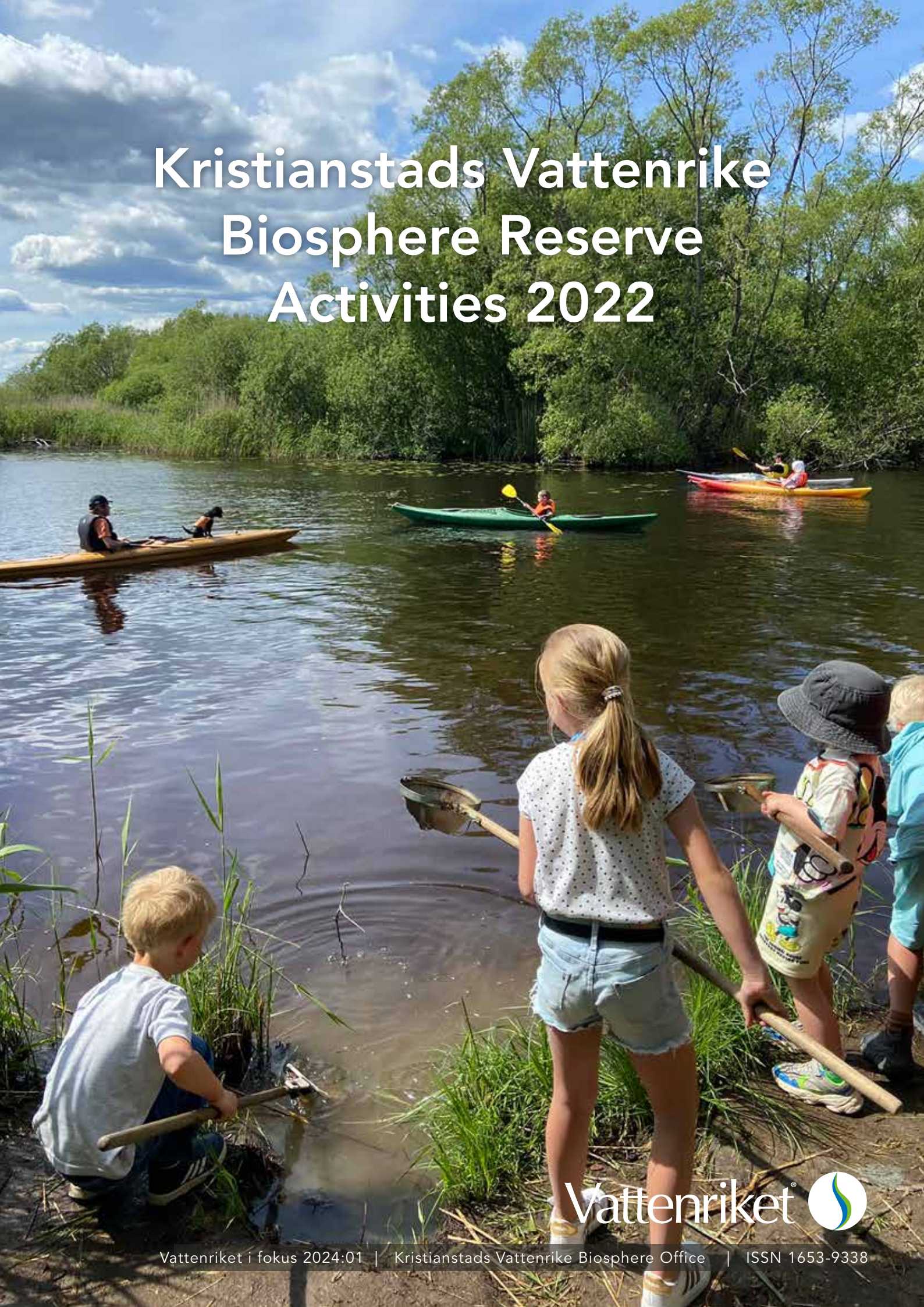


Kristianstads Vattenrike Biosphere Reserve Activities 2022



Vattenriket 

Kristianstads Vattenrike is a Unesco-designated biosphere reserve that serves as a model area for sustainable development. There are some 700 biosphere reserves worldwide, seven of which are in Sweden.

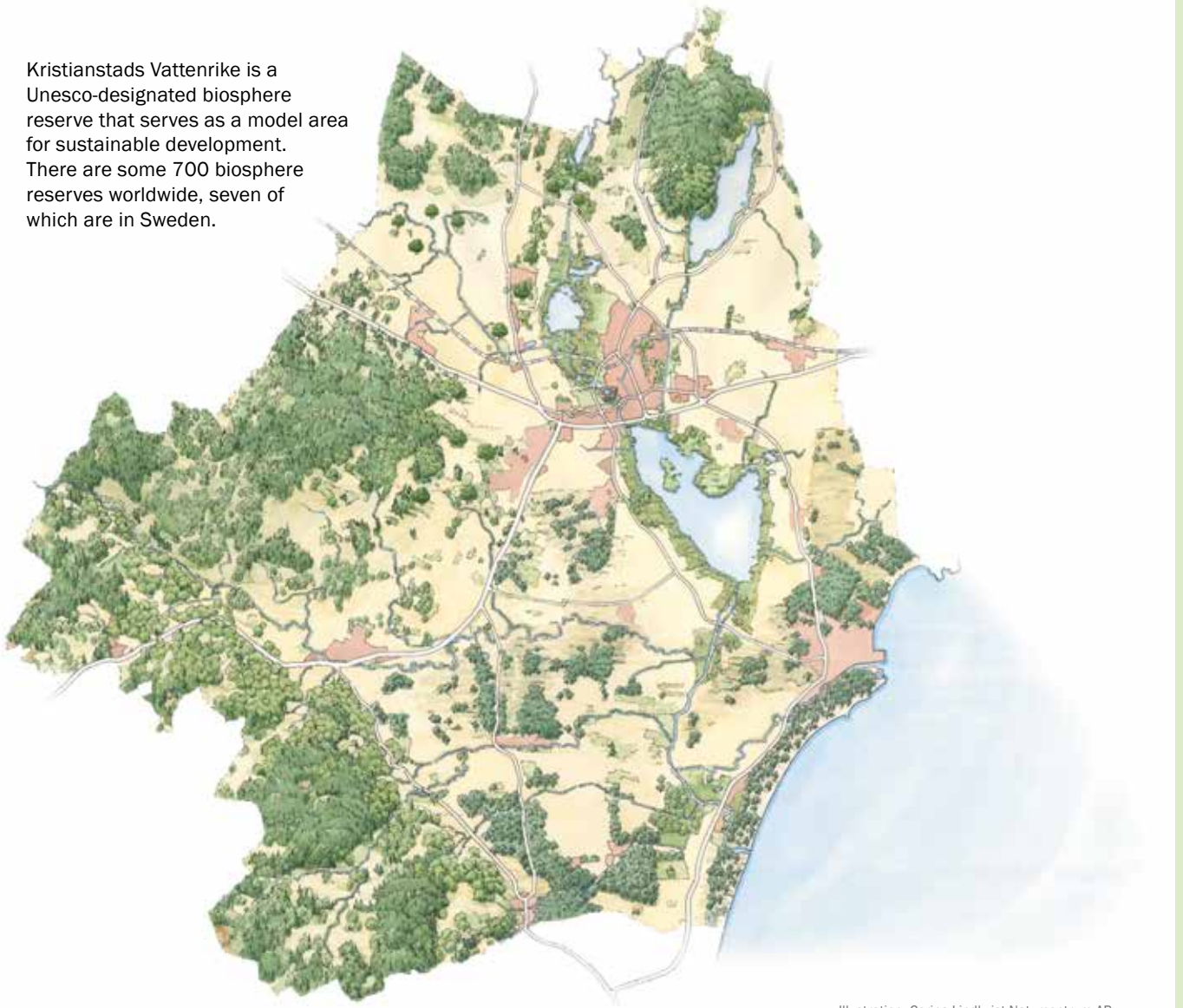


Illustration: Carina Lindkvist Naturcentrum AB

Kristianstads Vattenrike Biosphere Reserve

Kristianstads Vattenrike Biosphere Reserve (Vattenriket) occupies most of the municipality of Kristianstad. This rich cultural landscape is endowed with almost every type of natural habitat to be found in Sweden.

The majestic River Helge å is a central feature. Fed by streams from the ridges and plains, it flows into Lakes Araslövssjön and Hammarsjön before reaching the sea in Hanöbukten Bay. The river is fringed by wetlands and seasonally flooded grasslands, but there are also leafy forests and dry sandy arable lands within the reserve.

Such variety creates numerous natural habitats and the species-rich reserve, less than two tenths of one percent of the area of Sweden, is a refuge for some 20% of the nation's red-listed species.

Kristianstad Municipality is committed to making the biosphere reserve a model area for sustainable development.

Producing and sharing knowledge about the landscape and nature is crucial for an ecologically, economically and socially sustainable society, so we make inventories, publish reports, work with researchers, host conferences and welcome some 100,000 visitors a year to the naturum visitor centre.

We collaborate with local associations, companies and landowners to use and conserve natural values. We create wetlands and restore sandy grasslands. Species diversity and efficient ecosystems help us to cope better with challenges such as

climate change.

Enabling people to experience nature inspires them to help conserve it. The biosphere reserve has some 20 visitor sites with observation towers, marked trails and outdoor museums. The jewel in our crown is the naturum visitor centre with exhibitions, meeting rooms, a restaurant and a wide programme of activities. Here we explain how the biosphere reserve works and encourage visitors to explore the area for themselves.

Results have been positive. At the Pulken visitor site migrating cranes, visitors and farmers co-exist in harmony. Cat-fish have been successfully reintroduced into the river and otters fish close to the naturum. Thanks to a new-found respect for natural values, the wetlands are no longer seen as a problem, but as a valuable resource for Kristianstad.

2023 – The year in review

Spring came late in 2023 and was cold, dry and blighted by water shortages. It was followed by a rainy summer and several fierce autumn storms culminating in the devastation of Storm Babet that reshaped the coastline at Åhus. The year will also be remembered for the oil spill in the Blekinge archipelago. Despite heroic efforts to prevent the spread and remove oil from the coast and stricken seabirds, the damage to nature was severe. There were fears the slick would spread to our area, but low temperatures caused the oil to sink, and its current location is unknown.

The programme at naturum Vattenriket and activities such as the Seaweed Search and Algae Summer Study reflected the fact that 2023 was the final year of our marine environment theme. Also, in the largest ever such initiative in Hanöbukten Bay, 5,000 sq.m. of eelgrass were planted off the coast of Åhus. Reeds were cleared at Gropahålet to restore flow and revive fish nurseries, and our Baltic Sea Biosphere Classroom concept sparked keen interest from local schools, as well as nationally and internationally.

We need to be better equipped to meet

the future. From 2024 our new theme will focus on what nature's own smart solutions can teach us and how nature-based solutions can inspire us to tackle the challenges society faces. We made a head start in 2023 by planting eelgrass and, in our first climate-inspired wetlands project, by rewetting peat on old farmland to curb CO2 emissions. Water resources management is increasing in importance, so we worked with local agricultural consultants to arrange lectures and study visits to focus attention on this.

Among the year's many entertainments was the Teddy Bear's Concert, when 300 children and adults gathered in the 'nest' outside the naturum to hear the Malmö Symphony Orchestra. Also, the inauguration of the Ekenabben-Kvarnnäs Nature Reserve on 2 June (Biosphere Day) was celebrated with fun and games the day after, with the help of representatives from the municipality and local organisations and associations.

In September we hosted a conference for Sweden's biosphere municipalities. Meeting representatives from other biosphere reserves is both inspiring and important

for spreading and sharing our ideas. In October we were delighted when, together with Vattenriket's founder, Sven-Erik Magnusson, our work was honoured with the Aktion Skåne Foundation's environmental award.

Now we look forward with confidence towards another exciting year, firmly committed to continuing our work to promote sustainable development in the wonderful wetlands of Kristianstads Vattenrike.



Carina Wettemark

Carina Wettemark
Coordinator, Kristianstads Vattenrike Biosphere Reserve Manager, Department for Biosphere Activities, Municipal Executive Office, Kristianstad Municipality



Storm Babet reshaped the coastline

In October Storm Babet's extreme water levels and huge waves swept away parts of the sandspit around the Korran lagoon at the Äspet visitor site, and copious amounts of sand blew in.

Sections of the SL6 Vattenriket subtrail of the Skåne Trail were obliterated, the ground under the new platform and barbecue site gave way, but thankfully the observation tower, outdoor museum and biosphere classroom survived the ordeal.

The storm surge and easterly winds wrought havoc on the beach in Åhus. Water levels peaked 1.28 metres above normal. The storm also felled numerous pines along the coast and large quantities of eelgrass drifted ashore.

Conserving life in the Baltic Sea

New eelgrass meadows, channels through the reedbeds and a biosphere classroom – just three of many initiatives to spread knowledge of, inspire interest in and restore the health of the Baltic Sea.

Eelgrass meadows are often called marine nurseries, as the long, ribbon-like leaves protect fish and hatchlings and provide them with food. Also, the stabilising effect of the eelgrass root system reduces seabed erosion, while the leaves bind carbon dioxide through photosynthesis.

Work on planting eelgrass took place from May to July. Divers dug bunches of five to ten plants from donor meadows and replanted them where populations needed help to survive.

Our Sea theme comes to an end. Divers could later confirm that the transplanted plants, several thousands of them in

all covering an area of some 5,000 square metres, were growing well in their new homes two to five metres below the waves.

The initiative was part of a three-pronged project to restore the Baltic Sea to health that includes local initiatives to plant bladderwrack in the Stockholm archipelago and large-scale eelgrass meadows in Kristianstads Vattenrike biosphere reserve.

For our part, the project also paved the way for a biosphere classroom and an educational tool we call the Baltic Sea Compass, as well as providing funds to create new wetlands and natural nurseries for fish.

New biosphere classroom at Äspet
The Baltic Sea biosphere classroom at Äspet, designed and produced by naturum Vattenriket, is a platform for on-site learning and biological literacy. Here children's curiosity is aroused, inspiring them to experience, explore and learn more about coastal environments.

Reed cutting benefits fish and birds
In recent years Gropahålet, well-known among anglers for its spawning beds, has become choked with reeds. In 2023 we cut open pools and channels within the reedbeds to create suitable habitats for birds and fish, and enable the water to flow freely.



Photo: Johan Hammar

Planting eelgrass colonies



Photo: Johan Hammar

Biosphere classroom



Photo: Johan Hammar

Reed cutting



Vattenriket helps conduct research into bladderwrack

Equipped with nets and waders pupils from Rönnow School in Åhus took water temperatures and pH values at Revhaken and picked fronds of bladderwrack to help researchers map changes in the health of the Baltic Sea.

The Seaweed Search, led by Lena Kautsky and Ellen Schagerström, two researchers at Stockholm University's Baltic Sea Centre, seeks to shed light on changes in seaweed ecosystems and how climate change might affect these.

Sam Peterson, a naturum Vattenriket nature educator, coordinated contacts between researchers, pupils and teachers at local

level. Pupils measured water temperatures and pH values, took water samples, recorded the number and frequency of species, identified and counted the seaweed's resident species and sent researchers seaweed samples for analysis.

The project gave pupils valuable insights into the research process, while they learned about the role seaweed forests play in marine ecosystems and their importance for the climate.

Community science research into the love life of bladderwrack

The Biosphere Office also took part in another of Lena's and Ellen's projects, the Algae Summer Study, with community science volunteers submitting reports from around the Baltic coastline. The Biosphere

Office took a close look at bladderwrack at Snickarhaken. The plant's reproductive organs contain clutches of olive-green spotted eggs and clouds of fluffy, orange sperm. By examining a cross-section it is possible to determine whether the plant is ready to reproduce.

Researchers hope that data from an extensive area collected over time will reveal the mechanisms that control seaweed reproduction and the effects of factors such as temperature and seasonal conditions.



Fun and games inaugurat

Canoeing, hand-netting, casting. Sausages, griddlecakes and pancakes. 'Fresh Air Fun' was the signal for fun and games galore in the new Ekenabben-Kvarnnäs nature reserve.

The amazing diversity of natural environments – grazed and managed seasonally flooded grasslands, oak groves, alder carrs, mixed broadleaf forest – make Ekenabben on the shores of Lake Hammarsjön one of our most popular visitor sites.

People have been enjoying this varied nature for many years. In the early 1900s there was a dance hall here and steamboat connections to Kristianstad. Today barbecue sites and picnic tables, a boardwalk with wheelchair access, a rest area for hikers on the SL6 section of the Skåne Trail and a fun 'Frog Hop' circuit for children make the area popular for walking, fishing, recreation and relaxation.

In December 2022 Ekenabben and Kvarnnäs were accorded the status of a municipal nature reserve. At the official inauguration on 2 June 2023 Leading Councillor Camilla Palm hung a symbolic nesting box, and nature conservation manager Pyret Oveesson led a walk through the area, before participants enjoyed a spring picnic.

A day filled with activities

On 3 June the Municipality of Kristianstad,

Biosphere Office and local associations hosted an afternoon of outdoor fun and games. While the Culture & Leisure Department served boiled coffee in the background, activities ranged from identifying animal droppings to making paracord bracelets together with local scouts, kayaking with Kristianstad Canoe Club, birdwatching with North-East Skåne Ornithologists, negotiating the Swedish Outdoor Association's obstacle course or playing 'cone darts'.

There was hand-netting in the lake with naturum Vattenriket, flower walks and insect hunts with the Swedish Society for Nature Conservation, fly-casting with Peshku Angling Club, orienteering challenges with PAN Kristianstad, tug-of-war games, tent-pitching and obstacle courses with Fritidsbanken, and a chance to learn all about Lillö Castle from the Friends of Vattenriket.



e Ekenabben



Helping hands for hunters of the night

Ten years ago bats flitted busily around the old farm. Today they are fewer in number. As part of the Bats in Vattenriket project, biosphere office ecologist Dan Gerell shares tips on how to lend bats a helping hand.

Christina Nyström and Erik Jönsson seized the chance to learn more about bats and how to help them feel at home, two key aspects of this local nature conservation initiative, which also includes field trips and the inventorying and marking of ancient trees.

First, Dan assessed the suitability of the habitat for bats around the farm, which dates from the 1800s. Old buildings and plenty of trees to provide homes, a dung heap that retains the heat and a small pond are all positive indicators.

Today it is hard for bats to find a place to roost. Bat boxes are one solution. Christina and Erik were given a bat box made of wood wool cement board (WWCB) and instructions on how to build their own bat boxes.

Food, homes and water

As well as somewhere to live, bats need access to food. They feed on insects that live among flowering plants, bushes and trees, so Dan advised sowing wildflower seeds and leaving dandelions to blossom.

Bats navigate by sonar, emitting high-frequency soundwaves from their open mouths and listening to the echo to deter-

mine the size of their prey. Dan concluded his visit with a detector in his hand. Initially little was picked up, but suddenly the bats could be both seen and heard clearly.

At naturum Vattenriket children were able to make their own bat boxes as part of the wider initiative to inspire young and old alike to learn more about these stealthy hunters of the night.



Rewetting helps save the climate

Rewetting peatland helps reduce CO₂ emissions. In 2023 the Biosphere Office embarked on its first wetlands project specifically aimed at tackling climate change. Eight ditches were plugged on Fjällmossen to restore 2.5 hectares of wetland.

Drained peatlands emit large quantities of carbon dioxide, so restoring them can have a positive climate effect. Today two thirds of the original wetlands in the municipality of Kristianstad are used for agriculture or forestry. The carbon dioxide emitted from these peatlands amounts to more than 20 % of all greenhouse gas emissions in the municipality.

Fifty years ago peat was cut and ditches were dug on the fringes of Fjällmossen to drain the land for cultivation. By the 1970s fields that had been drained were no longer financially viable as agricultural land. The ditches remained, however, so the bog and its surroundings continued to dry out.

Drainage ditches expose peat to a process of oxidation and degradation that releases carbon dioxide into the atmosphere.

Raising the water level traps carbon in the ground, which reduces these CO₂ emissions.

Alongside its climatic benefits, rewetting has a positive effect on biodiversity and also evens out the flow in watercourses lower down in the system.

In 2023, using government LONA funds for local nature conservation initiatives, the Biosphere Office carried out its first climate-oriented wetlands project, plugging eight ditches on Fjällmossen to restore 2.5 hectares of wetland. Half of the land is in the Fjällmossen national nature reserve and half is privately owned.

The Biosphere Office collates and spreads knowledge about rewetting, which is a relatively new and still-evolving climate

mitigation measure. Through lectures, field trips and social media we share insights in order to inspire and motivate researchers, students, landowners and those who work with wetlands, as well as the general public.



Restored water levels
on Fjällmossen



Young ideas for future sustainability

Energy, enthusiasm and new knowledge. The Minett Youth Forum gave participants a chance to explore a biosphere reserve and present Luxembourg's Environment Minister with a proposal for an information campaign.

For five days in July representatives from biosphere reserves in Germany, France, Poland, Luxembourg and Sweden discussed how people can live in harmony with nature – a key issue facing all 748 biosphere reserves worldwide.

EU funding from the Erasmus+ programme enabled four young participants from Kristianstads Vattenrike to attend and return home full of energy, enthusiasm

and new knowledge.

Since the closure of Minett's open-cast mines, the area has become a biological hotspot and a popular nature reserve that is home to many rare plants and insects.

The Youth Forum was tasked with designing a campaign to urge visitors to show care and concern for the natural surroundings. Ideas and prototypes developed in

workshops and through storytelling were presented in the form of a campaign proposal to Luxembourg's Environment Minister, Joëlle Wellfring, on the final day of the forum.



17 PARTNERSHIPS FOR THE GOALS



Innovative solutions in challenging conditions

A floating excavator, a mower on caterpillar tracks and a lichen rake – just three of the machines tested by Vattenriket's nature conservation coordinator, Pyret Oveesson, during the year.

As part of the biosphere reserve's mission to act as a testing ground for innovative ideas that support sustainable development within nature conservation, several new methods and machines were put through their paces in 2023.

At Iternäset a Big Foot floating excavator cleared seasonally flooded grasslands from the encroaching reeds. These grasslands are difficult to manage, so Pyret also tested a small three-in-one machine on rubber tracks that cuts, collects and removes the grass in a single action.

On the Mosslanda natura 2000 site spruce, northern red oak and larch were growing unchecked. As these trees are not part of the area's conservation plan, they were felled. Pyret then experimented with sowing rye and releasing cows to graze. It was a success. The rye suppres-

sed weeds and acted as a magnet for the cows.

Exposed sandy patches are key to the survival of many rare species in the sandy grasslands. At Nyehusen, sand pinks, wild thyme, umbellate wintergreen and other sensitive species were being overrun by lichen. Pyret collaborated with a contractor to devise a solution that removed the lichen with a side delivery rake on a self-propelled mower.



15 LIFE ON LAND



The year in review



Naturum joins EU project for sustainable coastal activities

In the spring naturum Vattenriket joined the SeaMan knowledge exchange project to develop sustainable coastal activities and experiences in the South Baltic region. Lead partner is the EU office in Elblag, north-eastern Poland. Online and physical meetings in spring and summer enabled participants to learn from and be inspired by one another.

During a two-day visit from SeaMan's international partners the naturum demonstrated its own discovery-based approach for understanding Baltic Sea ecosystems, using pedagogic tools such as the Baltic Sea Compass and Baltic Sea Biosphere Classroom.

The EU Office Skåne Nordost and naturum also visited Elblag, which lies in coastal wetlands with much the same mix of natural resources and challenges as Kristianstad. The Grupa Wodna (Water Group) arranges water-themed events, courses and summer camps for young people in Elblag.



Film and folder to celebrate Open Day at Lillö Castle

When the Friends of Vattenriket opened up Lillö Castle on the first weekend in May, visitors were welcomed with a new folder and a film that brought the medieval castle to life. This popular visitor site halfway along the Linnérundan Trail and close to the city centre welcomes 50,000 visitors a year. Many who stop here for a picnic borrow a key from naturum Vattenriket to take a look inside. Others come on Sundays during the summer, when the Friends are on site to make sure the castle is open.

Added attractions for summer 2023 included a short animated film showing Lillö in its heyday and a new folder recounting the fascinating history of the castle. There were also new handrails for the stairways and new signage, lighting and sound effects for the Life at Lillö exhibition – improvements that have been made possible thanks to generous support from the Friends of Vattenriket.



A new nature play park on Skåne Trail SL6 subtrail

In June Lena Ohlson, chair of the Culture & Leisure Committee, opened a natural play park (Skåneleken) on the Skåne Trail SL6 subtrail in Åhus. First to use the facilities were children from Jollen Preschool who climbed, clambered and balanced on the nature-based structures to learn about biodiversity in the sandy grasslands.

An adjacent patch of open sand, a fauna depot and a thyme lawn provide valuable habitats for wild bees and insects. Biosphere office ecologist Dan Gerell helped the children drill holes in logs and explained how insects use these to find food, build nests and lay their eggs.

The play park, a fun and educational addition to the subtrail for families with children, schools and local residents, is a collaborative venture between the Culture & Leisure and Public Works Departments, the Land Development Unit and the Biosphere Office. It has been funded by Region Skåne.



Four new focus reports. One on insects in sandy grasslands

Vattenriket's commitment to conserving the biodiversity of our local dry sandy grasslands stretches back many years. One such area is Horna Sandar close to Åhus, where sporadic, mild disturbances of the sandy surfaces are essential to conserve the site's unique natural values.

Since Horna Sandar nature reserve was created in 2013 various measures have been taken to increase the expanse of open sand. Now a focus report and inventory of the area's insect fauna confirms that a regime of harrowing, ploughing, digging and burning the sands has led to the desired outcome.

Other focus reports in 2023 provided updates on pollinators in wildflower meadows and the edges of fields, bats in Kristianstad Vattenrike and the potential of wetlands to mitigate brownification.

The year in review

Learning sites for nature-based solutions in the Baltic

In the summer of 2023 the Biosphere for Baltic network received 4.5 million euros from the EU for its Supported by Nature project. Kristianstads Vattenrike is one of nine biosphere reserves working with nature-based solutions to restore the health of the Baltic Sea.

The long-term objective is to develop new knowledge to enable nature-based solutions to become an intrinsic aspect of land and seascape management practices. The project will establish 13 so-called learning sites to focus on multifunctional wetlands, coastal water habitats and watercourse restoration.

Kristianstads Vattenrike has been nominated as one of these learning sites and will implement various measures, one of which is climate-adapted spawning areas for sea trout. In addition, a consultant will be appointed to create a stone reef in the sea off the shore of Åhus. Stone reefs are important habitats for numerous marine animals and plants.



Photo: Johan Hammar

Malmö Symphony Orchestra visits Vattenriket

Naturum Vattenriket's autumn programme got off to a great start in August with a visit from Malmö Symphony Orchestra and children's TV entertainer Nassim Al Fakir.

An expectant 300-strong audience of children and adults, local preschoolers and the general public, flocked to the 'nest' outside the entrance to the naturum to sing along and clap to the music in the free Teddy Bear's Concert. Guided by the irrepressible Nassim Al Fakir, a popular broadcaster, musician and actor, they also learned to recognise the sound of the tuba, French horn, trombone and other brass and percussion instruments in the orchestra.

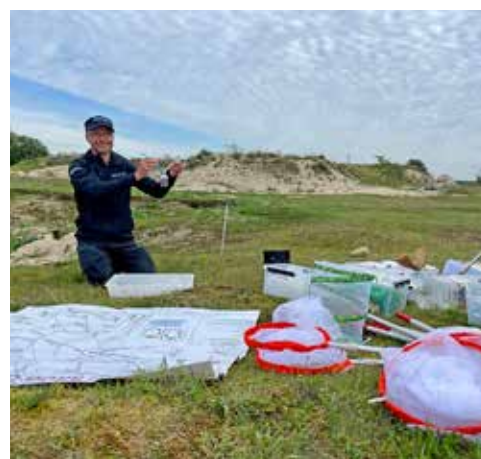
In addition to rapturous applause from the audience Nassim also received an 'I love Vattenriket' T-shirt from naturum as a thank-you for his part in the enjoyable concert.



Biosphere classroom reveals the biodiversity of sandy soils

Sandy, dry and windswept. At first sight Sannarna may seem barren and have little to offer. In summer, however, visitors are met with the fragrance of sand pinks and the vivid colours of viper's bugloss. Wild bees and butterflies flit from flower to flower and the ground teems with beetles. A new biosphere classroom opened at Sannarna in 2023, with equipment to inspire school classes to examine and explore the many flowering plants and pollinating insects.

Naturum Vattenriket's biosphere classrooms make it easier for schools, scout groups, etc. to explore Kristianstads Vattenrike on their own. Materials for field studies for each of the biosphere classrooms are available free of charge from naturum Vattenriket. Other biosphere classrooms at Kanalhuset in Kristianstad and Vramsån at Gärds Köpinge focus on life in freshwater habitats, while the one at Äspet in Åhus inspires visitors to explore coastal ecosystems.



Sweden's biosphere municipalities meet in Vattenriket

'Make peace with nature' was the message from Lena Sommestad, chair of the Swedish National Commission for UNESCO, when politicians and administrators from Sweden's biosphere reserves met in Kristianstad in September to discuss the role municipalities play in biosphere reserve activities.

One challenge municipalities face is how best to create a sustainable society. The conference made clear that biosphere reserves are part of the solution.

Camilla Palm, chair of the Municipal Executive Committee, expressed pride in what has already been achieved in Kristianstads Vattenrike. By developing and sharing good examples and by leading the way in nature-based solutions, biosphere reserves can help to foster the changes in attitude that are needed.





Inspiration for international researchers

In October a group of post-doctoral researchers from a number of academic institutions in Europe visited Kristianstads Vattenrike. For group coordinator Katja Malmberg biosphere reserves provide useful case studies. Here researchers can find interesting ideas to discuss and explore interdisciplinary themes as part of a specialised management training course that focuses on sustainability and leadership in academic contexts.

Biosphere reserve coordinator Carina Wettemark explained the background to Vattenriket's mission, in which research has a key role to play. She and her colleagues gave examples of the work done to identify societal challenges and how solutions are underpinned by research. It is hoped the visit will lead to new collaborations on climate change, biodiversity conservation and sustainable agricultural practices.



Vattenriket receives Aktion Skåne Environmental Prize

Flowers, a diploma and 'bubbly'. That was how the Aktion Skåne Foundation chose to recognise the decades of dedication and hard work behind the creation of Kristianstads Vattenrike Biosphere Reserve and the role it plays in promoting positive and sustainable development. The prize was officially awarded to Sven-Erik Magnusson, architect of the Vattenriket concept, and Carina Wettemark of the Biosphere Office.

Sven-Erik told of how Vattenriket came to be, of its future and of how honoured he felt for his efforts to be acknowledged in this way. Carina said the award was a powerful affirmation of appreciation for the work done by the biosphere reserve for people and nature.

The Aktion Skåne Foundation seeks to support and conserve the agricultural landscape of Skåne by rewarding important and valuable contributions to this endeavour.



Water Workshops meet the thirst for knowledge

A series of water workshops arranged by the Biosphere Office and local agricultural consultants focused on how making wise use of water helps prepare for future challenges and sustain agriculture in an era of climate change.

The first meeting took place in November in Listerlandet, where participants witnessed for themselves the many natural values of wetlands (irrigation, water purification, biodiversity, etc.) and learned from the experiences of local farmers. The second meeting focused on watering from below, with visits to Åhus Grönt and Färlövs-gården Farm, where HIR Skåne water consultant Peter Malm talked about controlling nutrient loss in drainage.

Collaboration and dialogue are two key principles, both of the mission with which UNESCO has tasked Vattenriket and in work towards climate neutrality in Kristianstad by 2030.

Kristianstads Vattenrike Biosphere Reserve
– benefiting nature and people

Read more on our homepage, where you will also find contact details
vattenriket.kristianstad.se