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Kristianstads Vattenrike Biosphere Reserve

Periodic Review 2015–2025

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Biosphere Reserve

Kristianstads kommun

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unesco Man and the Biosphere Programme	PERIODIC REVIEW FOR BIOSPHERE RESERVE Kristianstads Vattenrike 2025

INTRODUCTION

The UNESCO General Conference, at its 28th session, adopted Resolution 28 C/2.4 on the Statutory Framework of the World Network of Biosphere Reserves. This text defines in particular the criteria for an area to be qualified for designation as a biosphere reserve (Article 4). In addition, Article 9 foresees a periodic review every ten years, based on a report prepared by the concerned authority, on the basis of the criteria of Article 4 and forwarded to the secretariat by the State concerned. The text of the Statutory Framework is given in the third annex.

The form which follows is provided to help States to prepare their national reports in accordance with Article 9 and to update the data available to the Secretariat on the biosphere reserve concerned. This report should enable the International Coordinating Council (ICC) of the MAB Programme to review how each biosphere reserve is fulfilling the criteria of Article 4 of the Statutory Framework and in particular the three functions. It should be noted that it is requested, in the last part of the form (Criteria and Progress Made), to indicate how the biosphere reserve fulfills each of these criteria.

The information presented on this periodic review will be used in a number of ways by UNESCO:

a) for examination of the biosphere reserve by the International Advisory Committee for Biosphere Reserves and by the Bureau of the MAB International Coordinating Council;

b) for use in a world-wide accessible information system, notably for the UNESCO-MABnet and publications, facilitating communication and interaction amongst persons interested in biosphere reserves throughout the world.

Kindly indicate if any part of this report should remain confidential.

The form consists of three parts:

- Part one is a summary highlighting the main changes in the biosphere reserve during the reporting period.
- Part two is more descriptive and detailed, referring to the human, physical and biological characteristics as well as to the institutional aspects.
- Part three consists of two Annexes (A): the first Annex (A.1) will be used to update the directory of biosphere reserves on the MABnet. The second annex will be used to provide promotion and communication materials of the biosphere reserve (A.2).

The third annex comprises the Statutory Framework for the World Network of Biosphere Reserves.

Please provide as many quantitative data as possible as well as supporting documentation to complete the information provided, especially:

Ø Map(s) clearly showing the zonation (see in particular 2.3.1);

Ø The legal texts for the different zones.

The form should be completed in English, French or Spanish. Two copies should be sent to the Secretariat, as follows:

1. The original hard copy, with the original signatures, letters of endorsement, zonation map and supporting documents. This should be sent to the Secretariat through the Official UNESCO channels, i.e. via the National Commission for UNESCO and/or the Permanent Delegation to UNESCO.
2. An electronic version (on diskette, CD, etc.) of the periodic review form and of maps (especially the zonation map). This can be sent directly to the MAB Secretariat:

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“I have seen the dry seeds grow at last.
I have seen the bright green spread out fast.

Mightier than iron is life's tenderness,
driven forth from the earth's heart without defence.”

Karin Boye (1900–1941), translated into English by David McDuff in "Karin Boye: Complete poems".

In the entire universe, there is only one place where we have found life – the biosphere. A thin layer that surrounds planet Earth, where you and I, and all other creatures live our lives – sometimes in harmony, sometimes in conflict. But always in relation and motion, where life ultimately creates the conditions for more life. Yet now we stand at a crossroads in human history, where the decisions we make this decade will affect life on Earth for thousands of years to come. We have become a dominant species on the planet and must carefully consider our role in the biosphere.

When UNESCO's Man and the Biosphere Programme was born in the 1970s, its purpose was to foster harmony between people and nature, as part of UNESCO's mission of peacebuilding. And twenty years ago, Kristianstads Vattenrike was designated as one of the hundreds of areas around the world meant to lead the way and put that beautiful vision into practice. By weaving together tradition and innovation, conservation and development, local and global perspectives – always with the well-being of both people and nature in mind – Vattenriket would serve as a model region for sustainable development. At the Stockholm Resilience Centre, we have had the privilege of following Kristianstads Vattenrike through a number of research projects. They have taught us and our students the importance of bridge-building, dialogue, positive examples, and adaptive co-management (or “common sense,” as it’s called in Skåne) to find local solutions to global challenges, in harmony with the biosphere.

Kristianstads Vattenrike Biosphere Reserve is now being evaluated for the second time, and the results are impressive. The work is characterised by continuous learning and active collaboration across boundaries to strengthen the resilience of both people and nature. People of all ages and from different parts of society are involved, and the positive effects are seen not only through increased knowledge, a stronger sense of place, and access to recreation and other ecosystem services for people, but also through improved conditions for Vattenriket’s flying, crawling, swimming, and rooted inhabitants – such as kingfishers, thick shelled river mussels, black-tailed godwits, otters, and catfish. For the tawny pipits, large blue butterflies, dung beetles, mason bees, and sand pinks, Vattenriket’s work is deeply tangible.

The work towards sustainable development is never finished. Each era has its challenges, and each evaluation is an opportunity for learning and reflection. As a scientist, I place great value on the work being done in Vattenriket, and on the thorough evaluation now at hand. Just as much as I celebrate the progress that has already been made, I look forward to the discoveries we will make together in the future. In a turbulent and uncertain world, the positive, life-nurturing example is more needed than ever.

Happy 20th anniversary, and good luck!

Lisen Schultz

Sustainability scientist, Deputy Director at the Stockholm Resilience Centre, Stockholm University, and Member of the Swedish National Commission for UNESCO

PART I: SUMMARY

a) Name of biosphere reserve: Kristianstads Vattenrike Biosphere Reserve

b) Country: Sweden

c) Year of designation: 2005

d) Year(s) of periodic review(s): 2015

e) Previous recommendation(s) made by the International Co-ordinating Council (MAB ICC), if applicable:

The International Advisory Committee for Biosphere Reserves encouraged the biosphere reserve to:
Share their knowledge in the EuroMAB and World Network, and
Develop more cooperation for comparative research on social-ecological dynamics.

f) What follow-up actions are completed and if not completed/initiated, please provide justifications.

Sharing knowledge in the EuroMAB and World Network

The Biosphere Office actively participates and has held workshops at EuroMAB and NordMAB. In 2017, the Biosphere Office initiated the Biosphere for Baltic network. We collaborate with twelve biosphere reserves around the Baltic Sea on projects such as BFB-TOOLS, BFB-COLAB, Supported by nature and BFB-Future generations. Study trips, exchanges of experience and collaborations have taken place with Appennino Tosco-Emiliano, Palermo and Monte Grappa in Italy, Mön in Denmark, Southeast Rügen in Germany, Dublin Bay in Ireland, West Estonian Archipelago in Estonia, Slowinski in Poland, Archipelago Sea in Finland, Wester Ross and Galloway and Southern Ayrshire in Scotland and Nordhordland in Norway. The Biosphere Office participated in an EU application, Biosphere Forests for the Future, with several European biosphere reserves and universities, and the workshops were held in the Rhön Biosphere Reserve in Germany and the Wienerwald Biosphere Reserve in Austria.

Developing more cooperation for comparative research on socio-ecological dynamics

Collaborations on social-ecological research have been initiated with many more universities, mainly Lund University, the University of Gothenburg, the Swedish University of Agricultural Sciences, Linnaeus University, the University of Bergen in Norway and the Leibniz Centre for Agricultural Research in Germany.

Kristianstad University still acts as an informal research node and is in continuous contact with the Biosphere Office. The long-standing and broad collaboration with the Stockholm Resilience Centre continues in projects such as BECOME – Biosphere Reserves as Effective Conservation Measures – which also involves universities in Norway, Canada and Chile. Important international projects on biosphere reserves, including Kristianstads Vattenrike, since the previous review are BiosACM and GLEAN, which have led to a number of publications.

The Biosphere Research Conference, which the Biosphere Office organises with Kristianstad University, is a very important forum where new findings linked to the biosphere reserve are presented. In 2022, the naturum Vattenriket visitor centre was one of two hosts of the conference Meeting-place Biosphere *(Mötesplats Biosfär),* which was about how biosphere reserves can serve as local arenas for research and innovation to achieve the UN's Sustainable Development Goals.

See questions 6.2, 6.6 and 8.7 for further information.

g) Update on the implementation of measures to achieve the objectives of the biosphere reserve.

Since the previous review, Kristianstads Vattenrike Biosphere Reserve has worked to achieve the biosphere reserve's objectives (below) in line with the MAB's Statutory Framework, Seville Strategy and Lima Action Plan and the upcoming Hangzhou Strategy and Action Plan. We work towards sustainable development that benefits people and nature within Kristianstads Vattenrike Biosphere Reserve and Kristianstad Municipality by:

Carrying out targeted conservation work relating to valuable natural environments and species with a focus on nature and people. Our conservation work has become much more comprehensive. As can be seen from the answer to question 4.2, we have expanded and developed our work in all ecosystem types and thematic landscapes, often closely linked with strong collaborations, innovative methods and knowledge-enhancing follow-up. One example is that we have further developed our work on wetlands with 185 hectares of wetlands constructed or restored since the previous review. Our work on wetlands is now also linked to carbon sequestration in the shape of peatland rewetting, including at Fjällmossen and in the new international Land4Climate project.

Continuously developing knowledge regarding natural and cultural values, and the requirements for protection and management of valuable habitats and species. More than 50 reports and inventories have been published in the series Vattenriket in focus *(Vattenriket i fokus)* since the previous review and new collaborations with a number of different universities have been initiated. We have also carried out a follow-up of all the 66 wetlands that we have helped to construct.

Working with a landscape perspective based on thematic landscapes and high-value landscapes. For example, the Biosphere Office has participated in several major projects in sandy grasslands. In the LONA project In the Sand Near You *(I sanden nära dig),* 14 hectares of coastal sandy grasslands were restored. In addition, private individuals received advice and a leaflet on promoting biodiversity. In the VIP for wild pollinators *(VIP för vilda pollinatörer)* project, we created over one hectare of exposed sand and restored eight sandy grasslands with funding from the Swedish Environmental Protection Agency through the County Administrative Board of Skåne. In SandLife, the county administrative boards of Skåne, Halland and Kalmar received EU funding to carry out large-scale landscape measures and provide information about the high natural values of sandy grasslands.

Working according to themes including all three functions of the biosphere reserves: conservation, development and logistic support. In 2022–2023, the Biosphere Office worked under the theme of The Sea, with the WWF project Restoring the Health of the Baltic Sea *(Återskapa Östersjöns livskraft)* as an example. Among other things, we created new eelgrass *(Zostera marina)* beds, constructed wetlands for northern pike *(Esox lucius)*, dug new wetlands to improve water quality, and carried out biotope conservation measures to improve spawning areas for fish. At the same time, information was disseminated to the public to raise awareness of the sea and the marine environment, including through a bioblitz. On World Ocean Day, we organised a business breakfast on the theme of The Sea with speakers from companies and the Stockholm Resilience Centre. An outdoor classroom with a Baltic Sea theme and an educational tool, the Baltic Sea Compass *(Östersjökompassen),* were also developed. Funding was provided by the Swedish Postcode Lottery.

Working in cooperation and dialogue with a multi-stakeholder approach and with the goal of creating trust and changing attitudes. In 2024, the final section of the Skåneleden SL6 Vattenriket subtrail, which links several of Vattenriket's visitor sites, was inaugurated. Kristianstad Municipality has made a major investment in the new trail, along with government funding from LONA. The trail

An arena for research

Knowledge for a sustainable future

Cooperating with researchers is an important part of the mission to provide logistical support. Biosphere reserves are to act as arenas for research and help to produce, use and disseminate new research in, with and about biosphere reserves. Kristianstad University acts as a research node in Vattenriket.

Kristianstad University, Lund University, Stockholm University and others study the biosphere reserve from several perspectives. The effects of wetlands on water quality and biodiversity are some aspects, as well as adaptive co-management, education and attitude change. The Biosphere Office contributes by developing ideas, participating in studies and providing contacts.

Citizen science gives researchers valuable data and strengthens participants' connection to nature. Naturum's educators and pupils collect data in the project Seaweed Forest Hunt. In another project, members of the public take pictures at a photo point outside naturum, helping to document changes in nature and the climate.

The Biosphere Office spreads knowledge through news articles, reports, guided tours and lectures. Every November, the Biosphere Office organises the Biosphere Research Conference at naturum in collaboration with Kristianstad University. Here, current findings are shared with a wider audience.

The area has many reference sites and sampling points for environmental monitoring as well. The Biosphere Office also initiates monitoring of birds, plants, insects, catfish and mussels.

can be seen as evidence of the attitude change that we in the biosphere reserve have been working towards since the beginning. The area used to be seen as "waterlogged", but now it is "water-rich"

and even a "water kingdom" *(vattenrike),* with high biodiversity. The high natural values of the biosphere reserve contribute to an improved quality of life for residents and attract visitors to the municipality and the tourism industry from near and far, with the Skåneleden SL6 Vattenriket subtrail as a new attraction.

Engaging and including young people and those unaccustomed to nature as priority target groups. One project was More Activity *(Aktivera mera)* with the Culture and Leisure Administration and funding from Swedish Outdoor Recreation *(Svenskt friluftsliv).* We offered fishing, bird watching, forest bathing and activities, mainly to children, young people and families in socio-economically disadvantaged areas and recent immigrants. In the Naturally Wise *(NaturligtVis)* project at Näsby, pupils from a socially disadvantaged area are given the opportunity to get out into the biosphere reserve, as part of the municipality's Urban Development Näsby *(Stadsutveckling Näsby)* initiative. The funding is from Sparbanken Skåne in collaboration with the Friends of Vattenriket *(Vattenrikets vänner).*

Raising awareness of the importance of a sustainable future by inspiring people of all ages to enjoy and respect nature. The Biosphere Office's outreach work includes everything from class visits, biosphere ambassadors, biosphere classrooms, biosphere camps, biosphere heroes, a youth forum, citizen science and collaborations with teachers in training to visitor sites, scheduled activities, guided tours, internships, work experience and new educational tools.

Making it easier for the public, pupils and researchers to benefit from all the values of the biosphere reserve through the visitor centre, visitor sites, website, social media and information materials. Over the last ten years, the naturum Vattenriket visitor centre has had 906,000 visitors. 16,000 people each year participate in naturum's scheduled activities, while 40,000 people per year visit the Kanalhuset boardwalk and 12,000 people per year visit Pulken during the crane *(Grus grus)* season. We have also developed our communications to be even more accessible, modern and transparent. We have adapted our website to all platforms, and started using more channels and methods. Examples include the social network Linkedin, an underwater drone for still and moving images, a podcast, and a webcam that can broadcast live, for example, from the B&B for cranes at Pulken.

h) Briefly describe the process by which the current periodic review has been conducted:

In the autumn of 2024, a project worker was hired to coordinate work on the review and write the report alongside Biosphere Office staff and other stakeholders. The review was sent out for consultation to the Consultation Group, other Swedish biosphere reserves, the Swedish Biosphere Council *(Biosfärrådet)* and the Committee for the Swedish MAB Programme *(Kommittén för svenska biosfärprogrammet).* It was also made available to the public at Kristianstad Town Hall, naturum Vattenriket and on the Vattenriket website, enabling all interested parties to submit comments. The

> *"A fantastic overall experience! I'm so impressed by the joy and commitment I encountered. It makes me full of hope. Vattenriket shows how you can achieve a good green infrastructure based on a holistic approach to the landscape. And working to get as many people as possible on board."*
>
> Anneli Hulthén, Skåne County Governor, 2018

review was discussed at the Consultation Group meeting on 24 March 2025 and was approved by Kristianstad's Municipal Executive Committee on 14 March 2025.

i) Area and spatial configuration

	Previous report (nomination form or periodic review) 2015	Proposed changes
Area of terrestrial core area(s)	6,958 hectares	6,192 hectares
Area of terrestrial buffer zone(s)	16,184 hectares	14,123 hectares
Area for terrestrial transition area(s)	67,373 hectares	67,032 hectares
Area of marine/limnic core area(s)	221 hectares	2,389 hectares
Area of marine/limnic buffer zone(s)	6,715 hectares	7,614 hectares
Area for marine/limnic transition area(s)	6,924 hectares	7,012 hectares

Large areas of wetlands in the core areas are now classified as marine/limnic rather than terrestrial. This is because the boundaries between terrestrial and limnic areas have been adjusted since the previous review due to increased detail in the GIS work. The figure for the total area of the biosphere reserve is also affected. In total, the core areas have increased by as much as 20 percent, while the buffer zones and the transition area have decreased accordingly. 11 new nature reserves covering almost 830 hectares within the biosphere reserve have been established. In addition, the Biosphere Office has been involved in expanding the municipal nature conservation fund by eight areas.

j) Human population of the biosphere reserve

	2015	2025
Core area(s) (permanent/seasonally)	12/ ?	18/ ?
Buffer zone(s) (permanent/seasonally)	1,995/ ?	1,895/ ?
Transition area(s) (permanent/seasonally)	73,783 /?	78,011/ ?

(k) Budget (main sources of funds, special capital funds) and international, regional or national relevant projects/initiatives carried out or planned

Budget in the previous report (nomination form or periodic review) 2015	Current budget 2025
SEK 15,622,200 (€1.4 million)	SEK 17,808,000 (€1.6 million)

The Biosphere and Naturum Unit has an annual (2025) budget of SEK 17,808,000 (€1.6 million), which is largely financed by Kristianstad Municipality. This figure includes SEK 450,000 contributed by the Swedish Environmental Protection Agency for the biosphere work and SEK 250,000 for naturum's work.

In addition to the annual budget, grants are sought for individual projects, either on our own or with partners. Project activities themselves can also generate money for future projects or for landowners, municipalities and so on. Grants also enable the employment of more staff, which in turn increases the chances to apply for further grants. Since its nomination in 2005, the Biosphere Office has been granted more than SEK 87 million in external funding.

One example is the Interreg project Land4Climate in which Kristianstads Vattenrike Biosphere Reserve is a project partner. The total budget is €3.4 million, of which €225,000 is the contribution to the biosphere reserve.

l) International, regional, multilateral or bilateral framework of cooperation. Describe, where applicable, the contribution of the biosphere reserve to achieve objectives and developing mechanisms that contribute to the implementation of international or regional bilateral or multilateral agreements, conventions, etc.

Examples of cooperation frameworks relevant to the biosphere reserve are described below.

The World Network of Biosphere Reserves Statutory Framework, which sets out the three functions of biosphere reserves – conservation, development and logistic support, the zonation with core areas, buffer zones and transition areas, and the importance of participating in the World Network of Biosphere Reserves. The Biosphere Office's action plans clearly address all three functions and a master's thesis from the Stockholm Resilience Centre shows how well the zoning in Kristianstads Vattenrike matches people's perceptions of the biosphere reserve's ecosystem services (Schwarze, 2024). The Biosphere Office regularly participates at the international biosphere reserve conference EuroMAB and contributed to three different workshops at the most recent conference in Germany. See question 6.6 for further information.

The MAB Seville Strategy and Lima Action Plan, which highlight, among other things, the importance of the contribution of biosphere reserves to Agenda 21 (now Agenda 2030) and the Convention on Biological Diversity (now the Kunming-Montreal Global Biodiversity Framework). Climate and youth are other focus areas, as well as working from a scientific basis, facilitating education, fostering people's relationships with nature, highlighting cultural diversity and traditional knowledge, bridging silos, working according to adaptive co-management, sharing information freely between different groups and sectors, and promoting sustainable economies. As can be seen in our current action plan and objectives, the Biosphere Office is actively working on these priorities. Some examples are our extensive work on education and changing attitudes, youth projects such as the Biosphere for Baltic – Future Generations collaboration, our collaborations with researchers, the results of which are used in subsequent work, our promotion of the traditional management of seasonally flooded grasslands, co-management with our Consultation Group and in various projects, our extensive communications work and our collaborations with farmers and the tourism industry.

The draft **MAB Hangzhou Strategy and Action Plan** reinforces many priority areas from the Seville Strategy and the Lima Action Plan, while further emphasising conservation efforts linked to the goals of the Kunming-Montreal Global Biodiversity Framework. These include halting species extinction, protecting and restoring habitats and reducing invasive species. Some areas that have also become more prominent are climate work in line with the Paris Agreement, nature-based solutions and citizen science. The Biosphere Office works on a long-term basis to promote biodiversity in general and also to protect specific species, including by protecting and restoring habitats and reducing invasive species. Since the previous review, climate perspectives have been more clearly integrated into our work of constructing and restoring wetlands, in the shape of rewetting drained peatlands and in the Land4Climate project. One example of a nature-based solution is the new wetland at

Fredriksdalsviken, the first of its kind in Sweden to reduce levels of iron and aluminium in the water. Several citizen science collaborations have also been launched.

The Kunming-Montreal Global Biodiversity Framework (GBF), like the earlier **Convention on Biological Diversity (CBD),** is a key foundation for the work of the Biosphere Office. Like the draft Hangzhou Strategy and Action Plan, it addresses issues such as halting species extinction, protecting and restoring habitats, and reducing invasive species, as well as climate and nature-based solutions. The GBF also clearly emphasises the importance of changing values and behaviours to address the main drivers of species extinction. Methods include promoting access to natural areas where people live and increasing knowledge sharing, communication and education. The Biosphere Office works hard to make nature more accessible, especially near urban areas, with everything from visitor sites and scheduled activities to the municipal project Urban Development Näsby *(Stadsutveckling Näsby),* where the Biosphere Office arranges activities in natural environments for children from the socio-economically disadvantaged area. Naturum's educational work has been developed further, with new partnerships, biosphere classrooms and educational tools since the previous review. The Biosphere Office's communications have also been developed with an increased number of followers on Facebook from 1,700 to 7,200, presence in new channels such as Linkedin and new tools such as podcasts, underwater drones and webcams.

> *"Vattenriket has come to mean much more than we could initially imagine. We usually say that Kristianstad has gone from being waterlogged to water-rich. I think that's a pretty good description. In many ways, our low-lying waterside location is still a threat and a weakness. But by taking a holistic approach and focusing on the positive, the water, through Vattenriket, has also become one of our greatest assets and strengths."*
>
> Pierre Månsson, then Municipal Commissioner, 2019

The 2030 Agenda for Sustainable Development is well integrated into the work and communications of the Biosphere Office. When the Biosphere Office's projects and initiatives are presented in annual reports and on the website, we state which of the Sustainable Development Goals they contribute to. A 2017 study of Swedish biosphere reserves, including Kristianstads Vattenrike, showed that they not only integrate the goals of the 2030 Agenda for Sustainable Development, but also serve as models for implementing the Sustainable Development Goals that can be scaled up and applied in other contexts. Vattenriket's slogan "Benefitting nature and people" is highlighted, as well as the biosphere reserves' neutral platforms for discussion. Bringing together a diverse range of stakeholders with different interests seems to give broader perspectives on sustainable development where conservation and development are integrated, which according to the researchers is necessary to implement the 2030 Agenda for Sustainable Development (Heinrup & Schultz, 2017).

UNESCO's Medium-Term Strategy for 2022–2029 emphasises work on the 2030 Agenda for Sustainable Development and with young people. The Biosphere Office has made several efforts to involve young people since the previous review. One example is the Biosphere for Baltic – Future Generations project, which involves young people aged 18–28 in the work for a sustainable Baltic Sea. The aim is to develop new ways to increase youth participation in the work of the twelve biosphere reserves and to create a transnational network for young people.

The Paris Agreement, which aims to keep global warming well below 2°C and to pursue efforts to limit it to 1.5°C. The Biosphere Office works on climate issues in many ways, for example in our work

on wetlands. This used to focus mainly on nutrient retention, but has become increasingly multifunctional with a focus on benefitting several ecosystem services such as reducing greenhouse gas emissions. In 2024, the Interreg project Land4Climate was launched, focusing on the rewetting of drained peatlands in Sweden and Denmark, where the Biosphere Office is part of the project management. The rewetting of peatland on Fjällmossen is described on a full page in Chapter 2. Other examples include the project Restoring the Health of the Baltic Sea *(Återskapa Östersjöns livskraft),* where the Biosphere Office planted 8,000 square meters of eelgrass *(Zostera marina),* which binds carbon, and citizen science on phenology and climate, described under question 6.3.

The EU Nature Restoration Regulation was adopted by both the European Parliament and the Council of Ministers in 2024. It requires the restoration of damaged nature in all Member States and sets binding targets for the restoration of ecosystems, habitats and species, with milestones for 2030, 2040 and 2050. The targets apply to a wide range of habitats and species, marine, terrestrial and freshwater. How the targets will be achieved, and the actual implementation of measures, are planned by each country individually. Member States have two years to develop a national restoration plan. The Biosphere Office is following the work closely.

Sweden's environmental objectives include the generational goal, 16 national environmental quality objectives and a number of milestone targets. The generational goal is to hand over to the next generation a society in which the major environmental problems have been solved, without increasing environmental and health problems outside Sweden's borders. The national environmental quality objectives include Clean Air, A Rich Diversity of Plant and Animal Life and A Non-Toxic Environment. **Skåne's regional environmental objectives** are the same as the national objectives: the generational objective, the environmental quality objectives (except for "A Magnificent Mountain Landscape") and the milestone targets. Skåne has also adopted regional objectives for the environmental quality objective of a Reduced Climate Impact. Important environmental objectives for the Biosphere Office are Reduced Climate Impact, Zero Eutrophication, Flourishing Lakes and Streams, Good-Quality Groundwater, A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos, Thriving Wetlands, Sustainable Forests, A Varied Agricultural Landscape, A Good Built Environment and A Rich Diversity of Plant and Animal Life. The objectives are well integrated into the Biosphere Office's action plan, which is described under questions 7.7.2 and 7.7.5.

The European Landscape Convention is a regional convention for Europe to improve the protection, management and planning of landscapes in Europe. It also aims to promote cooperation on landscape issues in Europe and to strengthen the involvement of the public and local communities in this work. Kristianstads Vattenrike Biosphere Reserve has always worked from a landscape perspective and a holistic perspective. The work in the biosphere reserve's various thematic landscapes is characterised by identifying values, threats and opportunities. Part of the work involves seeking detailed knowledge. This is analysed and translated into concrete plans so that we can act at a landscape level.

Kristianstads Vattenrike Biosphere Reserve has a total of 38 areas that are part of the EU's **Natura 2000** network of protected areas under the EU Habitats Directive (SCI) (34) and the EU Birds Directive (SPA) (4). The aim of the network is to halt the extinction of species and habitats in accordance with international conventions. The Biosphere Office is actively involved in the management of Natura 2000 areas. One example is that we played a key role when the Natura 2000 area Södra Äspet became a municipal nature reserve in 2021.

In 2000, an **EU directive, the Water Framework Directive** (or WFD), was introduced, setting minimum standards for water quality and access for Member States. The WFD is based on the

premise that we must collectively manage our water resources for future sustainable water use. When determining the status of a water body, chemical as well as biological parameters should be taken into account. The work must have a perspective centred around the drainage basin and involve the public, thus creating an understanding that water is society's most important resource. This is well in line with the work of the Biosphere Office. Kristianstad Municipality has 31 water bodies that must have good status by 2033. At present, around 35 percent of our water bodies fulfil this requirement (11 out of 31). Since the previous review, 2 water bodies have been added and the proportion with good status has increased from 20 percent.

The Helgeån Ramsar site lies entirely within the Kristianstads Vattenrike Biosphere Reserve. The wetland area is of great importance for resting, nesting and wintering wetland birds, has a valuable flora and is home to many red-listed fish species. For some time, the Biosphere Office has collaborated with landowners and fishing rights-holders and implemented measures to preserve and develop the values and at the same time make the wetland area accessible and attractive to visitors. A new nature reserve has been established in the area, Ekenabben and Kvarnäs. At the Ramsar COP14 meeting in Geneva in 2022, naturum Vattenriket received the Star Wetland Centre Award. The award is presented by Wetland Link International, which connects the visitor centres located in Ramsar areas.

In the autumn of 2014, Kristianstad Municipality decided that **the UN Convention on the Rights of the Child** should form the basis for all decisions made in Kristianstad Municipality. This means that all administrations must take the children's perspective into account and that the Convention is to guide all decisions made in the municipality's work. An implementation strategy was adopted in 2018 and the children's perspective is part of Vision 2030 and the Strategic Roadmap adopted by the Municipal Council.

The work on accessibility for all in the biosphere reserve is based on **the UN Convention on the Rights of Persons with Disabilities**. Swedish legislation is based on the Convention and sets requirements for accessibility and usability for people with reduced mobility through, for example, the Swedish Planning and Building Act. In the biosphere reserve, we have worked intensively since 2005 to make visitor destinations accessible to all, for example by creating ramps to birdwatching towers and broad boardwalks through wetland environments. Since the previous review, accessibility at several of the biosphere reserve's visitor sites and trails has been further improved, including at Kavröbro and Äspet. Following a citizen's proposal, a footbridge was inaugurated over the Härlövsängaleden road, making the entire urban Linnérundan trail accessible for wheelchair users and prams. The naturum Vattenriket visitor centre is accessible to wheelchair users, people with visual impairments and people with hearing impairments. For example, there are ten disabled spaces in the parking lot, a lift, a hearing loop, an audio guide to the exhibition and information in sign language. The entrance, emergency exits and toilets can be used by wheelchair users and the floors are level.

> *"We are very impressed by the work in the biosphere reserve. Many people talk about sustainable development, but here concrete efforts are being made where the municipality,*
> *the state and many different interests work side by side."*
>
> Susanne Lindeman, Chair of the Nordic Council of Ministers' Terrestrial Ecosystem Expert Group, 2018

PART II: PERIODIC REVIEW REPORT

1. BIOSPHERE RESERVE

1.1 Year designated

2005

1.2 Year of first periodic review and of any following periodic review(s) (when appropriate).

2015

1.3 Follow-up actions taken in response to each recommendation from the previous periodic review(s) (if applicable), and if not completed/initiated, please provide justifications.

In terms of **sharing the biosphere reserve's knowledge in the EuroMAB and World Network**, much has been done since the previous review. Kristianstads Vattenrike Biosphere Reserve has established several collaborations at national, regional and international levels to promote sustainable development, biodiversity conservation and knowledge exchange.

Staff from the Biosphere Office and naturum Vattenriket have participated in all **EuroMAB conferences** over the past ten years. The Biosphere Office has held workshops at several EuroMAB and **NordMAB conferences**. We have visited and received visits from biosphere reserves in Scotland, Germany, Finland, Norway and Denmark on several occasions.

In 2017, the Biosphere Office initiated **the Biosphere for Baltic** network. This is a collaboration of twelve biosphere reserves around the Baltic Sea on issues such as sustainable marine awareness, education and sustainable tourism with projects such as BFB-TOOLS, BFB-COLAB, Supported by Nature and BFB-Future Generations. The first physical meeting of the network was held in Vattenriket and the Biosphere Office coordinated the network until 2023.

Study trips, exchanges of experience and collaborations have taken place with Appennino Tosco-Emiliano, Palermo and Monte Grappa in Italy, Mön in Denmark, Southeast Rügen in Germany, Dublin Bay in Ireland, West Estonian Archipelago in Estonia, Slowinski in Poland, the Archipelago Sea in Finland, Wester Ross and Galloway and Southern Ayrshire in Scotland and Nordhordland in Norway. The Biosphere Office participated in an EU application, Biosphere Forests for the Future, with several European biosphere reserves and universities. Workshops were held in the Rhön Biosphere Reserve in Germany and the Wienerwald in Austria.

See questions 6.6 and 8.7 for further information.

In terms of **developing more cooperation for comparative research on social-ecological dynamics**, much has also been done since the previous review. Collaborations on social-ecological research have been initiated with many more universities, mainly Lund University, the University of Gothenburg, the Swedish University of Agricultural Sciences SLU, Linnaeus University, the University of Bergen in Norway and Leibniz Centre for Agricultural Research in Germany.

Kristianstad University still acts as an informal node and is in continuous contact with the Biosphere Office. The research environment Man and Biosphere Health, MABH, changed its name to Sustainable Multifunctional Landscapes (SMULA) in 2023 and has around 25 members. Some important research areas are water quality, geese, mallards *(Anas platyrhynchos),* swans, black terns *(Chlidonias niger),* ecosystem services, outdoor recreation and nature connection.

The long-standing and broad collaboration with the **Stockholm Resilience Centre** continues in projects such as BECOME – Biosphere Reserves as Effective Conservation Measures – which also involves universities in Norway, Canada and Chile. Important international projects on biosphere reserves, including Kristianstads Vattenrike, since the previous review are BiosACM and GLEAN, which have led to a number of publications.

Key collaborations with **Lund University** concern brownification, eutrophication, ecosystem services, sandy grasslands and biodiversity, as well as continuous cover forestry and wetland rewetting.

In the summer of 2024, researchers from **the University of Gothenburg** carried out measurements of the greenhouse gas methane from constructed wetlands in Vattenriket and elsewhere. The collaboration with **the Swedish University of Agricultural Sciences (SLU)** is mainly about wading birds and accompanying research in the Interreg project Land4Climate. Researchers at **Linnaeus University** are investigating the leaching of iron and aluminium from acid sulfate soils, and collaborating with Kristianstad University.

The University of Bergen, Norway, is leading the BECOME project and conducting research in Vattenriket in a study of places where participants feel they can enjoy landscape values in biosphere reserves and why these places are important to them. **Leibniz Centre for Agricultural Research** in Germany is investigating how to resolve and prevent conflicts between people and wildlife in the agricultural landscape in biosphere reserves, using the example of crane *(Grus grus)* management.

The Biosphere Research Conference, which the Biosphere Office organises with Kristianstad University, is a very important forum where new findings linked to the biosphere reserve are presented to researchers and the public.

In 2022, the naturum Vattenriket visitor centre was one of two hosts of **the conference Meeting-place Biosphere** *(Mötesplats Biosfär),* which focused on how biosphere reserves can serve as local arenas for research and innovation to achieve the UN's Sustainable Development Goals. UNESCO Deputy Director-General Shamila Nair-Bedouelle addressed the conference, emphasising the importance of biosphere reserves in understanding biodiversity and ecosystem services, finding nature-based solutions and restoring ecosystems. She also encouraged universities to collaborate with biosphere reserves on research and innovation.

See question 6.2 for further information.

1.4 Other observations or comments on the above.

No observations or comments on the above.

1.5 Describe in detail the process by which the current periodic review has been conducted.

In the autumn of 2024, one person was hired to coordinate the work on the periodic review and write the report with Biosphere Office staff and other stakeholders. The main sources of data were:

- Analysis of previous periodic reviews from a number of biosphere reserves
- Analysis of international strategies, action plans, frameworks, reports and other key documents such as the draft Hangzhou Strategy and Action Plan, the Seville Strategy, the Lima Action Plan, the Kunming-Montreal Global Biodiversity Framework and reports from the Swedish MAB Programme
- Analysis of a large number of scientific publications on the biosphere reserve
- Contacts with municipal officials, researchers and other experts for input and feedback
- A close dialogue between employees within the Biosphere Office throughout the work.

The first draft of the report was sent out for consultation to various stakeholders such as the Consultation Group, the Swedish Biosphere Council *(Biosfärrådet)* and the Committee for the Swedish MAB Programme *(Kommittén för svenska biosfärprogrammet)* (authorities, politicians, officials, landowners, researchers, associations and organisations). It was also exhibited to the public at Kristianstad Town Hall and naturum Vattenriket. The report was also made available on the Vattenriket website, which enabled all interested and involved parties to participate and provide feedback on the work of the Biosphere Office since the previous review.

A meeting with the Consultation Group was held which focused on the review. This was to anchor the work and obtain feedback on the report.

At this meeting, the Consultation Group listed success factors for the biosphere reserve including: collaboration with a number of stakeholders – not least farmers, dialogue, a long-term approach, openness to new ideas, a culture and identity that supports the work, concrete and visible measures, educational work, communications, a scientific basis, knowledgeable staff on a range of topics, a mandate and support, a functioning organisation and a focus on the positive, energy and new ideas.

In the work ahead, the group's members see project follow-up, cooperation, communications, urban planning, integration and increased awareness of Vattenriket as particularly interesting.

The Consultation Group also produced a word cloud of the best things about the biosphere reserve.

At its meeting on the 24 March 2025, the Consultation Group created a word cloud of the best things about the biosphere reserve.

Responses and comments from the Consultation Group and other stakeholders were included in the report to obtain greater objectivity and a wider range of views in the final version. After the consultation period, the report was translated into English.

The review was approved by Kristianstad's Municipal Executive Committee to anchor it politically.

The Committee for the Swedish MAB Programme *(Kommittén för svenska biosfärprogrammet)* approved the review in August 2025 and then submitted it to UNESCO. The review will then be disseminated, via the Committee for the Swedish MAB Programme, to various national authorities.

1.5.1 Which stakeholders were involved?

Representatives of the following organisations contributed to the review in various ways:

Kristianstad Municipality:

- Biosphere and Naturum Unit
- Sustainability Unit
- Land and Development Unit
- Business and Communication Unit
- Environmental Health Office
- Analysis and Development Department
- Public Works Department

Other actors:

- Consultation Group
- County Administrative Board of Skåne
- Eco Images
- HIR Skåne
- Kristianstad University
- Leader Skånes Ess
- Naturcentrum AB
- SMHI, the Swedish Meteorological and Hydrological Institute
- Stockholm Resilience Centre
- Swedish MAB Programme
- Swedish Board of Agriculture
- Swedish Forestry Agency

The first draft of the report was sent out for consultation to the Consultation Group, the Swedish Biosphere Council *(Biosfärrådet)* and the Committee for the Swedish MAB Programme *(Kommittén för svenska biosfärprogrammet)* (authorities, politicians, officials, landowners, researchers, associations and organisations). It was also made available to the public at Kristianstad Town Hall, naturum Vattenriket and the Vattenriket website. The consultation responses were included in the report. It was then approved by Kristianstad's Municipal Executive Committee.

1.5.2 What methodology was used to involve stakeholders in the process (e.g., workshops, meetings, consultation with experts)?

The following methods were used:

- Meetings, telephone calls and email contact with Biosphere Office staff, municipal officials, researchers and other experts for input and feedback
- Consultation with stakeholders such as the Consultation Group, the Swedish Biosphere Council *(Biosfärrådet)* and the Committee for the Swedish MAB Programme *(Kommittén för svenska biosfärprogrammet)* (authorities, politicians, officials, landowners, researchers, associations and organisations)
- Exhibition and collection of responses at Kristianstad Town Hall, naturum Vattenriket and the Vattenriket website
- One meeting of the Consultation Group focusing on the review
- One meeting ofthe Swedish Biosphere Council focusing on the review
- One meeting of Kristianstad's Municipal Executive Committee.

1.5.3 How many meetings, workshops, etc. occurred throughout the process of conducting this review?

The following meetings were held during the evaluation:

- One meeting of the Consultation Group focusing on the review
- One meeting of the Swedish Biosphere Council *(Biosfärrådet)* focusing on the review
- One meeting of the Kristianstad Municipal Executive Committee to approve the review
- A large number of meetings were held with employees of the Biosphere Office and external stakeholders throughout the process to gather knowledge and anchor the work.

1.5.4 Were they well attended, with full and balanced representation?

(Describe the participation and stakeholders.)

- One meeting of the Consultation Group was focused on the review. The meeting was well attended with about 20 participants from the Municipal Management Office and several other municipal administrations, the County Administrative Board, as well as several associations and other stakeholders.
- One meeting of the Swedish Biosphere Council *(Biosfärrådet)* was focused on the review. The meeting was well attended, with all the Swedish biosphere reserves represented except the East Vättern Scarp Landscape, which at the time had no coordinator.
- One meeting of Kristianstad's Municipal Executive Committee to approve the review. The meeting was well attended, with all 15 members present except two, substituted by acting alternates, as well as six alternate members and eight municipal civil servants.
- A large number of meetings were held with employees of the Biosphere Office and external stakeholders throughout the process to gather knowledge and anchor the work.

2. SIGNIFICANT CHANGES IN THE BIOSPHERE RESERVE DURING THE PAST TEN YEARS

2.1 Brief summary overview: Narrative account of important changes in the local economy, landscapes or habitat use, and other related issues. Note important changes in the institutional arrangements for governance of the biosphere reserve area, and changes (if any) in the coordinating arrangements (including the biosphere reserve organization/coordinator/manager) that provide direction for the biosphere reserve. Identify the role of biosphere reserve organization/coordinator/manager in initiating or responding to these changes.

Biosphere Office staff have been working with dialogue and collaboration with local stakeholders in the area since 1989. Our work is built on good examples and interested stakeholders, which are then developed into larger projects and measures. A key focus is creating and building trust between Biosphere Office staff and the various stakeholders in the landscape. This way of working is sometimes described as "adaptive co-management" and is one success factor in the Biosphere Office's work, according to research from the Stockholm Resilience Centre. Another is the close cooperation which has developed between different authorities such as the County Administrative Board and the Swedish Forest Agency.

Since the previous review, the Biosphere Office has worked even more closely with other municipal administrations, and is, for example, actively involved in Kristianstad Municipality's work on the urban planning process, such as the comprehensive plan and detailed development plans. For example, the coordinator of the biosphere reserve and manager of the Biosphere Office is a member of the steering group for the urban planning process and the comprehensive plan in Kristianstad Municipality. By getting involved early in the planning process and contributing our knowledge of landscape values, it is possible to find solutions that benefit nature and people. For example, we were instrumental in the development of a forestry policy for Kristianstad Municipality.

In terms of conservation, since the previous review, the Biosphere Office has, among other things, constructed 185 hectares of wetlands including the biosphere reserve's first rewetting project to reduce carbon emissions. We have participated in several international projects on Baltic Sea issues, ecosystem services, restoring watercourses, constructing wetlands, improving water quality, restoring eelgrass *(Zostera marina)* beds and more. Other projects have benefited threatened wild pollinators, endangered wading birds in seasonally flooded grasslands and other biodiversity. We have also explored new management methods using new machinery. We have collaborated with stakeholders such as the Swedish Armed Forces, local golf courses, farmers and landowners on biodiversity issues and projects. We have also participated in and carried out extensive research and monitoring on biodiversity, including around 30 of our own inventories and surveys.

Since the last report, 11 new nature reserves have been established, an increase of almost 830 hectares (within the biosphere reserve) or almost 15 percent. In addition, the Biosphere Office has been involved in adding eight areas to the municipal nature conservation fund in Kristianstad Municipality. According to our latest survey, there are 947 red-listed species in the biosphere reserve, 366 of which are threatened. This can be compared with the figures from the previous review: 775 red-listed species, of which 277 were threatened.

A clear trend in agriculture in the biosphere reserve is that farms are merging, leading to a decrease in numbers and an increase in size. Larger units and herds of livestock require more land for grazing and winter fodder, which has led to increased interest in restoring overgrown seasonally flooded grasslands. The average age of farmers is rising. At the same time, we have now seen several examples of generational renewal at farms in Vattenriket and there is significant interest from the younger generation to continue to manage seasonally flooded grasslands with grazing cattle, for example. There is a clear trend towards increased sustainability in agriculture and higher demands are being made. According to the Swedish Board of Agriculture, the area of land managed organically or in conversion in Kristianstad Municipality increased by around 11 percent from 2015 to 2023.

The Biosphere Office works to make nature accessible and communicate opportunities for nature tourism. In 2024, the final section of the Skåne Trail's SL6 Vattenriket subtrail was inaugurated, connecting Vattenriket visitor sites. We have produced an excursion guide, new maps and films that highlight outdoor activities, as well as launching new jetties at Kanalhuset and Kavröbro and digital marking of the fairway on Lake Hammarsjön. We have also created a new outdoor museum with a boardwalk, Årummet, renewed the exhibitions at several visitor sites and initiated the introduction of the Nature Map *(Naturkartan)* in the municipality to highlight nature and activities.

Naturum Vattenriket is the visitor centre and meeting place for Kristianstads Vattenrike Biosphere Reserve. Since the previous review, naturum Vattenriket has had more than 906,000 visitors. A study of tourism revenue in 2016 showed that visitors who come to the area specifically to visit naturum and Vattenriket contribute over SEK 30 million in tourism revenue.

Kristianstad Municipality is the responsible authority for Kristianstads Vattenrike Biosphere Reserve, as was the case at the time of nomination. Since 1 January 2025, the previous two units, the Biosphere Office and the Naturum Unit, have been merged into one unit, the Biosphere and Naturum Unit. In this report, the unit is referred to as the Biosphere Office. The unit forms part of the Societal Development Department, which is a department under the Municipal Management Office at Kristianstad Municipality, with the Municipal Executive Committee as its immediate political governing body. The unit has 15 permanent employees, 2 project employees and 5 hourly employees. The manager of the Biosphere and Naturum Unit and coordinator of the biosphere reserve is Carina Wettemark.

Kristianstads Vattenrike Biosphere Reserve has established several collaborations with other biosphere reserves at the national, regional and international levels. The Biosphere Office participates actively and has held workshops at EuroMAB and NordMAB. In 2017, the Biosphere Office initiated the Biosphere for Baltic network, where we collaborate with twelve biosphere reserves around the Baltic Sea. Study trips, exchanges of experience and collaborations have taken place with biosphere reserves in Italy, Denmark, Germany, Ireland, Estonia, Poland, Scotland, Finland and Norway. The Biosphere Office participated in an EU application, Biosphere Forests for the Future, with several European biosphere reserves and universities.

Cooperation for social-ecological research has been initiated with many more universities, mainly Lund University, the University of Gothenburg, the Swedish University of Agricultural Sciences, Linnaeus University, the University of Bergen in Norway and Leibniz Centre for Agricultural Research in Germany. Kristianstad University still acts as an informal node and is in continuous contact with Vattenriket. Our long-standing and broad collaboration with the Stockholm Resilience Centre continues.

Ideas in a changing climate

Rewetting peatland at Fjällmossen

By rewetting peatlands, we can mitigate climate change as well as adapt to it. Blocking old drainage ditches can reduce carbon emissions and even out water flows. The Biosphere Office has contributed to the restoration of 2.5 hectares of wetland by blocking ditches at Fjällmossen.

50 years ago, peat was cut and the land on the edge of Fjällmossen was cultivated. Ditches were dug to make the ground drier. Today, the land is no longer farmed, but the ditches remained and were still drying out the bog. As part of the LONA Rewet project, we have restored the original water level by blocking the ditches.

Oxygen causes peat soil to decompose and turn into carbon dioxide in the atmosphere. By raising the water level, we stop this process and allow new peat to form. This reduces greenhouse gas emissions and keeps carbon in the soil.

Well-functioning wetlands also equip us for a changing climate. In southern Sweden, precipitation is increasing in winter with longer periods of drought in summer. Fjällmossen and other wetlands can hold large amounts of water, like big sponges. Rewetting improves this capacity, evening out water flows in rivers downstream and making us more resilient to extreme weather. During periods of drought, more water is retained in the landscape for longer, and during heavy rainfalls the speed of water flows is reduced.

By and large, all the goals and visions set out in the Biosphere Office's action plans since the previous review have been implemented or initiated. Since 2005, the Biosphere Office has applied for and received more than SEK 87 million in external project funding.

2.2 Updated background information about the biosphere reserve.

Kristianstads Vattenrike Biosphere Reserve is located in Sweden's southernmost province, Skåne. The area includes the lower drainage basin of the the Helge Å River in Kristianstad Municipality and the coastal areas of Hanöbukten Bay, which is part of the Baltic Sea. The area, covering around 100,000 hectares, contains landscapes and biological assets of international, national and regional importance.

The area's special morphology, geology, contact of lakes and rivers with the Baltic Sea's brackish waters and varying local climates have created unique conditions for multifaceted land use. This has in turn provided space for a variety of ecosystems and a large diversity of species. Much of the area's value in this cultural landscape is the result of long-term human use of the land, but some areas also provide biologically valuable sanctuaries that do not depend on human activities.

Total area of the biosphere reserve:
104,362 hectares, of which 87,347 are terrestrial and 17,015 are marine/freshwater environments.

Since the previous review, the figures for the different areas have been adjusted slightly due to an increased level of detail in the GIS work. For example, the boundaries between terrestrial and limnic areas have been adjusted. The figure for the total area of the biosphere reserve is also affected.

Administrative area:
Municipality: Kristianstad Municipality
County: Skåne County
Country: Sweden

Protected areas:

- 34 Natura 2000 sites covering 4,778 hectares under the EU Habitats Directive (SCI)
- 4 Natura 2000 sites covering 4,376 hectares under the EU Birds Directive (SPA)
- 42 nature reserves with an area of 6,295 hectares
- 60 biotope protection areas with an area of 129.28 hectares
- 1 Ramsar site with an area of 8,042 hectares
- 14 areas of national interest for nature conservation

Since the previous review, the number of nature reserves has increased by eleven, eight of which are national and three municipal, and almost 830 hectares (within the biosphere reserve). The number of biotope protection areas has increased by 17, an expansion of 37 hectares.

Nature and land use types:
Lakes and watercourses, seasonally flooded grasslands, wetlands, marine ecosystems, sandy grasslands, coastal dune landscapes, forests, agricultural landscapes, urban nature and built-up areas.

Highest altitude above sea level:
Approximately 190 metres above sea level (at Linderödsåsen west of Östra Sönnarslöv)

Lowest altitude above sea level:
On land 2.32 metres below sea level RH2000. (This is Sweden's lowest point on land, which is below sea level in the embanked Nosabyviken inlet.) The bottom of Lake Råbelövssjön is approximately 9 metres below sea level. (The lake is 11 metres deep.)

Maximum depth below mean sea level for coastal/marine areas:
19 metres

Climate:
The area has a warm temperate climate, according to the Köppen climate classification.

Average temperature:
17.6°C during the warmest month, -1.2°C during the coldest month according to SMHI data from 2024. This can be compared to SMHI figures for 2013: 16.9°C and -1.7°C respectively.

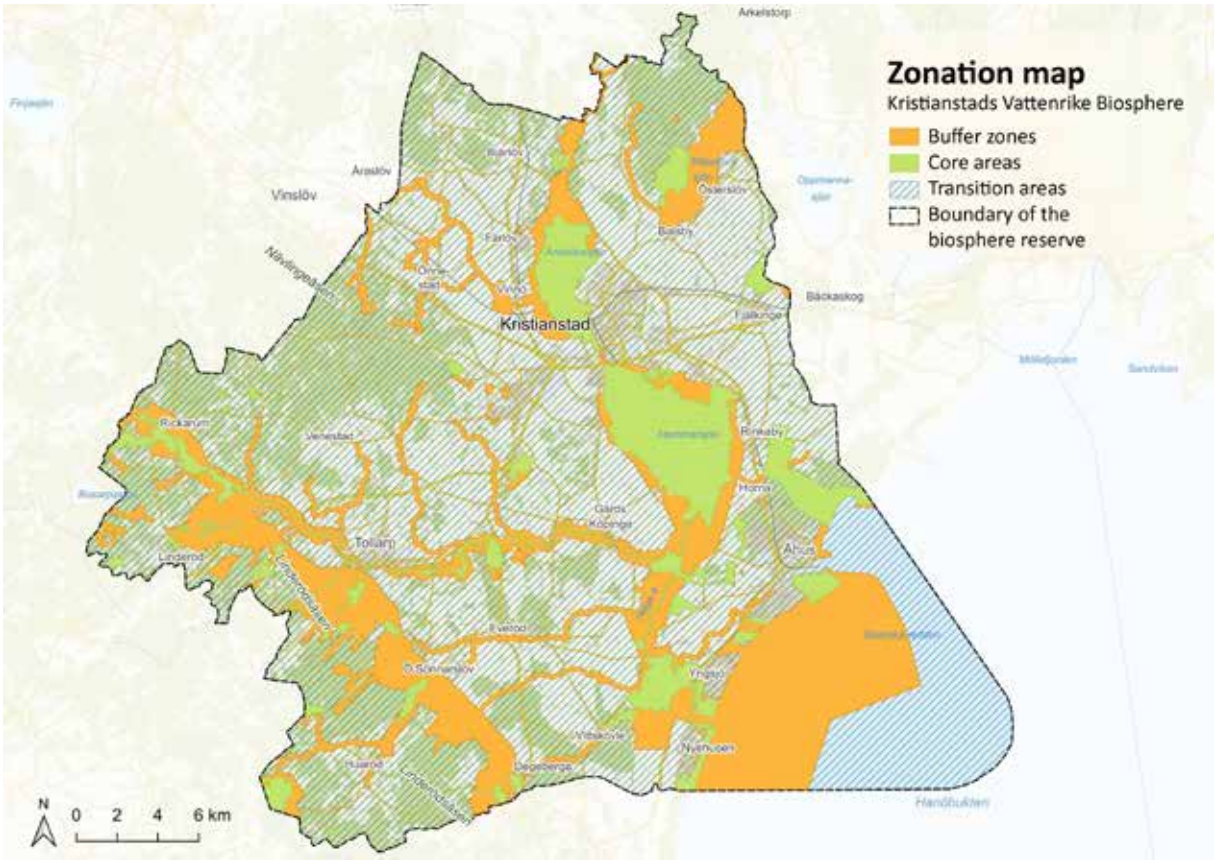
Total annual precipitation:
639 millimetres in 2024 according to SMHI. This can be compared to 550.9 millimetres in 2013.

2.2.1 Updated coordinates (if applicable). If any changes in the biosphere reserve's standard geographical coordinates, please provide them here (all projected under WGS 84).

Cardinal points	Latitude	Longitude
Most central point	56°01'57''N	14°08'58''E
Northernmost point	56°10'26''N	15°13'15''E
Southernmost point	55°48'14''N	13°58'42''E
Westernmost point	55°56'13''N	13°45'04''E
Easternmost point	55°51'33''N	14°28'42''E

2.2.2 If necessary, provide an updated map on a topographic layer of the precise location and delimitation of the three zones of the biosphere reserve. Map(s) shall be provided in both paper and electronic copies. Shape files (also in WGS 84 projection system) used to produce the map must also be attached to the electronic copy of the form.

Download the shape files from https://vattenriket.kristianstad.se/periodic-review/



2.2.3 Changes in the human population of the biosphere reserve.

	2015	2025
Core area(s) (permanent/seasonal residents)	12/ ?	18/ ?
Buffer zone(s) (permanent/seasonal residents)	1,995/ ?	1,895/ ?
Transition area(s) (permanent/seasonal residents)	73,783/ ?	78,011/ ?

2.2.4 Update on conservation function, including main changes since last report (summary). (Note briefly here and refer to 4 below).

The proportion of protected areas has increased. Since the last report, 11 new nature reserves have been established, an increase of almost 830 hectares within the biosphere reserve or nearly 15 percent. In addition, the Biosphere Office has been involved in expanding the municipal nature conservation fund in Kristianstad Municipality by eight areas.

A concept from the Swedish Environmental Protection Agency and the county administrative boards that has gained momentum during the last ten years is high-value landscapes, a sort of hotspots for biodiversity. In the biosphere reserve, we are proud to have many different types of high-value landscapes, such as a large high-value landscape for sandy grasslands (see Appendix 7). This high-value landscape is a fine example of how we have succeeded in preserving many of the natural values associated with sandy grasslands. We also have a high-value landscape for broadleaf forests with older beech forests growing in valleys and along watercourses.

We are seeing some improvement in the extent to which natural assets are taken into account in community planning. For example, far more inventories of natural values are carried out today than previously, and the Biosphere Office has been involved in a cross-sector group within the municipality for balancing conservation and exploitation, and biodiversity offsetting.

Our conservation work not only contributes to biodiversity, but also to climate change mitigation and adaptation and resilience. A clear example is our work on wetlands, which has been developed to contribute to an increasing number of ecosystem services, such as reducing carbon emissions.

In **lakes and watercourses**, the European catfish *(Silurus glanis)* has become well established throughout the Helge Å River, having been classified as vulnerable in 2015. The European eel *(Anguilla anguilla)* has declined sharply in coastal areas and inland waters. The River Vramsån in Vattenriket is the only watercourse in the Nordic region where the river water crowfoot *(Ranunculus fluitans)* grows. During the last ten years, several measures have been taken to benefit the species. Since 2015, the otter (*Lutra lutra*) has become re-established throughout Vattenriket.

Nutrient concentrations continue to decline in our aquatic systems but are still classed as high to very high in many waters. Brownification is increasing but the rate has slowed in our lakes and rivers over the past ten years. The Biosphere Office is involved in research and monitoring on this issue as well as constructing wetlands, see below.

In Kristianstads Vattenrike, the invasive species fringed water-lily *(Nymphoides peltata),* American skunk cabbage *(Lysichiton americanus)* and Himalayan balsam *(Impatiens glandulifera)* mainly affect aquatic environments and their surroundings. In Lake Råbelövssjön, the management of fringed water-lily has resulted in a reduction in the population by around 50 percent. The County Administrative Board as well as the Biosphere Office have participated in the management of American skunk cabbage by digging up plants.

Breeding waterfowl such as greylag goose *(Anser anser),* great crested grebe *(Podiceps cristatus),* ducks, mute swan *(Cygnus olor)* and coot (*Fulica atra*) have shown a marked decline in recent decades and no positive trend has been noted in the last ten years. Since the early 2000s, the number of resting barnacle geese *(Branta leucopsis)* in southern Sweden has increased dramatically.

Vattenriket, along the Helge Å River, has Sweden's largest area of **inland seasonally flooded grasslands**, managed by grazing and haymaking. Wading birds are generally not doing well in Vattenriket, as in most of Sweden and in Europe. In recent years, we have also seen that the

seasonally flooded grasslands are drying out too quickly in the spring, which has a negative impact on wading birds. We are trying to address this problem by means of wetland construction and other conservation measures. In 2019, the Biosphere Office launched a project with several other stakeholders to promote predator hunting in seasonally flooded grasslands. The aim is to support declining wader populations.

Willow *(Salix spp)* is expanding in the low-lying areas of Vattenriket and overgrowth seems to have accelerated in the last decade. We have carried out extensive restoration and tested new methods and machinery.

The Biosphere Office has increased construction of **wetlands** and between 2015 and 2025, 185 hectares of wetlands have been constructed or restored under our direction. By evaluating and communicating, our work contributes to developing practical and theoretical knowledge about wetlands locally, nationally and internationally. Some of the aims of different wetland projects are to promote nutrient retention, groundwater recharge, flow detention, biodiversity, recreation and water management, create spawning areas for fish, solve problems related to iron and aluminium, reduce brownification and reduce carbon dioxide emissions.

In **Hanöbukten Bay** we see changes in the coastal ecosystem. The Biosphere Office has made efforts to improve the environment for predatory fish in the area. Other measures in the WWF project Restoring the Health of the Baltic Sea *(Återskapa Östersjöns livskraft)* included constructing wetlands, restoring eelgrass *(Zostera marina)* beds, developing educational tools and working with school classes on Baltic Sea issues. In the Biosphere for Baltic network, twelve biosphere reserves and other actors around the Baltic Sea share experiences and knowledge about measures for better water quality and greater marine awareness. One important project is Supported by Nature, which aims to make nature-based solutions a natural part of land and sea management.

The biodiversity of **sandy grasslands** is a particular area of responsibility in the biosphere reserve. For several years, the Biosphere Office has worked to increase knowledge of biodiversity, provided information, protected sandy grasslands for the future and carried out management and restoration. The LONA project In the Sand Near You *(I sanden nära dig)* and the County Administrative Board's Wild Pollinators *(Vilda pollinatörer VIP)* initiative are some examples, as well as measures for the natterjack toad (*Epidalea calamita*), *Cyphelium trachylioides*, sand pink *(Dianthus arenarius)* and increased grazing and removal of lichens. We also participated actively in the SandLife project coordinated by the County Administrative Board. Our work to combat overgrowth has been stepped up. The number of measures and the amount of money spent on measures has increased. We are also working to protect the most important areas by establishing nature reserves. In 2019–2022, the Biosphere Office ran a LONA project to establish two new municipal nature reserves.

We are seeing an increase in droughts and snow-free winters, which can have major impacts on biodiversity. Climate change is also leading to changes in species composition, with alien or invasive species from the south gaining further ground.

In recent years, erosion in **coastal dune landscapes** has increased. In the autumn of 2023, Storm Babet hit the shores of Hanöbukten Bay hard, and properties along the shore were affected by the erosion caused by the storm. The problem of erosion is expected to increase with global warming.

Some initiatives in **forest ecosystems** since the previous review are a LONA project for bats, new conservation measures linked to trees, a project on heritage trees and our key role in work on the municipality's first forestry policy.

In **agricultural landscapes,** there have been several examples of generational renewal on farms and the younger generation are showing great interest in continuing to maintain natural pastures. Larger units and livestock require more land, which has led to an increased interest in restoring overgrown seasonally flooded grasslands. The Biosphere Office is involved in Let Sweden Blossom *(Hela Sverige blommar),* the Swedish Federation of Rural Economy and Agricultural Societies' project to encourage farmers to grow pollen- and nectar-producing plants on arable land.

Invasive species are one of the biggest threats to biodiversity in **urban nature**. As part of the LONA project In the Sand Near You *(I sanden nära dig),* a green space in Åhus was restored where the Biosphere Office is testing new management methods. The Piggastan dunes have become an example of how to work with nature-based solutions.

2.2.5 Update on development function, including main changes since last report. (Note briefly here and refer to 5 below).

Agriculture

A clear trend is that farms are merging, leading to a decrease in numbers and an increase in size. Larger units and herds of livestock require more land for grazing and winter fodder, which has led to an increased interest in restoring overgrown seasonally flooded grasslands. The average age of farmers is rising. At the same time, we have now seen several examples of generational renewal at farms in Vattenriket and there is significant interest from the younger generation in continuing to manage seasonally flooded grasslands with grazing cattle, for example. There is a clear trend towards increased sustainability in agriculture and higher demands are being made. According to the Swedish Board of Agriculture, the area of land managed organically or in conversion in Kristianstad Municipality has increased by around 11 percent from 2015 to 2023.

Tourism

Since the previous review, the Biosphere Office has worked on making nature accessible as well as communicating opportunities for nature tourism. In 2024, the last section of the Skåneleden SL6 Vattenriket subtrail was inaugurated, linking Vattenriket visitor sites. Funding came from Kristianstad Municipality and LONA. We have produced an excursion guide, new maps and films that highlight outdoor activities, as well as new jetties at Kanalhuset and Kavröbro and digital marking of the fairway on Lake Hammarsjön. We have also created a new outdoor museum and updated several existing ones. The Biosphere Office has also initiated the introduction of the Nature Map *(Naturkartan)* in the municipality to highlight nature and outdoor activities.

Vattenriket plays an important role in Kristianstad Municipality's work on tourism and hospitality. The crane-feeding project at the Pulken Outdoor Museum, to minimise damage to farmers' crops, attracts a large number of visitors. The biosphere reserve's range of visitor attractions is often included in the municipality's marketing of Kristianstad as a visitor destination. Naturum Vattenriket attracts tourists who also consume other goods and services in the municipality, according to a survey from 2016. At that time visitors generated a turnover of SEK 74 million in the municipality, of which SEK 31 million came from tourists who had naturum or Vattenriket as their primary reason for visiting Kristianstad.

The pandemic meant a drastic reduction in the number of visitors, with serious consequences for the tourism industry. However, the effects were considerably less severe in Kristianstad Municipality

than the rest of the country, largely thanks to a wide range of outdoor activities, not least within the biosphere reserve.

Development projects

The Bring Back Bream *(Dax för brax)* project was a collaboration with Krinova Science Park and Kristianstad University. Catching Cyprinids such as bream improves the water quality in Lake Råbelövssjön. Today, all the fish is used in biogas production, but the hope is that it can be used as food in the future. In the project, we investigated whether bream can become a sustainably used resource instead of a problem. Among other things, a recipe and inspiration book was produced, and bream burgers were introduced on the menu in naturum's restaurant.

The I love Vattenriket campaign was developed in collaboration with the association Friends of Vattenriket *(Vattenrikets vänner).* Residents, visitors and businesses can show their commitment to Vattenriket by buying products at naturum. Businesses that sponsor the Friends of Vattenriket can use the project's slogan in their marketing. The campaign is a way to spread information, inspiration and involvement in a change of attitude towards sustainable societal development, and to raise money for the Friends of Vattenriket to co-fund initiatives and projects in the biosphere reserve.

Sustainability among local businesses

Local climate contracts mean that businesses and organisations in Kristianstad can now contribute to a reduced climate impact. Their commitments should either lead to direct emission reductions or contribute to shared decarbonisation efforts. The project is run by the municipal Sustainability Unit.

The Biosphere Office was involved in developing a new model for compensation to Absolut Vodka's wheat growers, which was launched in 2022. Farms are paid more if they implement measures to reduce carbon dioxide emissions, reduce nutrient leakage, improve opportunities for continued high yields and benefit biodiversity, among other things.

Another important collaboration was Water Workshops in Vattenriket *(Vattenmöten i Vattenriket),* with the Swedish Federation of Rural Economy and Agricultural Societies and agricultural consultants HIR Skåne. Together we held a series of study visits and lectures on how to improve water management, save money and be better equipped for the future.

Programmes for different societal groups

Young people are a priority target group for the Biosphere Office. Naturum's educational activities reach 1,500 pupils per year. Other initiatives include biosphere camps, which have been held with 20 children every year, biosphere heroes – a collaboration with the Scouts to stimulate interest in nature and the biosphere reserve, the municipality's event Fresh Air & Fun *(Friluftskul),* where associations and others offered the opportunity to try out outdoor activities, and Biosphere for Baltic – Future Generations, which engages young people aged 18–28 in the work for a sustainable Baltic Sea. The Biosphere Office also regularly welcomes young people for work experience and internships.

Another priority group in the Biosphere Office's work is newly arrived immigrants and people with a foreign background. One example is that the naturum Vattenriket visitor centre offers information and guided tours in several languages. After the war in Ukraine began, we offered guided tours at Pulken for Ukrainian refugees. Many newly arrived immigrant groups visit naturum through SFI, Swedish for Immigrants.

The Biosphere Office has also carried out projects for those unaccustomed to nature, such as More Activity – Outdoors *(Aktivera mera – friluftsliv),* with funding from Swedish Outdoor Recreation *(Svenskt friluftsliv)*. The focus was on reaching children and young people in socio-economically disadvantaged areas, their families and newly arrived immigrants with visits to and activities in urban nature areas. Another was New in Vattenriket *(Ny i Vattenriket),* where the Biosphere Office employed an Arabic-speaking person who translated naturum's programme into Arabic and acted as a contact person for naturum's family activities.

2.2.6 Update on logistic support function, including main changes since last report. (Note briefly here and refer to 6 below).

Education and training

Educational activities form an important part of naturum Vattenriket's mission. A full-time nature educator works with 80–100 groups from preschool to university each year. A major change since the previous review is that the nature educator now works with more and more classes from upper secondary schools along with the Biosphere Office's ecologists. We are also involved in Kristianstad University's teacher training programme.

Naturum Vattenriket also develops biosphere classrooms to make it easier for schools to explore Vattenriket on their own. There are four biosphere classrooms, two of which have been opened in the last ten years. During pupils' summer holidays, naturum Vattenriket offers a biosphere camp for 20 schoolchildren aged 10–14. So far, over 400 biosphere ambassadors have been trained to spread interest in and knowledge of Kristianstads Vattenrike Biosphere Reserve. In addition, the Biosphere Office accepts interns from different levels of education, including primary, secondary and higher education.

Kristianstad University (HKR) is the most important node for higher education due to its location in the middle of the biosphere reserve. The university offers courses with a direct focus on the environment and sustainability, at undergraduate as well as graduate level. Within these programmes, many degree projects and work placements have been carried out in the biosphere reserve, in several cases in close collaboration with the Biosphere Office. Lund University, Stockholm University and the Swedish University of Agricultural Sciences are other examples of universities that use Kristianstads Vattenrike Biosphere Reserve in courses at undergraduate as well as graduate level to illustrate everything from hydrology to adaptive co-management.

Cooperation with other biosphere reserves

Kristianstads Vattenrike Biosphere Reserve has established several collaborations at national, regional and international levels to promote sustainable development and biodiversity conservation and share best practices. Staff from the Biosphere Office and naturum Vattenriket have participated in every EuroMAB conference for the past ten years. The Biosphere Office has held workshops at several EuroMAB and NordMAB conferences. We have visited and received visitors from the biosphere reserves Appennino Tosco-Emiliano, Palermo and Monte Grappa in Italy, Mön in Denmark, Southeast Rügen in Germany, Dublin Bay in Ireland, West Estonian Archipelago in Estonia, Slowinski in Poland, Archipelago Sea in Finland, Wester Ross and Galloway and Southern Ayrshire in Scotland and Nordhordland in Norway on several occasions. The Biosphere Office participated in an EU application, Biosphere Forests for the Future, with several European biosphere reserves and universities. The workshops were held in the Rhön Biosphere Reserve in Germany and the Wienerwald Biosphere Reserve in Austria.

In 2017, the Biosphere Office initiated the Biosphere for Baltic network. Here, we collaborate with biosphere reserves and other actors around the Baltic Sea on issues such as sustainable marine awareness, education and sustainable tourism with projects such as BFB-TOOLS, BFB-COLAB, Supported by Nature and BFB-Future Generations.

On a national level, Kristianstads Vattenrike collaborates with other Swedish biosphere reserves through the Swedish MAB Programme *(Biosfärprogrammet Sverige),* a network that enables knowledge exchange and joint projects. We have actively supported biosphere reserves in the establishment process, such as Storkriket, Örebro, Nämndö, Öresund and Dalsland. We have visited Blekinge Archipelago and contributed to Storkriket's application process. We also helped to organise a conference for biosphere municipalities in 2023, a national gathering to strengthen the role of biosphere municipalities in sustainable development.

For updates on monitoring and research, see question 2.4.6 and chapter 6; for updates on traditional and local knowledge, see questions 2.3.6 and 6.3; for updates on communications, see questions 2.3.3 and 6.5.

2.2.7 Update on governance management and coordination, including changes since last report (if any) in hierarchy of administrative divisions, coordination structure. (Note briefly here and refer to 7 below.)

Several reorganisations have taken place since the previous review. Since 1 January 2025, the previous two units, the Biosphere Office and the Naturum Unit, have been merged into one unit, the Biosphere and Naturum Unit. In this report, the unit is referred to as the Biosphere Office. The unit forms part of the Societal Development Department, which is a department under the Municipal Management Office at Kristianstad Municipality, with the Municipal Executive Committee as its immediate political governing body. The unit has 15 permanent employees, 2 project employees and 5 hourly employees. The manager of the Biosphere and Naturum Unit and coordinator of the biosphere reserve is Carina Wettemark. Carina has been the coordinator and manager since 2013. See chapter 7 for further information.

2.3 The authority/authorities in charge of coordinating/managing the biosphere reserve.

Kristianstad Municipality is the responsible authority for Kristianstads Vattenrike Biosphere Reserve, as was the case at the time of nomination, and responsible for managing the area as a whole. The Biosphere and Naturum Unit forms part of the Societal Development Department, which is a department under the Municipal Management Office at Kristianstad Municipality. The unit is responsible for coordinating its own activities and projects within the biosphere reserve, as well as supporting and initiating projects that can be implemented by other actors as long as they meet the biosphere reserve's criteria for conservation and development and fall within the framework of the action plan. The unit does not exercise any authority, but produces documentation and proposals for decisions for local, regional and national bodies. For protected areas within the core areas and buffer zones of the biosphere reserve, the Swedish Environmental Protection Agency and local and regional authorities, such as Kristianstad Municipality, the County Administrative Board of Skåne and the Swedish Forest Agency, are responsible for ensuring compliance with applicable laws.

The Biosphere Office's work has broad political support in Kristianstad Municipality. This support, combined with straightforward and direct dialogue with the political leadership, is a prerequisite for continuing the biosphere work successfully in the future.

2.3.1 Updates to cooperation/management policy/plan, including vision statement, goals and objectives, either current or for the next 5–10 years.

Kristianstads Vattenrike Biosphere Reserve will continue to act as a model area for sustainable development that benefits people and nature and to integrate the three functions of conservation, development and logistic support. Naturum Vattenriket will continue to meet the Swedish Environmental Protection Agency's requirements and intentions for naturum in Sweden. Our work will be in line with MAB's Statutory Framework, Seville Strategy and Lima Action Plan as well as the upcoming Hangzhou Strategy and Action Plan, the 2030 Agenda for Sustainable Development, the Kunming-Montreal Global Biodiversity Framework, the EU Nature Restoration Regulation, the Paris Agreement, UNESCO's Medium-Term Strategy for 2022–2029 and other relevant national, regional and international strategies.

Kristianstad Municipality's Strategic Roadmap emphasises the importance of sustainability. The biosphere reserve's action plan is an important tool for achieving the goals of the municipality's Strategic Roadmap and Strategy for Sustainable Development. A blue-green structure with a low climate impact and healthy, diverse natural environments are key parameters for creating attractiveness. The municipality's Strategy for Sustainable Development also refers to Kristianstads Vattenrike Biosphere Reserve as a model area for sustainable societal development. Our action plan also contributes to the UN's Sustainable Development Goals for sustainability and biodiversity, Sweden's environmental objectives and Sweden's outdoor recreation objectives.

The biosphere reserve aims to work towards sustainable development that benefits people and nature within Kristianstads Vattenrike Biosphere Reserve and Kristianstad Municipality by:

- Carrying out targeted conservation work relating to valuable natural environments and species with a focus on nature and people.
- Continuously developing knowledge regarding natural and cultural values, and the requirements for protection and management of valuable habitats and species.
- Working with a landscape perspective based on thematic landscapes and high-value landscapes.
- Working according to themes including all three functions of the biosphere reserves: conservation, development and logistic support.
- Working in cooperation and dialogue with a multi-stakeholder approach and with the goal of creating trust and changing attitudes.
- Engaging and including young people and those unaccustomed to nature as priority target groups.
- Raising awareness of the importance of a sustainable future by inspiring people of all ages to enjoy and respect nature.
- Making it easier for the public, pupils and researchers to benefit from all the values of the biosphere reserve through the visitor centre, visitor sites, website, social media and information materials.

Our work is based on five-year action plans and so we have developed and worked towards two action plans since the previous review, one for 2016–2020 and one for 2021–2025. A new action plan

will be developed in 2025/2026. By and large, all the objectives and guidelines set out in the most recent action plans have been successfully implemented, see question 7.7.5 for further information.

The previous action plans were based on the three functions of the biosphere reserve – conservation, development and logistic support. In the latest action plan, the three functions were expanded to selected focus areas for the biosphere reserve. The five focus areas are:

Healthy ecosystems and rich biodiversity
Kristianstads Vattenrike's rich and varied nature is home to unique biodiversity. The reserve is a mosaic of almost every type of Swedish landscape apart from mountains. This variety provides habitats for many uncommon plants, animals and fungi. The varied landscape provides a number of essential services – so called ecosystem services – for us humans. Conserving and developing biodiversity and ecosystems by strengthening ecosystem services and using natural resources responsibly is absolutely vital. This is also one of the most important goals in UNESCO's MAB programme.

Water in balance from source to sea
The majestic Helge Å River, fed by rivers and streams of varying character, runs through the wetlands and seasonally flooded grasslands of the biosphere reserve from Torsebro in the north to Hanöbukten Bay in the south-east. Numerous habitats and great biodiversity deliver many important ecosystem services. Work to promote the sustainable use of water, create carbon sinks and retain water for longer in the landscape conserves species diversity and ecosystem services, and helps to mitigate the effects of climate change. Broad collaboration with stakeholders at local, national and international level is taking place to combat eutrophication and brownification in Hanöbukten Bay and breathe new life into the Baltic Sea.

Changing attitudes, spreading knowledge
The long-term aim of the biosphere work is to create a shift in attitudes towards sustainable social development in line with the UN's Sustainable Development Goals. Communications play a key role in this. Promoting research and education in biodiversity and sustainability is one of UNESCO's MAB programme's goals. New knowledge is produced and shared continuously in Vattenriket. The Biosphere Office works with educational establishments in Sweden and abroad, with Kristianstad University as a key research node. The naturum Vattenriket visitor centre is a natural meeting place and showcase for our activities. Visitors learn about the biosphere reserve and are encouraged to explore the reserve's 21 visitor sites, where they will find more information as well as marked trails and birdwatching towers. Developing local links and strengthening local involvement through the Consultation Group, collaboration with associations and training our own biosphere ambassadors are important aspects of our work.

Sustainable business, agriculture and hospitality
In Kristianstads Vattenrike Biosphere Reserve, we work towards sustainable development from an ecological, economic and social perspective. Development that benefits nature and people, using and developing nature and natural resources sustainably. Nature tourism is a rapidly growing trend. Vattenriket has great potential to develop further as a hub for tourism on nature's terms and help Kristianstad grow as a sustainable destination. The Kristianstadsslätten Plain has long been a centre for agriculture. Local, sustainable production is important here. Below the fertile soils is northern Europe's largest groundwater reservoir, a life-giving resource for drinking water, irrigation and production. A range of stakeholders are working together to find solutions to reduce water consumption. The key to this and to strengthening ecosystem services lies in innovation and climate-smart thinking, along with new crops and new food traditions.

Health, quality of life and social development
Vattenriket's fantastic nature, exciting cultural history and opportunities for outdoor recreation are important ingredients in a good quality of life. Research shows that nature has a positive effect on us humans, and that time spent in natural surroundings reduces stress and anxiety. Biosphere reserves serve as model areas for sustainable social development. Urban planning and development play a key role in this respect. Integrating and developing urban nature, strengthening ecosystem services and taking initiatives to mitigate the effects of climate change when planning new construction are all factors that contribute to sustainability and improve quality of life. UNESCO has tasked those engaged in biosphere work with helping to create sustainable, equitable economies and thriving societies. Nature can be a meeting place for people of all ages and cultures.

2.3.2 Budget and staff support, including approximate average annual amounts (or range from year-to-year); main sources of funds (including financial partnerships established (private/public), innovative financial schemes); special capital funds (if applicable); number of full and/or part-time staff; in-kind contribution of staff; volunteer contributions of time or other support.

The Biosphere and Naturum Unit has an annual (2025) budget of SEK 17,808,000 (€1.6 million), which is largely financed by Kristianstad Municipality. This figure includes SEK 450,000 contributed by the Swedish Environmental Protection Agency for the biosphere work and SEK 250,000 for naturum's work.

In addition to the annual budget, grants are sought for individual projects, either on our own or with partners. Project activities themselves can also generate money for future projects or for landowners, municipalities and so on. Grants also enable the employment of more staff, which in turn increases the chances to apply for further grants. Since its nomination in 2005, the Biosphere Office has been granted more than SEK 87 million in external funding.

One example is the Interreg project Land4Climate where Kristianstads Vattenrike Biosphere Reserve is a project partner. The total budget is €3.4 million, of which €225,000 is the contribution to the biosphere reserve.

The municipality's Public Works Administration and the County Administrative Board of Skåne manage municipal and state-owned nature conservation areas and nature reserves. Within these areas, the Biosphere Office carries out various activities aimed at conservation, development and information, including establishing visitor sites.

The Biosphere and Naturum Unit has 15 permanent employees, 2 project employees and 5 hourly employees. 6 of these 22 employees are under 35 years old and 14 of 22 are women. Together, the staff are responsible for the biosphere work, including staffing the naturum Vattenriket visitor centre. Our work is carried out in close cooperation with several other municipal administrations and with the County Administrative Board of Skåne.

There is also a consultation group that meets three times a year. The Consultation Group for Kristianstads Vattenrike Biosphere Reserve *(Samrådsgruppen för Biosfärområde Kristianstads Vattenrike)* is an advisory group including local organisations, municipal civil servants and politicians, as well as representatives from regional authorities. Together, the group represents over 20 different

associations, regional and municipal organisations.

For naturum's scheduled activities, there is a programme board that, in addition to representatives from naturum Vattenriket, consists of representatives from nature and outdoor recreation associations in the municipality. There is also a friends association, the Friends of Vattenriket *(Vattenrikets vänner),* a non-profit organisation that supports projects and development in Vattenriket. In addition, there are over 400 biosphere ambassadors who work as volunteers.

"Vattenriket constitutes a prime example of an idea that has had a tremendous impact over time."

Alexander Palmér, 2023, The evolution of wetland restoration policy – A case study of Kristianstad Vattenrike. Master thesis at Lund University.

Communicating broadly

We reach many different audiences

Every spring, the fields at Pulken in Vattenriket are filled with thousands of resting cranes. To avoid damage to newly sown fields, the cranes are fed near the Pulken Outdoor Museum. This is a collaboration between the Biosphere Office, the Skåne County Administrative Board, Kristianstad's Warehouse Association, farmers, the Bird Society of North-East Scania and others.

The dance attracts visitors from near and far. The Biosphere Office and naturum make the experience accessible for all, both on site and digitally. Using broad and diverse communications, we reach locals and visitors, nature enthusiasts and beginners.

We use several channels to reach as many people as possible. The website has up-to-date information on crane numbers and behaviour, as well as a webcam that follows the dance in real time. On Facebook and Instagram, we broadcast live, share news, pictures and tips.

At the naturum visitor centre, nature interpreters hold a range of events during the crane season, from talks for adults to puppet shows for families with children.

At Pulken there is a bird tower, an exhibition about the cranes and why Vattenriket is an important resting place. During the high season, our crane hosts are on hand to talk about the cranes and the biosphere reserve.

We actively encourage the media to spread the story of the cranes. We also welcome school classes and groups and offer interpreters for refugees from Ukraine.

The cranes at Pulken are not only an impressive natural attraction – they also show how we use communications to increase understanding of and engagement with nature.

2.3.3 Communications strategy for the biosphere reserve including different approaches and tools geared towards the community and/or towards soliciting outside support.

The Biosphere Office has a well-developed communications strategy. Our communications take a broad perspective, with many different target groups across a number of channels. The overall aim is to contribute to a change in attitudes towards sustainable societal development that benefits nature and people. To achieve this, we work strategically to spread knowledge, engage and involve the local community by conveying positive messages and faith in the future.

Through our communications, we highlight Kristianstads Vattenrike Biosphere Reserve as:

- A model for sustainable development designated by UNESCO, where we work to conserve, develop and support sustainable solutions through concrete projects and results.
- An exciting visitor destination with the naturum Vattenriket visitor centre as a hub for knowledge, activities and experiences linked to the biosphere reserve's 21 visitor sites.

Informing and reaching out

Our information is aimed at a broad target group with different prior knowledge and roles, including the general public, associations and businesses in Kristianstad, school classes and families with children, university students, researchers, visitors from southern Sweden and Europe, decision-makers at various levels, the media and the national and international networks of biosphere reserves.

We use a mixture of channels to best reach different audiences:

- The naturum Vattenriket visitor centre and visitor sites: Physical encounters and experiences are important for creating a strong connection to the landscape and the biosphere work.
- Digital channels: Our website serves as both an archive and a news channel with 300,000 page views per year. Here we present our work, news, events and publications.
- Newsletters: Regular emails to interested stakeholders, including local organisations, researchers and policy makers.
- Social platforms: Used to spread inspiration, highlight good examples and engage the public. We reach out via Facebook (7,200 followers), Instagram (550 followers), Linkedin (500 followers) and newsletters (400 recipients).
- Printed materials: Leaflets, maps and brochures are available at naturum and on the website.
- Other digital materials: Audio guides, videos and podcasts provide additional opportunities to share knowledge in an accessible way.
- Media and advertising: Press contacts and advertising help us reach beyond the target audience that is already interested.

Engaging and involving the local community

To promote participation and engagement, we work actively with the local community through various initiatives:

- Biosphere ambassadors: Since 2013, we have trained over 400 biosphere ambassadors who spread knowledge and engagement in their networks and anchor the work locally.
- Friends of Vattenriket *(Vattenrikets Vänner):* The friends association that contributes by raising funds and supporting the work of the Biosphere Office.
- Collaboration with associations: For example, through crane hosts at Pulken, Vattenriket's Consultation Group and naturum's programme board, where local stakeholders are actively involved.
- Lectures and study visits: We receive groups at the naturum Vattenriket visitor centre and give lectures to associations in the local community to deepen the understanding of the area's natural and cultural values.

With a strategy combining information and active engagement, we promote understanding and participation, which strengthens the role of the biosphere reserve as a platform for sustainable development and contributes to increased interest, commitment and the transition to more sustainable societal development.

2.3.4 Strategies for fostering networks of cooperation in the biosphere reserve that serve as connections ("bridging") among diverse groups in different sectors of the community (e.g. groups devoted to agricultural issues, local economic development, tourism, conservation of ecosystems, research and monitoring).

Our strategy for promoting cooperation between different actors in different sectors has mainly been to create different arenas for discussion and dialogue. As Biosphere Office staff have a large network, we can act as a bridge, initiate meetings and create conditions for cooperation and dialogue between stakeholders at different levels. New groups for collaboration are formed when new projects are started and these contribute to dialogue and exchange between actors from different sectors and levels of society, such as between farmers and authorities. The Biosphere Office also has an active network including many researchers and universities and helps to establish contacts between researchers, and between researchers and local stakeholders.

In the autumn of 2019, the Biosphere Office initiated a project with the County Administrative Board of Skåne, the Swedish Association for Hunting and Wildlife Management and the Kristianstad-Bromölla Game Conservation District *(Kristianstad-Bromölla Jaktvårdskrets).* The aim is to create interest in and support predator hunting around the seasonally flooded grasslands and inspiration is drawn from similar projects in Öland and Vellinge. Information meetings have been attended by landowners, tenants and holders of hunting leases, as well as the Bird Society of North-East Scania *(Nordöstra Skånes Fågelklubb)* and the Swedish Society for Nature Conservation. Önnestad Upper Secondary School has also contributed by building traps. Funding comes from the Rural Development Programme, the Biosphere Office and the County Administrative Board of Skåne and is supplemented by voluntary contributions from hunters.

In 2016, Helge Å became Sweden's third Model Forest, in the International Model Forest Network. The area spans 14 municipalities in the counties of Jönköping, Kronoberg and Skåne. A Model Forest

is a forum for participation and collaboration between those who use the landscape in different ways and to solve common issues through dialogue. The initiative to establish a Model Forest in the Helge Å River drainage basin came in 2007 from the Södra Forestry Cooperative, Kristianstads Vattenrike Biosphere Reserve and the Swedish Forest Agency. They wanted to find shared solutions to the brownification of watercourses, flooding and how this is linked to land use in, for example, forestry.

The work of the Consultation Group for Kristianstads Vattenrike Biosphere Reserve is important in promoting dialogue and cooperation between local and regional stakeholders – from politicians and officials to representatives from agriculture, tourism and various associations – on the biosphere reserve's management. The training of new biosphere ambassadors is another way of developing networks, as they come from different parts of society.

The work of the Goose and Crane Management Group in North-East Scania continues to be developed and deepened. The group has contributed to promoting continued cooperation between the County Administrative Board, Kristianstad Municipality, farmers and ornithological associations in the management of crane *(Grus grus)* and goose populations.

The Biosphere Office participates in several municipal groups and projects. One example is the project Living City Centre *(Levande stadskärna),* which aims to promote cooperation for a vibrant and attractive city centre. Participants include property owners, hotel owners, merchants' associations and civil servants.

The Biosphere Office also acts as a bridge between actors at local, regional and national levels, as we have large networks of our own. The Biosphere Office and our work have attracted the attention of researchers for our ability to facilitate collaboration between actors from different levels and different sectors. See question 6.2 for further information about the Stockholm Resilience Centre's research on this. See also questions 2.4.7 and 8.6.

2.3.5 Particular vision and approaches adopted for addressing the socio-cultural context and role of the biosphere reserve (e.g. promotion of local heritage resources, history, cultural and cross-cultural learning opportunities; cooperation with local population; reaching out to recent immigrant groups, indigenous people etc.).

The medieval castle ruin Lillöborgen just north of Kristianstad city centre was once a mighty building, similar to Glimmingehus, the best-preserved medieval castle in the Nordic region. It was built in the 13th century, razed in 1658–1659 and not excavated by archaeologists until the 1940s. The castle is one of Vattenriket's visitor sites and is located along the Linnérundan trail. The key to the castle can be borrowed free of charge from naturum and the Friends of Vattenriket *(Vattenrikets vänner)* keep the castle open during the season.

Since the previous review, we have revamped the exhibition about life at Lillö and produced an animated short film and a new self-guiding brochure about the exciting history of the castle. It was the Friends of Vattenriket who applied for and received a grant from Sparbanken Skåne to develop the visitor site. In 2021, the Swedish Educational Broadcasting Company's programme UR Samtiden made a video about Lillöborgen in collaboration with the Biosphere Office.

Naturum Vattenriket acts as a visitor centre and meeting place for the biosphere reserve. Naturum has an extensive programme with a broad range of activities for all target groups. Outdoor activities

are combined with literature, film, poetry, history and music. Music in the Nest *(Musik i redet)* outside naturum is one particularly appreciated example, where the local symphony orchestra gives an annual performance of Handel's Water Music.

We are pleased that a wide range of people come to naturum. All different ages, women and men, Swedes and overseas visitors. Many newly arrived immigrant groups visit naturum through Swedish for Immigrants *(SFI),* which is a course offered to all newly arrived immigrants in Sweden.

Naturum Vattenriket offers information and guided tours in several languages. Vattenriket's website and information about the exhibition are available in Swedish, English and German. Brief information about the Kristianstads Vattenrike Biosphere Reserve, activities and places to visit has been translated into Arabic, Danish, Dari, English, German, Polish, Somali, Spanish and Tigrinya. Visitors are welcomed to the exhibition with a touch screen in all these languages as well as Swedish Sign Language. After the start of the war in Ukraine, we offered guided tours at Pulken in Ukrainian.

The Biosphere Office has also carried out various projects for those unaccustomed to nature, such as More Activity – Outdoors *(Aktivera mera – friluftsliv),* with funding from Swedish Outdoor Recreation *(Svenskt friluftsliv)*. The aim was to reach more people who are unfamiliar with nature with visits and activities in urban nature areas for children and young people in socio-economically disadvantaged areas, their families and newly arrived immigrants. Naturum offered various ways to experience Vattenriket's natural environments, such as fishing, birdwatching and forest bathing, as well as activities at the new Story Trail *(Sagostigen)* at Norra Lingenäset.

Another was New in Vattenriket *(Ny i Vattenriket),* where the Biosphere Office employed an Arabic-speaking person who translated naturum's programme into Arabic and acted as a contact person for naturum's family activities. In collaboration with the association The Arab Child *(Arabiska barnet),* she invited new participants and interpreted into Arabic.

2.3.6 Use of traditional and local knowledge in the management of the biosphere reserve.

Kristianstads Vattenrike Biosphere Reserve is a cultural landscape where the land has been farmed for a long time. To preserve the values of the area, it is therefore natural to gather local knowledge from landowners, land users, associations and residents who can tell us about earlier ways of managing the land. We protect this traditional knowledge and incorporate it into the management methods and measures we test and implement.

Over the last decade, we have collected local and historical knowledge by interviewing the last lake fisherman in Lake Hammarsjön who fished the lake for 40 years. We also collect local knowledge with the help of the public and students through citizen science. Some examples are a bioblitz in Hanöbukten Bay, Stockholm University's projects Algae Research Summer *(Algforskarsommar)* and Seaweed Forest Hunt *(Tångskogsjakten),* the Spring Check *(Vårkollen)* campaign where we contribute observations to the Swedish National Phenology Network *(Svenska fenologinätverket),* a photo point to help researchers monitor climate change in the biosphere reserve, and observations of cranes *(Grus grus)* and otters (*Lutra lutra*).

We share this knowledge with the public in many ways. Exhibitions at the visitor sites provide information about the cultural landscape, fishing and land use through the ages. Reports in our publication series Vattenriket in focus *(Vattenriket i fokus)* are published on our website and spread

via social media. Knowledge is also disseminated through lectures and the annual Biosphere Research Conference at the naturum Vattenriket visitor centre.

See question 6.3 for further information.

2.3.7. Community cultural development initiatives. Programmes and actions to promote community language, and, both tangible and intangible cultural heritage. Are spiritual and cultural values and customary practices promoted and transmitted?

Vattenriket's visitor sites provide information about the natural environment as well as the cultural history of each area. For example, at Hercules, there is information about how the land was farmed, at Kanalhuset about the watery history of the city of Kristianstad, at Lillö about the castle and at Ekenabben about the dance pavilion. Much of the information and data comes from local heritage associations and other local actors.

Since 2015, the so-called Eel Heritage *(Ålarvet)* has been included on Sweden's national list of intangible cultural heritage. The Eel Heritage refers to the cultural heritage that has formed around eel fishing along the east coast of Skåne between Åhus and Stenshuvud, called the Eel Coast *(Ålakusten).* In addition to the fishing itself, with its specific gear, knowledge and organisation, it involves traditions around food and meals, buildings and boats, as well as stories and special names. In the area, people are working to spread knowledge and to create interest in its traditions and heritage, for example through cultural walks. An annual eel festival is also organised, where participants eat a variety of eel dishes and visit the typical eel sheds – small cabins for storage and accommodation – along the coast.

The Biosphere Office has collaborated with several artists since the previous review. Man and Biosphere – precarious situations was a collaboration between artists and scientists in dialogue with the Biosphere Office to highlight the complex climate changes we are facing. The result was shown at the Kristianstad Municipality Art Gallery in 2018. Four locations in Vattenriket were awarded Caroline Mårtensson's artwork Living Fossils *(Levande fossil),* which consists of stones with selected species sand-blasted onto their surface.

In 2019, the world premiere of Music for the Climate *(Musik för klimatet)* was held at the naturum Vattenriket visitor centre in collaboration with Lund University's Centre for Sustainability Research LUCSUS, XL Big Band and composer Claus Sörensen. Based on facts and articles, the composer wrote music to reflect and convey various issues and scenarios. In 2023, a biologist and a flautist took visitors on an exciting encounter between birdsong and flute in the early summer greenery of Ekenabben. Information about the birds and their songs was interspersed with flute pieces inspired by birdsong.

With her exhibition Souls in the Sea – Songs from the Sea's Nursery *(Själar i havet – sånger från havets barnkammare),* artist Malena Olsson delved beneath the surface to shed light on the challenges facing the sea. The Biosphere Office's experts provided knowledge and inspiration. The exhibition was shown in Vattenriket and Stockholm in 2021, among other places. In 2022, Pia Sandström created the artwork The Hills (Space for Thought Action by Soil) *(Kullarna (Rymd för tanke Handling av mark))* for Sånna School, inspired by the sand dunes of Gropahålet and the paths at Sånnarna. The work was constructed using sand and lime-rich soil from the site. As it reverts to sandy grasslands, unusual species can take hold.

Maria Bajt has also drawn inspiration from Vattenriket's natural environments in her works from 2022. Her Fantastic Figures *(Fantastiska figurer)* for Hjärtebacken Preschool in Näsby consists of three sculptures, a relief and a book. The Biosphere Office was involved in the selection of species and writing text. The artist's intention is for children and educators to use her art as a foundation for exploring the flora and fauna of Vattenriket.

In the autumn of 2024, Sandra Magnusson's crocheted stumps and embroidered mosses moved into naturum's exhibition. She held two fully booked workshops where participants could embroider and be inspired by mosses, stones, sticks and her art. Visitors could also study moss up close and conduct experiments to find out how much water it absorbs.

2.3.8 Specify the number of spoken and written languages (including ethnic, minority and endangered languages) in the biosphere reserve. Has there been a change in the number of spoken and written languages? Has there been a revitalization programme for endangered languages?

The main language spoken in the biosphere reserve is Swedish.

Between 2015 and 2023, the proportion of the population in Kristianstad Municipality with a foreign background increased from 21 to 27 percent. In 2015, many asylum seekers came from Afghanistan, Syria and Somalia. According to Statistics Sweden, the most common countries of birth other than Sweden in the municipality in 2024 were Syria, Iraq, Poland, Yugoslavia, Bosnia and Herzegovina, Afghanistan, Palestine, Romania, Somalia and Denmark. Thus, in addition to Swedish, some of the most common languages in the municipality are likely to be Arabic, Polish, the languages spoken in the former Yugoslavia, Pashto, Dari, Farsi, Romanian, Somali, Danish and Kurdish.

Sweden's national minority languages are Finnish, Meänkieli, Sami, Romani Chib and Yiddish. However, Kristianstad does not belong to the national administrative areas for any of the national minority languages. Swedish Sign Language also has a strong legal status in Sweden.

2.3.9 Effectiveness of management/coordination. Obstacles to the management/coordination of the biosphere reserve or challenges to its effective functioning.

The biosphere reserve's coordinator is a member of the steering group for the urban planning process and the comprehensive plan in Kristianstad Municipality. This is very valuable and means that knowledge about the biosphere reserve, our mission and the area's natural values can be brought into these processes at an early stage. This in turn provides the conditions for dialogue and collaboration. Staff from the Biosphere Office also participate actively in various working groups linked to the work on the comprehensive plan and detailed development plans.

Researchers have highlighted several challenges for biosphere reserves in general and Kristianstads Vattenrike specifically. One example is adaptive co-management, which is largely based on human relationships and trust. To continue building bridges, the biosphere reserve needs to expand its collaborations to a diversity of governmental and non-governmental actors downstream and upstream (Schultz et al, 2015).

A report from the Swedish Environmental Protection Agency notes that Kristianstads Vattenrike is the only biosphere reserve in Sweden that only includes one municipality and that this means that the Biosphere Office is now involved in municipal planning work. This is mainly positive, but according to the authors, being placed under municipal management has also presented challenges, for example in terms of balancing different interests in the work on municipal comprehensive planning. Being part of a municipal organisation also means that work in the biosphere reserve continuously needs to be anchored politically across party lines to ensure continued support in the event of changes in municipal politics (Sandström & Sahlström, 2020).

A report from the Swedish Institute for the Marine Environment on five different operational models for ecosystem-based marine management, where Kristianstads Vattenrike Biosphere Reserve is one of the case studies, also emphasises that the advantages of working within a municipality outweigh the disadvantages. Some challenges are the risk of being "consumed", and being subject to the Swedish Public Procurement Act and the municipality's procurement system. This can make it more difficult to hire local contractors (Prutzer et al, 2024).

Project funding can present several challenges. One example is the lack of funds to carry out follow-ups and evaluate results. Another is that it takes a lot of time to apply for and account for project funds. A third is that unexpected events can make it difficult to use the funds within the time limit. Procedural delays at various authorities, weather conditions and making time for dialogue and collaboration with landowners and other stakeholders can delay project work (Prutzer et al, 2024).

2.4 Comment on the following matters of special interest in regard to this biosphere reserve: **(Refer to other sections below where appropriate.)**

2.4.1 Is the biosphere reserve addressed specifically in any local, regional or/and national development plan? If so, what plan(s)? Briefly describe such plans that have been completed or revised in the past 10 years.

The municipality adopted a new Nature Conservation Plan in December 2024. The plan is a platform for future work on nature conservation and an important knowledge base for physical planning and various forms of exploitation that affect the natural environment and its values. The Nature Conservation Plan is based on the UN's Sustainable Development Goals and the intentions of the 2030 Agenda for Sustainable Development, as well as Sweden's environmental objectives. The Biosphere Office has an explicit responsibility to contribute to achieving the goals in the plan.

In the municipality's Comprehensive Plan, which was revised in 2013, the most important aspects of the planning process for the biosphere reserve include conservation and logistic support. In 2021, the Municipal Council adopted a new Comprehensive Plan for the City of Kristianstad, which details the plans for developing land and water areas until 2037. The Biosphere Office participated in the work and the biosphere reserve is highlighted in the plan.

Staff at the Biosphere Office participated in the work on producing the municipality's Green Plan, updated Nature Conservation Plan, Tree Plan, Outdoor Recreation Plan, revised Comprehensive Plan for Åhus, Sustainability Strategy and more. This means that our work is integrated into local plans and strategies, and our knowledge is utilised and contributes to more sustainable development in Kristianstad Municipality.

The Biosphere Office and the municipal Land Manager developed a Forestry Policy for the management of municipal forest holdings. This policy focuses on sustainability in all its dimensions. It has attracted positive attention on a national level, from other municipalities as well as interest groups, as an inspiring example of the management of municipal forest holdings.

The Biosphere Office is also involved in the County Administrative Board's work to produce an action plan for ecologically functional landscapes (Green Infrastructure).

At the national level, within Swedish nature conservation policy, biosphere reserves have become a tool similar to nature reserves and national parks, with the aim of achieving sustainable development. The Swedish Environmental Protection Agency refers to biosphere reserves as pilot areas where new methods and new knowledge can be tested when it comes to sustainably managing the relationship between humans and nature. As Kristianstads Vattenrike was the first biosphere reserve in Sweden, the success of the work here has been important for the continued establishment of biosphere reserves in Swedish nature conservation.

The Swedish MAB Programme has produced a report showing that the Swedish biosphere reserves have achieved very good results by linking people to nature and local initiatives to national strategies. Co-creating solutions from a system-wide perspective is crucial for success and local solutions to global problems are key. The report states that the world's biosphere reserves should therefore be used for just that. Sweden is in a very good position to take the lead here, because our MAB programme is well established and anchored, because structures for collaboration are in place, and because a lot of knowledge to be utilised has already been accumulated within the biosphere reserves. As authorities and researchers collaborate to a greater extent with biosphere reserve organisations and direct knowledge development efforts towards them, it will be possible to increase the pace of the transition. The report highlights Kristianstads Vattenrike's successful work on restoring wetlands and watercourses. This work is also highlighted by the Swedish Environmental Protection Agency as a best practice in their national initiative to construct more wetlands and bring more water into the landscape, with all its ecosystem services (Löf, 2023).

The Biosphere Office began using the concept of ecosystem services at an early stage, and the first survey was carried out as early as 2008. When the Swedish Environmental Protection Agency received a government commission to communicate the value and importance of ecosystem services, a national network was launched. The Biosphere Office was invited to participate to share our experiences as well as disseminate the work of the Swedish EPA within our network. We contributed practical examples and communications initiatives from our work, and also had the opportunity to present naturum Vattenrike's educational tool the Vattenrike flower *(Vattenrikeblomman).* This tool helps participants to discover, investigate and assess nature's different ecosystem services.

Later, this network for ecosystem services became a network for green infrastructure and ecosystem services. The work is still led by the Swedish EPA with participants from a number of organisations and authorities in Sweden. The purposes of the network include finding new and effective ways of working with ecosystem services, green infrastructure and biodiversity, and becoming more synchronised in the initiatives that are implemented. The Biosphere Office continues to be involved in the network. In 2024, the Swedish EPA carried out a national initiative to raise awareness of work on green infrastructure. The Biosphere Office's ecologist participated in the programme and presented our work on green infrastructure as a good example.

2.4.2 Outcomes of management/cooperation plans of government agencies and other organisations in the biosphere reserve.

The Biosphere Office works with local, regional and national authorities to ensure the conservation of various high value areas. The collaboration with Kristianstad Municipality, the County Administrative Board of Skåne and the Swedish Environmental Protection Agency has led to the establishment of eleven new nature reserves within the biosphere reserve since the previous review, eight of which are national and three municipal. In total, this is an increase of almost 830 hectares within the biosphere reserve, or almost 15 percent. The Biosphere Office has also been involved in expanding the municipal nature conservation fund in Kristianstad Municipality by eight areas. In addition, the number of habitat protection areas has increased by 17, or 37.28 hectares.

2.4.3 Continued involvement of local people in the work of the biosphere reserve. Which communities, groups, etc. How are they involved?

The local community is involved in various ways in the work of Kristianstads Vattenrike Biosphere Reserve. Among other things, the Biosphere Office cooperates with local actors in various projects. In addition to temporary projects, there is long-term cooperation with several landowners regarding the management of, for example, seasonally flooded grasslands and sandy arable land. The management of geese and cranes *(Grus grus)* is another good example of the involvement of local conservation and ornithological associations, farmers and landowners.

Through naturum's nature education activities, there is a well-functioning collaboration with local teachers, other educators and pupils, which helps to develop the activities. Naturum's programme is developed in naturum's programme board, where local associations are also represented.

Furthermore, the local community is involved in the work of the biosphere ambassadors. In addition, committed members of the local community started the association Friends of Vattenriket *(Vattenrikets vänner)* on their own initiative, which donates to, and helps to apply for grants for, various projects within the biosphere reserve on a voluntary basis. Like the biosphere ambassadors, they also spread interest in and knowledge about the area, as well as organising excursions in the area and seminars for their members. The association has just over 180 members.

Kristianstads Vattenrike Biosphere Reserve was one of four biosphere reserves in a 2018 study on participation in decision-making processes. A paper from the project shows that biosphere reserves involve a wide range of stakeholders in decision-making as well as implementation. According to the researchers, the biosphere reserves studied enable action by creating important new spaces for stakeholders to meet. In Vattenriket, this includes the Consultation Group as well as networks of individuals and organisations formed around specific projects (Baird et al, 2018).

Big Clearing Day *(Stora röjardagen)* is a recurring event organised by the Biosphere Office and the County Administrative Board of Skåne. It is a demonstration and inspiration day for farmers, county administrative board and municipal officials and others interested in nature conservation and pasture management. Among other things, contractors demonstrate machines used in the management of Kristianstads Vattenrike.

In 2023 and 2024, the municipality held the event Fresh Air & Fun *(Friluftskul)*, where associations and others offered visitors the opportunity to try out outdoor activities such as collecting insects,

casting a fishing rod, canoeing, bird watching, pitching a tent and mountain biking. The Biosphere Office was involved in organising the event.

The public is given the opportunity to influence the biosphere reserve's action plan, through representation of different stakeholders and communities in the Consultation Group. New action plans are discussed in the Consultation Group so that members can influence the contents. In the spring of 2024, a workshop was held for the Consultation Group, the Friends of Vattenriket, biosphere ambassadors and interested members of the public. The ideas from the workshop will be one of the inputs to the 2026–2030 action plan.

In a new project, so-called heritage trees are designated that will be protected from felling and allowed to grow large and old. The public is involved by giving private individuals in Kristianstad Municipality the opportunity to designate their own heritage trees. Those who meet the criteria will receive a badge and a diploma for their trees.

Another example is the work on the Skåneleden SL6 Vattenriket subtrail, which began with a citizen's proposal to Kristianstad Municipality. In 2024, the last stretch of the subtrail was inaugurated, linking the Vattenriket's visitor sites with information, birdwatching towers, boardwalks and picnic areas.

Several citizen science projects have been launched in the biosphere reserve since the previous review. See questions 2.3.6 and 6.3 for further information.

2.4.4 Women’s roles. Do women participate in community organisations and decision-making processes? Are their interests and needs given equal consideration within the biosphere reserve? What incentives or programmes are in place to encourage their representation and participation? (e.g. was a “gender impact assessment” carried out?) Are there any studies that examine a) whether men and women have different access to and control over sources of income and b) which sources of income do women control? If so, provide reference of these studies and/or a paper copy in an annex.

Sweden is considered one of the most gender equal countries in the world, where it is a norm to give equal consideration to the needs and interests of both men and women. Swedish legislation also does not allow for different treatment of people based on gender.

Within Kristianstads Vattenrike, women have the highest level of participation in local organisations as well as decision-making processes. The Biosphere Coordinator and the Manager of the naturum Vattenriket visitor centre are both women. There are female representatives on, for example, the Municipal Executive Committee, the County Administrative Board, the Consultation Group and the naturum programme board.

2.4.5 Are there any changes in the main protection regime of the core area(s) and of the buffer zone(s)?

No. *The core areas* consist of nature reserves, Natura 2000 areas and habitat protection areas, all of which are protected by Swedish legislation under the Swedish Environmental Code that came into force on 1 January 1999 (SFS 1998:808).

The buffer zones include shoreline protection areas and areas of national interest for nature conservation, both of which are protected under Swedish legislation. In addition to the national interests selected by the Swedish Environmental Protection Agency and the County Administrative Board the actual legal text (Chapter 4 of the Swedish Environmental Code) also mentions a number of sub-areas with such high natural and cultural values that they are of national interest in their entirety. The areas in question must not be subjected to exploitation that significantly damages these values. These areas include a large coastal and marine area within the biosphere reserve. Parts of this are included in the buffer zone. The parts of the Ramsar site along the Helge Å River, which are not nature reserves or Natura 2000 sites, also belong to the buffer zones. The buffer zones also consist of forests with nature conservation agreements, as well as areas listed in the municipal nature conservation fund and national nature conservation areas, that are not yet under formal protection.

2.4.6 What research and monitoring activities have been undertaken in the biosphere reserve by local universities, government agencies, stakeholders and/or linked with national and international programs?

Since the previous review, many research and monitoring programmes have been completed or initiated that have benefitted the biosphere work and guided the Biosphere Office's action plan. We help to support research while applying the lessons learned. Our local knowledge helps researchers to assess how natural values in the area are developing and what types of measures promote biodiversity. The Biosphere Office and naturum Vattenriket also link research and monitoring to educational initiatives and communications with the public.

The Biosphere Office has commissioned or carried out considerably more of our own inventories over the last ten-year period, around 30. These are mainly various forms of inventories of natural values. We also collect data on water levels in the Helge Å River and the sea, as well as water flow, and contribute to citizen science. Some of the monitoring carried out by other stakeholders in the biosphere reserve is done in consultation with the Biosphere Office.

The River Helge Å Water Conservation Association *(Helgeåkommittén)* is responsible for statutory recipient monitoring in the Helge Å River drainage basin. The Western Hanöbukten Bay Water Conservation Association *(Vattenvårdsförbundet för västra Hanöbukten)* is responsible for statutory recipient monitoring in Hanöbukten Bay. Both carry out a large number of investigations of both chemical and biological parameters.

The County Administrative Board of Skåne is responsible for biotic and abiotic monitoring in accordance with a county programme for monitoring Sweden's 16 environmental objectives and biogeographical monitoring of, for example, butterflies, grasslands and seasonally flooded grasslands. Kristianstad Municipality carries out various types of abiotic sampling, species monitoring and inventories and socio-economic inventories.

Involvement for all ages

We train ambassadors – young and old

Strengthening local commitment is an important part of changing attitudes and promoting sustainable development. By training biosphere ambassadors, organising biosphere camps and inviting Scouts to become biosphere heroes, we inspire people of all ages.

Future biosphere ambassadors experience the biosphere reserve and our projects, and after the training they can join different biosphere initiatives. So far, we have trained over 400 ambassadors who spread knowledge and involvement in their networks.

The biosphere camp is a day camp for children aged 10–14. For a week, they discover the area, learn about nature and the interaction between nature and people.

In 2024, we launched the biosphere heroes collaboration with the Scouts to increase young people's interest in nature and the biosphere reserve.

Friends of Vattenriket, the biosphere reserve's friend association, was founded in 2010 and provides support, project ideas and funding. The I love Vattenriket campaign is a collaboration where residents, visitors and businesses can show their commitment to Vattenriket.

The crane hosts at the Pulken visitor site are an example of cooperation with local outdoor recreation and conservation associations.

The Flora Guardians *(Floraväktarna)* monitor populations of red-listed and threatened species in Sweden. Their knowledge and work are very important for nature conservation. The Bird Society of North-East Scania *(Nordöstra Skånes Fågelklubb)* conducts annual counts of several bird species such as geese and eagles, as well as targeted inventories of threatened species.

Kristianstad University still acts as an informal node and is in continuous contact with the Biosphere Office. The Man and Biosphere Health research community, MABH, changed its name to Sustainable Multifunctional Landscapes (SMULA) in 2023 and has around 25 members. Key research areas include biodiversity, water quality, geese, mallards *(Anas platyrhynchos),* swans, black terns *(Chlidonias niger),* ecosystem services, outdoor recreation and nature connection.

The long-standing and broad collaboration with the Stockholm Resilience Centre continues in projects such as BECOME – Biosphere Reserves as Effective Conservation Measures – which also involves universities in Norway, Canada and Chile. BiosACM and GLEAN are two important international projects on biosphere reserves, including Kristianstads Vattenrike, since the previous review, and have led to a number of publications.

Key collaborations with Lund University concern brownification and eutrophication, ecosystem services, sandy grasslands and biodiversity, as well as a new project on continuous cover forestry and wetland rewetting. A research group at Stockholm University is investigating the hydrology of wetlands by studying satellite images in collaboration with the Biosphere Office. The aim is to propose guidelines for restoration that maximise ecosystem health as well as climate change mitigation. At the same university, citizen science on bladderwrack *(Fucus vesiculosus)* and seaweed forests is being conducted in the Algae Research Summer *(Algforskarsommar)* and Seaweed Forest Hunt *(Tångskogsjakten)* projects, to which the Biosphere Office is contributing.

In the summer of 2024, researchers from the University of Gothenburg carried out measurements of the greenhouse gas methane from constructed wetlands in Vattenriket and elsewhere. Our collaboration with the Swedish University of Agricultural Sciences (SLU) is mainly focused on wading birds, accompanying research in the Interreg project Land4Climate and citizen science on phenology. Researchers at Linnaeus University are investigating the leaching of iron and aluminium from acidic sulfate soils, including collaborations with Kristianstad University.

The University of Bergen, Norway, is leading the BECOME project and is also conducting research in Vattenriket on places where participants feel they can enjoy the landscape values of biosphere reserves and why these places are important to them. Leibniz Centre for Agricultural Research in Germany is investigating how to resolve and prevent conflicts between people and wildlife in agricultural landscapes within biosphere reserves, using the example of crane *(Grus grus)* management in Vattenriket. See Chapter 6 and question 6.2 for further information.

2.4.7 How have collective capacities for the overall governance of the biosphere reserve (e.g. organization of new networks of cooperation, partnerships) been strengthened?

Several new collaborations and partnerships have been developed since the previous review. The Eel Academy *(Ålakademin)* is a non-profit organisation that the Biosphere Office works closely with. The association's aim is good water quality in the Helge Å River and in Hanöbukten Bay and it is involved in terrestrial as well as aquatic measures. One collaboration with the Eel Academy, as well as

Råbelöfs Estate Management *(Råbelöfs godsförvaltning),* is the construction of a wetland to reduce iron and aluminium at Fredriksdalsviken, a project led by the Biosphere Office.

Another example is the Friends of the Helge Å River *(Helgeåns vänner),* which was formed in 2018. The purpose of the association is, among other things, to open and restore the waterways and lakes of the Helge Å River and to increase accessibility for boating. The Biosphere Office meets with the association several times a year and maintains a close dialogue on, for example, the need for various measures. Among other things, the association is responsible for removing fallen trees in Graften, while the Biosphere Office is responsible for cutting reeds, both measures aimed at improving access for boating.

Another new partner is the agricultural consultants HIR. The Biosphere Office has organised a series of information meetings with them and the project group for Climate Neutral Kristianstad 2030 for farmers in the area on water management, intermediate crops and climate-smart cultivation, with a focus on developing farming methods.

The Biosphere Office now also cooperates with the the Lower Helge Å Fishery Conservation Area *(Nedre Helgeåns fiskevårdsområde).* Biosphere Office staff are on the board, representing the municipality and the Biosphere Office. The association has been involved in various projects run by the Biosphere Office, linked to fish conservation as well as improved accessibility for fishing in the Helge Å River and its tributaries. For example, the association contributed funding for the construction of the much-appreciated fishing jetty at Kavröbro in 2021.

The Biosphere Office is responsible for coordinating the River Helge Å Water Council *(Helgeåns vattenråd).* It is a non-profit association to provide a voluntary and open advisory forum for many different areas of interest in the Helge Å River drainage basin. The members work together to promote sustainable management of water resources in accordance with the EU Water Framework Directive. The water council's boundaries extend beyond the biosphere reserve, which provides a good overview of the river's water management.

In 2016, Helge Å became Sweden's third Model Forest, in the International Model Forest Network. The area spans 14 municipalities in the counties of Jönköping, Kronoberg and Skåne. A Model Forest is a forum for participation and collaboration between those who use the landscape in different ways and to solve common issues through dialogue. The initiative to establish a Model Forest in the Helge Å River drainage basin came in 2007 from the Södra Forestry Cooperative, Kristianstads Vattenrike Biosphere Reserve and the Swedish Forest Agency. They wanted to find shared solutions to the brownification of watercourses, flooding and how this is linked to land use in, for example, forestry.

The Biosphere Office is one of the participants in the municipality's project Urban Development Näsby *(Stadsutveckling Näsby),* which focuses on sustainability in a socially disadvantaged area. The Biosphere Office's contributions include an initiative in which students at the Praktiska Upper Secondary School built 60 bat boxes for their neighborhood. The Friends of Vattenriket *(Vattenrikets vänner)* have also applied for and received funding from Sparbanken Skåne for pupils from Näsby to experience cranes *(Grus grus)* at Pulken and aquatic life through naturum's educational activities.

In 2024, the Baltic Stewardship Initiative project, run by WWF with the Federation of Swedish Farmers and the agricultural cooperative Lantmännen, came to an end. The network was committed to reducing nutrient leakage to rivers, lakes and seas and increasing the circulation of plant nutrients. Participants have shared knowledge, experiences and developed concrete solutions that optimise the usage of plant nutrients and develop more circular flows. The network has also worked to influence the Swedish parliament and government about rules to make agriculture and the food chain more

Baltic Sea-friendly and circular. Participants included the Biosphere Office as well as farmers, businesses and organisations.

A number of national and international collaborations with other biosphere reserves are described under questions 6.6 and 8.7. In addition, the Biosphere Office participates in other international projects, such as Land4Climate which is described under question 5.3.

2.4.8. Please provide some additional information about the interaction between the three zones.

Since the previous review, 11 new nature reserves and 17 new biotope protection areas have been added to the core area. In total, the core area has grown by 20 percent or around 1,400 hectares. In addition, the Biosphere Office has been involved in expanding the municipal nature conservation fund in Kristianstad Municipality by eight areas, which are in the buffer zone.

According to a master's thesis from the Stockholm Resilience Centre, the public's perception of ecosystem services corresponds well with the zonation of the biosphere reserve. 163 people who were familiar with the biosphere reserve were asked to show on a map where they experience different ecosystem services in the biosphere reserve. Regulating ecosystem services were mapped more in core areas than in buffer zones. Provisioning ecosystem services, on the other hand, were mapped more in buffer zones than in core areas. The author notes that these results were to be expected, as nature that is protected in core areas can contribute more to regulating ecosystem services. The study also shows that the core areas of the biosphere reserve are places where people value nature regardless of the services it provides (Schwarze, 2024).

2.4.9 Participation of young people. How were young people involved in the organisations and community decision-making processes? How were their interests and needs considered within the biosphere reserve? What are the incentives or programs in place to encourage their participation?

In the autumn of 2014, Kristianstad Municipality decided that the UN Convention on the Rights of the Child should form the basis for all decisions made in Kristianstad Municipality. This means that all administrations must ensure that the child's perspective is included and that the UN Convention on the Rights of the Child is to guide all decisions in the municipality’s work. An implementation strategy was adopted in 2018 and the child's perspective is part of Vision 2030 and the Strategic Roadmap adopted by the City Council.

Naturum's educational activities reach 1,500 pupils per year and are described in detail under questions 6.2 and 7.7.

The Biosphere for Baltic – Future Generations (BFB–FG) project aims to involve young people aged 18–28 in the work for a sustainable Baltic Sea. The aim is to develop new ideas to increase youth participation in the work of the biosphere reserves and to create a transnational network for young people. Twelve biosphere reserves in eight countries around the Baltic Sea are involved in the project, which is funded by the Swedish Institute and Kristianstad Municipality. In addition to a youth forum in 2025, webinars have been held to share experiences of informing, inspiring and involving

young adults in the local work of the biosphere reserves in the network. External organisations have been invited to share successful projects and experiences.

The naturum Vattenriket visitor centre's programme of public activities is aimed at all ages, but several events are specifically designed for children and young people. Every year during the summer holidays, naturum organises a biosphere camp for school children aged 10–14. Young people aged 16–17 can opt for this as a municipal summer job and act as assistants. The camp provides opportunities for children to learn more about people and nature and about the biosphere reserve, but also for young people to be involved in biosphere activities by working as helpers.

The Biosphere Office also accepts interns from different levels of education and can offer students help with their theses.

In 2024, the Biosphere Office started a collaboration with the Scouts to stimulate interest in nature and the biosphere reserve – biosphere heroes. A new Scout badge has been developed, which Scouts receive when they have participated in at least four of seven meetings in the Kristianstads Vattenrike Biosphere Reserve.

In 2023 and 2024, the municipality held the event Fresh Air & Fun *(Friluftskul)*, where associations and others offered visitors the opportunity to try out outdoor activities such as collecting insects, casting a fishing rod, canoeing, bird watching, pitching a tent and mountain biking. The Biosphere Office was involved in organising the event.

"It was an obvious choice to showcase Kristianstads Vattenrike. Partly because it is Sweden's first UNESCO biosphere reserve, and partly because of the fantastic work Vattenriket does in working strategically and holistically. It is fun to be in this environment. It gives you energy and makes you happy to see all the work that is going on. We have been extremely well received by the municipality and everyone from Vattenriket who has been kind enough to tell us about their work. It has given us a good idea of how biosphere reserves work."

Mats Djurberg, Secretary-General of the Swedish National Commission for UNESCO, 2019

3. ECOSYSTEM SERVICES

The Biosphere Office began using the concept of ecosystem services at an early stage, and the first survey was carried out as early as 2008. When the Swedish Environmental Protection Agency received a government commission to communicate the value and importance of ecosystem services, a national network was launched. The Biosphere Office was invited to participate to share our experiences as well as disseminate the work of the Swedish EPA within our network. We contributed practical examples and communication initiatives we have carried out, and also had the opportunity to present the educational tool the Vattenrike flower *(Vattenrikeblomman),* see below.

Later, the ecosystem services network was transformed into a green infrastructure and ecosystem services network. The work is still led by the Swedish Environmental Protection Agency and has participants from a number of organisations and authorities in Sweden. The purpose of the network is, among other things, to find new and effective ways of working with ecosystem services, green infrastructure and biodiversity, and to become more synchronised in the initiatives that are implemented. The Biosphere Office is still involved in the network. In 2024, the Swedish EPA carried out a national initiative to raise awareness of work on green infrastructure. The Biosphere Office's ecologist participated in the programme and talked about our work with green infrastructure as an example of best practice.

In 2016–2018, the Biosphere Office worked under the theme of Ecosystem Services, which was reflected in naturum's educational work, see below. We also produced a temporary exhibition at the naturum Vattenriket visitor centre focusing on ecosystem services, set up bee hotels in nature reserves and on farms, and produced a report on ecosystem services in the planning of a new residential area. Ecosystem services were also a theme for biosphere camps, the Biosphere Research Conference, a senior citizens' day and the training of biosphere ambassadors. See questions 3.4 for further information about research and reports on ecosystem services in the biosphere reserve.

Educational work linked to ecosystem services

Since the previous review, naturum Vattenriket has produced educational materials to develop pupils', students' and teachers' learning about and understanding of ecosystem services, from preschool to university. Naturum has conducted a large number of excursions with upper secondary school classes and students training to be teachers.

- The story of the little apple tree. The story is based on oral storytelling with interactive elements and is suitable for children aged three to nine.
- Pollinate more is a fast-paced game where pupils take on the role of bees and bumblebees pollinating flowers. Using movement and reflection, we focus on pollination as an important ecosystem service and try to value things we are used to getting free from nature. The game is suitable for children aged seven to twelve.
- The Vattenrike flower *(Vattenrikeblomman),* and the Baltic Sea Compass *(Östersjökompassen)* are tools for participants to identify, investigate, assess and reflect on nature's ecosystem services. The tools are mainly adapted for secondary and upper secondary schools and teacher training programmes.
- A film about ecosystem services in Vattenriket was produced in 2018 and has been used in upper secondary schools in the municipality and the rest of Skåne.

3.1 If possible, provide an update in the ecosystem services provided by each ecosystem of the biosphere reserve and the beneficiaries of these services.

(As per previous report and with reference to the Millennium Ecosystem Assessment Framework and The Economics of Ecosystems and Biodiversity (TEEB) Framework (http://millenniumassessment.org/en/Framework.html and http://www.teebweb.org/publications/teeb-study-reports/foundations/)).

Ecosystem services are products and services that directly or indirectly benefit people and that are important for our well-being. According to the MEA and TEEB frameworks, these services can be divided into four categories:

1. **Supporting services** – the natural processes and conditions forming the basic preconditions for all other ecosystem services.
2. **Regulating services** – benefits obtained from the regulation of natural processes.
3. **Provisioning services** – various products obtained from ecosystems.
4. **Cultural services** – non-material benefits that people obtain from ecosystems, such as mental and physical health, recreation and spiritual and aesthetic experiences.

Ecosystem services are presented here based on these four categories for eight different habitats: 1) lakes and watercourses, 2) wetlands, 3) grazing land and hay meadows, 4) forests, 5) coastal ecosystems, 6) marine ecosystems, 7) agricultural land and 8) urban nature.

It must be added that many services are general in nature and recur under a number of different ecosystems. These services are therefore not described in detail. For example, supporting services such as the primary production of plants (the conversion of energy into organic material through photosynthesis) and biogeochemical cycles (e.g. the carbon, nitrogen and water cycles) represent basic prerequisites for all ecosystems. Biodiversity is important for the functioning of ecosystems and consequently their capacity to provide ecosystem services. Additionally, no description is given of the link between supporting services and the beneficiaries, as the supporting services are indirectly beneficial in that they underpin other ecosystem services.

Supporting services Habitats and living environments Primary production Biogeochemical cycles Nutrient flows Water flows Biodiversity	**Regulating services** 1. Water regulation 2. Water purification 3. Erosion control 4. Local climate regulation	1. Municipal residents 2. Baltic Sea users, local residents, industries 3. Municipal residents, local and non-local residents 4. Municipal residents

The categorisation of people who benefit is not comprehensive but is based on the primary benefits and beneficiaries. The various categories are also aimed at how the service is used or perceived. It is therefore possible to belong to several groups, e.g. a fisherman benefits from the provisioning service 'food from freshwater organisms' in his/her roles as an angler, commercial fisherman and/or consumer depending on the situation.

As there have been no comprehensive studies of ecosystem services specifically to evaluate the three functions of the biosphere reserve, the grouping is somewhat arbitrary. However, many other studies of ecosystem services have been carried out, see question 3.4 for further information. The aim is rather to obtain a simple and clear way to describe the groups of people that benefit from the various services. In cases where it is difficult to identify a specific group of beneficiaries, or where there are a number of beneficiaries, the term 'municipal residents' has been used as a general term for people living in Kristianstad Municipality, along with the term 'tourists' for people visiting the area. The concept of 'local and non-local residents' defines services that may be considered as important within a broader perspective (climate regulation and air purification), and similarly the concept of 'beneficiaries of the Baltic Sea' as regards water purification as part of a much larger catchment area.

Lakes and watercourses

Ecosystem services		Examples of who benefits
	Provisioning services 1. Drinking water for livestock 2. Irrigation 3. Food from freshwater organisms 4. Hydropower 5. Industrial cooling water	1. Farmers 2. Farmers 3. Consumers, commercial fishermen, anglers 4. Energy companies, private use 5. Industries
	Cultural services 1. Recreation, outdoor activities and tourism 2. Mental and physical health 3. Cultural and natural heritage 4. Knowledge and education	1. Local residents, tourists, anglers 2. Municipal residents 3. Local and non-local residents, tourists 4. Schoolchildren, teachers, researchers, students

There is a diverse range of aquatic environments in Kristianstads Vattenrike Biosphere Reserve. The River Helge å, which flows calmly across the Kristianstadsslätten Plain, is the largest watercourse and passes the two floodplain lakes of Lake Araslövssjön and Lake Hammarsjön on its way to the sea. The water from Lake Råbelövssjön drains into the River Helge å via Nosabykanalen Channel. The small watercourse from the Linderödsåsen Ridge races down the slope of the ridge before becoming a gently flowing watercourse on the plains before discharging into the River Helge å.

The primary production of the aquatic vegetation and algae is an important supporting service from the lakes and watercourses, as this forms the basis for the limnological food chain. This also

contributes to the regulating services in the form of water purification and water regulation by absorbing nutrients and detaining water flows. Historically, watercourses have acted as recipients for large quantities of untreated municipal and industrial wastewater. This wastewater is now fed into a treatment plant with a high level of purification. However, the watercourses are still subject to agricultural discharges and discharges from individual wastewater outlets. Underwater plants and trees and other vegetation in the shore zones regulate the flow of water and prevent erosion due to the fact that their roots bind the sediment together. Water bodies reduce temperature changes and contribute to a more stable climate on a local scale.

The primary provisioning service from this ecosystem has historically been as a power source for mills and power plants, and as a water source for households, agriculture and industries. The majority of water extraction for industry, drinking water and irrigation now comes from groundwater reservoirs. There are still hydropower plants in the area, and the electricity generated from the water may be defined as a provisioning service. There are fish in the lakes and watercourses, although fishing now primarily takes place for private consumption.

The lakes and watercourses provide several cultural services. These are used for recreation such as canoeing, sailing, bathing, birdwatching and angling, which has also led to the improved mental and physical health of local residents. Additionally, the lakes and watercourses also attract tourists, and there are local businesses, which, among other things, provide boat trips and guided tours along the River Helge å, in addition to specially designed fishing trips in the area. The lakes have a high species diversity and contain several rare or endangered species, which contributes to an important natural heritage. For example, the lower water area of the River Helge å is one of the few rivers in Sweden to still have a viable European catfish *(Silurus glanis)* population. The water and landscape in the vicinity of the lakes and watercourses in the biosphere reserve contribute to a local identity and sense of place.

Wetlands

Ecosystem services		Examples of who benefits
Supporting services Habitats and living environments Primary production Biogeochemical cycles Nutrient flows Water flows Biodiversity	**Regulating services** 1. Water regulation 2. Water purification 3. Climate regulation 4. Fire protection	1. Municipal residents, property owners, farmers 2. Beneficiaries of the lakes and sea 3. Municipal residents, local and non-local residents 4. Forest owners, property owners
	Provisioning services 1. Drinking water for livestock 2. Irrigation 3. Food from freshwater organisms 4. Wild game	1. Farmers 2. Consumers, commercial fishermen, anglers 3. Anglers, consumers 4. Hunters, consumers
	Cultural services 1. Recreation, outdoor activities and tourism 2. Mental and physical health 3. Cultural and natural heritage 4. Knowledge and education	1. Municipal residents, tourists, anglers 2. Municipal residents 3. EU, national and municipal residents, tourists 4. Schoolchildren, teachers, researchers, students

Kristianstads Vattenrike Biosphere Reserve contains a variety of different types of wetlands. Along the Helge Å River there are large areas of common reeds *(Phragmites australis)* and willows *(Salix spp)* with water levels that vary with the river. In the forest landscape there are nutrient-rich bogs and wet forests, as well as open nutrient-poor raised bogs. The agricultural landscape contains ponds and constructed wetlands that are home to many birds and insects, some of which are also used as irrigation reservoirs. Grazed seasonally flooded grasslands can also be classified as a type of wetland, but their function is described in the next section on grazing land.

Wetlands provide many ecosystem services. As their water level varies, they detain water flows and counteract droughts and floods. They are among the most species-rich environments and 10 percent of the species on Sweden's Red List are dependent on wetlands. Thanks to their high biodiversity and beauty, they are used for recreation and outdoor activities, not least by birdwatchers. Wetlands are important for fish as well as large mammals, which means they enhance opportunities for fishing and hunting.

Peatlands store large amounts of carbon, mitigating global warming. Organic soils cover almost 7 percent of the municipality's surface and are the ecosystem that stores the most carbon per square metre. Wetlands in forests can limit the spread of forest fires and improve opportunities for hunting. In agricultural landscapes, wetlands are important for removing nutrients and sediments from drainage water that would otherwise reach rivers, lakes and the sea.

The wetlands in the biosphere reserve are also used for education. The Biosphere Office gives hundreds of schoolchildren, university students and other visitors every year the chance to learn about and from the wetlands. The wetlands in the biosphere reserve contribute to local identity and sense of place.

The vast majority of the wetlands in the biosphere reserve have been affected by human activities in the shape of lower water levels. Two-thirds of the organic soils have been drained and are used for forestry or agriculture, leaching carbon dioxide. Wetland ecosystem services depend on water. Therefore, it is necessary to avoid further drainage of wetlands, and to enhance ecosystem services, it is desirable for wetlands to be restored, for example by restoring original water levels.

Nature-based solutions

Sweden’s first constructed wetland for reducing iron and aluminium

Nature-based solutions use natural processes to address various societal challenges such as climate change and biodiversity loss. In Vattenriket, we have constructed the country’s first wetland to reduce the leaching of metals with nature’s help.

Along the Helge Å River, there are embanked agricultural soils that leach iron and aluminium into the river. These metals are toxic to many species and can, for example, stick to the gills of fish.

To alleviate the problem, we have constructed Sweden’s first wetland to purify water from iron and aluminium.

The wetland is divided into sections, some shallower, others deeper. As the water is pumped through the system, the metals stick to vegetation and settle to the bottom. This protects the Helge Å River and its seasonally flooded grasslands, while strengthening the local ecosystem.

The problem of metal leaching from sulphate soils has previously been recognised in Denmark, which has experience of practical measures. The wetland at Fredriksdalsviken is a result of a study visit to Denmark. The project is led by the Biosphere Office in collaboration with local stakeholders.

Grazing land and hay meadows

Ecosystem services		Examples of who benefits
Supporting services Primary production Biogeochemical cycles Nutrient flows Water flows Soil formation Habitats and living environments Biodiversity	**Regulating services** 1. Water regulation 2. Water purification 3. Climate regulation 4. Air purification 5. Pollination	1. Municipal residents, farmers 2. Beneficiaries of the Baltic Sea, municipal residents 3. Municipal residents, local and non-local residents 4. Municipal residents, local and non-local residents 5. Farmers
	Provisioning services 1. Beef 2. Feed 3. Manure 4. Drinking water 5. Mushrooms and berries 6. Wild game	1. Farmers, consumers both within and outside the municipality 2. Farmers 3. Farmers 4. Municipal residents 5. Mushroom and berry pickers 6. Hunters, consumers
	Cultural services 1. Recreation, outdoor activities and tourism 2. Mental and physical health 3. Cultural and natural heritage 4. Sense of place 5. Aesthetics and inspiration 6. Knowledge and education	1. Municipal residents, tourists, birdwatchers, hunters 2. Municipal residents 3. EU, national and municipal residents, tourists 4. Municipal residents 5. Municipal residents, cultural practitioners 6. Schoolchildren, teachers, researchers, students

The grazing areas in the biosphere reserve range from dry and poor sandy heaths to healthy and wet grasslands, the so-called seasonally flooded grasslands. The grazing areas are dependent on grazing or cutting in order to retain their function and natural values. Cutting for hay production primarily takes place on the seasonally flooded grasslands. The supporting services are largely identical for all grazing areas, as are the regulating services. However, the wet seasonally flooded grasslands contribute to water purification and regulation of the recurrent floods in the water system. The seasonally flooded grasslands absorb water, take up nutrients and act as a buffer, which reduces the risk of flooding in urban areas and prevents nutrient leakage into nearby watercourses (Nekoro and Svedén, 2009).

The seasonally flooded grasslands also take up surface water through infiltration, reduce the risk of flooding in urban areas and prevent nutrient leakage into nearby watercourses (Nekoro and Svedén, 2009).

In terms of provisioning services, all grazing areas contribute in the production of beef on account of the grazing provided. Animal feed for the winter months is also obtained through cutting the seasonally flooded grasslands. In terms of cultural services, grazing areas that are easily accessible to the public also provide the potential for recreation and outdoor recreation. The bird life of the seasonally flooded grasslands mean that they are popular and well-known environments for birdwatching.

Many of the natural grasslands in the biosphere reserve are situated on calcareous soil, which means that many of them have a very rich flora and fauna. Wild bees are present in considerable numbers,

which contributes to the pollination of both wild and cultivated plants. The sandy grasslands have their own characteristic plants which have a long history in the landscape and contribute to the local identity.

All grazing areas are also important pieces of cultural heritage because they form part of the traditional agricultural landscape. In this way, they also help to preserve the landscape's local identity and sense of place. The management of the grazing areas through cutting and grazing also preserves traditional and local ecological knowledge (Nekoro och Svedén 2009). This management, along with the high natural value of the grazing areas, also helps to allow the area to be used for educational purposes, ranging from teaching younger children about nature to education and research at a higher level.

Forests

Ecosystem services		Examples of who benefits
Supporting services Primary production Biogeochemical cycles Nutrient flows Water flows Fertility of the land, soil formation Habitats and living environments Biodiversity Seed dispersal	**Regulating services** 1. Water regulation and purification 2. Climate regulation 3. Air purification 4. Erosion control 5. Biological pest control 6. Prevention of storm damage	1. Beneficiaries of the Baltic Sea, municipal residents 2. Municipal residents, local and non-local residents 3. Municipal residents, local and non-local residents 4. Municipal residents, forest owners, other landowners 5. Forest owners 6. Forest owners, farmers, homeowners
	Provisioning services 1. Timber, wood and decorative materials 2. Biofuel (wood and wood chips) 3. Drinking water 4. Wild game 5. Mushrooms and berries	1. Forest owners and companies in the sector 2. Municipal residents 3. Municipal residents 4. Hunters, consumers 5. Municipal residents, mushroom and berry pickers
	Cultural services 1. Recreation, outdoor activities and tourism 2. Mental and physical health 3. Cultural and natural heritage 4. Sense of place 5. Aesthetics and inspiration 6. Knowledge and education	1. Municipal residents, tourists, birdwatchers 2. Municipal residents 3. EU, national and municipal residents, tourists 4. Municipal residents 5. Municipal residents, cultural practitioners 6. Schoolchildren, teachers, researchers, students

The biosphere reserve contains deciduous forests, moist alder *(Alnus spp)* forest, mixed forest and coniferous forest. The largest forest areas are located in the bedrock areas of the Linderödsåsen Ridge and the Nävlingeåsen Ridge in the south-west and Balsberget in the north, while smaller areas are scattered across the plains and in the shape of pine plantations along the coast (described under coastal ecosystems). Biogeochemical cycles and soil fertility may be considered some of the most important supporting services, as they create the conditions necessary for the forest's production. For example, the trees absorb nutrients and water from the ground, which also provides a foothold for tree roots. In this way, the land supports regulating services such as climate regulation through

the storage of carbon in the soil and flow detention, in addition to provisioning services such as timber production, biofuel and drinking water (Hansen et al, 2014). An analysis carried out in 2024 shows that the growth of forests in Kristianstad Municipality (without considering felling) annually stores more carbon than the total fossil greenhouse gas emissions in the municipality (Kristianstads kommun, 2024).

For forestry, the most important provisioning services are timber, wood, biofuels and decorative materials. The provisioning services provided by forests to the public and hunters are mushrooms, berries and wild game. Drinking water is another important provisioning service provided by woodland areas. Forests both capture and store water by a process of infiltration into groundwater reserves, in addition to purifying the water to remove pollutants (IVL, 2014). However, in the Kristianstads Vattenrike Biosphere Reserve, the contribution to groundwater via infiltration is greater from arable and grazing land because the biosphere reserve largely consists of these land types.

The forests provide important cultural services. They are used for outdoor recreation and exercise in the form of forest walks, orienteering and mushroom- and berry-picking, which means that they contribute to both physical and mental health. It is possible that protected forests in the nature reserve provide somewhat greater value in terms of these aspects, as many of them are more accessible as a result of visitor facilities such as parking, in addition to a greater number of larger paths. The protected Scots pine *(Pinus sylvestris)* and hardwood forests typically provide greater variety and species diversity than production-oriented Norway spruce *(Picea abies)* forests. Beech *(Fagus sylvatica)* forests in particular attract visitors, as these are easy to navigate, light and considered by many people to be particularly beautiful.

Coastal ecosystems

Ecosystem services		Examples of people who benefit
Supporting services Primary production Biogeochemical cycles Nutrient flows Water flows Supply of sand Habitats and living environments Biodiversity	**Regulating services** 1. Climate regulation 2. Water purification 3. Erosion control 4. Storm, wind and surge protection 5. Pollination	1. Municipal residents, local and non-local residents 2. Beneficiaries of the Baltic Sea, municipal residents 3. Municipal residents 4. Municipal residents 5. Municipal residents, farmers
	Provisioning services 1. Forest timber 2. Mushrooms and berries	1. Landowners 2. Municipal residents, mushroom and berry pickers
	Cultural services 1. Recreation and tourism 2. Mental and physical health 3. Cultural and natural heritage 4. Sense of place 5. Aesthetics and inspiration 6. Knowledge and education	1. Municipal residents, tourists, birdwatchers, anglers 2. Municipal residents 3. EU, national and municipal residents, tourists 4. Municipal residents 5. Municipal residents, cultural practitioners 6. Schoolchildren, teachers, researchers, students, armed forces

The coastal ecosystems in Kristianstad Vattenrike Biosphere Reserve are characterised by sandy beaches, dunes, Scots pine *(Pinus sylvestris)* forests and drift sand fields. The dune landscape provides a natural buffer against high waves and storms, and the vegetation in these ecosystems contributes by preventing erosion and sand drift, and the forest provides shelter for coastal urban areas and the agricultural landscape, which are all important regulating services.

The provisioning services of coastal ecosystems are limited to timber and mushrooms and berries. However, coastal ecosystems provide many cultural services. These areas are popular with local residents, summer residents and tourists because of their beautiful and easily accessible environments and their recreational and outdoor recreation possibilities such as enjoying the sun, bathing, walking, fishing and birdwatching. These services are in turn dependent on the biodiversity that the coastal ecosystem provides, particularly special flora and bird fauna.

European eel *(Anguilla anguilla)* fishing is still carried out along Vattenriket's coast, but now only to a limited extent due to the endangered status of the eel. The activity of eel fishermen forms part of an important cultural and historical heritage. The fact that the activity is still performed in the areas around Ålabodarna also contributes to the conservation of species-rich sand environments, as many of these species are dependent on periodic ground disturbance.

Education and teaching people about nature are also cultural services provided by coastal ecosystems, as these areas are often used by schools for excursions. One of the armed forces' large exercise areas at the Rinkaby firing range is located on the coast and used for training and exercises. The field is open to the public as a recreation area when it is not in use. The military activity also contributes to biodiversity as a result of the periodic disturbance of the sandy grasslands in the exercise area.

Marine ecosystems

Ecosystem services		Examples of who benefits
Supporting services Habitats and living environments Primary production Biogeochemical cycles Nutrient flows Water flows Biodiversity	**Regulating services** 1. Water regulation 2. Water purification: uptake/dilution 3. Climate regulation 4. Supply of sand 5. Erosion control 6. Wave control	1. Municipal residents 2. Beneficiaries of the Baltic Sea, municipal residents 3. Municipal residents, local and non-local residents 4. Municipal residents 5. Municipal residents 6. Municipal residents
	Provisioning services 1. Food from fish	1. Commercial fishermen and anglers, consumers
	Cultural services 1. Recreation, outdoor activities and tourism 2. Mental and physical health 3. Sense of place 4. Cultural and natural heritage 5. Knowledge and education	1. Municipal residents, tourists, anglers, divers, boat owners 2. Municipal residents, coastal residents, tourists 3. Municipal residents, coastal residents 4. EU, national and municipal residents, eel fishermen 5. Schoolchildren, teachers, researchers, students

The marine ecosystems in Kristianstads Vattenrike Biosphere Reserve are found in Western Hanöbukten Bay, which is part of the Baltic Sea. A number of areas with valuable natural environments were documented in an inventory of coastal areas performed in 2014, particularly soft seabeds with eelgrass *(Zostera marina)* beds and boulder-strewn seabed areas with the macroalgae bladderwrack *(Fucus vesiculosus)* and serrated wrack *(Fucus serratus)* (Svensson, 2014). These areas provide important supporting services such as habitats, living environments and primary production, and contribute to biodiversity. Seabeds containing eelgrass and macroalgae support robust fish populations, as they provide protection, spawning and breeding grounds for many species of fish. The marine ecosystems act as important nursery areas for fish that stay intermittently in the Helge Å River. Sea trout *(Salmo trutta* morpha *trutt),* northern pike *(Esox lucius),* European perch *(Perca fluviatilis)* and ide *(Leuciscus idus)* are examples of species that alternate between sea and river. In turn, these areas also act as a food resource, which is a contributory factor behind the rich bird life in the coastal area. As the eelgrass binds the bottom sediment and the eelgrass meadows absorb wave energy, the areas also provide a regulating service in the form of erosion control. The plants absorb carbon dioxide and therefore also act as carbon sinks.

Phytoplankton, seagrass and macroalgae are the main primary producers in marine ecosystems and form the basis for the marine food chain. By absorbing carbon dioxide, the areas also regulate and reduce human impact on the climate, which benefits society as a whole and not just residents in Kristianstad.

The main provisioning services from the marine ecosystems of the biosphere reserve come from anglers catching fish for human consumption in the sea and the very limited commercial fishing. Since 2007, only registered eel fishermen are allowed in the sea. In the biosphere reserve, there are a handful of eel fishermen who carry out traditional eel fishing with gillnets in the autumn. The cultural history associated with this type of eel fishing is important for local identity. Since 2015, the so-called Eel Heritage *(Ålarvet)* has been included on Sweden's national list of intangible cultural heritage. The Eel Heritage refers to the cultural heritage that has formed around eel fishing along the east coast of Skåne between Åhus and Stenshuvud, called the Eel Coast *(Ålakusten).* In addition to the fishing itself, with its specific gear, skills and organisation, it includes traditions surrounding food and meals, buildings and boats, as well as stories and special names.

Marine ecosystems also provide other cultural services such as recreation and tourism, as the area is used by anglers, divers, boaters and bathers, among others. In addition, the marine area contributes to a sense of place and is used for educational purposes to teach schoolchildren about nature and for research and teaching at university level.

Agricultural land

Ecosystem services		Examples of who benefits
Supporting services Primary production Biogeochemical cycles Nutrient flows Water flows Soil formation Habitats and living environments Biodiversity	**Regulating services** 1. Air purification 2. Climate regulation 3. Biological pest control 4. Pollination	1. Municipal residents, local and non-local residents 2. Municipal residents, local and non-local residents 3. Farmers 4. Farmers
	Provisioning services 1. Food from the plant kingdom 2. Animal feed 3. Meat and dairy products 4. Wild game	1. Farmers, consumers 2. Farmers and other livestock owners 3. Farmers, consumers 4. Hunters, consumers
	Cultural services 1. Recreation and tourism 2. Cultural and natural heritage 3. Sense of place 4. Aesthetics and inspiration 5. Knowledge and education	1. Municipal residents, tourists, birdwatchers, hunters 2. EU, national and municipal residents, farmers, tourists 3. Municipal residents, farmers 4. Municipal residents, cultural practitioners 5. Schoolchildren, teachers, researchers, students

The open cultivated landscape is characteristic of Skåne. This also applies to the biosphere reserve, in which arable land represents a dominant part of this landscape. Grasslands, wooded environments and various types of microhabitats are key elements of the agricultural landscape. These are natural structures with a long history in the landscape. Many species-rich environments can be found here with links to long and traditional extensive use. The supporting services, which are important primarily for food, are the primary production of plants and photosynthesis, the biogeochemical cycles, soil formation and the natural supply of water from groundwater reserves and nearby watercourses. Pollination primarily performed by bumblebees and other wild bees represents an important regulating service for the cultivation of non-wind pollinated crops such as rapeseed and fruit and berry crops. Biological pest control is another important regulating service. It is a method of limiting the impact of harmful animals, pathogens and plants by using other, beneficial organisms, such as insects and plants that inhibit the harmful organisms. With adapted farming practices, agricultural land also has the potential to sequester more carbon and thus mitigate climate change.

Food from cereals, vegetables, fruit and berries and cattle represent the dominating provisioning services. Many locally produced products from agriculture are consumed in Kristianstad Municipality. Substantial regional and national exports also take place, which increases the extent of these services.

The cultural services are primarily related to the open landscape which characterises the biosphere reserve and which represents a piece of cultural heritage because the land has been used since prehistoric times. This also gives rise to a sense of place. The agricultural landscape offers recreational opportunities, both directly in the form of hunting and riding for example, and indirectly in the form of the beauty experienced by people travelling through the landscape. The local food production contributes to the tourist industry, for example by enhancing visitor experiences through the range of locally produced food characteristic of the area such as ice cream and other dairy products, processed products made from apples and berries and wild game.

Urban nature

Ecosystem services		Examples of who benefits
Supporting services Primary production Biogeochemical cycles Nutrient flows Water flows Soil formation Habitats and d living environments Biodiversity	**Regulating services** 1. Water purification and regulation 2. Climate regulation 3. Air purification 4. Erosion control 5. Pollination 6. Biological pest control	1. Beneficiaries of the Baltic Sea, municipal residents 2. Municipal residents, local and non-local residents 3. Municipal residents, local and non-local residents 4. Municipal residents 5. Municipal residents 6. Municipal residents
	Provisioning services 1. Vegetables	1. Municipal residents
	Cultural services 1. Recreation and tourism 2. Physical and mental health 3. Cultural and natural heritage 4. Sense of place 5. Aesthetics and inspiration 6. Knowledge and education	1. Municipal residents, tourists 2. Municipal residents 3. Municipal residents 4. Municipal residents 5. Municipal residents 6. Schoolchildren, teachers

Urban areas also provide ecosystem services. Gardens, parks and other natural/green areas with elements of open water in urban areas provide habitats for flora and fauna, which benefits urban residents as well as other local residents.

Flowering plants in gardens and on balconies benefit insects that contribute to pollination. Among other things, trees in urban areas provide important habitats for insects and birds. They also purify the air by absorbing particles and are responsible for climate regulation because they provide shade and absorb carbon dioxide. Another important ecosystem service in urban areas is the regulation and purification of water. Vegetation such as grass and trees takes up water and surfaces consisting of gravel or soil allow water to permeate, which, among other things, reduces the need to divert surface water.

Ecosystems in urban areas also account for provisioning services such as vegetables cultivated in gardens or parks. An example of this is the vegetables cultivated in the Health Garden *(Hälsoträdgården)* in Kristianstad. Parks and gardens also account for many cultural services. Urban residents and visitors use parks and green areas for recreation and exercise, which improves both physical and mental health. Studies have shown that greenery has a calming effect on people and can reduce stress levels.

3.2 Specify if there are any changes regarding the indicators of ecosystem services that are being used to evaluate the three functions (conservation, development and logistic) of the biosphere reserve. If yes, which ones and give details and update.

There have been no comprehensive studies of ecosystem services specifically to evaluate the three functions of the biosphere reserve. However, many other studies of ecosystem services have been carried out, see question 3.4 for further information.

3.3 Update description on biodiversity involved in the provision of ecosystems services in the biosphere reserve (e.g. species or groups of species involved).

Biodiversity of flora and fauna is often a prerequisite for an ecosystem to provide important ecosystem services. The importance of different species varies depending on the function that they perform in the ecosystem, e.g. whether they pollinate flowers or act as apex predators, and how important they are in this context. The table below presents the key species or groups of species of particular importance for the respective ecosystem service in the biosphere reserve. However, it is important to note that it is the high biodiversity of the area overall that makes Kristianstads Vattenrike unique, and in many cases the diversity contributes to the ecosystem services. Additionally, a high species diversity often contributes to the resilience of an ecosystem, i.e. its ability to handle stress as a result of human influence and natural disturbance. In cases where several species can generate the same function and service, these can replace each other in the event of changes in species content.

Overview of the supporting and regulating ecosystem services and the species and/or species groups of importance for the provision of the service.

Ecosystem services	Species and species groups
Supporting services	
Primary production - *Conversion of solar energy into organic material through photosynthesis.*	Ground vegetation, e.g. various herbs, grasses and cultivated crops Conifers, e.g. Scots pine *(Pinus sylvestris)* and Norway spruce *(Picea abies)* Deciduous trees, e.g. birch *(Betula spp),* alder *(Alnus spp),* oak *(Quercus robur)* and beech *(Fagus sylvatica)* Freshwater algae and other underwater vegetation Marine algae and other underwater vegetation, e.g. eelgrass *(Zostera marina),* bladderwrack *(Fucus vesiculosus),* phytoplankton Microbes
Biogeochemical cycles	Microbes Fungi, etc.
Habitats and living environments - *Species that are important for maintaining the habitat and living environments for other organisms.*	Ground vegetation, e.g. flowering plants in dune areas and natural grazing land Conifers, especially Scots pine *(Pinus sylvestris)* Deciduous trees, such as alder *(Alnus spp),* oak *(Quercus robur)* and beech *(Fagus sylvatica)* Eelgrass *(Zostera marina),* serrated wrack *(Fucus serratus)* and bladderwrack *(Fucus vesiculosus)* Fish species (e.g. northern pike *(Esox lucius),* European perch *(Perca fluviatilis)* and cod *(Gadus morhua))* are important for maintaining living environments for other species
Biodiversity - *Includes the entire species composition in the biosphere reserve and its genetic*	Birds Insects Flowering plants

diversity. However, only species groups considered to be especially diverse in the biosphere reserve have been specified in the table.	Mushrooms Small and large game Bats Fish communities in freshwater and marine environments
Soil formation - *Organisms that contribute to the formation of new soil.*	Microbes Invertebrates
Seed dispersal - *Organisms responsible for seed dispersal, i.e. this does not include abiotic seed dispersal.*	Birds, insects and rodents
Regulating services	
Water regulation and purification - *Species that regulate and purify water through the uptake of water and nutrients and through flow detention.*	Ground and shrub vegetation Coniferous and deciduous trees (of deciduous trees, alder *(Alnus spp)* is particularly important for water regulation) Rushes and reeds Intermediate crops, such as rye Bladderwrack *(Fucus vesiculosus)* and eelgrass *(Zostera marina)* Algae and underwater vegetation in freshwater Invertebrates, such as mussels in freshwater and marine environments
Climate regulation - *Species that contribute to climate regulation by absorbing carbon dioxide and other greenhouse gases.*	Ground and shrub vegetation Coniferous and deciduous trees Algae in freshwater and marine environments, plankton and macroalgae, and eelgrass *(Zostera marina)* Underwater vegetation in freshwater
Air purification - *Species that clean the air by absorbing airborne pollutants.*	Ground and shrub vegetation Coniferous and deciduous trees
Pollination - *Species that contribute to the pollination of both commercially important and native plants.*	Wild bees, diptera, butterflies and other pollinating insects
Erosion control - *Species that bind sediment through networks of roots.*	Ground vegetation, especially grasses and bushes Coniferous and deciduous trees Intermediate crops such as rye Eelgrass *(Zostera marina)* Underwater vegetation, bushes and alder *(Alnus spp)* in freshwater environments
Biological pest control - *Species that provide natural pest control through predation.*	Insects, birds of prey, mammals and insectivorous birds
Storm, wind and wave protection - *Species that reduce the negative impact of wind and/or waves.*	Ground vegetation such as dune grass in coastal ecosystems Bushes, coniferous and deciduous trees Eelgrass *(Zostera marina)* in marine environments; underwater vegetation and alder *(Alnus spp)* in freshwater environments

Overview of the provisioning and cultural ecosystem services and the species and/or species groups of importance for the provision of the service.

Ecosystem services	**Key species and species groups**
Provisioning services	
Drinking water - *Groups of species that are important for water in cases where the water becomes part of the groundwater reservoir through infiltration for use as drinking water. It may however be argued that these species contribute to the regulating service of water purification; however, we have chosen to include them in this context.*	Ground vegetation such as various grasses and bushes (e.g. willow *(Salix spp))* Coniferous and deciduous trees Algae and underwater vegetation in freshwater Invertebrates, e.g. freshwater mussels
Food from the plant kingdom - *Species grown for commercial purposes or for personal consumption.*	Crops such as various grains, root crops, rapeseed, fruits, berries and vegetables

By-products/residues from food production from the plant kingdom	E.g. draff, beet pulp, beet shreds, potato pulp
Meat and dairy products - *Species that are important for the production of meat and dairy products.*	Various species of grass and herbs grazed by cattle Cattle
Food from fish/freshwater organisms - *Both marine and freshwater species fished for commercial purposes or for personal consumption.*	Fish species such as European perch *(Perca fluviatilis),* northern pike *(Esox lucius),* zander *(Sander lucioperca),* cod *(Gadus morhua)*, European flounder *(Platichthys flesus)* and European eel *(Anguilla anguilla)* Crayfish
Animal feed - *Species used for animal feed.*	Primarily various species of grass (including maize) and legumes
Manure - *Species that directly or indirectly contribute to natural fertilisers.*	Different grass species grazed by cattle Livestock animals e.g. cattle
Wild game - *Species that normally serve as hunting prey. Used for personal consumption or for sale.*	Roe deer *(Capreolus capreolus),* elk *(Alces alces),* other deer, wild boar *(Sus scrofa)* and wild geese
Wild mushrooms and berries - *Edible species harvested mainly for personal consumption.*	Edible mushrooms and berries, such as chanterelles, bolete mushrooms, bilberries *(Vaccinium myrtillus)* and raspberries *(Rubus idaeus)*
Timber - *Species used as pulpwood and timber.*	Norway spruce *(Picea abies),* Scots pine *(Pinus sylvestris),* European beech *(Fagus sylvatica)* and birch *(Betula spp)*
Biofuel (firewood, wood chips) - *Species used as fuel, either for commercial purposes or for personal use.*	Norway spruce *(Picea abies),* Scots pine *(Pinus sylvestris),* European beech *(Fagus sylvatica)* and birch *(Betula spp)*
Cultural services	
Recreation, outdoor activities, tourism - *Species that contribute to recreational and outdoor experiences such as bird watching and angling. This includes species that also contribute to the biosphere reserve's tourism industry by attracting visitors.*	The Biosphere Reserve's biodiversity is important in itself for this service. Specific important species groups and species include: - Birds such as common cranes *(Grus grus),* ducks, geese and birds of prey that attract birdwatchers and tourists - Fish species important for sport and recreational fishing such as northern pike *(Esox lucius)*, European perch *(Perca fluviatilis),* brown trout *(Salmo trutta)* and European eel *(Anguilla anguilla)* - Otters *(Lutra lutra)* and seals - European beech *(Fagus sylvatica)* - Sand pink *(Dianthus arenarius)* and wild thyme *(Thymus serpyllum)* - Small and large game - Crops from the area that may attract tourists, like strawberries and apples
Mental/physical health - *Species that contribute to improved physical and/or mental health in people.*	For this service, the biodiversity of the biosphere reserve itself is important and this is not related to any specific species or species group. However, green spaces in general have a positive impact on both physical and mental health, especially in urban areas, where greenery in parks, gardens and allotments plays an important role.
Cultural and natural heritage - *Species important to the cultural and/or natural heritage of the biosphere reserve.*	The biodiversity is important in itself for the cultural and natural heritage of the biosphere reserve. However, certain red-listed species are considered important for the natural heritage of the biosphere reserve, such as European catfish *(Silurus glanis),* sand pink *(Dianthus arenarius)* and tawny pipit *(Anthus campestris),* the freshwater plants fen ragwort *(Jacobaea paludosa)* and river water crowfoot *(Ranunculus fluitans),* and thick shelled river mussel (*Unio crassus)* and European eel *(Anguilla anguilla)*.
Sense of place - *Species that contribute to a stronger sense of place in the biosphere reserve.*	The biosphere reserve's biodiversity is important in itself for this service, and the open landscapes of arable fields, seasonally flooded grasslands and sandy grasslands, along with Scots pine *(Pinus sylvestris)* forests along the coast, are characteristic of the region.
Aesthetics and inspiration - *Species that are aesthetically pleasing and help to inspire, for example, cultural practitioners.*	The biosphere reserve's biodiversity is important in itself for this service, as well as the open landscapes and the European beech *(Fagus sylvatica)* and Scots pine *(Pinus sylvestris)* forests.
Knowledge/education - *Species that are used or referred to for educational purposes and/or contribute to maintaining ecological knowledge.*	The biosphere reserve's biodiversity is primarily important in itself for this service. Specific species and species groups include European catfish *(Silurus glanis)*, common cranes *(Grus grus),* wading birds and wild bees.

3.4 Specify whether any recent/updated ecosystem services assessment has been done for the biosphere reserve since its nomination/last report. If yes, please specify and indicate if and how this is being used in the management plan.

Since the previous review, several different assessments of ecosystem services have been made. In 2016, the Biosphere Office commissioned two different geographical analyses based on the ecosystems' potential to deliver ecosystem services. The first analysis concerns various peri-urban landscape types in and around Åhus, the Linnérundan trail and Näsby fält in Kristianstad. As expected, the conditions for ecosystems are poorer in landscapes where land and water use is intensive and far from natural conditions, such as developed land and buildings with very hard surfaces and a deficit of habitats for the species that produce ecosystem services. In contrast, an extensively managed natural grassland or wetland can produce ecosystem services, creating a surplus that can be used in the local area. Areas in the 'everyday landscape', such as roadsides, protection zones and gardens, can also be managed in a way that makes them important for the delivery of ecosystem services (Grönlund, 2016).

The second geographical analysis covers various so-called focus areas, Horna fure, Horna grushåla, Horna sandar, Sånnarna, the sides of the roads into Åhus and Äspet in Åhus, and the Linnérundan trail and Näsby fält in Kristianstad. All these areas have high natural values in common, and most are protected under the Swedish Environmental Code (Grönlund, 2016).

The analyses show, as predicted, that the geographical area of Kristianstads Vattenrike Biosphere Reserve is of great importance for the production and delivery of ecosystem services. The report shows, on the one hand, the difficulty of valuing ecosystems and ecosystem services objectively and, on the other hand, how simple, uncontroversial and evocative it is to simply highlight examples and images. For the Biosphere Office, which does a lot of work on information, experiences and education, ecosystem services are a very useful tool, as long as they are presented in a way that simplifies rather than complicates the link between people and nature. With the right geographical information, ecosystem services are also a good basis for research, management and protection (Grönlund, 2016).

The Biosphere Office participated in the Stockholm Resilience Centre's project Managing bundles of ecosystems with multiple users in Helge å catchment in 2013–2016. The researchers collaborated with a range of local stakeholders in an analysis of ecosystem services in the River Helge Å drainage basin. The process created a common understanding and overview among participants of the multifunctional landscape around the Helge Å River. As a result, the new knowledge influenced local sustainability planning. Ecosystem services acted as a bridging concept for meeting and learning, acknowledging the complexity of the social-ecological system. As part of the process, a list of 15 different ecosystem services was developed:

- Provisioning: Forest production, Meat production, Cultivated food crops, Cultivated fodder crops, Milk production, Fruit production
- Regulating: Nitrogen retention, Phosphorus retention, Landscape diversity, Standing water quality, Running water quality
- Cultural: Outdoor recreation, Horseback riding, Hunting, Biodiversity heritage (Malmborg et al, 2021).

The group also carried out a spatial analysis of the production of the services, a comparative analysis of demand in relation to production, and a 'bundle analysis' showing how the services relate to each

other. In the second phase of the process, a vision for the future was developed, describing a more multifunctional landscape and identifying a series of actions to move towards the vision. The main challenges can be summarised as 1) Creating conditions for higher diversity in the forest landscape, 2) Maintaining and creating new opportunities for locally produced and sustainable food, and 3) Achieving good water quality, without brownification in the Helge Å River (Enfors-Kautsky, 2019).

The Biosphere Office is working on all these challenges, for example through its work on developing the municipality's new forestry policy, working with local farmers and creating wetlands.

The Biosphere Office was involved in initiating and supporting a study from 2020 on the consequences of, driving forces behind and possible solutions to brownification, in collaboration with the Helge Å Model Forest, Stockholm Environment Institute, Lund University and others. One conclusion was that while climate change, recovery from acidification, and land-use change certainly contribute to brownification, changing land use in the hydrologically connected parts of the landscape is probably the most feasible way to counteract it. Brownification has negative impacts on ecosystem services such as drinking water, recreation, biodiversity and biogeochemical processes. Possible measures include increasing the proportion of deciduous trees along watercourses, changing the management of ditches, restoring peatlands and streams, and practicing continuous cover forestry (Kritzberg et al., 2020).

The Biosphere Office has also collaborated with a master's student at the Stockholm Resilience Centre on ecosystem services. By asking people who were familiar with the biosphere reserve to link ecosystem services to places, a clear connection was shown between ecosystem services and zonation, as well as a high level of awareness of the important role of wetlands in water regulation. See questions 6.5 and 8.5 for more information on this. An unexpectedly high number of participants highlighted intrinsic, relational and regulating ecosystem services. This can be interpreted to mean that the biosphere reserve has great potential as an arena for promoting sustainability. As most of the biosphere reserve's visitor sites are located within so-called "hotspots" mapped by many participants, the results also suggest that the Biosphere Office promotes accessibility to nature and the valuation of ecosystem services (Schwarze, 2024).

One study investigated the public's views on the planting of eelgrass *(Zostera marina)* and coastal erosion control in four coastal municipalities in Skåne, including Kristianstad. Participants showed low awareness of the contribution of eelgrass planting to ecosystem services like counteracting erosion, storing carbon and promoting biodiversity. However, many participants appreciated nature and coastal biodiversity and mainly use beaches to promote health and well-being. Erosion control was primarily seen as important for recreation, nature and tourism rather than protecting infrastructure. According to the researchers, it is important that nature-based solutions like eelgrass planting take into account these local values to gain support for the measures (Van Well et al., 2023).

Other assessments of ecosystem services carried out in Kristianstad Municipality are:

The municipality's 2017 Green Plan included a mapping of ecosystem services.

The 2019 municipal Green Plan included a quantitative/monetary estimate of the main livelihood assets of food, fodder and wood. At that time, the estimated figures were:

- 550,000 tonnes of food and fodder are grown in Kristianstad Municipality.
- 1,500 companies in the municipality are active in food production.
- The municipality's forest holdings are estimated to correspond to 213,000 cubic metres of wood worth over SEK 100 million.

Kristianstad University has also conducted a great deal of research in the biosphere reserve linked to ecosystem services. See question 6.2 for further information.

Since the previous review, the Biosphere Office has been guided by two new action plans, for the years 2016–2020 and 2021–2025. In the first action plan, ecosystem services are primarily linked to the development function. It is stated that ecosystem services are important for human welfare, and that this idea is a natural part of biosphere work. Some examples of ecosystem services in Vattenriket are that the wetlands contribute to flow detention in the Helge Å River, reduce nutrient run-off and promote wildlife and outdoor recreation, that the seasonally flooded grasslands provide grazing and fodder, that the forest provides timber, mushrooms and berries, the coast provides recreation and the sea absorbs carbon dioxide and provides fish. The action plan states that it is important that these natural services are maintained and strengthened. The Biosphere Office should therefore raise awareness of Vattenriket's ecosystem services and work on projects that improve the conditions for nature to deliver ecosystem services.

The latest action plan links ecosystem services to conservation as well as development. It states that Vattenriket's forests are important as carbon sinks, for the production of renewable raw materials and for tourism and outdoor recreation. The Biosphere Office and the Land and Development Unit developed the municipality's new forestry policy, which was adopted in 2023. It details how municipal forest holdings can be managed in a responsible way to take advantage of the values that the forest provides.

Ecosystem services are also addressed in the action plan's section on sustainable business, agriculture and tourism. It is stated that rich biodiversity in the agricultural landscape provides many free services and contributes to robust ecosystems. One focus is pollination. To promote pollinating insects, the Biosphere Office is one collaborator in the project Let Scania Blossom *(Hela Skåne blommar),* which has developed into Let Sweden Blossom *(Hela Sverige blommar),* and is run by the Swedish Federation of Rural Economy and Agricultural Societies. By sponsoring seeds, farmers are encouraged to sow pollen- and nectar-producing plants on arable land. The Biosphere Office communicates the concept to the public by means of information and packets of seeds.

4. THE CONSERVATION FUNCTION

[This refers to programmes that seek to protect biodiversity at landscape and site levels and/or ecological functions that provide ecosystem goods and services in the biosphere reserve. While actions to address this function might be focused on core area(s) and buffer zone(s), ecosystem dynamics occur across a range of spatial and temporal scales throughout the biosphere reserve and beyond].

4.1 Significant changes (if any) in the main habitat types, ecosystems, species or varieties of traditional or economic importance identified for the biosphere reserve, including natural processes or events, main human impacts, and/or relevant management practices (since the last report).

More areas have been protected

Since the previous review, eleven new nature reserves have been established within the biosphere reserve, of which eight are national and three are municipal. In total, this is an increase of almost 830 hectares (area within the biosphere reserve) or almost 15 percent. In addition, the Biosphere Office has been involved in expanding the municipal nature conservation fund in Kristianstad Municipality by eight areas. Kristianstad Municipality has a relatively unique way of safeguarding valuable land for nature conservation and recreation. Areas in the nature conservation fund are exempt from exploitation and are intended to benefit natural and recreational values. The nature conservation fund is managed by the municipality's nature conservation manager.

High-value landscapes indicate hotspots

A concept that has gained momentum since the previous review is that of high-value landscapes, a concept developed by the Swedish Environmental Protection Agency and the county administrative boards. A high-value landscape contains many valuable areas of a particular type of habitat, i.e. many areas with high biodiversity. High-value landscapes can therefore be regarded as biodiversity hotspots. In the biosphere reserve, we are proud to have many different types of high-value landscapes (see Appendix 7). For example, we have a large high-value landscape for sandy grasslands that extends over large parts of the Kristianstadsslätten Plain. Since its inception, the Biosphere Office has worked to preserve and develop the natural values of sandy grasslands and to spread knowledge about their values. The high-value landscape is a fine example of our success in preserving many of the natural values associated with the sandy grasslands. We also have a high-value landscape for deciduous forest that extends along the northern slope of the Linderödsåsen Ridge, which is within the biosphere reserve. This consists of old beech forests growing in valleys and along watercourses. This type of forest is often associated with very high natural values.

Taking natural values into account in urban planning

We see some improvement in the extent to which nature values are taken into account in urban planning. Far more inventories of natural values are carried out today than before. The Biosphere Office has been involved in an interdisciplinary group within Kristianstad Municipality that has worked on issues relating to balancing conservation and exploitation, and biodiversity offsetting. That is, how to work to offset necessary losses of natural values.

Linking biodiversity to climate change

The Biosphere Office's conservation measures not only contribute to biodiversity, but also to climate change mitigation, management and resilience, which is becoming increasingly important. One good example is our work on wetlands, which used to be mainly focused on nutrient retention, but has

evolved to contribute to an increasing number of ecosystem services. Rewetting drained peatlands reduces carbon emissions. Other objectives of wetland projects are to benefit biodiversity and flow detention, recharge groundwater, create nursery areas for fish, reduce iron and aluminium, reduce brownification, promote water efficiency and contribute to recreation. Different objectives are combined in the same project and also contribute to making society as a whole more resilient.

Lakes and watercourses

Catfish are well-established in the River Helge Å

The European catfish *(Silurus glanis)* is protected from directed fishing throughout Sweden. In 2015 it was considered vulnerable (VU). Nowadays, it is only classified as near threatened (NT) in the Species Information Centre's red list, which indicates that the threat has decreased. Test fishing and other monitoring paints an unambiguous picture that the catfish is well established throughout the Helge Å River. In contrast to most fish species, the catfish, which is nocturnal and not dependent on light, is favoured by the brown water in the Helge Å River. Warmer water favours catfish reproduction and extends its growth period.

The status of the eel has deteriorated

European eels *(Anguilla anguilla)* have declined sharply in coastal and inland waters. Sweden introduced a fishing ban in 2007 which only permits existing licensed eel fisheries. Recreational eel fishing is only permitted upstream of certain definite migration barriers. In the River Helge Å, the ban applies from the Broby power plant. Over the last ten years, large numbers of eel fry have been released into the Helge Å River catchment area at the initiative of fish conservation associations and power companies. Natural migration from the sea is crucial for eel recruitment, and the focus is on functioning eel passes at migration barriers. The Biosphere Office is working to ensure that the eel pass at Torsebro power station functions optimally.

Water quality – working towards a better nutrient balance

Nutrient concentrations are continuing to decrease in our aquatic systems but are still classified as high to very high in many of our waters (Naturvårdsverket, 1999). Nutrient concentrations in the Helge Å River are at a stable level with a slight decrease in the concentrations of phosphorus and nitrogen over the last ten years. The concentrations of phosphorous and nitrogen are still classed as high and high to very high, respectively, in the Helge Å River. Over the past ten years, oxygen levels have continued to decrease in the bottom waters of Lake Råbelövssjön with anoxic periods, often during late summer and early autumn. In anoxic conditions, phosphorus is released from the sediments, creating an internal load of phosphorus in the lake. See question 4.2 for information on reduction fishing to improve the water quality in Lake Råbelövssjön. We have constructed a large number of new wetlands in the agricultural landscape to reduce nutrient concentrations, contribute to flow detention and increase biodiversity. Our work on reducing the supply of nutrients to watercourses continues, with other administrations within Kristianstad Municipality. These measures have not yet been sufficient to bring the Baltic Sea back into balance or to restore healthy lakes and watercourses.

The otter is back

During the 1970s, the otter (*Lutra lutra*) disappeared from Vattenriket. The species was hit hard by environmental toxins. The otter has now recovered from this in Sweden and also found its way back to Vattenriket. Since 2015, the otter has become re-established throughout the region. Not least, otters are reported from the Helge Å River system, with many observations from central Kristianstad, with the naturum Vattenriket visitor centre as the best observation site.

360-degree projects

Restoring the Health of the Baltic Sea – a project with a holistic approach

The Baltic Sea faces major challenges such as eutrophication, loss of biodiversity and declining fish stocks. Meeting them requires action as well as knowledge dissemination.

In the WWF project Restoring the Health of the Baltic Sea, the Biosphere Office collaborated with stakeholders in the Stockholm Archipelago and Sweden's High Coast to strengthen the marine ecosystem.

The project took a holistic approach – from concrete measures to public education and involvement.

In Vattenriket we constructed wetlands that capture nutrients before the water reaches the sea and opened reed beds at Gropahålet to benefit fish and underwater plants.

We created spawning wetlands for pike and planted 8 000 square metres of eelgrass to strengthen the coastal ecosystem.

We also inspired involvement by developing the Baltic Sea Compass, which helps students understand coastal ecosystem services.

The Baltic Sea Outdoor Classroom was equipped with nets and educational materials to explore life below the surface.

Bioblitzes and citizen science mapped biodiversity, and a World Ocean Day business breakfast brought companies and researchers together around sustainable solutions.

At naturum, exhibitions and activities helped visitors discover marine life. Restoring the Health of the Baltic Sea shows how research, action and collaboration can contribute to a healthier sea.

Fighting invasive species

In Kristianstads Vattenrike, aquatic environments and their surroundings are mainly affected by the invasive species fringed water-lily *(Nymphoides peltata),* American skunk cabbage *(Lysichiton americanus)* and Himalayan balsam *(Impatiens glandulifera)*. Fringed water-lily is an invasive plant with floating leaves found in 11 lakes and ponds in Skåne, including one population in Lake Råbelövssjön. Here, the management of fringed water-lily was intensified between 2021 and 2023, resulting in a reduction of the population by about 50 percent.

American skunk cabbage is another invasive species that has been reported from the River Vramsån. Management consists of digging up plants. Both the County Administrative Board and the Biosphere Office have participated in the work. Himalayan balsam is a large herb that spreads along watercourses and is one of the most problematic invasive species in Sweden. It is found along many watercourses and lakes in the biosphere reserve.

Brownification still on the rise

Increasing water colour has become a major problem in the northern hemisphere, and here, too, lakes and rivers have become increasingly brown. The increasing colour is mainly due to increased levels of organic matter (humus) and iron in the water. Several factors influence the increase, such as climate change, drainage ditches and land use change. The increase in water colour has slowed down in our lakes and rivers over the last decade. The water in several rivers and lakes is intermittently classified as strongly coloured (dark) (Naturvårdsverket, 1999) and the concentration of organic matter is also high. As one way to gather more knowledge and possible measures to reduce brownification, the Biosphere Office has participated in projects to study the transport of carbon to the Baltic Sea (Jones, 2023) and the potential of wetlands as local and regional tools (Borgström, 2024; Djerf, 2025). Water quality is continuously monitored in several water bodies.

Marked decline in breeding seabirds

Over the last 20 years, breeding geese in Lake Hammarsjön have declined from around 800 to 70 pairs. Inventories show that populations of breeding greylag geese *(Anser anser)* have declined significantly throughout the wetland system. Breeding waterfowl such as great crested grebe *(Podiceps cristatus),* ducks, mute swan *(Cygnus olor)* and coot (*Fulica atra*) have shown a marked decline in recent decades. No positive trend has been noted in the last ten years.

Dramatic increase in barnacle geese

Since the early 2000s, the number of resting barnacle geese *(Branta leucopsis)* in southern Sweden has increased dramatically. These geese nest in the Arctic, but in spring large flocks of tens of thousands of geese can visit fields and meadows in the biosphere reserve. On arable land, geese can cause significant damage to growing crops. The grazing of geese has a negative impact on wading birds in the seasonally flooded grasslands, through direct disturbance as well as heavy grazing. Heavy grazing by geese in the seasonally flooded grasslands also affects the availability of fodder in areas managed by grazing or haymaking.

Rushes are decreasing in Lake Hammarsjön

The rushes have declined drastically in Lake Hammarsjön and Lake Araslövssjön in recent decades. Previously, the rushes were characteristic species in the lakes, growing in large clumps, which favoured most bird species, such as black tern *(Chlidonias niger)*, great crested grebe (*Podiceps cristatus)* and coot (*Fulica atra).* The clumps consisted of two different species of rushes, common club-rush *(Schoenoplectus lacustris)* and grey club-rush *(Schoenoplectus tabernaemontani)*. Nowadays, there are only a few sparse clumps of rushes left in the lakes. The Biosphere Office is working actively to understand the factors contributing to the decline, and possible measures. In the

past, local historical knowledge has been collected, aerial photographs have been taken and experiments to exclude geese using cages have been undertaken by Kristianstad University. Today, research is also being done on the decline of the rushes. It is likely that the decline is due to several different factors acting together, making the issue very complex. The rapidly increasing water colour and growing greylag goose *(Anser anser)* population over the past 30 years are consistent with the decline of the rushes and are possible causes. A project is currently underway at Kristianstad University on how geese and other factors affect aquatic vegetation in wetlands. Hopefully, the results of this research can also be applied to the rushes in Lake Hammarsjön.

Seasonally flooded grasslands

Climate change affects biodiversity

Vattenriket, along the Helge Å River, has Sweden's largest area of inland seasonally flooded grasslands, managed using grazing and haymaking. The high natural values of these grasslands are dependent on haymaking, grazing and annual flooding. In recent years, we have seen that the seasonally flooded grasslands are drying out too quickly in the spring. Wading birds depend on water remaining in low points after flooding. Wetter soil with more water provides more food for wading birds. By constructing wetlands and making improvements to existing ditches, we are trying to address this problem by retaining water for longer in the seasonally flooded grasslands.

Further deterioration in the status of wading birds

In general, wading birds in Vattenriket are not doing well, despite various measures being implemented locally by the Biosphere Office as well as the County Administrative Board. Species such as black-tailed godwit *(Limosa limosa)* and ruff *(Philomachus pugnax)* are now rare in the area. In recent years, it is likely that no black-tailed godwit *(Limosa limosa)* have nested and fledged young in Vattenriket. The cause has not been investigated, but persistent early summer drought combined with high predator pressure provides poor conditions for the few individuals that stay in the area. With the exception of a few localities, the trend is similar in the rest of Sweden.

Expansion of willow on wetlands

Willow *(Salix spp)* is expanding in the low-lying parts of Vattenriket and overgrowth seems to have accelerated in the last decade. This is particularly evident in Lake Hammarsjön and Lake Araslövssjön, where uncultivated areas and reed beds are gradually being transformed into dense willow thickets. In recent years, extensive restoration has been carried out but this is both costly and difficult as it requires specialised machinery and can only be carried out during a short period in the late summer.

Wetlands

Many more wetlands have been constructed

Much of the Biosphere Office's work in aquatic environments is focused on constructing wetlands. Our work on wetlands has increased in scope and between 2015 and 2025, 185 hectares of wetlands were constructed or restored by the Biosphere Office. Of these, 71 hectares are in the biosphere reserve and 88 hectares are upstream in the Helge Å River drainage basin. 26 hectares have also been constructed in the River Skräbeån drainage basin, whose waters also flow into Hanöbukten Bay. See 4.2 for more information about our work on wetlands.

Marine ecosystems

Predatory fish are important for coastal ecosystems

The presence of predatory fish is essential for a balanced coastal ecosystem. Due to deteriorating nursery habitats for predatory fish, a phenomenon is now spreading along Swedish coasts where large three-spined sticklebacks *(Gasterosteus aculeatus)* are taking over fish communities. This has negative effects on water quality and the rest of the ecosystem. Three-spined sticklebacks also feed

on the roe of predatory fish. This leads to a negative spiral for predatory fish such as northern pike (*Esox lucius*) and European perch *(Perca fluviatilis).* The situation can be further exacerbated by predators such as cormorants *(Phalacrocoracidae spp)* and seals. The Biosphere Office has made efforts to improve the nursery areas for predatory fish in the Helge Å River, see 4.2.

Sandy grasslands

Measures in sandy grasslands have been stepped up

Apart from exploitation, overgrowth is the main threat to sandy grasslands. We have stepped up our work on sandy grasslands since the latest report to combat overgrowth. This means that the number of measures as well as the amount of money spent on them has increased and we believe that the natural values have responded well to these measures, see question 4.4.

Climate change affects biodiversity

We are seeing an increase in the number of droughts and snowless winters. This can have a major impact on biodiversity. A dry period can be devastating to insect populations if it occurs at a sensitive time of year. For example, snowless winters create problems for prescribed burns, as green grass grows into last year's grass, making it unburnable. Climate change also leads to changes in species composition, with alien or invasive species gaining further ground. Some alien species have long been present in the biosphere reserve without causing problems. However, over time these species have exploded in numbers and we believe that this may be partly due to the warmer climate.

Coastal dune landscapes

Coastal erosion is increasing

Much of the coastline of the biosphere reserve is a dynamic landscape consisting of sandy beaches and dunes. Coastal areas with sand dunes are particularly vulnerable to climate change, rising sea levels and stronger storms. In recent years, erosion along Vattenriket’s coast has increased. As a result, dunes without the space to move inland, for example due to development, risk disappearing completely. Dunes act as natural barriers to the sea and protect inland areas from flooding. When they disappear, the risk of storm damage and saltwater intrusion increases. Reduced dune stability can lead to the loss of vegetation, which in turn reduces the dunes' ability to retain sand. As dunes erode, habitats for species adapted to these environments are also lost.

In the autumn of 2023, Storm Babet hit the shore of Hanöbukten Bay hard, and properties along the shore were affected by the erosion caused by the storm. A cross-administrative coastal group within the municipality is working on measures such as beach nourishment and the construction of a stone reef. Several property owners have received permits to build erosion protection structures following the storm, while others have been built without permission. In 2024 and 2025, natural processes have returned some of the sand carried into the sea by the storm, but coastal erosion is expected to increase with global warming.

Forests

Exploitation threatens forests

A major threat to forest ecosystems is various forms of development. In the last ten years, several large areas of forest have been used for urban development. Recently, around 14 hectares of Scots pine *(Pinus sylvestris)* forest in Åhus was cut down, to be converted into sections for business developments. In recent years, we have seen many applications for solar parks on forest land in the biosphere reserve. Although most of the parks have not yet been decided on, this indicates a change in future land use. Signing contracts with solar companies has become so lucrative that it is comparable to the returns of more traditional forestry and agriculture. This risks further aggravating the situation for forest-dwelling species.

Birds of prey are on the rise

The white-tailed eagle (*Haliaeetus albicilla*) has increased significantly and there are 5–6 breeding pairs in the biosphere reserve. There are also 2–3 pairs of golden eagles (*Aquila chrysaetos*), which are stable–declining. There has been a positive development for the osprey *(Pandion haliaetus)* and today there are around 10 pairs within the biosphere reserve. The main increase has occurred in the wetland area.

Agricultural landscapes

Generational renewal in agriculture

There have been several examples of generational renewal at farms in Vattenriket and there is a great deal of interest from the younger generation in continuing to manage natural pastures. Larger units and more livestock require more land for grazing and winter fodder, which has led to increased interest in restoring overgrown seasonally flooded grasslands. The EU's environmental compensation for pastures is an important driving force in this work, as is market interest for what is produced.

Urban nature

Invasive species threaten biodiversity

Since the previous report, invasive species have received a lot of attention and are one of the main threats to biodiversity. A common problem is garden plants spreading into the countryside from private land. This is why the problem of invasive species is particularly acute in urban areas. One example is how the Scots pine *(Pinus sylvestris)* forests on sandy soils in Åhus have been invaded by various forms of shrubs from gardens. Around 100 escaped shrub species have been found in Åhus (Tyler, 2019). These risk shading out the very diverse and light-demanding field layer. One species that has exploded on Vattenriket's sandy grasslands in recent years is spotted knapweed *(Centaurea stoebe)*. Its invasiveness has not been fully investigated, but the species' ability to spread indicates that it may become a major problem in the future.

4.2 Describe the main conservation programmes that have been conducted in the biosphere reserve over the past ten years as well as current on-going ones. Note their main goals and the scope of activities, e.g. biotic inventories, species-at-risk, landscape analyses, conservation stewardship actions. Cross reference to other sections below where appropriate.

Lakes and watercourses

Reduction fishing carried out in Lake Råbelövssjön

The ecological status of Lake Råbelövssjön has been classified as unsatisfactory due to high algal biomass and elevated nutrient concentrations. Recipient monitoring shows a high predation of zooplankton, which contributes to the high phytoplankton biomass. To improve the status of the lake, reduction fishing was carried out in 2019–2021 after test fishing in 2018. The aim was to reduce the amount of Cyprinids *(Cyprinidae spp)* and increase the proportion of predatory fish, to improve light conditions and reduce bottom disturbance. In the long term, this will benefit underwater vegetation and birds.

In total, 86 tonnes of plankton-eating and bottom-dwelling fish were removed from the lake, including bream. The results were slightly worse than expected. The harvested fish were transported to a biogas plant and some were used in the project Bring back bream, see question 4.3. After the project, the Lake Råbelövssjön fishery conservation association *(Lake Råbelövssjön's Fisheries*

Management Association) has continued to carry out reduction fishing under its own auspices. The reduction fishing was partly financed by a LOVA grant from the County Administrative Board.

Promoting river water crowfoot in the River Vramsån

The River Vramsån in Vattenriket is the only watercourse in the Nordic region where river water crowfoot *(Ranunculus fluitans)* grows. It is a rare aquatic plant that thrives in shallow stretches of river with fast-flowing water and light. Since the previous review, several measures have been taken to benefit the species. For example, shady areas have been cleared and river water crowfoot plants have been moved to new locations. The river water crowfoot creates ecosystems for other species to live in. Spreading the population will improve habitats for several other species. Some of the measures have been funded by the World Wildlife Fund (WWF).

We are involved in the fishery conservation area

As a major landowner, Kristianstad Municipality is one of just over 1,000 co-owners of the Lower Helge Å Fishery Conservation Area *(Nedre Helgeåns fiskevårdsområde).* The Biosphere Office represents the municipality with one full member and one alternate member on the board. The association grants fishing rights by selling fishing licenses to anglers. The Biosphere Office's representatives are focusing on issues relating to young anglers and fish conservation.

Test fishing of catfish shows good growth

In 1999, 2011 and 2012, European catfish *(Silurus glanis)* were restocked in the Helge Å River. From 2011 to 2022, standardised test fishing of catfish was carried out annually to analyse the population status of catfish in Vattenriket. The fishing was done in collaboration with the County Administrative Board of Skåne. The results indicate that the catfish is well-established and shows good growth, similar to that in continental Europe. Due to good results combined with a lack of equipment for catching/handling large catfish, test fishing will now take place every five years.

Gaps have been cut for pike at Gropahålet

In the estuaries of the Helge Å River, channels and small open areas have been cut in dense reed beds on several occasions. This is to promote the reproduction of northern pike (*Esox lucius*) and European perch *(Perca fluviatilis)* and to create beneficial habitats for fish in general. These measures help to strengthen functioning coastal ecosystems and promote predators, which reduces the numbers and impacts of three-spined sticklebacks *(Gasterosteus aculeatus)*. The funding came from the Swedish Postcode Lottery, the World Wildlife Fund (WWF) was the project owner and Kristianstads Vattenrike Biosphere Reserve and two other sites were involved in the project, which was called Restoring the Health of the Baltic Sea *(Återskapa Östersjöns livskraft).*

Seasonally flooded grasslands

Testing inventive management measures

Vattenriket, along the Helge Å River, has Sweden's largest area, 1,700 hectares, of inland seasonally flooded grasslands managed using grazing and haymaking. The high natural values of these grasslands are dependent on haymaking, grazing and annual flooding. However, they are threatened by the overgrowth of reeds, alder *(Alnus spp)* and willow *(Salix spp)*. The Biosphere Office has tested new methods to combat these species. A floating excavator and a wetland mower with caterpillar tracks have opened up new possibilities for managing Vattenriket's seasonally flooded grasslands.

New project for predator control

In the early 2000s, the number of wading birds began to decline on the seasonally flooded grasslands in Vattenriket. Similar changes are occurring in many other places in Sweden and Europe, probably due to a combination of factors, such as deteriorating habitats at breeding and wintering sites, insufficient food supply, and eggs and chicks becoming food for predators. Predator control means

limiting the populations of red fox (*Vulpes vulpes*), badger (*Meles meles*), pine marten (*Martes martes*), mink (*Neovison vison*) and corvids *(Corvidae spp)* on the seasonally flooded grasslands by hunting and trapping. In the autumn of 2019, the Biosphere Office launched a project with several other actors to take an integrated approach to predator hunting. The aim is to create interest in and support predator hunting on Vattenriket's seasonally flooded grasslands, with the aim of supporting declining wader populations. Similar projects on Öland's and Vellinge's seasonally flooded grasslands provide experience and inspiration.

Wetlands

Much of the Biosphere Office's work in aquatic environments consists of constructing wetlands. Our work on wetlands has increased in scope and between 2015 and 2025, 185 hectares of wetlands were constructed or restored by the Biosphere Office. Of these, 71 hectares are in the biosphere reserve and 88 hectares are upstream in the Helge Å River drainage basin. 26 hectares have also been constructed in the River Skräbeån drainage basin, whose waters also flow into Hanöbukten Bay. By applying and spreading the approach used in the biosphere reserve to neighbouring areas, the Biosphere Office's work has had a positive effect on most ecosystem services in the region. Much of the funding for these projects has come from the EU via the Rural Development Programme and national LONA and LOVA grants.

Our work on wetlands used to focus mainly on nutrient retention, but has become increasingly multifunctional with a focus on benefitting multiple ecosystem services. Most wetlands contribute to biodiversity and flow detention, but some projects also have other purposes. As a model area, the Biosphere Office has constructed various types of wetlands over the past ten years, often innovative in design and purpose. Through evaluation and communication, this work contributes to developing practical and theoretical knowledge about wetlands locally, nationally and internationally. Below are examples of wetland projects with different purposes.

Creating nursery areas for fish

To improve the opportunities for northern pike (*Esox lucius*) and other fish to reproduce, the Biosphere Office has created wetlands for pike. This type of constructed wetland retains the water in seasonally flooded grasslands and creates an optimal nursery environment for fish fry. Three of these wetlands have been constructed as part of the project Restoring the Health of the Baltic Sea *(Återskapa Östersjöns livskraft).*

Collecting iron and aluminium

The water leaving some embanked areas along the River Helge Å contains high levels of iron and aluminium, which are harmful to plants as well as animals. This is particularly relevant at Fredriksdalsviken, where extensive discharges of iron and aluminium have been confirmed (Shahabi-Ghahfarokhi et al, 2021). In the summer of 2024, a wetland was excavated at the Fredriksdalsviken pumping station that is designed to collect iron and aluminium and is the first of its kind in Sweden. The project was run by the Biosphere Office, in collaboration with the Eel Acadamy *(Ålakademin)* and Råbelöfs Estate Management *(Råbelöfs godsförvaltning).*

Reducing greenhouse gas emissions

We have begun to implement wetland projects where reducing greenhouse gas emissions is one of the aims. Raising the groundwater level in drained peatlands, so-called rewetting, reduces carbon dioxide emissions. In 2024, the Interreg project Land4Climate was launched, focusing on rewetting in Sweden and Denmark, with the Biosphere Office as part of the project management.

Irrigation

Since the previous review, the Biosphere Office has been involved in five wetland projects that also function as irrigation facilities. Nutrient-rich drainage water can be returned to fields, leading to lower concentrations of nutrients in watercourses and better harvests.

Reducing brownification

To reduce the browning of our watercourses (for more information, see question 4.1), the Biosphere Office has constructed wetlands in the forest landscape. The idea is that sedimentation and UV radiation from the sun can reduce the brown colour of the water. Unfortunately, measurements in these wetlands show that this does not always work, and in some cases the water has unfortunately become browner. For more information see question 4.4.

Marine ecosystems

Restoring the Health of the Baltic Sea

Restoring the Health of the Baltic Sea *(Återskapa Östersjöns livskraft)* was a major WWF project to revitalise the underwater worlds of the Baltic Sea with funding from the Swedish Postcode Lottery. The project ran from 2020 to 2024 and included nature conservation efforts in Kristianstads Vattenrike Biosphere Reserve, the Stockholm Archipelago and the High Coast UNESCO World Heritage Site. In Vattenriket, we have, among other things, constructed wetlands, recreated eelgrass *(Zostera marina)* meadows, organised a business breakfast under the theme of The Sea, developed educational tools and met school classes around Baltic Sea issues. An important part of the project has also been to increase public awareness of the Baltic Sea's sensitive ecosystem.

Biosphere for Baltic

The project was launched in 2017 on the initiative of the Biosphere Office and highlights the role of biosphere reserves in working towards the 2030 Agenda for Sustainable Development, focusing on Goal 14 for oceans and marine resources. Twelve biosphere reserves around the Baltic Sea in eight different countries are participating. A central aspect of the project is an exchange of experiences and knowledge between the biosphere reserves around the Baltic Sea on measures for better water quality and greater marine awareness. It also highlights the experiences of the biosphere reserves in driving sustainable development using dialogue and collaboration. The project was coordinated by the Biosphere Office and the Swedish MAB Programme *(Biosfärprogrammet Sverige)* between 2017 and 2023 and has developed into a network for exchange and collaboration.

Supported by Nature

Supported by Nature is a collaborative project in the international Biosphere for Baltic network. The aim of the project is to increase understanding of nature-based solutions and how they contribute to better environmental conditions for the Baltic Sea. The goal is to develop new knowledge that can lead to nature-based solutions becoming a natural part of land and marine management. At least 17 'learning sites' will be developed around the Baltic Sea, focusing on multifunctional wetlands, coastal water habitats and river restoration. Within our biosphere reserve, we will develop climate-adapted reproduction areas for sea trout *(Salmo trutta* morpha *trutt)*, construct a stone reef in the sea off the coast of Åhus, and install structural plates in in Åhus's harbour and guest harbour. The aim of the measures is to benefit biodiversity while raising awareness of how people can help nature by using nature-based solutions.

Sandy grasslands

The biodiversity of sandy grasslands is a particular area of responsibility in the biosphere reserve. For several years, the Biosphere Office has worked to increase knowledge about biodiversity, provided information, protected sandy grasslands for the future and carried out management and restoration.

In the sand near you (I sanden nära dig)

Between 2015 and 2020, the Biosphere Office ran a LONA project with the aim of spreading knowledge and inspiration about methods of managing the coast to benefit the diversity of sandy grasslands. Advice was given to private individuals on how they could promote the natural values of sandy grasslands on their properties. Several natural areas were restored as part of the project and an information leaflet for property owners was produced. The project was partly financed by the Swedish Environmental Protection Agency via the County Administrative Board of Skåne.

Wild pollinators (Vilda pollinatörer, VIP)

During 2020–2023, the County Administrative Board ran VIP, a project aimed at initiatives for wild pollinators. Skåne is home to around 75 percent of the country's wild bees, of which just over 20 percent are threatened. Vattenriket is one of five areas in Skåne highlighted as being of national importance for threatened wild bees. The Biosphere Office applied for and received a total of SEK 1.6 million in government grants via the County Administrative Board of Skåne to benefit threatened wild pollinators. The measures have involved restoring sandy pastures, creating sandy patches, removing pine trees and exposing bare sand.

Natterjack toad restoration and new ponds

The natterjack toad (*Epidalea calamita*) thrives in seasonally flooded grasslands and abandoned gravel pits where it can find ponds to spawn in. The tadpoles need warmth to develop. Therefore, the water must be shallow and sunlit, with no fish to eat the young. In the Sånnarna Nature Reserve, existing small ponds in the disused sand quarry were restored a few years ago. The measure has been successful and many natterjack toads now reproduce in the sunny pit. Outside the nature reserve, two new ponds were also dug on private land. It didn't take long for the toads to find their way there, which sparked a great deal of engagement from the landowner.

Increased grazing

Since the previous review, several measures have been undertaken to increase the grazed areas in the nature areas managed by the municipality. For example, 6 hectares of dense forest in Mosslunda were converted into pasture. Rye was sown to prevent the regrowth of unwanted vegetation. In 2022, several areas of Scots pine *(Pinus sylvestris)* forest at Horna fure were fenced in. Cows graze in the forest in late autumn and winter, and the trampling and grazing benefit the area's natural values. Several of the sandy nature reserves in the Åhus region have also been expanded with new grazed areas where the grazing regime is adapted to the natural values.

Promoting Cyphelium trachylioides

The lichen *Cyphelium trachylioides* is critically endangered and has the world's largest known population in Skåne, large parts of which are found in Vattenriket. Here it grows exclusively on fence posts made of oak *(Quercus robur).* For several years, the Biosphere Office has been working with local farmers to put up more oak posts in the landscape and ensure that existing fences are not taken down. In 2021, we launched a fund to buy oak posts and offer them to local farmers.

Promoting sand pinks

Vattenriket is home to large parts of Sweden's population of sand pink *(Dianthus arenarius),* a very special and rare plant. The sand pink is linked to the rare habitat type of sandy steppe and in Sweden there are only about 75 hectares of sandy steppe left. The sand pink in Sweden and the Baltic States belongs to a separate subspecies. We therefore have an international responsibility to preserve this plant. Since the previous review, several projects have been carried out to improve the conditions for sand pink, partly through information to the public and advice to private individuals, partly cultivation and planting of seedlings, and partly restoration of nature areas.

New method for lichen removal

The Biosphere Office's nature conservation manager has tested a new method for removing lichen on Vattenriket's valuable sandy grasslands. The result is more exposed and sunlit sand – which benefits flowering plants and insects. A remote-controlled mower with a side-mounted rake has made it possible to restore large areas in a short amount of time. The aim is to remove a large amount of moss and lichen while leaving the species we wish to preserve. Wild thyme *(Thymus serpyllum)* and sand pink *(Dianthus arenarius)* are not removed by the rake, but given more space to grow. The measure was funded via the County Administrative Board of Skåne's action programme for threatened species.

Coastal dune landscapes

LONA Reserve Formation (LONA Reservatsbildning)

Between 2019 and 2022, the Biosphere Office ran a LONA project aimed at creating two new municipal nature reserves in the biosphere reserve. Both are located on municipal land and are dominated by forest. By creating nature reserves, the areas' natural and outdoor recreation values have been secured for future generations. The areas already had high natural values that will be developed through ongoing reserve management. In addition, measures were taken to improve outdoor recreation in both reserves. One of the areas, Södra Äspet, consists largely of wooded dunes and is located near the coast south of Åhus. The project was partly financed by the Swedish Environmental Protection Agency via the County Administrative Board of Skåne.

Forests

LONA Bats

In 2021–2023, a LONA project was run to raise knowledge about Vattenriket's bats. The project included an inventory, advice and several public activities such as guided tours and box building. The activities were highly appreciated and attracted many participants. It was also in this project that the work on heritage trees emerged. See separate point below. The project was partly financed by the Swedish Environmental Protection Agency via the County Administrative Board of Skåne.

New municipal forestry policy

The Biosphere Office has been a driving force in the development of Kristianstad Municipality's first forestry policy, which provides guidelines for managing municipal forest holdings. The policy will help us to make the municipality's forestry better for nature conservation, the climate and outdoor recreation. An important point is that continuous cover methods are to be prioritised over clear-cutting. By developing the policy, the municipality is taking the lead and setting an example of what sustainable forestry should look like.

A range of tree measures

We have tested many new forms of nature conservation measures linked to trees since the previous review. Various forms of fauna depots, i.e. collections of dead wood to benefit biodiversity, have been placed in nature conservation areas. Wood-mould boxes have been put up to mimic the special conditions found inside large old trees, which many threatened species depend on. Veteranisation is when trees are damaged in various ways to speed up the formation of valuable structures that otherwise take a long time to form. This is done in many different ways, both manually and with forestry machines. In 2023, the method of blasting trees with dynamite to create various injuries and cavities was tested. Fungi and rot will then create attractive environments for insects. We have also tested a new method using a milling-cutter to make a nest hole in the tree itself. Various measures have also been taken to highlight the valuable tree species oak *(Quercus robur).* Oaks have been planted and other large trees have been removed to avoid shading them out.

Broad palette for biodiversity

How we conserve species and restore habitats in sandy grasslands

The Biosphere Office takes a broad and innovative approach to conserving species and restoring habitats. Our work in sandy grasslands is a good example of how a combination of many different measures can create better conditions for biodiversity.

Sandy environments are home to many specialised plants and animals, but these habitats are threatened by overgrowth and land use change. That's why we use a wide range of measures to keep the landscape open and thriving:

- We use excavators to scrape and dig the soil to create bare sand where rare plants and insects can become established.
- We burn, plough and clear to mimic natural processes that once created these environments.
- We offer advice to landowners and individuals to inspire more people to benefit biodiversity.
- We veteranise trees and drill holes to create habitats for endangered insects.

And last but not least, we make sure to get the next generation involved! By letting pupils dig in the sand, we promote curiosity and understanding of nature conservation in practice.

Labelling heritage trees

The Biosphere Office is running a project on heritage trees. These are trees that will be left untouched until they eventually collapse and continue to be important for wood-living organisms such as mosses, lichens, fungi and not least insects. Birds and bats also benefit from large old trees with plenty of cavities to nest in. So far, more than 20 heritage trees have been labelled on municipal land and private individuals are also encouraged to mark heritage trees.

Agricultural landscapes

Let Sweden Blossom

The Biosphere Office is involved in the Swedish Federation of Rural Economy and Agricultural Societies' project Let Sweden Blossom *(Hela Sverige blommar),* a collaboration between farmers, advisors, contractors and sponsoring companies/organisations. The project aims to encourage farmers to grow pollen- and nectar-producing plants on arable land. Growing nectar- and pollen-rich flowers such as lacy phacelia *(Phacelia tanacetifolia)*, buckwheat (*Fagopyrum esculentum*) and clover *(Trifolium spp)* benefits our pollinators and creates many ecosystem services that in turn benefit agriculture and biodiversity.

Urban nature

The Piggastan dunes

As part of the LONA project In the Sand Near You *(I sanden nära dig),* a green area in Åhus was restored and later named the Piggastan dunes. The area has a thriving population of the threatened plant sand pink *(Dianthus arenarius).* The Biosphere Office is testing new management methods here, and the area has become an example of how to work with nature-based solutions in urban nature. The area also serves as a demo area where we guide students as well as colleagues in planning and ecology. The restoration was partly financed by the Swedish Environmental Protection Agency via the County Administrative Board of Skåne, and via the County Administrative Board of Skåne's action programme for endangered species.

4.3 In what ways are conservation activities linked to, or integrated with, sustainable development issues (e.g. stewardship for conservation on private lands used for other purposes)?

Bring Back Bream

To improve the water quality in some of the lakes in Vattenriket, reduction fishing is carried out. By catching Cyprinids *(Cyprinidae spp)* like bream *(Abramis brama),* we get clearer water. Previously, all the fish from reduction fishing was used for biogas production, but the hope is to use it for food production in the future. In the project Bring Back Bream *(Dax för brax),* we investigated the possibilities for bream to regain its status as a table fish and become a sustainably used resource instead of a problem. A broad collaboration with Kristianstad University and its gastronomy programme, Krinova Science Park and other actors made the project possible. Together we organised a food jam where local chefs participated and a panel examined and evaluated the fish's taste. Seminars were also organised, a book of recipes and inspiration was produced, and bream burgers were introduced on the menu at naturum's restaurant.

Partnerships with golf courses

There is great potential for golf courses to promote biodiversity. Since the previous review, the Biosphere Office has collaborated with Kristianstad Golf Club as well as Araslöv Golf Club in various

types of nature conservation projects. We have restored sandy grasslands, held bat walks and contributed knowledge about various nature conservation measures. Araslöv Golf Club has built its own fauna depots, built and put up bird and bat boxes and, with financial support from the County Administrative Board of Skåne, exposed sand and sown meadow flowers. In 2023, our contact person at Araslövs Golf Club received the municipality's environmental award for his work on biodiversity.

Cooperation with the Armed Forces

Since the previous review, the Biosphere Office has collaborated with the Swedish Armed Forces and the Swedish Fortifications Agency in a project to develop and work according to a management plan adapted to exercises and the environment. In many cases, military exercises benefit biodiversity on sandy grasslands such as Rinkabyfältet and Åsumfältet. These areas also have very high biodiversity. We have collaborated on coordinating measures and evaluating different types of military exercises and how they can benefit biodiversity. Each training ground has had a specific management plan, which the Biosphere Office has been involved in developing.

Wild crop relatives

Vattenriket has the highest number of wild relatives of cultivated plants in the country, 85 out of 115 priority species. These wild relatives of our agricultural crops are important for developing crops to cope with a warmer climate or become resistant to disease, for example. In 2019, the Biosphere Office hosted a national conference on wild relatives of cultivated plants, where representatives from the Nordic Genetic Resource Centre, the SLU Swedish Species Information Centre, Lund's Botanical Society and several government agencies discussed the subject.

Irrigation wetlands

In five places in the biosphere reserve, the Biosphere Office has helped to construct irrigation wetlands in collaboration with individual farms. These constructions also create wetland areas for biodiversity, nutrient retention and water management. When water from the wetlands is used for irrigation, there is less extraction from the groundwater, which also benefits the surrounding environment and promotes biodiversity. At the same time, the crop utilises leached nutrients as the water moves through the soil profile more than once.

Using harvested vegetation to produce biogas

New machines that can mow and collect vegetation at the same time have entered the market. This makes it much more cost-effective to collect harvested vegetation. Today, most of this is composted. The Biosphere Office has begun to explore using this type of green waste to produce biogas and sludge. This has not been entirely straightforward, with the main challenges being transportation costs and the adaptation of digestion plants to other substrates such as food waste. We will continue to work on combining haymaking with biogas production.

Let Sweden Blossom

The Biosphere Office is involved in the Swedish Federation of Rural Economy and Agricultural Societies' project Let Sweden Blossom *(Hela Sverige blommar),* a collaboration between farmers, advisors, contractors and sponsoring companies/organisations. The project aims to encourage farmers to grow pollen- and nectar-producing plants on arable land. Growing nectar- and pollen-rich flowers such as lacy phacelia *(Phacelia tanacetifolia)*, buckwheat (*Fagopyrum esculentum*) and clover *(Trifolium spp)* benefits our pollinators and creates many ecosystem services that in turn benefit agriculture and biodiversity.

Advice to private individuals

In the LONA projects In the Sand Near You *(I sanden nära dig)* and Bats in Vattenriket *(Fladdermöss i Vattenriket),* we have included advice to private individuals. This has been very successful and

appreciated. By offering free advice on how private individuals can promote biodiversity in their own gardens, we have a great opportunity to accelerate nature conservation. Private gardens in particular have been shown to have major positive effects on nearby farmland (Timberlake et al, 2024).

Labelling heritage trees

The Biosphere Office is running a project on heritage trees. These are trees that will be left untouched until they eventually collapse and continue to be important for wood-living organisms such as mosses, lichens, fungi and not least insects. Birds and bats also benefit from large old trees with plenty of cavities to nest in. In the project, private individuals are invited to label heritage trees on their own property. If a tree meets certain criteria, we send a badge and a certificate. Then the person can mark their tree with the badge themselves.

4.4 How do you assess the effectiveness of actions or strategies applied?

(Describe the methods, indicators used.)

Inventories

An important part of our work is to gather new knowledge about biodiversity and threatened species in the biosphere reserve. Since the previous review, we have funded and carried out around 30 inventories and follow-ups. Inventories can be carried out for several different purposes. One example is as part of the management of a nature reserve, to monitor how its natural values are developing and to evaluate the effect of different management methods. We also carry out inventories of areas threatened by development to get an accurate picture of their natural values. We have also inventoried new or future nature reserves as a basis for management plans. Sometimes inventories are used to monitor specific threatened species, to assess how the local population is changing and whether further action may be warranted to conserve the species. Larger inventories are carried out exclusively by nature conservation consultants, but the Biosphere Office's ecologists also carry out inventory work themselves.

Nature value inventories (NVI) are often performed at a very detailed level. This is useful for learning a lot about an area. One disadvantage is that it is very costly. This has meant that we are behind with inventories of valuable nature areas. We cannot afford to fund as many inventories as we need. However, it is possible that there would not have been enough qualified staff to carry them out.

Therefore we believe that in the future, detailed inventories will need to be complemented by some form of monitoring using a mixture of different methods, including ones that are more cost-effective. These methods could involve remote sensing, AI camera traps and eDNA. Another way to monitor nature values more effectively could be to focus on indicator species (see below).

Report on indicator species for open land

The report lists insects as indicator species for open land in southern Sweden. By highlighting insects that are easy to recognise, we want to raise the level of knowledge among members of the public with an interest in nature, and other important actors. The report was produced by the County Administrative Board of Halland with Kristianstads Vattenrike and written by conservation biologist Krister Larsson (Larsson, 2017). Indicator species can be a tool in the search for more cost-effective monitoring of nature values. At the same time, the use of indicator species has been met with some criticism in recent years (Tälle et al, 2023).

Wetland monitoring

Between 2021 and 2023, an evaluation was carried out of the 66 wetland projects that the Biosphere Office has been involved in since 2005. Each wetland was visited to evaluate its condition,

management and shortcomings. Landowners were given advice on how to improve management. Seven wetlands were subjected to detailed surveys to assess their impact on water quality and biodiversity. The evaluation was described in a report that was disseminated in several national networks for people working with wetlands.

Geographical Information Systems (GIS)

We make extensive use of many digital tools in the planning as well as monitoring of measures and in inventories of natural values. GIS is used extensively for planning and monitoring measures, but also for overseeing species data and producing educational maps. Technologies such as GPS and drones are often used in combination with GIS. In some cases, Differential GPS (DGPS) is used with very high accuracy to mark valuable species before restoration is carried out. This gives an extremely accurate picture of where to carry out different measures in a restoration project without damaging existing natural values. This use of technology helps us to work more efficiently and with fewer mistakes.

Monitoring of the fen ragwort

The fen ragwort *(Jacobaea paludosa)* is a rare plant that is only found in a few places in the country. It is assessed as vulnerable (VU) on the Swedish Red List. 95 percent of the Swedish population is found in Vattenriket. The biosphere reserve has open fields that flood regularly but dry out during the summer – exactly the kind of environment that the fen ragwort needs. For 25 years, a local botanist has inventoried the fen ragwort in Vattenriket. The number of individuals fluctuates from year to year but the population is stable. One clear pattern has emerged over time which is that the fen ragwort is negatively affected by prolonged high water.

How we work with researchers

The Biosphere Office has and has had many collaborations with researchers from university colleges and universities. With the help of our local knowledge, researchers can generate knowledge about how nature in the area is developing and what types of measures strengthen biodiversity. Over the past ten years, research has been carried out in the biosphere reserve on topics such as water quality in wetlands, greenhouse gas flows in wetlands, goose populations and the flora of sandy grasslands.

First bioblitz

In 2022, the Biosphere Office carried out its first bioblitz. A bioblitz is a hunt for species in a specific area for a specific period of time, where amateurs and experts work together to find as many species as possible. The event took place in the sea at Snickarhaken in Åhus on World Biodiversity Day and had two purposes. Firstly, it provided valuable knowledge to help us look after the sea. Secondly, it aroused interest in the exciting life below the surface. Tents were set up on the beach, where species were identified, as well as aquariums where collected animals and plants were presented to the public. In total, 143 different species were found during the bioblitz. The event attracted around 300 visitors and involved several local associations. The bioblitz was part of the WWF project Restoring the Health of the Baltic Sea *(Återställ Östersjöns livskraft),* funded by the Swedish Postcode Lottery.

CyanoAlert

CyanoAlert is a monitoring system that uses satellite data to assess water quality. Analysis of the satellite images provides current and historical information on cyanobacteria and eutrophication. It is an opportunity to obtain a large amount of information in a fast and resource-efficient way. The Biosphere Office tested CyanoAlert between 2021 and 2023, to monitor the effects of the reduction fishing carried out in Lake Råbelövssjön and Lake Oppmannasjön.

4.5 What are the main factors that influenced (positively or negatively) the successes of conservation efforts in the entire biosphere reserve? Given the experiences and lessons learned in the past ten years, what new strategies or approaches will be most effective for conservation for sustainable development?

The work of the Biosphere Office is based on adaptive co-management and a bridge-building approach between different actors in the landscape. Nature conservation involves many stakeholders, including authorities, farmers, landowners and non-profit organisations. Our role is to connect these groups through dialogue and collaboration and build long-term relationships as a basis for sustainable partnerships. These collaborations are based on ongoing learning and respect for local knowledge. The Biosphere Office translates this knowledge into measures that are then evaluated and disseminated through communications and contribute to a change in attitudes.

A key element of our approach is to build trust through understanding and communicating openly. Thanks to our neutral and well-known brand, we can establish contact with landowners and other stakeholders more easily than if we were a government agency. Trust-building processes are crucial to ensure cooperation and commitment from all stakeholders.

We meet stakeholders with understanding and respect, and in situations where different interests collide, such as in discussions about development, our approach is to find solutions through dialogue and compromise. Our motto, that the actions we take should benefit nature and people, underpins these collaborative processes.

For biodiversity measures to gain acceptance and impact, it is important to inform and promote dialogue internally within the municipality as well externally. Citizen participation and a sense of being heard are fundamental to creating the conditions for positive change. This is done through articles on the website, social media, lectures, field walks and scheduled activities for adults as well as children at the naturum Vattenriket visitor centre.

We know that the best results may require crossing borders. One example is when we have constructed wetlands outside the biosphere reserve, higher up in the drainage basin. In some cases, these actions have a greater impact on water quality than if they had been implemented within the biosphere reserve, which demonstrates the importance of a landscape perspective, where we see how different areas are connected. Restoration is often carried out in smaller areas, but for the sake of biodiversity we need to zoom out, understand the history of the landscape and see where high natural values are to be found.

To make our measures for biodiversity more effective, we have also taken a bold approach to testing new management methods. By testing innovative and cost-effective methods, we can improve our work on nature conservation and ensure long-term results.

In summary, collaboration and trust are the fundamental factors for successful nature conservation efforts. In the future, the greatest successes in sustainable development will lie in continuing to build relationships and find common solutions with all stakeholders in the biosphere reserve.

Tradition and innovation in the cultural landscape

Combining local knowledge and new methods

In Vattenriket, traditional knowledge meets innovative thinking in caring for the landscape. Over the past decade, several innovative methods have been tested to manage and conserve important natural environments. Biosphere reserves are tasked with acting as test beds for sustainable solutions, and local landowners and land users play a crucial role.

Grazed seasonally flooded grasslands are important for biodiversity, but can be difficult to manage. At Isternäset, reeds and willows threatened to take over. The solution was a pontoon excavator that effectively cleared the overgrowth. Elsewhere, we tested a small mower on rubber tracks that could cut, collect and remove the grass in a single pass.

At the Mosslunda Natura 2000 site, invasive trees needed to be removed to benefit the original flora. After clearing, a new method was tested: sowing rye and letting cows in. This was a success – the rye suppressed weeds and became a favourite for the grazers, helping to keep the landscape open.

Exposed sand is crucial for rare species such as sand pink, wild thyme and umbellate wintergreen. At Nyehusen, lichen had begun to outcompete the plants. The Biosphere Office's nature conservation coordinator, in collaboration with a contractor, came up with a solution: a specially built side rake that removed the lichen, improving conditions for sand-dwelling plants.

In close dialogue with landowners, land users and contractors, new methods are developed to conserve important natural values. Innovation and collaboration are the key to a thriving cultural landscape – for nature as well as local people.

4.6 Other comments/observations from a biosphere reserve perspective.

Conservation efforts do not only contribute to biodiversity but also to mitigating and managing climate change and promoting resilience. It is clear that the climate crisis and biodiversity loss are closely linked and affect each other. For example, biodiversity loss exacerbates the effects of climate change, while a changing climate affects the health of people, ecosystems and species. Therefore, we need to address both crises together in our conservation efforts. One example is our work on wetlands. Rewetting drained peatlands reduces carbon emissions. Other objectives of wetland projects are to benefit biodiversity, nutrient retention, groundwater recharge, flow detention, recreation and water management, create fish nurseries, solve problems related to iron and aluminium, and reduce brownification. Different objectives are combined in the same project and also contribute to a more resilient society.

"Vattenriket has acted as an engine for other biosphere reserves in Sweden. Partly because we have been able to learn from your successful journey, and partly because Kristianstad has often carried the heaviest load when we biosphere reserves work together. We look forward to continuing to chug along with you."

Elias Regelin, Coordinator of the Nedre Dalälven River Landscape Biosphere Reserve, 2025

"In contrast to the tensions created by the Natura 2000 implementation, Kristianstads Vattenrike succeeded in bringing stakeholders to the table early on and drew on both scientific and local knowledge. The initiative connected local action with regional and global institutions, identified and acted on synergies between conservation and development in the broader landscape and across sectors, and built social–ecological capacity to monitor and respond to changes in natural capital."

Schultz, L., Folke, C., Österblom, H., & Olsson, P. (2015).
Adaptive governance, ecosystem management, and natural capital.
Proceedings of the National Academy of Sciences, 112(24), 7369–7374.

5. THE DEVELOPMENT FUNCTION

[This refers to programmes that address sustainability issues at the individual livelihood and community levels, including economic trends in different sectors that drive the need to innovate and/or adapt, the main adaptive strategies being implemented within the biosphere reserve, and initiatives to develop certain sectors such as tourism to complement and/or compensate for losses in other markets, employment, and community well-being over the past ten years].

5.1 Briefly describe the prevailing trends over the past decade in each main sector of the economic base of the biosphere reserve (e.g. agriculture and forest activities, renewable resources, non-renewable resources, manufacturing and construction, tourism and other service industries).

Agriculture

A clear trend is that farms are merging, leading to a decrease in numbers and an increase in size. Larger units and herds of livestock require more land for grazing and winter fodder, which has led to increased interest in restoring overgrown seasonally flooded grasslands. The average age of farmers is rising. At the same time, we have now seen several examples of generational renewal at farms in Vattenriket and there is significant interest from the younger generation to continue to manage seasonally flooded grasslands with grazing cattle, for example.

The area of agricultural land is decreasing and being replaced by developments. At the same time, the remaining fields are being cultivated more intensively. There have been significant technological developments, especially in the last five years, with tools such as drones, apps, measuring devices and sensors.

Crops such as vegetables and potatoes have increased, while sugar beet, cereals and grassland are decreasing. The cultivation of intermediate crops has increased, which, among other things, reduces soil loss and increases the content of organic matter as well as carbon storage. The impact of climate change on agriculture is clear. More drought- and heat-tolerant crops are becoming increasingly attractive, and viticulture has grown rapidly, albeit on a small scale.

Centre pivot irrigation has mostly replaced conventional irrigation machines in fields that are large enough, saving significantly on water use compared to more wind-sensitive irrigation. Environmental compensation was introduced in 2025 for sowing flowers on arable land. This used to be a basic condition for receiving full compensation. There is a greater understanding among farmers that pollinators benefit the landscape and are necessary for insect-pollinated crops.

Forestry

Forestry in north-eastern Skåne has long been dominated by conifers, mainly Norway spruce *(Picea abies).* Over the last five years, there has been an upward trend for Scots pine *(Pinus sylvestris)*. When clearing young forests, there is also a tendency for environmental considerations to weigh more heavily, which increases the proportion of deciduous trees. New ditches have long been prohibited, except for other purposes than drainage and with permission. Site adaptation seems to be increasing and therefore it is becoming more common to regenerate using deciduous trees, for example, when the ground is moist, rather than digging protective ditches.

The level of knowledge is decreasing among forest owners and shifting instead to forestry workers, as well as to officials and other advisers. As a result, more and more landowners are using the large logging and purchasing companies. Fewer people are carrying out their own forestry work.

The preservation or reinforcement of all types of riparian zones is increasing. Careful harvesting through the use of low-impact machinery, better working methods and better planning is increasing. As a result, damage by vehicles is decreasing, especially the serious damage that occurred near water and watercourses.

Tourism

Experience-based tourism, with a focus on nature tourism and learning new things, continues to increase in terms of both Swedish and overseas visitors' choice of holidays. More and more visitors are choosing sustainable holiday options and Vattenriket's trail infrastructure, visitor sites and activities are an important foundation for what Kristianstad Municipality as a destination has to offer. Municipal work on site and destination development has recently focused more on regenerative tourism, which fits in well with the biosphere approach.

Vattenriket remains one of the most important reasons for traveling to Kristianstad. It is also very important for those who primarily visit the municipality for other reasons, which makes it a good reason for return visits to the area.

The COVID pandemic meant a drastic reduction in the number of visitors, with serious consequences for the tourism industry. However, the effects were considerably less severe in Kristianstad Municipality than the rest of Sweden, largely thanks to a wide range of outdoor activities, not least within the biosphere reserve.

Manufacturing

The food industry is Kristianstad’s most important manufacturing sector and it is said that every Swede eats something from Kristianstad every day. The largest group of employees in the manufacturing and extraction sector in 2022 was the joint category of butchers, bakers and food workers, with 351 people or 9.8 percent of the total number of employees in the sector. Major employers include the meat manufacturer Scan, the vodka producer Absolut Company and the dairy company Skånemejerier, while an important change is that the poultry company Kronfågel has ceased its operations in the municipality.

Krinova Incubator and Science Park is a national node for food and continues to be an important engine for the food industry. The manufacturing industry in general has undergone major technological changes in terms of AI and robots. The supply of skills is a challenge in many sectors, especially in manufacturing, where it is slowing down development.

Before the pandemic, manufacturing companies worked more on a 'just in time' basis, while many are now building up their own stocks of components as far as possible to be more resilient. During the pandemic, many started to produce new products that were in demand, such as hand sanitiser. Some have taken these new products further. There is also more focus on risk and vulnerability analysis, such as ensuring several different suppliers of a given product. Another trend is choosing suppliers that are closer geographically. This has increased demand for manufacturing in Sweden and Europe.

After the pandemic, new challenges such as high interest rates and high electricity prices emerged. As a result, construction has slowed down, which is also affecting the manufacturing industry. However, the effects are lagging behind and only started to be felt in 2024. Some construction

companies have already gone bankrupt. Another effect is that many have invested in new heating systems using alternative energy sources, which has a positive impact on manufacturing.

Trade

Kristianstad is northeastern Skåne's commercial hub and the main centre for eleven surrounding municipalities. Trade turnover from surrounding municipalities has doubled since 2015 to SEK 1.3 billion a year. Durable goods in particular have increased.

Two new retail areas have been established in Kristianstad since the previous review: Kristianstad West and C4 Shopping. Previously, the focus was on the city centre, while today trade is spread across all three locations. Trade in Åhus is also growing. C4 Shopping is located close to the E22 highway and has become a destination in itself, attracting long-distance customers. With 3.2 million visitors in 2023, it is the municipality's most important destination.

In rural areas, unmanned shops are a clear trend, and can stay open 24 hours a day, all year round. Customers show their ID to enter, select their goods, scan and pay unassisted. Rural retailers are changing rather than disappearing.

The pandemic has had a major impact on retail. Customers became accustomed to an increased level of service, and shops found new ways to sell and deliver goods, from couriers to parcel boxes. The relationship between online and physical shops has changed in several ways. Today, physical shops can act more as showrooms or shop windows for online shops. It is also common for customers to look up a product online, find a physical location and then visit the shop to examine it in person. A third variation is ordering online and going to a physical shop to pick up the order. A new phenomenon is live sales outside standard opening hours. Customers follow a live broadcast on social media and place their order there.

Another new development is the so-called REKO ring, which is a modern version of a producer-to-consumer marketplace without intermediaries, using digital orders.

5.2 Describe the tourism industry in the biosphere reserve. Has tourism increased or decreased since nomination or the last periodic review? What new projects or initiatives have been undertaken? What types of tourism activities? What effect have these activities had on the economy, ecology and society of the biosphere reserve? Are there any studies that examine whether designation of the area as a biosphere reserve has influenced the number of tourists? Please provide the bibliographic information of any studies and/or a paper copy in an annex.

Since the last report, the Biosphere Office has intensified its work to make nature accessible and communicate opportunities for nature tourism. Among other things, we carried out a series of measures as part of our theme Explore Vattenriket 2019–2021. Some examples of new physical infrastructure are new jetties such as the fishing jetty at Kanalhuset, financed by LONA, and a boat and kayak jetty at Kavröbro, financed by Kristianstad Municipality and the Lower Helge Å Fishery Conservation Association *(Nedre Helgeåns fiskevårdsförening).* We have also created a new outdoor museum with a boardwalk, Årummet, at the naturum Vattenriket visitor centre and updated the exhibitions at several existing outdoor museums.

We have produced an excursion guide with information about our 21 visitor sites, trails, jetties and birdwatching towers where visitors can hike, paddle, cycle, fish and birdwatch. We have also produced maps and inspirational videos. A digital marking of the fairway on Lake Hammarsjön, funded by Kristianstad Municipality, was developed within the framework of the project On Water in Vattenriket *(På vatten i Vattenriket),* which was initiated and run by the Biosphere Office. We have also initiated the introduction of the digital Nature Map *(Naturkartan)* in the municipality to highlight nature and outdoor activities.

Work on the Skåne Trail's SL6 Vattenriket subtrail began with a citizens' proposal to Kristianstad Municipality. The proposal gave rise to the idea of creating a Vattenriket trail, linking the Skåne Trail in the northern and southern parts of the municipality. The Biosphere Office applied for and received LONA funding for a feasibility study. The feasibility study highlights the potential of the trail for outdoor recreation and tourism. It also shows how the trail can contribute to meeting global, national and local sustainability goals. In 2024, the final stretch of the trail was inaugurated, taking the hiker through a varied cultural landscape from forest to plain, coast and sea. The trail links Vattenriket's visitor sites, which offer information, birdwatching towers, paths and picnic areas. It passes several towns with hospitality establishments. The funders were Kristianstad Municipality and LONA. In 2021, the trail gained a wind shelter at Österslöv's bathing area, which also serves as a campsite along the trail, as part of the architecture festival Arknat, where architecture meets nature.

Another project linked to the trail was Three Rising Stars along the Vattenriket subtrail *(Tre bubblare längs Vattenrikeleden).* With funding from LONA and Kristianstad Municipality, the Story Trail Vättestigen was created at Norra Lingenäset, with a fairy tale told via signs and illustrations as well as sculptures of the main characters of the story. The Frog Game (*Grodleken)* nature activity trail, a path with animal signs at Ekenabben where children can practice their motor skills and learn about different animals at the same time, was completed in 2022, and an exhibition of boxes for birds, bats and insects at naturum Vattenriket was completed in 2024. The project contributes to recreation and public health and was carried out in collaboration with associations, schools and preschools with a focus on families with children and preschools. The paths are accessible for wheelchair users and prams and are located in urban nature areas in close proximity to socially disadvantaged areas.

Vattenriket plays an important role in Kristianstad Municipality's work on tourism and hospitality. The Biosphere Office's initiatives create opportunities for business development. For example, the number of canoe and kayak rental companies has increased in the area, thanks to maps and new jetties. Through collaboration with the municipality, Vattenriket once again has a sightseeing boat that offers tours of the area and can also benefit from the jetties built by the Biosphere Office.

The crane *(Grus grus)* feeding project at the Pulken Outdoor Museum, which aims to minimise damage to crops, has a positive side effect. The visiting cranes attract a large number of people from the local area, but also from elsewhere. The Biosphere Office has made the site accessible with an exhibition at the outdoor museum, crane hosts on site, a webcam and information on its website. Visitors from further afield bring added value to restaurants and accommodation facilities in the area.

The naturum Vattenriket visitor centre has consolidated its position as an important meeting place for local residents as well as visitors from Sweden and abroad. The building itself and its location on the water have become an often photographed landmark of the town and Vattenriket. The biosphere reserve's range of visitor attractions is often included in the municipality's marketing of Kristianstad as a visitor destination and is an important part of programmes for various types of media collaborations.

Easy access to Vattenriket

Helping people to experience nature – for health, enjoyment and sustainable tourism

Making Vattenriket's varied nature accessible is an important part of our work. It promotes understanding of conserving and caring for nature and contributing to sustainable development.

For 30 years, we have been developing conditions for outdoor recreation and nature tourism. This has resulted in 21 visitor sites with information, birdwatching towers, trails and picnic areas. 7 are outdoor museums with exhibitions, tactile elements and audio guides. Several have been adapted for wheelchairs and prams.

The visitor centre naturum Vattenriket acts as a gateway to the area. It has knowledgeable staff, exhibitions, leaflets and activities. The visitor sites are presented on the website, in an excursion guide, on Google Maps and in the Nature Map app. Maps show where visitors can hike, canoe, watch birds, cycle and fish.

In the past ten years, we have created new exhibitions for four visitor sites. The Årummet Outdoor Museum, with a boardwalk, hide and exhibition, has been built next to naturum.

Signs and outdoor museums give information about nature and cultural history and the interaction between nature and people.

In 2019–2021, our overall theme was Experience Vattenriket. We made films and created story and activity trails for children.

In 2024, we opened the Skåne Trail SL6 Vattenriket subtrail. It links the visitor sites together and benefits nature tourism. Projects such as Experience Vattenriket and On the Water in Vattenriket have improved opportunities for canoeing and fishing.

A well-planned infrastructure with trails, bird towers, outdoor museums, an excursion guide, maps and activities helps to make Kristianstad Municipality attractive to visitors and businesses in the tourism sector.

Naturum Vattenriket attracts tourists to Kristianstad who also consume other goods and services in the municipality. This is shown by a study of tourism revenue by HUI from 2016. At that time, visitors generated a turnover of SEK 74 million in the municipality, of which SEK 31 million was from tourists who had naturum or Vattenriket as their primary reason for visiting Kristianstad (Rokotova, 2016).

The COVID pandemic meant a drastic reduction in the number of visitors, with serious consequences for the tourism industry. However, the effects were considerably less severe in Kristianstad Municipality than the rest of Sweden, largely thanks to a wide range of outdoor activities, not least within the biosphere reserve. One effect of the pandemic was a general increase in visitors to nature areas. The infrastructure provided by Vattenriket was particularly valuable and, together with the municipality, the Biosphere Office was also able to offer awareness-raising communications to many new and unfamiliar visitors. See also question 6.8.

In 2020, all the municipalities in Skåne and Visit Skåne AB, Skåne's regional destination company, adopted a joint strategic roadmap; Skåne – where tourism matters. Together, we are working to ensure that tourism in Skåne helps to shape a sustainable future in a caring and welcoming world. Tourism matters largely adopts the biosphere approach, and in Kristianstad Municipality's work on tourism, this reinforces the work already being done in collaboration with Biosphere Office. For further information, see also questions 5.4 and 5.5.

"My favourite example of resilience thinking is the story of how Kristianstads Vattenrike came to be... What fascinated us researchers was that Kristianstad managed to restore large areas of threatened ecosystems and increase populations of endangered species, in the middle of the city, on privately owned farmland... There are many lessons to be learned from Kristianstad, including the importance of collaboration, learning and flexibility. It's about bringing people together who can bring about change, helping each other to understand the problem, and finding actions that benefit everyone. Bridging different interests, harnessing everyone's knowledge and laying the jigsaw puzzle together. With this approach, you can move quickly from framing a problem to trying to solve it. It becomes a win-win."

Lisen Schultz, Deputy Director of the Stockholm Resilience Centre,
in the book The Course: 10 Lessons for Sustainable Business
(Kursen: 10 lektioner för ett hållbart näringsliv), 2021.

5.3 When applicable, describe other key sectors and uses such as agriculture, fishing, forestry. Have they increased or decreased since the nomination or the last periodic review? What kind of new projects or initiatives have been undertaken? What effect have they had on the economy and ecology of the biosphere reserve, and on its biodiversity? Are there any studies that examine whether designation as a biosphere reserve has influenced the frequency of its activities? If so, provide the bibliographic information of these studies and/or a paper copy in an annex.

Agriculture

A clear trend in agriculture in the biosphere reserve is that farms are merging, leading to a decrease in numbers and an increase in size. According to statistics from the Swedish Board of Agriculture, the number of very small (under 2 hectares) and very large (over 100 hectares) farms in Kristianstad remained unchanged between 2013 and 2023. However, the number of farms between these sizes decreased from 666 to 484 between 2013 and 2023. Larger units and herds of livestock require more land for grazing and winter fodder, which has led to increased interest in restoring overgrown seasonally flooded grasslands and natural pastures.

The average age of farmers is increasing. Generational renewal is a risk. Sometimes there is no one to hand over to, sometimes siblings cannot afford to buy each other out. At the same time, we have now seen several examples of generational renewal at farms in Vattenriket. The landowners who were involved when work in the biosphere reserve began have now passed on the baton to a younger generation. We feel that this has gone smoothly in the area and there is significant interest from the younger generation to continue to manage seasonally flooded grasslands with grazing cattle, for example. The dialogue and trust that the Biosphere Office has built up with landowners and users over the years is one prerequisite for this, as is the fact that it is possible for the management of a cultural landscape with high natural values to be financially viable. The EU's environmental compensation for pastures is an important driving force in this, as is market interest for what is produced. Several farmers sell boxes of meat themselves or through local traders.

The area of agricultural land is decreasing and being replaced by developments. According to the Swedish Board of Agriculture, the area of arable land in Kristianstad Municipality has decreased by around 1,000 hectares from 2015 to 2024, from 43,147 to 42,356 hectares. This trend can also be seen nationally. At the same time, the remaining fields are being cultivated more intensively. Crops such as vegetables and potatoes have increased, while sugar beet, cereals and grassland are decreasing. Autumn sowing has increased, partly to meet the Swedish Board of Agriculture's requirements for areas of winter-planted land.

The impact of climate change on agriculture is clear. More drought- and heat-tolerant crops are becoming increasingly attractive and viticulture has grown rapidly, although still on a very small scale.

There have been significant technological developments. New tools such as drones, apps, measuring devices and sensors provide farmers with precise information for decision-making and are partly replacing the craftsmanship of the past.

Many farmers see a need to specialise in one part of the value chain. At the same time, cooperation is increasing. Several smaller farms are joining forces to hire staff and equipment, or to deliver an order.

One innovation is the company Gårdsfisk, which is pioneering land-based fish farming in Sweden. They use a recirculating system to minimise water and energy use, and the waste from the fish farming is used in agriculture. The fish species are herbivorous to reduce the environmental impact and are bred by contracted farmers, thus broadening their business.

The cultivation of intermediate crops has increased, which, among other things, reduces soil loss and increases the content of organic matter as well as carbon storage. Some important reasons for the increase are that bare soil is now to be avoided and that the Swedish Board of Agriculture's compensation for intermediate and catch crops has been raised in recent years. The interest from farmers was evident in the Biosphere Office's collaboration with the Swedish Federation of Rural Economy and Agricultural Societies and the project group for Climate Neutral Kristianstad 2030, Water Workshops in Vattenriket *(Vattenmöten i Vattenriket),* which included a well-attended meeting in January 2024 about intermediate crops. The message from the Swedish University of Agricultural Sciences, Swedish Carbon Storage *(Svensk kolinlagring),* farmers and agricultural consultants HIR Skåne was that including intermediate crops in the crop rotation improves financial outcomes, sustainability and carbon storage as well as increasing resilience in the soil.

Water is a key issue on the light sandy soils of the biosphere reserve. The Water Workshops in Vattenriket *(Vattenmöten i Vattenriket)* increased awareness of how to make better use of water in the landscape and conserve natural resources. Saving water benefits farmers financially. One development since the previous report is that centre pivot irrigation has largely replaced conventional irrigation machines in fields that are large enough. This allows for more precise irrigation and saves time in moving the irrigation machines. With centre pivot irrigation, the water is directed straight downwards and stays near the ground. This means significant savings on water use compared to more wind-sensitive irrigation.

The new Strategic Plan for the EU's Common Agricultural Policy has introduced environmental compensation for sowing flowers on arable land. This would have been more difficult 20 years ago when there was more of a focus on production. There is now a greater understanding among farmers that pollinators benefit the landscape and many have received positive feedback from neighbours and the public for these flowering areas.

The Biosphere Office has been involved in this development as an actor in the collaborative project Let Sweden Blossom *(Hela Sverige blommar)*, run by the Swedish Federation of Rural Economy and Agricultural Societies. Sponsored seeds encourage farmers to sow pollen- and nectar-producing plants on arable land. The Biosphere Office communicates the concept to the public by means of information and packets of seeds.

The Biosphere Office collaborates with farmers and others around the annual crane *(Grus grus)* feeding at our Pulken Outdoor Museum. Every spring, tens of thousands of cranes rest in north-eastern Skåne. In order to prevent the cranes from damaging the farmers' newly sown fields, they are fed in collaboration with the County Administrative Board, Kristianstad's warehouse association *(Kristianstads lagerhusförening),* farmers, the Bird Society of North-East Scania *(Nordöstra Skånes fågelklubb*), the Swedish Society for Nature Conservation, the Swedish Association for Hunting and Wildlife Management, Kristianstad University and the Biosphere Office. For several years now, we have been organising crane hosts in collaboration with local outdoor recreation and nature conservation associations. Together we tell people about the cranes and show them the way to other visitor sites in Vattenriket.

In 2024, the Baltic Stewardship Initiative project, run by WWF with the Federation of Swedish Farmers *(LRF)* and the agricultural cooperative Lantmännen, came to an end. The network was

committed to reducing nutrient leakage to rivers, lakes and seas and increasing the circulation of plant nutrients. Participants have shared knowledge, experiences and developed concrete solutions that optimise the usage of plant nutrients and develop more circular flows. The network has also worked to influence the Swedish parliament and government about rules to make agriculture and the food chain more Baltic Sea-friendly and circular. Participants included the Biosphere Office as well as farmers, businesses and organisations.

Big Clearing Day *(Stora röjardagen)* is a recurring event organised by the Biosphere Office and the County Administrative Board of Skåne. It is a demonstration and inspiration day for farmers, county administrative board and municipal officials and others interested in nature conservation and pasture management. Among other things, contractors demonstrate machines used in the management of Kristianstads Vattenrike.

The Biosphere Office has been working very actively for many years to encourage and support farmers to manage seasonally flooded grasslands using traditional methods, to promote biodiversity on sandy grasslands and to construct wetlands. See questions 4.2 and 5.7 for further information.

Fishing

Commercial fishing in the biosphere reserve continues to be virtually non-existent. European eel *(Anguilla anguilla)* is still fished along the Åhus coast. As eel has declined sharply in recent decades, fishing is heavily regulated and since 2007 only fishermen who already had permits are allowed to fish for eel.

Forestry

There have been no major changes since the last report, but here are some differences.

Forestry in north-eastern Skåne has long been dominated by conifers, mainly Norway spruce *(Picea abies).* Over the last five years, there has been an upward trend for Scots pine *(Pinus sylvestris).* When clearing young forests, there is also a tendency for environmental considerations to weigh more heavily, which increases the proportion of deciduous trees. The change is small but positive and is largely caused by a desire for greater production diversity in a changing climate, but for some also by hunting, aesthetic and social values.

The level of knowledge is decreasing among forest owners and shifting instead to forestry workers, as well as to officials and other advisers. The Swedish Forest Agency is finding it difficult to attract landowners to the advice it offers. One reason may be that more and more forest owners are hiring external help, and it then becomes natural to contact forestry companies that also carry out the practical work.

More and more landowners are using the large logging and purchasing companies. Fewer people are carrying out their own forestry work. This is both a strength and a weakness. There is a risk of greater uniformity in implementation (this may be a strength in terms of production but possibly a weakness in terms of the environment), while a larger proportion of the forest is automatically becoming environmentally certified (the companies need this as there is a demand for it from customers of forest products).

In terms of water, there have been several positive trends over the last ten years. Careful harvesting using low-impact machinery, better working methods and better planning is increasing. As a result, damage by vehicles is decreasing, especially the serious damage that occurred near water and

watercourses. New ditches have long been prohibited, except for other purposes than drainage and with permission. Protective draining in connection with regeneration felling does occur. Nevertheless, site adaptation seems to be increasing and it is becoming more common to regenerate using deciduous trees, for example, when the ground is moist, rather than digging protective ditches.

Unfortunately, some ditches are still being cleared. Regulated ditch systems that open at high tide and close during dry periods occur but are rare. So far, there has not been much rewetting, with less than 100 hectares in Skåne at the time of writing. This milestone may be reached in 2025.

One of the ways in which the Biosphere Office promotes the rewetting of peatlands is through the Interreg project Land4Climate. The project involves municipalities, water boards, universities, companies and authorities, such as the Forestry Agency, in Denmark and southern Sweden. By exchanging experiences and learning from each other across national borders, it is hoped that work on rewetting organogenic soils can be developed faster and more effectively.

In 2017, the Biosphere Office constructed its first really large wetland in a landscape characterised by intensive forestry, with funding from the Swedish Agency for Marine and Water Management. As part of the LONA project Wetter land *(Våtare mark),* the Biosphere Office constructed wetlands in the forest landscape along the Helge Å and Bivarödsån rivers between 2018 and 2021. The aim was to retain water in the landscape, contribute to flow detention, become better equipped to deal with climate change, create more groundwater and increase the diversity of species and environments.

Together with the Land and Development Unit, the Biosphere Office has developed a municipal forestry policy, which was adopted in 2023. The aim is for the municipality to work with nature-based forestry and continuous cover forestry methods, and to take nature conservation and outdoor recreation more into account. The policy also supports dialogues with private landowners about their forest management.

5.4 How do economic activities in the biosphere benefit local communities?

The Biosphere Office's efforts to promote tourism and hospitality benefit local businesses that offer accommodation, food and activities for visitors. One example is that the Biosphere Office has produced new maps for those who wish to experience the biosphere reserve from the water. Several canoe and kayak companies have set up since the last review and have been able to use the biosphere reserve's maps. As part of the project On the Water in Vattenriket *(På vatten i Vattenriket)*, we also improved the conditions for water-based nature experiences in the shape of jetties and launching sites for boats and kayaks, with funding from Kristianstad Municipality and the Lower Helge Å Fishery Conservation Association *(Nedre Helgeåns fiskevårdsförening).*

In collaboration with Kristianstad Municipality, the sightseeing boat Big Safari Boat *(Stora safaribåten)* is running in Vattenriket again, which offers tours of the area and takes advantage of the jetties built by the Biosphere Office. The company that organises the boat tours has received support from the Biosphere Office in terms of skills development as well as marketing in our social media.

The new Skåne Trail SL6 Vattenriket subtrail, funded by Kristianstad Municipality and LONA, connects visitor sites as well as accommodation facilities. By means of an exhibition, crane hosts and information on the web, the Biosphere Office makes the B&B for cranes *(Grus grus)* at Pulken visitor-friendly. This also benefits nearby accommodation and restaurants, which offer crane packages with overnight stays. The Biosphere Office has also initiated the introduction of the Nature Map *(Naturkartan)* in the municipality to promote nature and outdoor recreation. Promoting the visitor

infrastructure in the biosphere reserve benefits accommodation facilities and other businesses in the tourism sector.

In 2023, a joint effort was made to promote four different UNESCO-designated areas along the east coast of southern Sweden, including on social media and in one of Sweden's largest weekly magazines, Icakuriren. It was a collaboration between the World Heritage Sites of the Agricultural Landscape of Southern Öland and the Naval Port of Karlskrona and the biosphere reserves of Blekinge Archipelago and Kristianstads Vattenrike.

Our work on constructing wetlands on farmland can make a big financial difference to farmers. Making pastures wetter can be crucial in times of drought or to get through the winter. Buying silage to feed grazing animals is not an economically sustainable solution. Having access to water for irrigation also strengthens farmers' resilience. Constructed wetlands can also attract ducks and deer, for example, which can increase the rent for farmers who let their land to hunters.

The Biosphere Office is a participant in the municipal project Living City Centre *(Levande stadskärna),* which aims to promote cooperation for a vibrant and attractive city centre. Participants include property owners, hotel owners, merchants' associations and civil servants.

Since its nomination in 2005, Kristianstads Vattenrike Biosphere Reserve has been granted around SEK 87 million in external funding. Project activities can generate money for landowners, municipalities and others and enable the employment of more staff.

5.5 How do you assess the effectiveness of actions or strategies applied?

(Describe the methods, indicators.)

The Biosphere Office regularly counts the number of visitors at strategic visitor sites. The numbers indicate that the visitor sites are very well attended. For example, around 50,000 people annually walk the Linnérundan trail near the city, and 15,000 people annually watch the cranes *(Grus grus)* dance at the Pulken Outdoor Museum. Over the past ten years, the naturum Vattenriket visitor centre has had over 900,000 visitors in total.

Regular meetings with Kristianstad Municipality's tourism developer ensure that the Biosphere Office's work contributes to the development of the sector and benefits local businesses that offer accommodation, food and activities for visitors.

Most of the biosphere reserve's visitor sites are located within so-called "hotspots" for ecosystem services. This can be seen from a master's thesis in which 163 participants who were familiar with the biosphere reserve marked on a map where they experience different ecosystem services in the biosphere reserve. The most common type of ecosystem service highlighted by the participants was outdoor recreation. The results indicate that the biosphere reserve makes natural areas and their ecosystem services more accessible to visitors (Schwarze, 2024).

See questions 5.4 and 5.10 for further information.

5.6 Community economic development initiatives. What programmes exist to promote comprehensive strategies for economic innovation, change, and adaptation within the biosphere reserve, and to what extent are they implemented?

The EU offers funding through e.g. the Regional Fund, the Social Fund and Interreg. In the biosphere reserve, funding goes to the municipality's so-called development cheques and various initiatives to get more people into work, for example. The EU LIFE grant funds initiatives for a sustainable circular, energy-efficient economy and the protection and improvement of the environment, health and biodiversity. For example, the Biosphere Office participated in the SandLife project from 2015 to 2018 with the county administrative boards of Skåne, Halland and Kalmar, and Lund University. Overgrown Natura 2000 areas on sandy land in Skåne, Halland and Öland were made more accessible to the public as well as to rare plants and animals.

The Rural Development Programme (RDP), which ran until 2022, has been an important EU programme for the biosphere reserve. Some of the available support was for organic farming as well as environmental compensation for pastures and hay meadows, reduced nitrogen leakage, protection zones, ley farming and wetlands and ponds, for example. The Rural Development Programme has now been replaced by the Strategic Plan for the EU's Common Agricultural Policy 2023–2027. Several types of environmental and climate compensation are similar to those in the Rural Development Programme. Some new types of support promote flowers in fields and field edges, precision farming and carbon sequestration. Funding is also available for different types of investments and projects.

There have been several important changes in payments to farmers since the previous review. For example, compensation for grazing land has been increased, which gives farmers an extra incentive to keep the important seasonally flooded grasslands grazed. The fact that compensation for ley farming is no longer available has not affected farmers in the biosphere reserve very much. On the other hand, the new compensation for precision farming benefits those farmers who use more data and analysis to plan their cultivation. Small farms no longer receive support under the single payment scheme, but on the other hand the requirement for payment entitlements has been removed. This makes it easier for farmers, who are simply paid for the area claimed.

An important source of EU funding is Leader, which enables cross-border cooperation on local rural development between rural individuals and businesses and the public sector. In 2014–2022, Leader Skånes Ess invested SEK 48 million in development projects. The Biosphere Office was involved in projects such as Protecting the shallow bottoms of Hanöbukten Bay *(Värna Hanöbuktens grunda bottnar)* and Nature-based exercise on Landön *(Naturnära rörelse på Landön).* For 2023–2027, Kristianstad belongs to Leader Östra Skåne. The area was allocated SEK 67 million for local development, the largest budget in the country.

National funding comes from the Swedish Energy Agency, Formas, a government research council for sustainable development, and Sweden's innovation agency Vinnova, among others. Over the past ten years, in the biosphere reserve these funds have gone, for example, to Kristianstad University, the projects Climate Neutral Kristianstad 2030 and Viable Cities, and the project Brokering Peace with Nature through Foresight in Kristianstads Vattenrike Biosphere Reserve. The Swedish Institute has provided funding for three projects on marine awareness and tourism in the Biosphere for Baltic network.

Circular resource use

From rubbish to a resource – acting as a test bed

Kristianstads Vattenrike provides a test bed for sustainable innovation through collaboration with Kristianstad University, Krinova Science Park and other actors.

One clear example is the project Bring Back Bream, in which we explored how reduction fishing can improve water quality while creating new opportunities in food production.

Today, bream is considered undesirable as a fish and is mainly used for biogas. Historically, it was a favoured food and globally it is still part of many cuisines. Reduction fishing improves the water quality in Lake Råbelövssjön by reducing the amount of Cyprinids, but what happens to the fish afterwards?

In Bring Back Bream, we investigated whether bream could reclaim its place in the kitchen. Along with Krinova Science Park, the Gastronomy Programme at Kristianstad University, chefs and other stakeholders, we tested flavours, developed cooking methods and investigated market opportunities.

The project opened new doors for food entrepreneurs and created a better understanding of how we can use local resources in a cleverer way.

Bring Back Bream is an example of how we can rethink nature's potential. By linking ecology, innovation and food, the Biosphere Office demonstrated the possibility of turning an ecological challenge into a sustainable resource.

Another important source of funding for sustainability initiatives is the government's Climate Leap *(Klimatklivet)* initiative which has provided SEK 600 million for a collaboration on biogas with the Southern Energy Office *(Energikontor Syd).* The Swedish Forest Agency offers support to forest owners for the rewetting of drained peatlands, skills development in sustainable forestry, measures for natural and cultural environments and broadleaf forestry.

The Swedish Environmental Protection Agency's LONA (local nature conservation initiative) and LOVA funds have been an important source of funding for the Biosphere Office, used, for example, for work on the Skåne Trail SL6 Vattenriket subtrail, Three Rising Stars along the Vattenrike subtrail *(Tre bubblare längs Vattenrikeleden),* the construction of wetlands on agricultural land, the establishment of new nature reserves and measures for sandy grasslands and bats. Another important funder is the Swedish Agency for Marine and Water Management, mainly for developing cooperation between biosphere reserves around the Baltic Sea, which then became the Baltic Sea network Biosphere for Baltic.

Regional funding can be sought from Region Skåne and the private Sparbanksstiftelsen, among others. From there, the Friends of Vattenriket *(Vattenrikets vänner)* have received funding to develop Lillöborgen and for the new project Naturally Wise in Näsby *(NaturligtVis på Näsby).* Schools in the socio-economically disadvantaged area are given the chance to discover Vattenriket's natural environments through exciting adventures and educational visits to the naturum Vattenriket visitor centre and the biosphere reserve's visitor sites.

The mission of Krinova Incubator and Science Park is to increase the attractiveness and growth of Kristianstad and northeastern Skåne, with a foundation in the local business community. Krinova is also tasked with developing the food sector throughout Skåne as well as Sweden, and has an incubator with a national intake.

The Bring Back Bream *(Dags för brax)* project was a collaboration between Krinova Science Park, Kristianstad University, the Biosphere Office and other stakeholders. Catching Cyprinids such as bream improves the water quality in Lake Råbelövssjön. Today, all the fish is used in biogas production, but the hope is that it can be used as a source of protein for food production in the future. Bream was once used as a table fish in Sweden and it is still eaten in many places around the world. In the project, we investigated the possibilities for bream to regain its status as a table fish and become a sustainably used resource instead of a problem. Among other things, food jams were organised, a recipe and inspiration book was produced and bream burgers were introduced on the menu in naturum's restaurant.

The Biosphere Office was inspired by a visit to Appennino Tosco-Emiliano, where sponsors can receive a plaque showing their support for the biosphere reserve. In collaboration with the friends association Friends of Vattenriket *(Vattenrikets vänner),* we developed the I love Vattenriket campaign. Residents, visitors and businesses can show their commitment to Vattenriket by buying t-shirts, baby bodysuits and umbrellas at naturum. Companies sponsoring the Friends of Vattenriket can use the project's slogan in their marketing. The campaign is a way to spread information, inspiration and involvement in a change of attitude towards sustainable societal development, and to raise money for the Friends of Vattenriket to co-fund initiatives and projects in the biosphere reserve.

5.7 Local business or other economic development initiatives. Are there specific “green” alternatives being undertaken to address sustainability issues? What relationships (if any) are there among these different activities?

Since the autumn of 2021, Kristianstad Municipality with the Biosphere Office has been one of 23 Swedish municipalities that have taken up the challenge of climate-neutral cities by 2030 and is part of the Viable Cities innovation programme. In the Climate Neutral Kristianstad project, which is run by the Sustainability Unit, companies and organisations in Kristianstad can contribute to a reduced climate impact through local climate contracts. Each company or organisation determines its own commitments and signs a local climate contract with the municipality. These commitments must either generate direct emission reductions or contribute to shared decarbonisation efforts. One example is that Skanska has started a business network for climate-neutral construction.

Signatory companies and organisations gain access to a platform for knowledge sharing, collaboration and skills development. The businesses meet twice a year to share their work, challenges and solutions so that the group can learn together and move forward more quickly. At the time of writing, there are 30 local climate contracts between Kristianstad Municipality and businesses and associations.

There is a greater focus on the environment, sustainability and a circular economy among businesses in the municipality. Residual products from the major food companies are used as animal feed and water is reused to irrigate fields. Residual heat can be used for cultivation and several large businesses have joined forces to build a large biogas plant in 2028. This will transform waste from a cost into a resource. The idea that nothing should go to waste is clearly visible in companies' business development plans and is something they are collaborating around. The choice of materials is also becoming more sustainable, with one lamp manufacturer switching from metal to hemp as a raw material. Preparedness has become increasingly important, especially for food companies. The sale of second-hand goods has increased with several new shops in the city.

There is great potential for golf courses to promote biodiversity. Since the previous review, the Biosphere Office has collaborated with Kristianstad Golf Club as well as Araslöv Golf Club in various types of nature conservation projects. We have restored sandy grasslands, held bat walks and contributed knowledge about various nature conservation measures. Araslöv Golf Club has built its own fauna depots, built and put up bird and bat boxes and, with financial support from the County Administrative Board of Skåne, exposed sand and sown meadow flowers. In 2023, our contact person at Araslövs Golf Club received the municipality’s environmental award for his work on biodiversity.

There is a clear trend towards increased sustainability in agriculture and higher demands are being made. In recent years, around 150 farms in the municipality have been granted compensation for carbon sequestration/reduced nitrogen leakage on around 10,000 hectares of land annually. Around 200 farms have been granted compensation for precision farming on around 30,000 hectares of land annually, according to the Swedish Board of Agriculture. The area of land managed organically or in conversion in the municipality has increased by around 11 percent from 2015 to 2023. The largest increase is in converted arable land, up by 30 percent.

The Biosphere Office was involved in developing a new model for compensation to Absolut Vodka's wheat growers, which was launched in 2022. All Absolut vodka is produced in Åhus from wheat from around 400 farms in southern Sweden. A variety of improvement measures are awarded points based on the effect they have on, among other things, reducing carbon dioxide emissions, reducing

plant nutrient leakage, improving opportunities for continued high yields, and biodiversity. Farms that achieve a certain score level are paid more.

Another important collaboration was Water Workshops in Vattenriket *(Vattenmöten i Vattenriket),* with the Swedish Federation of Rural Economy and Agricultural Societies *(Hushållningssällskapet)* and agricultural consultants HIR Skåne. Together we held a series of study visits and lectures on how to conserve water and thus be better equipped for the future. Saving water also has a positive financial impact on farmers.

The Biosphere Office is one actor in the collaborative project Let Sweden Blossom *(Hela Sverige blommar)*, run by the Swedish Federation of Rural Economy and Agricultural Societies. Sponsored seeds encourage farmers to sow pollen- and nectar-producing plants on arable land. The Biosphere Office communicates the concept to the public by means of information and packets of seeds.

One initiative that is still in its infancy concerns biogas. The Biosphere Office's goal is for harvested green waste from restoration measures to be used to produce biogas and sludge.

In five places in the biosphere reserve, the Biosphere Office has helped to construct irrigation wetlands in collaboration with individual farms. These constructions also create wetland areas for biodiversity, nutrient retention and water management. When water from the wetlands is used for irrigation, there is less extraction from the groundwater, which also benefits the surrounding environment and promotes biodiversity. At the same time, the crop utilises leached nutrients as the water moves through the soil profile more than once. Wetlands on agricultural land have been a focus area for us for many years. See also question 4.2.

5.8 Describe the main changes (if there are any) in terms of cultural values (religious, historical, political, social, ethnological) and others, if possible with distinction between material and intangible heritage.

Since the previous review, the population of Kristianstad Municipality has become more multicultural. While the number of people with a Swedish background has remained largely unchanged, the number of people with a foreign background has increased by 30 percent from 2015 to 2023. During the refugee crisis in 2015, many asylum seekers came from Afghanistan, Syria and Somalia, among other countries. The share of the population with a foreign background has thus increased from 21 percent to 27 percent.

The Biosphere Office has taken this into account in its activities in various ways. One example is that the naturum Vattenriket visitor centre offers information and guided tours in several languages. Visitors are welcomed to the exhibition where a touch screen provides information about the biosphere reserve, visitor sites and activities in some of the most common languages in the biosphere reserve – Swedish, Arabic, Danish, Dari, Polish, Somali, Spanish and Tigrinya – as well as English, German and Swedish sign language. After the war started in Ukraine, we offered guided tours at Pulken in Ukrainian.

The Biosphere Office has also carried out various projects for people who are unfamiliar with nature, such as More Activity – Outdoors *(Aktivera mera – friluftsliv),* with funding from Swedish Outdoor Recreation *(Svenskt friluftsliv)*. The aim was to reach more people who are unaccustomed to nature with visits and activities in urban nature to create awareness, enjoyment, well-being and knowledge of the opportunities offered by nature and outdoor recreation. The focus was on reaching children and young people in socio-economically disadvantaged areas, their families and newly arrived

immigrants. Naturum showcased natural areas in Vattenriket and different ways to experience them, such as fishing, bird watching, forest bathing and activities at the new Story Trail (*Sagostigen)* at Norra Lingenäset.

In the project New in Vattenriket *(Ny i Vattenriket)*, we hired an Arabic-speaking person who translated naturum's programme into Arabic and acted as a contact person for naturum's family activities. In collaboration with the association Arab Child *(Arabiska barnet)*, she invited new participants to the activities and interpreted into Arabic.

Many newly arrived immigrant groups visit naturum through SFI, Swedish for Immigrants, which is a course that all newly arrived immigrants are offered in Sweden.

Since 2015, the so-called Eel Heritage *(Ålarvet)* has been included on Sweden's national list of intangible cultural heritage. The Eel Heritage refers to the cultural heritage that has formed around eel fishing along the east coast of Skåne between Åhus and Stenshuvud, called the Eel Coast *(Ålakusten).* In addition to the fishing itself, with its specific gear, knowledge and organisation, it involves traditions around food and meals, buildings and boats, as well as stories and special names. In the area, people are working to spread knowledge and to create interest in its traditions and heritage, for example through cultural walks. An annual 'eel festival' is also organised, where participants eat a variety of eel dishes and visit the typical eel sheds – small cabins for storage and accommodation – along the coast.

The medieval castle ruin Lillöborgen just north of Kristianstad city centre was once a mighty building, similar to Glimmingehus, the best-preserved medieval castle in the Nordic region. It was built in the 13th century, razed in 1658–1659 and not excavated by archaeologists until the 1940s. The castle is located along the Linnérundan trail. The key to the castle can be borrowed free of charge from naturum and the Friends of Vattenriket *(Vattenrikets vänner)* keep the castle open to visitors on Sundays during the season.

Since the previous review, we have revamped the exhibition about life at Lillö and produced an animated short film and a new self-guiding brochure about the exciting history of the castle. It was the Friends of Vattenriket who applied for and received a grant from Sparbanken Skåne to develop the visitor site. In 2021, the Swedish Educational Broadcasting Company's programme UR Samtiden made a video about Lillöborgen in collaboration with the Biosphere Office.

5.9 Community support facilities and services. What programmes in/for the biosphere reserve address issues such as job preparation and skills training, health and social services, and social justice questions. What are the relationships among them and with community economic development?

Young people are a priority target group in UNESCO's medium-term strategy and for the Swedish National Commission for UNESCO, as well as for the Biosphere Office. Naturum's educational activities reach 1,500 pupils per year and are mainly described under questions 6.2 and 7.7.

Biosphere camps are held every year with 20 children, and the Biosphere Office regularly welcomes pupils for work experience and students for internships. In the LONA project Three Rising Stars along the Vattenriket subtrail *(Tre bubblare längs Vattenrikeleden)*, we linked nature and culture close to urban areas to three of the Skåne Trail SL6 Vattenriket subtrail's entrances with a story trail, a nature

activity trail and an exhibition of boxes for birds, bats and insects. The paths are accessible for wheelchair users and prams.

In 2023 and 2024, the municipality held the event Fresh Air & Fun *(Friluftskul)*, where associations and others offered visitors the opportunity to try out outdoor activities such as collecting insects, casting a fishing rod, canoeing, bird watching, pitching a tent and mountain biking. The Biosphere Office was involved in organising the event.

In 2024, the Biosphere Office started a collaboration with the Scouts to stimulate interest in nature and the biosphere reserve – biosphere heroes. A new Scout badge has been developed, which Scouts receive when they have participated in at least four of seven meetings in the Kristianstads Vattenrike Biosphere Reserve.

The Biosphere for Baltic – Future Generations (BFB–FG) project aims to engage young people aged 18–28 in the work for a sustainable Baltic Sea. The aim is to develop new ideas to increase youth participation in the work of the biosphere reserves and to create a transnational network for young people. The project includes a youth forum in Vattenriket in the summer of 2025, as well as a series of webinars to share experiences of inspiring and involving young adults in the local work of the biosphere reserves that are part of the Biosphere for Baltic network. External organisations have been invited to share successful projects and experiences. Twelve biosphere reserves in eight countries around the Baltic Sea are collaborating in the project, which is funded by the Swedish Institute and Kristianstad Municipality.

Since the previous review, accessibility at several of the biosphere reserve's visitor sites and trails has been further improved. The picnic area at Kavröbro has been refurbished and given an accessible toilet in collaboration with the Public Works Administration. A new outdoor museum has been built at Årummet with an accessible hide and boardwalk. With the County Administrative Board, we have made a constructed an accessible boardwalk and an accessible barbecue and picnic area near the sea in the Äspet Nature Reserve. Following a citizen's proposal, a footbridge was inaugurated over the Härlövsängaleden road, which makes the entire Linnérundan trail accessible for wheelchair users and prams.

Another priority group for us is newly arrived immigrants and people with a foreign background, see question 5.8 for further information.

5.10 What indicators are in place to assess the effectiveness of activities aiming to foster sustainable development? What have these indicators shown?

The Biosphere Office's work for sustainable development is long-term and the relationships are complex. Having said that, there are several indicators that can be measured and followed over time.

One example is the area of wetlands constructed or restored under our management. During the previous decade, the area of newly constructed wetlands increased tenfold from 8.15 hectares to 84.6. During this decade, 185 hectares of wetlands have been constructed or restored. Since 2005, we have worked on 66 wetland projects.

The naturum Vattenriket visitor centre attracts tourists to Kristianstad who also consume other goods and services in the municipality. This is shown in a report by HUI from 2016. At that time, the visitors to naturum generated a turnover of SEK 74 million in the municipality, of which SEK 31

million was from tourists who had naturum or Vattenriket as their primary reason for visiting Kristianstad (Rokotova, 2016).

We regularly measure a number of indicators. Some examples are:

- Biosphere ambassadors: We train about 25 new ambassadors for the biosphere reserve every year
- Biosphere camp: Each year, 20 children attend the week-long biosphere camp
- Facebook: Our Facebook page has 7,200 followers
- In naturum's programme we have over 500 events every year.

Kristianstad Municipality's new Sustainability Unit has signed 30 local climate contracts with businesses and associations so far. Their commitment is a way to contribute to a reduced climate impact through either direct emission reductions or contributions to shared decarbonisation efforts.

A lot of research has also been carried out about the biosphere reserve. In a 2017 study of four biosphere reserves in Sweden and Canada, participants were asked to evaluate decision-making processes characterised by adaptive co-management. In Kristianstads Vattenrike, participants were mainly members of the Consultation Group. The aim of the study was not to compare biosphere reserves, however participants from Vattenriket gave the highest scores for ecological as well as livelihood components, which can be compared to the conservation and development functions. The average score for each question ranged from 3.33 to 4.47 out of 5 in Kristianstads Vattenrike, with only Georgian Bay in Canada also scoring above 3 on each question (Plummer et al, 2017b).

The same research group also conducted a study on how Kristianstads Vattenrike and three other biosphere reserves in Sweden and Canada integrate the development and logistic support functions in their activities using adaptive co-management. It was found that 56 percent of activities in Kristianstads Vattenrike combined the development and logistic support functions. Some ways to get involved in the biosphere reserve's activities are practical actions on the landscape, such as data collection and restoration of cultural landscapes, as well as social events around, for example, learning. A key factor identified was bringing together a diversity of different stakeholders. In Vattenriket, this is done in specific networks for different projects, where individuals and organisations who are willing and able to contribute are invited. According to other studies, not all biosphere reserves succeed in combining the two functions (Baird et al, 2018).

Another important publication is The Course: 10 Lessons for Sustainable Business *(Kursen: 10 lektioner för ett hållbart näringsliv)*. The book is based on the executive programme offered by the Stockholm Resilience Centre to some of the most influential business leaders in Sweden. The case study in Chapter 7 on resilience is Kristianstads Vattenrike, described as 'my best example of resilience thinking' (Schultz & Treijs, 2021).

See also questions 5.4 and 5.5 for further information.

5.11 What are the main factors that influenced (positively or negatively) the success of development efforts in the entire biosphere reserve? Given the experiences and lessons learned in the past ten years, what new strategies or approaches will be most effective?

Some key success factors for the Biosphere Office's development efforts are:

- A strong local connection and pride in 'our place'
- Strong, established and increased cooperation with other departments within the municipality, such as urban development and the Sustainability Unit's climate work
- Close cooperation with Kristianstad Municipality's tourism developer
- Dialogue and collaboration with farmers in the area
- Thematic work that has enabled us to make significant progress in a short time on highlighting visitor sites and outdoor activities in the area and making them accessible
- Special efforts for specific target groups such as newly arrived immigrants and young adults.

Since the previous review, Kristianstad Municipality has established a Sustainability Unit. This is a major change that shows how important sustainability is to the municipality, promotes these issues in general, and also makes a positive contribution to the work of the Biosphere Office.

An important project for the Sustainability Unit is Climate Neutral Kristianstad 2030. Since the autumn of 2021, Kristianstad Municipality has been one of 23 Swedish municipalities that have taken up the challenge of climate-neutral cities by 2030 and part of the Viable Cities innovation programme. The goal is for everyone to be able to live well in Kristianstad and for us as a society to respect nature’s limits. Greenhouse gas emissions within the municipality's geographical area are to be reduced as much as possible by 2030, and carbon storage is to be increased. Over two thirds of greenhouse gas emissions in Kristianstad come from transport and agriculture. Therefore, the Sustainability Unit is working particularly hard on these areas.

A study by the Swedish Environmental Protection Agency on five Swedish biosphere reserves as arenas for implementing the 2030 Agenda for Sustainable Development, which included Kristianstads Vattenriket Biosphere Reserve, highlights several success factors. In biosphere reserves, conservation measures are often included in economic development instead of being separate. According to the researchers, this is a necessary aspect of implementing the 2030 Agenda and integrating the social, economic and ecological dimensions of sustainability. Biosphere reserves are highlighted here as models for others to follow. Biosphere reserves:

- Act as platforms for cooperation, bringing together and coordinating existing initiatives, actors and/or experiences, acting as bridges and mediators between actors and taking a holistic approach to sustainable development
- Connect actors both vertically and horizontally, across administrative and geographical borders, across sectors and between different levels of governance
- Integrate the 2030 Agenda, identify synergies between the SDGs and create win-win solutions
- Preserve healthy ecosystems, recognising that healthy ecosystems are a prerequisite for human well-being and progressive economic development
- Promote learning and awareness raising, developing new and innovative models and methods of governance, promoting education for sustainable development and connecting actors in learning networks (Heinrup & Schultz, 2017).

6. THE LOGISTIC FUNCTION

[This refers to programmes that increase the capacity of people and organisations in biosphere reserves to address both conservation and development issues for sustainable development, as well as the research, monitoring, demonstration projects and training required to address the specific framework and conditions of the biosphere reserve].

6.1 Describe the main institutions conducting research or monitoring in the biosphere reserve, and their programmes. Comment on organizational changes (if any) in these institutions over the past ten years as they relate to their work in the biosphere reserve.

Research is conducted in Kristianstad Vattenrike Biosphere Reserve in various subject areas by researchers from several Swedish colleges and universities. From being primarily a research environment for Kristianstad University and Stockholm University through the Stockholm Resilience Centre, many new universities have started performing research in Vattenriket during the last decade, including Lund University, Linnaeus University, the University of Gothenburg and the Swedish University of Agricultural Sciences. In addition to research, several bachelor's theses have also been written by students from other universities such as the Blekinge Institute of Technology, Halmstad University and Gävle University.

The biosphere reserve has also continued to attract researchers from other parts of the world. New international research collaborations have been established with the University of Bergen, among others.

Kristianstad University has an interdisciplinary research environment with a sustainability focus that has long collaborated with the Biosphere Office in both education and research. The research environment was previously called Man & Biosphere Health (MABH) but changed its name to Sustainable Multifunctional Landscapes (SMULA) in 2023 and currently has around 25 members. The environment includes researchers from a wide range of natural sciences, social sciences and humanities, including ecology, environmental chemistry, environmental engineering, earth sciences, agricultural history and environmental education. This provides a good knowledge base for research on various sustainability issues and for cooperation with the Biosphere Office. SMULA has regular contacts, coordination meetings and workshops with the Biosphere Office and has also co-organised the annual Biosphere Research Conference held at naturum Vattenriket since 2010. The conference summarises and disseminates research and work at the bachelor's and master's level performed in the biosphere reserve.

The monitoring carried out in the biosphere reserve follows the Swedish model of long-term and regular environmental monitoring and has generated long series of measurements without equal anywhere else in the world. At regional level, county administrative boards are responsible for and coordinate environmental monitoring, while municipalities are responsible for local monitoring. Environmental monitoring is also carried out by local non-profit organisations.

> *"Vattenriket is something that many of us who live here are very proud of and that attracts national as well as international visitors."*
>
> Eva Berglund, tourism industry planning strategist at Kristianstad Municipality, 2019.

6.2 Summarize the main themes of research and monitoring undertaken over the past ten years and the area(s) in which they were undertaken in order to address specific questions related to biosphere reserve management and for the implementation of the management plan (please refer to variables in Annex I).

(For each specific topic provide reference citations. Provide the full citations alphabetically by lead author at the end of Section 6 or in a separate annex).

Since the previous review, many research and monitoring programmes have been completed or initiated that have benefitted biosphere activities and guided the Biosphere Office's action plan. We help to support research while applying the lessons learned. Collaborations on social-ecological research have been initiated with many more universities, primarily Lund University, Linnaeus University, the University of Gothenburg, the Swedish University of Agricultural Sciences, the University of Bergen in Norway and the Leibniz Centre for Agricultural Research in Germany. Our local knowledge helps researchers to assess how natural values in the area are developing and what types of measures strengthen biodiversity. The Biosphere Office has commissioned or carried out considerably more of our own inventories over the last ten-year period.

The Biosphere Office applies so-called adaptive co-management, an approach that focuses on collaboration, and leaning the lessons of how different measures impact nature and society. This approach is characterised by gathering knowledge relating to a potential project area through inventories of flora and fauna and dialogue with local stakeholders. The project is then developed, and appropriate measures are applied as required. This may involve establishing a nature reserve, or conservation measures for specific species. This is regularly followed up to evaluate the effects of the initiatives and allow measures to be corrected as and when necessary. Projects therefore include the monitoring of both abiotic and biotic variables by the Biosphere Office or other stakeholders. The research may provide a basis for the initiation of a project or form part of the work. The project is part of the overall action plan, but it also contributes to the development of new action plans.

The Biosphere Office and naturum Vattenriket also link research and monitoring to educational initiatives and communication with the public. Some examples are the citizen science described under question 6.3, our report series Vattenriket in focus with reports and inventories carried out on behalf of or in collaboration with the Biosphere Office, and the Biosphere Research Conference which is organised annually in collaboration with Kristianstad University and open to the public.

Below is a summary of the main projects carried out in the biosphere reserve, where research, monitoring and follow-up have contributed to the development of biosphere activities.

> *"Having Kristianstads Vattenrike Biosphere Office as a collaborator, with its long track record of adaptive co-management, makes this area particularly fertile ground to conduct research that requires collaboration between researchers and other societal actors."*
>
> Katja Malmborg, 2021. How on Earth?: Operationalizing the ecosystem service concept for sustainability, PhD thesis, Stockholm Resilience Centre, Stockholm University.

Naturum Vattenriket

Our visitor centre – in the heart of Kristianstad, in the heart of Vattenriket

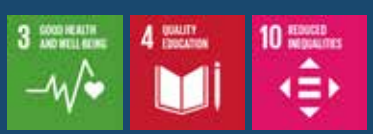
Naturum Vattenriket opened in 2010 as the biosphere reserve's meeting place and showcase. It has become an important part of Kristianstad's profile, where beautiful architecture is combined with experiencing and enjoying nature. Every year, naturum welcomes around 90,000 visitors who come to learn more about Vattenriket's unique natural environment and the work of the biosphere reserve. The visitor centre is aimed at a broad target group and admission is free.

The foundation for naturum's work is to create positive relationships with nature. We believe this can be done in different ways. That's why naturum has a broad programme, from family activities to forest bathing to concerts in the nest outside the centre. In this way, everyone – regardless of age or interest – can connect with nature in their own way.

Naturum also has an exhibition which is rich in experiences, a restaurant and an auditorium with a fantastic view.

The auditorium is used by the Biosphere Office for lectures, meetings and educational activities, but is also the venue for around 80 meetings for external stakeholders each year.

Naturum Vattenriket has also received international attention. In 2022, the centre received the Star Wetland Centre Award as one of the world's best wetland visitor centres. The award recognised best practices in ecotourism, communications and education about wetlands and water. In 2025, naturum Vattenriket is featured in the UNESCO exhibition at the Venice Architecture Biennale.



Monitoring

Vattenriket in focus

An important part of our work is to gather new knowledge about biodiversity and threatened species in the biosphere reserve. By inventorying and monitoring species, sites and measures, the Biosphere Office gains valuable knowledge that can be applied in our work. We have commissioned or carried out considerably more of our own inventories and follow-ups over the past ten years, around 30. The results are published in the publication series Vattenriket in focus, where over 50 reports and inventories have been published since the previous review. A complete list is provided in Annex 6. These are mainly various forms of nature value inventories such as monitoring of large freshwater mussels, European catfish *(Silurus glanis),* test fishing, bladderwrack *(Fucus vesiculosus)* and serrated wrack *(Fucus serratus),* wading birds, insects, flora, fungi and bats, as well as studies of peri-urban ecosystem services and whether wetlands can counteract brownification. See question 4.4 for further information.

Other monitoring by the Biosphere Office

The Biosphere Office collects data on water levels in the Helge Å River and the sea, as well as water flows, and makes this available to the public and researchers via the Vattenriket website.

In 2016, a study of tourism revenue was carried out to give an idea of what visitors to the naturum Vattenriket visitor centre and Vattenriket's visitor sites have contributed to the municipality in financial terms. The study is described under question 5.2. We also collect local knowledge with the help of the public and students through citizen science. See question 6.3 for further information.

Monitoring by other actors

Regular recipient controls (sampling) of lakes and watercourses in the River Helge å drainage basin are carried out on behalf of the River Helge å Water Conservation Association *(Helgeåkommittén),* which before 2016 was called the Committee for the Coordinated Management of the Helge Å River *(Kommittén för samordnad kontroll av Helge å).* The sampling programme includes physical and chemical water studies and biological parameters. In lakes it covers fish, diatoms, phytoplankton and zooplankton, in rivers benthic fauna and fish. The monitoring is used to detect changes in the aquatic environment and may result in targeted measures within Kristianstad Municipality's nature conservation programme. The results of the monitoring are published in an annual report that is available on the municipality's website. The committee consists of the various municipalities in the River Helge å drainage basin and major operators.

The Western Hanöbukten Bay Water Conservation Association *(Vattenvårdsförbundet för västra Hanöbukten)* includes two industries, a port, a regiment with training and firing ranges along the coast, seven municipalities and the water conservation associations for the watercourses that flow into the Western Hanöbukten Bay, of which the Helge Å River is the largest. Through the water conservation association, a large number of studies are carried out regularly according to an established programme of chemical and biological parameters such as test fishing, benthic fauna and plankton. The work is done in collaboration with the Blekinge Water Conservation Association *(Blekingekustens vattenvårdsförbund).* The programme is carried out in consultation with the authorities that are responsible for supervision under the Swedish Environmental Code. The results provide a basis for planning, measures and monitoring of the environment in the Western Hanöbukten Bay and its associated drainage basin.

The County Administrative Board of Skåne is responsible for biotic and abiotic monitoring in accordance with a county programme for monitoring its 16 environmental objectives and biogeographical monitoring of, for example, butterflies, grasslands and seasonally flooded

grasslands. Kristianstad Municipality carries out various types of abiotic sampling, species monitoring and inventories, and socio-economic inventories.

The Flora Guardians *(Floraväktarna)* is a network of people with an interest in botany, coordinated by the Swedish Botanical Society *(Botaniska föreningen).* Together they monitor populations of red-listed and threatened species in Sweden, entirely on a voluntary basis. Their knowledge and work are very important for nature conservation. They use standardised methods and publish their findings in the public database Swedish Species Observation System *(Artportalen).* The work of the Flora Guardians is often used as a basis when new red list assessments are made for threatened species. The Biosphere Office has a strong relationship with local flora guardians. Representatives from the Biosphere Office made an excursion to the Mjöån River in 2023 with the Flora Guardians, to find the river water crowfoot *(Ranunculus fluitans),* but without success.

The Bird Society of North-East Scania *(Nordöstra Skånes fågelklubb)* is a non-profit organisation that promotes bird protection and bird watching and has a strong focus on Vattenriket. The association conducts annual counts of several bird species and targeted inventories of endangered species. Among other things, geese and eagles are counted annually. The goose count has been carried out since 1976 and is part of the project Swedish Bird Survey *(Svensk fågeltaxering).*

Some of the monitoring in the biosphere reserve by the actors above is carried out in consultation with the Biosphere Office.

Research

Kristianstad University

Biodiversity surveys

One example is studies of the invertebrate group known as tardigrades, where so far seven species new to science have been documented in the biosphere reserve, and about 30 percent (37) of all species of tardigrade observed in Sweden have been found in the biosphere reserve (Massa et al, 2022, Atherton et al, 2025). One of the new species of tardigrade has also been named after the first coordinator of the biosphere reserve, Sven-Erik Magnusson, *Itaquascon magnussoni*.

Environmental chemistry research on water quality

The research that has attracted the most attention is the development of analytical methods and technology for effective treatment of pharmaceutical residues and other organic micropollutants (Svahn & Björklund, 2015; Björklund et al, 2016). The research, which is internationally leading-edge, has been carried out in close collaboration with national authorities as well as municipal administrations and has resulted, among other things, in a pilot plant for the treatment of pharmaceutical residues at the wastewater treatment plant in Degeberga (Björklund & Svahn, 2021a,b; Rimfors & Björklund, 2021).

Other environmental chemistry research related to water has focused on the browning of streams, and experimental mesocosm studies have been carried out on the ability of wetlands to reduce the brownness of water (Djerf, 2023; 2025). The research, which was carried out in collaboration with the Biosphere Office, showed that vegetation has the ability to reduce water colour, with the effect being greatest in shallow wetlands. Studies of acid sulphate soils in the northern part of the biosphere reserve have also demonstrated extensive precipitation of iron along with significant amounts of aluminium, rare earth elements, beryllium and uranium to the wetland area, where these were eventually oxidised, precipitated and retained in Fredriksdalsviken Nature Reserve (Shahabi-Ghahfarokhi et al, 2021). Other metals also leached in large quantities from the acid sulfate

soils, but were not measured at elevated levels in the precipitates, indicating that they are transported further out into the ecologically sensitive wetland. This research is important for understanding the soil chemical processes that can affect wetlands and water bodies in the biosphere reserve.

Research on birds

Research on the conflict with geese on agricultural land

For ten years, researchers at Kristianstad University, in collaboration with other universities and the Swedish Association for Hunting and Wildlife Management, have conducted projects to better understand the movements and feeding preferences of geese in the agricultural landscape. Other studies are about how to reduce this conflict in practice. Here, Vattenriket has been an ideal study area because it consists largely of intensively farmed agricultural land, but is also one of the areas in the Nordic region with the largest number of wild geese for much of the year. Many studies have been carried out in collaboration or consultation with Biosphere Office staff, who have provided landowner contacts and established forms of cooperation. The publications offer examples from classical avian ecology (Olsson et al, 2017), bird migration research (Elmberg et al, 2019; Månsson et al, 2022; Nilsson et al, 2022), the role of geese as seed dispersers between wetlands (Navarro-Ramos et al, 2024), and not least the intersection between wildlife management and human/societal aspects (Elmberg, 2015; Tuvendal & Elmberg, 2015; Elmberg et al, 2018; 2022).

Impacts of geese and swans on wetland ecosystems

The research on geese and swans aims to understand their role in wetland ecosystems. The focus is on how these herbivorous birds affect wetland vegetation, invertebrates and other wetland birds (Gunnarsson & Kjeller, 2023; Gunnarsson et al, 2024; Kjeller et al, 2024). Much of the research is conducted within the biosphere reserve in collaboration with landowners. The results can contribute to more sustainable management of wetlands and their biological values.

Effects of farmed mallards on populations and ecosystems

Research on the effects of releasing farmed mallards *(Anas platyrhynchos)* for hunting has partly been carried out in the biosphere reserve in collaboration with landowners and hunters. The studies have taught us more about how these releases affect the individuals released and the ecosystems in which the releases take place (Söderquist, 2015; Söderquist et al, 2017; 2021; Elmberg et al, 2018; Elmberg et al, 2021). Collaboration between the university's duck researchers and gastronomes has also resulted in studies on the taste and nutritional content of ducks and geese from the biosphere reserve (Söderquist et al, 2022).

Studies on the migration routes of the black tern (Chlidonias niger)

Researchers at Kristianstad University have participated in studies to document the black tern's *(Chlidonias niger)* migration routes and wintering areas using geographical position loggers attached to the birds (Alerstam et al, 2024). In addition to providing an interesting insight into the long migration of these birds, the research also provides knowledge that can contribute to an understanding of the factors during migration and wintering that can affect the species' occurrence and development.

Ecosystem services, outdoor recreation and nature connection

Research on ecosystem services in spatial planning has been conducted at the university, with the Biosphere Office and the Environment, Planning and Community Development Administration also participating as project partners (the ECOSIMP project 2014–2017; Jönsson et al, 2017). The research highlighted the problem of introducing ecosystem services as a new policy concept in municipalities'

planning of land and water (Beery et al, 2016), and also included studies on how municipalities' climate adaptation work can be integrated with the introduction and understanding of the ecosystem service concept in spatial planning (Wamsler et al, 2016). Another study linked to spatial planning was about the need and opportunities for planning pedestrian and cycle paths in urban environments so that they also create incidental nature experiences (Beery et al, 2017). The bridge over the Helge Å River between Kristianstad city centre and the visitor parking lot at the naturum Vattenriket visitor centre was used as an example of how people who use the bridge as a transport route can also enjoy the rich natural environments along the Helge Å River.

Several studies at the university have focused on people's use of naturum Vattenriket and the biosphere reserve's visitor sites and hiking trails, and on visitors' relationship with different environments (Beery & Jönsson, 2015; 2017). Some of this research was carried out in close collaboration with the Biosphere Office. Studies have also been conducted on the biosphere reserve as an outdoor classroom for learning about the environment and sustainability in the education of preschool teachers (Beery & Magntorn, 2021).

Stockholm Resilience Centre

Two international projects on biosphere reserves have led to several publications since the previous review. BiosACM, Diagnosing Processes and Outcomes in Social-Ecological Systems: a Systematic, Cross-Case Comparison of Adaptive Co-Management Initiatives, in four biosphere reserves, ran from 2012 to 2016. GLEAN, A Global Survey of Learning, Participation and Ecosystem Management in Biosphere Reserves – a comparative study of 146 biosphere reserves in 55 countries, ran from 2011 to 2017. The projects were led by Brock University and Stockholm University, respectively, including researchers from the Stockholm Resilience Centre. Using case studies and international surveys, these projects explored how biosphere reserves in different regions function as learning sites for sustainable development and as bridging organisations that connect different interests and knowledge systems in adaptive co-management. Kristianstads Vattenrike Biosphere Reserve was one of the case studies (Schultz et al, 2015; Odom Green et al, 2015; Plummer et al, 2017a; Plummer et al, 2017b; Plummer et al, 2017c; Baird et al, 2018; Armitage et al, 2018; Baird et al, 2019a; Baird et al, 2019b; Bodin et al, 2020). Several of these studies are summarised in Chapter 7.

The project Co-Management of Interacting Ecosystem Services in the Helge Å River Drainage Basin *(Samförvaltning av interagerande ekosystemtjänster i Helgeåns avrinningsområde)* ran from 2013-2016. It was led by Stockholm University with researchers from the Stockholm Resilience Centre. The researchers collaborated with a number of local actors, such as the Biosphere Office, in an analysis of the ecosystem services in the Helge Å River Drainage Basin. Together, they developed a list of relevant ecosystem services with associated indicators and divided the area into three relatively similar areas (Malmborg, 2021; Malmborg et al, 2021; Malmborg et al, 2022). The participants also identified three key issues in the current system: 1) Creating conditions for higher diversity in the forest landscape, 2) Maintaining and creating new opportunities for locally produced and sustainable food, and 3) Achieving good water quality, without brownification in the Helge Å River (Enfors-Kautsky, 2019).

A master's thesis from the project asked people with knowledge of the biosphere reserve to link ecosystem services to places. The result was a clear link between ecosystem services and zonation, and a high level of awareness of the important role of wetlands in water regulation. See questions 6.5 and 8.5 for further information. An unexpectedly high number of participants highlighted intrinsic, relational and regulating ecosystem services. This can be interpreted to mean that the biosphere reserve has great potential as an arena for promoting sustainability. As most of the

biosphere reserve's visitor sites are located within so-called "hotspots" that many participants mapped, the results also suggest that the Biosphere Office promotes accessibility to nature as well as the valuation of ecosystem services (Schwarze, 2024).

The project BECOME – Biosphere Reserves as Effective Conservation Measures started in 2023 and is led by the University of Bergen. The aim is to provide knowledge about how biosphere reserves contribute to nature conservation as well as community development, how they navigate the combination of these goals and what role participation plays in enabling biosphere reserves to achieve their goals effectively. The researchers are also following up on the survey conducted by the Stockholm Resilience Centre with 146 biosphere reserves in 2008 and 100 biosphere reserves in 2013. The project has a case study in at least one biosphere reserve in each participating country: Sweden (Kristianstads Vattenrike and Vindelälven-Juhttátahkka), Norway, France, Portugal, South Africa, Chile and Canada.

In a study of Kristianstads Vattenrike Biosphere Reserve and other Swedish biosphere reserves, researchers found that biosphere reserves act as platforms for collaboration, connect different actors vertically and horizontally, integrate the SDGs, maintain healthy ecosystems, and promote learning and sustainable development. The conclusion is that biosphere reserves contribute innovative models and methods that integrate the social, economic and ecological dimensions of sustainability and that can be scaled up and applied in other contexts (Heinrup & Schultz, 2017).

Other relevant publications include Barraclough et al, 2023, and Plummer et al, 2018.

Lund University

The Biosphere Office was involved in initiating and supporting a study from 2020 on the consequences of, driving forces behind and possible solutions to browning of freshwaters, in collaboration with the Helge Å Model Forest, Stockholm Environment Institute, Lund University and others. One conclusion was that while climate change, recovery from acidification and land-use change certainly contribute to browning, managing the land use in the hydrologically connected parts of the landscape may be the most feasible way to counteract it. Measures could include increasing the proportion of deciduous trees along watercourses, changing ditch management, restoring peatlands and streams, and practicing continuous cover forestry (Kritzberg et al., 2020).

A 2024 paper emphasises the importance of monitoring to ensure that wetlands are having the expected effect on brownification and eutrophication. Effectiveness varied depending on factors such as water levels and vegetation. Wetlands that dry out are less effective and proper management can make a big difference. Knowledge and interest among landowners is also important. A majority of the wetlands are located in Vattenriket and the collaboration with the Biosphere Office was crucial (Borgström, 2024).

The Biosphere Office has also been part of a project that has studied the transport of carbon to the Baltic Sea in streams. The researchers noted large seasonal variations and concluded that measures to reduce the transport of bioavailable carbon are most beneficial during spring and autumn (Jones, 2023).

Researchers from Lund University have participated in the research described above, on ecosystem services in spatial planning and how municipalities' climate adaptation work can be integrated with the introduction and understanding of the ecosystem service concept in spatial planning.

Another research area is the conservation and development of sandy grasslands within the biosphere reserve. Studies have included the importance of soil disturbance to benefit biodiversity. Lund University is also responsible for following up the SandLife project, affecting several areas in Vattenriket.

Researchers at Lund University have developed a proposal for an action plan to evaluate measures in the Swedish Environmental Protection Agency's initiative Wild Pollinators as part of the Action Programme for Threatened Species and Habitats (VIP ÅGP, *Vilda pollinatörer inom Åtgärdsprogram för hotade arter och naturtyper*). Part of the research group has subsequently received funding to make biodiversity data available for local decision-making on biodiversity conservation during 2024–2026. Areas in the sandy grasslands of Vattenrike where VIP measures have been implemented are being used as case studies.

The project Resilient Ecosystems of Sweden: Promoting Sustainability through Continuous Cover Forestry and Wetland Rewetting *(Motståndskraftiga ekosystem i Sverige; kan vi främja hållbarhet genom hyggesfritt skogsbruk och återvätning av våtmarker)* runs from 2024 to 2026. The aim is to increase the understanding of the effects of forestry and wetland rewetting on the resilience of ecosystems to extreme weather.

One study investigated public perceptions of eelgrass *(Zostera marina)* planting and coastal erosion control in four coastal municipalities in Skåne, including Kristianstad. Participants had low awareness of the role of eelgrass planting in preventing erosion, storing carbon and promoting biodiversity, but cared about nature and biodiversity. Preventing erosion was considered important for recreation, nature and tourism rather than for protecting infrastructure. According to the researchers, nature-based measures need to take into account these values of local communities to gain support for different actions (Van Well, 2023).

The important contribution of eelgrass *(Zostera marina)* meadows to biodiversity is established in one study (Kindeberg et al, 2022), as is the important role of Hanöbukten Bay for seabird wintering, with increased for almost all species studied from 1969 to 2014 (Nilsson & Olsson, 2017). A master's thesis on success factors for the biosphere reserve's work on wetlands is described in more detail under question 7.7.6 (Palmér, 2023).

Potential studies of the new plant at Fredrikdalsviken to purify the water from iron and aluminium are being discussed and work on a master's thesis has begun. It will analyse iron and aluminium in the plant and see experimentally how oxygen availability and pH affect the function of the plant. In addition to water chemistry, the differences in the macroinvertebrate community between inlet and outlet will also be studied.

Other higher education institutions

Four of the 40 wetlands in **the University of Gothenburg'**s study Exploring greenhouse gas emissions in wetlands: rewetted organic soils vs constructed agricultural ponds are located in Vattenriket. The study will investigate whether methane emissions differ between constructed wetlands on peat soil compared to mineral soil.

A master's thesis from **Stockholm University** about the participation of local actors in the governance of the biosphere reserve is described further under question 7.5.3 (Örtenholm, 2024).

A research team at Stockholm University is investigating the hydrology of wetlands by studying satellite images. The goal is to propose restoration guidelines that maximise ecosystem health as well

as climate change mitigation. Using machine learning, the researchers can model how water levels change from year to year and season to season. The Helge Å River is one of the Ramsar sites being studied in the project and a collaboration has been initiated with the researchers.

A study led by the **Swedish University of Agricultural Sciences (SLU**) focused on wading birds in the biosphere reserve's seasonally flooded grasslands. The researchers could not disprove the hypothesis that predators contribute to the decline of birds. However, they suggest more research on complex, long-term changes in land use with a focus on social-ecological systems (Manton et al, 2016). SLU is also carrying out accompanying research in the Interreg project Land4Climate, in which the Biosphere Office is involved in project management. See question 5.3.

Linnaeus University is investigating the leaching of iron and aluminium from acidic sulfate soils such as at Fredriksdalsviken, including in collaboration with Kristianstad University, see above.

The University of Bergen, Norway, is conducting research in Vattenriket within the framework of the project Activating local resources; cultivating regional cooperation for a sustainable land-use. The study concerns ecosystem services in biosphere reserves and is being conducted in collaboration with four Nordic biosphere reserves, one of which is Kristianstads Vattenrike. The focus is on identifying places in the biosphere reserves where participants feel they can benefit from the values of the landscape and why these places are important to them.

How can conflicts between people and wildlife in the agricultural landscape be resolved and prevented in biosphere reserves? This is something that **the Leibniz Centre for Agricultural Research** in Germany is looking into, using the example of crane *(Grus grus)* management. The research project is a collaboration between the Schaalsee Biosphere Reserve in Germany, Vattenriket, the Swedish Wildlife Damage Centre (SLU), and Kristianstad University.

Satellite images in the SWOS project will provide better environmental monitoring of the world's wetlands. SWOS stands for Satellite-based Wetland Observations Service and is a collaborative project between research institutes, universities and businesses, including the Biosphere Office, in 23 countries.

The LANDPATHS project is developing new strategies for multifunctional landscape governance and management with the aim of improving Sweden's biodiversity. The programme is led by **Uppsala University**, in collaboration with researchers from the Swedish University of Agricultural Sciences (SLU), the Stockholm Resilience Centre and Södertörn University during 2022–2027. One of the researchers is focusing on biosphere reserves and will, among other things, study the Biosphere for Baltic network.

A study from **the Swedish Institute for the Marine Environment** analyses the pros and cons of different operational models for ecosystem-based marine management. Kristianstads Vattenrike Biosphere Reserve is one of the case studies (Prutzer et al, 2024). See questions 2.3.9 and 7.6.4 for further information.

Other interesting studies include, for example, bean goose *(Anser fabalis)* (Honka et al, 2025), eelgrass *(Zostera marina)* (Jakobsson-Thor et al, 2019), forms of organisation and collaboration processes in Sweden's biosphere reserves (Sandström & Sahlström, 2020) and flood risk management (Johannessen & Granit, 2015).

6.3 Describe how traditional and local knowledge and knowledge from relating to management practices have been collected, synthesized and disseminated. Explain how such knowledge is being applied to new management practices, and how and if it has been integrated into training and educational programmes.

Kristianstads Vattenrike Biosphere Reserve is a cultural landscape where the land has been farmed for a long time. To preserve the values of the area, it is therefore natural to collect local knowledge from landowners, land users, associations and residents who can tell us about earlier ways of managing the land. We can often build on traditional knowledge to find appropriate contemporary measures to conserve and develop biodiversity. For a long time, we have been collecting knowledge about the management of seasonally flooded grasslands, sandy farmland and the changes in Lake Hammarsjön. We protect this traditional knowledge and incorporate it into the management practices and measures we test and implement in the landscape.

Over the past ten years, we have gathered local and historical knowledge by interviewing the last lake fisherman in Lake Hammarsjön who fished in the lake for 40 years. Today, no such fishing takes place, but now valuable knowledge in the form of photos and descriptions has been collected.

We also collect local knowledge with the help of the public and students through citizen science. During the past ten years, we have, for example, conducted a bioblitzin which the public worked with researchers to gather knowledge about species in Hanöbukten Bay. Since 2023, pupils have been helping to collect knowledge about the sea in the Algae Research Summer *(Algforskarsommar)* project. Their data on bladderwrack *(Fucus vesiculosus)* is provided to researchers at Stockholm University. The Seaweed Forest Hunt *(Tångskogsjakten)* research project is led by the same researchers. Students from secondary schools in Vattenriket and elsewhere are collecting data that will contribute to greater knowledge about how the seaweed forest ecosystem is changing along the coast today and how it will be affected by climate change in the future.

The Swedish University of Agricultural Sciences (SLU) is the lead agency for the Swedish National Phenology Network *(Svenska fenologinätverket).* With the help of observations, researchers can follow changes in nature and gain more knowledge about the biological effects of climate change. Naturum Vattenriket, together with visitors, contributes reports on signs of spring in the Spring Check *(Vårkollen)* campaign. Another example of citizen science is the photo point we have set up to help researchers monitor climate change in the biosphere reserve. Anyone passing the photo point can take a picture with their own mobile phone and send it to the project, which then analyses the images. Finally, the public also contributes observations of cranes *(Grus grus)* during the resting period in Vattenriket and otters (*Lutra lutra*) during the winter.

We share this knowledge with the public in many ways. Reports are collected in the publication series Vattenriket in focus *(Vattenriket i fokus),* published on our website and disseminated via social media. Lectures and field trips are organised at the naturum Vattenriket visitor centre, as well as the annual Biosphere Research Conference where knowledge is disseminated. The exhibitions at Vattenriket's 21 visitor sites are another important way of sharing local knowledge about fishing and land use in earlier times.

One example from the last ten years is how our work on the sandy arable land around Åhus has developed. In the previous review, we described identifying a threat in the shape of increased demand for the species-rich sandy grasslands. We described interviewing local stakeholders,

inventorying natural values, organising a think tank and a national conference and constructing an outdoor museum.

Over the past ten years, this work has continued at the Sånnarna Outdoor Museum, where we have produced a new, updated exhibition and built a biosphere classroom for pupils and teachers. A large box contains questions and field material that pupils and teachers need to investigate the pollinators and plants at the site. The biosphere classroom and outdoor museum also highlight how the diversity of species and habitats in the sandy grasslands has been shaped by traditional use and is dependent on human presence.

In the sandy grasslands, we have also continued to work based on the local knowledge we gathered earlier through our work on the Piggastan dunes. This is a small area with high natural values, but close to urban areas. In this area, the Biosphere Office is testing new methods of nature conservation management that have been adapted and developed based on the local knowledge we gathered earlier.

6.4 Environmental/sustainability education. Which are the main educational institutions ("formal" – schools, colleges, universities, and "informal" services for the general public) that are active in the biosphere reserve? Describe their programmes, including special school or adult education programmes, as these contribute towards the functions of the biosphere reserve. Comment on organizational changes (if any) in institutions and programmes that were identified in the biosphere reserve ten or so years ago (e.g. closed down, redesigned, new initiatives). Refer to programmes and initiatives of UNESCO Associated Schools networks, UNESCO Chairs and Centers where applicable.

Education through the biosphere reserve's own activities

Naturum Vattenriket is the visitor centre and meeting place for Kristianstads Vattenrike Biosphere Reserve. The visitor centre was inaugurated in 2010 as a direct result of the decision by UNESCO to designate Kristianstads Vattenrike as a biosphere reserve. In Sweden, there are more than 30 naturum – all appointed by the Swedish Environmental Protection Agency – tasked with increasing knowledge about nature and nature conservation in an inspiring way and acting as a gateway into nature. Since its opening in 2010, naturum Vattenriket has had more than 1.4 million visitors, including 906,000 visitors in the last ten years. Naturum Vattenriket has an exciting exhibition and information about various biosphere projects. Naturum is also the venue for over 500 annual events for the public.

An important part of naturum's mission is its educational activities. A full-time nature educator works with 80–100 school groups a year from preschool to university. A major change in the last ten years is that the nature educator is working with more and more classes at upper secondary level along with the Biosphere Office's ecologists. The pupils evaluate nature values and carry out management activities. For example, students on the Natural Resource Programmes in agriculture and fisheries receive lectures and in some cases excursions from our ecologists and project managers on the importance of wetlands in retaining more water in the landscape, reducing leakage of nitrogen and phosphorus and reducing emissions of greenhouse gases, while also seeing and participating in concrete measures to improve nursery environments for fish. In 2025, a project was launched with students in socially disadvantaged areas. According to research, it is important to create a

From preschool to university

Broad educational activities for all ages

Naturum Vattenriket is an inspiring place for lifelong learning. We offer outdoor education and teach sustainable development to people of all ages. The youngest children come to naturum to connect with nature through experiences and play. Slightly older pupils are challenged in interactive exercises at our biosphere classrooms.

By the sea, secondary school pupils study bladderwrack in the Algae Research Summer project and report to researchers in Stockholm. At upper secondary level, pupils investigate aquatic environments with nature educators and Vattenriket ecologists. Children and young people aged 10–14 are also invited to take part in the biosphere camp organised every summer holiday.

Naturum's educational activities extend all the way into Kristianstad University to the training of preschool teachers and teachers. For many years, part of their training has taken place with the nature educator at naturum.

At naturum, we develop tools and methods that inspire and make it easier for classes and educators to explore Vattenriket on their own, such as the Vattenriket Flower and the Baltic Sea Compass.

We have also established new biosphere classrooms, such as the Sånnarna Biosphere Classroom. The biosphere classroom consists of a box containing field materials and questions that pupils and teachers need to investigate the site. The sandy grassland habitats at Sånnarna rely on the sand being stirred up. The box therefore contains materials for discovering plants and small animals as well as trying out conservation in practice, such as exposing sand.

relationship with nature in these areas. The Naturally Wise *(NaturligtVis)* project at Näsby is being implemented with the support of the Friends of Vattenriket association *(Vattenrikets vänner)* and Sparbanken Skåne.

We are also involved in Kristianstad University's teacher training programme, where for many years teaching students have been able to work with naturum's educator and also carry out their own projects. In 2024, we were invited to present our activities to delegates from five continents from the international network OMEP (World Organization for Early Childhood Education) who were at Kristianstad University for a conference on sustainability in education for children.

Naturum Vattenriket develops biosphere classrooms to make it easier for schools to explore Vattenriket on their own. There are four biosphere classrooms, two of which have been established in the last ten years. The biosphere classrooms consist of boxes filled with physical research materials at Vattenriket's visitor sites. With the help of the biosphere classrooms, schools can explore everything from freshwater life to marine ecosystem services.

During pupils' summer holidays, naturum Vattenriket offers a biosphere camp for 20 school children aged 10–14. For a week, the children learn more about nature and humans by experiencing, discovering and investigating. The biosphere camp is aimed at children who enjoy being outdoors and learning about nature and people. Young people aged 16–17 are hired as assistants. In this way, they also learn about the biosphere reserve.

In March 2013, the Biosphere Office began training biosphere ambassadors to spread interest in and knowledge about Kristianstads Vattenrike Biosphere Reserve to colleagues, friends, customers, families and associations. The training is aimed at adults. So far, over 400 biosphere ambassadors have been trained.

In addition, the Biosphere Office accepts interns from different levels of education, including primary, secondary and higher education.

Higher education

Kristianstad University (HKR), located in the heart of the biosphere reserve, is the most important node for higher education. It is home to 14,000 students from Sweden and the rest of the world. The university offers programmes with a direct focus on the environment and sustainability, both at undergraduate and graduate level.

In the spring of 2025, the course Multifunctional landscapes and biosphere reserves as models for sustainable management will be held for the first time. The course is at advanced level and is about the biosphere reserve concept and the international network of biosphere reserves; the work of the Swedish MAB Programme *(Biosfärprogrammet Sverige)*; theoretical foundations of the concept of multifunctionality and its application; theories and principles around communication and collaboration in the landscape and multifunctional management in different types of landscapes.

HKR has two three-year bachelor's programmes in landscape science with a focus on management/planning and communication/outdoor education. These interdisciplinary programmes interweave natural sciences with social sciences and humanities to create knowledge and understanding of how the landscape has been managed and changed throughout history, how it is being managed and changed today, and what the future use of the landscape may look like. The Biosphere Office regularly collaborates with these programmes.

HKR also has a three-year environmental strategy programme with strong links to sustainability and the Biosphere Office's activities, which also collaborates with the Biosphere Office around various courses. In addition, there is a two-year programme, Sustainable Water and Wastewater Engineering for Technicians *(Hållbara VA-system för tekniker),* with strong links to water and climate issues, that often interacts with the local community.

Within these programmes and the former biology programme, many degree projects and internships have been carried out in the biosphere reserve, in several cases in close collaboration with the Biosphere Office. Many former students of the environmental programmes at Kristianstad University have also been recruited to positions at the Biosphere Office, and therefore the collaboration between the university and the Biosphere Office in higher education is in many ways an important part of the knowledge development and logistic support function in the biosphere reserve.

Lund University, Stockholm University and the Swedish University of Agricultural Sciences are other examples of higher education institutions that use Kristianstads Vattenrike Biosphere Reserve in courses at both undergraduate and graduate level to illustrate everything from hydrology to adaptive co-management.

The Biosphere Office is also partnering with the Blue transition summer school course "From source to tap", held by Lund University and Bolmen Research Station, to hold lectures on, among other things, aquatic ecosystem services. The course will be held for the first time in April 2025. PhD and master students have been accepted from Sweden, Denmark and Germany.

6.5 How do you assess the effectiveness of actions or strategies applied?

(Describe the methods, indicators).

The Biosphere Office's long-term work on communications aims to create an attitude change towards sustainable development that benefits nature as well as people. We work with positive messages, hope and faith in the future. To assess the impact of our work, we combine quantitative and qualitative methods, monitoring reach, participation and changes in attitudes and behaviours.

Methods and indicators

1. Visitor and participation statistics

Visitor counters are used at the naturum Vattenriket visitor centre and the 21 visitor sites in the biosphere reserve to measure interest and reach. For example, naturum has around 90,000 visitors per year and the visitor counter at the Linnérundan trail near the city registers 50,000 passages annually. Every year, 12,000 people visit the crane feeding at Vattenriket's visitor site Pulken.

By counting the number of participants at events, biosphere classrooms and guided tours, we get a measure of engagement and knowledge dissemination. For example, each year 16,000 people attend public events and 1,500 schoolchildren take part in naturum’s educational activities. Every year the summer biosphere camp welcomes 20 children and around 30 people take the biosphere ambassador course. In total, we have trained over 400 biosphere ambassadors.

2. Digital reach

Website statistics show that the biosphere reserve website has 300,000 page views per year. In 2025, we had 7,200 followers on Facebook, 550 on Instagram, 500 on Linkedin and 400 recipients of the newsletter. This indicates a great deal of interest in receiving information about Vattenriket.

3. Awards and recognition

The many and varied nominations, awards and recognition we have received over the last decade – locally, nationally and internationally – provide evidence of increased understanding of the biosphere reserve's activities and the impact of successful communication.

- In 2017, naturum Vattenriket was evaluated by the Swedish Environmental Protection Agency. Naturum was approved both in terms of the Swedish Environmental Protection Agency's formal requirements and statements from the Swedish Centre for Nature Interpretation and the Swedish Museum of Natural History.
- In 2018, naturum Vattenriket was highlighted at an international UNESCO conference for visitor centres in Palermo, Sicily, where the naturum manager was one of the speakers.
- In 2019, we were awarded the Rosenberg Prize for nature conservation with the citation: "Visionary and long-term work on conservation, development and the opportunity to enjoy unique natural values in Kristianstads Vattenrike."
- In 2019, the conference Think Tank for Outdoor Recreation *(Tankesmedja för friluftsliv)* was held in Kristianstad under the theme of Sustainable Outdoor Recreation to showcase our work on making nature accessible and providing a gateway into nature, among other things.
- In 2019, the Nordic UNESCO conference was held at naturum Vattenriket. Some 70 delegates from Sweden, Norway, Denmark, Finland and Iceland gained in-depth knowledge of biosphere reserves in general and Kristianstads Vattenrike in particular.
- In 2019, the Swedish Environmental Protection Agency commissioned a survey of the country's naturum. It showed that 95 percent of naturum Vattenriket's visitors are satisfied with their visit. Visitors are very satisfied with the nature trails and children's activities, as well as the level of knowledge, subject and themes of the exhibition. Visitors felt that the visit had inspired them to visit nature in the local area.
- In 2020, we received an award at Kristianstad's Guldjubel for the film Experience Vattenriket. The award was for Up-and-Comer of the Year and the citation was: "Appealing and beautiful: the urge to visit and discover more of Vattenriket is awakened!"
- In 2020, the Secretary-General of the Swedish National Commission for UNESCO Anna-Karin Johansson visited Kristianstads Vattenrike Biosphere Reserve.
- In 2021, the Story Trail Vättestigen at the visitor site Norra Lingenäset was nominated for the Best Nature Interpretation of the Year award by the Swedish Centre for Nature Interpretation.
- In 2021, the Skåne Trail appointed the Biosphere Office's project manager for outdoor recreation Skåne Trail Innovator of the Year for his work on the Skåne Trail SL6 Vattenriket subtrail.
- In 2022, Kristianstads Vattenrike Biosphere Reserve was nominated for the Nordic Council Environment Prize for our work on nature-based solutions.
- In 2022, Kristianstads Vattenrike Biosphere Reserve was one of two hosts of the national research conference Meeting-place Biosphere *(Mötesplats Biosfär).*
- In 2022, naturum Vattenriket received the Star Wetland Centre Award as one of the world's best wetland visitor centres.
- In 2023, Sweden's second national municipal conference for biosphere reserves was held in Kristianstad.
- In 2023, the current and former coordinators of the biosphere reserve were awarded Aktion Skåne's environmental prize for their determined and patient work on creating the Kristianstads Vattenrike Biosphere Reserve and thus promoting positive and sustainable development.
- In 2025, naturum Vattenriket was selected for the UNESCO pavilion at the 2025 Venice Biennale.

4. Kristianstads Vattenrike as an inspiring model

The Biosphere Office has been invited several times to share our approach as an example and inspiration nationally and internationally, even outside the biosphere reserve context. Some examples:

- **2016 Waddentag in Waddenzee**: We presented Kristianstads Vattenrike's work as a model for attitude change.
- **2018 Almedalen Week**: The biosphere reserve's coordinator participated in the Swedish Institute for the Marine Environment's seminar on the environmental problems of Hanöbukten Bay and how we work with dialogue and collaboration.
- **2024 Nordic Water Management Conference**: We showcased Vattenriket as a test bed for nature-based solutions and multifunctional wetlands.
- **2024 Collaborative Conference on Oceans and Water, Formas**: We shared our work as an example of how knowledge can be translated into action.

Research and studies

According to several scientific studies, the Biosphere Office's efforts to raise awareness of the importance of wetlands have had a positive effect, as well as promoting accessibility to nature and the valuation of ecosystem services. One example is the master's thesis Participatory Mapping of Ecosystem Service Values in the Kristianstads Vattenrike Biosphere Reserve (Schwarze, 2024).

The master's thesis The Evolution of Wetland Restoration Policy – A Case Study of Kristianstad Vattenrike shows that the Biosphere Office's working methods, including dialogue and collaboration between stakeholders, have been crucial in mobilising commitment, influencing policy development and driving concrete measures such as wetland restoration and improved water quality (Palmér, 2023).

A study from 2015 shows that naturum Vattenriket is successful in inspiring visitors to go outdoors for a direct experience of nature. Some success factors seem to be a place-based exhibition, accessibility and personal visitor factors (Beery & Jönsson, 2015).

According to one study, the naturum bridge over the River Helge Å provides good opportunities for spontaneous encounters with nature. When 2,000 people walk every day between the parking lot at the naturum Vattenriket visitor centre and their workplace in Kristianstad, they meet nature up close, with the opportunity to see otters (*Lutra lutra*) and kingfishers (*Alcedo atthis)*. This type of unplanned nature experience is very valuable for people's well-being. According to the researchers, urban planning should place more emphasis on residents' spontaneous encounters with nature (Beery et al., 2017).

Another study of Kristianstads Vattenrike showed that significant biodiversity efforts can be combined with opportunities for outdoor recreation, providing space for people to engage with and experience biodiversity. One conclusion was that accessible outdoor recreation that facilitates a direct experience of biodiversity is important for engaging the public in biodiversity conservation. Experiencing nature is an important motivation for outdoor recreation and this motivation can be used to highlight nature conservation in outdoor recreation infrastructure. Accessible outdoor recreation is not sufficient in itself to engage the public in biodiversity conservation. However, it can be crucial in combination with biodiversity conservation, sustainable development and logistic support for research and monitoring (Beery & Jönsson, 2017).

Students studying to be preschool teachers at Kristianstad University, who in collaboration with naturum's educator use Kristianstads Vattenrike as an outdoor classroom during their course, were the subject of another study. Before this part of their training, they had little or no knowledge of the biosphere reserve. After working with naturum's educator, their knowledge had increased and they were also inspired to use the biosphere reserve and similar environments in their work with preschool pupils (Beery & Magntorn, 2021).

Through a combination of visitor statistics, digital reach, external awards and research studies, we can monitor and evaluate the impact of the biosphere reserve's strategies. The conclusion is that our communications contribute to increased understanding and commitment to issues concerning the biosphere reserve, nature and sustainable development. Through a broad communications strategy that signals hope, we reach local people, decision-makers and an international network.

6.5.1 Describe the biosphere reserve's main internal and external communication mechanisms/systems.

The aim of the Biosphere Office's communications is to create a change in attitudes towards sustainable development that benefits nature as well as people. Our methods are spreading knowledge, inspiring and engaging through positive messages and hope.

We work long-term and strategically using overall strategies that are made concrete in annual and weekly plans. Our communications are about biosphere activities, the area's natural values and how visitors can enjoy them. Our channels range from printed leaflets and exhibitions in the landscape to films and podcasts on our website and social media. We also work on projects that enable engagement such as conferences, meetings, training for biosphere ambassadors and youth forums.

Our communications are aimed at a wide range of audiences: the general public, associations and businesses, school classes and families with children, college and university students, teachers and researchers, visitors, decision-makers and officials, and the media.

External communications

Our external message is about the Biosphere Office's work to conserve, develop and support nature in various projects, about the high natural values of the biosphere reserve and about how visitors can experience the area. It also inspires visits to the naturum Vattenriket visitor centre and visitor sites and provides opportunities for engagement. We have many, varied target groups. To reach out, we use a variety of channels.

The website

The biosphere reserve website is our most important channel for external communication. It contains information about our work, news, activities, visitor information and facts about animals and nature. The website has been online since 1996 and has around 300,000 page views per year. The main language is Swedish. Brief information about Kristianstads Vattenrike Biosphere Reserve, activities and places to visit has been translated into Arabic, Danish, Dari, German, English, Spanish, Polish, Somali and Tigrinya. In 2018, the website was redesigned to work equally well on mobile phones, computers and tablets, making it easier for visitors to find what they are looking for. Information about the biosphere reserve can also be found on the websites of Kristianstad Municipality and the Swedish MAB Programme *(Biosfärprogrammet Sverige)*. The area's visitor sites and activities are included on the Nature Map *(Naturkartan)* digital map service.

Social media

Social media are important in external communications. Our posts on Facebook and Instagram are about current projects and activities at naturum. Linkedin is used to reach professionals, authorities and other organisations in the field of sustainability. We publish videos on our own Youtube channel.

Podcast

Podcasts are a relatively new way of communicating. The Biosphere Office has produced a nine-part podcast series in which we explore different aspects of a sustainable future.

Newsletter

News about the biosphere work is published on the website and sent to interested parties in a digital newletter every quarter. Emails about activities at naturum are sent at more frequent intervals.

Naturum

The naturum Vattenriket visitor centre is the biosphere reserve's meeting place and showcase for the biosphere work and the values of the landscape, with around 90,000 visitors a year. It has knowledgeable staff, an exhibition about the biosphere reserve's nature and activities, and visitor information.

Visitor sites

There are 21 visitor sites in the biosphere reserve, with information signs and exhibitions, trails and picnic areas. Six visitor sites are highlighted as outdoor museums with more developed information, sound files, film clips and three-dimensional figures. Brown and white tourist signs show the way. QR codes lead to audio guides, film clips, text and images from the website.

Four visitor sites also have biosphere classrooms with educational materials. In addition to the visitor sites, we use special project signs to give information about ongoing restoration projects in the landscape. Within the Supported by Nature project, two so-called learning sites are being developed to spread knowledge about nature-based solutions for a better living environment in the Baltic Sea.

Printed material

Leaflets, maps and guidebooks help visitors to experience the biosphere reserve and learn about the biosphere work. Vattenriket in focus *(Vattenriket i fokus)* is a series of publications that disseminates research and results to authorities, libraries, educational institutions and decision-makers. Every year the Biosphere Office produces an annual report in Swedish and English, which is printed and published on the website.

Media

Press releases and press conferences are held regularly. Newspapers, trade press and the municipality's pages in the local newspaper reach both broad and specific audiences.

Some examples of media coverage since the previous review are that the national radio programme Nature Morning *(Naturmorgon i P1)* regularly broadcasts from naturum Vattenriket, the Swedish Educational Broadcasting Company’s programme UR Samtiden made ten episodes from Vattenriket in 2021, there has been coverage on Canadian television and in Sweden's largest environmental magazine Sveriges Natur, and local media such as the newspaper Kristianstadsbladet, the radio station P4 Kristianstad and the tv news programme SVT Nyheter Skåne regularly report on the biosphere reserve. When Kristianstad University named new species of tardigrades after Greta Thunberg and the biosphere reserve's first coordinator in 2021, it attracted the attention of Swedish and international media.

Events, visits and conferences

Subject-specific information is also disseminated through seminars, conferences, workshops and theme days in the landscape or at naturum. The Biosphere Research Conference conveys information about research linked to Kristianstad Vattenrike Biosphere Reserve to the wider public.

Around 80 group visits are received each year at naturum. These are groups that hold meetings or learn from the Biosphere Office in the shape of excursions and lectures.

Meetings, dialogues and ambassadors

Dialogue and communication are key tools in all contacts with partners, stakeholders, families, schools, politicians and officials. Dialogues with stakeholders and other actors take place before the beginning of a project and during the project. Information is provided via emails, letters, face-to-face meetings, posters and signs.

Biosphere Reserve Consultation Group meetings are held three times a year. Every spring, we train a new group of biosphere ambassadors. So far we have trained over 400 ambassadors. Along with the Friends of Vattenriket *(Vattenrikets vänner),* they help to spread information in their networks. Study visits and guided tours create direct contact with visitors and stakeholders.

The Future We Want method has provided an opportunity for the Consultation Group, the Friends of Vattenriket and the general public to be involved in the Biosphere Office's upcoming action plan. See question 7.5.6 for further information. Our youth forum provides an opportunity for the target group of young adults aged 18–28 to gain knowledge and inspiration and to be involved in biosphere work locally and in the network around the Baltic Sea. See question 6.6 for further information.

Internal communication

Communication within the Biosphere Office and within Kristianstad Municipality takes place through:

- Regular meetings, both indoors and in the field
- Email and digital collaboration tools
- Intranet and shared booking calendars
- Coordination with other municipal activities.

We use a multifaceted communications strategy to reach different target groups through digital and physical channels and meetings. The combination of the naturum Vattenriket visitor centre, visitor sites, social media, printed material and direct dialogue ensures that the message of sustainable development is spread and has an impact.

6.5.2 Is there a biosphere reserve website? If so, provide the link.

vattenriket.kristianstad.se

6.5.3 Is there an electronic newsletter? How often is it published? (provide the link, if applicable).

The Biosphere Office's newsletter is sent out four times a year. It contains an overall greeting and short preambles with links to blog posts from the latest quarter. The recipients are the Friends of Vattenriket *(Vattenrikets vänner),* biosphere ambassadors, other biosphere reserves, the Swedish MAB Programme *(Biosfärprogrammet Sverige)*, the Consultation Group, decision-makers and politicians.

Naturum Vattenriket's newsletter is sent out once a week with information about current activities. It is aimed at members of the Friends of Vattenriket *(Vattenrikets vänner)* association.

In addition to the newsletters, news is published in a news blog on the biosphere reserve website about twice a month. The posts describe the work in the biosphere reserve and are promoted via Vattenriket's Facebook page. The language is Swedish, but the posts can easily be translated using Google Translate.

6.5.4 Does the biosphere reserve belong to a social network (Facebook, Twitter, etc.)? Provide the contact.

Facebook: facebook.com/NaturumVattenriket. The Facebook page was started in connection with the opening of naturum in 2010 and has over 7,200 followers.
Instagram: instagram.com/vattenriket, which has 550 followers.
Linkedin: linkedin.com/company/vattenriket, which has 500 followers.
Youtube: youtube.com/user/Vattenriket
Naturkartan: naturkartan.se/en/vattenriket

6.5.5 Are there any other internal communication systems? If so, describe them.

Meetings with other departments in Kristianstad Municipality, the County Administrative Board, Kristianstad University and other associations are held as required to supplement the regular meetings mentioned previously.

The Biosphere Office acts as a resource for the municipality in matters relating to tourism development, outdoor recreation, urban planning and environmental development. In connection with this, internal communication takes place with the municipal departments concerned.

The Biosphere Office is also an important actor in developing Kristianstad's municipality-wide climate communication. The Biosphere Office is also a member of the County Administrative Board's consultation group for nature conservation.

Regular meetings are held within the Biosphere Office to plan our work, deepen our knowledge and coordinate projects. We have an internal Facebook group for sharing news, good ideas and other relevant information.

6.6 Describe how the biosphere reserve currently contributes to the World Network of Biosphere Reserves and/or could do so in the future.

Kristianstads Vattenrike Biosphere Reserve actively contributes to the World Network of Biosphere Reserves by participating in several international collaborations and sharing good examples.

EuroMAB
The Biosphere Office participates actively in this network, which provides opportunities for exchanges of experience and joint projects with other biosphere reserves in Europe and North America. Staff from the Biosphere Office and naturum Vattenriket have participated in every

EuroMAB conference for the past ten years. At the most recent EuroMAB conference in Wittenberg, Germany in 2024 we provided several inspiring examples during the workshops.

NordMAB

The Biosphere Office has participated and held workshops at several NordMAB conferences. The network has also arranged exchanges between members, and staff from the Biosphere Office have visited and received visits from the biosphere reserves Wester Ross in Scotland, Southeast Rügen in Germany, the Archipelago Sea in Finland and Mön in Denmark on several occasions.

The Biosphere for Baltic Network

Since the Biosphere Office initiated this network of twelve biosphere reserves around the Baltic Sea in 2017, several collaborative projects have been carried out with a focus on sustainable marine awareness, education and sustainable tourism, with meetings in the West Estonian Archipelago in Estonia, Slowinski in Poland, the Archipelago Sea in Finland and Sweden. For the first seven years (2017–2023) the network was coordinated by the Biosphere Office.

The network is currently collaborating in the Supported by Nature Interreg project, which aims to increase understanding of nature-based solutions by establishing learning sites. The Biosphere Office is the project manager of Biosphere for Baltic – Future Generations, in which twelve biosphere reserves around the Baltic Sea are working together to increase the involvement of young people in biosphere activities, sustainable development and the health of the Baltic Sea. In addition to a series of webinars, a youth forum will be organised in Vattenriket and a plan will be developed to establish a long-term network around the Baltic Sea for young adults.

Other exchanges of experience

The biosphere reserve has received visits from other biosphere reserves, such as Mön in Denmark, Southeast Rügen in Germany and Dublin Bay in Ireland, to share experiences and knowledge in various projects. Naturum's manager spoke at a UNESCO conference for visitor centres in the World Heritage city of Palermo in Sicily in 2018. The Biosphere Office's information officer has given a presentation on Vattenriket's strategic work on communications, visitor sites and biosphere ambassadors for the Monte Grappa Biosphere Reserve candidate in Italy.

Future contributions

In the future, the Biosphere Office plans to continue sharing its experiences and best practices in sustainable development and nature conservation. By participating in regional and thematic networks, as well as organising and participating in international meetings and conferences, we aim to further strengthen cooperation within the World Network of Biosphere Reserves.

6.6.1 Describe any collaboration with existing biosphere reserves at national, regional, and international levels, also within regional and bilateral agreements.

We have established several partnerships at national, regional and international levels to promote sustainable development, biodiversity conservation and knowledge sharing.

National cooperation

At national level, Kristianstads Vattenrike cooperates with other Swedish biosphere reserves through the Swedish MAB Programme *(Biosfärprogrammet Sverige)*, a network that enables knowledge exchange and joint projects. We have actively supported biosphere reserves during their

establishment process, such as Storkriket, Örebro, Nämndö, Öresund and Dalsland. The Biosphere Office has visited Blekinge Archipelago and contributed to the Storkriket application process. We helped to organise the conference for biosphere municipalities 2023, a national gathering to strengthen the role of biosphere municipalities in sustainable development.

International collaborations

Kristianstads Vattenrike plays an active role in several international networks and projects.

The Biosphere for Baltic network

In 2017, the Biosphere Office initiated the Biosphere for Baltic network. We collaborate with twelve biosphere reserves around the Baltic Sea on issues such as sustainable marine awareness, education and sustainable tourism. The network was coordinated for the first seven years (2017–2023) by Kristianstads Vattenrike.

- **BFB-TOOLS**, Tools for Ocean Literacy and Sustainability, a collaboration for sustainable tourism that draws attention to environmental challenges and increases knowledge about the ocean. Funded by the Swedish Institute.

- **BFB-COLAB,** Biosphere for Baltic – Collaboration, Ocean Literacy & Local Engagement for a Sustainable Baltic Sea deepened the collaboration within the network with a focus on visitor centres and ocean awareness activities. Funded by the Swedish Institute.

- **Supported by Nature Interreg project**, to increase understanding of nature-based solutions by establishing learning sites. Funded by the EU programme Interreg.

- **Biosphere for Baltic – Future Generations.** The Biosphere Office is leading this initiative to increase youth engagement in biosphere activities, sustainable development and the Baltic Sea ecosystem. Funded by the Swedish Institute. The project consists of a series of webinars and a youth forum organised in Vattenriket.

Other international cooperation

Exchange of experience with other biosphere reserves about visitor centres in Palermo, Italy.

Study trip to the Appennino Tosco-Emiliano Biosphere Reserve, Italy. Focus on sustainable tourism, rural development, new forms of enterprise and nature education.

Study trip to the Galloway and Southern Ayrshire Biosphere Reserve, Scotland. Focus on social enterprise and entrepreneurship in biosphere reserves.

Exchange of experience with Monte Grappa, Italy. Information about the work of the Biosphere Office for a prospective biosphere reserve.

Biosphere Forests for the Future project application. The Biosphere Office participated in several international workshops on a new EU application with European biosphere reserves and universities. The workshops were held in the Rhön Biosphere Reserve in Germany and the Wienerwald Biosphere Reserve in Austria.

Cooperation with Nordhordland, Norway:

- Participants from the Nordhordland Biosphere Reserve, the Norwegian UNESCO Commission, the University of Bergen and Alver Municipality visited Vattenriket to be inspired by our work on education, communication, ecosystem services and collaboration with researchers and landowners.

- Naturum's educator participated in a UNESCO school network meeting in Nordhordland.

Citizen science Rügen: Naturum's nature educator shared experiences from citizen science in the project Algae Research Summer *(Algforskarsommar)* at an international conference at Vilm, in the Southeast Rügen Biosphere Reserve.

MAB LAB II: Workshops with other Nordic biosphere reserves have led to a report on local action for the new Kunming-Montreal Global Diversity Framework (Dietrich et al, 2025).

International youth exchange: In 2023, four young people from Vattenriket participated in a forum in Luxembourg, and in the summer of 2025, Kristianstads Vattenrike will organise its own forum for young people from twelve biosphere reserves in eight countries as part of the Biosphere for Baltic – Future Generations project.

6.6.2 What are the current and expected benefits of international cooperation for the biosphere reserve?

International cooperation is important to promote knowledge exchange, research and visibility, and the ability to shape policies and strategies, contributing to local as well as global sustainable development.

Current benefits

Knowledge exchange and learning: Through participation in international networks such as EuroMAB, NordMAB and Biosphere for Baltic, BfB, the Biosphere Office shares experiences and lessons learned with other biosphere reserves, promoting co-development and the use of sustainable practices. Biosphere for Baltic – Future Generations is one example. In the BfB network, we found a common challenge – engaging young adults. Together we developed a project idea and applied for funding from the Swedish Institute. The aim is to learn from each other and develop new methods, and to spread knowledge of and commitment to biosphere work among our key target group of young adults.

Research and innovation: Collaborations with international researchers and institutions, such as the Stockholm Resilience Centre and the University of Bergen, are helping to develop new approaches to sustainability and ecosystem management.

Increased visibility and recognition: By being part of UNESCO's global network, Kristianstads Vattenrike Biosphere Reserve gains international recognition, raising the profile of the area and attracting visitors, researchers and investments.

Expected future benefits

Developing sustainable solutions: Continued international cooperation can lead to the development and implementation of innovative solutions to global environmental challenges adapted to local conditions.

Capacity building: By participating in international projects and training programmes, we can strengthen our expertise and capacity in areas such as nature-based solutions to societal challenges, climate change adaptation and biodiversity conservation.

Policy development and advocacy: By engaging in global discussions and collaborations, the Biosphere Office can help shape policies and strategies for sustainable development at national as well as international levels.

Learning in the landscape

A living classroom where nature and cultural history meet

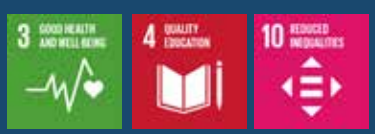
The biosphere reserve's visitor sites are places for learning and inspiration. Here, nature enthusiasts can gain new insights, teachers and students can explore nature, and nature-based solutions for conservation are shared.

21 visitor sites spread knowledge about ecosystems and cultural history. Seven sites have outdoor museums with exhibits, tactile elements and audio guides. Four are equipped with biosphere classrooms with field materials that schools and scout groups can use to explore life in freshwater and coastal ecosystems and sandy grasslands.

The Äspet Outdoor Museum is a good example. It tells the story of the Baltic Sea and how humans have used and affected the sea throughout the ages. A path leads to a bird tower with information about bird life in the lagoon. On the beach there is a biosphere classroom with materials that educators can use to explore life below the surface.

A little way out to sea, a stone reef is being built as a nature-based solution to benefit biodiversity and reduce erosion.

The reef will become a learning site in the EU-funded project Supported by Nature. At 17 learning sites around the Baltic Sea, students, authorities and organisations will be able to find inspiration for actions to make the sea healthier.



This argument is supported by research that concludes that if we are to harness the power of place-based learning for sustainability to address global challenges, individual places are not enough. Regional and global networks are needed to develop theories that are adapted to specific contexts and can also be used more generally (Barraclough et al, 2023).

6.6.3 How do you intend to contribute to the World Network of Biosphere Reserves in the future and to the Regional and Thematic Networks?

In the future, the Biosphere Office plans to continue sharing its experiences and best practices in sustainable development and nature conservation. By participating in regional and thematic networks, as well as organising and participating in international meetings and conferences, we aim to further strengthen cooperation within the World Network of Biosphere Reserves.

This applies both to the global networks such as EuroMAB and the regional networks NordMAB and Biosphere for Baltic, BfB. We will support the formation of a young adult network around the Baltic Sea linked to BfB and hope to be able to offer a young delegate from Vattenriket the chance to participate in upcoming EuroMAB conferences.

The BfB network's Interreg project Supported by Nature, SbN, continues into the next ten-year period. Within the project, 17 so-called learning sites will be developed to show how to work with nature-based solutions in measures for a healthier Baltic Sea.

We will help to communicate what these networks are working on and achieving in existing and new channels to a broad range of stakeholders and audiences.

The same applies to naturum Vattenriket within the UNESCO network of visitor centres.

6.7 What are the main factors that influenced (positively or negatively) the success of activities contributing to the logistic support function? Given the experiences and lessons learned in the past ten years, what new strategies or approaches will be favored as being most effective?

The work in Kristianstads Vattenrike on the logistic support function is wide-ranging. We help to produce and disseminate new research in, with and about the biosphere reserve. We have long experience of working to change attitudes towards sustainable social development using many tools. We use a range of different channels to reach our target groups, from guidebooks and reports to websites, films and information signs, and – through naturum Vattenriket – we can offer a meeting place for everyone. In addition to the breadth of our work, it is also a major success factor that we can carry out the vast majority of our activities ourselves as we have employees with many skills.

Research and higher education: The biosphere reserve attracts researchers from universities in Sweden and around the world. We help to promote research while applying the lessons learned and we disseminate knowledge to the public in many ways: through the publication series Vattenriket in focus *(Vattenriket i fokus),* on our website, via social media and field trips. Lectures and the annual Biosphere Research Conference are organised at the naturum Vattenriket visitor centre.

International cooperation: Kristianstads Vattenrike Biosphere Reserve actively contributes to the World Network of Biosphere Reserves by participating in various collaborations and sharing best

practices in terms of sustainable development and nature conservation. We will continue to participate in regional and thematic networks and organise and participate in international meetings and conferences to further strengthen cooperation within the World Network of Biosphere Reserves.

Naturum Vattenriket: Naturum Vattenriket has been the biosphere reserve's visitor centre since 2010. Over the past ten years, the centre has had 900,000 visitors. In 2022, naturum Vattenriket received the international Star Wetland Centre Award as one of the world's best visitor centres for wetlands. The prize was awarded by the Wetland Link International (WLI) network, which highlighted naturum's architecture, location, accessibility and activities in its award citation. In 2025, naturum Vattenriket will participate in UNESCO's exhibition at the Venice Architecture Biennale as a good example of a multifunctional visitor centre that strengthens the area's designation as a biosphere reserve. Naturum shows the way to the visitor sites and offers a broad educational programme.

Visitor sites in the landscape: There are 21 visitor sites in the biosphere reserve that provide on-site knowledge and experiences by bringing the site's natural and cultural values to life. In this way, the visitor sites contribute to lifelong learning. The visitor sites play an important role in channelling visitors so that wear and tear on valuable and sensitive natural areas is minimised. They also provide a base for the area's outdoor recreation activities, associations and ecotourism operators.

Over the last ten years, the Biosphere Office has made several improvements at our visitor sites. We have developed and opened three new outdoor museums. The Hercules Outdoor Museum shows the area's varied landscape and human use of the cultural landscape. A new exhibition at the Äspet Outdoor Museum by the sea highlights life under the surface, European eel *(Anguilla anguilla)* fishing and bathing through the ages. The Årummet Outdoor Museum with a boardwalk has been built in the vicinity of naturum. Several initiatives have been taken for families with children. We have developed the story trail Vättestigen where visitors can familiarise themselves with some of the deciduous forest species at Norra Lingenäset. At Ekenabben, we have developed the Frog Game *(Grodleken),* where children are encouraged to move around while learning about the exciting diversity of species in the wet forest.

Infrastructure for outdoor recreation and ecotourism: We have long experience of working to improve access to encounters with nature. The infrastructure that we contribute to seeking funding for and building benefits the local population and visiting guests as well as ecotourism companies that can use it in their businesses.

Several sites have high accessibility with extra wide paths and boardwalks. The new Årummet Outdoor Museum with a boardwalk is fully adapted for wheelchairs and prams, as is a new fishing jetty at the Kanalhuset Outdoor Museum. We have increased accessibility to the urban Linnérundan trail, which has been made wheelchair accessible. One major project was creating 150 kilometres of new hiking trail as part of the Skåne Trail SL6 between Vattenriket's visitor sites with information, birdwatching towers, boardwalks and picnic areas.

Strategic communication: Vattenriket's communications will continue to be based on a well thought-out, broad and targeted communication strategy in many different channels.

Digital channels: Vattenriket has a well-visited and content-rich website. It contains information for visitors, descriptions of nature and good examples of our work for sustainable development in the biosphere reserve. On social media, we show the breadth of the biosphere work. News about our work is published on the website and sent to interested parties as a digital newsletter each quarter.

6.8 Other comments/observations from a biosphere reserve perspective.

Information in many languages: The Biosphere Office works to provide information about the biosphere reserve to everyone. Brief information about Kristianstads Vattenrike Biosphere Reserve, activities and places to visit has been translated into Arabic, Danish, Dari, German, English, Spanish, Polish, Somali and Tigrinya. At the naturum Vattenriket visitor centre, information is also available in Swedish sign language. Naturum's exhibition, annual reports and tourist information are available in Swedish, English and to some extent in German.

COVID pandemic: 2020 and 2021 were largely characterised by the COVID pandemic. Vattenriket's natural surroundings became a place to meet family and friends. The Biosphere Office invested heavily in showing the way to visitor sites, hiking trails and hidden gems using films and posts on social media. We also launched a series of fun missions that families with children could solve on their own in the vicinity of naturum.

For those who could not or did not want to go outside, we offered digital nature experiences such as slow TV coverage of the crane dancing and digital scheduled activities. During periods when naturum was forced to close for visitors, maps and visitor information were available outside naturum and during periods when naturum was permitted to open, we met at the COVID-safe distance of an eagle's wingspan, with the number of simultaneous visitors greatly limited.

"Always a pleasant response from the staff, who are happy to answer visitors' questions! A real gem to visit in Kristianstad. Our grandchildren also love to be there with us. Every time we discover something new and interesting!"

Visitor to naturum Vattenriket, Google reviews, 2024.

"At naturum Vattenriket, visitors feel expected and welcome! There is a wide and rich range of manned as well as unmanned nature interpretation for many target groups, whether you are a first-time or returning visitor."

The Swedish Centre for Nature Interpretation in the Swedish Environmental Protection Agency's evaluation of naturum Vattenriket, 2017.

7. GOVERNANCE, BIOSPHERE RESERVE MANAGEMENT AND COORDINATION

[Biosphere reserve coordination/management coordinators/managers have to work within extensive overlays of government bodies, business enterprises, and a "civil society" mix of non-governmental organizations and community groups. These collectively constitute the structures of governance for the area of the biosphere reserve. Success in carrying out the functions of a biosphere reserve can be crucially dependent upon the collaborative arrangements that evolve with these organizations and actors. Key roles for those responsible for the biosphere reserve coordination/management are to learn about the governance system they must work within and to explore ways to enhance its collective capacities for fulfilling the functions of the biosphere reserve].

7.1 What are the technical and logistical resources for the coordination of the biosphere reserve?

Kristianstad Municipality is the responsible authority for Kristianstads Vattenrike Biosphere Reserve. The Biosphere and Naturum Unit belongs to the Municipal Executive Office and its Societal Development Department. The unit has 15 permanent employees, 2 project employees and 5 hourly employees. Together, the staff are responsible for biosphere activities including the staffing of naturum Vattenriket. The work is done in close cooperation with several other municipal administrations and with the County Administrative Board of Skåne.

There is also a consultation group that meets three times a year. The Consultation Group for Kristianstads Vattenrike Biosphere Reserve acts as an advisory group and consists of representatives of local organisations, civil servants and politicians, as well as some regional authorities. Together, the group represents over 20 different associations, regional and municipal units and departments. See question 7.5 for further information.

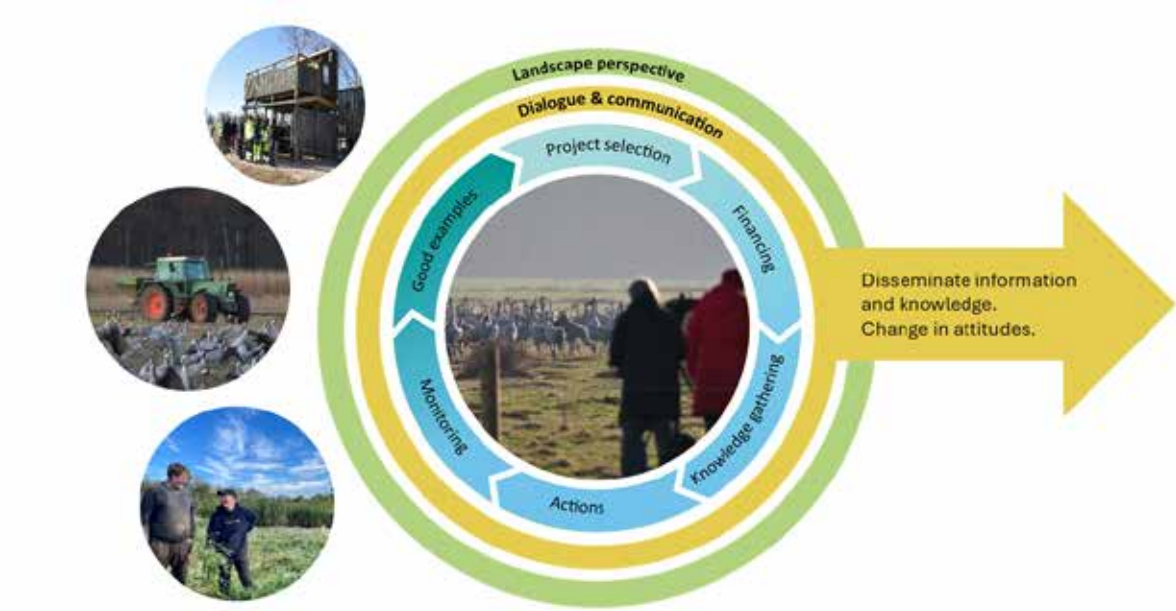
There is a programme board for naturum's scheduled activities, that, in addition to representatives from the naturum Vattenriket visitor centre, consists of people from nature conservation and outdoor recreation associations in the municipality.

There is also a non-profit association, Friends of Vattenriket *(Vattenrikets vänner),* which supports projects and development in Vattenriket.

7.2 What is the overall framework for governance in the area of the biosphere reserve? Identify the main components and their contributions to the biosphere reserve.

The governance of Kristianstads Vattenrike Biosphere Reserve is based on a flexible and collaborative approach, where all relevant stakeholders work together to achieve common goals. Dialogue and collaboration are central to the work. The Biosphere Office is responsible for coordinating the work and ensuring that the area's three main functions – conservation of biodiversity, sustainable development and communication/logistic support for research – are fulfilled. The Biosphere Office coordinates activities within the biosphere reserve and plays a central role in supporting, initiating and following up actions carried out by other stakeholders in accordance with the biosphere reserve's action plan.

The Biosphere Office has no official authority. Instead, the work is based on open and active dialogue with authorities, associations, landowners, the public and other relevant stakeholders. Our working model has been described by researchers as adaptive co-management, where we work together to find local solutions to global challenges. An important part of this process is the biosphere reserve's Consultation Group, which consists of representatives from various stakeholders in the area. The Consultation Group acts as an advisory group and meets three times a year. It is an important forum for discussing current issues, exchanging experiences and creating conditions for early and constructive dialogues on various projects and initiatives.



The management of resting cranes *(Grus grus)* in Vattenriket is an example of adaptive co-management. Previously, the cranes caused damage to newly sown fields and birdwatchers drove around the area to see the cranes. After a study trip to Germany, feeding was tested and now the cranes are fed at the Pulken Outdoor Museum. This protects farmers' spring sowing, lets the cranes feed and rest, and allows visitors to enjoy the spectacle. Crane hosts welcome visitors at the birdwatching tower. The Swedish Environmental Protection Agency and Kristianstad's Warehouse Association *(Kristianstadsortens lagerhusförening)* provide funding and the Bird Society of North-East Scania *(Nordöstra Skånes Fågelklubb)* counts the cranes to adjust the feeding.

7.3 Describe social impact assessments or similar tools and guidelines used to support indigenous and local rights and cultural initiatives (e.g. CBD Akwé:Kon guidelines, Free, Prior, and Informed Consent Programme/policy, access and benefit sharing institutional arrangements, etc.).

This question is not relevant to Kristianstads Vattenrike Biosphere Reserve. No indigenous peoples live in the reserve.

7.4 What (if any) are the main conflicts relating to the biosphere reserve and what solutions have been implemented?

There are no major conflicts in Kristianstad Vattenrike Biosphere Reserve. The conflicts that have arisen, and in some cases still do, are linked to development and land use, and also in some cases to

cultivation and natural values. Further back in time, there were also conflicts linked to water extraction, see question 7.4.1 for further information.

7.4.1 Describe the main conflicts regarding access to, or the use of, resources in the area and the relevant timeframe. If the biosphere reserve has contributed to preventing or resolving some of these conflicts, explain what has been resolved or prevented, and how this was achieved for each zone.

Kristianstad Municipality is part of an expanding region with increasing exploitation and intensive agriculture. This has led to certain situations where there are conflicting interests in the biosphere reserve's transition areas, for example between agriculture and nature conservation and regarding the way in which groundwater should be used.

By promoting an ongoing dialogue between different stakeholders and attempting to start the dialogue early in the process, the Biosphere Office helps to create agreement.

Our work on crane *(Grus grus)* and goose management is a good example of how cooperation and dialogue can lead to excellent solutions for all parties concerned. The cranes used to cause problems, as resting cranes in the spring tended to ruin farmers' spring sowing, see question 4.2 for further details. In 1997, the Goose and Crane Management Group in North-Eastern Skåne was initiated by what is now the Biosphere Office, to create a platform for dialogue between the various stakeholders. The aim of the group was to find a solution to the problem, so that the cranes could rest undisturbed in the biosphere reserve without causing problems for the spring sowing.

The cranes are now fed at the Pulken Outdoor Museum in a collaboration with the County Administrative Board, Kristianstad's Warehouse Association *(Kristianstadsortens lagerhusförening)*, farmers, the Bird Society of North-East Scania *(Nordöstra Skånes Fågelklubb)*, the Swedish Society for Nature Conservation, the Swedish Association for Hunting and Wildlife Management, Kristianstad University and the Biosphere Office. This does not only benefit farmers and cranes, but also around 15,000 visitors a year who gain a memorable experience of nature. The activity had already been established prior to the nomination to become a biosphere reserve, but has been further developed during the past ten years. For a couple of years now, we have been organising crane hosts in collaboration with local outdoor recreation and nature conservation associations. Together we tell people about the cranes and show them the way to other visitor sites in Vattenriket.

As regards goose management, the close collaboration with Kristianstad University and its research has been very valuable in increasing knowledge about the geese's patterns of movement, foraging, life and impact in the landscape. Information from the researchers is a standing agenda item at the Goose and Crane Management Group's meetings. The Biosphere Office also commissions regular nest inventories to monitor the development of geese in the biosphere reserve. This type of knowledge and dialogue, as well as respect for the different interests of the group members, is very important in preventing conflicts of interest.

The Biosphere Office works actively to find solutions that balance exploitation and conservation to prevent conflicts. We are currently involved in an urban development project where we will develop a management plan and implement biodiversity offsetting measures. The area has high natural values that risk being lost during exploitation, and so measures to increase biodiversity will be implemented in a nearby area instead. We have also participated in developing a balancing model that can be used to weigh exploitation against natural and recreational values.

7.4.2 Describe any conflicts in competence among the different administrative authorities involved in the management of the area comprising the biosphere reserve.

The Biosphere Office has no official authority. Instead it acts as an arena for discussions and can assist by providing knowledge in cases such as those concerning planning work and the development of areas with natural values in cases where other interests are also present. A good example of this is the sandy grasslands to the west of Åhus, which have very high natural values. Some species have their only occurrence in northern Europe in this area. As a result of the Biosphere Office's work to raise awareness and ensure a good dialogue at an early stage in the process of amending the comprehensive plan for Åhus, we have been able to achieve a solution that benefits nature and people! This is a continuation of the work that we have been doing since 2005, when sandy grasslands with high natural, cultural and recreational values were re-classified from development land to the municipal nature conservation fund, with the aim of benefitting nature and recreational interests, and have now been municipal nature reserves for several years.

7.4.3 Explain the means used to resolve these conflicts, and their effectiveness. Describe its composition and functioning, resolution on a case-by-case basis. Are there local mediators; if so, are they approved by the biosphere reserve or by another authority?

Kristianstad Municipality is part of an expanding region where many people want to live and do business. Food production is also an important industry and it is said that every Swede eats something produced in Kristianstad every day. There are many farms here, with crop as well as livestock production. Many of the soils on the Kristianstadsslätten Plain are quite "light" and require irrigation. This has led to some situations of conflicting interests in the transition areas of the biosphere reserve, for example, between exploitation and agriculture, exploitation and natural values, agriculture and natural values, and also how to manage groundwater. For example, the Biosphere Office has organised a seminar series, Water Workshops in Vattenriket *(Vattenmöten i Vattenriket)* with the Swedish Federation of Rural Economy and Agricultural Societies and the work on Climate Neutral Kristianstad 2030, for farmers in the area. Together, we have visited farmers in the biosphere reserve who have demonstrated best practices for how to conserve water, and organised seminars as well as a study trip to the Blekinge Archipelago Biosphere Reserve. There we met farmers who have built different types of ponds for irrigation.

By promoting ongoing dialogue between different stakeholders, the Biosphere Office helps to build agreement. In the collaboration process in the project Co-Management of Interacting Ecosystem Services in the Helge Å River Drainage Basin *(Samförvaltning av interagerande ekosystemtjänster i Helgeåns avrinningsområde),* which was conducted by researchers at the Stockholm Resilience Centre over several years in collaboration with the Biosphere Office, several participants from the agriculture and forestry sectors described experiencing the biosphere work as an arena where they were listened to and not singled out as "villains" whose work was "environmentally harmful". This is an example of how important the biosphere work is and of our work to promote dialogue and collaboration (Enfors-Kautsky, 2022).

The work with goose and crane *(Grus grus)* management that we have been doing for many years is a good example of how collaboration and dialogue can lead to excellent solutions for all parties involved, see question 7.4.1.

The Biosphere Office also participates actively in the municipality's work on the urban planning process, such as the comprehensive plan and detailed development plans. For example, the coordinator of the biosphere reserve and manager of the Biosphere Office is a member of the steering group for the urban planning process and the comprehensive plan in Kristianstad Municipality. By getting involved early in the planning process and contributing our knowledge of landscape values, it is possible to find solutions that benefit nature and people. One example is the work on amending the comprehensive plan for Åhus, where the Biosphere Office's knowledge of the natural values of the sandy grasslands in open as well as wooded environments, developed over several years, is of great value. Sustainable solutions and wise compromises between different interests can be made, which help to develop the community as an attractive place to live, do business and visit.

7.5 Updated information about the representation and consultation of local communities and their participation in the life of the biosphere reserve:

7.5.1 Describe how local people (including women and indigenous people) are represented in the planning and management of the biosphere reserve (e.g., assembly of representatives, consultation of associations, women's groups).

The Consultation Group and naturum's programme board are two examples of groups that have significant influence over our work. The Consultation Group for Kristianstads Vattenrike Biosphere Reserve consists of a variety of stakeholders representing a range of different disciplines, authorities and organisations. The Consultation Group meets three times a year and has an advisory role. Two meetings are held outdoors in the field to study a current issue on site. This issue might be a planned activity, a report on work performed or a problem that needs to be discussed. The chairperson and political representatives in the Consultation Group are appointed by the Municipal Executive Committee. The information officer at the Biosphere Office acts as the secretary. The naturum Vattenriket visitor centre has a programme board that meets twice a year to collaborate on naturum's programme.

The Biosphere Office also engages in dialogue with landowners and other stakeholders as necessary before new projects are launched.

Sweden is considered one of the most gender equal countries in the world and men and women have equal opportunities to participate in the activities of the biosphere reserve. There are no indigenous peoples in the biosphere reserve who require special consideration.

7.5.2 What form does this representation take: companies, associations, environmental associations, trade unions (list the various groups)?

The Consultation Group for Kristianstads Vattenrike Biosphere Reserve consists of representatives from:

- Federation of Swedish Farmers (LRF) in Kristianstad Municipality
- Swedish Society for Nature Conservation in Kristianstad Bromölla
- Bird Society of North-East Scania *(Nordöstra Skånes fågelklubb)*
- Lower Helge Å Fishery Conservation Area *(Nedre Helgeåns fiskevårdsområde)*
- Vramsån Fishery Conservation Area within Köpinge *(Vramsåns fiskevårdsområde inom Köpinge)*
- Kristianstad-Bromölla Game Conservation District *(Kristianstad-Bromölla Jaktvårdskrets)*
- Kristianstad Motor Boat Club *(Christianstads Motorbåtsklubb)*
- Beckhovet Fishing Hut Association *(Beckhovets fiskebodsförening)*
- County Administrative Board of Skåne, the Environment Department and the Nature Conservation Unit
- Region Skåne, the Department for Regional Development
- Kristianstad University
- Friends of Vattenriket *(Vattenrikets vänner)*
- Eel Academy *(Ålakademin)*
- Regulation Company of the Lower River Helge Å *(Nedre Helgeåns regleringsföretag)*
- Swedish Forestry Agency, Skåne District
- Kristianstad Beekeepers Queen's Club *(Kristianstads biodlares drottningklubb).*

Kristianstad Municipality:

- Political representatives appointed by the Municipal Executive Committee
- Municipal Management Office
- Biosphere and Naturum Unit, Municipal Management Office
- Sustainability Unit, Municipal Management Office
- Land and Development Unit, Municipal Management Office
- Business and Communications Unit, Municipal Management Office
- Culture and Recreation Administration
- Public Works Administration
- Environment, Planning and Community Development Administration
- Childcare and Education Administration.

Naturum's programme board consists of representatives from:

- naturum Vattenriket visitor centre
- Friends of Vattenriket *(Vattenrikets vänner)*
- Bird Society of North-East Scania *(Nordöstra Skånes fågelklubb)*
- Swedish Society for Nature Conservation in Kristianstad Bromölla
- Swedish Tourist Association Eastern Skåne
- Swedish Outdoor Association Kristianstad
- Studiefrämjandet study association in Skåne County.

Adaptive co-management

Successful approach to rewetting and constructing new wetlands

Wetlands improve water quality and benefit biodiversity. The Biosphere Office has been involved in over 60 wetland projects during the past ten years. Wetland construction is a clear example of adaptive co-management. It is characterised by collaboration, learning and flexibility in finding sustainable solutions.

The process of constructing and managing wetlands can be divided into several steps. It begins with collaboration and planning. The Biosphere Office works with landowners, authorities and other local stakeholders to identify suitable sites and methods.

The measures are then implemented. Wetlands are constructed using different designs depending on the landscape and specific needs.

The next step is follow-up and learning. We work with researchers to measure and analyse the impacts of wetlands on water quality, greenhouse gas emissions and biodiversity.

The results are used to improve future measures and existing wetlands.

By testing, evaluating and improving our work with wetlands in cooperation with researchers as well as local stakeholders, we have created a model for sustainable water management that can inspire others.

The Biosphere Office's work with wetlands was nominated for the Nordic Council Environment Prize in 2022, when the focus of the prize was on nature-based solutions.

7.5.3 Indicate whether there are procedures for integrating the representative body of local communities (e.g., financial, election of representatives, traditional authorities).

The Consultation Group and naturum's programme board are the main forums for representatives of the local communities. The Consultation Group includes a diverse range of representatives from authorities, associations and other organisations. Naturum's programme board has been expanded to six different associations in addition to staff from the naturum Vattenriket visitor centre. The new associations are the Swedish Tourist Association Eastern Skåne and the Swedish Outdoor Association Kristianstad.

In addition, the Biosphere Office collaborates broadly with the surrounding community and a large network of contacts in formal as well as informal networks. Some examples are the friends association Friends of Vattenriket *(Vattenrikets vänner)* and the network of biosphere ambassadors. The work of the Biosphere Office is based on collaboration and dialogue with everyone from landowners and business owners to civil servants, researchers and associations.

Members of the public can contact the Biosphere Office by phone, email and letter, and via Facebook, Instagram and Linkedin. Information and contact details for the Biosphere Office are available on the website.

Kristianstads Vattenrike Biosphere Reserve was one of four biosphere reserves in a 2018 study on participation in decision-making processes. A paper from the project shows that biosphere reserves involve a diverse range of stakeholders in decision-making as well as implementation. According to the researchers, the biosphere reserves studied enable action by creating important new arenas for stakeholders to meet. In Vattenriket, this includes the Consultation Group as well as networks of individuals and organisations formed around specific projects (Baird et al, 2018).

Members of the Consultation Group and other stakeholders in the biosphere reserve were interviewed for a 2024 master's thesis from Stockholm University. Participants in the study felt that the local community is well represented in the Consultation Group, although some interests may dominate. The Biosphere Office is perceived as fair, and participation as relevant. Extensive communication about objectives, decisions and activities provides transparency. Participants in the study are generally satisfied with participating through knowledge sharing and implementation. Many feel that they can contribute their expertise while also trusting the expertise of the staff (Örtenholm, 2024).

7.5.4 How long-lived is the consultation mechanism (e.g., permanent assembly, consultation on specific projects)?

The Consultation Group is permanent and meets three times a year. The naturum programme board meets twice a year while the Goose and Crane Management Group in North-Eastern Skåne meets once a year. In addition, new groups for cooperation are created with stakeholders for specific Biosphere Office projects.

7.5.5 What is the impact of this consultation on the decision-making process (decisional, consultative or merely to inform the population)?

The Consultation Group primarily has an advisory role. The group receives information and is

consulted regarding management of and activities in the biosphere reserve. This includes, for example, various projects in which the Biosphere Office is involved, as well as work on the municipal comprehensive plan, outdoor recreation plan and the like. Another aim of the group is to share knowledge and information between stakeholders so that this can then be shared further.

7.5.6 At which step in the existence of a biosphere reserve is the population involved: creation of the biosphere reserve, drawing up of the management plan, implementation of the plan, day to day management of the biosphere reserve? Give some practical examples.

The public has been involved in various ways – from the time Kristianstads Vattenrike became a biosphere reserve to the daily management of the area. The associations in naturum's programme board collaborate on naturum's programme. The Friends of Vattenriket *(Vattenrikets vänner)* and the biosphere ambassadors are involved in activities ranging from disseminating information at various events to carrying out simple restoration measures in the landscape.

The public is given the opportunity to influence the biosphere reserve's action plan, through the representation of different stakeholders and groups in the Consultation Group. Before a new action plan is adopted, it is discussed in the Consultation Group so that its members can influence its content.

In preparing the action plan for 2026–2030, the public was involved more directly. Within the Vinnova project Brokering Peace with Nature Using Foresight in Kristianstads Vattenrike Biosphere Reserve, a workshop was held in the spring of 2024 for the Consultation Group, Friends of Vattenriket, biosphere ambassadors and interested members of the public. The workshop was based on the method The Future We Want from the British organisation Transition Together. Participants were led through four steps focusing on the biosphere reserve: making a status report, visualising a sustainable future, framing questions to lead to that future, and developing next steps. Ideas from the workshop will form one of the bases for the upcoming action plan. The process was documented in a report (Sykes, 2024).

In a new project, so-called heritage trees are designated that will be protected from felling and allowed to grow large and old. Eventually, the trees will be allowed to fall where they stand as a contribution to biodiversity. So far, more than 20 trees have been designated as heritage trees through a collaboration between the Biosphere Office, the Land and Development Unit and the Public Works Administration. The public is involved by also giving private individuals in Kristianstad Municipality the opportunity to designate their own heritage trees. Those who meet the requirements will receive a badge and a diploma. Funding is provided by Kristianstad Municipality and the Swedish Environmental Protection Agency through the County Administrative Board of Skåne.

Another example is the work on the Skåne Trail SL6 Vattenriket subtrail, which began with a citizens' proposal to Kristianstad Municipality. The proposal gave rise to the idea of creating a Vattenriket trail, linking the Skåne Trail in the northern and southern parts of the municipality. The Biosphere Office led the extensive project. In 2024, the final stretch of the trail was inaugurated, linking Vattenriket's visitor sites with information, birdwatching towers, paths and picnic areas. Funding came from Kristianstad Municipality and LONA.

The core areas and buffer zones are managed by different authorities and the land in the transition areas is largely privately owned. Therefore, the consent of landowners is required for the Biosphere Office to influence the management and development of the latter. By having a close dialogue and highlighting good examples, the Biosphere Office has promoted knowledge exchange and has been successful in convincing landowners of the benefits of the biosphere activities. Long-term, strong cooperation with several landowners has created a high level of confidence, which enables further nature conservation and sustainability activities.

The initiative to form a biosphere reserve with Kristianstad Municipality as the responsible authority was reached with broad political agreement and was addressed in Kristianstads Vattenrike's action plan for 2001–2003. The Consultation Group was informed at an early stage. Information, knowledge exchanges and discussions regarding the application also took place with associations, local and regional authorities and organisations. A large emphasis was placed on making the application process transparent. The proposal for the application was distributed for consultation in the spring of 2004 to over 40 authorities, associations, organisations and individuals. The Kristianstad Municipal Council then reached a decision to make an application to become a biosphere reserve with broad political agreement.

7.6 Update on management and coordination structure:

7.6.1 Describe any changes regarding administrative authorities that have competence for each zone of the biosphere reserve (core area(s), buffer zone(s) and transition area(s))? If there are any changes since the nomination form/last periodic review report, please submit the original endorsements for each area.

There have been no changes in the authorities responsible for the zones in the biosphere reserve since the last report.

7.6.2 Update information about the manager(s)/coordinator(s) of the biosphere reserve including designation procedures.

The previous coordinator for the biosphere reserve retired in 2013, and Carina Wettemark, a former ecologist at the Biosphere Office, was appointed in the role. Carina Wettemark is still the coordinator and manager of the unit.

7.6.3 Are there any changes with regard to the coordination structure of the biosphere reserve? (if yes, describe in details its functioning, composition and the relative proportion of each group in this structure, its role and competence.). Is this coordination structure autonomous or is it under the authority of local or central government, or of the manager of the biosphere reserve?).

Kristianstad Municipality is the responsible authority for Kristianstads Vattenrike Biosphere Reserve, as was the case at the time of application. However, several reorganisations have taken place since the previous review.

Since 1 January 2025, the previous two units, the Biosphere Office and the Naturum Unit, have been merged into one unit, the Biosphere and Naturum Unit. In this report, the unit is referred to as the Biosphere Office. The manager of the Biosphere and Naturum Unit and coordinator is Carina Wettemark. Carina has been the coordinator and manager since 2013.

The unit now forms part of the Societal Development Department, which is a department under the Municipal Management Office at Kristianstad Municipality, with the Municipal Executive Committee as its immediate political governing body. In addition to the Biosphere and Naturum Unit, the new Societal Development Department also includes the Sustainability Unit and the Land and Development Unit.

7.6.4 How has the management/coordination been adapted to the local situation?

Kristianstads Vattenrike Biosphere Reserve covers around two thirds of the geographic area of Kristianstad Municipality. Kristianstad Municipality is the responsible authority for the biosphere reserve through the Biosphere Office under the Municipal Executive Office. It is a major advantage for Kristianstads Vattenrike Biosphere Reserve to operate within a single municipality, as issues relating to land use and urban development can be resolved in a municipal process in which the Biosphere Office participates.

Kristianstads Vattenrike is the only biosphere reserve in Sweden that is located within a single municipality, according to a report from the Swedish Environmental Protection Agency. This means, among other things, that the Biosphere Office is now involved in municipal planning work. According to the authors, this has contributed to great opportunities for insight into and influence over the long-term management of the land in the area. At the same time, being under municipal management has also presented challenges in terms of, for example, balancing different interests in the work on municipal comprehensive planning. Being part of a municipality organisationally also means that the biosphere work needs to be continuously anchored politically across party boundaries to ensure continued support in the event of municipal political changes (Sandström & Sahlström, 2020).

The advantages of belonging organisationally to a municipality outweigh the disadvantages, write the authors of a report from the Swedish Agency for the Marine Environment on five different operational models for ecosystem-based marine management, in which Kristianstads Vattenrike Biosphere Reserve is one of the case studies. Advantages include continuity and that the municipality has chosen to invest in the biosphere activities. Logistically, the Biosphere Office has access to the

municipality's IT, HR and other services, which has many advantages. Other pros mentioned are the fact that municipally owned land is set aside so that it can be exchanged when establishing nature conservation areas, and access to the municipality's expertise. One advantage of being part of a municipal organisation is that liquidity problems are avoided when there are delays in the receipt of funds, for example in the case of funding from Leader. Another is that the organisation can deduct VAT, unlike non-profit associations that do not have that possibility (Prutzer et al, 2024).

The Biosphere Office's working model of adaptive co-management is well described in research studies as a successful model for adaptive ecosystem management. Through this approach, networks are built up with key individuals who represent the local community in each major project. In this way, the Biosphere Office creates arenas for information exchange and discussion in a dynamic system based on local knowledge. Thanks to the Biosphere Office's contacts with stakeholders in different sectors of society (non-profit, private and public) and at different levels of decision-making in society (municipality, county administrative board, national and international), networks can be tailored to each project.

7.6.5 Was the effectiveness of the management/coordination evaluated? If yes, was it according to a procedure?

A 2017 study of Swedish biosphere reserves found that they serve as platforms for collaboration, connect actors vertically as well as horizontally, integrate the goals of the 2030 Agenda, maintain healthy ecosystems, and promote learning and awareness raising. The researchers note that biosphere reserves serve as models for implementing the goals of the 2030 Agenda that can be scaled up and applied in other contexts (Heinrup & Schultz, 2017).

Kristianstads Vattenrike Biosphere Reserve was one of four biosphere reserves in a 2017 study on participation in decision-making processes. In Kristianstads Vattenrike Biosphere Reserve, this mainly concerned members of the Consultation Group. Some conclusions were that individuals who participate in more activities are more satisfied with the decision-making processes and their outcomes, and that learning is a more important driver than collaboration (Plummer et al, 2017c).

In an article from the same project, the researchers conclude that adaptive co-management leads to a number of positive results. The better the co-management process, the better the results. In Kristianstads Vattenrike Biosphere Reserve, collaborative processes such as transparency, constructive debate and trust-building are used, which have positive social and ecological effects. Participants reported more collaborations with stakeholders linked to Vattenriket, making resource use within the biosphere reserve more sustainable (Plummer et al, 2017b).

7.7 Update on the management/cooperation plan/policy:

7.7.1 Are there any changes with regard to the management/cooperation plan/policy and the stakeholders involved? If yes, provide detailed information on process for involvement of stakeholders, adoption and revision of the plan.

Two new editions of the action plan for the biosphere reserve have been published since 2015. Before a new action plan is adopted, it is discussed with the Consultation Group. This means that

stakeholders affected have the opportunity to influence the content of the plan. The new action plan is also adopted by the Municipal Executive Committee of Kristianstad Municipality.

Previous action plans have been based on the three functions of the biosphere reserve: conservation, development and logistic support. The latest action plan broadens these functions to selected focus areas for the biosphere reserve. The work is in line with MAB's Statutory Framework, Seville Strategy and Lima Action Plan, the 2030 Agenda for Sustainable Development, the EU Nature Restoration Regulation, the Paris Agreement, UNESCO's Medium-Term Strategy for 2022–2029 and other relevant national, regional and international strategies.

In preparing the action plan for 2026–2030, we have worked slightly differently. In the spring of 2024, the process What if (The future we want) was carried out as part of the Vinnova-funded project Brokering Peace with Nature Using Foresight in Kristianstads Vattenrike Biosphere Reserve. Employees as well as the Consultation Group, the Friends of Vattenriket *(Vattenrikets vänner),* biosphere ambassadors and interested members of the public were led through a four-step process to create visions of a sustainable and equitable future for the biosphere reserve and what can be done here and now to create this future. Ideas from the workshop will form one of the bases for the upcoming action plan. The process was documented in a report (Sykes, 2024).

7.7.2 Describe contents of the management/cooperation plan (provide some examples of measures and guidelines). Is the plan binding? Is it based on consensus?

A proposal for an action plan for Kristianstad Vattenrike Biosphere Reserve is produced by the Biosphere Office. The Consultation Group is involved in the process and the plan is based on agreement. The action plan is a consultative plan containing guidelines for the overall work in the biosphere reserve, focusing on the three functions of conservation, development and logistic support, as well as selected focus areas for the biosphere reserve. The action plan is also adopted by the Municipal Executive Committee of Kristianstad Municipality. The work is in line with MAB's Statutory Framework, Seville Strategy and Lima Action Plan, the 2030 Agenda for Sustainable Development, the EU Nature Restoration Regulation, the Paris Agreement, UNESCO's Medium-Term Strategy for 2022–2029 and other relevant national, regional and international strategies.

Our work is based on five-year action plans and so we have developed and worked towards two action plans since the previous review, one for 2016–2020 and one for 2021–2025. A new action plan will be developed in 2025/2026. The action plan for 2021–2025 was designed according to the five focus areas of the biosphere reserve. Question 7.7.5 gives examples from both action plans divided into the five focus areas, linked to the progress made. The five focus areas are:

Healthy ecosystems and rich biodiversity
Kristianstads Vattenrike's rich and varied nature is home to unique biodiversity. The reserve is a mosaic of almost every type of Swedish landscape apart from mountains. Such variety provides habitats for many uncommon plants, animals and fungi. The varied landscape provides a number of essential services – so called ecosystem services – for us humans. Conserving and developing biodiversity and ecosystems by strengthening ecosystem services and using natural resources responsibly is absolutely vital. This is also one of the most important goals in UNESCO's MAB programme.

Water in balance from source to sea

The majestic Helge Å River, fed by rivers and streams of varying character, runs through the wetlands and seasonally flooded grasslands of the biosphere reserve from Torsebro in the north to Hanöbukten Bay in the south-east. Numerous habitats and great biodiversity deliver many important ecosystem services. Work to promote the sustainable use of water, create carbon sinks and retain water for longer in the landscape conserves species diversity and ecosystem services, and helps to mitigate the effects of climate change. Broad collaboration with stakeholders at local, national and international level is taking place to combat eutrophication and brownification in Hanöbukten Bay and breathe new life into the Baltic Sea.

Changing attitudes, spreading knowledge

The long-term aim of biosphere work is to create a shift in attitude towards sustainable social development in line with Agenda 2030 and the Sustainable Development Goals. Communication plays a key role in this. Promoting research and education in biodiversity and sustainability is one of UNESCO's MAB programme's goals. New knowledge is produced and shared continuously in Vattenriket. The Biosphere Office works with educational establishments in Sweden and abroad, with Kristianstad University as a key research node. The naturum Vattenriket visitor centre is a natural meeting place and showcase for our activities. Visitors learn about the biosphere reserve and are encouraged to explore the reserve's 21 visitor sites, where they will find more information as well as marked trails and observation towers. Developing local links and strengthening local involvement through consultation groups, collaboration with associations and training our own biosphere ambassadors are important aspects of our work.

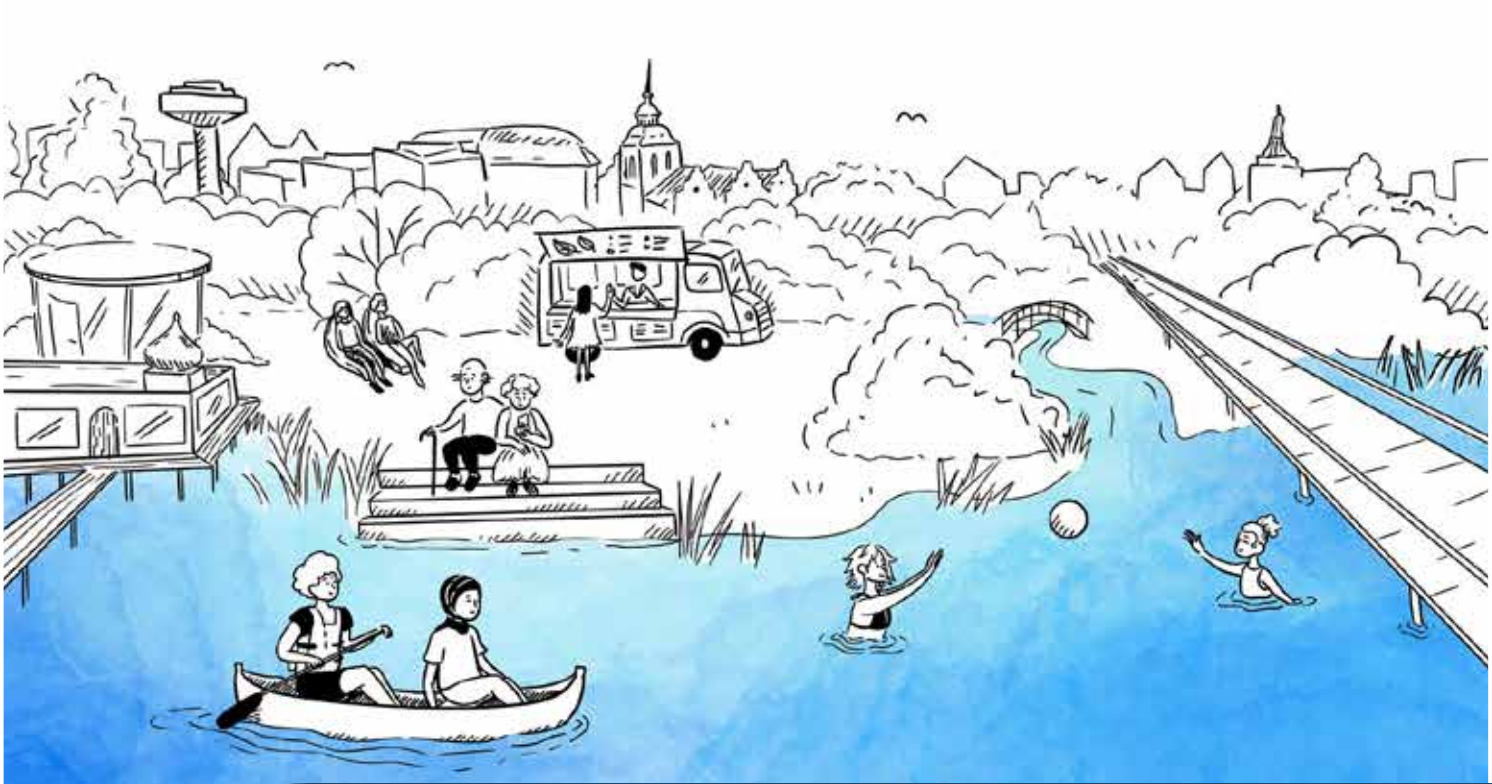
Sustainable business, agriculture and hospitality

Kristianstads Vattenrike Biosphere Reserve works for sustainable development from an ecological, economic and social perspective – development that benefits nature as well as people, using and developing nature and natural resources in a sustainable manner. Nature tourism is a rapidly growing trend. There is great potential for developing Vattenriket as a node for tourism in harmony with nature, thus supporting Kristianstad's profile as a sustainable destination. The Kristianstadsslätten Plain has long been a centre for agriculture. Local, sustainable production is important here. Below the fertile soils is northern Europe's largest groundwater reservoir, a life-giving resource for drinking water, irrigation and production. Various stakeholders are liaising to find solutions to reduce water consumption. The key to this and to strengthening ecosystem services lies in innovation and climate-smart thinking, along with new crops and new food traditions.

Health, quality of life and social development

Vattenriket's fantastic nature, exciting cultural history and opportunities for outdoor recreation are important ingredients in a good quality of life. Research shows that nature has a positive effect on us humans, and that time spent in natural surroundings reduces stress and anxiety. Biosphere reserves serve as model areas for sustainable social development. Urban planning and development play a key role in this respect. Integrating and developing urban nature, strengthening ecosystem services and taking initiatives to mitigate the effects of climate change when planning new developments are all factors that contribute to sustainability and improve quality of life. UNESCO has tasked those engaged in biosphere work with helping to create sustainable, equitable economies and thriving societies. Nature can be a meeting place for people of all ages and cultures.

Hope inspires new attitudes



Think again for a sustainable future

The Biosphere Office's long-term goal is to change attitudes to increase sustainability in line with the UN's Sustainable Development Goals. By conveying hope and faith in the future, we wish to inspire an inner transition.

The Vinnova project Brokering Peace with Nature Using Foresight in Kristianstads Vattenrike Biosphere Reserve is one example.

The project aimed to give hope and highlight the role of biosphere reserves in transition – as brokers between different interests. By working with nature, we can meet climate challenges and contribute to achieving the SDGs.

The project included workshops with employees and stakeholders in Vattenriket. Using the Future We Want method, participants imagined a desirable future. The method gives an opportunity to lead from the future. The resulting report will be an important foundation for the biosphere reserve's action plan for 2025–2030.

The project also led to nine episodes of the Biosphere Office's first podcast called Think Again for a Sustainable Future in Vattenriket (Tänk om för en hållbar framtid i Vattenriket). Along with local and national experts, we explored the opportunities for creating quality of life within planetary boundaries.

The project attracted local and international attention. It was presented at the EuroMAB conference in 2024, to master's students at the University of Toulouse, at a NordMAB conference, and at the Youth for Baltic 2025 international youth forum in Vattenriket.

THE GLOBAL GOALS

7.7.3 Describe the role of the authorities in charge of the implementation of the plan. Describe institutional changes since the nomination form/last periodic review report. Please provide evidence of the role of these authorities.

The proposal for the action plan for Kristianstad Vattenrike Biosphere Reserve is produced by the Biosphere Office. The Consultation Group is involved in the process and the plan is based on agreement. Several authorities are represented in the Consultation Group and the plan is well anchored. The action plan is also adopted by the Municipal Executive Committee of Kristianstad Municipality. When it is time to implement various sub-projects in the action plan, there is a close dialogue and cooperation with the relevant authorities such as the County Administrative Board and the Swedish Forest Agency, which significantly facilitates the implementation of several of the action plan's objectives.

Since the last review, the position of nature conservation manager in Kristianstad Municipality has been fully funded by the municipality and fully located at the Biosphere Office. Previously, funding was shared between the municipality and the County Administrative Board. A management agreement has been signed between the County Administrative Board of Skåne and Kristianstad Municipality for the management of national nature reserves in Kristianstad Municipality. Representatives from the County Administrative Board, the land manager, the nature conservation manager and the person responsible for the management organisation at Kristianstad Municipality meet regularly in the so-called management board. Having the nature conservation manager based at the Biosphere Office significantly promotes dialogue and support for the implementation of the action plan.

7.7.4 Indicate how the management plan addresses the objectives of the biosphere reserve.

As described under question 7.7.2, the action plan is based on the three functions that a biosphere reserve must fulfil in accordance with MAB's Statutory Framework, Seville Strategy and Lima Action Plan as well as the upcoming Hangzhou Strategy and Action Plan. There are clear guidelines and objectives for how the work will achieve the goals of a biosphere reserve, how the biosphere reserve will work to conserve important natural values, contribute to sustainable development in the area, and support research, education and and the dissemination of information about the value of Kristianstads Vattenrike Biosphere Reserve in particular and biosphere reserves in general. We work towards sustainable development that benefits people and nature within Kristianstads Vattenrike Biosphere Reserve and Kristianstad Municipality by:

Carrying out targeted conservation work relating to valuable natural environments and species with a focus on nature and people. The Predator Control *(Predatorkontroll)* project with the County Administrative Board of Skåne, the Swedish Association for Hunting and Wildlife Management in Skåne and the Kristianstad-Bromölla Game Conservation District *(Kristianstad-Bromölla Jaktvårdskrets)* is one example. Limiting predators such as red fox (*Vulpes vulpes*), badger (*Meles meles*), pine marten (*Martes martes*), mink (*Neovison vison*) and corvids *(Corvidae spp)* through hunting will create better conditions for wading birds nesting on the seasonally flooded grasslands.

Continuously developing knowledge regarding natural and cultural values, and the requirements for protection and management of valuable habitats and species. More than 50 reports and inventories have been published in the series Vattenriket in focus *(Vattenriket i fokus)* since the

previous review and new collaborations with a number of different universities have been initiated. We have also carried out a follow-up of all the 66 wetlands that we have helped to construct.

Working with a landscape perspective based on thematic landscapes and high-value landscapes. For example, the Biosphere Office has participated in several major projects in sandy grasslands. In the LONA project In the Sand Near You *(I sanden nära dig),* 14 hectares of coastal sandy grasslands were restored. In addition, private individuals received advice and a leaflet on promoting biodiversity. In the VIP for wild pollinators *(VIP för vilda pollinatörer)* project, we created over one hectare of exposed sand and restored eight sandy grasslands with funding from the Swedish Environmental Protection Agency through the County Administrative Board of Skåne. In SandLife, the county administrative boards of Skåne, Halland and Kalmar received EU funding to carry out large-scale landscape measures and provide information about the high natural values of sandy grasslands.

Working according to themes including all three functions of the biosphere reserves: conservation, development and logistic support. In 2022–2023, the Biosphere Office worked under the theme of The Sea, with the WWF project Restoring the Health of the Baltic Sea *(Återskapa Östersjöns livskraft)* as an example. Among other things, we created new eelgrass *(Zostera marina)* beds, constructed wetlands for northern pike *(Esox lucius)*, dug new wetlands to improve water quality, and carried out biotope conservation measures to improve nursery areas for fish. At the same time, information was disseminated to the public to raise awareness of the sea and the marine environment, including through a bioblitz. On World Ocean Day, we organised a business breakfast on the theme of The Sea with speakers from companies and the Stockholm Resilience Centre. An outdoor classroom with a Baltic Sea theme and an educational tool, the Baltic Sea Compass *(Östersjökompassen),* were also developed. Funding was provided by the Swedish Postcode Lottery.

Working in cooperation and dialogue with a multi-stakeholder approach and with the goal of creating trust and changing attitudes. In 2024, the final section of the Skåneleden SL6 Vattenriket subtrail, which links several of Vattenriket's visitor sites, was inaugurated. Kristianstad Municipality has made a major investment in the new trail, along with government funding from LONA. The trail can be seen as evidence of the attitude change that we in the biosphere reserve have been working towards since the beginning. The area used to be seen as "waterlogged", but now it is "water-rich" and even a "water kingdom" *(vattenrike),* with high biodiversity. The high natural values of the biosphere reserve contribute to an improved quality of life for residents and attract visitors to the municipality and the tourism industry from near and far, with the Skåneleden SL6 Vattenriket subtrail as a new attraction.

Engaging and including young people and those unaccustomed to nature as priority target groups. One project was More Activity *(Aktivera mera)* with the Culture and Leisure Administration and funding from Swedish Outdoor Recreation *(Svenskt friluftsliv).* We offered fishing, bird watching, forest bathing and activities, mainly to children, young people and families in socio-economically disadvantaged areas and recent immigrants. In the Naturally Wise *(NaturligtVis)* project at Näsby, pupils from a socially disadvantaged area are given the opportunity to get out into the biosphere reserve, as part of the municipality's Urban Development Näsby *(Stadsutveckling Näsby)* initiative. The funding is from Sparbanken Skåne in collaboration with the Friends of Vattenriket *(Vattenrikets vänner).* The Biosphere for Baltic – Future Generations project is an initiative to involve young adults in twelve biosphere reserves around the Baltic Sea.

Raising awareness of the importance of a sustainable future by inspiring people of all ages to enjoy and respect nature. The Biosphere Office's outreach work includes everything from class visits, biosphere ambassadors, biosphere classrooms, biosphere camps, biosphere heroes, a youth forum,

citizen science and collaborations with teachers in training to visitor sites, scheduled activities, guided tours, internships, work experience and new educational tools.

Making it easier for the public, pupils and researchers to benefit from all the values of the biosphere reserve through the visitor centre, visitor sites, website, social media and information materials. The biosphere reserve's activities and projects are communicated to a number of different target groups via the website and social media, printed materials and reports, our 21 visitor sites and naturum Vattenriket. In addition to Facebook, Instagram and Youtube, we have an account on Linkedin. Naturum has had approximately 90,000 visitors annually and received the Star Wetland Centre Award in 2022 as one of the world's best visitor centres for wetlands.

7.7.5 What are the progresses with regard to the guidelines of the management/cooperation plan/policy?

By and large, all the objectives and guidelines set out in the latest action plans (see question 7.7.2) have been implemented and amply met, as summarised below.

Healthy ecosystems and rich biodiversity

Seasonally flooded grasslands

In an attempt to improve the nesting of wading birds, the Biosphere Office has been running a project since 2019 with the County Administrative Board of Skåne, the Swedish Association for Hunting and Wildlife Management in Skåne and the Kristianstad-Bromölla Game Conservation District *(Kristianstad-Bromölla Jaktvårdskrets)*. The project has applied for and received permits for protective hunting of red fox (*Vulpes vulpes*), badger (*Meles meles*), pine marten (*Martes martes*), mink (*Neovison vison*), carrion crow *(Corvus corone),* jackdaw *(Coloeus monedula),* magpie *(Pica pica)* and rook *(Corvus frugilegus).* In the first year, a well-attended lecture was held on lure hunting for foxes, traps and decoys were bought for holders of hunting licenses and the pupils at Önnestad upper secondary school built a Värmland tunnel trap and a Norwegian crow trap.

Unique sandy grasslands

In the LONA project In the Sand Near You (*I sanden nära dig*, 2015–2020), 14 hectares of coastal sandy grasslands were restored with funding from the Swedish Environmental Protection Agency via the County Administrative Board of Skåne and Kristianstad Municipality. 20 advice sessions were given to private individuals on their own properties and several field walks were held to explain the geology, cultural history and special diversity of the sandy coast. The Biosphere Office also produced a leaflet on how landowners with sandy grasslands can manage their properties to benefit biodiversity. In the VIP for wild pollinators *(VIP för vilda pollinatörer)* project, we created over one hectare of exposed sand and restored eight sandy grasslands in Vattenriket with funding from the Swedish Environmental Protection Agency through the County Administrative Board of Skåne. The idea for SandLife was hatched at a conference on sandy grasslands in Vattenriket in 2008. The county administrative boards of Skåne, Halland and Kalmar received EU funding to carry out large-scale measures in the landscape and provide information about the high natural values of the sandy grasslands. Twelve outdoor museums and a handbook were created. Two outdoor museums are located in Kristianstad Municipality, at Östra Sand and Friseboda.

Sustainable forests

In 2023, the Municipal Executive Committee adopted the municipality's first forestry policy, which was developed by the Biosphere Office and the Land and Development Unit. The aim is nature-based and continuous cover forestry that benefits biodiversity, public health and the climate. The policy

A resource in urban development

Knowledge improves planning for nature as well as people

The Biosphere Office is an important resource in the municipality's work for sustainable urban planning. By integrating our expertise into planning processes and urban development, we contribute to more sustainable development in which biodiversity, outdoor recreation and ecosystem services are considered.

Blue-green urban development and green infrastructure are key, and reflected in the municipality's forestry policy, comprehensive plan and detailed development plans. When the Biosphere Office contributes insights into ecosystems and nature-based solutions, the municipality can make decisions that benefit the environment as well as the inhabitants.

One example is Kristianstad's forestry policy, adopted in 2024, which promotes nature-based and continuous cover forestry to benefit biodiversity, public health and the climate. It was developed by the Biosphere Office's ecologist, the municipality's land manager and a reference group.

Another is the relocation of Hedentorpsvägen Road, which was going to affect a valuable biotope. In collaboration with the Land and Development Unit and the Environment, Planning and Community Development Department we can preserve part of the biotope. To offset lost natural values, we are taking measures to strengthen biodiversity in the remaining biotope.

also provides support for dialogue with private landowners about their forest management. Oak seedlings have been planted at Näsby fält and wood-mould boxes have been put up at Ekenabben and Näsby fält to promote biodiversity.

Urban nature

Since 2019, the Biosphere Office has been working to develop the Piggastan dunes in Åhus into a multifunctional green area that is more accessible to people and where the sandy soil's diversity of plants, insects and birds is promoted. Trees and bushes have been felled to create a more open area and we have removed large amounts of topsoil to benefit biodiversity. Funding came from LONA, the County Administrative Board of Skåne's Action Programme for Threatened Species and Habitats *(Åtgärdsprogram för hotade arter och naturtyper ÅGP)* and Kristianstad Municipality.

Water in balance from source to sea

More water in the landscape

Between 2015 and 2025, 185 hectares of wetlands were constructed or restored by the Biosphere Office. We have also rewetted the first peatland in the biosphere reserve, as part of reducing greenhouse gas emissions.

Better water quality and greater diversity

The Biosphere Office has distributed spawning gravel and bundles of sticks to promote European perch *(Perca fluviatilis)* and northern pike *(Esox lucius).* Two new wetlands for pike were created in 2024 as part of the WWF project Restoring the Health of the Baltic Sea (*Återskapa Östersjöns livskraft)* with funding from the Swedish Postcode Lottery. Three years of reduction fishing have been carried out with support from LONA to promote clearer water and better sport fishing in Lake Råbelövssjön and Lake Oppmannasjön.

Several studies of browning and nutrient leakage in Vattenriket have been published in collaboration with Lund University, among others. A follow-up of all the 66 wetlands that the Biosphere Office has been involved in constructing showed that the plain wetlands generally have a high capacity for nutrient purification, while the forest wetlands in many cases do not seem to reduce browning.

At Fredriksdalsviken, the country's first wetland facility has been excavated to capture iron and aluminium using natural processes, before the water reaches the Helge Å River. The project was run by the Biosphere Office, in collaboration with the Eel Academy *(Ålakademin)* and Råbelöfs Estate Management *(Råbelöfs godsförvaltning).*

A healthy Baltic Sea

In the WWF project Restoring the Health of the Baltic Sea *(Återskapa Östersjöns livskraft)*, the Biosphere Office has, among other things, created new eelgrass *(Zostera marina)* meadows, constructed wetlands for northern pike *(Esox lucius)*, dug new wetlands to improve water quality and carried out biotope conservation measures to improve nursery areas for fish. At the same time, information was disseminated to the public to raise awareness of the sea and the marine environment, including during World Ocean Day and a bioblitz. An outdoor classroom with a Baltic Sea theme and an educational tool, the Baltic Sea Compass *(Östersjökompassen)*, were also developed. Funding was provided by the Swedish Postcode Lottery.

Changing attitudes, spreading knowledge

Naturum – meeting place and showcase

The naturum Vattenriket visitor centre has offered a broad range of around 500 scheduled activities each year. During the pandemic, naturum played a very important role by offering experiences outside the centre and at visitor sites, such as self-guided experiences, digital experiences and guided tours in small groups. The activities have been linked to our themes: Calm by Nature 2015, Ecosystem Services 2016–2018, Explore Vattenriket 2019–2021, The Sea 2022–2023 and Nature's Smart Solutions 2024-2025. Our scheduled activities have included everything from a boardwalk safari for children via lectures on drought-resistant plants to large concerts with a symphony orchestra outside naturum. We have worked with artists in several major projects, such as art students or, as in 2024, with an artist on the exhibition Moss Romance *(Mossromantik)* inside naturum and workshops on nature embroidery.

We have made continuous improvements to the exhibition at naturum. One major change is that knowledge about the sea has moved into the auditorium, including a Baltic Sea aquarium. Another new attraction is the "feed the pike" module, where children learn about one of the most important predatory fish in the biosphere reserve in a fun way.

Naturum has had approximately 90,000 visitors annually, except during the COVID pandemic when the number of visitors inside naturum was halved. In November 2022, in connection with the COP-14 meeting in Geneva, naturum Vattenriket received the Star Wetland Centre Award as one of the world's best visitor centres for wetlands. This is an award to showcase best practices in ecotourism, communication and education around wetlands and water.

Exploring Vattenriket

A new hiking trail through Vattenriket, the Skåne Trail SL6 Vattenriket subtrail, was inaugurated in 2024, linking ten of Vattenriket's visitor sites. The funding came from Kristianstad Municipality and LONA. To develop two visitor sites along the trail, we built a story trail at Norra Lingenäset and an activity trail at Ekenabben, with funding from LONA. A natural play park with a sandpit, a fauna depot and a mat of thyme has also been built along the trail. During the Arknat 2021 festival, students from different countries designed and built windbreaks along the Skåne Trail. At the picnic area in Österslöv, the students built a wind shelter in the shape of a giant beech nut inspired by the surrounding beech forest.

As part of our 2019–2021 theme Explore Vattenriket, we launched an excursion guide to the area's visitor sites, new maps and films highlighting activities in nature, and a digital marking of the fairway on Lake Hammarsjön financed by Kristianstad Municipality within the framework of the project On Water in Vattenriket *(På vatten i Vattenriket)*, which was initiated and run by the Biosphere Office. We also initiated the introduction of the digital Nature Map *(Naturkartan)* in the municipality to highlight nature and outdoor activities.

We inaugurated the fishing jenny at Kanalhuset, funded by LONA, an accessible boat jetty in Tivoliparken, and a boat and kayak jetty at Kavröbro, financed by Kristianstad Municipality and the Lower Helge Å Fishery Conservation Association *(Nedre Helgeåns fiskevårdsförening).* We developed a new outdoor museum, Årummet, with an exhibition and an accessible hide and boardwalk that provides an up-close experience of the plants and birds in the wetlands a stone's throw from the naturum Vattenriket visitor centre. We developed new exhibitions for the outdoor museums at Hercules and Sånnarna and the visitor sites at Vramsån and Sweden’s lowest point.

Focus on nature education

Naturum's educational activities have reached around 1,800 pupils per year through class visits and biosphere camps. The nature educator has collaborated with the Biosphere Office's ecologists and met more and more classes at upper secondary level. The collaboration with Kristianstad University, where the nature educator contributes to the training of future teachers and preschool teachers, has continued.

Two new biosphere classrooms have been established. As part of the WWF project Restoring the Health of the Baltic Sea *(Återskapa Östersjöns livskraft)* we created the Baltic Sea Biosphere Classroom and the Baltic Sea Compass *(Östersjökompassen)* educational tool. In the Spades, Flowers and Bees *(Spadar, blommor och bin)* project, a new biosphere classroom was inaugurated at Sånnarna.

Citizen science with pupils has become an important part of our educational activities through the projects Seaweed Forest Hunt *(Tångskogsjakten)* and Algae Research Summer *(Algforskarsommar)*. Together with students, our nature educator collects data on bladderwrack *(Fucus vesiculosus)* reproduction, which is then analysed by researchers at Stockholm University.

Since the previous review, we have shared our experience of nature education activities as part of an international collaboration, SeaMan, and with the biosphere reserves Nordhordland and Rügen.

New knowledge is essential for success

Over 50 reports and inventories have been published in the series Vattenriket in focus *(Vattenriket i fokus)* since the last review. The Biosphere Research Conference has continued to be organised every year in collaboration with Kristianstad University, where new findings linked to the biosphere reserve are presented. Monitoring and research in the biosphere reserve has been expanded with collaborations with a number of different universities. See question 6.2 for further information.

Broad communication spreads good examples

At the beginning of 2025, Kristianstads Vattenrike Biosphere Reserve has 7,200 followers on Facebook, 550 on Instagram and 500 on Linkedin, while 400 people subscribe to our newsletter.

In 2018, the website was redesigned to work equally well on mobile phones, computers and tablets, making it easier for visitors to find what they are looking for. 2022 saw the inauguration of a webcam that can broadcast live from the B&B for cranes *(Grus grus)* at Pulken, funded by the Friends of Vattenriket *(Vattenrikets vänner)*. Several new films have been produced since the last evaluation and we have also made our first podcast with funding from Vinnova. Think again – for a sustainable future in Kristianstads Vattenrike *(Tänk om – för en hållbar framtid i Kristianstads Vattenrike)* has over 1,000 listens at the time of writing.

At Guldjubel 2020, the Biosphere Office and Infab Kommunikation AB received the Up-and-Comer of the Year award for our film Experience Vattenriket and the citation was: "Appealing and beautiful: the urge to visit and discover more of Vattenriket is awakened!"

Local involvement, pride and pleasure

Since the last evaluation, 30 biosphere ambassadors have been trained annually. Today there are over 400 certified biosphere ambassadors. Our cooperation with the Consultation Group for Kristianstads Vattenrike Biosphere Reserve, naturum's programme board and the biosphere reserve's friend association Friends of Vattenriket *(Vattenrikets vänner)* continues to grow stronger. Naturum's programme board has been expanded with two new associations. The Big Vattenriket Clean-up *(Storstädning i Vattenriket)* campaign is another example of how we involve the local community. Together we picked up rubbish and contributed to the UN's Sustainable Development Goals.

The I love Vattenriket campaign is a joint initiative with the Friends of Vattenriket where residents, visitors and businesses can show their commitment. Since the last review, we have revamped the exhibition at Lillöborgen, produced an animated short film and a new self-guiding brochure. It was the Friends of Vattenriket who received a grant from Sparbanken Skåne to develop the visitor site. The Friends have also arranged funding for pupils from a socially disadvantaged area to experience the cranes at Pulken and life in the water through naturum's educational activities.

Sustainable business, agriculture and hospitality

Sustainable tourism

The final section of the Skåneleden SL6 Vattenriket subtrail was opened in 2024, linking visitor sites as well accommodation facilities with funding from Kristianstad Municipality and LONA. In the project On Water in Vattenriket *(På Vatten i Vattenriket),* the area at Kavröbro was given a low floating jetty, an accessible toilet and a refurbished picnic area. At Lillö and Härnestadsgraften, we have started to cut back the reeds, and markings have been made clearer at Lake Hammarsjön and Lake Araslövssjön. Funding was provided by Kristianstad Municipality and the Lower Helge Å Fishery Conservation Association (*Nedre Helgeåns fiskevårdsförening).* In the Fishing in Vattenriket project *(Fiska i Vattenriket),* a new map was produced and a new accessible jetty was inaugurated at Kanalhusen with funding from LONA.

Close encounters with cranes at Pulken

Every spring, tens of thousands of resting cranes *(Grus grus)* are fed in a field at the Pulken Outdoor Museum. This work is coordinated by the Goose and Crane Management Group in North-Eastern Skåne, see question 7.4.1 for further information. A new initiative since 2017 is that the Biosphere Office organises around 40 crane hosts each year in collaboration with local associations. Together, we tell people about the cranes and show them the way to other visitor sites in Vattenriket. When many people fled the war in Ukraine, we arranged a Ukrainian guide at Pulken.

Tomorrow's farming will use less water

In collaboration with the Swedish Federation of Rural Economy and Agricultural Societies, agricultural consultants HIR and the municipality's work on Climate Neutral Kristianstad 2030, the Biosphere Office has organised a series of information meetings on water management, intermediate crops and climate-smart cultivation with a focus on developing farming methods.

Letting nature flourish in farmland

The Biosphere Office is involved in the collaborative project Let Sweden Blossom *(Hela Sverige blommar),* run by the Swedish Federation of Rural Economy and Agricultural Societies, in which sponsored seeds encourage farmers to sow pollen- and nectar-producing plants on arable land. The Biosphere Office communicates the concept to the public by means of information and packets of seeds. In 2020, 250 farmers in Skåne cultivated 600 kilometres of flowering field margins and 200 hectares of trees, while the Biosphere Office sowed 1.5 hectares of flowers on fallow municipally owned land.

Sustainable innovations – Bring Back Bream

To improve the water quality in Lake Råbelövssjön, Cyprinids such as bream were removed. In the Bring Back Bream *(Dax för brax)* project, we worked with Kristianstad University, Krinova Science Park and others to investigate how bream can become a sustainably utilised resource as a table fish instead of a problem. In addition to organising a food jam and publishing a recipe and inspiration book, bream burgers were introduced on the menu in naturum's restaurant.

Health, quality of life and social development

The feel-good factor

We improved accessibility at visitor sites such as Kavröbro and Äspet with accessible toilets and barbecue areas and made the paths accessible for wheelchair users and prams. Årummet gained an accessible hide and boardwalk. Following a citizen's proposal, a footbridge was inaugurated over the Härlövsängaleden road, which makes the entire Linnérundan trail accessible for wheelchair users and prams. In the LONA project Three Rising Stars along the Vattenriket Subtrail *(Tre bubblare vid Vattenrikeleden),* we linked nature and culture near urban areas to three of the Skåne Trail SL6 Vattenriket subtrail's entrance sites with a story trail, nature activity trail and exhibition of boxes for birds, bats and insects.

The naturum Vattenriket visitor centre continues to offer lectures, qigong and forest bathing as scheduled activities for the public and for booked groups. Naturum has organised special senior days to contribute to better public health and quality of life. Visitors enjoyed nature walks with the Friends of Vattenriket *(Vattenrikets vänner),* forest bathing, qigong, accordion music, coffee and a barbecue by the lake, felting wool, and tasting dandelion syrup.

New in Sweden's nature

Biosphere camps have been held every year with 20 children and naturum Vattenriket has continued to organise holiday activities and collaborate with Swedish for Immigrants SFI.

In the project More Activity *(Aktivera mera)*, the Biosphere Office and the Culture and Leisure Administration offered fishing, birdwatching, forest bathing and activities at the new story trail at Norra Lingenäset, mainly for children, young people and families in socio-economically disadvantaged areas and recent immigrants. The funder was Swedish Outdoor Recreation *(Svenskt friluftsliv).*

In 2023 and 2024, the municipality held the event Fresh Air & Fun *(Friluftskul)*, where associations and others offered visitors the opportunity to try out outdoor activities such as collecting insects, casting a fishing rod, canoeing, bird watching, pitching a tent and mountain biking. The Biosphere Office was involved in organising the event.

In 2024, naturum received funding for the Naturally Wise *(NaturligtVis)* project at Näsby, which gives pupils from a socially disadvantaged area the opportunity to get out into the biosphere reserve. The pupils can come to naturum, experience the cranes *(Grus grus)* in Vattenriket and investigate life below the surface. The idea came from the Friends of Vattenriket *(Vattenrikets vänner)* and is being implemented with the support of Sparbanken Skåne as part of the municipality's Urban Development Näsby *(Stadsutveckling Näsby)* initiative.

Sustainable urban planning

The Biosphere Office is actively involved in Kristianstad Municipality's work on the urban planning process, such as the comprehensive plan and detailed development plans. One example is the work on amending the comprehensive plan for Åhus, where the Biosphere Office's knowledge of the natural values of the sandy grasslands in open as well as wooded environments, developed over several years, is of great value in producing a plan that promotes sustainable societal development.

The municipality's Urban Development Näsby project focuses on sustainability in a socially disadvantaged area. Among other things, the Biosphere Office has assisted in an initiative in which students at the Praktiska upper secondary school built 60 bat boxes for their neighborhood.

7.7.6 Were there any factors and/or changes that impeded or helped with the implementation of the management/coordination plan/policy? (Reluctance of local people, conflicts between different levels of decision-making).

The staff of the Biosphere Office have been working with dialogue and collaboration with local stakeholders in the area since 1989. The work has been based on good examples and interested stakeholders, which have then been developed into larger projects and measures. An important element is the creation and development of trust between the staff of the Biosphere Office and the various stakeholders in the landscape. This way of working is sometimes described as "adaptive co-management" and facilitates the implementation of the action plan. The close cooperation developed between different authorities, such as the County Administrative Board of Skåne and the Swedish Forest Agency, also greatly facilitates the implementation of the action plan.

In 2015, researchers concluded that adaptive co-management has been crucial to the active management of many areas in Kristianstads Vattenrike Biosphere Reserve. Without a platform for collaboration between farmers and conservationists, these seasonally flooded grasslands and wetlands would instead have been abandoned or used for urban expansion. Nature conservation has contributed to a range of ecosystem services such as nutrient retention, flood protection, aesthetic values, recreation and biodiversity. The area of nature reserves has increased. Investments by national authorities, such as the Swedish Agency for Marine and Water Management, to counteract browning and improve water quality through upstream actions such as wetland restoration, can also be seen as a result of adaptive co-management in the area. Access to learning and outdoor recreation through outdoor museums and the naturum visitor centre is also highlighted as a result of the Biosphere Office's work. The researchers compare this with the tensions that followed the introduction of Natura 2000 in Europe, and write that the Biosphere Office succeeded instead in bringing together different stakeholders and utilising research as well as local knowledge. The work of the Biosphere Office linked local action with regional and global institutions, acted on synergies between conservation and development, and built social-ecological capacity to detect and respond to change (Schultz et al, 2015).

The Biosphere Office and naturum Vattenriket have been working for several years under themes that run for a couple of years. Since 2015, these have included Calm by Nature, Ecosystem Services, Explore Vattenriket, The Sea and currently Nature's Smart Solutions. These themes inspire our educational work and naturum’s scheduled activities as well as projects for nature conservation and outdoor recreation.

Some success factors for our work with wetlands were identified in a master's thesis from Lund University. Getting wetland work onto the agenda in the municipality required, for example, committed civil servants, individual efforts, the Biosphere Office's focus on wetlands as a solution to the problem of reduced groundwater levels, decreasing biodiversity and eutrophication, and support from universities, the County Administrative Board of Skåne and projects such as Focus on Nutrients (Palmér, 2023).

The paper also concludes that so-called "focusing events" were crucial. In this case, it was the designation as a biosphere reserve and the construction of the naturum Vattenriket visitor centre. It is possible that the risks of flooding and drought can also be classified as focusing events. In addition, the study shows that the biosphere reserve can be described as a coalition magnet, where the power of an innovative idea is spread among those in power and brings together different stakeholders. The study also shows that support from landowners for the construction of wetlands was based, among other things, on positive relationships with officials and information about the benefits of wetlands.

All landowners interviewed felt great pride in their wetlands, which is interpreted as a sign that the Biosphere Office has succeeded in describing wetland work as something positive (Palmér, 2023).

7.7.7 If applicable, how is the biosphere integrated in regional/national strategies? Vice versa, how are the local/municipal plans integrated in the planning of the biosphere reserve?

(Please provide detailed information if there are any changes since the nomination form/last periodic review report).

The Swedish MAB Programme *(Biosfärprogrammet Sverige)* has produced a report, Sweden's biosphere reserves – an accelerator for sustainable development: Fifty years of combined experience *(Sveriges biosfärområden – en accelerator för hållbar utveckling: Femtio år av sammanlagda erfarenheter).* The analysis clearly shows that the Swedish biosphere reserves have achieved very good results by linking people and nature and local initiatives with national strategies. Co-creating solutions from a system-wide perspective is crucial for success and local solutions to global problems are key. The report states that the world's biosphere reserves should therefore be used for just that. Sweden is in a very good position to take the lead here, as our biosphere programme is well established and anchored, the structures for collaboration are in place, and a lot of knowledge has already been accumulated to be utilised within the biosphere reserves. By authorities and researchers collaborating to a greater extent with the biosphere organisations and directing knowledge development efforts towards them, it will be possible to increase the pace of decarbonisation. The report highlights Kristianstad Vattenrike's successful work on restoring wetlands and watercourses. This work is also highlighted by the Swedish Environmental Protection Agency as a best practice in their national initiative to construct more wetlands and bring more water into the landscape with all its ecosystem services (Löf, 2023).

The Biosphere Office began using the concept of ecosystem services at an early stage, and the first survey was carried out as early as 2008. When the Swedish Environmental Protection Agency received a government commission to communicate the value and importance of ecosystem services, a national network was launched. The Biosphere Office was invited to participate to share our experiences as well as disseminate the work of the Swedish EPA within our network. We contributed practical examples and communication initiatives we have carried out, and also had the opportunity to present the educational tool the Vattenrike flower *(Vattenrikeblomman).* This tool helps participants to discover, examine and assess different ecosystem services in nature.

Later, the ecosystem services network was transformed into a green infrastructure and ecosystem services network. The work is still led by the Swedish Environmental Protection Agency and has participants from a number of organisations and authorities in Sweden. The purpose of the network is, among other things, to find new and effective ways of working with ecosystem services, green infrastructure and biodiversity, and to become more synchronised in the initiatives that are implemented. The Biosphere Office is still involved in the network. In 2024, the Swedish EPA carried out a national initiative to raise awareness of work on green infrastructure. The Biosphere Office's ecologist participated in the programme and talked about our work with green infrastructure as an example of best practice.

The Biosphere Office is also taking part in the County Administrative Board's work to produce an action plan for ecologically functional landscapes (green infrastructure). There is a specific declaration of intent confirming the close cooperation between Kristianstad Municipality and the

County Administrative Board of Skåne regarding the biosphere reserve, which was signed by the Chairperson of the Municipal Executive Committee and the County Governor in 2017.

Kristianstads Vattenrike Biosphere Reserve is governed by five-year action plans. The action plan is an important tool for achieving the goals of Kristianstad Municipality's strategic roadmap. The strategic roadmap emphasises the importance of sustainability. A blue-green structure with a low climate impact and thriving, rich nature are central to creating attractiveness. The municipality's strategy for sustainable development also refers to the biosphere reserve as a model area for sustainable societal development.

At the same time, the action plan is part of meeting the UN Sustainable Development Goals (SDGs) as well as biodiversity, environmental and outdoor recreation goals. We contribute to achieving the SDGs by being neutral arenas for collaboration, connecting actors, maintaining well-functioning ecosystems and promoting learning for sustainable development.

The Swedish Environmental Protection Agency's guidelines for naturum state that they should act as a gateway to nature. The naturum Vattenriket visitor centre fulfills several functions. It serves as a meeting place and showcase for the work of Kristianstads Vattenrike Biosphere Reserve, while also showing the way out into the area.

The coordinator of the biosphere reserve is a member of the steering group for the urban planning process and the comprehensive plan in Kristianstad Municipality. This is so that knowledge of the biosphere reserve, the mission and the values of the area can be brought into these processes at an early stage, which provides the conditions for strong dialogue and collaboration. Staff from the Biosphere Office also participate actively in various working groups linked to the work on comprehensive plans and detailed development plans.

Staff at the Biosphere Office have participated in the municipal work of producing a green plan, updated nature conservation plan, tree plan, outdoor recreation plan, etc. This means that local plans and strategies are integrated into our work and vice versa.

In collaboration with the municipal land manager, the Biosphere Office has developed a forestry policy for the management of the municipal forest holdings in Kristianstad. This policy focuses on all three dimensions of sustainability. It has attracted positive attention at a national level, from other municipalities as well as from interest groups, as a good and inspiring example of how municipal forest holdings can be managed.

8. CRITERIA AND PROGRESS MADE

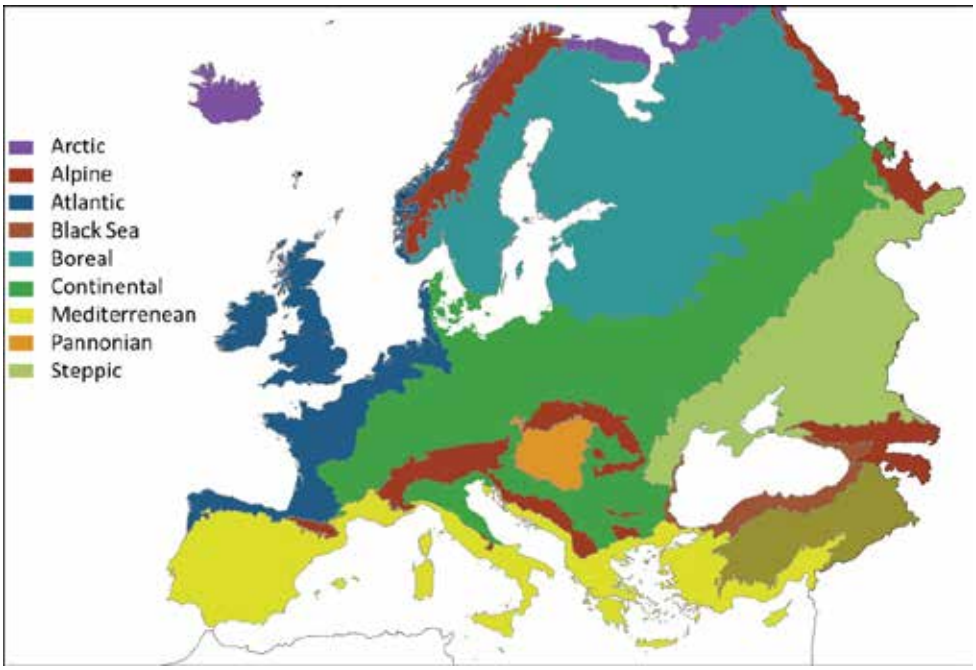
[Conclude by highlighting the major changes, achievements, and progress made in your biosphere reserve since nomination or the last periodic review. How does your biosphere reserve fulfill the criteria. Develop justification for the site to be a biosphere reserve and rationale for the zonation. What is lacking, and how could it be improved? What can your biosphere reserve share with others on how to implement sustainable development into practice?].

Brief justification of the way in which the biosphere reserve fulfills each criteria of article 4 of the Statutory Framework of the World Network of Biosphere Reserves:

1. "Encompass a mosaic of ecological systems representative of major biogeographic region(s), including a gradation of human interventions".

(The term "major biogeographical region" is not strictly defined, but it is a good idea to look at the Udvardy classification system [http://unep-wcmc.org/udvardys-biogeographical-provinces-1975_745.html].)

According to Udvardy's classification system, the Biosphere Reserve belongs to a type of landscape known as "Central European forest", which is characterised by broadleaf forests or woodlands. Based on the EU's classification system, the area belongs to the Continental region.



Biogeographical regions in Europe according to the EU classification. Kristianstads Vattenrike Biosphere Reserve belongs to the continental region, which is the northernmost outpost of a Central European landscape type.

Kristianstads Vattenrike Biosphere Reserve is situated in Skåne, the most southerly of Sweden's provinces, which constitutes the most northerly outpost of this landscape type, while the rest of Sweden belongs to the boreal or alpine region according to the EU's classification.

The biosphere reserve represents a combination of ecosystems that exhibit the characteristics of Central Europe, which is unique in Sweden. Thanks to relatively low population density and a relatively low level of exploitation, many ecosystem services and biological values are still existence.

The area is situated in a cultural landscape containing a large number of habitat and land cover types on the Kristianstadsslätten Plain and surrounding Archean rock areas. All of these play a vital role in the functioning of the ecosystems and ecosystem services.

Since before our nomination, we have worked in a number of thematic landscapes with high natural values. These form the basis of the Biosphere Office's work with the three functions. The thematic landscapes are:

- The wetland area along the River Helge Å
- Tributaries of the River Helge å originating on Linderödsåsen Ridge
- Woods and forests on the slopes of Linderödsåsen Ridge
- The dune landscape along the coast
- The coastal waters of Hanöbukten Bay
- Sandy grasslands
- Balsberget Hill and Lake Råbelövssjön
- Ancient trees and wooded habitats in cultivated areas
- Urban nature
- Groundwater.

These thematic landscapes largely coincide with high-value landscapes, a concept developed by the Swedish Environmental Protection Agency and the county administrative boards. A high-value landscape contains many valuable cores of a certain habitat, i.e. many areas with high biodiversity. High-value landscapes are therefore similar to biodiversity hotspots. In the biosphere reserve, we are proud to have many different types of high-value landscapes. These are: forests and trees, farmlands, natural wetlands, lakes and watercourses, and sandy grasslands. See the maps under 9.7 for further details.

2. "Be of significance for biological diversity conservation".

Within Kristianstads Vattenrike Biosphere Reserve, there is unusually high biodiversity from a national perspective, with a high concentration of red-listed species and valuable natural environments. According to our latest survey, there are 947 red-listed species in the biosphere reserve, of which 366 were threatened. This can be compared with the figures from the previous review. At that time, 775 red-listed species were reported, of which 277 were threatened. Since then, intensive knowledge building has taken place through various inventories and compilations of existing knowledge. Knowledge of red-listed species in the biosphere reserve has increased significantly, and the number of known red-listed species has therefore also increased. In addition, the national Red Lists have been revised twice (in 2015 and 2020), which has also led to major changes in the species on the lists for the biosphere reserve.

The wetland area along the River Helge Å

The central area of the biosphere reserve consists of the River Helge å Ramsar and Natura 2000 site, with its lowland lakes, seasonally flooded grasslands and wet forests. The area covers over 8,000 hectares, large parts of which are protected as nature reserves. A broad range of high biodiversity is linked to the various water-related habitats in flowing water, in the lakes and in the wetlands.

The rivers and lakes are home to a rich fauna of freshwater fish and large mussels, while the seasonally flooded grasslands are important for resting and breeding waders and ducks, and there is also a diverse land mollusc fauna. Examples of nationally and internationally red-listed species in the area are the common kingfisher *(Alcedo atthis),* thick-shelled river mussel *(Unio crassus),* black-tailed godwit *(Limosa limosa)*, otter *(Lutra lutra)* and European catfish *(Silurus glanis).*

Woods and forests on the slopes of Linderödsåsen Ridge

Beech-dominated broadleaf forests with particularly high natural values are found along the steep northern slopes of the ridge. Areas with particularly high natural values are mainly concentrated in the ravines that have been cut by streams. Calcareous soils and shallow groundwater provide a rich soil flora. There are also important occurrences of lichens, mosses and fungi. Terrestrial fungi dominate the critically and endangered species in deciduous forests, and many of these are associated with older broadleaf forests on calcareous soils. Over half of Sweden's threatened invertebrates depend on wooded environments, especially habitats that include broadleaf trees, old hollow trunks and decaying wood. In broadleaf forests such as that at Maltesholm, over 60 species of mollusc and over 1,200 species of beetle have been encountered, many of which are red-listed. This is one of the country's richest locations for these groups of species. Along the north-eastern slope of the Linderödsåsen Ridge, there are several nature reserves and Natura 2000 sites. The Swedish Forest Agency has also delimited over a hundred different key biotypes in the area.

Sandy grasslands

The sandy grasslands of the Kristianstadsslätten Plain were once managed under a rotational system of cultivation and fallow. Today, the most valuable areas consist of permanent grazing land which is not fertilised. These open sandy grasslands have a history dating back many thousands of years and are home to a flora and fauna which are specially adapted to the dry, warm and calcareous conditions. In the highly calcareous areas are Xeric sand calcareous grasslands which represent a unique and threatened habitat, both regionally and globally. Xeric sand calcareous grasslands primarily occur in eastern Skåne, where around 70 localities are known covering a total area of approx. 20-30 hectares. The majority are situated in the biosphere reserve. The most unique values in the biosphere reserve with regard to the occurrence of critically endangered and endangered species are found in the open sandy grasslands. Half of the 142 critically endangered and endangered (CR+EN) species within the biosphere reserve occur here. The species groups vascular plants, butterflies and hymenoptera are best represented. The biosphere reserve is also one of the five most prominent areas in the country for threatened species dependent on open sandy grasslands. Examples of nationally and globally threatened species in the sandy grasslands are the tawny pipit *(Anthus campestris),* large blue butterfly *(Maculinea arion)*, scarab beetle *(Heptaulacus sus),* mason bee *(Osmia maritima)* and sand pink *(Dianthus arenarius).*

Since the last review, the Biosphere Office has worked on a large number of nature conservation projects and restorations in several different habitats, with the aim of conserving and developing biodiversity. Primarily in Vattenriket’s sandy grasslands and wetland areas.

Since the last review, the Biosphere Office has, among other things:

- Led the creation of two new municipal nature reserves.
- Led the development of a municipal forestry policy for Kristianstad Municipality.
- Constructed 185 hectares of wetlands to benefit nutrient retention, groundwater recharge, flow detention, biodiversity, recreation and water management, create nursery areas for fish, reduce levels of iron and aluminium and reduce brownification.
- Implemented the biosphere reserve's first rewetting project to reduce carbon emissions.

- Started a project on predator hunting to benefit endangered wading birds in the seasonally flooded grasslands.
- Created shallow pools of water on the seasonally flooded grasslands in spring to benefit wading birds.
- Explored new management practices through the use of new machinery.
- Received approximately SEK 1.2 million in support from the County Administrative Board to implement measures to benefit endangered wild pollinators.
- Run several LONA projects to promote biodiversity, provide advice to private individuals, inventory natural values and disseminate knowledge about biodiversity and endangered species.
- Participated actively in the EU SandLife project, undertaking measures and contributing to increased knowledge of the high biological values of sandy grasslands.
- Participated in several international projects focusing on Baltic Sea issues, ecosystem services, river restoration, wetland construction, water quality improvement, eelgrass *(Zostera marina)* bed restoration and more.
- Collaborated with stakeholders such as the Swedish Armed Forces, local golf courses, farmers and landowners on biodiversity issues and projects.
- Participated in and conducted extensive research and monitoring on biodiversity, including around 30 of our own inventories and surveys.

3. "Provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale".

(Including examples or learning experiences from putting sustainable development into practice.)

The Biosphere Office works with sustainable development throughout the biosphere reserve in a variety of ways. Our work and measures are well-suited to demonstrating methods for sustainable development at local, regional and international levels. We welcome visitors and interested groups who want to learn about our work relating to sustainable development. The biosphere reserve's staff are frequently hired to give lectures at seminars and conferences, many of which are held in the biosphere reserve. Some practical examples from Kristianstads Vattenrike Biosphere Reserve are:

1. Naturum Vattenriket. The biosphere reserve's visitor centre is in the middle of town and in the middle of the wetlands. Its exhibition and wide range of activities attract 90,000 Kristianstad residents and visiting tourists every year. Read more in the full-page example in Chapter 6.

2. Nature-based solutions. Fredriksdalsviken is home to Sweden's first constructed wetland to use natural processes to reduce levels of iron and aluminium in drainage water. The project is a collaboration led by the Biosphere Office. Read more in the full-page example in Chapter 3.

3. Easy access to Vattenriket. Visitor sites, trails, bird towers, picnic areas and outdoor museums increase access to the area. Making it easy to experience Vattenriket's biodiversity increases understanding for conserving and caring for it. Read more in the full-page example in Chapter 5.

4. A resource in urban planning. By integrating biosphere expertise into planning processes, we contribute to more sustainable development in which biodiversity, outdoor recreation and ecosystem services are taken into account. Read more in the full-page example in Chapter 7.

5. Tradition and innovation. In close dialogue with landowners and land users, we make use of local knowledge and develop new methods to conserve important natural values. Innovation and

collaboration are the key to a thriving cultural landscape. Read more in the full-page example in Chapter 4.

6. 360-degree projects. We work on projects that span nature conservation measures, research, education, public activities and communication. One example is Restoring the Health of the Baltic Sea. Read more in the full-page example in Chapter 4.

7. Broad palette for biodiversity. The Biosphere Office works broadly and innovatively to conserve species and recreate habitats. We use a wide range of measures to keep the landscape open and thriving. Read more in the full-page example in Chapter 4.

8. Circular resource use. In the Bring Back Bream project, we acted as a test bed for circular resource use by exploring how bream, fished to improve water quality, could be used as a local resource in the food industry. Read more in the full-page example in Chapter 5.

9. Learning in the landscape. Our visitor sites are places for learning and inspiration. Here, nature enthusiasts can gain new insights, teachers and students can explore nature and nature-based solutions for conservation can be shared. Read more in the full-page example in Chapter 6.

10. Involvement for all ages. We train biosphere ambassadors, organise biosphere camps and invite scouts to become biosphere heroes. Strong partnerships with associations and the Consultation Group are other ways to engage, and to anchor our work. Read more in the full-page example in Chapter 2.

11. Hope inspires new attitudes. Our long-term goal is to change attitudes for more sustainable development. We aim to inspire inner transition by communicating hope and positive experiences of nature. The method The future we want is one example. Read more in the full-page example in Chapter 7.

12. From preschool to university. Naturum Vattenriket offers outdoor education for all ages, from playful contact with nature to research. Biosphere classrooms and new educational tools provide support for teachers. Read more in the full-page example in Chapter 6.

13. An arena for research. An important task is to collaborate with and provide logistic support to researchers. The Biosphere Office helps to develop and share new research in, with and about the biosphere reserve. Read more in the full-page example in Part I.

14. Communicating broadly. With a well-considered communications strategy that aims to inform, inspire and engage, we reach a large number of broad target groups using a range of channels. Read more in the full-page example in Chapter 2.

15. Adaptive co-management. Wetlands are constructed in discussion and collaboration with landowners. Together we find suitable sites and methods, apply for funding and implement measures that we evaluate, adapt and develop. Read more in the full-page example in Chapter 7.

16. Networking internationally. We initiated the Biosphere for Baltic network, with twelve biosphere reserves in eight countries on the Baltic Sea. In 2025, a Youth Forum will be held in Vattenriket with young adults dedicated to the sea. Read more in the full-page example in Chapter 8.

17. Ideas in a changing climate. Drained peatlands leak greenhouse gases. Raising the water level in the soil can reduce carbon dioxide emissions. The Biosphere Office has blocked ditches at Fjällmossen, restoring 2.5 hectares of wetland. Read more in the full-page example in Chapter 2.

4. "Have an appropriate size to serve the three functions of biosphere reserves".

The biosphere reserve covers a total area of 104,362 hectares (approximately 1,044 km2) and encompasses the lower drainage basin of the River Helge Å in Kristianstad Municipality and the coastal parts of Hanöbukten Bay, which is part of the Baltic Sea.

Over the past ten years, many projects have been successfully carried out within the boundaries of the biosphere reserve, which clearly indicates that the area provides good opportunities to fulfil the functions of conservation, development and logistic support.

5. Appropriate zonation to serve the three functions.

In accordance with UNESCO's criteria, the biosphere reserve is divided into three zones – a core area, a buffer zone and a transition area. The Swedish Environmental Code forms the basis for the zonation.

Since the last review, the core areas have increased by as much as 20 percent, while the buffer zones and the transition area have decreased by the same amount. The outer boundaries of the biosphere reserve have not changed. At the same time, the figures for the various areas have been adjusted slightly due to increased detail in the GIS work. For example, the boundaries between terrestrial and limnic areas have been adjusted, as has the figure for the total area of the biosphere reserve.

The core areas, with a total area of 8,581 hectares, consist of nature reserves, habitat protection areas and Natura 2000 areas, all protected by Swedish legislation. The conservation objectives in the core areas are mainly linked to the lakes and the seasonally flooded grasslands, wet forests and shoreline forests contiguous to these lakes. In addition to these types of landscape and ecosystem, the core areas include watercourses, dry grasslands with elements of xeric sand calcareous grasslands, outfield pastures, sand dunes and forested areas.

The buffer zones amount to 21 737 hectares and comprise areas designated as a Ramsar site, areas of national interest for the purpose of nature conservation and shoreline protection areas. Parts of these areas which consist of nature reserves or Natura 2000 sites are situated in the core areas, whereas the surrounding land forms part of the buffer zones. In addition to the national interests selected by the Environmental Protection Agency and the County Administrative Board, the text of the Act itself (Chapter 4 of the Environmental Code) also mentions a number of sub-areas with such high natural and cultural values that they are of national interest in their entirety. The areas in question must not be subjected to exploitation that significantly damages these values. Among these designated areas is a large coastal and marine area within the biosphere reserve. Parts of this are included in the buffer zone. Other areas classified as buffer zones are areas listed in the municipal nature conservation fund and state-owned nature conservation areas without formal protection. The buffer zones largely consist of private land.

The transition area covers 74,044 hectares and largely consists of private land. It consists mainly of agricultural land, woodland, urban areas and sparsely populated areas.

According to a master's thesis from the Stockholm Resilience Centre, the public's perception of ecosystem services corresponds well with the zonation of the biosphere reserve. 163 people who were familiar with the biosphere reserve were asked to show on a map where they experience different ecosystem services in the biosphere reserve. Regulating ecosystem services were mapped

more in core areas than in buffer zones. Provisioning ecosystem services, on the other hand, were mapped more in buffer zones than in core areas. The author notes that these results were to be expected, as nature that is protected in core areas can contribute more to regulating ecosystem services. The study also shows that the core areas of the biosphere reserve are places where people value nature regardless of the services it provides (Schwarze, 2024).

6. "Organizational arrangements should be provided for the involvement and participation of a suitable range of inter alia public authorities, local communities and private interests in the design and the carrying out of the functions of a biosphere reserve".

The Biosphere Office coordinates a large number of activities aimed at conserving, developing and supporting the values of the landscape in accordance with MAB's Statutory Framework, Seville Strategy and Lima Action Plan and the forthcoming Hangzhou Strategy and Action Plan. Since the last evaluation, the unit has expanded from 13 to 15 permanent employees, 2 project employees and 5 hourly employees.

We work from a landscape perspective based on different thematic landscapes and high-value landscapes, and projects are conducted in all of these. This has helped us to work with a wide range of partners in contacts with authorities, landowners, organisations and others.

Since the last review, we have worked even more closely with other municipal administrations, for example participating actively in the municipality's work on the urban planning process, such as comprehensive plans and detailed development plans. By getting involved early in the planning process and contributing our knowledge of landscape values, it is possible to find solutions that benefit nature as well as people. One example is the work on amending the comprehensive plan for Åhus, where the Biosphere Office's knowledge of the natural values of the sandy grasslands in open as well as wooded environments, developed over several years, is of great value in producing a plan that promotes the development of the community.

Our activities have been designed to involve and engage stakeholders in the work to achieve the objectives of the biosphere reserve. The Consultation Group for Kristianstad Vattenrike Biosphere Reserve had already been established before the area became a biosphere reserve. The group has a consultative role and acts as an arena for dialogue and the exchange of information and knowledge between representatives of different stakeholders within the biosphere reserve, such as politicians and officials in the municipality, local organisations and regional authorities. The Consultation Group meets three times a year, with one meeting being held in the field to study and discuss a topical issue on site.

For naturum's scheduled activities, there is a programme board that meets twice a year to collaborate on naturum's programme. In addition to representatives from the naturum Vattenriket visitor centre, it now consists of people from six different nature and outdoor recreation associations in the municipality.

Kristianstads Vattenrike Biosphere Reserve was one of four biosphere reserves in a 2018 study on participation in decision-making processes. A paper from the project shows that biosphere reserves involve a wide diversity of stakeholders in decision-making as well implementation. According to the researchers, the biosphere reserves studied enable action by creating important new arenas for

stakeholders to meet. In Vattenriket, this includes the Consultation Group as well as networks of individuals and organisations formed around specific projects (Baird et al, 2018).

A number of technical visits, study visits and exchanges have been carried out since the last review with biosphere reserves as well as other stakeholders. These provide valuable input, perspectives and new ideas for biosphere work, and showcase and disseminate the biosphere reserve's working methods to others. The many visitors since the last review include researchers from Lund University, Stockholm University, the University of Alaska Southeast and a group of international researchers studying a two-year management course with a focus on sustainability, leadership and academia. In 2024, naturum received its first trainee through the Erasmus programme, who was the manager of a visitor centre in the Czech Republic.

Another example is a study visit by Kristianstads Vattenrike's coordinator to the Appennino Tosco-Emiliano Biosphere Reserve, which has a greater focus on businesses. Among other things, sponsors can receive a plaque showing their support for the biosphere reserve. The I love Vattenriket campaign was developed in collaboration with the Friends of Vattenriket *(Vattenrikets vänner)*. Residents, visitors and businesses can show their commitment to Vattenriket by buying products at naturum. Companies that sponsor the Friends of Vattenriket can use the project's slogan in their marketing. The campaign is a way to spread information, inspiration and involvement in a change of attitude towards sustainable societal development, and to raise money for the Friends of Vattenriket to co-fund initiatives and projects in the biosphere reserve. This is also an example of how the friends association has grown and developed. See questions 6.6 and 8.7 for further information.

The Swedish Federation of Rural Economy and Agricultural Societies and agricultural consultants HIR are new partners. With them and the project group for Climate Neutral Kristianstad 2030, we have organised a series of information events for farmers in the area on water management, intermediate crops and climate-smart cultivation, with a focus on developing farming methods.

Another brand new partner is the Friends of the River Helge Å *(Helgeåns vänner),* which was founded in 2018. The purpose of the association is, among other things, to open and restore the waterways and lakes of the Helge Å River and to increase accessibility for boating. We meet with the association several times a year and maintain a close dialogue on, for example, the need for various actions. For example, the association is responsible for removing fallen trees in Graften, while the Biosphere Office is responsible for cutting reeds, both measures aimed at improving access for boating.

The Biosphere Office now also cooperates with the Lower Helge Å Fishery Conservation Area *(Nedre Helgeåns fiskevårdsområde).* Biosphere Office staff are on the board, representing the municipality and the Biosphere Office. The association has been involved in various projects run by the Biosphere Office, linked to fish conservation as well as improved accessibility for fishing in the Helge Å River and its tributaries. For example, the association contributed funding for the construction of the much-appreciated fishing pier at Kavrö Bridge in 2021, which was inaugurated in a festive ceremony by the then chairman of the fisheries conservation area with the chairperson of the Municipal Executive Committee.

The Biosphere Office is responsible for coordinating the River Helge Å Water Council *(Helgeåns vattenråd).* It is a non-profit association to provide a voluntary and open advisory forum for many different areas of interest in the Helge Å River drainage basin. The members work together to promote sustainable management of water resources in accordance with the EU Water Framework Directive. The water council's boundaries extend beyond the biosphere reserve, which provides a good overview of the river's water management.

The Eel Academy *(Ålakademin)* is a non-profit organisation that the Biosphere Office works closely with. The association's aim is good water quality in the Helge Å River and in Hanöbukten Bay and it is involved in terrestrial as well as aquatic measures. In Fredriksdalsviken, the country's first wetland facility has been constructed to capture iron and aluminium using natural processes, before the water reaches the Helge Å River. The project was run by the Biosphere Office, in collaboration with the Eel Academy and Råbelöfs Estate Management.

In 2019–2021, we were responsible for so-called reduction fishing in Lake Råbelövssjön. After the project ended, our dialogue with Lake Råbelövssjön's fisheries management association has continued, about continued measures and projects to improve the water quality in the lake. The County Administrative Board is also involved in this dialogue.

7. Mechanisms for implementation:

a) Mechanisms to manage human use and activities

Some activities are regulated by existing statutory regulations at national and EU level and by the municipal policy on areas in the municipal nature conservation fund. Environmental compensation is available from the EU for the management of valuable pastures and hay meadows.

Thoughts and ideas from associations, landowners, land users and the general public can be put forward in the Consultation Group or in direct contact with Biosphere Office staff. Conversely, Biosphere Office staff disseminate information concerning topical projects and the like at the Consultation Group's meetings or through direct contact with stakeholders. Several associations participate in the programme board for naturum's programme and are given the opportunity to put forward ideas and wishes. Many people visit the naturum Vattenriket visitor centre every year, which becomes a natural meeting place where thoughts and ideas about the biosphere reserve can be put forward and discussed with staff.

b) Management policy or plan

A proposal for an action plan for the biosphere reserve is produced by the Biosphere Office. The Consultation Group is involved in the process and the plan is based on agreement. The action plan contains guidelines for the overall work within the biosphere reserve, focusing on the three functions of conservation – development – logistic support in accordance with MAB's Seville Strategy and Lima Action Plan and the forthcoming Hangzhou Strategy and Action Plan. The action plan is implemented by the Biosphere Office with the support of local, regional, national and in some cases international bodies and authorities.

c) Authority or mechanism to implement this policy or plan

The Biosphere Office does not exercise authority, as no new laws or regulations have been developed for a biosphere reserve. Our task is to coordinate our own activities within the biosphere reserve, and to support, initiate and follow up activities carried out by other stakeholders, if they fall within the framework of our action plan. The Biosphere Office also helps to produce background information and proposals for decisions for Kristianstad Municipality, the County Administrative Board of Skåne, and other local, regional and national bodies.

d) Programmes for research, monitoring, education and training

Research, environmental monitoring, education and internships are carried out under the Biosphere Office's own auspices as well as through dialogue and collaboration with various universities, authorities and associations.

Networking internationally

Involving young people around the Baltic Sea

The Biosphere Office initiated and is an active participant in the Biosphere for Baltic network, with twelve biosphere reserves in eight countries around the Baltic Sea. The network was launched at the UN Ocean Conference 2017 with the aim of sharing best practices of sustainable management in the Baltic Sea region. The collaboration has led to several exciting projects to develop education and sustainable tourism.

The network has also identified a common challenge – involving young people. To strengthen young adults' participation, we have developed the Biosphere for Baltic – Future Generations project.

The aim is to involve people aged 18–28 in the work for a sustainable Baltic Sea. The goal is to develop new ideas to increase youth participation in the work of the biosphere reserves and to create a transnational youth network.

In the project, we have held webinars where the biosphere reserves have shared their experiences of involving young people. We have also invited external organisations to contribute inspiration and lessons learned.

The work culminates in a youth forum in Vattenriket in June 2025 for 50 young adults from the Baltic Sea region.

Through this initiative, we have strengthened collaboration between biosphere reserves and laid the foundation for a long-term commitment among young people to the future of the Baltic Sea.

Research in the biosphere reserve is conducted by colleges and universities in various subject areas. The biosphere reserve attracts researchers from different parts of the world and has been recognised in a number of international scientific journals.

When Kristianstads Vattenrike became a biosphere reserve, Kristianstad University set up the interdisciplinary research environment Man & Biosphere Health (MABH). It changed its name to Sustainable Multifunctional Landscapes (SMULA) in 2023 and includes around 25 researchers from a wide range of natural sciences, social sciences and humanities. This provides a good basis for research on various sustainability issues and for cooperation with the Biosphere Office.

Since the last evaluation, the Stockholm Resilience Centre has published a number of articles from two major international research projects on biosphere reserves: BiosACM and GLEAN. Other collaborations have focused on ecosystem services and the 2030 Agenda for Sustainable Development. One project that started in 2023 is Become – Biosphere Reserves as Effective Conservation Measures, led by the University of Bergen.

Since the last review, collaborations on social-ecological research have been established with many more universities, notably Lund University, the University of Gothenburg, the Swedish University of Agricultural Sciences SLU, Linnaeus University, the University of Bergen in Norway and Leibniz Centre for Agricultural Research in Germany.

Environmental monitoring is an important part of biosphere activities. Prior to new projects, inventories are carried out to gather information on natural values. The inventories are then regularly followed up to analyse the impact of the measures implemented, so that they can be adjusted if necessary.

A number of other stakeholders carry out monitoring within the biosphere reserve, often in consultation with the Biosphere Office. The most important are the County Administrative Board of Skåne, Kristianstad Municipality, the River Helge å Water Conservation Association *(Helgeåkommittén),* the Western Hanöbukten Bay Water Conservation Association *(Vattenvårdsförbundet för västra Hanöbukten)*, the Bird Society of North-East Scania *(Nordöstra Skånes fågelklubb)* and the Flora Guardians *(Floraväktarna)*.

Kristianstad University is the biosphere reserve's main node for higher education. Once a year in November, the Biosphere Office and Kristianstad University organise the Biosphere Research Conference together to share new findings about the biosphere reserve with a wider audience. Kristianstad University offers courses with a direct focus on the environment and sustainability, both at undergraduate and graduate levels.

Lund University, Stockholm University and the Swedish University of Agricultural Sciences are other examples of higher education institutions that use Kristianstads Vattenrike Biosphere Reserve in courses at both undergraduate and graduate level to illustrate everything from hydrology to adaptive co-management.

The Biosphere Office offers internships and opportunities to write theses for students from universities, colleges and upper secondary schools. In addition, our work includes nature education for pupils and teachers, biosphere camps for children on school holidays, field trips, training of biosphere ambassadors, conferences, etc.

Does the biosphere reserve have cooperative activities with other biosphere reserves (exchanges of information and staff, joint programmes, etc.)?

We have established several partnerships at national, regional and global levels to promote sustainable development and biodiversity conservation and share good practices.

At the national level

At the national level, Kristianstads Vattenrike cooperates with other Swedish biosphere reserves through the Swedish MAB Programme *(Biosfärprogrammet Sverige)*, a network that enables knowledge exchange and joint projects. We have actively supported biosphere reserves during their establishment process, such as Storkriket, Örebro, Nämndö, Öresund and Dalsland. The Biosphere Office has visited Blekinge Archipelago and contributed to the Storkriket application process. We helped to organise the conference for biosphere municipalities 2023, a national gathering to strengthen the role of biosphere municipalities in sustainable development.

Through twinning and/or transboundary biosphere reserves

Kristianstad Vattenrike Biosphere Reserve is not a twinned or transboundary biosphere reserve but lies within Sweden's borders.

At the regional level and within the World Network

EuroMAB

The Biosphere Office participates actively in this network, which provides opportunities for exchanges of experience and joint projects with other biosphere reserves in Europe and North America. Staff from the Biosphere Office and naturum Vattenriket have participated in every EuroMAB conference for the past ten years. At the most recent EuroMAB conference in Wittenberg, Germany in 2024 we provided several inspiring examples during the workshops.

NordMAB

The Biosphere Office has participated and held workshops at several NordMAB conferences. The network has also arranged exchanges between members, and staff from the Biosphere Office have visited and received visits from the biosphere reserves Wester Ross in Scotland, Southeast Rügen in Germany, the Archipelago Sea in Finland and Mön in Denmark on several occasions.

The Biosphere for Baltic network

Since the Biosphere Office initiated this network of twelve biosphere reserves around the Baltic Sea in 2017, several collaborative projects have been carried out with a focus on sustainable marine awareness, education and sustainable tourism, with meetings in the West Estonian Archipelago in Estonia, Slowinski in Poland, the Archipelago Sea in Finland and Sweden. For the first seven years (2017–2023) the network was coordinated by the Biosphere Office.

- **BFB-TOOLS**, Tools for Ocean Literacy and Sustainability, a collaboration for sustainable tourism that draws attention to environmental challenges and increases knowledge about the ocean. Funded by the Swedish Institute.

- **BFB-COLAB,** Biosphere for Baltic – Collaboration, Ocean Literacy & Local Engagement for a Sustainable Baltic Sea deepened the collaboration within the network with a focus on visitor centres and ocean awareness activities. Funded by the Swedish Institute.

- **Supported by Nature Interreg project**, to increase understanding of nature-based solutions by establishing learning sites. Funded by the EU programme Interreg.

- **Biosphere for Baltic – Future Generations.** The Biosphere Office is leading this initiative to increase youth engagement in biosphere activities, sustainable development and the Baltic Sea ecosystem. Funded by the Swedish Institute. The project consists of a series of webinars and a youth forum organised in Vattenriket.

Other international cooperation

Exchange of experience with other biosphere reserves about visitor centres in Palermo, Italy.

Study trip to the Appennino Tosco-Emiliano Biosphere Reserve, Italy. Focus on sustainable tourism, rural development, new forms of enterprise and nature education.

Study trip to the Galloway and Southern Ayrshire Biosphere Reserve, Scotland. Focus on social enterprise and entrepreneurship in biosphere reserves.

Exchange of experience with Monte Grappa, Italy. Information about the work of the Biosphere Office for a prospective biosphere reserve.

Biosphere Forests for the Future project application. The Biosphere Office participated in several international workshops on a new EU application with European biosphere reserves and universities. The workshops were held in the Rhön Biosphere Reserve in Germany and the Wienerwald Biosphere Reserve in Austria.

Cooperation with Nordhordland, Norway:

- Participants from the Nordhordland Biosphere Reserve, the Norwegian UNESCO Commission, the University of Bergen and Alver Municipality visited Vattenriket to be inspired by our work on education, communication, ecosystem services and collaboration with researchers and landowners.
- Naturum's educator participated in a UNESCO school network meeting in Nordhordland.

Citizen science Rügen: Naturum's nature educator shared experiences from citizen science in the project Algae Research Summer *(Algforskarsommar)* at an international conference at Vilm, in the Southeast Rügen Biosphere Reserve.

MAB LAB II: Workshops with other Nordic biosphere reserves have led to a report on local action for the new Kunming-Montreal Global Diversity Framework (Dietrich et al, 2025).

International youth exchange: In 2023, four young people from Vattenriket participated in a forum in Luxembourg, and in the summer of 2025, Kristianstads Vattenrike will organise its own forum for young people from twelve biosphere reserves in eight countries as part of the Biosphere for Baltic – Future Generations project.

Obstacles encountered, measures to be taken and, if appropriate, assistance expected from the Secretariat

We cooperate closely with and receive strong support from the Swedish MAB Programme's *(Biosfärprogrammet Sverige)* national coordinator, who has done a lot to draw attention to the role of biosphere reserves on a national level. This has led to increased interest in the MAB programme from national authorities. During the evaluation process, we have discussed our proposed new zonation with the national coordinator, among other things.

Main objectives of the Biosphere Reserve

Describe the overall objectives of the biosphere reserve, integrating the three functions and the sustainable development objectives for the coming years.

Kristianstads Vattenrike Biosphere Reserve will continue to act as a model area for sustainable development that benefits people and nature and to integrate the three functions of conservation, development and logistic support. Naturum Vattenriket will continue to meet the Swedish Environmental Protection Agency's requirements and intentions for naturum in Sweden. Our work will be in line with MAB's Statutory Framework, Seville Strategy and Lima Action Plan as well as the upcoming Hangzhou Strategy and Action Plan, the 2030 Agenda for Sustainable Development, the Kunming-Montreal Global Biodiversity Framework, the EU Nature Restoration Regulation, the Paris Agreement, UNESCO's Medium-Term Strategy for 2022–2029 and other relevant national, regional and international strategies.

Other important goals for the biosphere reserve are to work towards sustainable development that benefits people and nature within Kristianstads Vattenrike Biosphere Reserve and Kristianstad Municipality by:

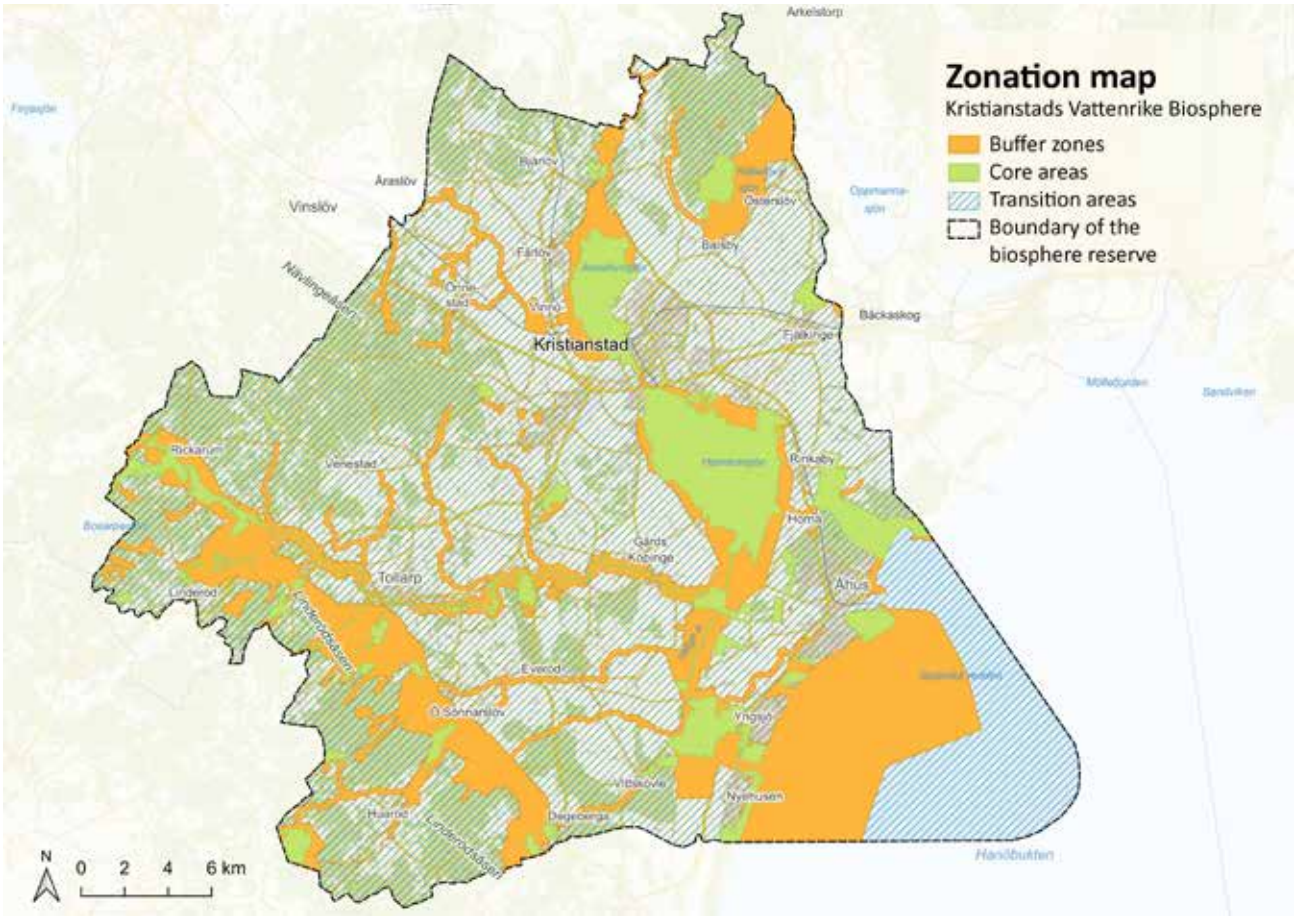
- Carrying out targeted conservation work relating to valuable natural environments and species with a focus on nature and people.
- Continuously developing knowledge regarding natural and cultural values, and the requirements for protection and management of valuable habitats and species.
- Working with a landscape perspective based on thematic landscapes and high-value landscapes.
- Working according to themes including all three functions of the biosphere reserves: conservation, development and logistic support.
- Working in cooperation and dialogue with a multi-stakeholder approach and with the goal of creating trust and changing attitudes.
- Engaging and including young people and those unaccustomed to nature as priority target groups.
- Raising awareness of the importance of a sustainable future by inspiring people of all ages to enjoy and respect nature.
- Making it easier for the public, pupils and researchers to benefit from all the values of the biosphere reserve through the visitor centre, visitor sites, website, social media and information materials.

9. SUPPORTING DOCUMENTS

(1) Updated location and zonation map with coordinates

[Provide the biosphere reserve's standard geographical coordinates (all projected under WGS 84). Provide a map on a topographic layer of the precise location and delimitation of the three zones of the biosphere reserve (Map(s) shall be provided in both paper and electronic copies). Shapefiles (also in WGS 84 projection system) used to produce the map must also be attached to the electronic copy of the form. If applicable, also provide a link to access this map on the internet (e.g. Google map, website…).]

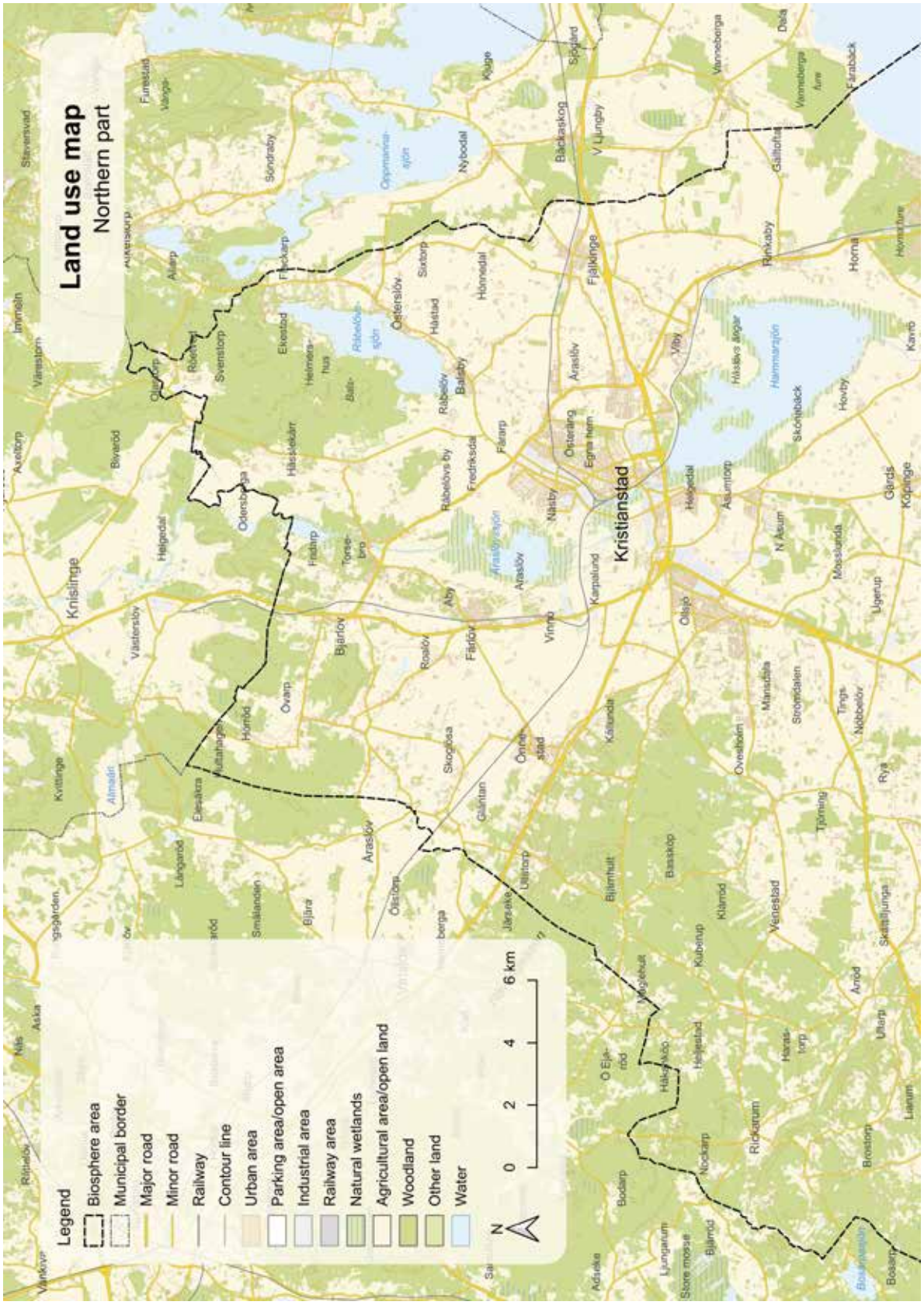
The shape files can be downloaded from https://vattenriket.kristianstad.se/periodic-review/



Cardinal points	Latitude	Longitude
Most central point	56°01'57''N	14°08'58''E
Northernmost point	56°10'26''N	15°13'15''E
Southernmost point	55°48'14''N	13°58'42''E
Westernmost point	55°56'13''N	13°45'04''E
Easternmost point	55°51'33''N	14°28'42''E

(2) Updated vegetation map or land cover map

[A vegetation map or land cover map showing the principal habitats and land cover types of the biosphere reserve should be provided, if available.]




Land use map
Southern part
Kristianstad
Åhus
Tollarp
Linderödsåsen
Legend
Biosphere area
Municipal border
Major road
Minor road
Railway
Contour line
Urban area
Parking area/open area
Industrial area
Railway area
Natural wetlands
Agricultural area/open land
Woodland
Other land
Water
0
2
4
6 km
N

(3) Updated list of legal documents (if possible with English, French or Spanish synthesis of its contents and a translation of its most relevant provisions)

[If applicable update the principal legal documents since the nomination of the biosphere reserve and provide a copy of these documents.]

Designated nature reserves, Natura 2000 areas, areas of national interest, habitat protection areas and Ramsar site within Kristianstads Vattenrike Biosphere Reserve

Documents and more information can be found at skyddadnatur.naturvardsverket.se

Designated nature reserves under Chapter 7, Section 4 of the Swedish Environmental Code

Decision date	Rev. decision date	Name	Area (ha)
1967-04-25	2019-07-04	Håslövs ängar	523
1968-06-28		Fjälkinge backe	129
1976-12-08		Boarps hed	30
1976-12-08	2022-06-02	Gropahålet	32
1991-12-09		Fredriksdalsviken	92
1996-05-06		Äspet	216
1999-11-26	2014-04-24	Hercules	93
2001-03-26		Isternäset	108
2002-11-18		Näsby fält	462
2002-11-18		Rinkaby and Horna ängar	192
2003-10-14		Maltesholm	29
2005-12-13		Balsberget	287
2006-12-11		Forsakar with Lillaforsskogen	38
2007-10-24		Hovby ängar	845
2007-11-29		Egeside	230
2008-05-13		Degeberga backar	31
2009-02-02	2017-01-26	Pulken-Yngsjön	306
2010-08-13	2014-09-18	Klintabäcken	72
2011-01-18		Årummet	56
2011-06-16	2017-04-27	Björkerödsbäcken	75
2011-06-22		Horna sjömark	158
2011-09-15		Åby ängar	124
2011-10-20		Åsums ängar and Åsumallet	448
2012-02-09		Vramsåns mynning	102
2012-04-26		Åbjär	93
2013-04-09		Horna Sandar	52
2013-04-09	2014-06-10	Sånnarna	45
2013-06-13		Horna grushåla	14
2013-10-17		Friseboda	150
2015-12-15	2022-06-02	Lillesjö	80
2017-10-17		Mosslunda	74
2018-04-19		Heljestad	24
2019-01-24		Fjällmossen	169
2020-01-15		Lyngsjö	80

2020-06-17	2024-10-03	Linderödsåsens nordsluttning	431
2021-12-14		Södra Äspet	63
2022-05-05		Vittskövle sandmark	8
2022-09-01		Norra Ripa sandar	50
2022-11-15		Ekenabben and Kvarnnäs	127
2022-12-15		Uddarp	42
2023-02-02		Södra Ripa sandar	73
2024-04-18		Torsebro	42
		Total area	**6,295**

Natura 2000 areas designated by the Swedish Government, under Chapter 7, Section 28 of the Swedish Environmental Code, in accordance with the EU Habitats Directive (SCI) and the EU Birds Directive (SPA)

Government decision, SCI	Government decision, SPA	Site code	Name	Area (ha) SCI	Area (ha) SPA
1995-12-21		SE0420021	Boarps hed	30	
1996-06-27		SE0420128	Torsebroparken	14	
	1996-12-19	SE0420146	Araslövssjöområdet		1,133
	1996-12-19	SE0420145	Hammarsjöområdet		2,641
	1996-12-19	SE0420144	Vramsåns mynningsområde		95
1997-01-30		SE0420141	Forsakar-Borråkra	40	
1997-01-30		SE0420137	Gropahålet	77	
1997-01-30		SE0420203	Klintabäcken	21	
1997-01-30		SE0420202	Maltesholm	29	
1997-01-30		SE0420047	Norra Mosslunda	72	
1997-01-30		SE0420152	Södra Äspet	58	
1997-01-30		SE0420142	Söndreklack	32	
1997-01-30		SE0420138	Äspet	216	
1998-12-22		SE0420256	Björkhäll	36	
1998-12-22		SE0420261	Egeside	22	
1998-12-22		SE0420255	Gamlegården	19	
1998-12-22		SE0420258	Hercules	39	
1998-12-22		SE0420257	Håslöv	150	
1998-12-22		SE0420252	Lingenäsen	87	
1998-12-22		SE0420234	Lyngby	4.7	
1998-12-22		SE0420235	Lyngsjön	84	
1998-12-22		SE0420204	Mjööns dalgång	25	
1998-12-22		SE0420260	Pulken	7.6	
1998-12-22		SE0420239	Rinkaby skjutfält	775	
1998-12-22		SE0420236	Vittskövle driva	59	
1998-12-22		SE0420259	Vramsåns mynning	22	
1998-12-22		SE0420253	Västra fäladen	38	
1998-12-22		SE0420254	Åsumallet	40	
2000-07-06		SE0420280	Everöds utmark	37	
2000-07-06		SE0420282	Prästängen	15	
2002-01-24		SE0420308	Araslövssjön	369	
2002-01-24		SE0420316	Balsbergsgrottan	1.3	
2002-01-24		SE0420309	Hammarsjön	1,797	
2002-01-24		SE0420307	Helgeå	112	
2002-01-24		SE0420310	Vramsån	242	
2003-11-06		SE0420324	Balsberget	195	
	1998-12-22	SE0420264	Egeside-Pulken-Yngsjön		507
2006-05		SE0420328	Stackedala	14,6	
			Total area	**4,778**	**4,376**

Areas of national interest for nature conservation designated by the Swedish Environmental Protection Agency under Chapter 3, Section 6 of the Swedish Environmental Code

Decision date	Identification	Area name	
2000-02-07	NRO 12 023	Tostebergakusten	geodata.naturvardsverket.se/handlingar/rest/dokument/203070
2000-02-07	NRO 12 022	Oppmanna – Ivösjöområdet	geodata.naturvardsverket.se/handlingar/rest/dokument/203069
2000-02-07	NRO 12 025	Fjälkinge backe Lilles backe	geodata.naturvardsverket.se/handlingar/rest/dokument/203072
2000-02-07	NRO 12 026	Gummastorpasjön	geodata.naturvardsverket.se/handlingar/rest/dokument/203073
2000-02-07	NRO 12 027	Hallabacken	geodata.naturvardsverket.se/handlingar/rest/dokument/203074
2023-06-22	NRO 12 064	Helgeåns nedre lopp (with Araslövssjön and Hammarsjön)	geodata.naturvardsverket.se/handlingar/rest/dokument/203111
2000-02-07	NRO 12 063	Mosslunda	geodata.naturvardsverket.se/handlingar/rest/dokument/203110
2000-02-07	NRO 12 065	Kusten Åhus – Juleboda	geodata.naturvardsverket.se/handlingar/rest/dokument/203112
2000-02-07	NRO 12 062	Lyngsjö	geodata.naturvardsverket.se/handlingar/rest/dokument/203109
2000-02-07	NRO 12 061	Linderödsåsens nordsluttning med vattendrag	geodata.naturvardsverket.se/handlingar/rest/dokument/203108
2000-02-07	NRO 12 035	Boarps fälad	geodata.naturvardsverket.se/handlingar/rest/dokument/203082
2000-02-07	NRO 12 060	Knopparp	geodata.naturvardsverket.se/handlingar/rest/dokument/203107
2000-02-07	NRO 12 059	Everöds Fälad	geodata.naturvardsverket.se/handlingar/rest/dokument/203106
2000-02-07	NRO 12 058	Fjällmossen	geodata.naturvardsverket.se/handlingar/rest/dokument/203105

Habitat protection areas under Chapter 7, Section 11 of the Swedish Environmental Code (SFS 1998:808)

Case reference	NVR ID	Property	Decision date	Area
SK 120-1997	2008601	BÖKESTORP 15:1	1997-06-13	2.7
SK 125-2005	2008668	ÖLLESTORP 1:2	2005-02-15	2.2
SK 126-2005	2008674	ÖLLESTORP 1:2	2005-02-15	6.5
SK 158-1999	2008771	TORSEKE 22:2	1999-06-14	1.6
SK 216-2012	2040635	NORRA PÅRUP 4:1	2012-12-11	1.0
SK 220-2013	2042464	BASSKÖP 1:8	2014-05-13	0.7
SK 222-2012	2031772	NORRA PÅRUP 4:1	2012-09-04	4.0
SK 225-2012	2040673	NORRA PÅRUP 4:1	2012-12-11	0.3
SK 235-2012	2040757	LIARUM 5:3	2013-01-03	2.6
SK 236-2012	2040766	LIARUM 5:3	2013-01-03	1.9
SK 237-2012	2040735	LIARUM 5:3	2013-01-03	4.8
SK 238-2012	2040619	LIARUM 5:3	2013-01-03	1.8
SK 239-2012	2040668	LIARUM 7:1	2013-01-03	0.6
SK 266-2003	2008640	LINDERÖD 5:11	2003-03-10	0.9
SK 269-1996	2008616	STENSMA 5:7	1996-12-12	0.7
SK 270-1996	2008614	STENSMA 5:5	1996-12-12	0.8
SK 289-2003	2008638	LINDERÖD 3:45	2003-03-18	1.8
SK 290-2003	2008639	LINDERÖD 3:45	2003-03-18	0.6
SK 292-2013	2041752	LINDERÖD 7:59	2013-11-13	0.7
SK 298-2001	2008645	SKÄTTILLJUNGA 22:8	2001-06-18	3.6
SK 307-2010	2024559	ABULLABERGA 1:4	2010-11-26	0.5
SK 308-2010	2024558	ABULLABERGA 1:4	2010-11-26	6.7
SK 309-2010	2024552	ABULLABERGA 1:4	2010-11-26	1.1
SK 353-2013	2041755	LINDERÖD 7:59	2013-11-13	0.2
SK 354-2013	2041751	LINDERÖD 7:59	2013-11-13	0.4
SK 355-2013	2041758	LINDERÖD 7:59	2013-11-13	3.8
SK 37-2006	2008667	VENESTAD 54:1	2006-01-16	1.3
SK 456-2013	2041869	ULLARP 3:3	2013-12-18	0.8
SK 543-2002	2008672	OVESHOLM 1:1	2002-06-27	1.0
SK 544-2002	2008673	OVESHOLM 1:1	2002-06-27	0.8
SK 55-2013	2042393	HOLMÖ 1:32	2013-10-29	0.3
SK 629-2012	2042053	NORRA PÅRUP 4:1	2014-02-03	0.8
SK 63-2008	2013729	VENESTAD 21:3	2008-02-18	1.9
SK 747-2005	2008761	STRÖ 25:4	2005-11-03	2.5
SK 783-2006	2013241	LINDERÖD 1:1	2006-12-12	9.7
SK 784-2001	2008670	KNUTSTORP 2:7	2001-12-12	3.7
SK 785-2001	2008671	KNUTSTORP 2:7	2001-12-12	1.0
SK 786-2001	2008669	KNUTSTORP 2:7	2001-12-12	0.8
SK 789-2012	2042052	NORRA PÅRUP 4:1	2014-02-03	0.8
SK 790-2012	2042051	NORRA PÅRUP 4:1	2014-02-03	0.8
SK 72-2019	2055063	ÅKEBODA 1:4	2019-11-21	2.7

Case reference	NVR ID	Property	Decision date	Area
SK 251-2012	2045631	TRÄNE 16:3	2016-06-30	1.1
SK 11-2019	2055097	KUBERUP 1:4	2019-11-11	3.6
SK 559-2014	2044450	VENESTAD 13:1	2015-09-07	0.4
SK 560-2014	2044466	VENESTAD 13:1	2015-09-07	1.2
SK 366-2016	2046673	VENESTAD 34:14	2017-01-25	4.3
SK 144-2018	2055094	TOSTARP 1:1, LINEKULLA 2:1	2019-12-11	9.9
SK 149-2016	2046471	TÅGARP 2:2	2016-09-29	1.9
SK 147-2016	2046469	TÅGARP 2:2	2016-09-29	7.0
SK 148-2016	2046470	TÅGARP 2:2	2016-09-29	1.1
SK 146-2016	2046468	TÅGARP 2:2	2016-09-29	0.6
SK 145-2016	2046467	TÅGARP 2:2	2016-09-29	1.0
SK 247-2014	2042988	LIARUM 5:3	2014-09-22	1.1
SK 131-2022	2061901	LIARUM 5:2	2023-10-26	1.6
SK 564-2014	2044205	LINDERÖD 5:11	2015-05-27	1.7
SK 563-2014	2044191	LINDERÖD 5:12	2016-08-18	0.8
SK 94-2015	2045828	LINDERÖD 5:12	2016-08-18	0.8
SK 95-2015	2045829	LINDERÖD 5:12	2016-08-18	0.9
SK 562-2014	2044219	LINDERÖD 5:11	2015-05-27	0.3
			Total area	**129.28**

Ramsar site – Convention on Wetlands of International Importance, especially as Waterfowl Habitat

Documents and more information can be found at rsis.ramsar.org/ris/16

Name	Ramsar ID	Original decision date	Latest decision date	Area (ha)
Helge å	16	1974-06-28	2015-01-29	8,042

(4) Updated list of land use and management/cooperation plans

[List existing land use and management/cooperation plans (with dates and reference numbers) for the administrative area(s) included within the biosphere reserve. Provide a copy of these documents. It is recommended to produce an English, French or Spanish synthesis of its contents and a translation of its most relevant provisions.]

Documents and more information can be found at kristianstad.se

Established action programmes

Wind Farm Plan for Kristianstad Municipality adopted by the Municipal Council on 13 September 2011

Comprehensive Plan for Kristianstad Municipality adopted by the Municipal Council on 12 March 2013

Action Plan 2016–2020 for Kristianstads Vattenrike Biosphere Reserve adopted by the Municipal Executive Board on 23 November 2016

Green Strategy for Kristianstad Municipality adopted by the Municipal Council on 20 September 2017

Green Plan for Kristianstad Municipality adopted by the Municipal Council on 20 March 2019

Coastal and Maritime Plan adopted by the Municipal Council on 12 November 2019

Action Plan 2021–2025 for Kristianstads Vattenrike Biosphere Reserve adopted by the Municipal Executive Board on 27 January 2021

Comprehensive Plan for the City of Kristianstad adopted by the Municipal Council on 14 December 2021

Municipal Nature Conservation Fund revised by the Municipal Council on 26 October 2022

Climate and Environmental Plan for Kristianstad Municipality adopted by the Municipal Council on 11 April 2023

Forestry policy for Kristianstad Municipality adopted by the Municipal Council on 20 December 2023

Sustainable Development Strategy for Kristianstad Municipality adopted by the Municipal Council on 8 October 2024

Nature Conservation Plan for Kristianstad Municipality adopted by the Municipal Council on 10 December 2024

Comprehensive Plan for Åhus out for consultation

Designated management plans for nature reserves in Kristianstads Vattenrike BR

Nature reserve	Original management plan decision date	Revised management plan decision date
Balsberget	2005-12-13	2009-05-11
Björkerödsbäcken	2011-06-16	2017-04-27
Boarps hed	1976-12-08	2021-02-03
Degeberga backar	2008-05-13	
Egeside	2007-12-10	
Ekenabben and Kvarnnäs	2022-11-15	
Fjälkinge backe	1968-06-28	1993-07-26
Fjällmossen	2019-01-24	
Forsakar with Lillaforsskogen	2006-12-11	2008-10-15
Fredriksdalsviken	1991-12-09	
Friseboda	2013-10-17	
Gropahålet	1976-12-08	2008-12-10
Heljestad	2018-04-19	
Hercules	1999-11-26	
Horna grushåla	2013-06-13	
Horna sandar	2013-04-09	
Horna sjömark	2011-06-22	
Hovby ängar	2007-10-24	
Håslövs ängar	1967-04-25	2019-07-04
Isternäset	2001-03-26	
Klintabäcken	2010-08-13	2014-09-18
Kjugekull	2019-11-15	
Lillesjö	2015-12-15	
Linderödsåsens nordsluttning	2020-06-17	2024-10-13
Lyngsjö	2020-01-15	
Maltesholm	2003-10-14	
Mosslunda	2014-10-17	
Norra Ripa sandar	2022-09-01	
Näsby fält	2002-11-18	
Pulken-Yngsjön	2009-02-02	
Rinkaby and Horna ängar	2002-11-18	
Sånnarna	2013-04-09	2014-06-10
Södra Ripa sandar	2023-02-02	
Södra Äspet	2021-12-14	
Torsebro	2024-04-18	
Uddarp	2022-12-15	
Vittskövle sandmark	2022-05-05	
Vramsåns mynning	2012-02-09	
Åbjär	2012-04-26	
Åby ängar	2011-09-15	
Årummet	2011-01-18	
Åsums ängar and Åsumallet	2011-10-20	
Äspet	1996-05-06	

(5) Updated species list (to be annexed)

[Provide a list of important species occurring within the proposed biosphere reserve, including common names, wherever possible.]

The attached lists show internationally and nationally red-listed species that occur in the biosphere reserve.

In Sweden, SLU Swedish Species Information Centre (Artdatabanken) in Uppsala is tasked with collecting knowledge about Sweden's biodiversity and continuously updating the Red Lists according to guidelines from the International Union for Conservation of Nature (IUCN). The latest national Red List (SLU Artdatabanken, 2020) follows the IUCN categorisation.

A red-listed species is categorised as *Data Deficient (DD)*, *Regionally Extinct (RE)*, *Critically Endangered (CR)*, *Endangered (EN)*, *Vulnerable (VU)* or *Near Threatened (NT).*

A red-listed species categorised as *Critically Endangered (CR)*, *Endangered (EN)* or *Vulnerable (VU)* is designated as *endangered*.

When abbreviating the categories, the English designations are used to facilitate international comparisons.

Lists of known red-listed and threatened species in the area were presented in 2005 in the nomination form for Kristianstads Vattenrike Biosphere Reserve. At that time, 637 red-listed species were listed, of which 277 were threatened. Since then, intensive knowledge building has taken place through various inventories and compilations of existing knowledge. Knowledge of red-listed species in the biosphere reserve has increased significantly, and the number of known red-listed species has therefore also increased. In addition, the national Red Lists have been revised four times (in 2005, 2010, 2015 and 2020), which has also led to major changes in the species on the lists for the biosphere reserve. Overall, the number of known red-listed species with the criteria CR, EN, VU and NT in the area has increased to 947 species, of which 417 are threatened, in 2025 (Figure 1). If the category Data Deficient (DD) is included, the total is 968 red-listed species.

The main reason for the increase in the total number of red-listed species is the increase in knowledge since 2005. In addition, new sites have also been discovered for previously known species. However, it is difficult to draw conclusions about whether the status of red-listed and threatened species in general has changed within the biosphere reserve since 2005 or 2015, or whether red-listed species have disappeared regionally in Vattenriket (however, see Fritz, 2020). Above all, more targeted monitoring is needed to be able to make reliable analyses of such changes. The level of knowledge also varies considerably between different groups of organisms. Many red-listed butterflies, birds and vascular plants are monitored annually or every few years, and for these the level of knowledge can be described as good. But for species in most other organism groups, the level of knowledge about the current status and trend in Vattenriket is much poorer.

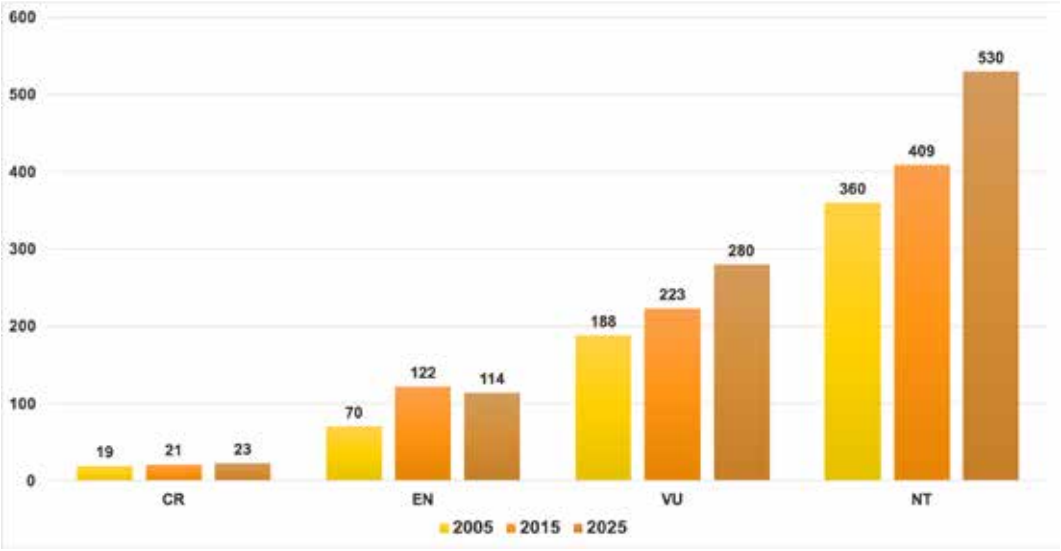


Figure 1: Number of known red-listed species in Kristianstads Vattenrike Biosphere Reserve in 2005, 2015 and 2025. The number of known red-listed species in the categories CR, EN, VU and NT has increased from 637 species in 2005, via 775 species in 2015 to 947 species in 2025. Red-listed species follow SLU Swedish Species Information Centre (2000, 2010 and 2020). The categories Regionally Extinct (RE) and Data Deficient (DD) are also included among red-listed species, but were not reported in either 2005 or 2015, which is why they have not been included in the figure above for 2025.

Changes in the species lists between 2015 and 2025

The total number of nationally red-listed species has thus increased significantly in 2025 compared to 2005 as well as 2015. The increase is mainly reflected in the fact that the number of red-listed species in the organism groups fungi, vascular plants, butterflies, birds and mammals has increased significantly between 2015 and 2025 (Figure 2). The reductions in the groups beetles, wasps, lichens and arachnids, in particular, cannot by any means compensate for the increases in the other groups. A decrease in the number of red-listed species is mainly because the Red List has been revised and species previously considered to be red-listed are now considered to be viable. As far as is known, no red-listed species have disappeared (the category Regionally Extinct, RE) from the biosphere reserve between 2015 and 2025, although this is very difficult to prove.

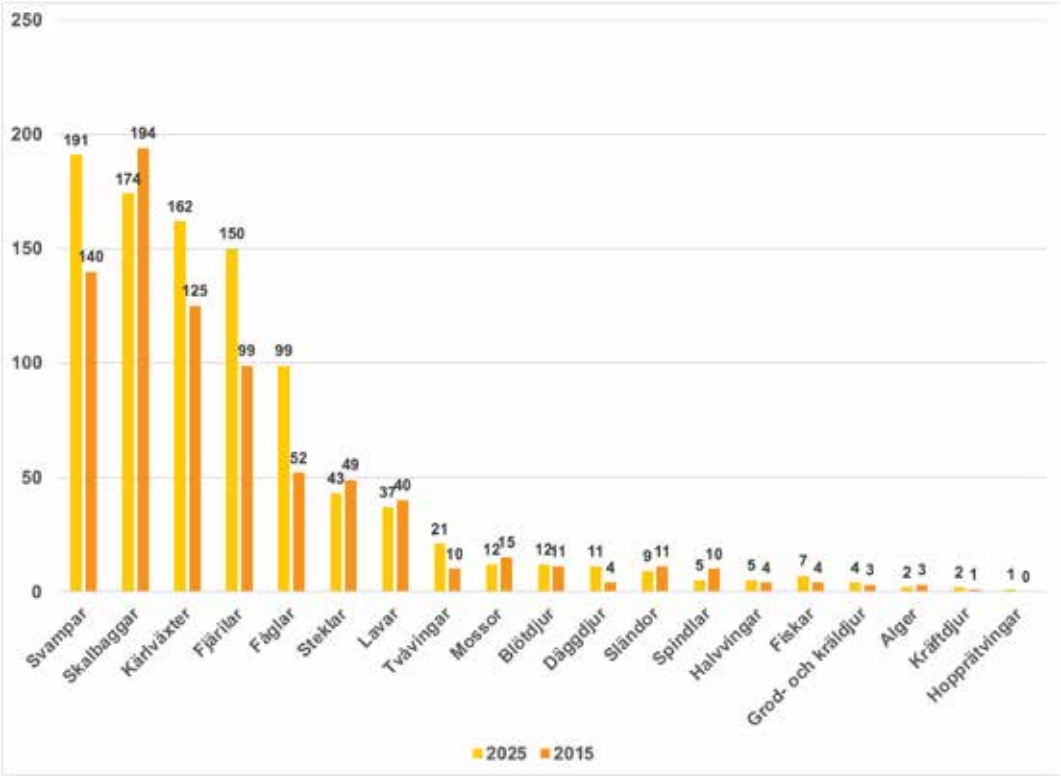


Figure 2. Comparison between the number of known red-listed species in the most species-rich groups of organisms (>10 red-listed species in either 2015 or 2025) in Kristianstads Vattenrike Biosphere Reserve in 2025 (for the period 2005–2025) and 2015 (2005–2015). The material includes the categories CR, EN, VU and NT. Groups of organisms from left to right: Fungi (Svampar), Beetles (Skalbaggar), Vascular plants (Kärlväxter), Butterflies (Fjärilar), Birds (Fåglar), Hymenoptera (Steklar), Lichens (Lavar), Diptera (Tvåvingar), Mosses (Mossor), Molluscs (Blötdjur), Mammals (Däggdjur), Dragonflies (Sländor), Arachnids (Spindlar), Hemiptera (Halvvingar), Fish (Fiskar), Amphibians and reptiles (Grod- och kräldjur), Algae (Alger), Crustaceans (Kräftdjur), Orthoptera (Hopprätvingar).

Overview of nationally red-listed species in 2025

Data was retrieved from SLU Swedish Species Information Centre for the period 2005–2025, which was considered to be an appropriate length of time while reflecting current conditions.

Fungi (199 species, including the DD category) are now the largest group of organisms in terms of the number of known red-listed species in the biosphere reserve. They are followed by beetles (179 species), vascular plants (162 species) and butterflies (151 species). Birds, wasps and lichens are also groups with a relatively high number of red-listed species. Organism groups such as mammals, fish and amphibians and reptiles are naturally less numerous (Table 1).

The most threatened species (in the CR, EN and VU categories) are also found among fungi with 96 species (23 percent of all threatened species). Vascular plants follow with 91 threatened species (22 percent). The other most threatened groups are birds, butterflies and beetles, with around 50 threatened species each (around 12 percent each). In total, 417 threatened species have been recorded recently in the biosphere reserve (Table 1). Thus, Kristianstads Vattenrike is one of the foremost regions in the country in terms of the occurrence of nationally threatened species.

The number of known red-listed species (n=968) in Kristianstads Vattenrike Biosphere Reserve, broken down by organism group and category (including Data Deficient DD, but excluding Regionally Extinct RE). Findings date from the period 2005–2025.

Organism group	CR	EN	VU	NT	DD	Total
Fungi		23	73	95	8	199
Beetles	1	7	40	126	5	179
Vascular plants	10	29	52	71		162
Butterflies	2	13	34	101	1	151
Birds	4	18	29	48		99
Hymenoptera		7	18	18	2	45
Lichens	2	7	13	15		37
Diptera			9	12	2	23
Mosses		2	1	9	2	14
Molluscs		3	2	7		12
Mammals		2	1	8		11
Dragonflies			2	7		9
Hemiptera	1	2		2		5
Arachnids				5		5
Fish	2		3	2		7
Amphibians and reptiles			2	2		4
Charophyceae		1	1			2
Crustaceans	1			1		2
Orthoptera				1		1
Planarians					1	1
TOTAL	**23**	**114**	**280**	**530**	**21**	**968**

References

ArtDatabanken. 2015. Rödlistade arter i Sverige 2015. ArtDatabanken, SLU, Uppsala.

Fritz, Ö. 2020. Rödlistade arter i Biosfärområde Kristianstads Vattenrike – Läget 2020 och jämförelse med 2015. Vattenriket i fokus 2020:03.

Gärdenfors, U. (ed.). 2000. Rödlistade arter i Sverige 2000. ArtDatabanken, SLU, Uppsala.

Larsson, K. 2015. Updated species list. Appendix 5 in Periodic Review for Unesco 2015. Kristianstads Vattenrike Biosphere Reserve.

SLU Artdatabanken 2020. Rödlistade arter i Sverige 2020. SLU Artdatabanken, Uppsala.

SLU Artdatabanken. 2025. Artportalen. artportalen.se (2025-01-13)

Nationally red-listed species in the category Critically Endangered (CR)

A total of 23 species for the period 2005–2025

Organism group	Latin name	Common name
Beetles	*Dromaeolus barnabita*	No common English name known
Birds	*Anser erythropus*	Lesser white-fronted goose
Birds	*Calidris alpina schinzii*	Dunlin
Birds	*Emberiza hortulana*	Ortolan bunting
Birds	*Remiz pendulinus*	Penduline tit
Butterflies	*Cucullia argentea*	Green silver spangled shark
Butterflies	*Lithostege griseata*	Grey carpet
Crustaceans	*Astacus astacus*	Noble crayfish
Fish	*Anguilla anguilla*	European eel
Fish	*Pollachius pollachius*	Pollack
Hemiptera	*Aelia rostrata*	Wheat stinkbug
Lichens	*Calicium trachylioides*	No common English name known
Lichens	*Cerothallia luteoalba*	Orange-fruited elm-lichen
Vascular plants	*Acer campestre*	Field maple
Vascular plants	*Aconitum napellus*	Monkshood
Vascular plants	*Ajuga genevensis*	Upright bugle
Vascular plants	*Ilex aquifolium*	Holly
Vascular plants	*Rosa agrestis*	Small-leaved sweet-briar
Vascular plants	*Rosa micrantha*	Small-flowered sweet-briar
Vascular plants	*Sabulina viscosa*	Sticky sandwort
Vascular plants	*Tilia platyphyllos*	Large-leaved lime/linden
Vascular plants	*Ulmus glabra*	Wych elm
Vascular plants	*Ulmus minor*	Field elm

Nationally red-listed species in the category Critically Endangered (EN)

A total of 114 species in the period 2005–2025

Organism group	Latin name	Common name
Beetles	*Cassida seladonia*	No common English name known
Beetles	*Denticollis rubens*	No common English name known
Beetles	*Euheptaulacus sus*	No common English name known
Beetles	*Harpalus hirtipes*	No common English name known
Beetles	*Hypocaccus rugiceps*	No common English name known
Beetles	*Maladera holosericea*	No common English name known
Beetles	*Melandrya barbata*	No common English name known
Birds	*Anthus campestris*	Tawny pipit
Birds	*Apus apus*	Common swift
Birds	*Arenaria interpres*	Ruddy turnstone
Birds	*Aythya ferina*	Pochard
Birds	*Aythya marila*	Greater scaup
Birds	*Chloris chloris*	Greenfinch
Birds	*Ciconia ciconia*	White stork
Birds	*Circus pygargus*	Montagu's harrier
Birds	*Emberiza calandra*	Corn bunting
Birds	*Falco rusticolus*	Gyrfalcon
Birds	*Limosa limosa*	Black-tailed godwit
Birds	*Milvus migrans*	Black kite
Birds	*Numenius arquata*	Eurasian curlew
Birds	*Oriolus oriolus*	Golden oriole
Birds	*Podiceps nigricollis*	Black-necked grebe
Birds	*Rissa tridactyla*	Kittiwake
Birds	*Somateria mollissima*	Common eider
Birds	*Spatula querquedula*	Garganey
Butterflies	*Agriphila poliella*	Drab grass-moth
Butterflies	*Brachmia dimidiella*	No common English name known
Butterflies	*Caryocolum arenariellum*	No common English name known
Butterflies	*Coleophora gnaphalii*	Ochreous case-bearer
Butterflies	*Cucullia artemisiae*	Scarce wormwood
Butterflies	*Denisia albimaculea*	White spotted black
Butterflies	*Eublemma minutata*	Scarce marbled
Butterflies	*Hemistola chrysoprasaria*	Small emerald
Butterflies	*Horisme aquata*	Cumbrian umber
Butterflies	*Lycia zonaria*	Belted beauty
Butterflies	*Pontia edusa*	Eastern Bath white
Butterflies	*Ptocheuusa inopella*	No common English name known
Butterflies	*Sideridis turbida*	White colon
Charophyceae	*Nitella capillaris*	Slimy-fruited stonewort
Fungi	*Albatrellus cristatus*	No common English name known
Fungi	*Cortinarius albertii*	No common English name known
Fungi	*Cortinarius multiformium*	No common English name known
Fungi	*Cortinarius pseudovulpinus*	No common English name known

Organism group	Latin name	Common name
Fungi	*Cortinarius saporatus*	No common English name known
Fungi	*Cortinarius sodagnitus*	Bitter bigfoot webcap
Fungi	*Cortinarius vesterholtii*	No common English name known
Fungi	*Disciseda bovista*	No common English name known
Fungi	*Elaphomyces maculatus*	No common English name known
Fungi	*Frantisekia mentschulensis*	No common English name known
Fungi	*Geastrum campestre*	Field earthstar
Fungi	*Geastrum elegans*	Elegant earthstar
Fungi	*Geastrum pseudostriatum*	No common English name known
Fungi	*Geastrum saccatum*	Rounded earthstar
Fungi	*Hemileccinum depilatum*	No common English name known
Fungi	*Hygrophorus arbustivus*	Forest woodwax
Fungi	*Hymenochaete ulmicola*	No common English name known
Fungi	*Lepiota fuscovinacea*	No common English name known
Fungi	*Phylloporus pelletieri*	Golden-gilled bolete
Fungi	*Steccherinum robustius*	No common English name known
Fungi	*Tulostoma fimbriatum*	No common English name known
Fungi	*Tulostoma kotlabae*	No common English name known
Fungi	*Tulostoma melanocyclum*	Scaly stalkball
Hemiptera	*Dimorphopterus spinolae*	No common English name known
Hemiptera	*Xanthochilus quadratus*	No common English name known
Hymenoptera	*Andrena bluethgeni*	No common English name known
Hymenoptera	*Andrena gelriae*	No common English name known
Hymenoptera	*Anthophora plagiata*	Treble-bar
Hymenoptera	*Leptothorax goesswaldi*	No common English name known
Hymenoptera	*Osmia maritima*	Mason bee
Hymenoptera	*Pterocheilus phaleratus*	No common English name known
Hymenoptera	*Seladonia leucahenea*	No common English name known
Lichens	*Bellicidia incompta*	No common English name known
Lichens	*Calicium notarisii*	No common English name known
Lichens	*Candelariella reflexa*	No common English name known
Lichens	*Diploicia canescens*	No common English name known
Lichens	*Megalaria laureri*	Laurer's catillaria
Lichens	*Mycosphaerella chimaphilae*	No common English name known
Lichens	*Sclerophora amabilis*	No common English name known
Mammals	*Myotis alcathoe*	Alcathoe bat
Mammals	*Myotis bechsteinii*	Bechstein's bat
Molluscs	*Cochlicopa nitens*	Robust pillar
Molluscs	*Margaritifera margaritifera*	Freshwater pearl mussel
Molluscs	*Unio crassus*	Thick shelled river mussel
Mosses	*Pseudocrossidium revolutum*	Revolute beard-moss
Mosses	*Syntrichia laevipila*	Small hairy screw-moss
Vascular plants	*Agrostemma githago*	Common corncockle
Vascular plants	*Anthericum liliago*	St. Bernard's lily
Vascular plants	*Aristolochia clematitis*	Birthwort
Vascular plants	*Arnoseris minima*	Swine's succory
Vascular plants	*Asplenium scolopendrium*	Hart's-tongue fern

Organism group	Latin name	Common name
Vascular plants	*Astragalus arenarius*	Arenarious milk-vetch
Vascular plants	*Chimaphila umbellata*	Umbellate wintergreen
Vascular plants	*Dactylis polygama*	Slender cock's-foot
Vascular plants	*Epipactis phyllanthes*	Green flowered helleborine
Vascular plants	*Epipactis phyllanthes arenaria*	No common English name known
Vascular plants	*Euphrasia officinalis subsp. pratensis*	Large-flowered sticky eyebright
Vascular plants	*Falcaria vulgaris*	Longleaf
Vascular plants	*Fraxinus excelsior*	Ash
Vascular plants	*Gypsophila muralis*	Annual gypsophila
Vascular plants	*Hypericum humifusum*	Trailing St. John's wort
Vascular plants	*Isolepis setacea*	Bristle club rush
Vascular plants	*Koeleria glauca*	Blue hair grass
Vascular plants	*Lappula squarrosa*	European stickseed
Vascular plants	*Nepeta cataria*	Catnip
Vascular plants	*Oenanthe fistulosa*	Tubular water-dropwort
Vascular plants	*Orobanche reticulata*	Thistle broomrape
Vascular plants	*Rumex conglomeratus*	Clustered dock
Vascular plants	*Salvia verticillata*	Lilac sage
Vascular plants	*Taraxacum austrinum*	No common English name known
Vascular plants	*Taraxacum biformatum*	Two-form dandelion
Vascular plants	*Taraxacum discretum*	No common English name known
Vascular plants	*Verbascum densiflorum*	Mullein
Vascular plants	*Veronica praecox*	Breckland speedwell
Vascular plants	*Vicia dumetorum*	No common English name known

Nationally red-listed species in the category Vulnerable (VU)

A total of 280 species in the period 2005–2025

Organism group	Latin name	Common name
Amphibians and reptiles	*Coronella austriaca*	Smooth snake
Amphibians and reptiles	*Lacerta agilis*	Sand lizard
Beetles	*Acylophorus glaberrimus*	No common English name known
Beetles	*Agrilus convexicollis*	No common English name known
Beetles	*Agrilus cuprescens*	No common English name known
Beetles	*Amphimallon fallenii*	No common English name known
Beetles	*Antherophagus silaceus*	No common English name known
Beetles	*Bagous elegans*	No common English name known
Beetles	*Brachypera dauci*	No common English name known
Beetles	*Carabus intricatus*	Blue ground beetle
Beetles	*Ceutorhynchus rhenanus*	No common English name known
Beetles	*Ceutorhynchus sophiae*	No common English name known
Beetles	*Coniocleonus turbatus*	No common English name known
Beetles	*Copris lunaris*	Horned dung beetle
Beetles	*Corticeus longulus*	Pine shoot beetle
Beetles	*Cossonus linearis*	No common English name known
Beetles	*Cossonus parallelepipedus*	No common English name known
Beetles	*Dicronychus equisetioides*	No common English name known
Beetles	*Donacia tomentosa*	No common English name known
Beetles	*Erotides cosnardi*	Cosnard's net-winged beetle
Beetles	*Euorodalus coenosus*	No common English name known
Beetles	*Galeruca interrupta*	No common English name known
Beetles	*Harpalus froelichii*	Brush-thighed seed-eater
Beetles	*Harpalus melancholicus*	No common English name known
Beetles	*Harpalus picipennis*	No common English name known
Beetles	*Hister bissexstriatus*	No common English name known
Beetles	*Malthodes dispar*	No common English name known
Beetles	*Margarinotus carbonarius*	No common English name known
Beetles	*Necrobia ruficollis*	Red-breasted copra beetle
Beetles	*Osmoderma eremita*	Hermit beetle
Beetles	*Phaleria cadaverina*	No common English name known
Beetles	*Phyllotreta dilatata*	No common English name known
Beetles	*Phytosus balticus*	No common English name known
Beetles	*Psylliodes cuprea*	No common English name known
Beetles	*Psylliodes tricolor*	Flixweed leaf beetle
Beetles	*Quedius truncicola*	No common English name known
Beetles	*Silusa rubiginosa*	No common English name known
Beetles	*Sphaeridium substriatum*	No common English name known
Beetles	*Squamapion oblivium*	No common English name known
Beetles	*Stenagostus rufus*	No common English name known
Beetles	*Trichonotulus scrofa*	No common English name known

Organism group	Latin name	Common name
Birds	*Alcedo atthis*	Common kingfisher
Birds	*Anas acuta*	Pintail
Birds	*Anas crecca*	Teal
Birds	*Anser fabalis fabalis*	Taiga bean goose
Birds	*Anthus cervinus*	Red-throated pipit
Birds	*Bubo bubo*	Eagle owl
Birds	*Calcarius lapponicus*	Lapland bunting
Birds	*Calidris pugnax*	Ruff
Birds	*Chlidonias niger*	Black tern
Birds	*Curruca nisoria*	Barred warbler
Birds	*Delichon urbicum*	House martin
Birds	*Emberiza pusilla*	Little bunting
Birds	*Eremophila alpestris*	Shore lark
Birds	*Larus argentatus*	Herring gull
Birds	*Larus fuscus fuscus*	Baltic gull
Birds	*Larus marinus*	Great black-backed gull
Birds	*Limosa lapponica*	Bar-tailed godwit
Birds	*Linaria flavirostris*	Twite
Birds	*Locustella luscinioides*	Savi's warbler
Birds	*Mareca penelope*	Wigeon
Birds	*Melanitta fusca*	Velvet scoter
Birds	*Pinicola enucleator*	Pine grosbeak
Birds	*Porzana porzana*	Spotted crake
Birds	*Riparia riparia*	Sand martin
Birds	*Saxicola rubicola*	Stonechat
Birds	*Serinus serinus*	Serin
Birds	*Strix nebulosa*	Great grey owl
Birds	*Sturnus vulgaris*	Starling
Birds	*Vanellus vanellus*	Lapwing
Butterflies	*Acontia trabealis*	Spotted sulphur
Butterflies	*Agriphila deliella*	No common English name known
Butterflies	*Bucculatrix ratisbonensis*	No common English name known
Butterflies	*Catoptria lythargyrella*	Yellow grass-moth
Butterflies	*Chrysoclista linneella*	Lime flame
Butterflies	*Clepsis pallidana*	No common English name known
Butterflies	*Cochylidia moguntiana*	No common English name known
Butterflies	*Coleophora hackmani*	No common English name known
Butterflies	*Coleophora scabrida*	No common English name known
Butterflies	*Coleophora solitariella*	Southern stitchwort case-bearer
Butterflies	*Cucullia praecana*	No common English name known
Butterflies	*Cucullia scrophulariae*	Water betony
Butterflies	*Delplanqueia dilutella*	Western thyme knot-horn
Butterflies	*Dichomeris limosella*	No common English name known
Butterflies	*Ecliptopera capitata*	No common English name known

Organism group	Latin name	Common name
Butterflies	*Eupithecia immundata*	No common English name known
Butterflies	*Eurhodope cirrigerella*	Scabious knot-horn
Butterflies	*Fabriciana niobe*	Niobe fritillary
Butterflies	*Hadena filograna*	No common English name known
Butterflies	*Hadena perplexa*	Tawny shears
Butterflies	*Heliodines roesella*	Roesel's signal
Butterflies	*Heliothis viriplaca*	Marbled clover
Butterflies	*Mythimna litoralis*	Shore wainscot
Butterflies	*Nemophora cupriacella*	Copper-tip longhorn
Butterflies	*Pelochrista infidana*	No common English name known
Butterflies	*Perritia obscurepunctella*	Honeysuckle blotch-miner
Butterflies	*Pyrausta aerealis*	No common English name known
Butterflies	*Pyrausta porphyralis*	No common English name known
Butterflies	*Pyrgus armoricanus*	Oberthür's grizzled skipper
Butterflies	*Scythris siccella*	Least owlet
Butterflies	*Sesia bembeciformis*	Lunar hornet moth
Butterflies	*Spiris striata*	Feathered footman
Butterflies	*Spuleria flavicaput*	Yellow-headed cosmet
Butterflies	*Xerocnephasia rigana*	No common English name known
Charophyceae	*Nitellopsis obtusa*	Starry stonewort
Diptera	*Antipalus varipes*	No common English name known
Diptera	*Asilus crabroniformis*	Hornet robberfly
Diptera	*Choades igneus*	No common English name known
Diptera	*Laphria ephippium*	No common English name known
Diptera	*Machimus arthriticus*	No common English name known
Diptera	*Mallota cimbiciformis*	No common English name known
Diptera	*Myolepta dubia*	No common English name known
Diptera	*Oxyna nebulosa*	No common English name known
Diptera	*Paragus constrictus*	No common English name known
Diptera	*Villa longicornis*	No common English name known
Dragonflies	*Crunoecia irrorata*	No common English name known
Dragonflies	*Euroleon nostras*	No common English name known
Fish	*Gadus morhua*	Atlantic cod
Fish	*Lota lota*	Burbot
Fish	*Merlangius merlangus*	Whiting
Fungi	*Amanita franchetii*	Yellow veiled amanita
Fungi	*Butyriboletus fechtneri*	Pale bolete
Fungi	*Ceriporiopsis gilvescens*	Pink porecrust
Fungi	*Coltricia cinnamomea*	No common English name known
Fungi	*Cortinarius alcalinophilus*	No common English name known
Fungi	*Cortinarius aquilanus*	No common English name known
Fungi	*Cortinarius aureocalceolatus*	No common English name known
Fungi	*Cortinarius aureofulvus*	No common English name known
Fungi	*Cortinarius barbaricus s. str.*	No common English name known

Organism group	Latin name	Common name
Fungi	*Cortinarius bergeronii*	Violet webcap mushroom
Fungi	*Cortinarius caerulescens*	Mealy bigfoot webcap
Fungi	*Cortinarius caesiocortinatus*	No common English name known
Fungi	*Cortinarius cagei*	No common English name known
Fungi	*Cortinarius catharinae*	No common English name known
Fungi	*Cortinarius coerulescentium*	No common English name known
Fungi	*Cortinarius corrosus*	Spruce bigfoot webcap
Fungi	*Cortinarius cupreorufus*	No common English name known
Fungi	*Cortinarius elegantissimus*	No common English name known
Fungi	*Cortinarius foetens*	No common English name known
Fungi	*Cortinarius fulvocitrinus*	No common English name known
Fungi	*Cortinarius humicola*	Golden webcap
Fungi	*Cortinarius langeorum*	No common English name known
Fungi	*Cortinarius luhmannii*	No common English name known
Fungi	*Cortinarius metarius*	No common English name known
Fungi	*Cortinarius obsoletus*	No common English name known
Fungi	*Cortinarius osmophorus*	Sweet webcap
Fungi	*Cortinarius platypus*	No common English name known
Fungi	*Cortinarius pseudoglaucopus*	No common English name known
Fungi	*Cortinarius selandicus*	No common English name known
Fungi	*Cortinarius splendens*	Splendid webcap
Fungi	*Cortinarius turgidus*	No common English name known
Fungi	*Cortinarius variiformis*	No common English name known
Fungi	*Cortinarius xantho-ochraceus*	No common English name known
Fungi	*Cystolepiota adulterina*	No common English name known
Fungi	*Disciseda candida*	No common English name known
Fungi	*Elaphomyces anthracinus*	Smooth-coated elaphomyces
Fungi	*Elaphomyces striatosporus*	No common English name known
Fungi	*Ganoderma adspersum*	No common English name known
Fungi	*Geastrum floriforme*	Daisy earthstar
Fungi	*Geastrum minimum s. lat.*	Tiny earthstar
Fungi	*Geastrum pseudolimbatum*	No common English name known
Fungi	*Gloeohypochnicium analogum*	No common English name known
Fungi	*Gymnopus hariolorum*	No common English name known
Fungi	*Helvella lactea*	No common English name known
Fungi	*Hemileccinum impolitum*	Iodine bolete
Fungi	*Hydnellum lepidum*	No common English name known
Fungi	*Hygrocybe spadicea*	Date waxcap
Fungi	*Hygrophorus poëtarum*	No common English name known
Fungi	*Inocybe fibrosoides*	No common English name known
Fungi	*Inonotus cuticularis*	Clustered bracket
Fungi	*Inonotus hispidus*	Shaggy bracket
Fungi	*Lepiota grangei*	Green dapperling
Fungi	*Lepiota ignivolvata*	No common English name known

Organism group	Latin name	Common name
Fungi	*Lepiota ochraceofulva*	No common English name known
Fungi	*Loweomyces wynneae*	No common English name known
Fungi	*Melanogaster tuberiformis*	No common English name known
Fungi	*Multiclavula mucida*	White green-algae coral
Fungi	*Neohygrocybe ovina*	Blushing waxcap
Fungi	*Octaviania asterosperma*	Chalky false truffle
Fungi	*Phaeoclavulina roellinii*	No common English name known
Fungi	*Poronia erici*	Dung button
Fungi	*Pseudoinonotus dryadeus*	Oak bracket
Fungi	*Ramaria bataillei*	No common English name known
Fungi	*Ramaria flavosalmonicolor*	No common English name known
Fungi	*Ramaria sanguinea*	Bloody coral
Fungi	*Ramaria spinulosa*	No common English name known
Fungi	*Ramaria subbotrytis*	No common English name known
Fungi	*Russula emeticicolor*	No common English name known
Fungi	*Russula incarnata*	No common English name known
Fungi	*Russula laeta*	No common English name known
Fungi	*Tricholoma basirubens*	No common English name known
Fungi	*Tricholoma filamentosum*	No common English name known
Fungi	*Volvariella bombycina*	Silky rosegill
Hymenoptera	*Andrena batava*	No common English name known
Hymenoptera	*Andrena bimaculata*	Large gorse mining bee
Hymenoptera	*Andrena humilis*	Buff-tailed mining bee
Hymenoptera	*Andrena nigrospina*	Scarce black mining bee
Hymenoptera	*Andrena nycthemera*	No common English name known
Hymenoptera	*Chrysis scutellaris*	No common English name known
Hymenoptera	*Epeolus marginatus*	No common English name known
Hymenoptera	*Lasioglossum brevicorne*	Short-horned furrow bee
Hymenoptera	*Nomada armata*	Scabious cuckoo bee
Hymenoptera	*Nomada fuscicornis*	Small Guernsey nomad bee
Hymenoptera	*Nomada similis*	Guernsey nomad bee
Hymenoptera	*Nomada subcornuta*	Kirby's nomad bee
Hymenoptera	*Panurgus banksianus*	Large shaggy bee
Hymenoptera	*Pemphredon mortifer*	No common English name known
Hymenoptera	*Podalonia luffii*	No common English name known
Hymenoptera	*Sphecodes niger*	Dark blood bee
Hymenoptera	*Stelis phaeoptera*	Plain dark bee
Hymenoptera	*Syzeuctus irrisorius*	No common English name known
Lichens	*Bacidia polychroa*	Polychrome dot lichen
Lichens	*Bacidia rosella*	No common English name known
Lichens	*Bacidina delicata*	No common English name known
Lichens	*Bacidina friesiana*	No common English name known
Lichens	*Biatoridium monasteriense*	No common English name known
Lichens	*Gyalecta carneola*	No common English name known

Organism group	Latin name	Common name
Lichens	*Gyalecta flotowii*	No common English name known
Lichens	*Gyalecta ulmi*	Elm gyalecta
Lichens	*Inoderma byssaceum*	No common English name known
Lichens	*Sclerophora pallida*	No common English name known
Lichens	*Sclerophora peronella*	No common English name known
Lichens	*Sphinctrina turbinata*	Short-stalk parasite needle lichen
Lichens	*Thelopsis rubella*	No common English name known
Mammals	*Pipistrellus pipistrellus*	Common pipistrelle
Molluscs	*Macrogastra ventricosa*	No common English name known
Molluscs	*Strigillaria cana*	No common English name known
Mosses	*Tortula protobryoides*	Tall pottia
Vascular plants	*Anthriscus caucalis*	Bur chervil
Vascular plants	*Arnica montana*	Wolf's bane
Vascular plants	*Blitum bonus-henricus*	Good-King-Henry
Vascular plants	*Blysmus compressus*	Flat-sedge
Vascular plants	*Botrychium matricariifolium*	Chamomile grape-fern
Vascular plants	*Camelina microcarpa*	Little-pod false flax
Vascular plants	*Carex hartmaniorum*	No common English name known
Vascular plants	*Carex obtusata*	Obtuse sedge
Vascular plants	*Catabrosa aquatica*	Whorl-grass
Vascular plants	*Dianthus arenarius*	Sand pink
Vascular plants	*Dianthus armeria*	Deptford pink
Vascular plants	*Eryngium maritimum*	Sea holly
Vascular plants	*Glyceria declinata*	Small sweet-grass
Vascular plants	*Goodyera repens*	Creeping lady's-tresses
Vascular plants	*Helianthemum nummularium subsp. obscurum*	No common English name known
Vascular plants	*Helichrysum arenarium*	Dwarf everlast
Vascular plants	*Helosciadium inundatum*	No common English name known
Vascular plants	*Herminium monorchis*	Musk orchid
Vascular plants	*Jacobaea paludosa*	Fen ragwort
Vascular plants	*Lathyrus tuberosus*	Earth-nut pea
Vascular plants	*Leersia oryzoides*	Rice cutgrass
Vascular plants	*Leonurus cardiaca*	Motherwort
Vascular plants	*Lepidium coronopus*	Swine cress
Vascular plants	*Luzula sylvatica*	Great wood-rush
Vascular plants	*Lysimachia minima*	Chaffweed
Vascular plants	*Malva pusilla*	Small mallow
Vascular plants	*Medicago minima*	Bur medick
Vascular plants	*Najas flexilis*	Slender naiad
Vascular plants	*Nasturtium officinale*	Water-cress
Vascular plants	*Peucedanum oreoselinum*	No common English name known
Vascular plants	*Phleum arenarium*	Sand cat's tail
Vascular plants	*Polygala comosa*	No common English name known

Organism group	Latin name	Common name
Vascular plants	*Potamogeton acutifolius*	Sharp-leaved pondweed
Vascular plants	*Potamogeton compressus*	Grass-wrack pondweed
Vascular plants	*Potamogeton rutilus*	Shetland pondweed
Vascular plants	*Pulsatilla vulgaris*	Pasqueflower
Vascular plants	*Pulsatilla vulgaris subsp. vulgaris*	No common English name known
Vascular plants	*Ranunculus fluitans*	River water crowfoot
Vascular plants	*Raphanus raphanistrum*	Radish
Vascular plants	*Salvia pratensis*	Meadow clary
Vascular plants	*Scabiosa canescens*	No common English name known
Vascular plants	*Sherardia arvensis*	Field madder
Vascular plants	*Stachys arvensis*	Field woundwort
Vascular plants	*Taraxacum maculigerum*	No common English name known
Vascular plants	*Thalictrum simplex subsp. tenuifolium*	No common English name known
Vascular plants	*Thymus pulegioides*	Broad-leaved thyme
Vascular plants	*Valeriana dioica*	Marsh valerian
Vascular plants	*Verbascum lychnitis*	White mullein
Vascular plants	*Vicia villosa*	Hairy vetch
Vascular plants	*Viola stagnina*	Fen violet
Vascular plants	*Viola tricolor subsp. curtisii*	Seaside pansy
Vascular plants	*Zostera marina*	Eelgrass

Within the Near Threatened (NT) category, 530 species were noted during the period 2005–2025, based on the current Red List (SLU Artdatabanken, 2020), compared with 409 species during the period 2005–2015 (ArtDatabanken, 2015) and 360 species according to the list in the 2005 nomination form (Gärdenfors, 2000).

Birds listed in the EU Birds Directive

Bird species listed in Annex 1 of the Birds Directive.

49 species in total. Refers to regularly occurring species of breeding, migratory or resting birds in the period 2005–2025. Thus, occasional species are not included.

Organism group	Latin name	Common name	EU code
Birds	*Alcedo atthis*	Kingfisher	A229
Birds	*Anthus campestris*	Tawny pipit	A255
Birds	*Aquila chrysaetos*	Golden eagle	A091
Birds	*Asio flammeus*	Short-eared owl	A222
Birds	*Botaurus stellaris*	Eurasian bittern	A021
Birds	*Branta leucopsis*	Barnacle goose	A045
Birds	*Bubo bubo*	Eagle owl	A215
Birds	*Calidris alpina schinzii*	Dunlin	A466
Birds	*Calidris pugnax*	Ruff	A151
Birds	*Caprimulgus europaeus*	Nightjar	A224
Birds	*Chlidonias niger*	Black tern	A197
Birds	*Ciconia ciconia*	White stork	A031
Birds	*Circus aeruginosus*	Marsh harrier	A081
Birds	*Circus cyaneus*	Hen harrier	A082
Birds	*Circus pygargus*	Montagu's harrier	A084
Birds	*Crex crex*	Corn crake	A122
Birds	*Cygnus columbianus*	Tundra swan	A037
Birds	*Cygnus cygnus*	Whooper swan	A038
Birds	*Dryocopus martius*	Black woodpecker	A236
Birds	*Falco columbarius*	Merlin	A098
Birds	*Falco peregrinus*	Peregrine falcon	A103
Birds	*Ficedula parva*	Red-breasted flycatcher	A320
Birds	*Gallinago media*	Great snipe	A154
Birds	*Gavia arctica*	Black-throated diver	A002
Birds	*Gavia stellata*	Red-throated diver	A001
Birds	*Glaucidium passerinum*	Eurasian Pygmy owl	A217
Birds	*Grus Grus*	Common crane	A127
Birds	*Haliaeetus albicilla*	White-tailed eagle	A075
Birds	*Hydrocoloeus minutus*	Little gull	A177
Birds	*Hydroprogne caspia*	Caspian tern	A190
Birds	*Lanius collurio*	Red-backed shrike	A338
Birds	*Limosa lapponica*	Bar-tailed godwit	A157
Birds	*Lullula arborea*	Woodlark	A246

Organism group	Latin name	Common name	EU code
Birds	*Luscinia svecica*	Bluethroat	A272
Birds	*Mergellus albellus*	Smew	A068
Birds	*Milvus migrans*	Black kite	
Birds	*Milvus milvus*	Red kite	A074
Birds	*Pandion haliaetus*	Osprey	A094
Birds	*Pernis apivorus*	Honey buzzard	A072
Birds	*Phalaropus lobatus*	Red-necked phalarope	A170
Birds	*Pluvialis apricaria*	European golden plover	A140
Birds	*Podiceps auritus*	Horned grebe	A007
Birds	*Porzana porzana*	Spotted crake	A119
Birds	*Recurvirostra avosetta*	Avocet	A132
Birds	*Sterna hirundo*	Common tern	A193
Birds	*Sterna paradisaea*	Arctic tern	A194
Birds	*Sternula albifrons*	Little tern	A195
Birds	*Thalasseus sandvicensis*	Sandwich tern	A191
Birds	*Tringa glareola*	Wood sandpiper	A166

Species listed in the EU Habitats Directive

Species included in Annexes 2, 4 and 5 in the period 2005–2025.

A total of 80 species in Kristianstads Vattenrike come under the purview of the Habitats Directive, of which 46 species are in Annexes 2 and/or 4 and a further 34 species in Annex 5.

Organism group	Latin name	Common name	Annex	EU code
Amphibians and reptiles	*Coronella austriaca*	Smooth snake	4	1283
Amphibians and reptiles	*Epidalea calamita*	Natterjack toad	4	6284
Amphibians and reptiles	*Hyla arborea*	European tree frog	4	1203
Amphibians and reptiles	*Lacerta agilis*	Sand lizard	4	1261
Amphibians and reptiles	*Rana arvalis*	Moor frog	4	1214
Amphibians and reptiles	*Rana dalmatina*	Agile frog	4	1209
Amphibians and reptiles	*Rana temporaria*	Common frog	5	1213
Amphibians and reptiles	*Triturus cristatus*	Northern crested newt	2, 4	1166
Beetles	*Graphoderus bilineatus*	No common English name known	2, 4	1082
Beetles	*Lucanus cervus*	Stag beetle	2	1083
Beetles	*Osmoderma eremita*	Hermit beetle	2, 4	6966
Butterflies	*Phengaris arion*	Large blue	4	1058
Crustaceans	*Astacus astacus*	European crayfish	5	1091
Dragonflies	*Aeshna viridis*	Green hawker	4	1048
Dragonflies	*Leucorrhinia albifrons*	Dark whiteface	4	1038
Dragonflies	*Leucorrhinia pectoralis*	Large white-faced darter	2, 4	1042
Fish	*Cottus gobio*	Bullhead	2	6965
Fish	*Lampetra fluviatilis*	European river lamprey	2, 5	1099
Fish	*Lampetra planeri*	Brook lamprey	2	1096
Fish	*Salmo salar*	Atlantic salmon	2, 5	1106
Leeches	*Hirudo medicinalis*	Medicinal leech	5	1034
Lichens	*Cladonia* spp.	Cup lichen	5	1378
Mammals	*Barbastella barbastellus*	Barbastelle	2, 4	1308
Mammals	*Canis lupus*	Wolf	2, 4	1352
Mammals	*Eptesicus nilssonii*	Northern bat	2, 4	1313
Mammals	*Eptesicus serotinus*	Serotine bat	2, 4	1327
Mammals	*Halichoerus grypus*	Grey seal	2, 5	1364
Mammals	*Lutra lutra*	Eurasian otter	2, 4	1355
Mammals	*Martes martes*	European pine marten	5	1357
Mammals	*Muscardinus avellanarius*	Hazel dormouse	4	1341
Mammals	*Mustela putorius*	European polecat	5	1358
Mammals	*Myotis alcathoe*	Alcathoe bat	2, 4	5003
Mammals	*Myotis bechsteinii*	Bechstein's bat	2, 4	1323
Mammals	*Myotis brandtii*	Brandt's bat	2, 4	1320
Mammals	*Myotis dasycneme*	Pond bat	2, 4	1318
Mammals	*Myotis daubentonii*	Daubenton's bat	2, 4	1314
Mammals	*Myotis mystacinus*	Whiskered bat	2, 4	1330

Organism group	Latin name	Common name	Annex	EU code
Mammals	*Myotis nattereri*	Natterer's bat	2, 4	1322
Mammals	*Nyctalus noctula*	Common noctule	2, 4	1312
Mammals	*Phoca vitulina*	Common seal	2, 5	1365
Mammals	*Pipistrellus nathusii*	Nathusius' pipistrelle	2, 4	1317
Mammals	*Pipistrellus pipistrellus*	Common pipistrelle	2, 4	1309
Mammals	*Pipistrellus pygmaeus*	Soprano pipistrelle	2, 4	5009
Mammals	*Plecotus auritus*	Brown long-eared bat	2, 4	1326
Mammals	*Vespertilio murinus*	Parti-coloured bat	2, 4	1332
Molluscs	*Helix pomatia*	Roman snail	5	1026
Molluscs	*Margaritifera margaritifera*	Freshwater pearl mussel	2, 5	1029
Molluscs	*Unio crassus*	Thick shelled river mussel	2, 4	1032
Molluscs	*Vertigo angustior*	Narrow-mouthed whorl snail	2	1014
Molluscs	*Vertigo geyeri*	Geyer's whorl snail	2	1013
Mosses	*Leucobryum glaucum*	Large white-moss	5	1400
Mosses	*Sphagnum* spp.	Sphagnum moss	5	1409
Vascular plants	*Arnica montana*	Wolf's bane	5	1762
Vascular plants	*Dianthus arenarius*	Sand pink	2, 4	1954
Vascular plants	*Liparis loeselii*	Fen orchid	4	1903
Vascular plants	*Lycopodiella inundata*	Marsh clubmoss	5	5191
Vascular plants	*Lycopodium* spp.	Clubmoss	5	1413
Vascular plants	*Najas flexilis*	Slender naiad	2, 4	1833

List of globally red-listed species

According to the IUCN list of globally red-listed species in 2025 (iucnredlist.org). A total of 83 species in Kristianstads Vattenrike are on the global Red List (according to IUCN).

Organism group	Latin name	Common name	IUCN
Arachnids	*Dolomedes plantarius*	Great raft spider	VU
Beetles	*Ampedus cardinalis*	Cardinal click beetle	NT
Beetles	*Ampedus deer*	No common English name known	NT
Beetles	*Carabus intricatus*	Blue ground beetle	NT
Beetles	*Lampyris noctiluca*	Glow-worm	NT
Beetles	*Osmoderma eremita*	Hermit beetle	NT
Birds	*Arenaria interpres*	Ruddy turnstone	NT
Birds	*Calidris alpina*	Dunlin	NT
Birds	*Calidris canutus*	Red knot	NT
Birds	*Circus macrourus*	Pallid harrier	NT
Birds	*Gallinago media*	Great snipe	NT
Birds	*Haematopus ostralegus*	Eurasian oystercatcher	NT
Birds	*Limosa lapponica*	Bar-tailed godwit	NT
Birds	*Limosa limosa*	Black-tailed godwit	NT
Birds	*Numenius arquata*	Eurasian curlew	NT
Birds	*Podiceps auritus*	Horned grebe	NT
Birds	*Somateria mollissima*	Common eider	NT
Birds	*Turdus iliacus*	Redwing	NT
Birds	*Vanellus vanellus*	Northern lapwing	NT
Birds	*Anser erythropus*	Lesser white-fronted goose	VU
Birds	*Aythya ferina*	Common pochard	VU
Birds	*Branta ruficollis*	Red-breasted goose	VU
Birds	*Calidris falcinellus*	Broad-billed sandpiper	VU
Birds	*Calidris ferruginea*	Curlew sandpiper	VU
Butterflies	*Phengaris arion*	Large blue	NT
Crustaceans	*Astacus astacus*	European crayfish	VU
Diptera	*Chrysogaster virescens*	No common English name known	NT
Fish	*Anguilla anguilla*	European eel	CR
Fish	*Ammodytes tobianus*	Lesser sand eel	DD
Fish	*Gadus morhua*	Atlantic cod	VU
Fish	*Lampetra fluviatilis*	European river lamprey	NT
Fish	*Lampetra planeri*	Brook Lamprey	NT
Fish	*Salmo salar*	Atlantic salmon	NT
Fungi	*Cortinarius alcalinophilus*	No common English name known	NT
Fungi	*Cortinarius cupreorufus*	No common English name known	NT
Fungi	*Cortinarius elegantissimus*	No common English name known	NT
Fungi	*Perenniporia medulla-panis*	Pancake crust	NT
Fungi	*Camarophyllopsis schulzeri*	Matt fanvault	VU
Fungi	*Cuphophyllus colemannianus*	Toasted waxcap	VU
Fungi	*Entoloma prunuloides*	Mealy pinkgill	VU

Organism group	Latin name	Common name	IUCN
Fungi	*Hygrocybe mucronella*	Bitter waxcap	VU
Fungi	*Hygrocybe punicea*	Crimson waxcap	VU
Fungi	*Hygrocybe spadicea*	Date waxcap	VU
Fungi	*Hygrocybe splendidissima*	Splendid waxcap	VU
Fungi	*Neohygrocybe nitrata*	Nitrous waxcap	VU
Hymenoptera	*Andrena batava*	No common English name known	DD
Hymenoptera	*Andrena fulva*	Tawny mining bee	DD
Hymenoptera	*Andrena semilaevis*	Shiny-margined mini-miner	DD
Hymenoptera	*Bombus bohemicus*	Gypsy cuckoo bee	DD
Hymenoptera	*Bombus cryptarum*	Cryptic bumblebee	DD
Hymenoptera	*Bombus jonellus*	Heath bumblebee	DD
Hymenoptera	*Epeolus cruciger*	Red-thighed epeolus	NT
Hymenoptera	*Formica polyctena*	European red wood ant	NT
Hymenoptera	*Formica pratensis*	Black-backed meadow ant	NT
Hymenoptera	*Formica rufa*	Red wood ant	NT
Hymenoptera	*Lasioglossum sabulosum*	No common English name known	NT
Hymenoptera	*Nomada armata*	Scabious cuckoo bee	NT
Hymenoptera	*Formicoxenus nitidulus*	Shining guest ant	VU
Leeches	*Hirudo medicinalis*	Medicinal leech	NT
Mammals	*Oryctolagus cuniculus*	European rabbit	EN
Mammals	*Barbastella barbastellus*	Western barbastelle	NT
Mammals	*Erinaceus europaeus*	European hedgehog	NT
Mammals	*Lutra lutra*	Eurasian otter	NT
Mammals	*Myotis bechsteinii*	Bechstein's bat	NT
Mammals	*Myotis dasycneme*	Pond bat	NT
Molluscs	*Margaritifera margaritifera*	Freshwater pearl mussel	EN
Molluscs	*Pseudanodonta complanata*	Depressed river mussel	EN
Molluscs	*Unio crassus*	Thick shelled river mussel	EN
Molluscs	*Spermodea lamellata*	Plated snail	NT
Molluscs	*Vertigo angustior*	Narrow-mouthed whorl snail	NT
Vascular plants	*Malus sylvestris*	European crab apple	DD
Vascular plants	*Prunus domestica*	Plum	DD
Vascular plants	*Ulmus glabra*	Wych elm	DD
Vascular plants	*Ulmus minor*	Field elm	DD
Vascular plants	*Baldellia ranunculoides*	Lesser water-plantain	NT
Vascular plants	*Fraxinus excelsior*	Ash	NT
Vascular plants	*Galanthus nivalis*	Snowdrop	NT
Vascular plants	*Pulsatilla vulgaris*	Pasque flower	NT
Vascular plants	*Aesculus hippocastanum*	Horse chestnut	VU

(6) Updated list of main bibliographic references (to be annexed)

[Provide a list of the main publications and articles of relevance to the proposed biosphere reserve.]

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Vattenriket in focus (Vattenriket i fokus)

Vattenriket in focus is a series of publications produced by Kristianstads Vattenrike Biosphere Reserve (ISSN 1653-9338). Vattenriket in focus publishes reports and inventories that have been carried out on behalf of or in collaboration with the Biosphere Office. The publication series started in 2006. All publications below can be accessed via vattenriket.kristianstad.se/fokus/

2025:04 Goda exempel från biosfärverksamheten 2015–2025 Vattenriket, Biosfärkontoret.

2025:03 Borrflugan Oxyna nebulosa spridd i Näsby fält 2024. Jan Edelsjö & Örjan Fritz, Naturcentrum.

2025:02 Många nya skyddsvärda insekter i naturreservatet Mosslunda. Resultat av uppföljning 2024. Örjan Fritz, Niklas Johansson & Håkan Lundkvist, Naturcentrum AB.

2025:01 Biosfärområde Kristianstads Vattenrike. Verksamheten 2024, Biosfärkontoret.

2024:06 Tänk om i Vattenriket – Projektrapport Mäkla fred med naturen genom framsyn. Abigail Sykes, Biosfärkontoret.

2024:04 Artrik insektsfauna i sandmarksreservatet Sånnarna. Resultat av uppföljning 2023. Örjan Fritz, Niklas Johansson & Håkan Lundkvist.

2024:03 Naturvärdesinventering i Horna fure 2023, Petter Andersson & Julia Svensson, Calluna.

2024:02 Lärdomar från våtmarksarbete, Per Torstensson, Mattis Vindelman, Biosfärkontoret.

2024:01 Biosfärområde Kristianstads Vattenrike. Verksamheten 2023, Biosfärkontoret.

2023:05 Unik insektsfauna i naturreservatet Horna Sandar gynnas av olika åtgärder – resultat från uppföljning 2022, Örjan Fritz, Niklas Johansson & Håkan Lundkvist

2023:04 Pollinatörer i blomåkrar och åkerkanter i Biosfärområde Kristianstads Vattenrike – resultat från en inventering 2021, Örjan Fritz, Naturcentrum AB.

2023:03 Kan våtmarker motverka brunifiering? Henric Djerf, Högskolan Kristianstad.

2023:02 Inventering av fladdermöss 2022 i fyra områden i Vattenriket. André Dabolins, Calluna.

2023:01 Biosfärområde Kristianstads Vattenrike. Verksamheten 2022, Biosfärkontoret.

2022:04 Våtmarksfåglar och trollsländor – Inventering av sju återskapade våtmarker i Helgeåns avrinningsområde 2022. Hans Cronert.

2022:03 Bioblitz i havet – Snickarhaken 22 maj 2022. Ebba Trolle och Dan Gerell (Biosfärkontoret), Stefan Tobiasson (Linnéuniversitetet).

2022:02 Malprovfiske i Helge å 2018–2021, Sanna Lindén, Biosfärkontoret.

2022:01 Biosfärområde Kristianstads Vattenrike. Verksamheten 2021, Biosfärkontoret.

2021:04 Rödspovsinventering i Kristianstads Vattenrike 2021. Roine Strandberg, Mirja Ström-Eriksson & Richard Ottvall.

2021:03 Gullstånds i Kristianstads Vattenrike 2021 – årsrapport. Kjell-Arne Olsson.

2021:02 Handlingsprogram 2021–2025, Biosfärkontoret.

2021:01 Biosfärområde Kristianstads Vattenrike. Verksamheten 2020, Biosfärkontoret.

2020:07 Rödspovsinventering i Kristianstads Vattenrike 2020. Roine Strandberg, Mirja Ström-Eriksson & Richard Ottvall.

2020:06 Återinventering av insekter på Bititten och Palmérs väg i Åhus 2020. Mikael Sörensson.

2020:05 Gullstånds i Kristianstads Vattenrike 2020 – årsrapport. Kjell-Arne Olsson.

2020:04 Makrofyter i Råbelövsjön och Oppmannasjön 2019.

2020:03 Rödlistade arter i Biosfärområde Kristianstads Vattenrike – Läget 2020 och jämförelse med 2015. Örjan Fritz, Naturcentrum AB.

2020:02 Myrlejon följer i människans spår – en artinventering i sandtallskog i Södra Äspet. Örjan Fritz.

2020:01 Biosfärområde Kristianstads Vattenrike. Verksamheten 2019, Biosfärkontoret.

2019:04 Rödspovsinventering i Kristianstads Vattenrike 2019. Roine Strandberg, Mirja Ström-Eriksson & Richard Ottvall.

2019:03 Gullstånds i Kristianstads Vattenrike 2019 – årsrapport. Kjell-Arne Olsson.

2019:02 Våtmarker attraherar våtmarksfåglar! Hans Cronert.

2019:01 Biosfärområde Kristianstads Vattenrike. Verksamheten 2018, Biosfärkontoret.

2018:05 Hammarsjön – bottenfauna 2018, Marika Stenberg och Kajsa Åbjörnsson, Ekoll AB.

2018:04 Sammanställning av provtagning av vattenkemi i Bivarödsån och biflöden 2014–2016, Jenny Hedin, Naturvårdsingenjörerna AB.

2018:03 Provfiske efter mal i Helge å 2017, Andreas Jezek, Biosfärkontoret.

2018:02 Förstudie Vattenriketleden.

2018:01 Biosfärområde Kristianstads Vattenrike. Verksamheten 2017, Biosfärkontoret.

2017:06 Hammarsjöns häckande fåglar Inventering 2017 och utveckling sedan 1956. Patrik Olofsson.

2017:05 Provfiske efter mal i Helge å 2016, Håkan Östberg, Biosfärkontoret.

2017:04 Skyddsvärda insekter vid Nyehusen – Fördjupad inventering 2016. Niklas Johansson.

2017:03 Häckningsframgång för rödspov och tofsvipa på Håslövs ängar och Isternäset 2016. Mirja Ström-Eriksson, Roine Strandberg & Richard Ottvall.

2017:02 Provfiske på grunda bottenområden i Hanöbukten inom Kristianstads kommun. Lena Svensson.

2017:01 Biosfärområde Kristianstads Vattenrike. Verksamheten 2016, Biosfärkontoret.

2016:06 Tätortsnära ekosystemtjänster i Vattenriket – Åhus, Linnérundan och Näsby fält Vattenriket. Anna Grönlund, Biosfärkontoret.

2016:05 Handlingsprogram 2016–2020 för biosfärområde Kristianstads Vattenrike, Biosfärkontoret.

2016:04 Provfiske efter mal i Helge å 2015. Håkan Östberg och Jonas Dahl, Biosfärkontoret.

2016:03 Förekomst av stormusslor i Vramsåns centrala biflöden. Per Ingvarsson.

2016:02 Var finns tången och hur mår den? Inventering av blås- och sågtång i Hanöbukten inom Kristianstads kommun. Lena Svensson, Biosfärkontoret.

2016:01 Biosfärområde Kristianstads Vattenrike. Verksamheten 2015, Biosfärkontoret.

2015:07 Häckningsframgång hos rödspov och tofsvipa på Håslövs ängar och Isternäset 2015. Mirja Ström-Eriksson & Richard Ottvall.

2015:06 Kan gullstånds hålla stånd? Kjell-Arne Olsson och Håkan Östberg.

2015:05 Provfiske efter mal i Helge å 2014. Jerker Vinterstare, Biosfärenheten.

2015:04 Forskningsmiljön Man & Biosphere Health Högskolan Kristianstads miljöforskning i Biosfärområde Kristianstads Vattenrike, Ingemar Jönsson red., Högskolan Kristianstad.

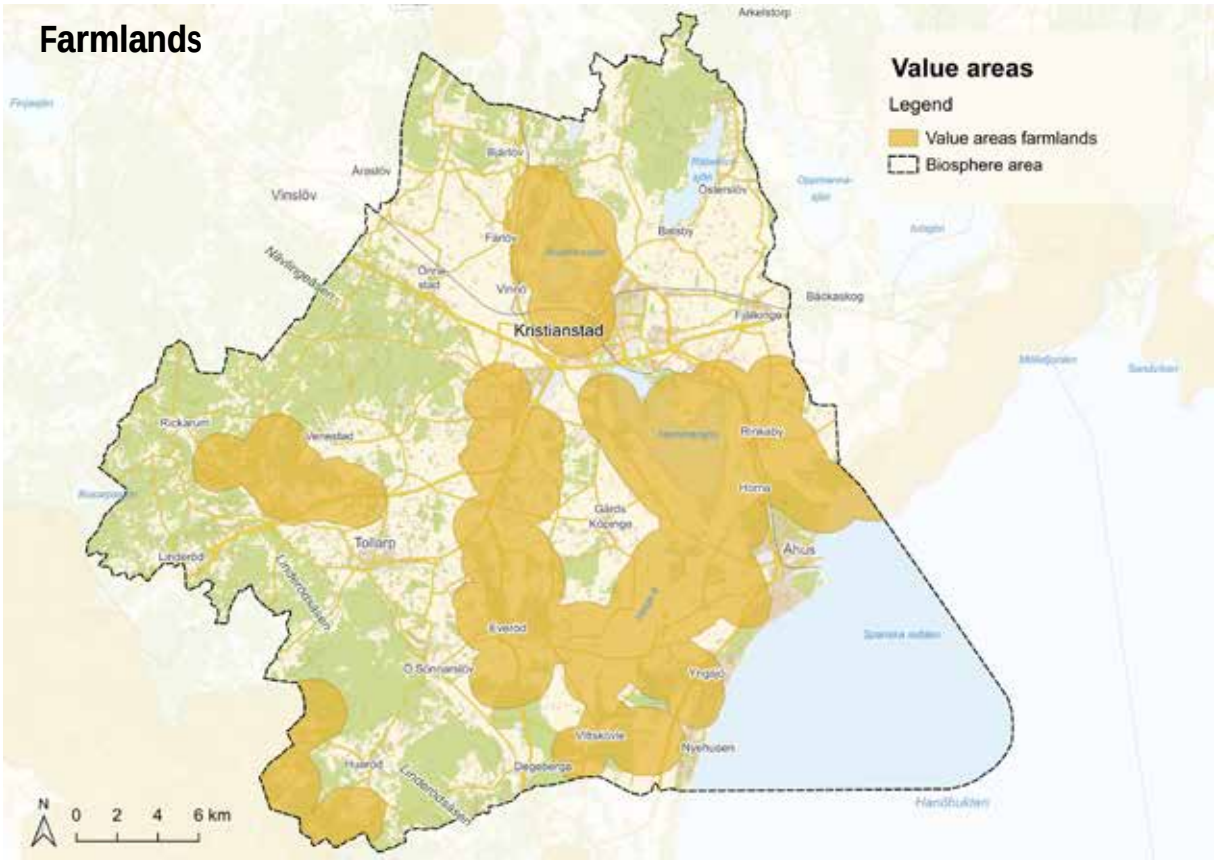
2015:03 Stormusslor i Helge å – en dykinventering, Håkan Östberg, Biosfärenheten.

(7) Further supporting documents

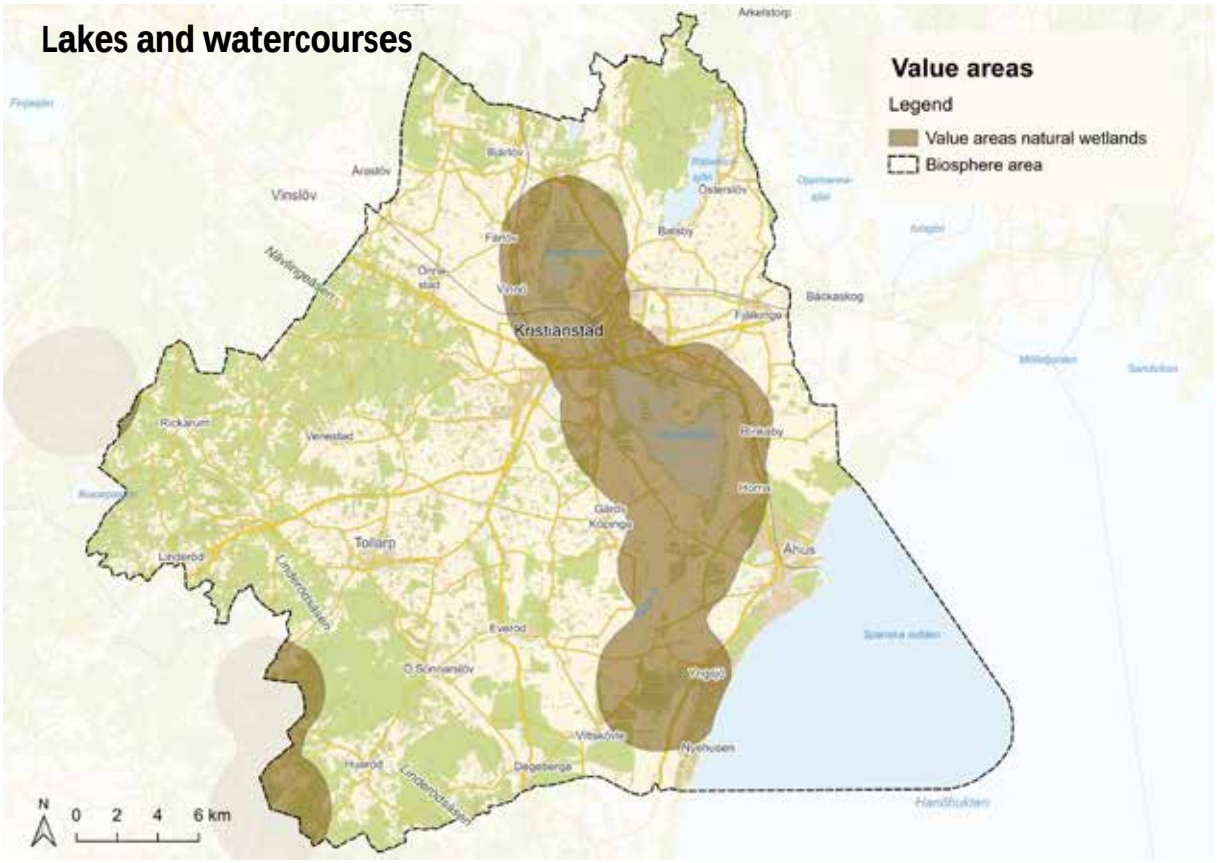
Maps of the high-value landscapes forests and trees, farmlands, natural wetlands, lakes and watercourses and sandy grasslands.

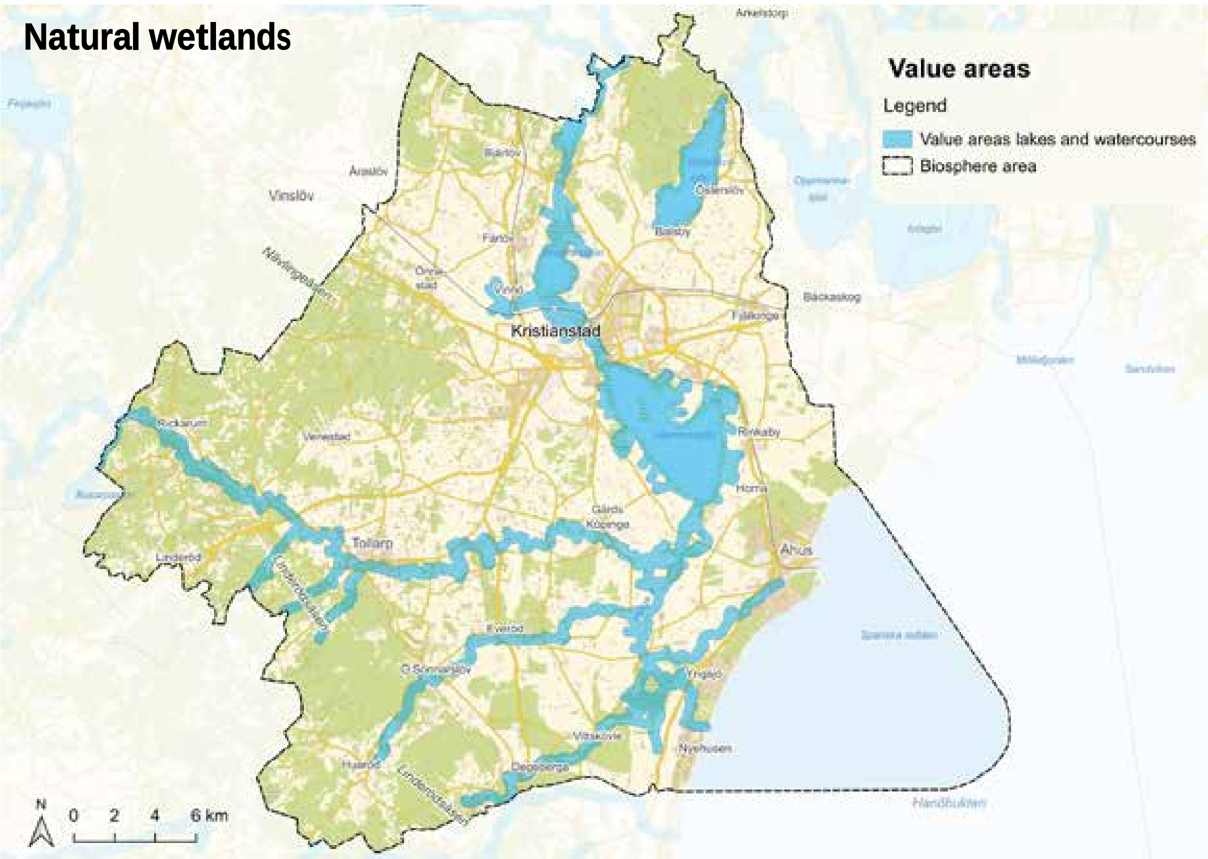
A high value landscape contains many valuable cores of a certain habitat, i.e. many areas with high biodiversity. The concept was developed by the Swedish Environmental Protection Agency and the county administrative boards.

Farmlands



Lakes and watercourses




Natural wetlands
Value areas
Legend
Value areas lakes and watercourses
Biosphere area
Arkelstorp
Vinslöv
Araslöv
Bjärlöv
Östersiöv
Balsby
Fårlöv
Önnestad
Vinnö
Kristianstad
Bäckaskog
Fjälkinge
Rickarum
Venestad
Rinkaby
Hörna
Gärds Köpinge
Tollarp
Linderöd
Åhus
Everöd
Ö Sönnarslöv
Yngsjö
Vittskövle
Nyehusen
Huaröd
Degeberga
Nävlingeåsen
Linderödsåsen
Hanöbukten
N
0 2 4 6 km


Sandy grasslands
Value areas
Legend
Value areas sandy grasslands
Biosphere area
Arkelstorp
Vinslöv
Araslöv
Bjärlöv
Östersiöv
Balsby
Fårlöv
Önnestad
Vinnö
Kristianstad
Bäckaskog
Fjälkinge
Rickarum
Venestad
Rinkaby
Hörna
Gärds Köpinge
Tollarp
Linderöd
Åhus
Everöd
Ö Sönnarslöv
Yngsjö
Vittskövle
Nyehusen
Huaröd
Degeberga
Nävlingeåsen
Linderödsåsen
Hanöbukten
N
0 2 4 6 km

10. ADDRESSES

10.1 Contact address of the biosphere reserve

[Government agency, organization, or other entity (entities) to serve as the main contact to whom all correspondence within the World Network of Biosphere Reserves should be addressed.]

Name: Kristianstads Vattenrike Biosphere Reserve
Street or P.O. Box: Enheten för biosfär och naturum, Kommunledningskontoret, Kristianstads kommun
City with postal code: SE-291 80 Kristianstad
Country: Sweden
Telephone: +46(0)44-136486
E-mail: carina.wettemark@kristianstad.se
Web site: vattenriket.kristianstad.se

10.2. and 10.3. Administering entity of the core areas and buffer zones

The administrative responsibility for the core areas and buffer zones is primarily divided between the various authorities and other stakeholders listed below. The Biosphere Office handles all correspondence relating to these areas as part of its work and then communicates the issues with the relevant authority/stakeholder.

Swedish Environmental Protection Agency - naturvardsverket.
County Administrative Board of Skåne - lansstyrelsen.se/skane.html
Swedish Forest Agency - skogsstyrelsen.se
Kristianstad Municipality - kristianstad.se

10.4. Administering entity of the transition areas

Name: Kristianstads Vattenrike Biosphere Reserve
Street or P.O. Box: Enheten för biosfär och naturum, Kommunledningskontoret, Kristianstads kommun
City with postal code: SE-291 80 Kristianstad
Country: Sweden
Telephone: +46(0)44-136486
E-mail: carina.wettemark@kristianstad.se
Web site: vattenriket.kristianstad.se

ANNEX I TO THE BIOSPHERE RESERVE PERIODIC REVIEW, 2025
MABnet DIRECTORY OF BIOSPHERE RESERVES

Administrative details

Country: Sweden

Name of BR: Kristianstads Vattenrike Biosphere Reserve

Year designated: 2005

Administrative authorities (7.6): Kristianstad Municipality

Name contact (10.1): Carina Wettemark, Head of the Biosphere and Naturum Unit/Coordinator Kristianstads Vattenrike Biosphere Reserve

Contact address (10.1): Enheten för biosfär och naturum, Kommunledningskontoret, Kristianstads kommun, 291 80 Kristianstad, Sweden
+46(0)44-136486
carina.wettemark@kristianstad.se

Related links: vattenriket.kristianstad.se

Social networks (6.5.4):
Facebook: facebook.com/NaturumVattenriket. The Facebook page was set up when the naturum Vattenriket visitor centre was opened in 2010 and has over 7,200 followers.
Instagram: instagram.com/vattenriket, which has 550 followers.
Linkedin: linkedin.com/company/vattenriket, which has 500 followers.
Youtube: youtube.com/user/Vattenriket
Nature map *(Naturkartan):* naturkartan.se/en/vattenriket

Description

General description:

The biosphere reserve is situated in the north-eastern part of Scania which is Sweden's most southerly landscape. The landscape of the area is very varied and contains a mosaic of forests, low mountain ridges, lakes, watercourses, wetlands and flat agricultural land. A marine area along the coast of Hanöbukten Bay of the Baltic Sea to the east is included. The landscape of the central areas, where the City of Kristianstad is situated, is dominated by a flat agricultural landscape stretching all the way down to the coast. The forested areas are primarily situated in the western and northern parts of the reserve that are mainly located above the highest coastline (55 metres above sea level).

Special conditions relating to morphology, climate, geology, hydrology and cultural history contribute in various ways to the area's rich variation in valuable habitats and species.

The Helge Å River with its lakes and wetlands is of international importance (River Helge Å Ramsar Convention Site) and flows through the centre of Kristianstads Vattenrike Biosphere Reserve. Other habitats with particularly high natural values are ancient broadleaf forests, sandy grasslands with a long tradition of a rotation system of cultivation and fallow, eelgrass *(Zostera marina)* beds

in Hanöbukten Bay and sand dune areas along the coast. There are 38 areas in the biosphere reserve that are included in the EU's Natura 2000 network and 42 nature reserves.

The considerable number of red-listed species provides confirmation of the large biodiversity of the biosphere reserve and the need for targeted conservation work in the entire landscape. The biosphere reserve is one of the foremost areas in Sweden in terms of species diversity as well as the presence of threatened species. According to our latest survey, there are 947 red-listed species in the biosphere reserve, 417 of which are threatened (CN, EN and VU). Several of these species have a particularly high conservation value as their main distribution is within the biosphere reserve.

Major ecosystem types: Lakes and watercourses, seasonally flooded grasslands, wetlands, marine ecosystems, sandy grasslands, coastal dune landscapes, forests, agricultural landscapes, urban nature and built-up areas.

Major habitats & land cover types: Agricultural area/open land, woodland, natural wetlands, water, other land, urban area.

Bioclimatic zone: Warm temperate climate according to the Köppen climate classification.

Location (latitude and longitude): 56°01'57''N, 14°08'58''E

Total area: 104,362 hectares

Core areas: 8,581 hectares

Buffer zones: 21,737 hectares

Transition areas: 74,044 hectares

Since the previous evaluation, the core areas have increased by as much as 20 percent, while the buffer zones and transition areas have decreased accordingly. At the same time, the figures for each zone have been adjusted slightly due to an increased level of detail in the GIS work. For example, the boundaries between terrestrial and limnic areas have been adjusted. The figure for the total area of the biosphere reserve is also affected.

Different existing zonation: Temperate and subpolar broadleaf forests or woodlands (UNESCO def.). According to the Udvardy classification system, the biosphere reserve belongs to the Middle European Forest landscape type, which is characterised by deciduous forests. Based on the EU classification system, the area belongs to the continental region.

Altitudinal range: 2.32 metres below sea level – 190 metres above sea level (RH2000)

Zonation map(s): Refer to section 2.2.2

Main objectives of the biosphere reserve

Brief description

To work towards sustainable development that benefits people and nature in Kristianstads Vattenrike Biosphere Reserve and Kristianstad Municipality by:
Carrying out targeted conservation work relating to valuable natural environments and species with a focus on nature and people.

Continuously developing knowledge regarding natural and cultural values, and the requirements for protection and management of valuable habitats and species.
Working with a landscape perspective based on thematic landscapes and high-value landscapes.
Working according to themes including all three functions of biosphere reserves: conservation, development and logistic support.
Working in cooperation and dialogue with a multi-stakeholder approach and with the goal of creating trust and changing attitudes.
Engaging and including young people and those unaccustomed to nature as priority target groups.
Raising awareness of the importance of a sustainable future by inspiring people of all ages to enjoy and respect nature.
Making it easier for the public, pupils and researchers to benefit from all the values of the biosphere reserve through naturum, visitor sites, website, social media and information materials.

Research

Brief description

Within the biosphere reserve, Kristianstad University's research environment Sustainable Multifunctional Landscapes (SMULA) primarily studies biodiversity, water quality, geese, mallards *(Anas platyrhynchos),* swans, black terns *(Chlidonias niger),* ecosystem services, outdoor recreation and nature connection.
The long-standing and broad collaboration with the Stockholm Resilience Centre continues in projects such as BECOME – Biosphere Reserves as Effective Conservation Measures. Important international projects on biosphere reserves, including Kristianstads Vattenrike, since the last evaluation are BiosACM and GLEAN, which have led to a number of publications.
Key collaborations with Lund University concern brownification and eutrophication, ecosystem services, sandy grasslands and biodiversity, as well as a new project on continuous cover forestry and peatland rewetting.
With universities such as Stockholm University, the University of Gothenburg, the Swedish University of Agricultural Sciences SLU, Linnaeus University, the University of Bergen in Norway and Leibniz Centre for Agricultural Research in Germany, collaborations are ongoing on wetland hydrology, seaweed, methane emissions from constructed wetlands, wading birds, accompanying research, phenology, water quality, landscape values and human-wildlife conflicts in the agricultural landscape.

Monitoring

Brief description

The Biosphere Office has commissioned or carried out considerably more of our own inventories over the last ten-year period, around 30. These are mainly various types of inventories of natural values. We also collect data on water levels in the Helge Å River and the sea, as well as water flow, and contribute to citizen science.
The River Helge Å Water Conservation Association *(Helgeåkommittén)* is responsible for statutory recipient monitoring in the Helge Å River drainage basin. The Western Hanöbukten Bay Water Conservation Association *(Vattenvårdsförbundet för västra Hanöbukten)* is responsible for statutory recipient monitoring in Hanöbukten Bay. Both carry out a large number of studies of chemical as well as biological parameters.

The County Administrative Board of Skåne is responsible for biotic and abiotic monitoring in accordance with a county programme for monitoring Sweden's 16 environmental objectives and biogeographical monitoring of, for example, butterflies, grasslands and seasonally flooded grasslands. Kristianstad Municipality carries out various types of abiotic sampling, species monitoring and inventories, and socio-economic inventories.
The Flora Guardians *(Floraväktarna)* monitor populations of red-listed and threatened species in Sweden.
The Bird Society of North-East Scania *(Nordöstra Skånes Fågelklubb)* conducts annual counts of several bird species such as geese and eagles, as well as targeted inventories of endangered species.

Specific variables (fill in the table below and tick the relevant parameters)

Abiotic		**Biodiversity**	
Abiotic factors	x	Afforestation/reforestation	x
Acidic deposition/atmospheric factors		Algae	x
Air quality	x	Alien and/or invasive species	x
Air temperature	x	Amphibians	x
Climate, climatology	x	Arid and semi-arid systems	
Contaminants	x	Autoecology	x
Drought		Beach/soft bottom systems	x
Erosion	x	Benthos	x
Geology	x	Biodiversity aspects	x
Geomorphology	x	Biogeography	
Geophysics		Biology	x
Glaciology		Biotechnology	x
Global change	x	Birds	x
Groundwater	x	Boreal forests	x
Habitat issues	x	Breeding	
Heavy metals	x	Coastal/marine systems	x
Hydrology	x	Community studies	x
Indicators	x	Conservation	x
Meteorology	x	Coral reefs	
Modeling	x	Degraded areas	
Monitoring/methodologies	x	Desertification	
Nutrients	x	Dune systems	x
Physical oceanography		Ecology	x
Pollution, pollutants	x	Ecosystem assessment	x
Siltation/sedimentation		Ecosystem functioning/structure	x
Soil	x	Ecosystem services	x
Speleology		Ecotones	x
Topography		Endemic species	x
Toxicology	x	Ethology	
UV radiation		Evapotranspiration	
		Evolutionary studies/paleoecology	
		Fauna	x
		Fires/fire ecology	x
		Fishes	x
		Flora	x

		Forest systems	x
		Freshwater systems	x
		Fungi	x
		Genetic resources	
		Genetically modified organisms	
		Home gardens	
		Indicators	x
		Invertebrates	x
		Island systems/studies	
		Lagoon systems	
		Lichens	x
		Mammals	x
		Mangrove systems	
		Mediterranean type systems	
		Microorganisms	x
		Migrating populations	x
		Modeling	x
		Monitoring/methodologies	x
		Mountain and highland systems	
		Natural and other resources	
		Natural medicinal products	
		Perturbations and resilience	x
		Pests/diseases	
		Phenology	x
		Phytosociology/succession	
		Plankton	x
		Plants	x
		Polar systems	
		Pollination	x
		Population genetics/dynamics	x
		Productivity	
		Rare/endangered species	x
		Reptiles	x
		Resoration/rehabilitation	x
		Species (re)introduction	x
		Species inventorying	x
		Subtropical and temperate rainforest	
		Taxonomy	
		Temperate forest systems	x
		Temperate grassland systems	x
		Tropical dry forest systems	
		Tropical grassland and savannah systems	
		Tropical humid forest systems	
		Tundra systems	
		Vegetation studies	x
		Volcanoes/geothermal systems	
		Wetland systems	x
		Wildlife	x

Socio-economic		Integrated monitoring	
Agriculture/other production systems	x	Biogeochemical studies	x
Agroforestry		Carrying capacity	
Anthropological studies		Climate change	x
Aquaculture		Conflict analysis/resolution	
Archaeology	x	Ecosystem approach	x
Bioprospecting		Education and public awareness	x
Capacity building		Environmental changes	x
Cottage (home-based) industry		Geographic Information System (GIS)	x
Cultural aspects	x	Impact and risk studies	x
Demography	x	Indicators	x
Economic studies		Indicators of environmental quality	x
Economically important species		Infrastructure development	
Energy production system		Institutional and legal aspects	
Ethnology/traditional practices/knowledge		Integrated studies	
Firewood cutting		Interdisciplinary studies	x
Fishery	x	Land tenure	
Forestry	x	Land use/land cover	x
Human health	x	Landscape inventory/monitoring	x
Human migration	x	Management issues	x
Hunting		Mapping	x
Indicators	x	Modeling	x
Indicators of sustainability	x	Monitoring/methodologies	x
Indigenous people's issues		Planning and zoning measures	
Industry		Policy issues	
Livelihood measures		Remote sensing	x
Livestock and related impacts		Rural systems	
Local participation		Sustainable development/use	x
Micro-credits		Transboundary issues/measures	x
Mining		Urban systems	
Modeling		Watershed studies/monitoring	x
Monitoring/methodologies	x		
Natural hazards			
Non-timber forest products			
Pastoralism			
People-Nature relations	x		
Poverty			
Quality economies/marketing			
Recreation	x		
Resource use			
Role of women			
Sacred sites			
Small business initiatives			
Social/socio-economic aspects			
Stakeholders' interests			
Tourism	x		
Transports			

ANNEX II
PROMOTIONAL AND COMMUNICATION MATERIAL

Provide some promotional material regarding the site, notably high quality photos, and/or short videos on the site so as to allow the Secretariat to prepare appropriate files for press events. To this end, a selection of photographs in high resolution (300 dpi), with photo credits and captions and video footage (rushes), without any comments or sub-titles, of professional quality – DV CAM or BETA only, will be needed.

In addition, return a signed copy of the following Agreements on Non-Exclusive Rights for photo(s) and video(s).

Photos can be downloaded from https://share.mediaflow.com/sv/?D1OEGDUO7H

Kristianstad and the urban wetlands with the naturum visitor centre.
Photo: Patrik Olofsson/N

The seasonally flooded grasslands at Isternäset with Kristianstad in the background.
Photo: Patrik Olofsson/N

Naturum Vattenriket is the biosphere reserve's visitor centre in the heart of the city of Kristianstad and also in the heart of the wetland area.
Photo: Patrik Olofsson/N

Constructing a wetland in collaboration with a landowner.
Photo: Biosphere Office

School children doing conservation work in sandy grasslands.
Photo: Biosphere Office

Preventive feeding of cranes.
Photo: Patrik Olofsson/N

The Äspet visitor site.
Photo: Biosphere Office

New knowledge and research.
Photo: Biosphere Office

Children at a biosphere camp.
Photo: Biosphere Office

Videos https://www.youtube.com/@Vattenriket

Kristianstads Vattenrike Biosphere Reserve – benefitting nature and people

In 2005, Kristianstads Vattenrike was designated a biosphere reserve by UNESCO. There are more than 700 biosphere reserves worldwide. Sweden has seven biosphere reserves, of which Kristiantads Vattenrike is the oldest. All biosphere reserves serve as model areas for sustainable social development by creating, demonstrating and spreading good examples. We work with society to promote lifestyles that will preserve natural values for all to enjoy, today and in the future. For the benefit of both nature and people.
Languages: Swedish, English and German
Filmmaker: Patrik Olofsson/N

Naturum Vattenriket

Naturum Vattenriket is Kristianstads Vattenrike Biosphere Reserve's visitor centre. In the middle of Kristianstad and in the middle of Vattenriket! The building rests on poles in the water, and is built entirely of wood with unusual angles and nooks. On the first floor there is an exhibition about the rich nature of Vattenriket and the biosphere work. Guided tours and scheduled activities are offered here. On the second floor, Bistro Årum serves locally produced and organic food. The roof terrace outside offers lovely views of the city, the seasonally flooded grasslands and the river.
Language: No speech
Filmmaker: Patrik Olofsson/N

Ecosystem services in Kristianstads Vattenrike

We call ecosystem services the benefits nature provides us with free of charge, and on which we are completely dependent for our survival. There are many ecosystem services in Kristianstads Vattenrike Biosphere Reserve. Here we work to preserve and develop ecosystem services in a sustainable way – benefitting nature and people!
Language: Swedish and English
Filmmaker: Patrik Olofsson/N

What if

Sometimes the present can feel dark and difficult. But what if... the future is actually bright? What if we choose to let go of what is and imagine a future that benefits nature and people? We invited interested locals, experts and researchers to peek into the future of the Kristianstads Vattenrike Biosphere Reserve. Jump into our time machine and visit our vision of the year 2040 with us. A film from the Vinnova-funded project Brokering Peace with Nature Using Foresight in Kristianstads Vattenrike Biosphere Reserve.

Language: Swedish and English
Filmmaker: Big Brain Agency

United Nations Educational, Scientific and Cultural Organization
Organisation des Nations Unies pour l'éducation, la science et la culture
Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura
Организация Объединенных Наций по вопросам образования, науки и культуры
منظمة الأمم المتحدة للتربية والعلم والثقافة
联合国教育、科学及文化组织

UNESCO Photo Library

Bureau of Public Information

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   b) These rights are granted to UNESCO for the legal term of copyright throughout the world.

   c) The name of the photographer will be cited alongside UNESCO's whenever his/her work is used in any form.

2. I certify that:

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   b) The photo(s) is/are in no way whatever a violation or an infringement of any existing copyright or licence, and contain(s) nothing obscene, libellous or defamatory.

Name and Address:

Signature :

Date :

(Sign, return to UNESCO two copies of the Agreement and retain the original for yourself)

Mailing address: 7 Place Fontenoy, 75352 Paris 07 SP, Direct Telephone: 00331 – 45681687

Direct Fax: 00331 – 45685655; e-mail: photobank@unesco.org; m.ravassard@unesco.org

Annex III to the Biosphere Reserve Periodic Review, 2025
The Statutory Framework of the World Network of Biosphere Reserves

Introduction

Within UNESCO's Man and the Biosphere (MAB) programme, biosphere reserves are established to promote and demonstrate a balanced relationship between humans and the biosphere. Biosphere reserves are designated by the International Co-ordinating Council of the MAB Programme, at the request of the State concerned. Biosphere reserves, each of which remains under the sole sovereignty of the State where it is situated and thereby submitted to State legislation only, form a World Network in which participation by the States is voluntary.

The present Statutory Framework of the World Network of Biosphere Reserves has been formulated with the objectives of enhancing the effectiveness of individual biosphere reserves and strengthening common understanding, communication and co-operation at regional and international levels.

This Statutory Framework is intended to contribute to the widespread recognition of biosphere reserves and to encourage and promote good working examples. The delisting procedure foreseen should be considered as an exception to this basically positive approach, and should be applied only after careful examination, paying due respect to the cultural and socio-economic situation of the country, and after consulting the government concerned.

The text provides for the designation, support and promotion of biosphere reserves, while taking account of the diversity of national and local situations. States are encouraged to elaborate and implement national criteria for biosphere reserves which take into account the special conditions of the State concerned.

Article 1 - Definition

Biosphere reserves are areas of terrestrial and coastal/marine ecosystems or a combination thereof, which are internationally recognized within the framework of UNESCO's programme on Man and the Biosphere (MAB), in accordance with the present Statutory Framework.

Article 2 - World Network of Biosphere Reserves

1. Biosphere reserves form a worldwide network, known as the World Network of Biosphere Reserves, hereafter called the Network.

2. The Network constitutes a tool for the conservation of biological diversity and the sustainable use of its components, thus contributing to the objectives of the Convention on Biological Diversity and other pertinent conventions and instruments.

3. Individual biosphere reserves remain under the sovereign jurisdiction of the States where they are situated. Under the present Statutory Framework, States take the measures which they deem necessary according to their national legislation.

Article 3 - Functions

In combining the three functions below, biosphere reserves should strive to be sites of excellence to explore and demonstrate approaches to conservation and sustainable development on a regional scale:

(i) conservation - contribute to the conservation of landscapes, ecosystems, species and genetic variation;

(ii) development - foster economic and human development which is socio-culturally and ecologically sustainable;

(iii) logistic support - support for demonstration projects, environmental education and training, research and monitoring related to local, regional, national and global issues of conservation and sustainable development.

Article 4 - Criteria

General criteria for an area to be qualified for designation as a biosphere reserve:

1. It should encompass a mosaic of ecological systems representative of major biogeographic regions, including a gradation of human interventions.

2. It should be of significance for biological diversity conservation.

3. It should provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale.

4. It should have an appropriate size to serve the three functions of biosphere reserves, as set out in Article 3.

5. It should include these functions, through appropriate zonation, recognizing:

(a) a legally constituted core area or areas devoted to long-term protection, according to the conservation objectives of the biosphere reserve, and of sufficient size to meet these objectives;

(b) a buffer zone or zones clearly identified and surrounding or contiguous to the core area or areas, where only activities compatible with the conservation objectives can take place;

(c) an outer transition area where sustainable resource management practices are promoted and developed.

6. Organizational arrangements should be provided for the involvement and participation of a suitable range of inter alia public authorities, local communities and private interests in the design and carrying out the functions of a biosphere reserve.

7. In addition, provisions should be made for:

(a) mechanisms to manage human use and activities in the buffer zone or zones;

(b) a management policy or plan for the area as a biosphere reserve;

(c) a designated authority or mechanism to implement this policy or plan;

(d) programmes for research, monitoring, education and training.

Article 5 - Designation procedure

1. Biosphere reserves are designated for inclusion in the Network by the International Co-ordinating Council (ICC) of the MAB programme in accordance with the following procedure:

(a) States, through National MAB Committees where appropriate, forward nominations with supporting documentation to the secretariat after having reviewed potential sites, taking into account the criteria as defined in Article 4;

(b) the secretariat verifies the content and supporting documentation: in the case of incomplete nomination, the secretariat requests the missing information from the nominating State;

(c) nominations will be considered by the Advisory Committee for Biosphere Reserves for recommendation to ICC;

(d) ICC of the MAB programme takes a decision on nominations for designation. The Director-General of UNESCO notifies the State concerned of the decision of ICC.

2. States are encouraged to examine and improve the adequacy of any existing biosphere reserve, and to propose extension as appropriate, to enable it to function fully within the Network. Proposals for extension follow the same procedure as described above for new designations.

3. Biosphere reserves which have been designated before the adoption of the present Statutory Framework are considered to be already part of the Network. The provisions of the Statutory Framework therefore apply to them.

Article 6 - Publicity

1. The designation of an area as a biosphere reserve should be given appropriate publicity by the State and authorities concerned, including commemorative plaques and dissemination of information material.

2. Biosphere reserves within the Network, as well as the objectives, should be given appropriate and continuing promotion.

Article 7 - Participation in the Network

1. States participate in or facilitate co-operative activities of the Network, including scientific research and monitoring, at the global, regional and sub-regional levels.

2. The appropriate authorities should make available the results of research, associated publications and other data, taking into account intellectual property rights, in order to ensure the proper functioning of the Network and maximize the benefits from information exchanges.

3. States and appropriate authorities should promote environmental education and training, as well as the development of human resources, in co-operation with other biosphere reserves in the Network.

Article 8 - Regional and thematic subnetworks

States should encourage the constitution and co-operative operation of regional and/or thematic subnetworks of biosphere reserves, and promote development of information exchanges, including electronic information, within the framework of these subnetworks.

Article 9 - Periodic review

1. The status of each biosphere reserve should be subject to a periodic review every ten years, based on a report prepared by the concerned authority, on the basis of the criteria of Article 4, and forwarded to the secretariat by the State concerned.

2. The report will be considered by the Advisory Committee for Biosphere Reserves for recommendation to ICC.

3. ICC will examine the periodic reports from States concerned.

4. If ICC considers that the status or management of the biosphere reserve is satisfactory, or has improved since designation or the last review, this will be formally recognized by ICC.

5. If ICC considers that the biosphere reserve no longer satisfies the criteria contained in Article 4, it may recommend that the State concerned take measures to ensure conformity with the provisions of Article 4, taking into account the cultural and socio-economic context of the State concerned. ICC indicates to the secretariat actions that it should take to assist the State concerned in the implementation of such measures.

6. Should ICC find that the biosphere reserve in question still does not satisfy the criteria contained in Article 4, within a reasonable period, the area will no longer be referred to as a biosphere reserve which is part of the Network.

7. The Director-General of UNESCO notifies the State concerned of the decision of ICC.

8. Should a State wish to remove a biosphere reserve under its jurisdiction from the Network, it notifies the secretariat. This notification shall be transmitted to ICC for information. The area will then no longer be referred to as a biosphere reserve which is part of the Network.

Article 10 - Secretariat

1. UNESCO shall act as the secretariat of the Network and be responsible for its functioning and promotion. The secretariat shall facilitate communication and interaction among individual biosphere reserves and among experts. UNESCO shall also develop and maintain a worldwide accessible information system on biosphere reserves, to be linked to other relevant initiatives.

2. In order to reinforce individual biosphere reserves and the functioning of the Network and sub-networks, UNESCO shall seek financial support from bilateral and multilateral sources.

3. The list of biosphere reserves forming part of the Network, their objectives and descriptive details, shall be updated, published and distributed by the secretariat periodically.

Biosphere Office in front of the naturum Vattenriket visitor centre, May 2025.

Kristianstads Vattenrike Biosphere Reserve
— benefitting nature and people

Every ten years, the world's biosphere reserves undergo a comprehensive evaluation, a so-called Periodic Review. The biosphere reserve's activities are scrutinised and UNESCO decides whether the area may continue to be a biosphere reserve. This report is the second evaluation of Kristianstads Vattenrike Biosphere Reserve.

More information and contact detail:
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unesco
Biosphere Reserve

Vattenriket

Kristianstads kommun