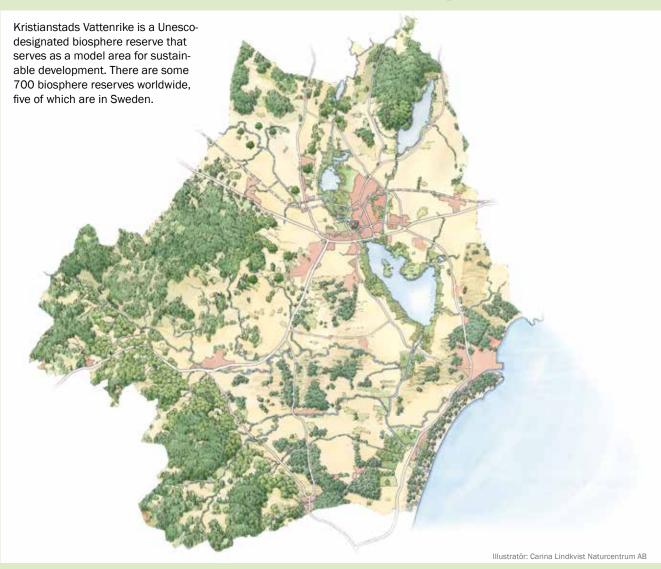
Biosphere Reserve Kristianstads Vattenrike[®]

ACTIVITIES 2016

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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 Lake Araslövssjön and Lake 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. The reserve is rich in diversity and a refuge for many threatened species. Here, in less than two tenths of one percent of the area of Sweden, live no less than 20% of Sweden's red-listed species!

Kristianstad Municipality is committed to conserving Vattenriket as a haven for nature and people. The Biosphere Office's projects give nature a helping hand and people an opportunity to use and enjoy natural values without compromising them. To do this effectively the Biosphere Office conducts research projects and shares new insights. We make inventories, publish reports, work with researchers and host conferences. We collaborate with 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 climate change and other challenges.

Enabling people to experience nature inspires them to help conserve it. So we have created 21 visitor sites with observation towers, marked trails and outdoor museums. The jewel in our crown is the naturum Vattenriket visitor centre with exhibitions, meeting rooms and a restaurant. Here we explain how the biosphere reserve works and encourage visitors to explore the area for themselves.

Our activities have led to many positive results. At the Pulken visitor site migrating cranes, visitors and farmers coexist in harmony. Catfish have been successfully reintroduced into the river and otters fish close to the naturum. Today the wetlands are no longer seen as a problem, but – thanks to a new-found respect for natural values – as a valuable resource.

2016 – The year in review

A year passes so quickly. Especially when so much is happening. Formal recognitions, challenges, experiences and meetings have meant progress on many levels for Kristianstads Vattenrike.

In March 2016 the World Congress of Biosphere Reserves in Peru gave full approval for our achievements during our first 10 years as a biosphere reserve. Such acknowledgement of the success of our efforts is both welcome encouragement and a fresh challenge to continue to work towards sustainable development that benefits nature and people. The biosphere concept is unique – a neutral arena for dialogue and collaboration that aims to conserve, support and develop the area's natural values.

Last year Kristianstad's Municipal Executive Committee approved a new five-year plan for our activities with a firm focus on the benefits provided by Vattenriket's ecosystem services. The biosphere reserve is blessed with numerous ecosystem services, but they need to be safeguarded and developed for the future. They are our insurance policy for coping with climate change and rising water levels. Healthy ecosystems with strong ecosystem services are essential for sustainable development.

Our mission is to serve as a model area for sustainable development and an inspiration to others. In the autumn I was in Holland to explain about how we use dialogue and collaboration to achieve positive long-term results. Last year we also visited other naturum visitor centres in Norway and Sweden to exchange experiences and seek new ideas. It was a year filled with local, national and international meetings. Every day, in addition to contacts with representatives for other biosphere reserves, we meet school pupils, teachers, tourists, landowners, researchers, associations, entrepreneurs, biosphere camp kids, biosphere ambassadors, politicians and civil servants.

Meetings are important. That's where things happen. Words become actions. Knowledge and experiences are exchanged and transformed into the commitments that are crucial for success when working together to promote sustainable development in Kristianstads Vattenrike Biosphere Reserve.

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Carina Wettemark Manager, Department for Biosphere Activities and Sustainable Development Coordinator, Kristianstads Vattenrike Biosphere Reserve



	25 rare species discovered		
2016 in figures	at Furuboda 8,600 cranes at Pulken on one single day 1 Prime Minister comes to visit	23 hectares of new wetlands	1,681 pupils take part in naturum's educational activities
480 scheduled naturum activities attract 17,497 participants 14,630 visitors to see cranes at Pulken		104,040 visitors to the naturum visitor centre	31 new biosphere ambassadors
		31,000,000 kronor generated by tourist income from visitors to naturum	25 species of fish inventoried in Hanöbukten Bay
	42,333 visitors walk the Linnérundan Trail		

KRISTIANSTADS VATTENRIKE BIOSPHERE RESERVE | ACTIVITIES 2016



Researchers divide ecosystem services into four categories. Kristianstads Vattenrike is at the heart of a species-rich landscape with many cultural,

Our local nature provides many ed

We are totally dependent on nature's gifts: fresh air to breathe, good drinking water, food, pleasant surroundings. Healthy ecosystems that sustain a rich diversity of species are the basis for a multitude of ecosystem services.

Vattenriket's diverse and species-rich landscapes abound in ecosystem services and Biosphere Office work to conserve and develop these services has repeatedly attracted the attention of researchers.

Ten years ago Vattenriket received a favourable mention in the Millennium Ecosystem Assessment, a ground-breaking UN project involving thousands of researchers in almost 100 countries.

Lisen Schultz, a researcher at the Stockholm Resilience Centre, says Vattenriket is interesting for global researchers into ecosystem services, because the prime movers here were quick to make the link between nature conservation and the benefits this has for society.

In 2016 the Swedish government declared that the value of ecosystem services must be taken into account in all important social decisions. The Swedish EPA has financed research into how this is to be done. Elin Enfors Kautsky, a researcher at the Stockholm Resilience Centre, cites Kristianstad as a hot spot for all types of ecosystem services. She says that much can be learnt from our unique local insights into landscape management that benefit the entire spectrum of ecosystem services – a diverse cross-section of nature's gifts.

Vattenriket has a long tradition of recognising natural values. Biosphere Coordinator Carina Wettemark is heartened by the growing understanding of the life-giving importance of nature's benefits and, in its strategic road map for municipal activities up to 2020, Kristianstad Municipality has given ecosystem services pride of place.



regulating, provisioning and supporting ecosystem services.

cosystem services

Measures to support local ecosystem services:

- New wetlands purify the water and create more habitats.
- Free migration routes and new spawning gravel improve freshwater habitats for fish and mussels.
- Biosphere ambassadors remove moss and uproot young pines to keep species-rich sandy grasslands open.
- Last year's grass is burned to promote the growth of plants that can't thrive in thick vegetation.
- A new bee hotel for wild bees at the naturum visitor centre.
- Field margins and raised strips filled with wild flowers lend a helping hand to pollinators and ground beetles.
- Work to produce and spread new knowledge through test-fishing, reports, conferences and outdoor museums.
- Pedagogic activities and nature interpretation activities at naturum Vattenriket.
- Visitor sites and information make it easier to canoe, explore and birdwatch.



Diversity trails – knowledge and adventure

It's so good to bite into a tasty apple. Apples are just one result of the many benefits that nature provides totally free of charge! Last summer's "Diversity Trails" explained how it all works.

On one of the summer's finest days, nature interpreter Josefin Svensson guided her group outside the naturum visitor centre. Chicory, viper's bugloss and lady's bedstraw were in flower. A bumble-bee buzzed past – one of nature's tiny miracles, flying from bloom to bloom, collecting pollen and nectar while pollinating the flowers.

Different plants adopt different strategies for attracting pollinators. The irresistible fragrance of honeysuckle and jasmine entices insects that spread the flowers' pollen. Dandelions attract with their radiant colour. Tiny stripes on the petals of violets show the way to the centre of the flower.

Plants must be pollinated to produce seeds and fruits. Pollination is one of the planet's most important ecosystem services and much of this essential work is carried out by insects.

If one species of pollinator disappears, others can shoulder the responsibility. Species diversity is another ecosystem service – one that is crucial for a resilient natural environment.

Sometimes nature needs a helping hand. Outside the naturum, close to some sandy mounds and a bee hotel that provide a home for their hard-working guests, Josefin shares advice on how to help wild bees and bumble bees by not being too fussy about keeping a perfectly manicured garden and maybe making your own bee hotels from reeds.

Only after pollination can flowers and fruits begin to grow. Apples are a popular food for many species. When deer and birds eat them,

they spread the pips so that new trees can take root and grow. So, next time you bite into an apple, remember to thank the bees!



Utter delight – otters in sight

There was widespread delight early in 2016 at the sight of a female otter and her two pups swimming, hunting and playing close to the naturum visitor centre.

UOtters eat small fish and it is presumably the abundance of common bleak around the visitor centre that attracts the otters. An adult otter needs to eat between one and one-and-a-half kilos of fish a day.

Otters were common along the Swedish coast and in lakes and rivers until the early 1950s. However, environmental toxins and hunting, together with widespread ditching and drainage in the wetlands and rivers left few places for them to seek refuge.

In the 1990s the trend was reversed and the otter began to make a comeback. Today Sweden has an estimated population of 2,000-2,700 otters, although they remain a rarity in the south of the country.

Otters returned to the River Helge å in 2006. For a long time the only evidence was tracks in the snow. A handful of lucky people caught a glimpse of the animals at Torsebro in the winter of 2011 and on the ice by the naturum a couple of years later.

Last winter, however, a mother and her pups could be seen outside the naturum almost every day from November until the end of winter. In February they were joined by a male. The naturum pond is well stocked with fish, and the otters ate their fill, apparently unruffled by the watching crowds.

We don't feed the otters. They find their own way here, attracted by the plentiful supply of fish. It's a good indicator of the water quality in the river. There are several ongoing local projects to clean up the water in the River Helge å and the Baltic Sea. Cleaner water and more wetlands are good for the otters and for us humans. And being able to see otters in the heart of the city is a fantastic ecosystem service!



A group of nature photographers gathered at the naturum in the early dawn light to capture the otters on film.



Tourists make the cash tills ring

Visitors to naturum Vattenriket spent 31 million kronor (3.2 million euros) on transport, accommodation, food and shopping in the region last year.

"Nature tourism is one of three areas that have great development potential for our local economy. The analysis shows that the naturum Vattenriket is an important magnet for tourists," says Eva Berglund, chief tourist strategist with Kristianstad Municipality.

HUI Research presented an economic analysis of local tourism based on 1,500 interviews conducted at the naturum visitor centre between April and October 2016. The survey showed that no less than two thirds of visitors came from other parts of Sweden or abroad. Those who cited Kristianstads Vattenrike as the main reason for their visit spent a total of 31 million kronor during their stay.

One key factor may be the many positive comments that visitors make on TripAdvisor. Anyone looking for "Nature and wildlife areas" in Skåne will find naturum Vattenriket in first place.

Many local residents return time and time again to take part in naturum activities. One third of those interviewed had their home in Kristianstad.

Some comments from TripAdvisor:

"Wonderful place"

A very pleasant place to acquaint yourself with Kristianstad's attractive natural surroundings. There are photos and information leaflets, maps of cycle/hiking trails and much more besides. Definitely worth a visit. A few months ago I saw a kingfisher perching just



outside the windows. Magical! And there's a café, too, on the top floor.

"Great views of the city and the wetlands"

A fantastic place to visit. A very informative and wellpresented exhibition. Outstanding views of the city. Easy to find, just a short walk from the city centre and car park.

"Something for all the family"

Very child-friendly, good parking, close to the city centre and with good food! A trip in Opteryx is a must for everyone in the family!



Open sandy grasslands benefit rare species

Work to conserve plants on the sandy grasslands at Nyehusen took a big step forward in 2016.

In spring 2016 excavators removed roots, branches and pine needles from areas at Nyehusen cleared of mountain pine. The machines then prepared the ground to give the unique flora and fauna of the sandy grasslands a helping hand to recolonise the open, warm sandy soils on which they are dependent.

The calcareous grasslands around Åhus are home to many rare species. No less than 27 of the threatened species that live in these sandy soils are found nowhere else!

An inventory shows that many species have responded rapidly to the improvement in their habitat. Flowering plants and insects increase in number when the sun is once again able to shine directly on the sandy soils. And local residents and visitors now have new areas to stroll in and enjoy.

Last summer an inventory of insects was made in more sandy grasslands in Nyehusen and Furuboda. The autumn meeting of biosphere ambassadors was held in Nyehusen and for the third year in succession the ambassadors worked to help keep the sandy soils open. With gloves and rakes, under the expert supervision of the Vattenriket ecologist Karin Hernborg, they removed lichens to help sensitive sand-loving plants to spread.





New exhibition at renovated Hercules site

In bright sunshine, with blackcap and nightingale providing a delightful spring concert, the new exhibition at Hercules was inaugurated with an early morning picnic on May 12.

Nature photographer Patrik Olofsson enthralled those present with a talk about the special survival strategy of the cuckoo. Most people are aware that cuckoos lay their eggs in other birds' nests, but fewer know that the eggs then develop the same colour and pattern as those of the host bird.

After Patrik's talk it was time for coffee and sandwiches – and a good look at the outdoor museum's new exhibition.

This is a historical environment that bears signs of human activity. For generations haymaking here has provided winter feed for the animals while also creating outstanding natural values.

Hercules derives its name from the brick factory that once stood here. When the factory closed in the 1960s, the clay pits gradually filled with water and began to teem with life. Dragonflies and black terns are just two of numerous species attracted by the ponds. The observation tower and boardwalks have been renovated by staff from Kristianstad's Department of Public Works, and the Biosphere Office has produced a new exhibition. Illustrations by Carl Christian Tofte, Tina Lundgren and Carina Lindkvist bear witness to the rich mosaic of habitats and species in the surroundings.

A stork, a black tern and a glistening downy emerald dragonfly created by wood carver Vesa Jussila give life to the tower. Audio guides narrated by freelance journalist Per-Erik Tell add a further dimension.

The renovated Hercules site attracted many visitors in the summer. The Swedish Society for Nature Conservation and the Studiefrämjandet Adult Education Association hosted "Flora Expeditions", and members of North-East Skåne Ornithologists' Club informed visitors about the local birdlife.

Biosphere ambassadors also visited the new exhibition, which has been sponsored by the Friends of Vattenriket. And during the summer naturum Vattenriket organised cycle tours through the surrounding countryside.

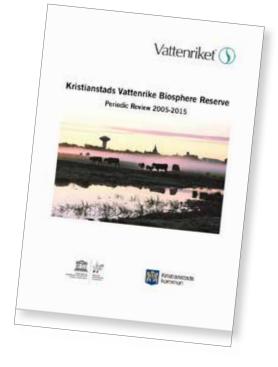
Unesco praises Vattenriket's work

Kristianstads Vattenrike was praised by Unesco after the biosphere reserve's first 10-year evaluation, and the Municipality of Kristianstad approved a new 5-year action plan.

The 10-year biosphere status evaluation submitted to Unesco at the end of 2015 was widely praised at the World Congress in Lima, Peru, in spring 2016, and Vattenriket was acknowledged as a good example for the world's 700 or so biosphere reserves.

A new 5-year biosphere reserve action plan was proposed during the year, to run parallel with Kristianstad Municipality's strategic road map for the period up to 2020. The plan was submitted to the Vattenriket Consultation Group and the County Administrative Board before being officially adopted by Kristianstad Municipality in November.

According to the plan, work with good examples and projects to conserve, develop and support natural values will continue to take place through dialogue and in collaboration with various stakeholders. Producing new information is deemed important, as is the need to enable people to easily find their way into and around the area.



Warm welcome for much travelled walkers

56 Portuguese, 43 Czechs and two Swedes. Day 3 of the Eurorando Hiking Week saw the Linnérundan Trail teeming with international participants.

The trail, close to the city centre, was one of four local paths chosen for the Eurorando event.

Rose hips beside the path glistened red against the lush green surroundings as our biosphere ambassadors welcomed the muchtravelled guests in bright September sunshine. In their role as hosts, the ambassadors showed walkers the route, opened the Lillöborgen exhibition for them and assisted in every way they could.

Some Czech hikers lingered by the ruins of Lillö to examine the model that showed the castle in its heyday. As biosphere ambassador Aina Bjerstedt pointed out, today only the lower parts of the wall remain intact.

During the year the Public Works Department continued its work of making the Linnérundan Trail wheelchair- and pushchair friendly – and more popular than ever. The statistics show that more than 42,000 visitors passed the Kanalhuset visitor site last year – a steep increase from 28,000 just four years ago.



The year in review



Canadian TV team visits Vattenriket

Ten-year-old Lili-Rose and her father, Vincent, spent a busy winter's day in Kristianstads Vattenrike. They were here for a Canadian TV programme that takes families off the beaten track to live in an ecological B&B and explore the surroundings in a sustainable way. In addition to visiting the naturum, where the highlight was a trip in the Opteryx, the family took part in an Eagle Safari with Landskapet JO. They journeyed in a rubber dinghy along the River Helge å towards Lake Hammarsjön in search of white-tailed eagles. Thick mist made it a magical experience. Reeds, willows and bare trees lined the mist-shrouded river banks. A couple of crows and a flock of goosanders flew past – but there was no sign of an eagle. Then, happily, after a break for coffee and buns, when the visitors had put away their binoculars and begun to doubt they would ever see one of huge birds, a large dark silhouette appeared in a tree a short distance away across the water.



Cranes galore and access for everyone

The 2016 crane season was a bumper one in terms of both cranes and visitors. The previous record of 8,600 cranes at Pulken was matched on 28 March – the same date as it was set in 2015! Ornithologists made the count at the height of the migration, when the birds are fed at Pulken to prevent them from plundering the newly sown fields. Vattenriket staff were on hand at the Pulken outdoor museum during the day to guide the thousands of visitors and let them enjoy a closer view of the birds through a spotting scope. In the evening the Ornithologists' Club took over. One day every year naturum Vattenriket extends a special welcome to elderly visitors and those in wheelchairs, reserving space for them in the observation tower. Spotting scopes adapted for users of wheelchairs, rollators, etc. make sure that they, too, get a good close-up look at the birds.



Tree screen improves aquatic habitat

One April weekend staff from the Biosphere Office and volunteers from Marcello's Farm planted 300 saplings along Rambrobäcken, a tributary to the River Vramsån, to improve conditions for plants and animals living in and beside the water. Years of straightening and cleaning the stream have decimated the natural vegetation along the banks. Last year's inventory of the lower reaches of Vramsån and its tributaries revealed a lack of shading vegetation on several stretches of Rambrobäcken, including one on land owned by Marcello's Farm. The Biosphere Office and the farm decided to plant alder and goat willow saplings – species that already line the banks of the stream elsewhere – to shade the water from the hot summer sun and provide food in the form of dead leaves in autumn for the many organisms in the water. Tree-lined banks provide habitats and dispersal routes for many plants and animals in the agricultural landscape.



A hotel for Vattenriket's wild bees

Think of bees and you probably think of honey bees in a hive. However, most species of bee are wild and live solitary existences. Sweden has as many bee species as it has species of nesting birds – 245 in all! As today's landscapes offer little refuge for wild bees, the Biosphere Office has lent a helping hand by erecting a bee hotel close to the naturum visitor centre. Different "rooms" with straw, reeds, pine needles, cones and twigs provide accommodation for many different species. Nearby, oblong-shaped sandy mounds give ground bees, too, an opportunity to set up home. The bee hotel is adjacent to one of the Diversity Trails, and in spring and summer visitors to the naturum can take part in guided tours along the trail. Vattenriket ecologists are also helping bees in many other ways in different areas in the biosphere reserve, not least in the sandy soils around Åhus.

The year in review

Events for schools and summer holidays

The naturum works with schools and children in many ways to spread knowledge about local natural values and conservation work, and to inspire teachers to use the biosphere reserve as a classroom. The summer Biosphere Camp is a popular event for many 10 to 13-year-olds. The 30 or so participants in Biosphere Camp 2016 explored the diverse habitats in Kristianstads Vattenrike on foot and by boat to discover many of the fascinating insects, fish, birds and plants that have found a home here. They ring-marked birds, made spiders out of felt, painted water colours, helped raise tadpoles and butterflies, built bee hotels, made elderflower cordial and met interesting people, such as a local farmer and a fisherman, who use the area's natural values in different ways. There were opportunities, too, to net insects, go fishing and canoeing – as well as time to simply chill out.



Secondary school pupils explore the river

With waders, aquascopes and nets, pupils from Österäng Secondary School studied aquatic life in the River Vramsån under the supervision of Vattenriket's nature educator, Sam Peterson. The results gave a good indication of the river's state of health and introduced pupils to how ecologists work. Teaching youngsters how to familiarise themselves with their local environment, interpret nature and turn knowledge into action are the main aims of Vattenriket's work with Kristianstad's schools. Sam has worked with primary school children for several years but collaboration with older pupils is a more recent development. Pupils of all ages love to net and study bugs, put on waders and use an aquascope. And, thanks to a generous donation from the Friends of Vattenriket, more school classes than ever before had the opportunity to explore Kristianstads Vattenrike in 2016.

Comfortable homes for kingfishers

Kingfishers prefer to nest in holes dug deep into high riverbanks from where they can safely fish for food. The River Vramsån has plenty of the kingfishers' favourite fish, but few suitable places where the birds can dig a nest. In 2016, however, long cement tunnels with a nest box at the end were strategically placed at sites along the riverbanks and covered with sand to leave only the entrance hole visible. The cost of the tunnels was met by funds from a WWF project that aims to help the river's threatened species. Another of the River Vramsån's endemic species is the beautiful river water-crowfoot, a rare aquatic plant that is found here but nowhere else in the Nordic countries. In 2016 the Biosphere Office took several initiatives to spread the plant to other suitable sites in the river.





Funding to create new wetlands

The Biosphere Office received a further 3.8 million kronor (almost 400,000 euros) in state support for local water conservation (LOVA) projects to improve water quality in the Helge å and Skräbeån rivers and Hanöbukten Bay. The money has been earmarked for the creation of 35 hectares of new wetlands, including a feasibility study for wetlands in the Lake Oppmannasjön drainage basin. The project will commence this year and is scheduled for completion by October 2018. The new wetlands will reduce nutrient run-off into the sea. More wetlands also mean greater variation in the landscape and promote biological diversity. The County Administrative Board motivates its decision by pointing to Kristianstads Vattenrike's track record of success in previous and ongoing LOVA projects. Many wetlands have already been created, contributing to a welcome and significant reduction in waterborne nutrients in Hanöbukten Bay.



Året som gått



New exhibition at Äspet

Äspet is an eldorado for birds and birdwatchers. In summer the Department of Public Works erected new walls on the observation tower and added a long-awaited roof. A new exhibition with photographs by Patrik Olofsson and Linda Niklasson provides information about the many fascinating birds to be seen in the lagoon, on the beach and on and above the waves. The refurbished tower was inaugurated one delightful summer evening in conjunction with a talk by Patrik Olofsson about the rich birdlife at Äspet. The ducks and waders – wigeons, broad-billed sandpipers, ringed plovers and golden plovers – clearly exercise an irresistible fascination, as the talk not only attracted an audience of some 70 people, but also a few inquisitive cows!



Where does the iron come from?

The summer floods of 2007 left deposits of iron on the seasonally flooded grasslands along the River Helge å. Initially thought to come from the forests and peatlands in northern Skåne and Småland, these were ultimately traced to embankments from local farmlands. Pumps worked 24/7 during the floods, churning out iron sludge that discoloured the grass and made it unusable as hay. The discoloration of the seasonally flooded grasslands has continued for several years after the floods, presumably because iron sediments have accumulated in the earth. The Swedish EPA allocated 400,000 kronor (approx. 40,000 euros) to the Country Administrative Board to work with Kristianstads Vattenrike on a 2-year project to compile a report detailing what is known about the background to the problem, where it is present, the environmental impact and future scenarios based on anticipated increases in summer rainfall. It is hoped that much can be learned from Denmark where there have been similar reports of iron and aluminium leaching from embankments.

Publications 2016

Vattenriket i fokus (Vattenriket in Focus) is the Biosphere Office's series of booklets (ISSN 1653-9338), in which we publish reports and inventories commissioned by or conducted in collaboration with the Biosphere Office. The reports can be downloaded from www.vattenriket.kristianstad.se

2016:01 Kristianstads Vattenrike Biosphere Reserve: Activities 2015. Biosphere Office.

2016:02 Var finns tången och hur mår den? Inventering av blås- och sågtång i Hanöbukten inom Kristianstads kommun. Author: Lena Svensson.

2016:03 Förekomst av stormusslor i Vramsåns centrala biflöden. Author: Per Ingvarsson.

2016:04 Provfiske efter mal i Helge å 2015. Biosphere Office.

2016:05 Kristianstads Vattenrike Biosphere Reserve – Action Plan 2016-2020. Biosphere Office.

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Text, photos and production

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