



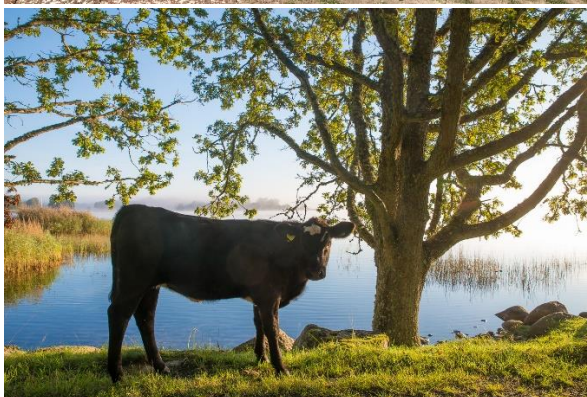
United Nations  
Educational, Scientific and  
Cultural Organization



BLEKINGE  
ARKIPELAG

# Blekinge Arkipelag 10 years as a biosphere reserve

Evaluation according to Unesco of the years 2011-2021



Havs  
och Vatten  
myndigheten

## Preface

Ten years has now passed since the Biosphere Reserve Blekinge Arkipelag was formed. Ten years of collaboration, enthusiasm, preservation and development. In the collaboration plan for the biosphere reserve signed by the former local county governor Gunvor Engström in 2011, the area is described as an area of outstanding potential. An area that can both tell a story and has an exciting future ahead.

The three municipalities of Karlshamn, Ronneby and Karlskrona, together with the Länsstyrelsen (the county's administrative board) in Blekinge have developed the area with a continuously growing commitment. Today, there are a lot of different projects and activities covering a wide business field. In recent years, the biospheric activities have mainly focused on the following five areas:

1. Sustainable hospitality industry
2. Keep the biosphere clean
3. Information, learning, and participation
4. Sustainable fishing
5. Sustainable agriculture and forestry

During the work with preservation and development, a large and increasing devotion has been shown from ambassadors, associations, and private individuals involved in the activity in different ways. Crucial factors in enthusing and creating a long-term sustainable business are the possibilities to firmly establish the concept, and sharing information and knowledge about the biosphere reserve. Furthermore, a committed corporate network has been built around the extensive "Archipelago route project" that has been implemented and is now developing rapidly. The inauguration of the route took place almost at the same time as the pandemic broke out, which strengthened the attention and value as nature activities became an important form of recreation during the pandemic.

When the biosphere reserve soon has been in operation for 10 years and it is time for the first evaluation, it is gratifying that the municipality of Sölvesborg has decided to apply for membership. With Sölvesborg as part of Blekinge Arkipelag, a largely cohesive area is created that connects to the closely located biosphere reserve Kristianstad Vattenrike.

From the board, I would like to extend a big and warm thank you to everyone who in various ways has contributed and is contributing to the continued development of the biosphere reserve - the principals, associations, private individuals, companies, visitors, and members. I hope that together we can continue to both preserve and develop the cultural and natural values that Blekinge, and specifically the biosphere reserve, offer. All together we can pool the efforts in the quest to take full advantage of all the history and future that Blekinge Arkipelag has to offer. Collectively we can develop in a sustainable way and become a role model for other areas.

In cooperation with our principals, the board has decided that Blekinge Arkipelag will continue to develop and create value for everyone who will come in contact with the area in one way or another. We see that the role of the biosphere reserve, if possible, has become even more important than in 2011 when it was formed. Therefore, in the near future we would like the business to further strengthen and to develop according to the perspectives and development directives that are important for both preservation and development.

The board of Biosfärområde Blekinge Arkipelag  
Chairman, Carl-Martin Lanér

## **TABLE OF CONTENTS**

PART I: OVERVIEW

PART II: EVALUATION

1. Biosphere Reserve
2. Significant changes in the biosphere reserve over the last ten years
3. Ecosystem services
4. The preservation function
5. The development function
6. The support function
7. Forms of Management administration procedures, facilitation and coordination of the biosphere reserve
8. Criteria and progress
9. Supporting documents
10. Addresses

Appendices

Appendix I: MABnets list of biosphere reserves

Appendix II: Promotion and communication materials

Appendix III: Statutes of the World Network of Biosphere Reserves (WNBR)



## EVALUATION OF THE BIOSPHERE RESERVE

### Blekinge Arkipelag

2011-2021

#### INTRODUCTION

At its twenty-eighth meeting, the UNESCO General Conference adopted Resolution 28 C/2.4, also the Statutes of the World Biosphere Reserve Network (*Statutory Framework of the World Network of Biosphere Reserves*). The statutes define the criteria for an area to be eligible for the designation biosphere reserve (Article 4). In addition, Article 9 stipulates that each biosphere reserve shall carry out an evaluation every ten years. The evaluation consists of a report from the actual organisation and is based on the criteria set out in Article 4. The evaluation shall be submitted by the National MAB Committee to the MAB Secretariat in Paris. Complete statutes can be found in Appendix III.

The subsequent form is intended to assist countries in conducting evaluations in accordance with Article 9 and to update the MAB Secretariat's data on the current biosphere reserve. The report should enable the MAB ICC (International Coordinating Council) to examine how each biosphere reserve meets the criteria set out in Article 4 of the Statutes and in particular its three functions: preservation, development and support. Note that the last part of the form (Criteria and progress) should have an indication of how the biosphere reserve meets all the criteria.

Unesco uses the information presented in the evaluation in several ways:

- (a) For review of the Biosphere Reserve by the *International Advisory Committee for Biosphere Reserves* and by the *Bureau of the MAB International Co-ordinating Council*;
- (b) For use in a global accessible information system, in particular for Unesco-MABnet and publications, to facilitate communication and interaction between interested biosphere reserves worldwide.

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

The form consists of three parts:

- Part I is an overview where the most important changes in the biosphere reserve during the evaluation period are summarized.
- Part II is more descriptive and detailed and refer to societal, physical, and biological characteristics as well as institutional aspects.
- Part III consists of two appendices (A): the first (A.1) is used to update the list of biosphere reserves on MABnet and the second is used to produce promotion and communication materials on the biosphere reserve (A.2).

The third appendix contains the statutes of the World Network of Biosphere Reserves (WNBR).

Provide as much quantitative information as possible and supporting documentation that complements the information provided, in particular:

- map/maps that clearly show the zoning (see in particular 2.3.1),
- legal documents for the different zones, where formal protection based on national legislation exists.

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

1. The signed original, letter of recommendation, zoning map and supporting documents. These are sent to the MAB Secretariat via Unesco's official channels, i.e. via the Swedish UNESCO Council and/or the national UNESCO delegation.

2. An electronic version (on floppy disc, CD or similar) of the evaluation and of the maps (in particular the zoning map). This can be sent directly to the MAB Secretariat.

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## PART I: OVERVIEW

a) **Name of the biosphere reserve:** Biosfärområde Blekinge Arkipelag (Biosphere Reserve Blekinge Archipelago)

b) **Country:** Sweden

c) **Year of appointment:** 2011

d) **Year of evaluation:** 2021

e) **Previous (possible) recommendation(s) from the MAB Global Board (MAB-ICC):**

No previous recommendations have been given, as no previous evaluations have been carried out.

f) **Indicate follow-up actions that have been completed. If applicable, justify why measures have not been completed/started.**

Follow-up has not been relevant, as no earlier evaluation has been carried out.

g) **Update on the implementation of measures/actions to achieve the goals of the biosphere reserve.**

- An organisation has been developed for the biosphere operation that includes both low level and government perspectives. Municipalities, Länsstyrelsen (the County administrative board), associations, companies, and private members all have their roles in the established organisation that collaborates for financing, creating initiatives, contributions, and communication.
- Strategic tools have been developed with five general and continuous focus areas for the business and ten more specific thematic areas that vary between different business periods. The five focus areas have been based on the Lima Action Plan, Agenda 2030 as well as various regional plans. Based on these strategic tools, projects and activities that aim to preserve, support, and develop processes have been implemented in the biosphere reserve.
- The accessibility to the biosphere reserve has increased physically through infrastructure projects that enable sustainable travel and discovery of Blekinge Arkipelag's natural and cultural values. The mental accessibility of the area has also increased thanks to a new map as well as digital products that show the way and tell about the landscape's environments and experiences.
- A specific way to communicate and spread information about what the biosphere activities include and aim for has emerged. It involves cooperation between the organisation's parties, arranged theme meetings, use of websites, newsletters and social media as well as annually trained ambassadors for Blekinge Arkipelag.

h) **A brief description of how the current evaluation was conducted.**

In the spring of 2019, an extra person was hired at the biosphere office to be able to gradually assume responsibility for parts of the ongoing operation. Hence, time was freed up for the evaluation work, which involved studies of what has been achieved in the biosphere reserve since the start of 2011, other evaluations carried out as well as a survey and conversations to get different stakeholders' feedback on the operation.

A dialogue has been held with the current principals and the municipality of Sölvesborg about an expansion of the biosphere reserve. Following the parties' agreement, the evaluation has also

included the coast and archipelago of Sölvesborg, something the board wishes to include in the project Blekinge Arkipelag. The evaluation has been discussed with the board of Blekinge Arkipelag and in the collaboration group for the principals. A first version has been sent out for evaluation and thereafter it has been accepted by each municipal board and approved by the municipal council.

**i) Area structure and spatial structure**

	Earlier report (nomination) 2011	Current situation, at evaluation 2021	Proposed changes with Sölvesborg municipality
Area for terrestrial core area(s)	5 800 ha	5 900 ha	7 400 ha
Area for terrestrial buffer zone(s)	16 000 ha	16 700 ha	20 900 ha
Area for terrestrial development area(s)	35 000 ha	34 400 ha	43 700 ha
Area for marine/limnic core area(s)	15 000 ha	29 200 ha	34 700 ha
Area for marine/limnic buffer zone(s)	31 000 ha	28 100 ha	30 800 ha
Area for marine/limnic development area(s)	110 000 ha	98 200 ha	122 000 ha

**j) Population of the biosphere reserve**

	Previous report (nomination) 2011	This report (evaluation) 2021
Core area(s) (permanent and seasonal)	Permanent: 219 Seasonal: + 37	Permanent: 178 Seasonal: + 59
Buffer zone(s) (permanent and seasonal)	Permanent: 22 077 Seasonal: + 7 598	Permanent: 20 369 Seasonal: + 8 103
Development area(s) (permanent and seasonal)	Permanent: 62 444 Seasonal: + 14 728	Permanent: 69 933 Seasonal: + 13 022

**k) Budget (main sources of funding, special capital funds) and international, regional, or national relevant projects/initiatives that have been implemented or planned.**

Budget in the previous report (nomination) 2008-2010	Current budget 2020-2021
1 384 500 kr	1 450 000 kr

- l) **International, regional, multilateral or bilateral frameworks for cooperation. If applicable, describe the biosphere reserve's contribution to achieve goals and develop mechanisms that contribute to the implementation of international, regional, bilateral or multilateral agreements, conventions, etc.**

**The UNESCO Biosphere Program *Man and the Biosphere (MAB)*** is an intergovernmental program aimed at scientifically improving the relationship between man and his living environment in a global perspective. The program started in 1971 and is an interdisciplinary research program where science and social sciences are combined.

**The Lima Action Plan (LAP)** is the global action plan for the UNESCO Biosphere Program 2016-2025. It aims to combine commitment and efforts to achieve the biosphere program's vision. The guide has been developed to support the biosphere coordinators and the biosphere reserve management functions, to develop the biosphere reserve within the framework of the UNESCO nomination and to facilitate the reporting of results to the Paris Secretariat.

**Agenda 2030 - 17 global goals.** In September 2015, a global agenda for sustainable development was adopted by the UN General Assembly. The agenda has 17 global goals and 169 sub-goals and is designed to meet the challenges facing the planet and humanity. The global strategy for UNESCO Biosphere Program (MAB) with the associated action program Lima Action Plan (2016-2025) underlines the biosphere program's role in implementing the global goals.

**Collaboration plan for the biosphere reserve Blekinge Arkipelag.** The primary purpose of the collaboration plan is to describe the conditions for the biosphere reserve and provide an action plan that entails the preservation of important natural and cultural values at the same time as a progressive business development takes place within the area. The plan should also make sure that the condition of the biosphere reserve can be maintained after the first 10-year period. The plan should facilitate the achievement of the vision for the biosphere reserve - Blekinge Arkipelag is synonymous with a living coast and archipelago where development takes place in harmony between preservation and use. The basis is the local commitment and care for the future of coming generations.

**The national and regional environmental goals.** The overall goal for Swedish environmental policy is that by 2020 we will hand over a society where the major environmental problems are solved. It is summarized in a generational goal that describes what we must protect and what changes in society are needed. The generational goal and the 16 environmental quality goals have been decided by the Riksdag and this is a promise to future generations regarding fresh air, healthy living environments and rich nature experiences. The environmental national quality goals apply for Blekinge County with associated specifications and milestones.

**Attractive Blekinge – regional development strategy.** The development of Blekinge is dependent upon our ability to attract permanent residents and visitors. Good quality of life, good infrastructure and a rich working life means that people desire and have the possibility to establish themselves here, which is the basis for the development strategy for the region, Attractive Blekinge. The strategy indicates the common directions with a more sustainable development for Attractive Blekinge, based on the strengths and challenges that are present here. *Climate and energy strategy for Blekinge - With a view to a climate-neutral Blekinge* (2019: 15) should also be mentioned here.

**The strategic tools and business plan for Blekinge Arkipelag** contain an elaborate model for the biosphere business' focus areas – built on the objectives in the above mentioned frameworks. In recent years, this document has partially replaced the Collaboration Plan for Blekinge Arkipelag. The following focus areas now form the basis of the business:



### **Learning and commitment for sustainable development (red)**

Information, research, and knowledge to increase understanding, to inspire and to guide in the direction of a sustainable biosphere reserve through collaborations and communication.

### **Water in balance and a vivid coast and archipelago (blue)**

For good condition in streams, lakes, and the sea. A clean coast and archipelago. To preserve and strengthen our cultural heritage and cultural history of the coast of Blekinge.

### **Biodiversity and intact ecosystems (green)**

To preserve and restore the area's unique diversity and important ecosystems. To promote the sustainable use of natural resources.

### **Sustainable businesses and thriving tourism (orange)**

For competitiveness and local sustainable production of goods and services. Resource and energy streamlining. For joint, long-term tourism initiatives.

### **Health and vitality in sustainable societies (lila)**

For sustainable settlement, strengthened recycling societies, improved infrastructure, and increased attractiveness. Participation, pride, identity, and gender equality. For a healthy local environment.



**Lärande och engagemang för hållbar utveckling**

Information, forskning och kunskap för att öka förståelse, inspirera och vägleda i riktning mot ett hållbart biosfärområde. Genom samarbeten och kommunikation.



**Vatten i balans samt en levande kust och skärgård**

För god status i vattendrag, sjöar och hav. En ren kust och skärgård. För att bevara och stärka vårt kulturarv och blekingekustens kulturhistoria.



**Biologisk mångfald och intakta ekosystemtjänster**

För att bevara och återställa områdets unika mångfald och viktiga ekosystemtjänster. Främja hållbar användning av naturresurser.



**Hållbara företag och blomstrande turism**

För konkurrenskraft och lokal hållbar produktion av varor och tjänster. Resurs- & energieffektivisering. För gemensamma, långsiktiga turismsatsningar.



**Hälsa och livskraft i hållbara samhällen**

För hållbar bebyggelse, stärkta kretslopp, förbättrad infrastruktur och ökad attraktivitet. Deltagande, stolthet, identitet och jämställdhet. För en hälsosam närmiljö.

## **PART II: EVALUATION**

### **1. BIOSPHERE RESERVE**

#### **1.1 Year of appointment: 2011**

#### **1.2 Year of the first evaluation (according to UNESCO): 2021**

#### **1.3 Follow-up measures taken as a result of recommendations in previous evaluations (where applicable) and reasons why these measures have not been completed/started, where applicable.**

Not applicable, no previous evaluations have been carried out according to UNESCO.

#### **1.4 Other observations or comments on the above.**

No comments or observations.

#### **1.5 Describe in detail how the current evaluation has been carried out.**

Historical archive material was first collected and compiled, reviewed, and then included in various parts of the evaluation. Various stakeholders' participation, such as municipalities and Länsstyrelsen Blekinge (the County Administrative Board of Blekinge), have been involved in changes in the biosphere reserve, and were asked to contribute with project descriptions and reports on what has been completed so far, for what purpose and how. These have then been reviewed, assessed in relation to the evaluation's questions and dealt with in relevant sections.

To detach the biosphere coordinator from regular duties, efforts have been made to secure funding from the biosphere municipalities and Länsstyrelsen to employ a new project coordinator at Blekinge Arkipelag for 1.5 year. The first period was devoted to setting up this new employee in ongoing projects and tasks. Since then, more and more time has been created for the coordinator to carry out the evaluation.

In the autumn of 2020, a larger survey was conducted with 20 questions with multiple-choice alternatives and space added for additional comments. About 100 people answered this survey and the answers gave clear indications of what worked well and what worked less well during the period, what people want to see more of and what Blekinge Arkipelag needs to prioritize and develop during the coming business period.

A university thesis project at Kristianstad University has studied how a tool, a mobile application, which was developed as one of the most important projects of the period, has changed the residents' view of the biosphere reserve. Some parts of the outcome from the survey have been included in the evaluation.

Parts of the evaluation, the questionnaire and the survey results and other evaluative conversations have been discussed in various working groups linked to Blekinge Arkipelag's association. Among other things, discussions have taken place among the biosphere ambassadors, in the board of the association, and in the working group for the association's main stakeholders, the so-called Collaboration Group.

The coordinator has then, with the help of a consultant and Länsstyrelsen i Blekinge, written and compiled the evaluation report in a consultation version which has been discussed, and comments

from municipalities, members, Länsstyrelsen and other stakeholders have been submitted. The coordinator has written chapters 1, 2, 5, 6, 7, 8 and 10 with some input from the consultant and with some map material from Länsstyrelsen. The consultant has written chapters 3 and 4 with some input from the coordinator and Länsstyrelsen. Chapter 9 has been written by Länsstyrelsen and the consultant.

Finally, a final version was compiled with proofreading by the association's board and was adopted in the council meetings of the municipality. The version has then been submitted for English translation and in September 2021 it was submitted to UNESCO headquarters in Paris.

### 1.5.1 Which stakeholders have participated?

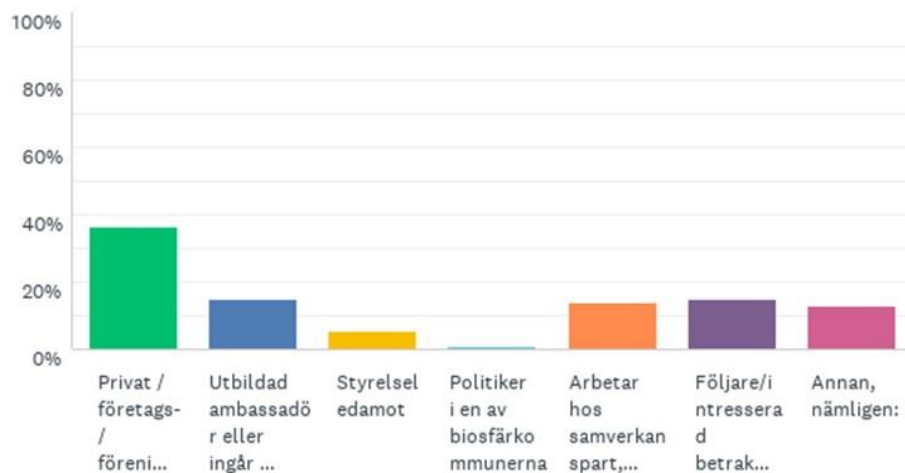
The evaluation has primarily been aimed at groups involved in the business during the first 10 years of operation. External observers and interested followers have also been allowed to respond to the completed evaluation survey. Stakeholders who have conducted a survey and participated in evaluation discussions are A) the board of Blekinge Arkipelag, B) The collaboration Group for Blekinge Arkipelag (which includes the three municipalities and Länsstyrelsen) and finally C) Blekinge Arkipelag's group of ambassadors, our so-called Support team.

Various stakeholders have been able to answer the association's evaluation questionnaire. The following response groups participated:

#### Question 1: What is your current relation to Blekinge Arkipelag?

##### F1: Vilken är din nuvarande relation till föreningen Blekinge Arkipelag?

Svarade: 93 Hoppade över: 1



Powered by SurveyMonkey

Most of the responses were received from the association's members (green) representing the public, companies, and associations in the biosphere reserve. Other responses were received from the association's trained biosphere ambassadors (blue), people who work for a partner (orange), e.g., municipality or association, people who follow the association's activities (purple), or any stakeholder, e.g., national authority (cerise).

### 1.5.2 What methods have been used to involve stakeholders in the evaluation process (e.g., workshops, meetings, consultation with experts)?

Due to the coronavirus, consultation has been limited to the groups we most often encounter, our

biosphere ambassadors, the association's board, and the principals' so-called collaboration group. In these groups, both the evaluation questions and the survey results have been subject to analysis and discussion. The questionnaire has been sent out to around 1,500 email contacts and marketed via our social media to reach out to everyone who historically have been in contact with the biosphere business, but also to give new stakeholders the opportunity to submit recommendations for the coming business period.

Municipalities and Länsstyrelsen have been commissioned to contribute with project descriptions and project results as well as other facts that are requested in the evaluation. Länsstyrelsen has delivered new map material and data for mainly chapters 3, 4 and 9. Consultant Josefin Gustavsson has been involved in writing chapters 3, 4 and parts of chapter 9 as well as provide feedback on the entire report.

To expand the biosphere reserve, a number of meetings have been held with the municipality of Sölvesborg and other current biosphere municipalities and the municipal board. Länsstyrelsen has also been involved in the expansion process.

We have also invited people to participate in digital meetings with our corporate network where entrepreneurs with businesses in the hospitality industry have been involved in evaluating and developing the trails along the coast and in the archipelago, ARK56, with associated products and experience packages.

An initial draft of the evaluation report has been discussed in the Swedish Biosphere Committee and in the network for Swedish biosphere reserves. Expertise in various areas in the biosphere reserve has been asked to add information to the evaluation questions. Finally, a consultation version of the evaluation has been sent out for comments and amendments from the biosphere reserve's and the association's stakeholders.

### **1.5.3 How many meetings, workshops etc. were carried out during the evaluation?**

Board meetings: 8

Strategy meetings for the board: 2

Survey of the business in general: 1

Survey of the mobile application ARK56: 1

Meeting with the collaboration group (principals): 3

Meetings with a representative group in Sölvesborg municipality and the municipal boards in the current biosphere municipalities: 6

Meetings with the corporate network in the hospitality industry regarding ARK56: 2

Evaluation with the biosphere ambassadors: 1

Evaluation meeting with the Biosphere Network Sweden: 1

Evaluation meeting with the program committee for the Biosphere Program Sweden: 1

Collaboration meetings with university student at Kristianstad University: 3

Referral round on the evaluation report: 1

Approval in the council meetings in current biosphere municipalities: 3

### **1.5.4 Were the meetings well-attended and was the representation comprehensive regarding gender equality aspects? (Describe the participation and the stakeholders.)**

Regarding the board, there are representatives from the local politicians, local associations, local businesses, Länsstyrelsen Blekinge, small-scale coastal commercial fishermen, academia, and the public. The composition of the board from a gender perspective currently has a ratio of 3-6 (a total of

9 people) with a predominance of men. The youngest person on the board is 40 years old and the oldest 68 years old.

The collaboration group includes a rural developer and an environmental strategist from each of the three municipalities, and in addition to the biosphere office's two individuals, Länsstyrelsen is also represented. Here, the composition from a gender perspective has a ratio of 5-4 (a total of 9 people) with a predominance of women. The youngest person in the group is 43 years old and the oldest is 63 years old.

In the ambassador group, the oldest person is 71 years old and the youngest 14 years old, and this group consists of 20 people, of whom 13 are women and 7 are men. None of the biosphere ambassadors participate as a representative, all participants are private individuals from the public.

In the corporate network for ARK56, the oldest person is 62 years old and the youngest 39 years old. The participation has increased by up to about 20 people per meeting with a slight predominance of men.

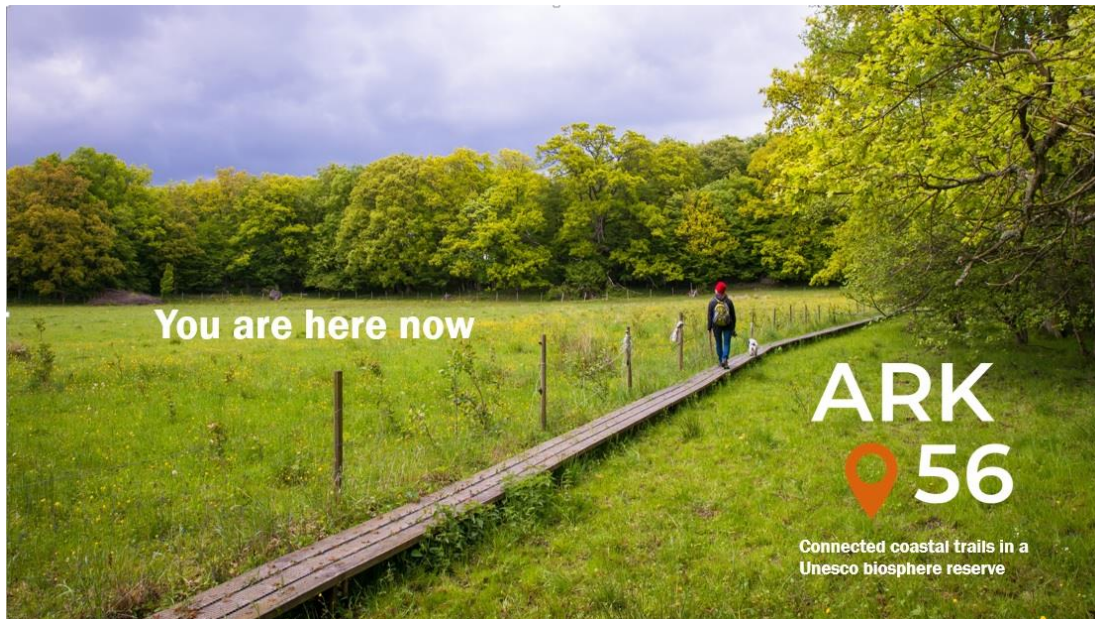
## **2. SIGNIFICANT CHANGES IN THE BIOSPHERE RESERVE OVER THE LAST TEN YEARS**

**2.1 Brief overview: Description of important changes in the local economy, cultivation of land and nature categories and other related issues.** (Mention important institutional changes in governance and management in the geographical area of the biosphere reserve and (possible) changes in coordination (including organisation/coordinator/head of the biosphere reserve) that affect the biosphere reserve's goal management and business orientation. Mention the role of the organisation/coordinator/head of the biosphere reserve to initiate or act on these changes).

During the operational period, the biosphere reserve has been made more accessible for sustainable outdoor life and sustainable tourism. To highlight nature and cultural environments, service and sustainable experiences, trails for hiking, kayaking, cycling, and sailing have been established in parallel with the creation of a mobile application, map, and website. This development investment has received its own brand, ARK56. The increased accessibility has resulted in a greater influx of visitors to thirteen different service points (hubs) which are preferably located in the archipelago and in relatively undeveloped coastal areas. For several small businesses, profitability has improved, and they have also been given the opportunity to improve their operations from a sustainability perspective where the focus has been on solutions for energy, waste, and water use. However, entrepreneurs with a strong connection to foreign target groups were negatively affected during the covid pandemic.

Blekinge Arkipelag is also changing the landscape through an ongoing wetland program. During the years, Blekinge has become increasingly drier due to digging and affected watercourses. Through collaboration with Länsstyrelsen, landowners and specialists, we have created and are still in the process of creating new wetlands and restoring watercourses, which has provided better conditions for biodiversity, water quality in coastal waters, natural pastures, and groundwater formation.

In collaboration with various stakeholders, the association has inspired to sustainable agriculture and forestry. The proportion of organic farming has increased as well as the direct local sales of organic food from producer to consumer. New innovations for irrigation and electricity production in agriculture are under development, and collaboration for maintained or increased natural pastures in the biosphere reserve is continuously promoted, partly for the sake of biodiversity, the open landscape and sustainable farming.



ARK56 are trails for hiking, kayaking, cycling, and sailing. The brand has a descriptive motto: "Linked coastal trails in a Unesco biosphere reserve" and an emotional motto: "You are here now".

Länsstyrelsen Blekinge has made great efforts to open overgrown islands in the archipelago and make them available for grazing and for people to visit.

The conditions for sustainable small-scale coastal commercial fishing have continued to deteriorate. Several fish stocks in these parts of the Baltic Sea are shrinking and many species are threatened by industrial overfishing, and also various environmental factors, which results in both leaner and more diseased individuals. The few small-scale fishermen left in the biosphere reserve have been forced to pursue highly diversified fishing to continue their trade. Sport fishing - an important branch of the hospitality and tourism industry in the biosphere reserve - is also affected. Blekinge Arkipelag has made great efforts to raise this issue to a national level through opinion formation in various media, meetings and direct letters to the government and national authorities. This has to some extent been obeyed and given a closer relationship to, among others, Havsmiljöinstitutet (the Institute of the Marine Environment) and Havs- och Vattenmyndigheten (the Swedish Agency for Marine and Water Management). Thanks to the extensive work under the leadership of Länsstyrelsen, new protection areas and restricted seasons have also been added for fishing of pike and perch.

Several new efforts have been made and are being made continuously to keep the biosphere reserve clean in various ways. In the municipality of Karlshamn, efforts have been made to provide virtually all islands with settlements with municipal water and sewage. Efforts from municipalities as well as associations to clean the coast and archipelago have resulted in a cleaner beach environment, and the municipal treatment plants are undergoing continuous improvements to protect the coastal water from bacteria, drug residues and microplastics.

Through the establishment of the new coastal and archipelago trails, ARK56, institutional changes have been made through a large regional collaboration to implement the accessibility of the biosphere reserve. The joint work has meant that the municipalities, Länsstyrelsen, Region Blekinge, Visit Blekinge, Blekinge Arkipelag, associations and entrepreneurs have approached each other and participated in several joint meetings. The successful concept has in several ways shortened the distances between different participants and resulted in a new management organisation for the operation and development of the trails and associated products. Today, this new organisation is led by Region Blekinge.

Another area where institutional changes have taken place is joint maritime planning activity between the coastal municipalities in Blekinge. The purpose is to state the municipalities' direction for use of water within the area and increase the predictability for the participants who intend to conduct activities at sea. The sea plan shall:

- Interact with government planning
- Make a balance between different interests
- Provide spatial conditions for use and preservation

The work has been initiated by Blekinge Arkipelag and thereafter led by Länsstyrelsen in collaboration with municipalities and consultants. The plan contains recommendations for how the sea area should be used in the long term to ensure a sustainable use of the sea's green infrastructure and thereby promote the important ecosystem services, such as the preservation of spawning grounds for pike and other coastal fish species.

Regarding the coordination of the biosphere reserve, some changes have taken place during the period. The original focus for the biosphere office was primarily to inspire other participants and stakeholders (including Länsstyrelsen and municipalities) to pursue projects towards common goals. After completed projects, Blekinge Arkipelag's role consisted of compiling and communicating results. The work was slow due to ambiguities regarding initiatives and ownership of various issues. In 2016-2017, the board commissioned an evaluation and concluded that a reorganisation was needed for the business to function without restrictions. The reorganisation was carried out in 2017-2018 and involved, among other things, changes within the board, new terms of employment and a renewed strategic attitude. The resources were redirected so that the biosphere office could initiate its own projects and participate in other participants' projects instead of trying to compile what other participants had accomplished. The reorganisation has led to a significant increase in the level of work, more specific and local results have been created and communicated, and confidence in what the association and the biosphere committee can achieve has increased significantly over the past five years.

The reorganisation with a new way of working, together with the expected future expansion of the biosphere reserve to include the municipality of Sölvesborg, requires greater basic resources for the association and the biosphere office's staff. The coordinator and the board have implemented a municipal process for increased basic funding so that the office continuously can include not only a full-time coordinator but also a project coordinator and a project manager with part-time employment from 2022.

The association's business plan for 2018 - 2021 shows that the business has reached 26 distinct objectives and is working towards another 20 objectives during 2020-2021. 11 new objectives have been added between September 2019 and July 2020. Within the theme **Hållbar besöksnäring** (Sustainable tourism and hospitality industry), the association has achieved 7 objectives and is working towards another 5. The theme **Hållbart fiske** (Sustainable fishing) has meant 3 achieved objectives and ongoing work with another 2. On the theme **Hållbart lant- och skogsbruk** (Sustainable agriculture and forestry), the association has achieved 6 goals and is working on another 4, the theme **Håll biosfären ren** (Keep the biosphere clean) contains 3 achieved goals and another 3 ongoing. The theme **Information, lärande och delaktighet** (Information, learning and participation) has finally yielded 8 achieved goals and work is continuing on another 5.

Blekinge Arkipelag has applied for and received 20.5 MSEK in external project funds during the operating period 2017-2021.

## 2.2 Updated background information about the biosphere reserve

Blekinge Arkipelag is the first biosphere reserve in Sweden with focus on issues facing the Baltic Sea. During the period 2011-2021, the area covered most of Blekinge's archipelago and coastal landscape, 156,000 ha water and 56,700 ha land.

Here we find the world heritage naval city Karlskrona, castles and fortifications from the time when the area was both Danish and Swedish, furthermore there are cultural and historical remains from the Bronze Age as well as from the Stone Age, and from the small-scale coastal fishing that for a long time left its mark on people and industries.

The typical coast with deciduous forest with oak groves, the shallow bays, and the many islands, skerries and estuaries give the landscape its character and wide range of species. The area's specific morphology and geology, together with the coastal waters, lakes, and watercourses, have created unique conditions for ecosystems, biodiversity, and a multifaceted human use. In addition to fishing, for example, natural grazing has existed in the archipelago for about 2000 years.

In 2021, we wish to expand the biosphere reserve with parts of Sölvesborg municipality, which has been the goal for a long time. Sölvesborg is one of Blekinge's four coastal municipalities and was included in the application phase for the biosphere reserve, but ultimately chose not to join. Inquiries from the municipality of Sölvesborg have since been received during 2015-2016 and again in 2019, which has now led to a unanimous political decision on an expanded biosphere reserve. *See the separate request attached to this evaluation.*



Hanö is an important gateway to Blekinge for everyone who arrives by sea from the southwest. The island has several interesting natural as well as cultural and historical environments and will probably become part of the county's first national park.



## Current total area

Area	Total (ha)	Sea(ha)	Land (ha)
Current area Blekinge archipelago	212 600	156 000	56 700
Blekinge archipelago including Sölvesborg	259 900	188 500	71 400

## Administrative area

Blekinge Arkipelag is part of the municipalities of Karlshamn, Karlskrona and Ronneby, Blekinge county, Sweden. It is therefore desirable that the municipality of Sölvesborg also will be included from 2022.

## Protected areas

	2011	Quantity	Area (ha)
Natura 2000 SCI (Species and Habitats Directive)		70	15 900
Natura 2000 SPA (Birds Directive)		15	7 900
Nature reserve land		34	6 600
Nature reserve marine areas		5	9 600
Biotope protection		46	118
Ramsar site		2	14 000
Protection area, fish		10	4 800
	<b>2021</b>		
Natura 2000 SCI		70	15 900
Natura 2000 SPA		15	7 900
Nature reserve land		37	6 700
Nature reserve marine areas (of which 14,200 ha yet without legal force)		8	24 900
Biotope protection		51	151
BSPA		1	10 600
Animal - plant protection		55	1 400
Ramsar site		2	14 000
Protection area, fish		18	7 100
	<b>Sölvesborg</b>		
Natura 2000 SCI		18	6 400
Natura 2000 SPA		2	196
Nature reserve land		10	1 200
Nature reserve marine areas		3	660
Biotope protection		3	27
Ramsar site		0	-
Protection area, fish		5	5 500

**Nature and land use categories**

Coastal and marine ecosystems. Cultivated land, pastures, and oak groves as well as beach meadows and hay meadows. Buildings and industrially exploited areas. Coast with deciduous forest and coniferous forest with a large representation of pine. Lakes and streams.

**Highest altitude above sea level**

The highest point above sea level is 125.5 meters at Ryssberget in Sölvesborg municipality

**Lowest altitude above sea level**

The lowest point is on the drained lake Vesan 1.5 meters below sea level, Sölvesborg municipality

**Maximum sea depth at medium water level**

East of the island Hanö and at Malkvarn the sea depth is 40 meters.

**Climate**

The area has a warm-temperate climate, according to Köppen's climate classification.

**Average temperature** (according to SMHI, 2015)

Annual average temperature 1991-2013 was 8°C.

The average winter temperature (December-February) 1991-2013 was 1°C.

Average summer temperature (June-August) 1991-2013 was 17°C.

**Precipitation** (according to SMHI, 2015)

Annual average precipitation 1991-2013 was a total of 650mm/year.

Average rainfall in winter (December-February) 1991-2013 was a total of 170mm.

Average rainfall in summer (June-August) 1991-2013 was a total of 190mm.

**2.2.1 Updated coordinates (in current cases). Indicate any changes in the geographical coordinates of the biosphere reserve (all according to reference system WGS 84).**

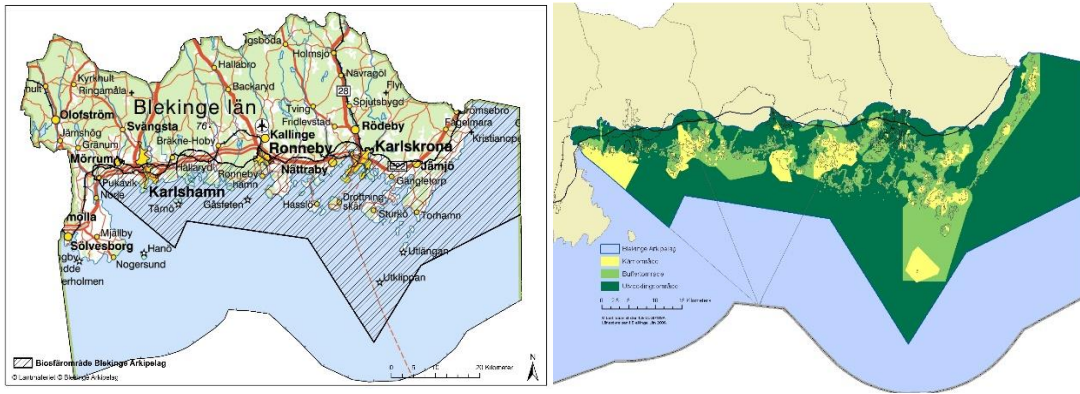
Directions	Latitude	Longitude
Most central point	56° 5' 53,53"	15° 25' 25,74"
Northernmost point	56° 19' 22,08"	16° 2' 51,36"
Southernmost point	55° 49' 51,96"	15° 40' 41,52"
Westernmost point	56° 0' 43,20"	14° 31' 58,08"
Easternmost point	56° 18' 16,20"	16° 13' 20,28"

**2.2.2 Attach, where applicable, an updated map on a topographical layer of the exact location and delimitation of the three zones in the biosphere reserve. The map/maps must be submitted in both paper format and electronic format. The Shape files (including those in reference system WGS 84) used to produce the map must also be attached to the electronic version of the form.**

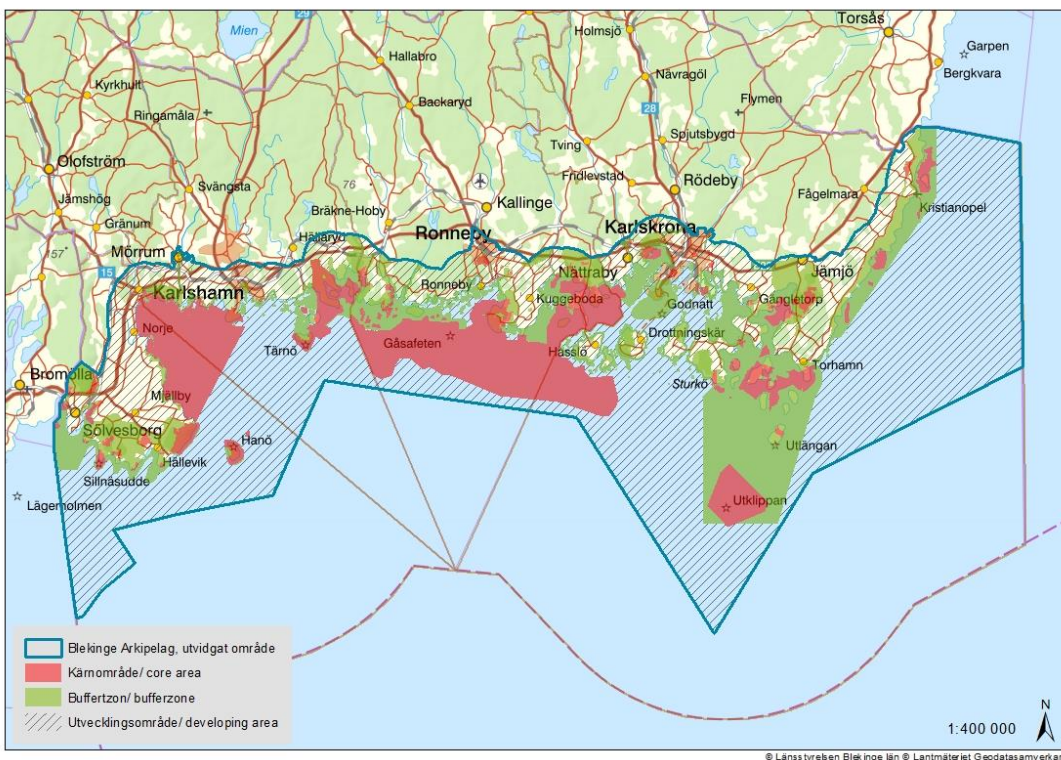
**In this case, provide an internet link to the map (for example, a Google map or a website):**

<http://blekingearkipelag.se/v%C3%A5rt-biosf%C3%A4romr%C3%A5de/kartor>

Current biosphere reserve and its zoning:



Formation of the desired, expanded biosphere reserve with zoning:



The reasons for expanding the biosphere reserve in the municipality of Sölvesborg is that it is part of the Blekinge archipelago with Hanö and the medieval city of Sölvesborg as gates to Blekinge Arkipelag. Hanö, an old important fishing village and an island that carries a lot of cultural history and protected nature. Länsstyrelsen has proposed to the Swedish Environmental Protection Agency to designate Hanö and the adjacent part of the mainland, Listershuvud, as Blekinge's first national park.

In the eastern part of Sölvesborg municipality, the biosphere reserve will cover the entire Pukavik Bay Natura 2000 area. In the west, the municipal boundary is followed, and is motivated by the fishproductive waters Valjeviken and Ryssberget nature reserve, a well-visited outdoor area. The entire Listerlandet (the large peninsula) has a number of well-preserved fishing villages such as Hällevik, Nogersund and Hörvik with guest harbours and some established hospitality and tourism businesses. There are several routes for cycling and hiking in the area and this will in an excellent way add to the existing trail network in Blekinge Arkipelag (ARK56) which also guarantees the creation of kayaks and sailing trails throughout this new part of the biosphere reserve. Farthest to the south, the

borderline follows the marine value area with valuable reef environments for mussels and flounder, turbot, and herring. This place was historically significant for cod.

*Attached to this evaluation you will find the separate request for the desired expansion of the biosphere reserve.*

### 2.2.3 Changes in the population of the biosphere reserve

	Previous report (nomination) <b>2011</b>	This report (evaluation) <b>2021</b>	This report 2021 When expanding with <b>Sölvesborg</b>
<b>Core areas</b> permanent and seasonal accommodation	Permanent: 219 Seasonal: + 37	Permanent: 178 Seasonal + 59	Permanent: 178 Seasonal: + 62
<b>Buffer zones</b> permanent and seasonal accommodation	Permanent: 22077 Seasonal: + 7 598	Permanent: 20 369 Seasonal: + 8 103	Permanent: 23 302 Seasonal: + 8 700
<b>Development area</b> permanent and seasonal accommodation	Permanent: 62 444 Seasonal: + 14 728	Permanent: 69 933 Seasonal: + 13 022	Permanent: 83 546 Seasonal: + 15 525

### 2.2.4 Update of the preservation function, including major changes since the last report. (Make short notes here with reference to point 4 below.)

#### New reserves and protected areas

The terrestrial and limnic core areas of Blekinge Arkipelag consist of nature reserves and other protected areas. The development since the nomination in 2011 has been towards a significant expansion of the reserve both on land and in water. The table below also shows which areas of protected nature are added in the biosphere reserve through an expansion in Sölvesborg municipality:

	Previous report (nomination) 2011	Current situation (evaluation) 2021	Proposed changes with Sölvesborgs municipality
Area for terrestrial core areas	5 800 ha	6 300 ha	7 700 ha
Area for marine/limnic core areas	15 000 ha	32 300 ha	37 800 ha
	<b>20 800 ha</b>	<b>38 600 ha</b>	<b>45 500 ha</b>

See also section 2.2

## Sustainable agriculture and forestry

Blekinge Arkipelag's wetland program involves a major effort to recreate and reconstruct wetlands and restore affected watercourses. The efforts are providing better circumstances for the preservation of several bird, fish, and mussel species in the area. Nutrition retention strengthens the conditions of coastal waters, protects from algal blooms and seabed deaths, and thus contributes to preservation of intact coastal ecosystems. To some extent restoration and new construction of wetlands also strengthens the possibility of natural grazing during predominantly dry summers, which contributes to the preservation of nature biodiversity of pastures. During 2020- 2021, Blekinge Arkipelag received funding for 5 new wetlands corresponding to approximately 7.5 MSEK.



Landowners, coordinator, consultant, and board member at an informative sign about the positive effects of the first newly constructed wetland. Torsteboda, outside Mörrum, Karlshamn municipality.

In the project Forest Network Blekinge Arkipelag, forest owners, forest companies and forest contractors meet to discuss how forest management and forestry can be better aligned. The biosphere reserve's original deciduous forests cope with climate challenges better than fast-growing production (coniferous) forests. The meetings, the sample areas, and the creation of a common view regarding forest management provide a specific Blekinge Arkipelag area directive and contribute to the preservation of our characteristic deciduous forest coast with associated flora and fauna.

In 2021, the association has had a series of lectures with Länsstyrelsen on values in the county's natural pastures and cultivated landscapes, which meant increased awareness of, for example, the importance of natural pastures for the preservation of pollinators and a wide range of species among herbs and flowers. A project to preserve biological diversity in the biosphere reserve's ditches and roadsides started in 2020 in collaboration with the Swedish Transport Administration. This project is about ensuring the use of the right methods and the right interval for the care of the ditches' surfaces.

### Keep the biosphere clean

Recurring cleaning of Blekinge Arkipelag's beaches are done in collaboration with other associations, companies, biosphere ambassadors, the voluntary public, and the biosphere municipalities. Every year, several hundred kilos of plastic, glass and metals are removed from the sensitive beach environment and contribute to the preservation of clean water and a functioning coastal ecosystem.

Blekinge Arkipelag makes various information efforts to identify the risks of invasive garden plants. Together with Sveriges Lantbruksuniversitet (the Swedish University of Agricultural Sciences (SLU)), we are involved in a national project that will result in guidelines for adequate communication and information about invasive species, something that in the long run can reduce the number of invasive species in our natural environment and instead prevent the displacement of natural, native species, in order to preserve them for the future.

## **Sustainable hospitality and tourism industry**

To preserve local handicraft traditions and the use of locally produced wool, the association, in collaboration with local entrepreneurs, has developed a concept of sustainable utensils and outdoor products that can be sold as souvenirs and aids when traveling on our coastal and archipelago trails, ARK56. The wool products are marketed in a folder that informs us that we want a sea without microplastics from washed synthetic garments and the value of an open archipelago landscape - important contributions to the preservation function.

### **2.2.5 Update of the development function, including major changes since the last report. (Make short notes here with reference to point 5 below.)**

#### **Sustainable hospitality and tourism industry**

The implementation of discovery trails in a fossil-free manner of the biosphere reserve, both for the local outdoor life and for outdoor tourism, has led to infrastructure development that makes unique cultural and natural environments accessible. A map, an application and a specific website have been developed, and that will reinforce one another and the brand "ARK56 - linked coastal trails in a Unesco biosphere reserve". The work has been done in collaboration between Blekinge Arkipelag, Blekinge Region, Karlskrona, Karlshamn and Ronneby municipalities, Länsstyrelsen Blekinge and several companies, associations and interested public. The funding has primarily been supplied by the Swedish Agency for Economic and Regional Growth and SydostLeader, but the municipalities and Länsstyrelsen and Blekinge Arkipelag have also contributed.


The companies in the hospitality industry have also developed in a sustainable direction regarding primarily waste management and a transition to sustainable energy. The companies' own products have been developed for different target groups and are often linked to ARK56 to jointly create an entire destination whose brand is characterized by sustainability and the biosphere reserve's objectives.


#### **Sustainable agriculture and forestry**

Together with researchers at Mälardalen University and local farmers, Blekinge Arkipelag has strived for the development of an optimized irrigation system. The model is still under development and will in the future have great local and national significance for sustainability in the area of food-energy-water-fertilizers. Other participants in the project are American NASA and the Swedish weather institute SMHI. Research projects focusing on the benefits of combining electricity production and agriculture on the same piece of land are also under development. The solar panels used in the project are vertical, which enables continued use of agricultural land.

In the Forest Network Project, the researchers look at, among other things, how a common picture of good forest management can give more requests for special products to forest contractors developing new management methods and how they can achieve better profitability. The new methods can mean both higher economic values for forest owners and higher social values for visitors.

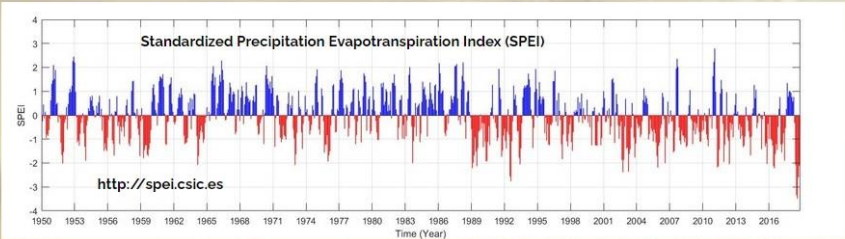
In Karlskrona municipality, a method has been developed to create biochar from seaweed that's been washed ashore. The finished product can be used as a soil improver and binds carbon dioxide to the soil for a long time to come. Mowing of reeds on the coast has also been carried out in areas where the nutrient supplement is high. The mowing means that the accumulated nutrients in the reeds are excluded before it leaks into the coastal water during decomposition and decay.


[Home](#)
[Model description](#)
[Model runs](#)
[Acknowledgements](#)
[Contacts](#)



SWEDIMS stands for SWEDish Irrigation Management System and it is mainly developed to provide guidelines for irrigation to Swedish farmers, especially during drought conditions. It can also be used by water and energy management agencies to better allocate natural resources.

Despite its geographical location and the abundance of water resources, Sweden can suffer from drought.



Website for an optimized irrigation is under development: [www.swedims.se](http://www.swedims.se)

### Keep the biosphere clean

In Ronneby municipality, the municipal company Miljöteknik has invested in developing a municipal sewage treatment plant to take care of drug residues and the hazardous substance PFAS before the water is discharged into the Baltic Sea. These new parts of the purification process are based on ozonation and filtration with activated carbon.

The biosphere office has had a washable and reusable garbage bag developed and produced that can be taken on excursions and trips in the biosphere reserve, and a biodegradable bag has been produced and distributed to archipelago ferries and the hospitality companies at ARK56.

### Sustainable fishing

In collaboration with local small-scale fishermen and the municipalities of Kalmar and Simrishamn, we try to develop catching methods for the invasive fish Round Goby. The effort also includes research into different ways of developing food products that can be used as both a local delicacy for restaurants and everyday food for, for example, school kitchens.

The association Sportfiskarna Blekinge has initiated a project in collaboration with fishermen, municipalities and Blekinge Arkipelag which aims to develop more spawning and rearing sites, especially for perch on the coast. Through strategic laying, anchoring, and marking of "Risvasar" (larger piles of brushwood), protected spawning and growth environments are created and maintained, especially for the perch.

**2.2.6 Update of the support function, including major changes since the last report. (Make short notes here with reference to point 6 below.)**

### **Information, learning and participation**

Within this theme, the activities have involved several communicative and information-disseminating initiatives of knowledge, project results and activities that support our goals and the development of a changed approach to nature and culture in the biosphere reserve. The association uses a new website, recorded films clips, social media, newsletters, biosphere ambassadors and various meeting forums to reach stakeholders in different target groups. Sometimes the association also reaches out via the municipalities' websites and social media as well as newsletters from Länsstyrelsen. Theme days, conferences and cinema tour days are arranged continuously with different current themes in focus.



Guided tours during the Biosphere Day 2020 on the theme of water, forest, and climate change.

### **Sustainable hospitality and tourism industry**

Blekinge Arkipelag is a continuous support to company members in their efforts to develop their products and businesses in a sustainable direction. During the development of ARK56, several different trainings were held with focus on sustainable development. Among other things, the association helps companies to communicate their sustainability efforts to guests with the help of a green protocol, a so-called Sustainability Certificate, which lists the various steps the company has taken towards a more sustainable business. The sustainability certificate is printed, framed and displayed at the companies' facilities. During the project for ARK56, Blekinge Arkipelag also contributed with advice and skills development seminars for entrepreneurs focusing on sustainable development.

In 2021, Friluftslivets År 2021 (the Year of Outdoor Life 2021) will be held in Sweden, and with the project funds received, Blekinge Arkipelag supports the conditions for more interested people to get involved in outdoor recreation close to the city on ARK56. The support is also aimed at our member



companies along ARK56 who will be able to demonstrate their services and environments suitable for outdoor recreation.

### **Sustainable fishing**

For several years, the Baltic salmon has experienced a significant deteriorating in health. In Blekinge Arkipelag, it is clearly noticeable when the salmon migrate upstream for spawning in our largest watercourse - Mörrumsån. Mortality is high, some years even before spawning. Through cooperation with other river managers, we know that the situation is similar in most salmon rivers in the Baltic Sea, both in Sweden and other countries. Our support efforts have aimed to facilitate sampling and research, for instance in collaboration with Mörrums Kronolaxfiske, but also to form an opinion to ensure these problems are taken seriously, that more people should know how the fish are doing and which activities are affected. We have taken part in radio and TV broadcasting on several occasions, both locally and nationally. Blekinge Arkipelag has also supported research on fish morbidity linked to thiamine deficiency. We have done this by digitally and physically creating the conditions for researchers to meet the public, politicians, and authorities both locally and nationally. We have written letters to the government and national authorities urging them to use public funds to invest in thiamine research. These support initiatives are also aimed at the company Mörrums Kronolaxfiske and the entire village of Mörrum, which in various ways make a living from sport fishing for salmon.

### **Sustainable agriculture and forestry**

The association has, among other things, arranged a theme day for farmers with focus on natural grazing, organic production, and local sales. In association with Länsstyrelsen, we are now conducting a series of lectures about values in the county's natural grazing and arable land. It is aimed, among others, at farmers and animal keepers, but also other players in the chain that values collaboration around natural grazing as well as refinement and sales of local natural pasture meat. Through its website, Blekinge Arkipelag is continuously working to disseminate knowledge on sustainable aspects of primarily natural grazing, but also on local production and consumption of various foods.



Roaming sheep on the island of Ramsö, outside the village of Nättraby.

### **2.2.7 Update of forms of administration and coordination including (possible) changes since the last report regarding administrative division and coordination structure. (Make short notes here with reference to point 7 below.)**

The principals of Blekinge Arkipelag association are still Karlshamn, Ronneby and Karlskrona municipalities as well as Havs- och Vattenmyndigheten (Swedish Agency for Marine and Water Management). The municipalities have political representatives on our board and civil servants as representatives in our so-called Collaboration Group. As before, Länsstyrelsen Blekinge has an important role in the administration of the biosphere reserve and is also represented on both the board and in the collaboration group. The Swedish Agency for Marine and Water Management has continued to only participate in the work as a financier, but there is an ongoing dialogue if they, from

2021, would consider a representation in the national Program Committee for the Biosphere Program Sweden.

After the reorganisation of Blekinge Arkipelag 2018, the association got a new coordinator in the month of May. The former coordinator worked for the association between 2012-2018. From 2022, it is the biosphere organisation's unanimous ambition to connect parts of Sölvesborg to the biosphere reserve. The municipality of Sölvesborg will then be an important principal and collaboration partner to the association Blekinge Arkipelag.

**2.3 The organisation or organisations responsible for coordinating/managing the biosphere reserve. (Comment on the following topics where relevant.)**

The non-profit association Blekinge Arkipelag has since its creation taken a special position in the biosphere reserve's coordination and management. The association consists of board, coordinator, employees (project coordinator and project manager) and members. During the period of activity, the association's independence has been strengthened through a changed relationship with the biosphere municipalities, at the same time as trust and cooperation have increased. Länsstyrelsen Blekinge continues to maintain the legal and regular management of Blekinge and the biosphere reserve - the Swedish biosphere reserves are areas rather than reserves, which means that Blekinge Arkipelag can in various ways contribute to preservation, support and development measures based on voluntary stakeholders and partners. The current organisation looks like this:



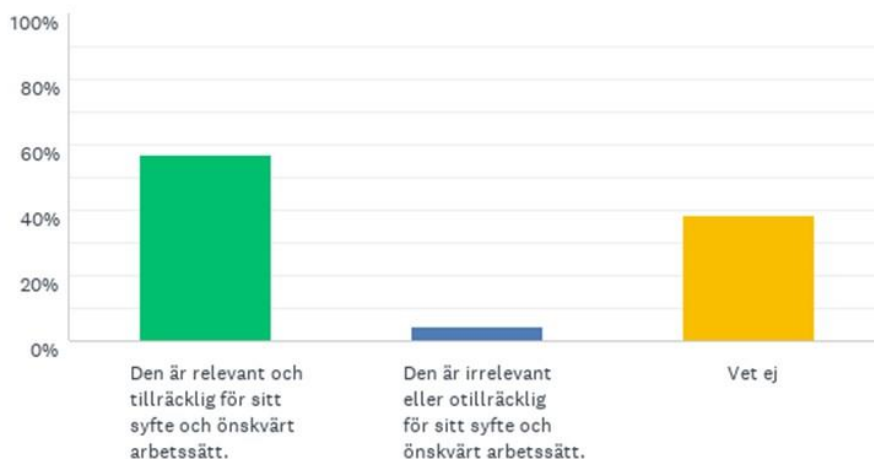
In the survey that the association commissioned in connection to the evaluation, the question was asked how the respondents perceive this way of organising the business. The answers indicate that those with insight into the biosphere reserve's mission and knowledge that the collaboration should

include both low level and government perspectives, view the current organisation as relevant and sufficient for its purposes (green).

**Question 13: The image above shows how Blekinge Arkipelag is organized on a regional level. How do you view this organisation?**

**F13: Bilden ovan visar hur Blekinge Arkipelag idag är organiserat på ett regionalt plan. Hur ser du på nuvarande organisation?**

Svarade: 93 Hoppade över: 1



Powered by SurveyMonkey

(Blue: Irrelevant and insufficient. Yellow: Don't know)

**2.3.1 Updates of policies and/or action programs for collaboration, including a statement of vision, goals and objectives, either current or for the next five to ten years.**

During the formation of Blekinge Arkipelag, participants and stakeholders under the leadership of Länsstyrelsen produced a collaboration plan for the biosphere reserve. It consists of a descriptive part and a strategic part. The strategic part consists of 10 thematic work areas and 22 strategies for preservation, support, and development measures where the areas of responsibility of different participants are specified. (See section 5.10).

The descriptive part of the Collaboration Plan was formally adopted by all parties involved, but not the strategic one. For the strategic part, the biosphere municipalities were positive but hesitant, and at the same time the role of the association Blekinge Arkipelag remained in coordinating projects that were largely carried out by participants other than the association itself, including the municipalities. As a result, the work was slow and there were also doubts about when the Collaboration Group owned the issues and when the association's board did so.

After the association's reorganisation in 2017-2018, this original ambition to be coordinating only by inspiring, compiling and communicating other participants' project results therefore ceased. Instead, a strategic tool for the association was developed with a more elaborated business plan. The strategic tool consists, among other things, of a pedagogical model of the biosphere reserve's five focus areas, which in turn are built up of the objectives for the biosphere reserve.

Below is an overview of how the focus areas are motivated by and connected with the objectives of the various governing documents. After each goal there is an abbreviation that indicates where it is taken from. The abbreviations stand for:

(Samplan BBA) = Samverkansplan för Biosfärområde Blekinge Arkipelag (Collaboration plan for Biosphere Reserve Blekinge Arkipelag),

(LAP) = Lima Action Plan, A2030 = Agenda 2030,

(Reg Miljömål (Regional Environmental Goals)) = Regional action program for the environmental quality objectives 2017-2020, (Blekingestrategin (Blekinge strategy) = Attraktiva Blekinge - Blekingestrategin 2014-2020.

Note that the same objective has been used in a few places to motivate more than one focus area.

### **Focus area 1: Learning and commitment to sustainable development**

The focus area is structured and motivated by the following objectives:

- Extensive, modern, transparent communication, information, and dissemination of data (LAP)
- Inclusive, dynamic, and results-oriented collaborations and network (LAP)
- Creating viable communities (A2030)
- Peaceful and inclusive societies (A2030)
- Implementation and global partnership (A2030)
- Generation goal (regional environmental goal)

### **Focus area 2: Water in balance and a living coast and archipelago**

The focus area is structured and motivated by the following objectives:

- Preserving biodiversity (LAP)
- Restore and strengthen ecosystem services (LAP)
- Clean water (A2030)
- Sea and marine resources (A2030)
- Ecosystems and biodiversity (A2030)
- Accessibility (Blekinge strategy)
- No eutrophication (regional environmental goal)
- Living lakes and watercourses (regional environmental goals)
- Groundwater of good quality (regional environmental goals)
- Balanced sea and living coast and archipelago (regional environmental goals)
- Crowded wetlands (regional environmental goals)
- Utilization and preservation of cultural environments (Samplan BBA)
- Reduced eutrophication (Samplan BBA)
- Sustainable boating (Samplan BBA)
- Sustainable fishing (Samplan BBA)

### **Focus area 3: Biodiversity and intact ecosystem services**

The focus area is structured and motivated by the following objectives:

- Preserving biodiversity (LAP)
- Restore and strengthen ecosystem services (LAP)
- Promote the sustainable use of natural resources (LAP)  
Develop tools that can mitigate the effects of climate change and other global environmental changes (LAP)
- Ecosystems and biodiversity (A2030)
- Fresh air (regional environmental goal)
- Only natural acidification (regional environmental goal)
- No eutrophication (regional environmental goal)
- Living forests (regional environmental goals)
- A rich agricultural landscape (regional environmental goals)
- A rich plant and animal life (regional environmental goals)
- Maintained open landscape (Samplan BBA)

#### Focus area 4: Sustainable businesses and prosperous tourism

The focus area is structured and motivated by the following objectives:

- Sustainable energy for all (A2030)
- Sustainable industry, innovations, and infrastructure (A2030)
- Economic growth (A2030)
- Sustainable production (A2030)
- Sustainable tourism (Samplan BBA)
- Sustainable entrepreneurship (Samplan BBA)
- Working life (Blekinge strategy)

#### Focus area 5: Health and vitality in sustainable societies

The focus area is built up/motivated by the following objectives:

- Sustainable building development (Samplan BBA)
- Infrastructure and community (Samplan BBA)
- Create sustainable and fair economies, as well as viable societies (LAP)
- Health and well-being (A2030)
- Gender equality (A2030)
- Sustainable energy for all (A2030)
- Sustainable industry, innovations and infrastructure (A2030)
- Sustainable cities and communities (A2030)
- Sustainable consumption (A2030)
- Fighting climate change (A2030)
- Peaceful and inclusive societies (A2030)
- The image of attractive Blekinge (Blekinge strategy)
- Quality of life (Blekinge strategy)
- Limited climate impact (regional environmental goals)
- Non-toxic environment (regional environmental goals)
- Good built environment (regional environmental goals)



Overall objectives for the biosphere reserve are thus integrated into the *focus areas (above)*. Tangible objectives for Blekinge Arkipelag's activities can be found in the business plan and are closely linked to the focus areas and to the more changing theme areas that are designated for shorter periods of activity, see <http://files.builder.misssite.com/d5/bf/d5bfceb1-d03f-4085-91a6-8a2e6e400d6d.pdf>

The biosphere office and the board have decided to update the descriptive part of the Collaboration Plan for 2022 and remove the strategic part, which instead will be replaced by the association's new strategic tools and business plan.

The vision for Blekinge Arkipelag is still that the biosphere reserve should be a *sea of opportunities*, which means that the area and its participants should not be limited by lack of knowledge or awareness, short-term solutions, lack of networks and collaborations, destroyed ecosystem services, reduced diversity or unsustainable habits or activities.

**2.3.2 Budget and staff, including approximate annual average amounts (or year-on-year basis), main sources of revenue (including established economic partnerships [private/public], innovative financial systems), special (if any) private equity funds, number of full-time and part-time staff, use of other organisations' human resources, voluntary work efforts and other support.**

During the years 2011-2020, the association Blekinge Arkipelag received approximately 1 MSEK/year (EUR 100,000) for salary to coordinator and operation of the office. This basic grant has been distributed at approximately 400,000 SEK/year (EUR 40,000) from the Swedish Agency for Marine and Water Management, 310,000 SEK/year (EUR 30,000) from Karlskrona municipality and 150,000 SEK/year (EUR 15,000) from Karlshamn and Ronneby municipalities.

During 2015-2016 there was a full-time project manager in the association and during 2017-2019 there were 2.5 positions for project management. During 2020-2022, a project manager will be employed, working approximately 10%. Project managers in the association have been employed on project funds received from primarily government agencies. During this evaluation to UNESCO 2020-2021, the office has an extra full-time employee through temporarily increased funding from the biosphere municipalities and Länsstyrelsen.

As of 2022, the association has an increased base grant from two of the three current municipalities and from Sölvesborg municipality, that wants to become part of the biosphere reserve. Blekinge Arkipelag's basic financing then comprises a total of 1.7 MSEK (EUR 170,000) and is estimated to be enough for 2 permanent full-time positions that can be expanded with project funds.

During the last 3-4 years in particular, the association has received smaller amounts in membership fees, gifts, and earnings on profile merchandise sold by company members, connected to the ARK56 network. A total of around 30,000 SEK/year (EUR 3,000).

Other organisations around the biosphere office are sometimes active as project partners, sometimes as actual leaders of projects in the biosphere reserve in accordance with Blekinge Arkipelag's objectives. This became clear during the collaboration with the main network ARK56, where primarily the municipalities, county administrative boards, company members, and Region Blekinge had crucial roles and were active with their own funds and manpower resources estimated at a total of approximately 11 MSEK (EUR 1,100,000) during 2016-2020. In addition to the basic funding, both Region Blekinge, Länsstyrelsen and the municipalities allocate some funding to the association Blekinge Arkipelag for the management of ARK56 and for participation in the board and collaboration group.

Every year, Blekinge Arkipelag has a strong and significant support from members, trained biosphere ambassadors and the support team - all lined up with networking and contacts, project management, at beach cleaning and information activities, and much more. Friluftsförbundet and Naturskyddsföreningen (Swedish Society for Nature Conservation) have also played important roles here. Some of the association's board members have taken on tasks that far exceed their actual assignments. All together, these volunteer efforts mean a great deal to the biosphere reserve and the association.

### **2.3.3 Communication strategy for the biosphere reserve, including various methods and tools with a special focus on local communities and/or to recruit external support.**

The most important tool for the biosphere office for communicating descriptions of the biosphere reserve, activities, and results, is the association's website. The website has allocated space for pictures, texts, news, and governing documents and is aimed at the public as well as municipalities, authorities, and other stakeholders. The website was reconstructed and updated in 2020.

The association's newsletter is sent out 3-4 times a year and reaches the public via links on the website and social media. Above all, the newsletter comes directly to members, partners, and organisations that are closely related to the business, via email. In the letter there is information, not only about the association's various achievements, but also about why we chose to get involved in ongoing projects and activities - a way to raise awareness of social or landscape-related conditions and motivate more people to participate.

Social media has become more important in recent years and every week contributions are posted on Blekinge Arkipelag's Facebook and Instagram. It will be a continuous and easily accessible update of project activities, implemented measures and results that inspire and encourage more people to become members and to get involved in sustainable development or preservation work.

During 2018-2021, Blekinge Arkipelag has produced five film clips (2-4 minutes) - one about each theme area. The films are posted on the website and marketed at the first screening on social media. In addition, the association has made an inspirational film about wetland facilities in Blekinge that is about 15 minutes long, and a shorter film in collaboration with the Swedish Environmental Protection Agency about how the work with ARK56 contributes to the goals in Agenda 2030.

All these communication tools together with lectures, theme days and gatherings in different constellations with people who know the business and support it, communicate what a biosphere reserve is, why it exists, what we do and what the business leads to, are invaluable in terms of communication. Ultimately, it will be a way to contribute to changing norms and ways of thinking, which in turn will be translated into action and an actual transition to a sustainable society.

Sometimes we have good help from other organisations' tools and communication strategies.

### **2.3.4 Strategies for developing networks for cooperation in the biosphere reserve that act as links ("bridges") between different groups in different parts of society (e.g. groups dealing with agricultural issues, local economic development, tourism, ecosystem preservation, research, and monitoring).**

Blekinge Arkipelag's strategy for creating collaboration and new networks between the biosphere reserve's various participants has mainly been the composition of a few different working groups, but also in different lectures and theme days, stakeholders with the same issue but from different sectors have been able to gather and create more informal networks.

The most important groups have been the Support team, the Corporate Network, the biosphere ambassadors and, of course, the group constellations that make up the association's board and the Collaboration group.

For example, the Support team, the association's catchment group for trained ambassadors and other non-profit participants, have been able to take on such diverse tasks as development in forestry, support for research on Baltic salmon, beach cleaning, development of profile products for ARK56, communication on invasive plants, development of garden beds and restoration of affected watercourses. In such a context, a particularly important network for sustainable development is created, a common view that different parts of society's habits and activities need to undergo sustainable development. A strong network with different abilities and angles of approach means a large and varied spread of the results in the participants' own networks.

After completed theme days and projects, one strategy has been to preserve the participating networks and those created through the activity. They have then received other related news and had the opportunity to contribute more within the same or similar areas. During each project or other major arrangements in the association, different sectors of society are participating, which means that bridges are built between, for example, members, public, authorities, experts, and researchers.

Blekinge Arkipelag is also an arena for and a mediator of objectives, visions and needs on a local, regional, national, and international level. On the international level, we find the UNESCO Man and Biosphere program, and for example our ongoing transnational project Biosphere for Baltic. On the national level is the Biosphere Program Committee and the Swedish Agency for Marine and Water Management, at the regional level there is Länsstyrelsen Blekinge and Visit Blekinge among others, and at the local level are our biosphere municipalities, all of which are part of the biosphere reserve. Between these participants, Blekinge Arkipelag is an important bridge in both directions when it comes to conveying messages, situation descriptions and possible measures.

### 2.3.5 Specific vision and methods used to highlight the biosphere reserve's socio-cultural context and role (e.g., marketing of local cultural heritage resources, local history and local opportunities for cultural and cross-cultural education, cooperation with local people, attempts to reach newly arrived immigrant groups, indigenous people, etc.).

Blekinge Arkipelag primarily uses the website and app ARK56 to show the biosphere reserve's cultural-historical heritage. The vision is to contribute to greater understanding and knowledge of the

## TEMA HÅLLBART LANTBRUK MED FOKUS PÅ: NATURBETE, EKOLOGISK PRODUKTION OCH LOKAL FÖRSÄLJNING



### PÅ PROGRAMMET

- 09:00 Blekinge Arkipelag och Äggaboden hälsar välkomna!
- 09:10 Ola Jennersten, WWF och Urban Emanuelsson, SLU: Naturbete och biologisk mångfald i Blekinge Arkipelag - goda sammanhang och goda argument.
- 09:45 Lotta Bergström och Sofia Persson, Länsstyrelsen i Blekinge: Hur bibehåller och förstärker vi betesdrift i skärgården genom samverkan och produktutveckling?
- 10:15 Fika - vi bjuder på Äggabodens smörgås, te och kaffe.
- 10:30 Åsa Johansson, Länsstyrelsen och Sofia Eitrem, Hushållningssällskapet: Gröppa näringen! Ekologisk odling och ekologisk köttproduktion.
- 11:00 Iohannishus Gods: Omställning till ekologisk odling och hjortar som betesdjur.
- 11:20 Märta Jansdotter, VD på Gröna Gårdar: Hur har Gröna Gårdar lyft produkternas status och kortat ledet mellan produktion och konsumtion?
- 11:50 Jenny Hedin, Naturvårdsingenjörerna: Våtmarksrestaurering i Blekinge Arkipelag.
- 12:10 Heike Tiatlik berättar om möjligheter med det lokala köp- och säljinitiativet REKO-ring.
- 12:25 Albin Ponnerit berättar om möjligheter med det nationella köp- och säljinitiativet Local Food Nodes.
- 12:40 Niclas Fjellström, Regional Matkultur: Om projekten "Baltic Sea Food" och "Från jord till bord – samverkan kring en enda transport".
- 13:00 LUNCH – Hoppas du vill stanna och avnjuta lunch till självkostnadspris!

### VÄLKOMMEN!

I samverkan med föredragshållarna och biosfärkommunerna



[WWW.BLEKINGEARKIPELAG.SE](http://WWW.BLEKINGEARKIPELAG.SE)

### NÄR?

Onsdagen 27  
mars  
09:00-13:00

### VAR?

Äggaboden i  
Gärestad  
Strax öster om Ronneby

### HUR?

Anmäl delta-  
gande och  
eventuell  
lunch till:

[mattias@blekingearkipelag.se](mailto:mattias@blekingearkipelag.se)  
eller på 070-63 22 545



Invitation to theme day about sustainable agriculture 2019



history of the people of Blekinge and to create greater pride in what we have and who we are. Many residents in Blekinge fail to fully appreciate their own natural environment and their own cultural heritage. One neither see nor take advantage of the traces or the knowledge of what was the natural way of feeding mankind for thousands of years and until very recently. It means a certain lost identity. A greater pride in what we have could also mean greater security in the success of using what we have, i.e., utilizing the specific assets that the biosphere reserve's landscape, nature, and cultural history actually have to offer.



With its 140 figures, Hästhallen on Torhamnslandet (Karlskrona municipality) is Blekinge's largest rock carving with over 80 pictures of different ships.

Both on the website and in the app ARK56, there are some descriptions of our socio-cultural context - petroglyphs, the burial mounds from the Bronze Age, fishing, the Danish era, and the stone masonry era to name a few essential parts. By utilising this information at the same time as the new trail infrastructure ARK56, which points to many of the cultural-historical monuments, we have created conditions for both Blekinge residents and visitors to embrace our background and our heritage. It is also important as a counterweight and reference when we need to build an understanding of how we have ended up in today's unsustainable society and how we can develop towards one that instead is sustainable in the long term.

Working to ensure that the last coastal and small-scale fishermen are allowed to remain through a more diversified activity, is another step in supporting our cultural heritage. A transnational project has been carried out with other Baltic Sea countries to commemorate our coastal cultural heritage and capture the knowledge and skills that remain within, for example, the fishing industry.

When we now, during Friluftslivets År 2021, carry out various outdoor events on ARK56, some of the event's different themes will be aimed in whole or in part at immigrants and new Swedes, who through interpreters and guides can be introduced to both the Swedish outdoor tradition and the biosphere reserve's cultural heritage.

Some parts of the cultural heritage will be shown in the exhibition being built in 2021 at Blekinge Arkipelag's office in the county's only cultural reserve, Brunnsparcken. Right now, a dialogue is being held with Karlskrona municipality about being able to show new video recordings in 3D with the help of 3D technology.

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

Both among members and board members as well as at Länsstyrelsen and the municipalities, there is great local knowledge which is advantageous for various development and preservation projects. Examples of this is agriculture and natural grazing, which are important elements in the preservation of species linked to human use of the land.

Steneryd's deciduous meadows are a coastal grazing land with high biological values where Östra Blekinges Hembygdsförening still pollard and mow in a traditional way.

The knowledge of the few remaining commercial fishermen is not only used in fishing but has also been involved in scientific research and experiments with fish that have taken place in the biosphere reserve.

Regarding the association's wetland program and the tools developed that will inspire new wetland establishment and new construction, several local examples of successful projects and satisfied landowners form the foundation.

In the ongoing project Skogsnätverket Blekinge Arkipelag (The Forest Network), the project manager has extensive experience from the biosphere reserve and great significant local knowledge when it comes to sites for sampling and the different forest values.

In the village of Mörrum, there is a team that up-hold the tradition of a local catching method. The skills and traditions are displayed every year during the celebration of the village day, 11<sup>th</sup> of May.

### **2.3.7 Cultural development initiatives in society. Programs and initiatives to promote local languages as well as material and intangible cultural heritage. Are religious and cultural values and established customs encouraged and disseminated?**

The development of the ARK56 trail network with associated tools and experience packages is to the highest degree a cultural development initiative as the project in various ways captures an already existing industry in tourism that the people of Blekinge have created partly due to lack of sufficient income from agriculture and fishing. The project has also contributed to new standards around the industry - it must be sustainable for producer, consumer, and the surrounding nature. The project is also included in a collaboration with Karlskrona Municipality's transnational project (DUNC) to promote the world heritage city of maritime war history - a way to use and promote our material cultural heritage. The app and the website also market the last remaining and active wooden boatyard and the skills that are kept alive there - Saxemara boatyard, a tangible and intangible cultural heritage.

Fishing is most central in the cultural genetics of the biosphere reserve. Blekinge Arkipelag is not only trying to promote commercial fishing by developing further opportunities for diversification. Sport fishing has a strong presence in the biosphere reserve and the whole of Blekinge. This can be seen in the number of fishing enthusiasts and sport fishing facilities along the Mörrum River and the coast. Thus, the fishing culture has participants in both professional and leisure life. Several of the sport fishing facilities are promoted through ARK56 Development, where they receive greater marketing,

but also through the newly introduced education program for young people in sustainable sport fishing, "Fiskeäventyret Blekinge" (The fishing adventure in Blekinge).

Blekinge Arkipelag has participated in various ways to promote the so-called "Sillarodden" which is arranged by local enthusiasts in Ronneby. Sillarodden is a local historical cultural phenomenon based on the importance of coming first from the harbour with freshly caught herring in a rowing boat via Ronnebyån to Ronneby square where all presumptive customers are waiting.



Small-scale coastal commercial fishing is a core activity in the biosphere reserve's cultural history.

In the transnational project RECORDI (Recall the costal heritage), films were made by those who are still carriers of an intangible cultural heritage, such as stories with roots in the biosphere reserve and skills linked to small-scale commercial fishing.

Otherwise, no efforts are made to spread religious culture.

**2.3.8 Enter the number of spoken and written languages (including ethnic languages, minority languages and endangered languages) in the biosphere reserve. Has the number of spoken and written languages changed? Has there been a revitalization program for moribund languages?**

Within Blekinge Arkipelag, only Swedish is spoken among Swedes. The same applies to the written language, which is Swedish. Among new Swedes in the biosphere reserve, there are groups from different parts of the world who speak their mother tongue, preferably within their own ethnic group. No endangered indigenous languages exist and consequently no revitalization programs. On the other hand, Listerlandet has a distinctive dialect.

**2.3.9 The impact of the administration/coordination. Obstacles for the management/coordination of the biosphere reserve or challenges in making it work effectively.**

How well Blekinge Arkipelag is coordinated and managed can be measured in different ways. It is relatively easy to look at how the association's support develops, how many projects are carried out and how many work theme areas are kept going during a period of activity. Measuring the long-term impact of actual results on standards, ecosystem services and various industries is much more difficult.

The development of the support for the association in recent years has been studied and gives the following results:

#### Changes in association support 2018-2021

Key performance indicators (KPIs)	2018	2019	2020	2021
Number of followers on Facebook (total)	658	1200	1808	2100
Downloads of the app ARK56 (total)	0	5000	14950	19700
Number of member companies (total)	28	52	60	65
Private members (total)	40	148	230	280
Number of trained ambassadors (total)	30	46	68	85

Following the reorganisation in 2017-2018, followers on social media as well as the number of members, and the number of trained ambassadors, have increased continuously.

A snapshot of ongoing projects and activities (January 2021) shows that 33 activities are kept going, of which 22 are larger projects that last one year or more:

#### Sustainable hospitality and tourism industry

1. ARK56  
Corporate networks  
Sustainability certificate  
Marketing  
Product development
2. Sustainable golf courses
3. Biosphere forBaltic - Exchange
4. Biosphere area brochure & ARK56
5. CoTourism
6. Friluftslivets År 2021 (The Year of Outdoor Life 2021)

#### Information learning and participation

12. Dialogue meetings (Biosfärdagen)
13. Information lecture
14. Film production
15. Facebook/Instagram

#### Keep the biosphere clean

7. Beach cleaning
8. Information about cleaning and Allemansrätten (Right of Public Access)
9. Develop and distribute a degradable garbage bag
10. Invasive plant species
11. Roadside diversity with the Swedish Transport Administration

#### Sustainable fishing

25. Thiamine research
26. Sweden's fishing municipalities
27. Biological restoration of watercourses
28. Support for coastal commercial fishing: Round Goby project
29. Support for sport fishing: The project "Risvase" (piles of brushwood)

16. Website update

17. News letter

18. Support team

19. Ambassador training

20. Members and member activities

21. Exhibition

22. School activities (The Biosphere Challenge)

23. Theme days and conferences

24. The 10-year evaluation and expansion of the biosphere reserve

## Sustainable agriculture and forestry

30. Optimal irrigation and solar panels on agricultural land

31. Wetland program

Gisslevik

Torsteboda

Grönadal

Möcklö

32. The forest network

33. Promote natural grazing

In the evaluation survey the association commissioned in the autumn of 2020, 94 respondents were asked how they viewed the association's current activities. The answers were given regarding the business' a) relevance based on needs and assignments, b) how much commitment it arouses, c) whether it balances well between economic and ecological focus and between preservation and development, d) how well established it is. The fact that most of the answers end up with responses ranging between medium and large, also provides a measure of how the association so far has succeeded in coordinating, and to what extent the results have had an impact:

### Question 14: How do you view the current business of Blekinge Arkipelag?

#### F14: Hur ser du på Blekinge Arkipelags nuvarande verksamhet?

Svarade: 94 Hoppade över: 0



Powered by SurveyMonkey

When it comes to prevailing results as a measure of impact of administration and coordination, ARK56, with the increased accessibility to the biosphere reserve and the information about its high natural and cultural values, should be mentioned. The inter-municipal marine planning and the association's gradual transformation of the biosphere reserve's wetland landscape are other important examples.

Another example of the administration's impact is the fact that all current biosphere municipalities and the municipality of Sölvesborg have decided to apply for an expansion of the biosphere reserve within Sölvesborg.

See sections 4.4, 5.10 and 6.5.

**2.4 Comment on the following particularly interesting matters concerning the biosphere reserve: (Refer to the other sections below, if applicable.)**

**2.4.1 Is the biosphere reserve specifically addressed in any local, regional and/or national development plan (overview plan, environmental strategy, etc.)? If so, which plan/plans? Briefly describe the plans that have been implemented or revised in the last ten years.**

The biosphere reserve is included in the following municipal plans

- Karlskrona Municipality's Rural and Archipelago Program 2018-2021
- Karlshamns Municipality's Overview Plan
- Karlshamns Municipality's Municipal Plan
- Ronneby Municipality's communication plan

The biosphere reserve is also mentioned in the following regional plans:

- Blekinge Region's Action Plan for Blekinge's regional trails (ARK56, Blekingeleden and Sydostleden)
- Länsstyrelsen's Forest Strategy
- Länsstyrelsen's Platform for the work with green infrastructure in Blekinge County 2019: 14
- Blekinge's inter-municipal plan for the sea
- Regional action programs for environmental quality objectives

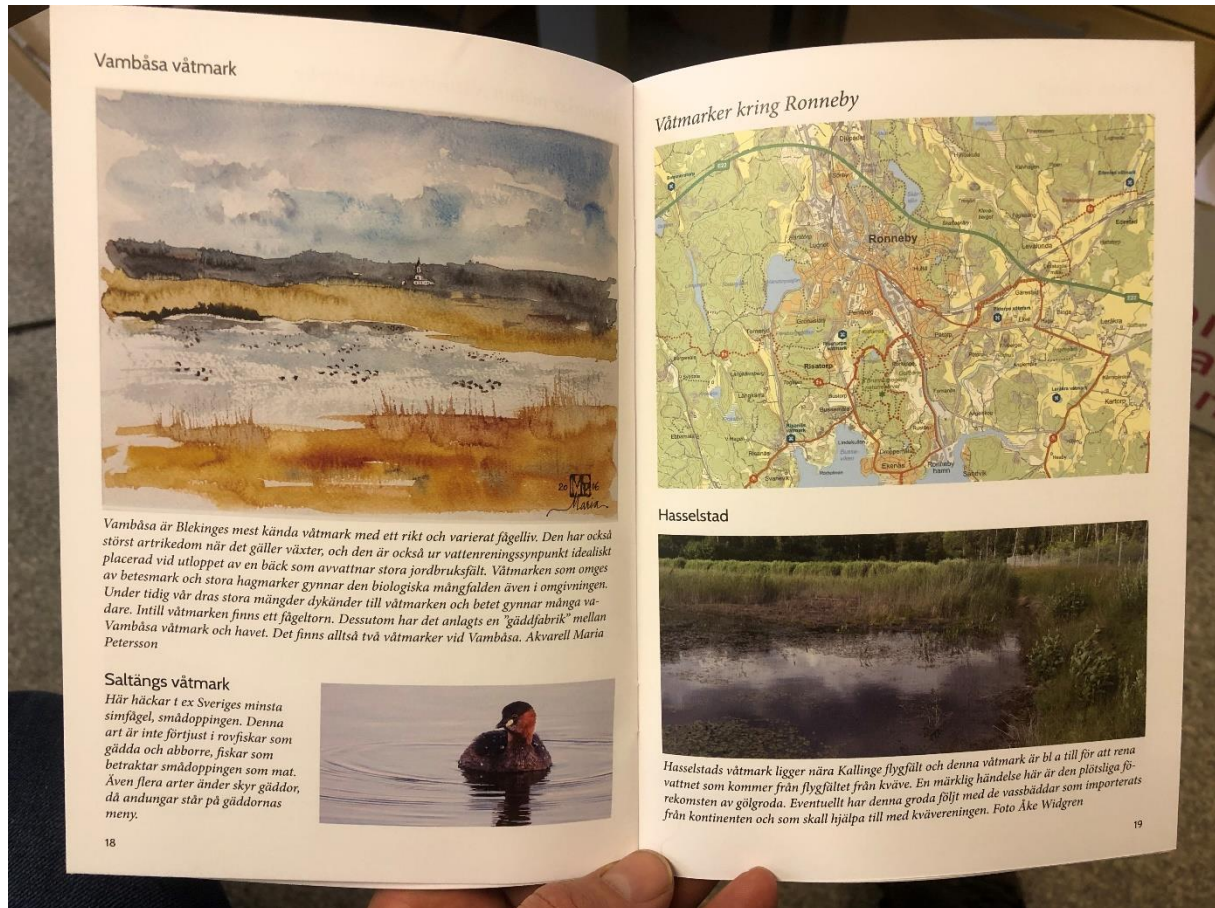
**2.4.2 Results of government agencies' and other organisations' management/collaboration plans in the biosphere reserve.**

Blekinge Arkipelag has in collaboration with the Swedish Environmental Protection Agency created a film illustrating how the biosphere work promotes the goals in Agenda 2030. The collaboration with Länsstyrelsen has resulted in inspirational material about wetlands and the preparation of wetlands in the biosphere reserve. Länsstyrelsen has had and still has several important LIFE projects and action programs for endangered species in the biosphere reserve, which in various ways have promoted the goals contained in the Collaboration Plan for the Biosphere Reserve Blekinge Arkipelag. The result has been, for example, that old pastures have been cleared and prepared for grazing again and other measures have influenced the diversity of the coastal deciduous forests. Länsstyrelsen's work with protected areas has also been developed into new reserve formations in the biosphere reserve.

**2.4.3 Continued involvement of the local population in the work of the biosphere reserve. Which social groups, interest groups, etc. In what way are they committed?**

All social groups are continuously invited to participate in the biosphere work, partly through social media and membership in the association, but also in the annual ambassador training. It is not uncommon for local people to be directly involved in various projects and activities. These non-profit forces are today involved in the association's projects through, for example, project leadership for our forest-related projects, which also involve many forest owners and entrepreneurs connected to forestry activities.

Non-profit forces have also been involved in the development of profile products for the coastal and archipelago routes ARK56. Other people that have been part of the association's so-called Support team have been involved in creating genuine crafts and sustainable Blekinge souvenirs that can be sold to tourists by company members. They have also managed restoration work in two of the biosphere reserve's watercourses.



Constructed wetlands in Blekinge - an inspirational publication

Landowners have been involved in our inspiration tools for wetland facilities in the biosphere reserve. Both in film and in print, they talk about their experiences and success stories. Even in the new constructions of wetlands, where Blekinge Arkipelag plays a major role, landowners are committed to enter into agreements and develop parts of their land into wetlands.

People from Naturskyddsföreningen (the Swedish Society for Nature Conservation) and Friluftsförbundet have been particularly involved in the development of the coastal and archipelago trails ARK56. They have continuously provided us with tips and views on the development of trails, maps, and mobile apps. Many companies along the trails have been involved in developing more sustainable hospitality businesses and creating sustainable products in the form of experiences in the biosphere reserve.

During Friluftslivets År 2021, both entrepreneurs and associations are involved in several outdoor events to inspire a wider public to more outdoor life.

We have involved the public in the association's evaluation of new innovations used to purify washing water from synthetic fibers. In our efforts to form an opinion on the morbidity of Baltic salmon, several people have been involved in disseminating information, writing texts, and proposing content during information days.

At our theme day for sustainable agriculture, many farmers were involved and several of them have since been involved in the association's projects for, among other things, optimized irrigation, and a new way of using agricultural land for solar production. In 2021, several animal keepers and others with a connection to grazing will be involved in a series of lectures on natural pasture and natural pasture meat, which we do in collaboration with Länsstyrelsen.

**2.4.4 The role of women. Do women participate in community organisations and in decision-making? Are the same interests and needs considered in the biosphere reserve? What incentives or programs are there to encourage their representation and participation? (For example, has an impact assessment of gender equality been carried out?) Are there surveys that examine a) whether men and women have different access to and control over sources of income and b) what sources of income do women have? In such cases, provide source references to these surveys and/or attach a hard copy.**

Sweden is considered one of the world's most equal countries where the general norm is that women's rights, needs and interests should weigh as heavily as men's. Swedish legislation also ensures that this is complied with, and any special treatment based on gender is not permitted.

Within the Biosphere Reserve Blekinge Arkipelag, the municipalities and Länsstyrelsen, decisions are made by women and men who are given influence due to competence and experience, or because all social groups should be heard in the democratic process. Within authorities and public organisations, including Blekinge Arkipelag, women are highly involved in work and decision-making processes.

**2.4.5 Has the main protection for the core area(s) and the buffer zone(s) changed?**

The protection for the core areas is intact because our core areas primarily consist of nature reserves that are protected by Swedish legislation. The buffer zones consist of other types of protected nature, Ramsar areas, BSPA area (Baltic Sea Protected Area, designated by Helcom), World Heritage, national interest in nature conservation and cultural environmental protection, beach protection areas along coasts and larger rivers, forest nature conservation agreements, and plant and animal protection areas. Here, too, the protection is unchanged, partly through Swedish legislation and the functioning administration of Länsstyrelsen regarding, for example, nature conservation agreements. Other parts of the buffer zones can be managed through the biosphere reserve's Collaboration Plan, for example the BSPA area and national interest areas.

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

Stockholm University and the Swedish Veterinary Institute (SVA) have conducted sampling for research on Baltic salmon. SVA also has an ongoing monitoring function via voluntary digital reporting of discoveries of diseased or dead fish, which did not exist before.

Sveriges Lantbruksuniversitet (the Swedish University of Agricultural Sciences (SLU)) has conducted research on what different target groups know and how they relate to risks with invasive garden plants. The surveys aim to develop guidelines for adequate communication between authorities and municipalities, garden owners, and more.

SLU also conducts the research project Management of salmon fishing in the Baltic Sea.

There are companies that investigate how mussel farming works in certain parts of the biosphere reserve and German researchers have in collaboration with Blekinge Arkipelag and Biosphere



Reserve Sydost-Rügen investigated what conditions the biosphere reserve offers for herring spawning.

**2.4.7 How has the ability to manage and develop the biosphere reserve as a whole been strengthened? For example, have you developed new collaborations, found new partners, or made new contacts of value to the overall management?**

The ability to manage and develop the biosphere reserve is strengthened as various new forms of collaboration, communication channels, initiatives, projects, and results emerge in the arena that consists of the association's independence and competence, and the stakeholders' commitment. Among the first ten years of operation, there are mainly three investments that have resulted in strengthened management and development. The wetland program, which has involved the development of wetlands and restored watercourses, has strengthened the collaboration between the biosphere office, Länsstyrelsen, SydostLeader, landowners, Sportfiskarna Blekinge and an interested public.

The development of ARK56 has created close relationships between the biosphere office, the municipalities, Region Blekinge, the hospitality companies, Länsstyrelsen Blekinge and a committed public, especially through association life. To manage the new trails and products, continuous meetings are held with the corporate network and in a newly formed administrative organisation with Region Blekinge as the trail principal.

Our biosphere reserve's relatively newly formed Forest Network has also meant new collaboration between Blekinge Arkipelag, Skogsbolagen, Länsstyrelsen Blekinge, forest owners and several entrepreneurs with the forest as their main industry. Blekinge Arkipelag has made comments on Länsstyrelsen's new forest strategy, where the biosphere reserve is now mentioned.

**2.4.8. Provide additional information about the interaction between the three zones.**

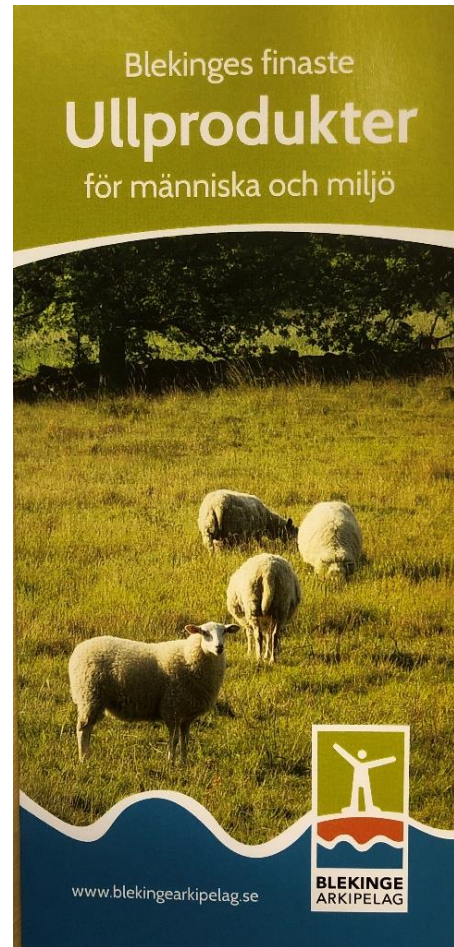
Zoning is a form of physical planning that is rooted in those involved in the area and is important for ecological, economic, and social development. The starting point for zoning in the biosphere reserve does not mean new legislation but relies entirely on existing laws. There are several laws with different processes that regulate use of land in Sweden. In the physical planning, construction, use of land and water are regulated through, for instance, the Planning and Building Act (Plan- och Bygglagen). The content of the operations is primarily governed by the Environmental Code (Miljöbalken). Other laws that are important for land use are, for example, the Cultural Heritage Act (Kulturminneslagen), the Species Protection Ordinance (Artskyddsförordningen), the Forest Conservation Act (Skogsvårdslagen), the Fisheries Act (Fiskelagen), the Hunting Act (Jaktlagen) and the Waterway Act (Farledslagen). Otherwise, land use is regulated through voluntary deals and agreements.

**2.4.9 Young people's participation. How have young people participated in the organisations and in the joint decision-making? In what way have their interests and needs been taken care of in the biosphere reserve? What are the incentives or programs to encourage them to participate?**

Our current biosphere ambassador training (since 2018) is made to suit both adults and young people. We have had and continuously have, in 2021, participating teenagers in the education program. Until 2018, we also had a young (25 years) representative on our board, but a replacement in the same age group has, according to the nomination committee, been difficult to find.

Our so-called support team brings together the newly trained ambassadors, but also other people, who through various activities and projects have heard about the association and want to contribute

to the business. This group has no age limit or prerequisites - all interested parties are welcome to participate. Over the years we have had several young people who have had key roles in, for example, beach cleaning and the development of profile products.



Pupils from Mörrum receive prize money for their innovation in Malmö, which later contributed to the folder about locally produced wool products that can replace synthetics and contribute to a cleaner Baltic Sea!

In collaboration with World Maritime University, we have arranged workshops in upper secondary school on the condition of the Baltic Sea. This resulted in innovative ideas that the pupils brought to an innovation competition where they succeeded and received prize money for their achievement. The pupils had to decide for themselves how the prize money would be used and chose to produce a folder in collaboration with Blekinge Arkipelag. The folder provides information of the benefits to the sea if we use and wash clothes and utensils made of wool instead of synthetic materials. The folder also markets several local wool garments and handicrafts.

During 2020-2021, Blekinge Arkipelag will lead a project in collaboration with other Swedish biosphere reserves that will finance and further develop the Vänerskärgrården Biosphere Reserve with Kinnekulle's so-called biosphere challenge. The biosphere challenge is primarily aimed at pupils in lower secondary school and will challenge their creative and innovative aspects of the environment and at the same time inform about the goals and purpose of the biosphere reserves.

Other areas where young people have been involved are in beach cleaning initiatives and during the association's participation in the national initiative on young people's interest in research, called Research Friday, arranged by Kreativum in Karlshamn.

### 3. ECOSYSTEM SERVICES

#### 3.1 If possible, describe the ecosystem services that each ecosystem in the biosphere reserve provides, and who uses these services.

(According to the previous evaluation or nomination and with 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 are beneficial to humans and important for our well-being. According to the MEA and TEEB frameworks, they can be divided into four categories:

1. **Supporting services** - the natural processes and conditions that are the basic preconditions for all other ecosystem services, such as biodiversity and the water cycle.
2. **Regulatory services** - benefits obtained from the regulation of natural processes, such as the purification of water when it filters through the soil layers to groundwater.
3. **Supplying services** - various products that the ecosystems offer, such as mushrooms, fish and drinking water.
4. **Cultural services** - non-material benefits from ecosystems, such as mental and physical health, recreation, spiritual and aesthetic experiences.

Ecosystem services are thus resources in nature that contribute to our welfare, our nature experiences, and our survival. Calculating their economic values can sometimes be difficult, but it is important to recall the societal benefits they contribute. They are needed for the sustainable development of our society, but also for a balanced sea and a vibrant coast and archipelago.

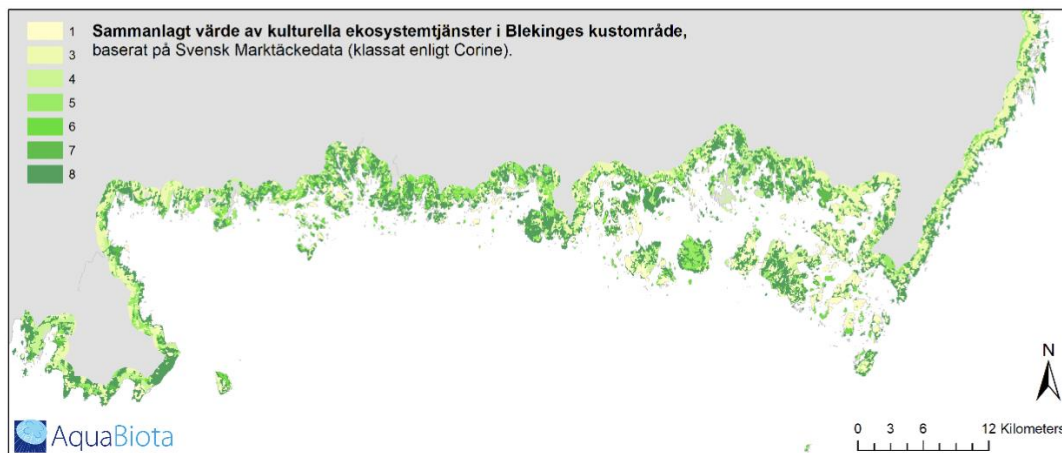
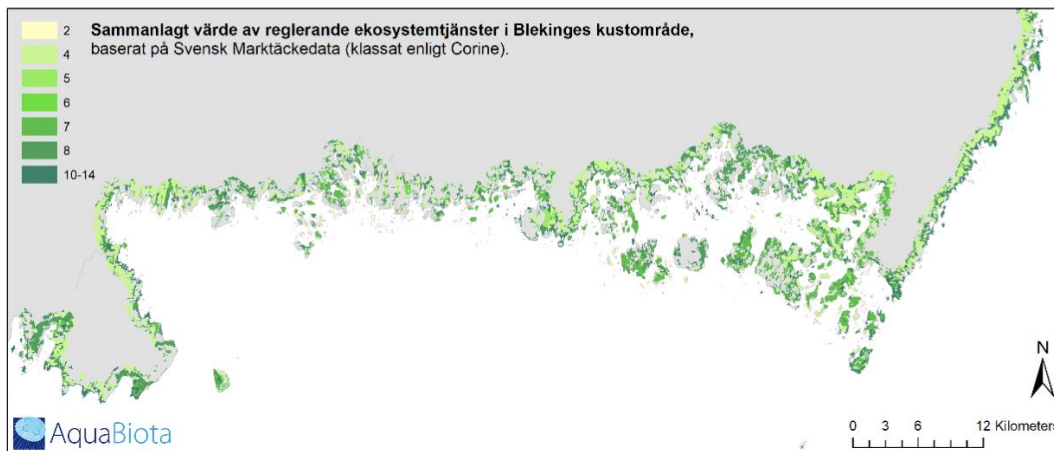
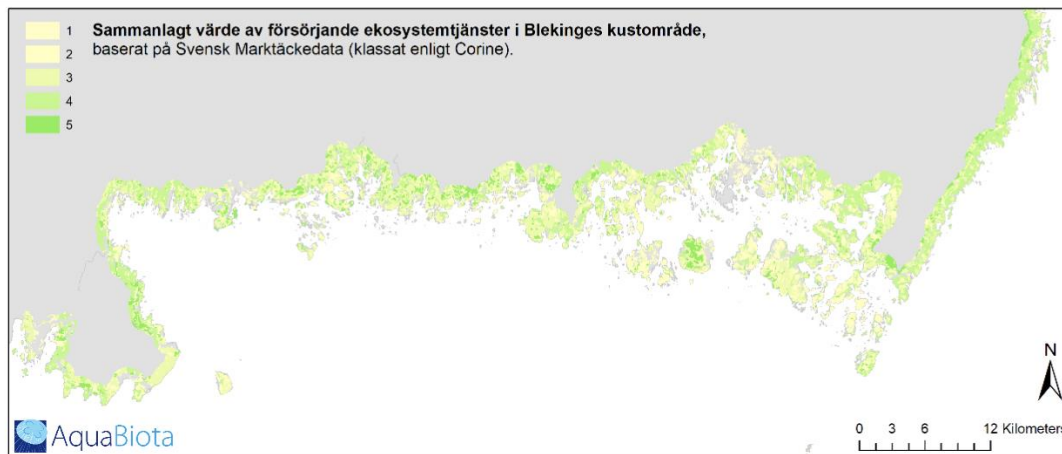
Blekinge Arkipelag is *an ecological hotspot*. The archipelago is completely unique when it comes to what can be offered in terms of commercial fishing and sport fishing, outdoor life, and nature tourism. The deciduous forest coast, wetlands, pastures and archipelago also have a very rich biological diversity. Here, a large number of species have protection in Swedish legislation or in the EU Birds and Habitats Directive.

A comprehensive ecosystem services analysis was carried out in 2017, on behalf of Länsstyrelsen, where ecosystem services along the Blekinge coast, both on land and at sea, were identified, mapped, and evaluated. The survey was conducted by Linus Hasselström, Jenny Wallström and Antonia Nyström Sandman 2017: Kartläggning av Blekingekustens ekosystemtjänster (Survey of Blekinge coast's ecosystem services). Länsstyrelsen Blekinge, Report: 2017: 23. The images below are taken from the report.

The images show that the coast of Blekinge and the biosphere reserve deliver both supply and regulatory as well as cultural ecosystem services in relatively high values.

(The darker the colours, the higher the values)

1. **Total value of supplying ecosystem services in Blekinge's coastal area**
2. **Total value of regulatory ecosystem services in Blekinge's coastal area**
3. **Total value of cultural ecosystem services in Blekinge's coastal area**

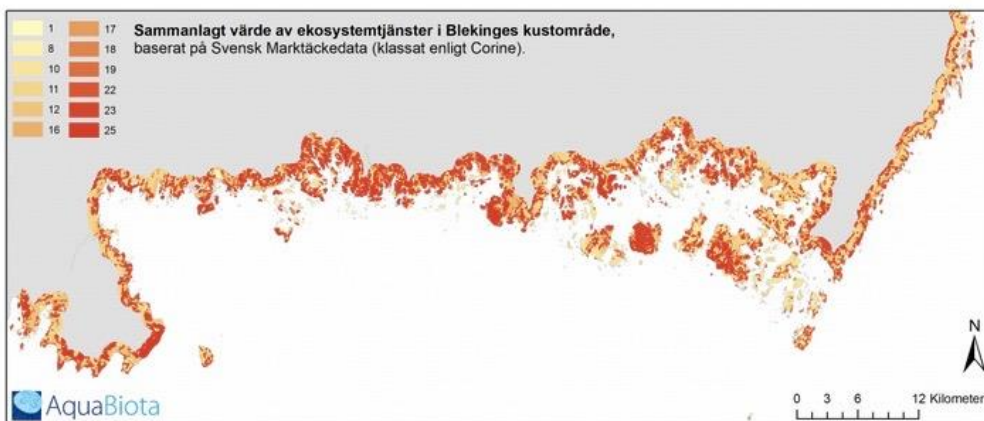
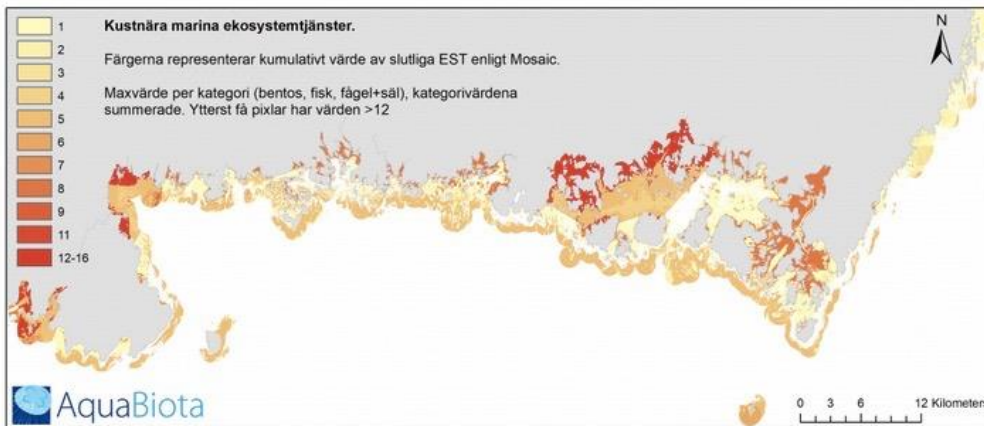


An in-depth analysis of ecosystem services on land shows that the highest total points for supplying, regulatory and cultural ecosystem services are given to deciduous and other forests, urban green areas, and coastal pastures. Together, these make up almost 50% of the surface in the coastal area. Deciduous forest, urban green areas and near-shore grazing land are important for regulatory and cultural ecosystem services, while coniferous forest receives the highest score for supplying ecosystem services. The following table from report 2017: 23, page 43, clarifies the biosphere reserve's different habitat types of contribution to the ecosystem services:

Table 1: Assessment of different habitat types of contributions to ecosystem services, from 0 (none) to 2 (large).

Marktyp	Procent av ytan i kustområdet	Lvsmedel	Vattenförsörjning	Biotiska råvaror (t ex fiberråvara)	Bioenergi	Renare luft	Lokal och regional klimatreglering	Global klimatreglering	Främjar biologisk mångfald	Biologisk kontroll av skadegörare	Bullerreducering	Vattenreglering	Pollinering	Friluftsliv och rekreation	Hälsa (t ex motion)	Landskapskaraktär (kultur- och naturarv)	Turism	Försörjande	Reglerande	Kulturella	summa
Lövskog	23.3%	1		1	1	2	2	2	2	1	2	2	1	2	2	2	2	3	14	8	25
Barrskog	8.9%	1		2	2	2	2	2	1	1	2	2	1	1	2	1	1	5	13	5	23
Blandskog	2.9%	1		1	1	2	2	2	2	1	2	2	1	2	2	1	1	3	14	6	23
Urbana grönområden	3.4%	1				2	2	1	2	1	2	2	2	2	2	2	2	1	14	8	23
Strandnära betesmark	8.7%	2		2		1	1		2	2	1	1	2	2	2	2	2	4	10	8	22
Vattendrag	0.03%	1	2				1	1	2	1		2	1	2	2	2	2	3	8	8	19
Frukt och bärodling	0.1%	2			1	1	1	1	2	1	1	1	2	1	1	1	2	3	10	5	18
Naturlig gräsmark	0.04%	1		1		1	1	1	2	1		1	2	2	2	2	2	2	8	8	18
Betesmark	2.7%	2				1	1		2	2	1	1	2	1	1	2	1	2	10	5	17
Sjöar och dammar	0.2%	1	2				1		2	1		2		2	2	2	2	3	6	8	17
Estuarier	0.1%	2		1			1	1	2	1		1		2	2	2	2	3	6	8	17
Kustlagun	0.2%	2		1			1	1	2	1				2	2	2	2	3	5	8	16
Gles stadsstruktur	9.5%					1	1		1		2	1	2	1	1	1	1	0	8	4	12
Myrar	0.8%			1	1				1	2		2		1	1	2	1	2	5	5	12
Saltpåverkade våtmarker	1.1%							2	2	1		2		1	1	2	1	0	7	5	12
Limnologena våtmarker	0.1%							2	2	1		2		1	1	2	1	0	7	5	12
Idrotts- och rekreationsområden	1.7%	1					1		1				2	2	2	1	2	1	4	7	12
Åkermark	17.4%	2		1	1	1			1	1			1	1	1	1		4	4	3	11
Hedmark	0.8%	1							2			1	1	2	1	2	1	1	4	6	11
Övergångstad. skog/busmark	15.0%	1			1	1	1	1	1		1	1	1				1	2	7	1	10
Berg i dagen och blockmark	1.1%								2					2	1	2	1	0	2	6	8

Two images:



1. Coastal marine ecosystem services

The colours represent the cumulative value of the final EST according to Mosaic Maximum

value per category (benthos, fish, bird + seal), the category values summed up. Very few pixels have values >12

2. Total value of ecosystem services in Blekinge's coastal area based on the Swedish land cover map (classified according to Corine).

Report 2017: 23 also contains descriptions of the total value of coastal marine ecosystem services and the coastal area's ecosystems' supplying, regulatory and cultural ecosystem services (above).



The archipelago and the deciduous forest coast are important for outdoor life and the hospitality industry. Kayaking at island Karön, Ronneby municipality

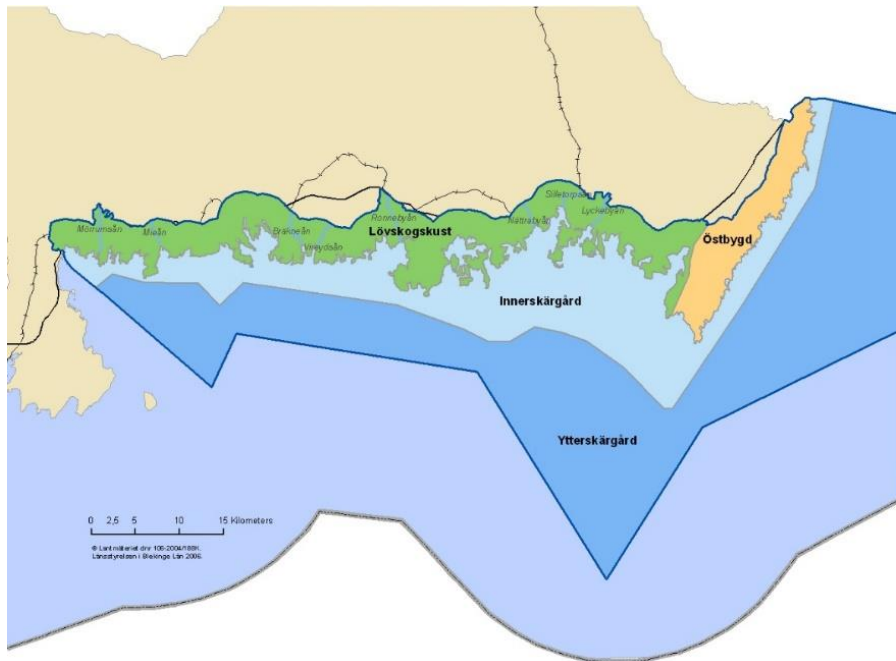
When it comes to the coastal marine ecosystem services, they can be described as more varied across the landscape. The highest total values for birds, fish and seals have their larger contiguous areas in the deep bays between Ronneby and Karlskrona, for example in the Listerby archipelago, which is also a nature reserve and special protection area. The land areas on the larger islands have a varied grazing landscape. There are pastures with oak, rocky grounds, and areas with juniper bushes on heaths and beach meadows. In pastures and on meadows there is a rich flora with, for example, the orchid Adam and Eve. Along the coast, round-cut rock slabs are found in many places. There are also pebble beaches, some grassland and sandy beaches, and the water depths varies between 1-18 meters. Many bird species thrive here, both nesting birds and those on a temporary visit. Smaller woodpeckers for example, live in the cavities of the old oak trees. In the bays, large flocks of seabirds rest and stay over the winter months. The small skerries in the southern part of the reserve are bird sanctuaries with nesting terns and other seabirds.

Overall, Blekinge Arkipelag Biosphere Reserve has a varied coastal landscape with different ecosystems linked to the local types of habitats. The area is in what is called the nemoral region and has ecosystem types that occur in a number of geographical areas with particularly high natural values. The UNESCO definition of this type of region is called Temperate, and subpolar broadleaf forests or woodlands and this is defined by the EU as Nemoral and Boreal regions. The Swedish definition is the Southern deciduous forest region (Södra lövskogsregionen) and the Southern coniferous forest region (Södra barrskogsregionen).

In the application for biosphere reserve, Blekinge Arkipelag was divided into the following parts:

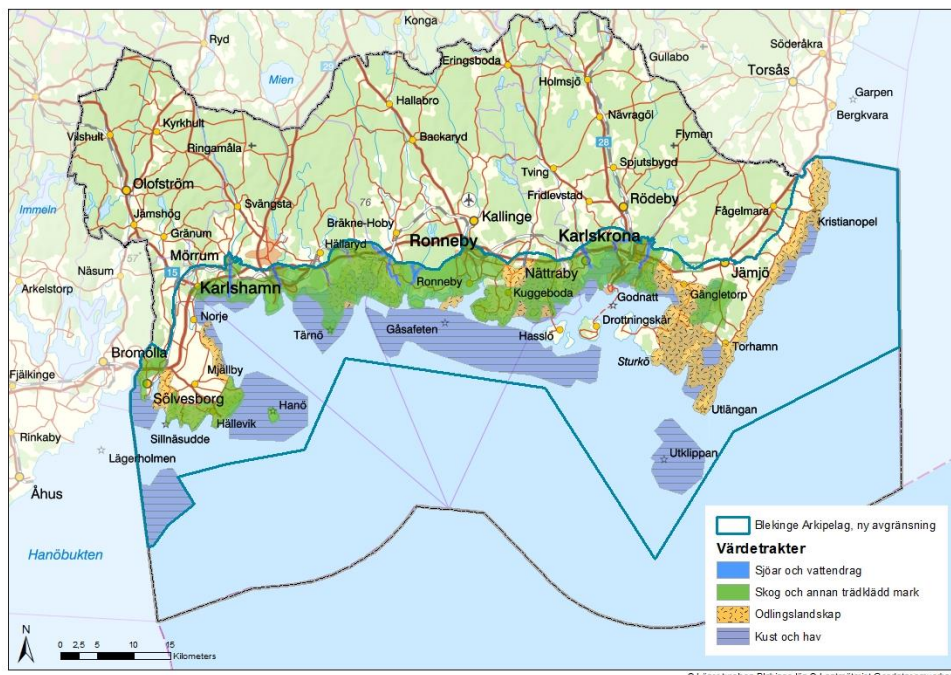
- The deciduous forest coast (the dominated deciduous forests by the sea)
- The Eastern part "Östbygden" (including cultivated landscape and coniferous forest)

- The 8 larger rivers
- The inner archipelago with its islands, shallow bays, and straits
- The outer archipelago (the open sea)



The deciduous forest coast (green) dominates Blekinge Arkipelag except in the eastern part.

The biosphere reserve's mix of ecosystems is located both within protected areas and in the cultivated land areas as well as near the coast, in the inner archipelago and in the outer archipelago. Even though coastal areas make up only 4% of the earth's total land area, more than 40% of the world's population lives within 150 km of the sea (UN Atlas 2010). In Blekinge, most major municipalities are located by the coast.



Sites of high value: Green is forests, and beige is farmland, lilac is coast and sea.

In chapter 12 of Blekinge Arkipelag's application for biosphere reserve, a division of habitat types/land use types was made:

- First type of habitat/land use type: **deciduous forests**
- Second type of habitat/land use type: **coniferous forests**
- Third type of habitat/land use type: **natural pastures and meadows**
- Fourth type of habitat/land use type: **cultivated land, fields, and grassland**
- Fifth type of habitat/land use type: **built environments**
- Sixth type of habitat/land use type: **watercourses and lakes**
- Seventh type of habitat/land use type: **inner archipelago, shallow bays, and straits**
- Eighth type of habitat/land use type: **outer archipelago, open sea**
- Ninth type of habitat/land use type: **beaches, islands and skerries**
- **NEW** Tenth type of habitat/land use type: **wetlands**

Here in Chapter 3, we use this division with the addition of Wetlands as a tenth important type of habitat that Blekinge Arkipelag has invested heavily in over the past ten years. The third habitat type was called natural forage land in the application, but we chose to name these as natural pastures and meadows based on the directed work Blekinge Arkipelag now does within the area of natural pastures.

## **Biosphere Reserve Blekinge Arkipelag's ecosystem, ecosystem services and users**

### ***Ecosystem Deciduous forests***

Within the biosphere reserve, there is a significant area of deciduous forest. Some deciduous forests have had a significant endurance, others have arisen through overgrowth of oak and beech pens. Most of the deciduous forest consists of oak and beech forests, sometimes in pure population but usually with elements of other tree varieties. In the area there is also hornbeam forest and small population of ash, linden and elm. The deciduous forests have very high biological values, approximately 50% of the national, red-listed species are linked to deciduous forests. For example, up to 1,000 different species depend on oaks of different ages and stages. In many places, the deciduous forest and the sea meet, something that within the country almost only occur in Blekinge, which is also very unusual from an international perspective. There are 8,511 hectares of deciduous forest along the coast. Relatively large areas are found in the vicinity of urban areas and built-up-areas, which could be a burden in terms of, for example, exploitation, traffic pollution and noise, but also something of great value with the opportunity to visit the forest. Deciduous forests in connection with the marine environment constitute a unique type of nature. In the transition between forest and water, there is often a great richness of species because species (for example, birds) from both forest and water can occur in combination with species that are linked to the transition zone. Transition zones are important not only for biodiversity but also for the transport of substances (e.g., nitrogen) from cultivated land to water. Furthermore, the climate in the coastal environment means that the diversity of species in the forest landscape along the coast is particularly good (Karlskrona municipality, 2014). Länsstyrelsen Blekinge Report: 2017:23.

### **Ecosystem services in deciduous forests**

The deciduous forests provide a variety of ecosystem services, where the creation of habitats for many species is the basic prerequisite for, e.g., following:

- Food (e.g., berries, mushrooms, and game)
- Wildlife experiences
- Flood protection through the trees' water uptake and water storage



- Climate regulation, both locally through temperature equalization and protection against wind, and globally through storage of carbon in trees and soil
- Pest control (biological regulation)
- Pollination for both the forest's own species and for agricultural and horticultural crops
- Ground stabilization
- Timber



Leafing in the beech forest on Sternö in Karlshamn munic.

It is difficult to evaluate all these services at once. When it comes to nature experiences, Blekinge's deciduous forests have been shown to have special values linked to human health. In a questionnaire study, Annerstedt et al. (2010) studied how people's stress levels were affected by visits to deciduous forests in Blekinge and Skåne. Longer stays in the deciduous forest resulted in lower perceived levels of stress, fatigue, and irritation. The same pattern did not apply to coniferous forest. The availability of forest for recreation is associated with great values.

Norman et al. (2011) compiles a list of the recreational values of the deciduous forest in Skåne and Blekinge. The following is stated: the residents in Skåne and Blekinge visit the forest on average about three times a month. Based on the travel cost, and the assumption that 113,000 adult residents make three visits per month (36 visits per year) to Blekinge's deciduous forests, the total recreational value per year is estimated at 195 MSEK. In case of coastal forests, it is not possible to isolate the value of these from the above total value. However, the coastal forests are likely to have particularly high recreational values. Reference: Linus Hasselström, Jenny Wallström and Antonia Nyström Sandman 2017: [Kartläggning av Blekingekustens ekosystemtjänster](#). Länsstyrelsen Blekinge Report: 2017:23.

### **Users of deciduous forests**

Residents and visitors

Landowners committed to forest production and hunting

The forest industry

The hospitality and tourism industry

### ***Ecosystem Coniferous forest***

Within the biosphere reserve, there is a significant area of coniferous forest. Most coniferous forest consists of planted spruce and pine along parts of the coast, but the area also contains original coastal pine forest.

### **Ecosystem services in coniferous forests**

Nature experiences in coniferous forests is an ecosystem service. Picking berries and mushrooms is a resource. Fishing and game hunting are important to many people, an ecosystem service that many appreciate. Even just visiting the coniferous forest enriches many of us. The ability of trees and plants to absorb and store water is an important ecosystem service in the coniferous forest. They can also provide protection against nutrient leakage to watercourses, but also against flooding. Trees and

plants also bind carbon from the atmosphere, giving us cleaner air.

Wooden buildings, for example, can also store coal, depending on how the raw timber material is used long term. Timber for wood and pulp as well as biofuel from coniferous forests are supporting us humans with great values.

### **Users**

Residents and visitors

Landowners committed to forestry and hunting

The forest industry

### ***Ecosystem Natural pastures and meadows***

The natural pastures and hay meadows within the area represent an important type of nature and land use. They contain a traditional flora and fauna that indicates both traditional continuity and a continuous avoidance of fertilizer. The natural pastures include everything from dry, lean grass heaths to marshy meadows and beach meadows. The hay meadows are few and small, but important for the biological diversity at the same time as they have a significant cultural-historical value.

### **Ecosystem services from natural pastures**

The grazing land close to the shore is valued higher than grazing land in general, and the grazed beach meadows contribute to the distinctive character of the Blekinge coast. Culturally created beach meadows are the result of long-term grazing and fulfil several functions such as habitat for species, water purification and protection against flooding. Short-grazed grass provides a warm microclimate, and the environment is beneficial for various species of small insects, which help to make beach meadows important as nesting and resting places for birds. Spring-flooded beaches are also important as a playground for fish such as pike and bream (WWF 2011). However, beach meadows and sandy beaches are sandwiched between rising sea levels and inland land use. Grazing animals also contribute, among other things, to increased biodiversity by keeping the landscape open. This has a positive effect on outdoor life and tourism, as many people appreciate a varied and diverse landscape.

### **Users**

Owners of agricultural land and grazing animals

Residents with gardens/cultivations dependent on the pollinators of the natural pastures and meadows

Anyone eating the animals that have grazed on these lands

### ***Ecosystem Cultivated land, fields, and grasslands***

Cultivated fields and cultivated pastures are found mainly in the northern to southern valleys of the fractured valley landscape and on the Ramdalaslätten between Karlskrona and Jämjö. There is also a significant proportion of arable land along the flat east coast.

### **Ecosystem services provided by arable land, fields, and grasslands**

The fertile land in Blekinge is located mainly around the coast. A rich agricultural landscape contributes to the supply of food, partly from cultivated plants and partly from domestic land animals. A rough economic valuation of the subsistence ecosystem service food production can be made by calculating the market value of the arable land. LRF Konsult (2017) has divided the country's arable land into five fertility classes, where the coast of Blekinge belongs to class 3. The average price of arable land in fertility class 3 is 120,000 SEK/hectare. The total area of arable land along the coast

of Blekinge is 6,367 hectares. An estimate of the total market value for the coast's arable area is thus 764 MSEK (Karlshamn municipality 92 million, Ronneby municipality 120 million, Karlskrona municipality 419 million and Sölvesborg municipality 133 million). In this type of valuation, it should be considered that no additions have been made to the value of the products produced on the surfaces each year, nor the synergy values that arise from the trading of these goods.

In the landscape there is historically cultivated land with fields and cairns. Together with grazed land, these contribute to biodiversity.

#### **Users**

Owners of agricultural land

Anyone eating the food grown on these lands

#### ***Ecosystem Built environments***

The biosphere reserve partly comprises of the coastal area of Blekinge, one of the country's most densely populated areas outside the metropolitan regions. In total, Blekinge county is considered the country's fifth most densely populated. Within the area there are three cities and a couple of smaller municipalities. In between, the built areas are relatively dense along the coast.

#### **Ecosystem services in built areas**

Within the urban areas, there are zones with high natural and cultural landscape values that are mainly linked to deciduous forest. Some of these are deliberately excluded from development due to their high recreational value and environmentally friendly qualities. In the cities, there are also landscaped green areas with high values. Other information that is interesting for the spatial distribution of ecosystem services is where human activities are allocated. The list of those that could be mapped is almost endless, and the report is therefore limited to bathing sites, jetties, and guest harbours, which are publicly accessible. This infrastructure adds to increased accessibility to ecosystem service-producing areas, at the same time as they have an impact on the natural environment. Accessibility to archipelago environments is considered important for continuing to build and maintain knowledge of natural values and ecosystem services.

#### **Users**

Residents and visitors

Property owners with gardens/plantations that are dependent on pollination

#### ***Ecosystem Watercourses and lakes***

The running waters and lakes occupy a very small area of the biosphere reserve, but they are very important as a type of nature and land use. Through the water, they link the inland lakes and wetlands with the sea. These are very important for biodiversity, at the same time as they are of great economic importance.

#### **Ecosystem services**

Watercourses have high ecosystem service values (see Table 2 above). Watercourses are important for the biological diversity in the coastal area and generate, for example, supplying (e.g. fisheries), regulatory (e.g. local and regional climate regulation, regulation of water levels and water purification) and cultural (e.g. recreational values) ecosystem services. They also serve as an important transitional environment, where its connection to the sea and beaches along the watercourse is a prerequisite for many ecosystem services. Figure 5 above shows water that has been identified as regionally valuable from a natural, fishing or cultural environment point of view. Note that other value classifications are also available (e.g., "nationally valuable waters").

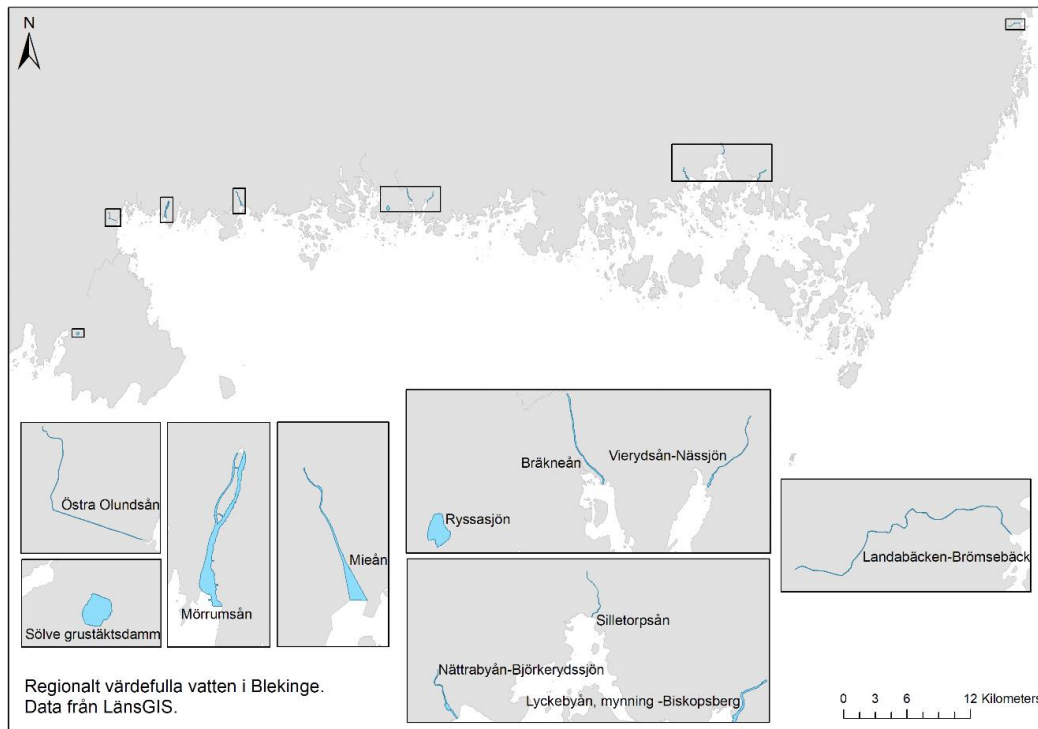


Figure Regionally valuable waters along the coast of Blekinge. From the Report 2017 p 21. In addition to these, Siesjö-Sissebäck., Färskesjön and Gallån are added.

## Users

Residents and visitors  
 Commercial and sport fishing  
 Everyone eating fish from here

## **Ecosystem Inner archipelago, shallow bays, and straits**

The inner parts of the archipelago are often shallow, affected by freshwater outflows and more or less separated from the open sea. The salinity of the surface layer usually varies between 6 and 8 per mille. The habitat type is widespread along the entire southern coast of the proposed biosphere reserve. On the east coast, the habitat type is less widespread, and the impact from the open sea is more distinct.

## **Ecosystem services**

The shallow water areas in the transition zone between land and water are important for green infrastructure. The environments are important to preserve as spawning, rearing, and feeding areas for many fish species. Forests adjacent to the sea are also a potential source of food (for example insects and organic matter) for many fish species.

The analysis of the marine environment shows that the highest ecosystem service values are found in shallow environments where areas suitable for fish recruitment overlap with habitats for coastal birds. In Blekinge, these areas are among the more densely populated, with a high density of jetties. Coastal waters are among the most productive and valuable environments in the world (Costanza et al., 1997; de Groot et al., 2012). For example, coastal sea areas are important breeding areas for fish, and the vegetation takes care of nutrients and binds sediments from land.

It is above all shallow protected environments that are important for attracting coastal predatory fish. Habitat loss due to coastal exploitation and eutrophication is one of the biggest threats to these environments (Eriksson et al., 2004; Sandström et al., 2005; Sundblad & Bergström, 2014).



The shallow bays are important growth and habitat environments for several species. Almö, Ronneby municipality.

In addition to predatory fish such as pike and perch contributing to incomes and cultural ecosystem services through commercial and sport fishing, they also provide regulatory services. One of the most important is their role in food tissue, where they can have a major impact on eutrophication symptoms, such as the quantity of fine-grained algae. (Östman et al., 2016).

#### **Users**

Residents and visitors

Commercial and sport fishing

Everyone eating fish from here

*Table 2: The contribution of ecosystem components to the supplying, regulatory and cultural ecosystem services. Tg = degree of coverage.*

Ekosystemkomponent	Förskjand ekosystemtjänster	Reglerande ekosystemtjänster	Kulturella ekosystemtjänster	Steg 1b. Slutliga ekosystemtjänster
blåstång $\geq$ 10% tg	0	1	0	1
blåstång $\geq$ 25% tg	0	1	0	1
Höga undervattenskärlväxter $\geq$ 10% tg	0	1	0	1
Höga undervattenskärlväxter $\geq$ 25% tg	0	1	0	1
axslinga $\geq$ 10% tg	0	1	0	1
blåmussla $\geq$ 10% tg	0	1	1	2
blåmussla $\geq$ 25% tg	0	1	4	5
borstnate $\geq$ 10% tg	0	0	1	1
borstnate $\geq$ 25% tg	0	0	1	1
bandtång $\geq$ 10% tg	0	1	0	1
Östersjömussla ( <i>Macoma balthica</i> ) $>$ 0 ind./m <sup>2</sup>	0	0	1	1
Områden med högre sannolikhet att fungera som lekogränder för abborre (typ grunda vikar)	4	1	4	7
Områden med högre sannolikhet att fungera som lekogränder för gädda (typ grunda vikar)	4	1	4	7
Områden med högre sannolikhet att fungera som lekogränder för mört (typ grunda vikar)	0	0	1	1
Områden med högre sannolikhet att fungera som lekogränder för sik	4	0	4	7
Tillhållningsplatser för gråsäl	0	0	1	1
Tillhållningsplatser för knubbsäl (östersjöbestånd)	0	0	1	1
Områden med ett årsmedel på $>$ 5 000 individer övervintrande fåglar (2004 – 2013)	0	0	4	4
Områden med ett årsmedel på $>$ 10 000 individer övervintrande fåglar (2004 – 2013)	0	0	4	4
Enl. RAMSAR kriterier internationellt viktiga områden för vigg och salskrake (övervintring)	0	0	4	4
Övervintringsområden för alfågel, medel konc.	0	0	1	1
Övervintringsområden för alfågel, hög koncentration	0	0	1	1

The table shows that, among other things, ecosystem service values for mussels with a high degree of coverage, areas with overwintering birds, and spawning areas for perch, pike and whitefish are very high.

### ***Ecosystem Outer archipelago, open sea***

This ecosystem covers virtually the entire outer part of the sea area included in the biosphere reserve. The most important animals here are porpoises, herring, salmon, cod, and blue mussels. The porpoise is rare but is still believed to have important breeding areas here. Salmon, sea trout and cod often follow the herring shoal in these waters. The cod has decreased sharply and has also become lean with a lot of parasites, but it is still expected that the trend is reversible, especially if the industrial trawling for herring can decrease.

Even in these parts of the biosphere reserve, there are value areas that are of extra great importance for the ecosystem. An example is Hanö Bay, 11 kilometers south of Sölvesborg. The area borders Skåne and covers an area of just over 4,300 hectares. The bottom substrate consists of mostly hard seabed, dominated by sand, gravel and pebbles. The largest and smallest depths in the area are 28 and 8 meters, respectively. The area includes valuable reef environments with dense populations of blue mussels as well as large populations of Baltic mussels and red algae communities. Most of the blue mussel stock has a coverage rate of at least 25% and acts as a complex habitat for fish and smaller organisms, such as sea worms and small crustaceans. Mussel reefs also serve as important foraging areas for fish, especially flatfish that depend on mussels as food in the Baltic Sea. Hanö Bay is one of the most important areas for porpoises in the Baltic Sea, with a population considered to be acutely endangered according to the national red list.

As the high natural values are located some distance from land and in deep water, the value area signifies an underrepresented habitat in the existing network of marine protected areas. In addition, reefs in the southern Baltic Sea are classified as an endangered (vulnerable) habitat by Helcom.

### **Ecosystem services in outer archipelago and open sea**

The mussel populations and the underwater vegetations are important in their regulatory function for nutrient uptake. The mussels' filtration function results in improved water quality. Both mussels and macro-vegetation stabilize sediment seabeds, which reduces erosion and thus improves water quality. Marine algae and microorganisms play a crucial regulatory role in carbon dioxide uptake and for the climate. When the reproduction of herring, cod and salmon is normal, all three species are important in supporting the ecosystem services. The fact that the marine ecosystem is intact also provides important cultural and supporting ecosystem services as these fish species come closer to the coast and rivers for spawning. The salmon fishing in Mörrumsån alone is estimated to be worth approximately 50 MSEK/year in direct fishing license revenues, but also through synergy effects of visiting fishermen's other purchases, like lodging and food.

### **Users**

Residents and visitors

Commercial and sport fishing

Everyone eating fish from here

People, animals and biotopes who depend on a certain climate

### ***Ecosystem Beaches, islands and skerries***

The type of nature and land use includes those coastal ecosystems on land (mainly beaches and smaller islands and skerries) that could not be consolidated with natural pastures or other habitat types. They are widespread along the entire coast of the biosphere reserve.

### **Ecosystem services**

The grazing land close to the shore is valued higher than grazing land in general, and the grazed beach meadows contribute to the distinctive character of the Blekinge coast. Culturally created beach meadows are the result of long-term grazing and fulfil several functions such as habitat for species, water purification and protection against flooding. Short-grazed grass provides a warm microclimate, and the environment is beneficial for various species of small insects, which help to make beach meadows important as nesting and resting places for birds. Spring-flooded beaches are also important as a playground for fish such as pike and bream (WWF 2011, Green 2015). However, beach meadows and sandy beaches are sandwiched between rising sea levels and inland land use (Green 2015). Fish spawning grounds in shallower waters can easily be disturbed by humans, affecting fish populations and the species that feed on fish. On islets and skerries the ecosystem services are important for both nesting and overwintering seabirds, but also for seals. They come closer to shallower sea areas and the availability of food, like fish. At the seabed there are often reefs with blue mussel banks and bladderwrack.

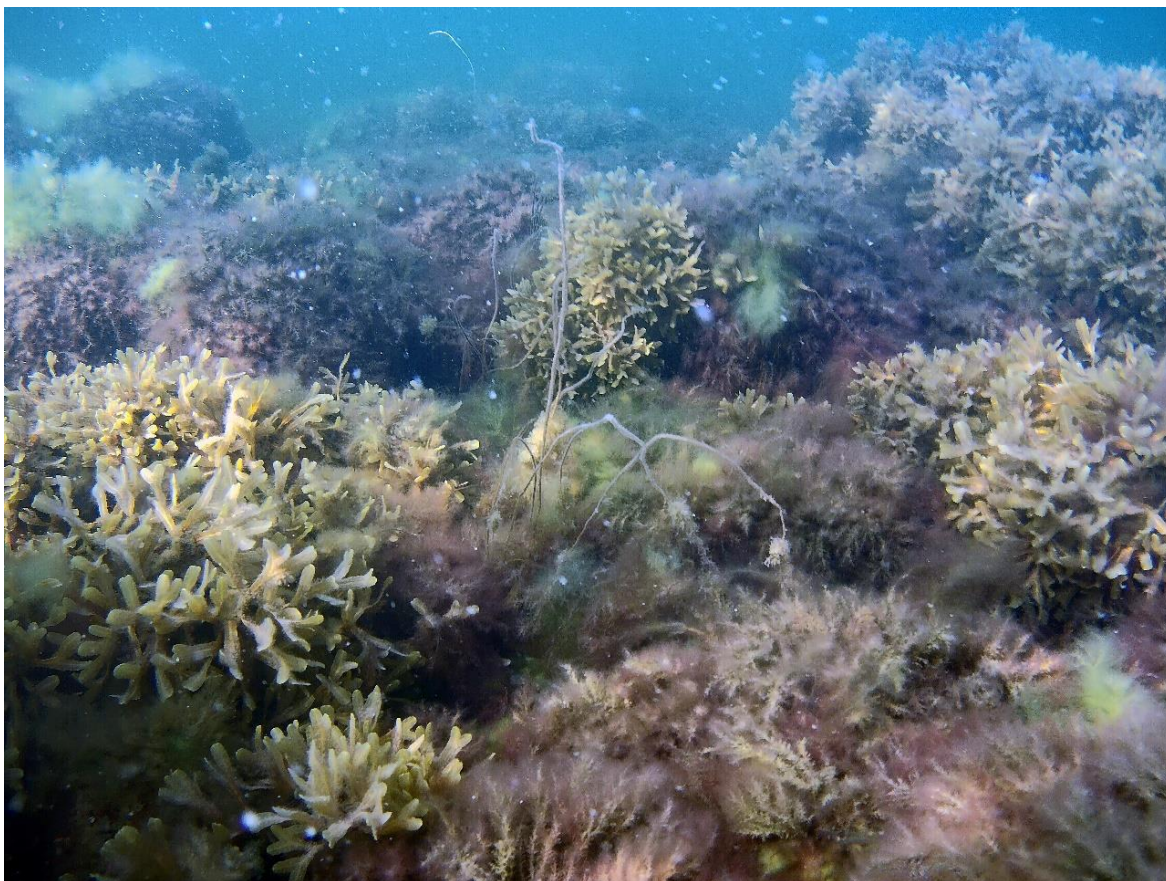
### **Users**

Residents and visitors

Commercial and sport fishing

Everyone eating fish from here

Landowners with cattle on the beach meadows



Bladderwracks are important for both mussels and fish. The picture was taken outside Möcklö, Karlskrona municipality

### ***Ecosystem Wetlands***

The Report 2017: 23 from Länsstyrelsen mentions that the total area of wetlands along the coast of Blekinge is 469 hectares. Since then, about 20 hectares have been added through various projects, including those initiated by Blekinge Arkipelag Biosphere Reserve. (See Blekinge Arkipelag's inspirational publication: *Landscaped wetlands in Blekinge - for water purification, water management, plant, and animal life*, 2020). In the case of coastal wetlands, it can be noted that these often overlap with the areas in the sea that are particularly suitable for fish recruitment.

### **Ecosystem services from wetlands**

Wetlands contribute to flow regulation, water purification and biodiversity. The water-regulating function in the wetlands leads to a reduced risk of flooding and the wetlands' water-holding capacity creates resilience against drought. The fact that the wetlands retain water or moisture even during drought, has resulted in continuous growth of fodder plants, which also has a value for grazing animals. In Blekinge, higher temperatures and increased precipitation are expected to make climate and water regulation very important in the future (Ronneby municipality, 2017, p.33). Wetlands also contribute to the uptake of nitrogen, phosphorus, and environmental toxins. In addition, they often provide aesthetic values.

Ecosystem services that wetlands contribute to, have been analysed in a British meta-study where 264 different valuations were carried out on 78 wetlands in Europe (Morris and Camino, 2011). Table 4 shows the results from this study. Länsstyrelsen Blekinge, Report: 2017:23.

If we assume that the estimated values for British wetlands are representative of Swedish wetlands, the ecosystem services from the Blekinge coast's wetlands can be roughly valued monetarily (see



table below from Länsstyrelsen Blekinge, Report: 2017:23). This means that the value of protection against flooding is estimated at approximately 3 MSEK per year. It should be noted that this estimate is an annual value. For example, with a recurring rainfall every fifty years, the benefit of avoiding flood damage is very significant, however, this amount of precipitation returns only every fifty years. In a scenario with more rainfall in the future, the value of the coast's wetlands will most likely increase.

**Table 3: Total value of various ecosystem services from the wetlands along the coast of Blekinge**

<b>Ecosystem service</b>	<b>Total value for the coast of Blekinge (MSEK/year)</b>	<b>Users</b>
Biodiversity	2,2	Locals get cleaner water
Water purification	2,1	Commercial and sport fishing
Water supply	0,01	Land owners
Flooding protection	3	Birdwatchers and other
Aesthetic values	1,7	outdoor enthusiasts

**3.2 Indicate whether any changes have been made to ecosystem services indicators that is used to evaluate the three functions of the biosphere reserve (preservation, development, and support). Indicate which, as well as details and status update if the answer is yes.**

No indicators for ecosystem services have been developed before. The reason being no comprehensive analysis was carried out for the entire biosphere reserve's ecosystem services until 2017, when a detailed survey was made. However, Länsstyrelsen Blekinge is developing a regional action plan for green infrastructure that contains distinct follow-ups of the Swedish environmental quality goals and measures to preserve, develop, and support the biosphere reserve's ecosystem services.

The following are some examples that indicate changes linked to ecosystem services in the biosphere reserve (see section 5.10):

**Preserve**

11 new reserves and biotope protections have been established since the application in 2011.

Restrictions and protected areas around commercial and sport fishing have been introduced. These are indicators that show that the ecosystem service fish in the area has weakened, something we are trying to restore through these restrictions.

Another example that indicates an important change linked to the preservation of ecosystem services is an investment in eliminating invasive species. Länsstyrelsen had one person employed full-time in 2020. One of the biosphere reserve's ambassadors has devoted time to a national project to develop improved information on invasive species. The same ambassador has also been involved in training other ambassadors in how garden meadows can be made to preserve species and pollinators.

**Develop**

One example that indicates an important change linked to the development of ecosystem services is the investment in outdoor life and nature-based tourism in the ARK 56 project. Länsstyrelsen's Report 2017:23 emphasizes that Blekinge Arkipelag has already made major investments in outdoor

life, recreation, and tourism. The report states that these ecosystem services contribute to great values for the inhabitants of Blekinge. Efforts to identify such national interest for outdoor recreation is however crucial to avoid exploitation of important recreational areas. It is also considered important to take into account less obvious recreational areas, such as natural areas located in the vicinity of residential environments.

Another example that indicates an important change in developing ecosystem services is Blekinge Arkipelag's investments in recreating wetlands. Great natural values are linked to these areas that contribute to ecosystem services. In report 2017:23, it was proposed that for wetlands, a strategy is needed for restoration and new establishment that links to both biodiversity, the nutrient burden at sea and the risk of drought and floodings. Through Blekinge Arkipelag's wetland program, 3 new wetlands have been created since 2019, covering approximately 18 hectares.

Länsstyrelsen's investments in the restoration of oak farms is yet another indicator demonstrating that development work is being done with the aim to increase biodiversity and ecosystem services.

## **Support**

One example that demonstrates an important change linked to the support of ecosystem services is the investment in mapping ecosystem services that was made in 2017 and the ongoing work on an action plan for green infrastructure. Länsstyrelsen has a knowledge-providing, and in biosphere context, a supportive role in many planning and development processes. The report from 2017 aimed to achieve environmental goals, the global sustainability goals (Agenda 2030) and be part of the work to ensure a so-called green infrastructure in Blekinge. The results should contribute with distinct recommendations for municipal general and detailed plans, maritime planning, coastal zone development and strengthen the attractiveness of tourism and outdoor life.

To increase knowledge about the ecosystem services that wetlands provide, Blekinge Arkipelag has produced a new brochure "Created wetlands in Blekinge - for water purification, water management, plant and animal life" and a film "The art of creating a wetland" (2020).

In May 2020, a webinar called "Ecosystem services - to see nature's gifts to achieve sustainable forestry" was held within the EU project GRIP on LIFE IP, which is ongoing 2018-2023. Blekinge Arkipelag's project Skogsnätverket develops methods, knowledge, and directives to support forestry's opportunities for more resilient deciduous forests, higher value of timber extraction and greater social values.

It is also important to build knowledge among various participants in society about the values of ecosystem services, including the public, something that Blekinge Arkipelag works continuously with by disseminating information. In a workshop arranged for Länsstyrelsen's summary report on the Blekinge coast's ecosystem services (2017:23), the importance of public knowledge was emphasized, partly to reduce everyone's load on the ecosystem, and partly to better establish policies and measures implemented for ecosystem services' preservation and development. The single most important measure pointed out during a workshop is to improve the accessibility to the archipelago nature to get more people to visit. Here, Blekinge Arkipelag's investment ARK 56 is a brilliant example of what has been done since the report was written. In addition to this, the value of integrating ecosystem services into school teaching, both practically and as school materials, was also emphasized. Furthermore, the need for a communication plan for ecosystem services in the county was highlighted. The report highlights the supportive actions around the need for knowledge:

- Examine the recreational habits of the residents in Blekinge.

- Examine where pastures are most useful.
- Examine where wetlands are most useful.
- Identify how selected species and biotopes are affected by climate change.
- Make a summary of the values created by the cultural environment.

As previously mentioned, Blekinge Arkipelag already works with most of these points.

### **3.3 Update the description of the biodiversity involved in providing ecosystem services in the biosphere reserve (e.g., the species or species groups involved).**

Biodiversity is a prerequisite for most ecosystem services which needs to be preserved for other ecosystem services to work. The report 2017:23 recommended that a survey should be made indicating how different species and biotopes are affected by climate change in order to develop adaptation and preservation measures needed to protect the coast's ecosystem services. It is important to point out that it is the overall high biological diversity in the area that makes Blekinge Arkipelag unique, and in several cases the diversity itself contributes to ecosystem services. In addition, a high species richness often contributes to the resilience of ecosystems, i.e., their ability to handle pressure such as human impact and natural disturbances. If several different species can generate the same function and service, they can replace each other in the event of changes in the species content. See Chapter 4 for more information.

For habitat and biodiversity, there are already many guidelines included in the planning process regarding red-listed species and area protection due to high nature values. However, there are no tools for the "everyday landscape". How to consider natural environments and ecosystem services in these cases is a difficult issue, but a partial answer may be that ecosystem services become particularly relevant here. The work with green infrastructure is a key factor due to its ability to consider the nature, which today lacks special protection. It is also important to further highlight the ecological functions and processes that exist in an area to be exploited, and how it affects green infrastructure and dispersal corridors for species that exist in the area.

Blekinge's coast has partly large contiguous areas of individual habitat types, and partly a mosaic with scattered habitat types. In the large contiguous areas (e.g., deciduous forests along the coast), it is important to consider the species' dependence on larger forest-covered areas. Some species need large contiguous areas while others do not. A specific assessment for each site and species is therefore required. It should be made visible in the decision process which species are affected by exploitation. In a more mosaic-like nature along the coast, it is particularly important to consider how transition zones, which can ensure great biodiversity, are affected.

The shallow bays in the Blekinge archipelago have both hard and soft seabeds, giving the marine life better conditions for a large variation of species. Fish species such as perch, pike and whitefish reproduce in these environments. They are sensitive to disturbances in the form of environmental toxins. On the rocky and hard seabeds, bladder wrack and stoneworts thrive, and on soft sand and clay seabeds, eelgrass and fennel pondweed thrive.

Pollination is affected by exploitation to the extent that habitats for, e.g., bumblebees and bees deteriorate or disappear. The report 2017:23 recommends that development projects identify strategic places for pollination and avoid exploitation in particularly important places, for example, related to human activities in need of pollinators.

How habitats for Blekinge's animal and plant species are affected by the climate change and other distress factors has not yet been mapped. For some species the climate may be the single most

important factor for reproduction, for others climate change may be tolerated, but threshold effects may occur when climate change and other stress factors interact. Understanding which species and biotopes are particularly sensitive to climate change is important in order to ensure ecosystem services in the future. The report recommends that such a survey should be carried out in order to form an opinion about what adaptation and preservation measures are needed to protect the ecosystem services along the coast in the event of climate change.

**3.4 Indicate if any assessment/updated assessment of the ecosystem services has been made since the nomination/most recent evaluation. Specify and state, if applicable, if and how this is used in the biosphere reserve's action program.**

Above all, the survey made by Blekingekusten's ecosystem services 2017, Länsstyrelsen Blekinge län, Report: 2017:23 by Linus Hasselström, Jenny Wallström and Antonia Nyström Sandman 2017, applies as an updated assessment.

The large investment that was made on behalf of Länsstyrelsen Blekinge in 2017 serves partly as a foundation for the ongoing work with the green structure plan that Länsstyrelsen is working on. Blekinge Arkipelag's work will to some extent be based on the survey and plan for the coming operating period. The association's business plan for 2022-2027 needs to have a scientific and transparent basis to prioritize future projects and for measuring project results. Report 2017:23 gives a good picture of what we can affect (see below).

According to the overview, exploitation is the threat that affects most of the ecosystem services and where Blekinge County and Blekinge municipalities have the greatest control. In order to strengthen ecosystem services in connection with exploitation, the following measures are proposed:

1. Integrate the impact on ecosystem services into general and detailed planning.
2. Set requirements for ecological compensation during exploitation to steer towards avoidance and minimizing damage.
3. Avoid exploitation that affects sensitive fish reproduction areas.
4. Create a "green infrastructure for local climate regulation" and take this into account when continuing exploitation.
5. Avoid exploitation in strategic places because of pollinating insects.
6. Map and take into account recreational values in people's local environments.

Proposed measures to deal with other threats:

1. Continue to support grazing or consider alternative management methods.
2. Make continued firm efforts to reduce eutrophication.
3. Avoid environmental debt with contaminated groundwater as these resources can become valuable in the future.
4. Work with storm water ponds and wetlands to create resistance to flooding and drought.
5. Improve hydrological conditions in watercourses to improve fish recruitment; water supply and biodiversity.
6. Improve accessibility to archipelago environments.
7. Continue to create the conditions for sustainable fish quota.
8. Develop a communication plan for ecosystem services.

It can be concluded that Blekinge Arkipelag is already working on some of the measures, but the list also provides a good direction for the biosphere association's future work:

Table 4: Ecosystem services, threats, opportunities to influence and strategy for the future

Ecosystem service	Threat	Blekinge's opportunity to influence	Strategy
Food (fish)	Over fishing Environmental toxins Eutrophication Exploitation	Medium Small Medium Big	Secure
Drinking water supply	Climate change High water abstraction Saltvatteninträngning	Small Big medium Medium	Secure
Habitat, biodiversity	Exploitation Climate change Environmental toxins Overgrowth	Big Small Small Big	Secure
Uptake and degradation of nutrients and toxins	Levels of nutrients and environmental toxins exceed nature's capacity for purification. Lack of natural stormwater management	Medium	Secure Introduction
Local and regional climate regulation	Exploitation of green areas	Big	Secure Introduction
Global climate regulation	Greenhouse gas levels exceed nature's capacity for regulation	Small (but emissions and uptake of carbon can be strengthened locally)	Strengthen
Noise reduction E	Exploitation of green areas	Big	Strengthen Introduction
Water regulation	Lack of natural stormwater management	Big	Introduction
Pollination	Overgrowth of pastures, exploitation	Big Big	Strengthen
Outdoor activities and recreation (in forest)	Exploitation Reduced availability due to urbanization	Big	Strengthen
Outdoor activities and recreation (by the sea)	Eutrophication Environmental toxins Reduced accessibility	Medium Small Big	Strengthen
Character of the landscape (cultural and natural heritage)	Exploitation Overgrowth	Big Big	Secure
Tourism	Exploitation Eutrophication Environmental toxins Reduced accessibility Overgrowth	Big Medium Small Big Big	Strengthen

#### 4. THE PRESERVATION FUNCTION

[This applies to programs that seek to protect biodiversity at the landscape and site level and/or ecological functions that provide ecosystem goods and services in biosphere reserves. Although measures to address this function may be focused on the core area(s) and the buffer zone(s), ecosystem dynamics may occur on a large spatial and time scale within and outside the biosphere reserves.]

##### **4.1 Significant (possible) changes in major habitats, ecosystems, species, or varieties that are of traditional or economic importance for the biosphere reserve, including natural processes or events, the main consequences of human impact and/or relevant measures (since the last report/evaluation).**

Protection of deciduous forests, marine environments and limnic values are the focus areas in the county according to national guidelines. Since 2010, it has been decided on creating several new nature reserves within the current delimitation of the biosphere reserve, see the list in chapter 9 (3). Worth mentioning is *Ronneby mussel banks*, which may be the county's largest reserve ever. In 2020, at the Länsstyrelsen's proposal, Havs- och Vattenmyndigheten (the Swedish Agency for Marine and Water Management) decided on 10 new protected areas for pike. In addition, there are protected areas in the desired expansion of the biosphere reserve in Sölvesborg municipality: 13 nature reserves, 20 Natura 2000 areas (of which 18 SCI and 2 SPA) and two biotope protection areas (Skogsstyrelsen).

Significant changes that affect ecosystems and species are thus the new formal protections that have been added since 2011.

##### When applying to a biosphere reserve in 2011:

1 cultural reserve  
34 terrestrial and 5 marine nature reserves  
(of which 1 is not yet ready)  
46 biotope protection  
85 Natura 2000-sites,  
2 Ramsar sites and  
10 protected areas for fish

##### Now at the evaluation 2021:

1 cultural reserve  
37 terrestrial and 8 marine nature reserves  
51 biotope protection  
85 Natura 2000-sites  
2 Ramsar sites and  
18 protected areas for fish

Please refer to the table in Chapter 9 (13). For example, marine nature reserves covered 9,600 ha in 2011 compared to 24,900 ha in 2021 (of which Ronneby mussel banks 14,200 ha had not yet gained legal force at the time of writing). The protected area for fish was 4,800 ha in 2011 compared to 7,100 ha in 2021.

The largest negative impact on biodiversity at national level, see IPBES NVV Report 6948 Box 4.1 2021, is caused by felling and overgrowth. When it comes to the biosphere reserve, it is above all overgrowth that has been a major threat to the preservation of biodiversity. Therefore, the natural pastures along the coastal oak landscape have been protected, and investments in nature preservation have been made over the past 10 years.

"...Overgrowth is negative for 2.200 species, and occurs in several different habitat types. When the customary tradition ceases (grazing or mowing), it leads to overgrowth in meadows and pastures and land close to the water. Other negative factors are nitrogen deposition and active fertilization, as well as lack of disturbances such as fire and flooding, and climate change." from Naturvårdsverket's (Swedish Environmental Protection Agency's) Report 6948 Box 4.1. Swedish IPBES, January 2021

Below is an attempt to describe the largest changes and measures for the biological diversity in the Biosphere Reserve Blekinge Arkipelag since 2011 within each habitat type (see description of the habitat types in Chapter 3.1).



Nowhere else in northern Europe do the deciduous forest and the sea meet to such an extent as on the coast of Blekinge.

## 1. Deciduous forest

### Changes

Obtaining data from official statistics applicable specifically to the biosphere reserve is difficult because it is small and runs across several municipalities. The information regarding deciduous forests and coniferous forests below therefore partly applies to Blekinge in general.

According to the National Forest Taxation, Sveriges Lantbruksuniversitet (Swedish University of Agricultural Sciences), the timber stock of older coarse noble deciduous trees is increasing. According to Sweden's report to the EU in 2019, the condition of all oak and beech forests is poor in the continental region. (p. 25 Sweden's species and habitats in the EU Species and Habitats Directive - RESULTS FROM REPORTING 2019 TO THE EU OF PRESERVATION STATUS 2013–2018. ([s 25 Sweden's species and habitats in the EU Species and Habitats Directive – RESULTS FROM REPORTING 2019 TO THE EU OF PRESERVATION STATUS 2013–2018](#)))

From the authorities' point of view, investments have primarily been made in area protection, care, and restoration of the oak landscape.

According to information from Länsstyrelsen, Blekinge has the highest game grazing pressure in Sweden. Due to this, according to Skogsstyrelsen (Swedish Forest Agency), there is almost no natural rejuvenation of oak, aspen, rowan, and pine in many places in Blekinge's coastal areas. Most of the plants are grazed mainly by deer and elk. There is a risk that this leads to a less species-rich forest landscape with a shortage of younger successors and in the long term also to old tree species.

The number of wild boars has increased and thus their impact on the biotope type deciduous forest. Possibly the grubbing of the pig could benefit the vascular plant flora thanks to the exposed soil surfaces. Information from Länsstyrelsen.

The disease that affected ash and elm were of great concern 5–10 years ago. Ash tree diseases has declined in recent years, but the disease on the elms is still a problem. Information from Länsstyrelsen.

### **Consequences of human impact**

A positive development for the oak landscape has been area protection, nature conservation measures linked to the action programs for endangered species, and the EU's Life project.

Exploitation for buildings and infrastructure means that valuable natural environments are still disappearing in the coastal areas of Blekinge.

Skogsstyrelsen (the Swedish Forest Agency) believes that another change is the large, unsustainable extraction of firewood for "bioenergy" mainly branches and tops from deciduous trees such as oak and beech. The landscape is then depleted of several unusual and endangered insect species that are linked to fresh dead wood from deciduous trees. Extraction of fuel wood thus becomes death traps for these insects as the wood with insects often remains in the forest during spring and summer but is then chipped up during the autumn or the following year.

### **Actions**

The biosphere reserve has run and is continuously running a project, Skogsnätverket Blekinge Arkipelag. There, forest owners, forest companies, and forest contractors meet to jointly discuss how nature preservation and forestry can be combined. It highlights that the original deciduous forests cope with the climate challenges better than fast-growing production (coniferous) forests. The learning opportunities, network meetings, samples, and the creation of a common view of forest management and a specific Blekinge Arkipelag area directive are expected to contribute to the preservation of the biosphere reserve's characteristic deciduous forest coast with associated flora and fauna.

The Life project Bridging the Gap is focusing on restoring oak environments. A county administrative board official states that since 2016, the years that Life Bridging The Gap has been active, hundreds of hectares of oak land have been restored, a type of nature for which Blekinge has a great national and international responsibility. The LIFE-project has meant that there has been secure financing for several years and focus has been on a selection of areas where a great deal has been done. The effect of, among other things, Life Bridging the Gap was highlighted, for example, in Sweden's regular reporting to the EU on species and habitats within the EU.

In the work with the action program for endangered species (ÅGP), measures are implemented for a selection of our most endangered species. In Blekinge, priority is given to trees worthy of protection, wood-living insects, batrachian, wild bees, and species living in sand. In deciduous forests, measures are taken for, for example, leather beetles and other wood-living beetles.

A new application for a LIFE project, in which Blekinge Arkipelag is involved as an associated partner, focuses on actions in beech forests to promote biodiversity.

Based on the view of Skogsstyrelsen (the Swedish Forest Agency), it is observed that there is a conflict of goals within the Biosphere Reserve's various objectives. Opening an overgrown cultural landscape too much to, for example, create experience values, can take place at the expense of



biological diversity. In built areas, experience sites and man-made paths, large natural values like shrub vegetation, and other valuable environments along the coast, are often sacrificed in favour of views.

## **2. Coniferous forests**

### **Changes**

The spruce forests have had quite a lot of spruce bark beetle infestations over the last ten years. Increased game grazing pressure and more wild boars are other changes that have taken place in the coniferous forests in the biosphere reserve. Due to the high game grazing pressure, mainly of deer and elk in some parts along the coast in Blekinge, there is almost no natural rejuvenation of pine.

### **Consequences of human impact**

Felling generally leads to a major change in the habitat for plants and animals in the forest landscape. Forest core values such as key biotopes and objects with natural values have developed their species richness over hundreds and sometimes thousands of years. Some of these areas are completely impossible to recreate. The representative from Skogsstyrelsen (the Swedish Forest Agency) believes it would be reasonable and desirable for key biotopes to be regarded as "living ancient remains". According to information from Länsstyrelsen, only about 1/3 of the existing key biotopes have been discovered in Blekinge. This entails a great risk for several plants and animals, especially those depending on standing and lying dead wood, due to negative human impact like deforestation.

### **Actions**

In the biosphere reserve's project Skogs nätverket Blekinge Arkipelag, forest owners, forest companies and forest entrepreneurs meet to jointly discuss how nature preservation and forestry can be combined, see the text under Deciduous forest above.

Grip on Life IP is an EU project focusing on the preservation and development of valuable watercourses and wetlands in the forest landscape. Blekinge participates with collaboration and data along Mieån and Lyckebyån.

According to the national forest assessment, the general respect for forestry measures in the biosphere reserve has improved during the 10-year period. Among other things, high stumps, load-bearing trees, and old coarse trees are being left. The areas along the coast are also saved to a greater extent. In areas with nature-demanding natural values, procedures that promote biodiversity have increased. This is partly because there have been opportunities to receive support for the actions. Most of the forest area within the Biosphere Reserve is certified, inspections of the certification bodies are carried out and the shortcomings that emerge lead to improvements. This is one of the reasons why nature preservation has improved, according to the current consultant but also the former forest consultant who runs the biosphere reserve's forest project.

## **3. Natural pastures and meadows**

### **Changes**

According to Länsstyrelsen, the grasslands are generally in a bad state, *Sveriges arter och naturtyper i EU:s art- och habitatdirektiv* (Sweden's species and habitats in the EU's species and habitat directive) p. 28. Investments in the restoration of previously overgrown oak pastures have been made and the negative trend for overgrown pastures is estimated to have slowed thanks to large-scale restorations carried out in Natura 2000 areas. Otherwise, overgrown natural pastures are still a major problem for biodiversity. During the period, Länsstyrelsen has worked with several LIFE projects linked to these environments. Among other things, a large project - The Life project GRACE, 2010-2016 - where

restoration of natural pastures was performed by Länsstyrelsen Blekinge on islands in Blekinge Arkipelag's Natura 2000 areas. The reduction in the area of natural pastures mainly refers to the forest area.

### **Consequences of human impact**

Several investments in projects or in connection with the action programs have led to improvements in some areas of the biosphere reserve, partly through the above-mentioned GRACE project.

A negative change is the cessation of possession of grazing animals, which leads to overgrowth of previously open pastures and meadows. Länsstyrelsen is of the opinion that the natural pastures and the values associated with them, are declining rapidly. This is probably because it is difficult to get profitability in small-scale farms, and for larger farmers it will be too much work to take care of small pens that may not provide as much grazing. Many of the areas they visited have lost value compared to the previous inventory from 2002-2003. In a short time, the areas stated to have good tradition and a number of species associated with natural pastures, have been changed to barely visible pastures and with a decline in tradition-dependent species.



Grazing cows

According to Länsstyrelsen it is extremely important to preserve the natural pastures for biological diversity, for cultural history, for recreational values and the associated ecosystem services. Landsbygdsprogrammet (Rural Development Program) (EU) has had a major impact here, but discussions have been made about simplifications of care conditions, which could mean that the most valuable areas, that often require special care are reduced even more. They believe that not only do we need to preserve the small debris that remains, but we need to restore overgrown land to preserve the values in the long run.

The clouded Apollo butterfly lives in the intermediate area of the agricultural landscape. The species has declined sharply in number since the 1960s, probably due to changes in cultivation, long-term overgrowth and fragmentation of the landscape. Especially in Blekinge, the situation is critical with few individuals per year spread over only three sub-premises. The clouded Apollo butterfly has been protected in Blekinge since 1986.

## **Actions**

Area protection and management of protected areas are distinct measures taken.

Länsstyrelsen together with Blekinge Arkipelag gave a series of lectures on values in the county's natural grazing lands and agricultural landscapes during spring 2021. The intention is to continue the collaboration on natural pasture animals and natural pasture meat during autumn. Blekinge Arkipelag wants to support the farmer, contribute to open landscapes with high biodiversity and provide local consumers with sustainably produced food of good quality. It may be relevant to label natural pasture meat and inform consumers about the benefits of locally produced and consumed food.

In addition to regular reserve management, Länsstyrelsen works with various projects and action programs for endangered species, such as the clouded Apollo butterfly, rattle grasshopper and various species of wild bees.

Every year, Naturum Blekinge holds an appreciated clouded Apollo butterfly safari with a knowledgeable guide to spread information about the endangered butterfly's conditions.

## **4. Cultivated land, fields, and grassland**

### **Changes**

More farms are closing and some cultivation of arable land ceases, which has the consequence that arable land decreases somewhat due to overgrowth. Buildings and infrastructure are sometimes built on these areas. The proportion of organically cultivated land has increased by at least 10% in the biosphere reserve during the 10-year period.



Johannishus Estates' conversion to organic farming is of great importance for the biosphere reserve.

### **Consequences of human impact**

The consequences of human impact is that ordinary farming has declined, but the investment in organic farming has increased. Exploitation of arable land for construction is another consequence of human impact.

### **Actions**

Blekinge Arkipelag has implemented dissemination of knowledge and inspiring measures for, among other things, organic farming and animal keeping. The association's investments in the development of an optimal model for irrigation and solar production on agricultural land are also measures that can lead to the preservation of more of the existing agricultural landscape by supporting the farmer financially.

## **5. Built environments**

### **Changes**

The city centers in Karlshamn, Ronneby and Karlskrona are located within the biosphere reserve, and continuous changes are being made to the built environment. Awareness of the possibilities for sustainable building development is considered good in each municipality. There are several good examples of how, primarily, already developed land is used to meet the need for quality housing as well as for public and commercial buildings. In addition, it is not uncommon for remediation of previously exploited land to take place when the area of use is changed or expanded. Detailed plans, master plans and the plan for green infrastructure will continue to be important tools for urban planners and architects to use the green areas wisely.

There are bad examples of how hasty decisions have been made and cultural buildings demolished, sea bays filled to promote development without taking into account the wishes of landowners and the public, but these are only a few examples that will be easier to avoid in the future with improved tools and processes.

It is usually from gardens and waste sites in the built environment that various invasive plants are spread. On the EU's list of 66 invasive alien species that are banned from selling, exchanging, and importing, there are currently seven established species in Blekinge: giant hogweed, yellow skunk cabbage, Himalayan balsam, Persian hogweed, common milkweed, Chinese mitten crab and signal crayfish. Other invasive species are also a threat to biodiversity in Blekinge: large-leaved lupine, Asian knotweed, beach rose, American waterweed, Agriolimacinae, Harris mud crab and Round Goby. One or more of these will probably soon be banned by ordering control where it exists.

### **Actions**

Blekinge Arkipelag's collaboration plan contains a working theme with a strategy for sustainable development, but during the past period of operation it has not been prioritized. There is still a lack of communication between the association and the biosphere municipalities that have not really found a relevant approach to common issues.

Blekinge Arkipelag makes various information efforts to identify the risks of invasive garden plants. Together with Sveriges Lantbruksuniversitet (the Swedish University of Agricultural Sciences) (SLU), the biosphere reserve is involved in a national project that will result in guidelines for adequate communication and information about invasive species. This can in the long run reduce the amount and number of invasive species in our natural environment, prevent the extinction of natural species and instead preserve them. Länsstyrelsen is also planning measures against invasive species.

A project to preserve biological diversity in the biosphere reserve's ditches and roadsides started in 2020 in collaboration with Trafikverket (the Swedish Transport Administration). It is about ensuring the use of the right methods and the right interval for the care of the ditch surfaces.

The sand lizard, which is protected, is part of an action program, and can sometimes prevent exploitation and construction plans through the Species Protection Ordinance.

## 6. Watercourses and lakes

### Changes

Since 2017, the biosphere reserve has made various efforts to create public opinion about the salmon's morbidity and that something is being done to find out what is causing these acute concerns. For several years now, Baltic salmon has had a significant deteriorating health condition.

In Blekinge Arkipelag, it is clearly noticeable when salmon migrate upstreams for spawning in our largest watercourse - Mörrumsån. Mortality is high, some years even before spawning. Through cooperation with other river managers, we know that the situation is similar in most Baltic Sea salmon rivers, both in Sweden and other countries.



Biosphere ambassadors are listening to how Mörrums Kronolaxfiske restored parts of Mörrumsån.

There has also been a significant biological restoration of historically affected watercourses, including Lyckebyån and Mörrumsån through the demolition of larger hydroelectric dams. Restoration projects have been carried out in several watercourses, for example Bräkneån and Mieån, in Mieån on the initiative of Blekinge Arkipelag.

The disease Chytridiomycosis (chytrid disease) affects frogs, toads and salamanders and is found in southern Sweden. The disease is one of the most serious threats to frog species ever and it is spread by two invasive alien species - the micro-fungi *Batrachochytrium dendrobatidis* (Bd) and *Batrachochytrium salamandrivorans* (Bsal). However, no serious effects of the disease have yet been seen in Sweden, but it is uncertain what the future holds.

### **Consequences of human impact**

Biologically restored watercourses have several positive outcomes such as better water purification, improved growing environments for fish, mussels and birds, improved water management and better resistance to flooding.

### **Actions**

Blekinge Arkipelag has, together with Länsstyrelsen, Karlshamn Municipality and Sportfiskarna Blekinge, been able to contribute to the restoration of Mieån which has been affected by raft clearance, excavation, shore protection, digging, construction of mills, etc. Blekinge Arkipelag has during summer and autumn 2021 contributed to two restored sections in the lower parts of the river Mieån.

Since 2014, Mörrums Kronolaxfiske has biotope mapped about 40 km of the river's southern course with focus on restoration needs, and implemented several successful measures at around 10 locations.



Professor Lennart Balk from Stockholm University is sampling distressed salmon and sea trout at Mörrum's Kronolaxfiske in the autumn of 2017.

In recent years, the biosphere reserve has invested in special support measures for Baltic salmon. The purpose has been to facilitate sampling and research on thiamine deficiency in collaboration with, among others, Mörrums Kronolaxfiske.

Blekinge Arkipelag has ensured that researchers have met the public, politicians and authorities both locally and nationally. The biosphere reserve has also written letters to the government and national authorities urging them to invest public funds in thiamine research. These support initiatives are also aimed at the company Mörrums Kronolaxfiske and the entire village of Mörrum, which in various ways make a living from salmon fishing.

The GRIP on LIFE IP project, a major EU project ongoing during 2018–2023, aims, among other things, to improve the environment in watercourses and wetlands in the forest landscape, with a special focus on priority measures in and in connection with Natura 2000 areas.

In 2019, Länsstyrelsen participated in a Nordic project to increase knowledge about and prevent the spread of the disease chytridiomycosis. The project produced information and proposals for measures to prevent the spread.

## **7. Inner archipelago, shallow bays, and straits**

### **Changes**

With the help of ornithologists in the county, Länsstyrelsen has made a review of the condition of birds listed in the *Birds Directive's* appendix 1 and *Other wetland birds* linked to the directive. Overall, it becomes evident that the situation for the birds is bad. Most listed species have a downward trend or unchanged, and only a few have increased in number. Appendix 1 of the Birds Directive lists 66 species, of which 33 nest in Blekinge and approximately 30 within Blekinge Arkipelag. Another 28 species occur temporarily, of which about 10 are rare. Based on a review, it can be stated that just over 35% of the nesting birds decrease in numbers, 30% occur in approximately unchanged numbers and just under 20% increase in numbers. For the wetland birds within Natura 2000, 75 species are listed, of which 44 nests in Blekinge and within Blekinge Arkipelag. 33% of wetland birds have a downward trend, 15% are unchanged and only 8% are considered to increase in number.

Pike fishing is of economic importance and both commercial fishing and sport fishing for pike have increased significantly during the past 10-year period. Household fishing is also increasing. Until 2016, the catch of pike in commercial fishing increased significantly, but decreased drastically in 2017 despite increased efforts.

As a predator, pike have a structuring role in the ecosystem. Länsstyrelsen works with compilations of fry recruitment (reproductive success) in pike and other coastal fish species along the coast of Blekinge. Data have been collected for ten years and the results show an alarming decrease in numbers of pike recruitment in many areas. In some cases, it seems to have ceased altogether in recent years. The reason is not clear, and it is uncertain whether the measures taken (protected areas) will be sufficient to stop or reverse the development.

### **Consequences of human impact**

The beach, the coastal aquatic environments and the sea are all important for biodiversity as well as for many human needs. Fishing, shipping, piers, cables, road banks, tourism and much more are visible results of activities we carry out to meet the needs of food, raw materials, transport, energy, recreation and more.

However, the activities often lead to physical impact and effects on biological diversity. For example, ship movements, ports, jetties, dredging and bottom trawling lead to changes in the seabed, the water becomes more turbid, and plants and animals are covered by sediment. Fishing gear and leisure activities leave marks in the form of debris, noise, and disturbance of species.



The white-tailed eagle has increased in the biosphere reserve thanks to monitoring and reduced environmental toxins.

Thanks to the biosphere ambassadors, river Mieån is now subject to biological restoration.

Our lifestyle on land also affects the coastal area and the sea. Industries such as agriculture and forestry can affect the amount of nutrients entering the sea. Digging and drainage affect the fish's opportunities to migrate into freshwater areas to spawn. Consumption that keeps the manufacturing industry going sometimes leaks toxic substances into both air and water.

Changes in society and our way of life constantly affect how and where we use nature. A crucial issue today is that the expansion of communities, and not least coastal leisure development, is increasing, with the subsequent need for dredging, boat traffic and modifications of the shoreline. The proliferation of microparticles, plastics and chemicals from our everyday consumption must also be taken seriously.

Another escalating driving force is the need for renewable energy, where offshore wind power is expected to play an important contributing role, but where any impact on biodiversity must be addressed.

Climate change as well as human activities affect coastal ecosystems through changes in temperature and salinity that will affect organisms. Installation of protection against flooding and erosion is important in many coastal areas and turn out to be more important when climate change leads to increased storm frequency, storm intensity and rising sea water levels.

When studying how human activities affect the marine environment and examining measures to reduce the negative effects, it is often seen that the most cost-effective response is the one directed towards the driving forces. It is more effective and gives a faster response to change the behaviours that lead to the impact rather than trying to change the results of these behaviours. In society, appropriate instruments and regulations play a key role, so that harmful effects and unsustainable activities can be avoided. Equally important are incentives that enable people to change their lifestyles in a more sustainable direction. (Naturvårdsverket (Swedish Environmental Protection Agency) Report 6948 Box 4.2. Swedish IPBES January 2021).

### **Actions**

Something that strongly contributes to the long-term preservation is the many legally protected areas that exist within Blekinge's archipelago and coastal landscape and, for example, the action program for white-tailed eagles. The most recently established protected areas are followed up through an agreement between Länsstyrelsen and the Coast Guard. Blekinge Arkipelag has a close dialogue with Sportfiskarna Blekinge about suitable seasons for fishing competitions and has



produced an informative folder on how the method “catch & release” should be carried out not to damage the fish.

The municipalities' joint “Sea plan”, linked to the general plans, is also a positive action that has taken place since the application, see below.

## **8. Outer archipelago, open sea**

### **Changes**

The biggest change in this environment is that cod and salmon, which until recently have been considered significant for commercial fishing, have continued to decline in numbers. Both fish species have been found to be deficient in vitamin B1, thiamine, which affects the fish in different ways (Balk, L.; Hansson, T. 2017). Cod has decreased in number and weight. In addition it has a lot of parasites in the body. The salmon seems to stay healthy during its time in the sea and only becomes ill when migrating in the waterways for spawning. Even though the Baltic salmon has been affected by this phenomenon for almost 10 years and despite the fact that the survival of spawning fish is around 10-20%, no significant declines are yet visible in the amount of migrating smolt from Mörrumsån. According to research, however, it may have a reduced vitality already at birth, which will be noticeable only in the next generation of mature salmon. The problem exists not only in Blekinge, but over large parts of the northern hemisphere (Balk, L. et al. Widespread episodic thiamine deficiency in northern hemisphere wildlife, 2016 | Sci Rep | 6 (38821)).

### **Consequences of human impact**

It is obvious that the negative effects of industrial trawling on fish stocks and structures of the seabed, the so important fish habitat, have contributed to the reduced food supply for, for example, salmon and cod.



Salmon in Mörrumsån who died before spawning due to fungal infections and stretch marks. The phenomenon is caused by lack of vitamin B1 (thiamine) and occurs in all Baltic salmon rivers. The cause of the deficiency is still unknown.

### **Actions**

Sveriges Lantbruksuniversitet (the Swedish University of Agricultural Sciences (SLU)) has, together with local fishermen, carried out experiments with caught cod that was released in cages and fed with herring. The experiments show that a large proportion of the captured and emaciated cod recovered in both health and growth when the supply of food was greater.

After the initiative from Blekinge Arkipelag, Länsstyrelsen, in collaboration with Blekinge's coastal municipalities, have produced an inter-municipal sea plan. The purpose is to state the municipalities' direction for water use within the planning area and increase the predictability for the participants who intend to conduct activities at sea. **The sea plan** shall:

- Interact with government planning
- Balancing the different interests
- Provide spatial conditions for use and preservation

Blekinge Arkipelag has also contributed to a newly started network run by Simrishamn municipality. The network Sveriges Fiskekommuner now contains most Swedish municipalities with a coastline and can collaborate on fisheries issues by running joint projects or acting as a reference body.

## **9. Beaches, islands and skerries**

### **Changes**

Grassland overgrowth is a continuing problem on beaches, islands and skerries.

See text on changes regarding bird occurrence under section 7 - Inner archipelago, shallow bays, and straits.

### **Consequences of human impact**

In the Life project GRACE, overgrown grasslands have been restored on islands in the archipelago.

In the area there are special bird protection areas.

The construction of for example jetties, has a negative effect on the living environment in the shallow areas. These shallow, wave-protected habitats on the coast are especially important for many fish species.

“... Although the environmental impact of an individual boat or jetty is limited, the overall effect will be significant as the possible spawning grounds for fish are reduced. Today, it is estimated that about 20 percent of the shallow wave-protected areas have so many jetties and heavy boat traffic that it will have a negative impact on the vegetation and the natural habitat. There are no signs that the pace is slowing down. Less than half of the wave-protected shallow areas are completely unaffected, if you look at all types of exploitation, such as ports, dredges, breakwaters, and industrial ports. On land, an average of 35 percent of the Swedish coast's beach zone is exploited.” *From Naturvårdsverket (the Swedish Environmental Protection Agency) Report 6948 Box 5.4. Lena Bergström. Swedish IPBES January 2021*

### **Actions**

Blekinge Arkipelag's recurring beach cleanings are done in collaboration with other associations, the voluntary public, and the municipalities. Every year, this means that several hundred kilos of plastic, glass, and metal are removed from the sensitive beach environment and contribute to the preservation of clean water and functioning coastal ecosystems.



Planting of the endangered species green-spotted toad *Bufo viridis variabilis* on Utklippan has made the population both the largest and most dense in Sweden.



The biggest threat to pollinators is the gradual decrease of their habitats - something that is relatively easy to recreate with the help of humans.

Länsstyrelsen has carried out restoration projects on islands in the archipelago. The restoration of natural pastures in the archipelago is positive for biodiversity. During restoration of overgrown grazing landscapes, it is necessary to carefully thin out not to disbenefit species such as lichens, insects, and birds. Not least in a wind-exposed coastal environment. More radical restoration with extensive clearing in the bush layer may disadvantage certain species but be justified in areas that were previously completely open and without trees, such as on individual islands in the archipelago.

## 10. Wetlands

### Changes

During these ten years, the restoration of wetlands has gained momentum. Since 2011, the biosphere reserve has contributed to the construction of 18 hectares of new wetlands. Other participants have contributed with at least the same area distributed over about 20 wetlands relatively close to the coast.

### Consequences of human impact

Here, human impact is positive after a century of negative impact through digging.

### Actions

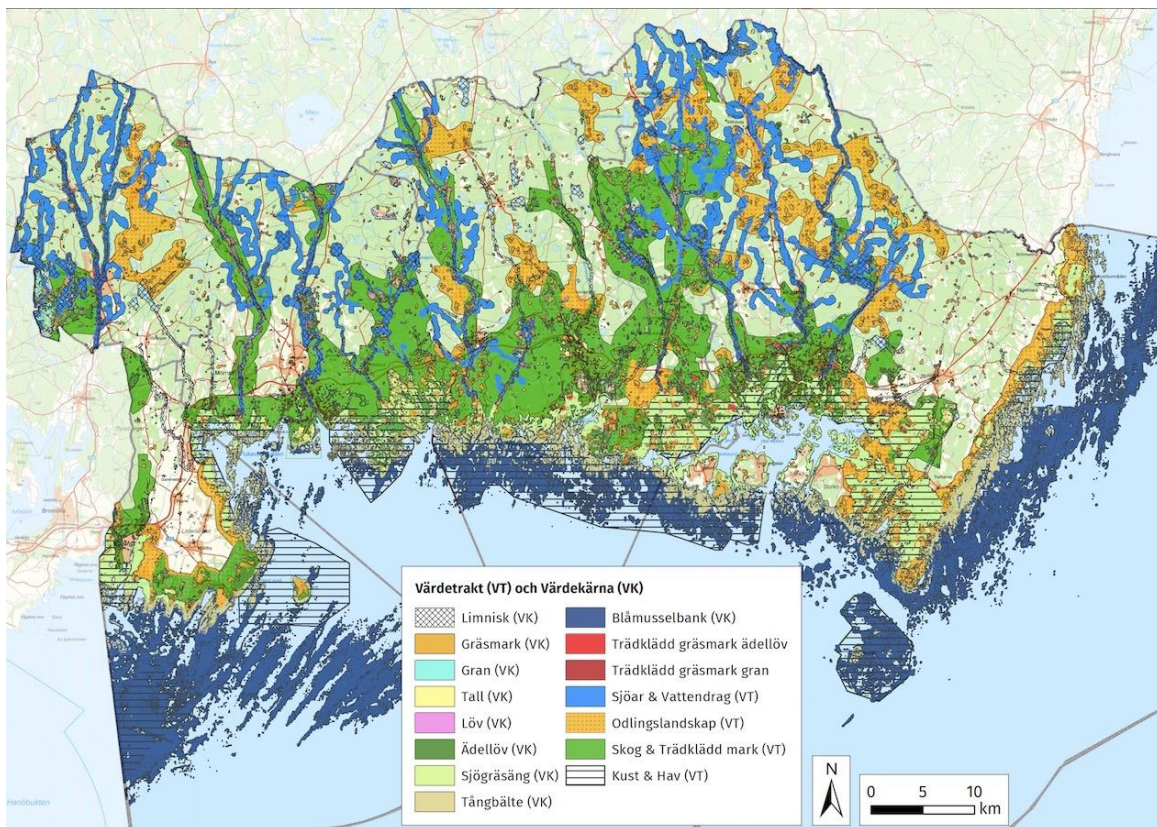
Blekinge Arkipelag's wetland program involves a major investment in recreating and rebuilding wetlands and restoring affected watercourses. The investment strengthens several bird, fish, and mussel species that thereby are preserved in the area. Nutritional retention strengthens the condition of coastal waters, protects against algal blooms and seabed deaths, and thus adds to the preservation of intact coastal ecosystems. To some extent, restoration and new construction of wetlands also strengthens the possibility of natural grazing during mainly dry summers, which contributes to the preservation of the biodiversity of natural pastures. In 2020, Blekinge Arkipelag received funding for 5 new wetland projects corresponding to approximately 7.5 MSEK.

Länsstyrelsen works with the construction and restoration of wetlands for various amphibians, mainly beach toads, also within the rural program.

**4.2 Describe the main activities/programs/measures to preserve and develop the biological diversity that has been carried out in the biosphere reserve over the past ten years as well as ongoing activities/programs/measures. Mention the main objectives for them and the scope of the**

activities, e.g., biotic inventories, endangered species, landscape analyses, activities to promote local commitment to preserve biodiversity. Refer to the other sections below if applicable.

In the Biosphere Reserve Blekinge Arkipelag's collaboration plan there are 22 strategies that are expected to promote the 10 preservation objectives developed by several collaborating participants in the biosphere reserve. (See section 5.10). In the association's new business plan, 5 focus areas are highlighted. They can all be linked to biodiversity, although it is mainly the areas of "Biodiversity and intact ecosystem services" and "Water in balance and a living coast and archipelago" that prioritize biodiversity. All 17 objectives in the UN Agenda 2030 have contributed to the development of Blekinge Arkipelag's focus areas, even though the Living Coast and Archipelago objective has a special position. (See section 2.3.1)



Value areas and core values in the Green Infrastructure Action Plan. Länsstyrelsen Blekinge

In particular, the Regional Environmental Monitoring Program for 2015-2020 should also be emphasized. A Regional Action Program was also made in 2017-2020. A list of the main activities/programs/measures for the preservation of biological diversity over the past 10 years can be found in Chapter 9 (4) and 9 (6), see chapter 2.4.6 of the evaluation regarding various research programs and environmental monitoring programs.

In 2021, the Regional Action Plan for Green Infrastructure with proposals for specific measures will also be completed. In the work with green infrastructure, Länsstyrelsen has developed value areas for different priority habitat types within Blekinge and many of them overlap the Biosphere Reserve Blekinge Arkipelag, see picture below. In collaboration with municipalities, other authorities, landowners' organisations, and other stakeholders, distinct measures are developed to improve the conditions for different habitat types at landscape level.

In 2019, Blekinge's municipalities compiled the first ever joint sea plan. This has been decided by the municipal council and is an extension of the general plans. (See section 2.1).

### **National action programs for endangered species and habitats**

Around 2,000 of Sweden's plant and animal species are endangered. In 2010, national action programs for a selection of these species were released. Blekinge County is affected by about 43 action programs for endangered species. Of these, three areas are prioritized:

- Protective trees/deciduous trees and wood-living insects
- Amphibians/small waters
- Species found in sand (e.g. wild bees, sand lizard and rattle grasshopper)

### **Protected trees and wood-living insects**

In Blekinge, inventories have been carried out of trees worthy of protection and measures to support them. A tree worthy of protection can be a coarse tree (diameter over 80 cm), a felled tree or a hollow tree. The largest trees in the biosphere reserve are marked on the map in the App ARK56.

### **Amphibians and small waters**

Special investments have been made in inventories of amphibians and restoration of small waters as well as planting of green toads.

### **Sandland species, wild pollinators, sand lizard and rattle grasshopper**

Länsstyrelsen Blekinge works to support wild bees and other wild pollinators. The work is carried out through various action programs and through the national pollination assignment. Examples of measures that have been implemented are scraping to expose sand patches in road slopes, clearing out bush wood on overgrown sandy areas and scraping away vegetation from abandoned gravel pits to expose the sand. This is done in collaboration with Trafikverket (the Swedish Transport Administration), Försvarsmakten (the Swedish Armed Forces), Fortifikationsverket (the Swedish Fortifications Agency) and other participants.

### **Wetlands**

During 2018-2019, Blekinge Arkipelag commissioned a feasibility study on where in the biosphere reserve restorations and new facilities of wetlands would be most useful with regard to various positive effects. The project resulted in two reports. It was financed with funds from LOVA from Havs- och Vattenmyndigheten (the Swedish Agency for Marine and Water Management) via Länsstyrelsen Blekinge and by SydostLeader. During 2019-2021, the association has created 18 hectares of new wetlands in the biosphere reserve.

### **New management plan for pike and perch in the biosphere reserve**

Länsstyrelsen Blekinge has made a sought-after and appreciated management plan for pike and perch in the biosphere reserve. It means that selected bays are protected from both commercial fishing and sport fishing during a certain part of the year. Blekinge Arkipelag has been involved in the process and has drawn up proposals for the plan. We communicate the new protected areas via our app ARK56, easily accessible to both visitors and regional fishermen.

### **The forest**

Blekinge Arkipelag Biosphere Reserve consists of 54,000 hectares of land, where about 20,000 hectares consist of forest and woody pasture without formal protection. What happens in the forest is of great importance for the biosphere reserve - the diversity of species, water quality and ecosystem services. It is also a large area that can be affected in various ways by ongoing climate change. With about 600 forest owners in the area and several active forest companies, a lot can be done collectively to increase ecological, economic and social values of the forest in Blekinge Arkipelag. Skogs nätverket is now up and running with approximately 85 participants who meet regularly. The following objectives apply to the project:

- 1) We have created a network for the exchange of experience and "quality assurance" for forestry measures in the biosphere reserve, regarding climate adaptation and environmental considerations.
- 2) We have developed routines, templates, and methods for forestry measures in the area that lead to better climate adaptation and better environmental considerations.
- 3) Several display areas are developed where the forest condition can be monitored for a longer period. In the display areas, a follow-up of the working method and the forest result is being done through conversations with contractors and landowners.
- 4) We have informed 600 forest owners about the possibility of cooperation in the Forest Network Blekinge Arkipelag.

The Forest Network project will soon turn into an information project (2022/2023), which has the following goals:

- 1) Increased interest in Blekinge Arkipelag and its forest values.
- 2) Increased knowledge of how to get climate-adapted and more sustainable forestry in the area.
- 3) Better cooperation in the forest industry and greater knowledge of the importance of making special adjustments in the valuable biosphere reserve.
- 4) Sense of belonging and pride to be part of a UNESCO-designated area with special values.
- 5) Increased involvement of female forest owners.



Blekinge Arkipelag The Forest Network is led by Helene Reiter, biosphere ambassador.

#### **The GRIP project on LIFE IP**

This major EU project is an ongoing operation between 2018–2023 and aims to improve the environment in watercourses and wetlands in the forest landscape, with a special focus on priority measures in and in connection with Natura 2000 areas.

#### **The project LIFE Bridging the Gap**

Since 2016, the Life project has been ongoing with focus on the restoration of oak environments. In the biosphere reserve, the areas Gö, Haglö, Knösö, Kummeln, Sonekulla, Tromtö and Valje are included in the project. The project focuses on valuable oak environments and will strengthen their

values so that they can survive and provide habitats for the same valuable species in the future. Among other things, efforts are made to:

- Restore overgrown oak fields.
- Plant oaks in areas that do not have oak rejuvenation.
- Create dead wood to try to bridge the gap in the age structure.
- Create dead wood artificially to increase the chances of some unusual beetles to abide. (veteranization, wood mould boxes, stag beetle compost).

A regional forest strategy for Blekinge has also been developed, and an action plan with forestry measures for the region is being developed. Blekinge Arkipelag is involved in the process. (See sections 2.3.1 and 2.4.6).

**Life restoRED** project started in 2021. All included areas (Hanö, Näsnabbarna, Järnavik, Vångsö, Tjärö, Uttorp, Hästolmen, Stora Rom) are within the biosphere reserve. The project is a continuation of Life BTG with the aim of benefiting the biodiversity of oak environments.

#### **4.3 In what ways are the measures linked to or integrated with issues related to sustainable development (e.g., promoting local commitment to the preservation of biodiversity in private areas used for other purposes)?**

First and foremost, we would like to refer to section 5.10, which provides a comprehensive description of how different objectives in sustainable development also aim at and integrate Blekinge Arkipelag's conservation goals.

To promote local commitment to biodiversity in private areas, landowners have been involved in the biosphere reserve's inspiration tool for wetland facilities in the biosphere reserve. Both in video clips and in print, they talk about their experiences and successful examples. Even in the newly constructed wetlands where Blekinge Arkipelag plays a major role, landowners are committed to enter into agreements and develop parts of their land into wetlands.

The association has arranged a theme day for farmers with focus on natural pasture, organic production, and local sales. In 2021, several animal keepers and others with a connection to grazing will be involved in a lecture series on natural pasture and natural pasture meat, which we do in collaboration with Länsstyrelsen. It is aimed at farmers and animal keepers, but also other participants in the chain who value collaboration and processing as well as sale of local natural pasture meat.

On their website and through other channels of information, Blekinge Arkipelag is continuously working to disseminate knowledge about sustainable aspects of natural grazing and sustainable local production and consumption of food.

The few remaining fishermen's knowledge is not only used in fishing but has also been valuable in scientific research and experiments with fish that have taken place in the biosphere reserve - both during feeding trials on cod and during sampling of unhealthy salmon in the sea and in Mörrumsån.

In our efforts to form an opinion on the morbidity of Baltic salmon, several people have been involved in disseminating information, writing texts, and proposing content during certain information days.



Steneryd's deciduous meadows are coastal pastures with high biological values where trees are pollarded and hay being mowed in the traditional way. A guided tour was held here on MAB's 50th anniversary in 2021.

All groups in society are continuously invited to participate in the biosphere work, partly through social media and membership in the association, but also during the annual ambassador training. It is not uncommon for local people to be directly involved in various projects and activities. These non-profit forces are today involved in the association's projects, through, for example, project leadership for our forest-related projects that also involve many forest owners and entrepreneurs linked to forestry activities, see the above-mentioned project Skogsnätverket.

Action programs for the endangered species are often aimed at practical nature conservation that is done together with landowners in the area. For example, wood mould boxes, sandy environments and biotopes are made for wild bees. (See sections 2.3.4 and 2.4.3).

#### **4.4 How is the impact of the measures or strategies used assessed? (Describe the methods and applied indicators.)**

The impact of the biosphere reserve's measures and strategies can be described as "many small streams become a large river". There are several methods and indicators for measuring the impact of the implemented actions on a larger scale, but there is a lack of an overall evaluation. There are several good examples of adaptive working methods that already give and will continue to give good and noticeable effects. Main methods and indicators used are:

- Practical nature preservation in project form, both initiated by the biosphere reserve and through Länsstyrelsen's action program for endangered species and other nature conservation projects.
- Information efforts.
- Area protection (initiated by municipalities, landowners, Länsstyrelsen and Skogsstyrelsen).
- Number of participants in projects and information opportunities.
- Sub-goals in the Collaboration Plan's strategies, see presentation in section 5.10.

A good example of adaptive co-management is that the biosphere reserve, in collaboration with local small-scale commercial fishermen and the municipalities of Kalmar and Simrishamn, is developing catching methods for the invasive fish Round Goby. The initiative also includes research into different ways of developing food products that can be used as local delicacy for restaurants and others.



Another example is where the association Sportfiskarna Blekinge has initiated a project in collaboration with fishermen, municipalities and Blekinge Arkipelag, which aims to develop more spawning and rearing sites, especially for perch on the coast. Through strategic laying, anchoring, and marking of larger "Risvasar" (piles of brushwood), protected places are created and maintained where the perch thrive. On the same note, knowledge of Blekinge's coast has been raised, valuable areas have been highlighted and management methods have been developed.

Blekinge Arkipelag's investment in creating wetlands is another example of a method with impact. This has resulted in a positive dialogue with for example landowners. At the same time, a development of knowledge and methods have led to an increased interest and commitment among more landowners for new establishment of wetlands and restoration of watercourses, but also creation of larger areas of wetlands.

The biosphere reserve's large investment in nature guidance via the ARK 56 project, is another example that leads to residents and visitors gaining knowledge of the landscape they walk or paddle through. Naturum Blekinge is another informative and educational hub for biosphere activities. In 2015, Naturum Blekinge was very well attended with 54,000 visitors, a good opportunity to hand out information about the biosphere reserve. In general, awareness of the biosphere reserve and confidence in the Biosphere Reserve's conservation work has increased among decision-makers and landowners as well as local participants and the people in general.

However, the strongest impact on the preservation and development of biodiversity, is area protection and practical nature measures, for example in connection with the action program for endangered species. During this evaluation, the success of the conservation work has been discussed with, among others, officials at Länsstyrelsen and a representative from Havs- och vattenmyndigheten (the Swedish Agency for Marine and Water Management). The following are examples of strategies/measures that are considered to have an effect on ecological sustainability and contribute to the conservation of biodiversity in the biosphere reserve:

1. Marine planning (inter-municipal and governmental) - the marine resources and marine biodiversity are managed strategically and can be better preserved for the future.
2. Ecosystem has become an accepted term in the development of society, see Chapter 3. By analysing the costs that lost ecosystem services entail in exploitation, we can modify exploitation efforts so that negative effects are reduced.
3. Nature guidance: ARK56, the pandemic means that people are out more, Friluftslivets år 2021, Naturum's exhibitions and events, Blekinge's excursion guide, an update of the trails in Blekinge, and the social trend which means that people try to discover the local/regional environment, captures people's interests and hopefully they get a greater understanding and appreciation of the preservation of biodiversity. The nature reserves will therefore be seen as a resource for residents and visitors in the Biosphere Reserve Blekinge Arkipelag.
4. The strategic importance of landscape perspective - to look at the landscape as a whole in order to achieve a long-term sustainable development.
5. Increased knowledge of environmental issues. Climate change, severe algal blooms, extreme drought in 2018 and floodings the same year, PFAS in the drinking water in Kallinge, toxic fish from the Baltic Sea, microplastics in the oceans and bush fires are warning bells. Many of these problems can be reduced with ecological solutions where biodiversity plays a key role. By showing how investments in biodiversity can reduce society's vulnerability, increase resilience - more measures can be motivated and implemented.

6. Cooperation and joint strategies (Region Blekinge's strategic plan, Climate Strategies, Action Plan for Green Infrastructure, the Environmental Objectives Action Program, the Water Framework Action Program and more) are important ways forward to create consensus and optimize efforts.

**4.5 What are the most important factors that have influenced (in a positive or negative direction) the success of nature conservation efforts in the entire biosphere reserve? Given the experience and lessons learned over the last ten years, what new strategies or methods will be most effective in promoting sustainable development?**

The most important factors that have affected nature conservation efforts *positively* are:

Today, the biosphere reserve is a successful project business. The biosphere office continuously seeks and runs preservation oriented projects with the help of external funding. The projects usually include both knowledge-raising activities and tangible measures, as well as information dissemination and communication.

A contemporary example is the association's wetland program and the tools developed that will inspire new wetland establishment. They have led to several local examples of successful projects and satisfied landowners.

Länsstyrelsen believes that focus on the oak landscape with area protection, action programs for endangered species and LIFE projects is what has affected the nature conservation efforts most positively.

An additional issue that has been emphasized by several, is the joint maritime planning between municipalities but also nationally. Marine biodiversity can then be managed strategically and be better preserved for the future.

The most important factors with a *negative* effect on nature conservation efforts are dredging and other measures linked to coastal exploitation, which have had a negative effect on marine biodiversity. Other exploitation in connection with urban areas can reduce the proportion of deciduous forest and arable land in the biosphere reserve.

Regarding the success of nature conservation initiatives, experiences and lessons learned over the past ten years have led to new strategies such as adaptive co-management in tangible nature conservation projects and collaborations with researchers. These are methods that have attracted media attention and the demand for more collaboration on new joint projects. This shows that we have effective strategies and methods for promoting more sustainable development in Blekinge Arkipelag's Biosphere Reserve in the future.

**4.6 Other comments/observations from a biosphere reserve perspective.**

In 2021 the government has provided Länsstyrelsen with extra resources for area protection and management of protected area, which is positive for the preservation of biological diversity in the biosphere reserve.

## 5. THE DEVELOPMENT FUNCTION

[This applies to programs/activities/actions that focus on sustainability issues at the societal level, but also those that affect the individual's livelihood, including economic trends in different sectors that generate the need for innovation and/or adaptation, the main adaptation strategies implemented in the biosphere reserve and efforts to develop specific areas such as tourism to supplement and/or compensate for losses in other markets, reduced employment and reduced social prosperity over the last ten years.]

### **5.1 Briefly describe the general trends of the last decade in each major sector of the biosphere reserve's economic base (e.g. agricultural and forestry activities, renewable resources, non-renewable resources, manufacturing and construction, tourism and other service industries).**

The trend for the areal industries is a continued decline over the past decade. Agriculture has generally become more unprofitable and the same applies to fishing. Agriculture has lost in value for many years and it is primarily the larger estates and agricultural properties that have continued their production successfully, while the smaller ones have found it increasingly difficult to generate a positive result, and several of them have therefore ceased their activity. During the last five-year period, however, a clear boom has been noticed in the demand for local and regional food products from even smaller farms.

The conditions for small-scale commercial fishing have collapsed in our parts of the Baltic Sea, where salmon has become increasingly unhealthy, cod increasingly leaner and herring increasingly overfished by industrial large-scale trawling. The number of registered commercial fishermen on the coast of Blekinge has decreased from several hundred to a handful of diversified fishermen who are still experiencing difficulties and the rejuvenation is very low.

Forestry in the biosphere reserve is relatively constant. Forest ownership is mainly distributed among several small forest owners who continue to use the forest in a conscious, and at the same time traditional way, without increased or decreased production. The proportion of coniferous forest decreases somewhat in favour of deciduous forest.

Tourism in the biosphere reserve has increased during the 10-year period thanks to more municipal, regional, and entrepreneurial investments, as Sweden's tourism sector has become increasingly important and more foreign tourists have discovered Sweden as a destination perceived as safe to visit.

The stone industry is an old industry based on non-renewable resources in the biosphere reserve. Today, only one active quarry remains in the western part. How long it will continue is unclear at present.

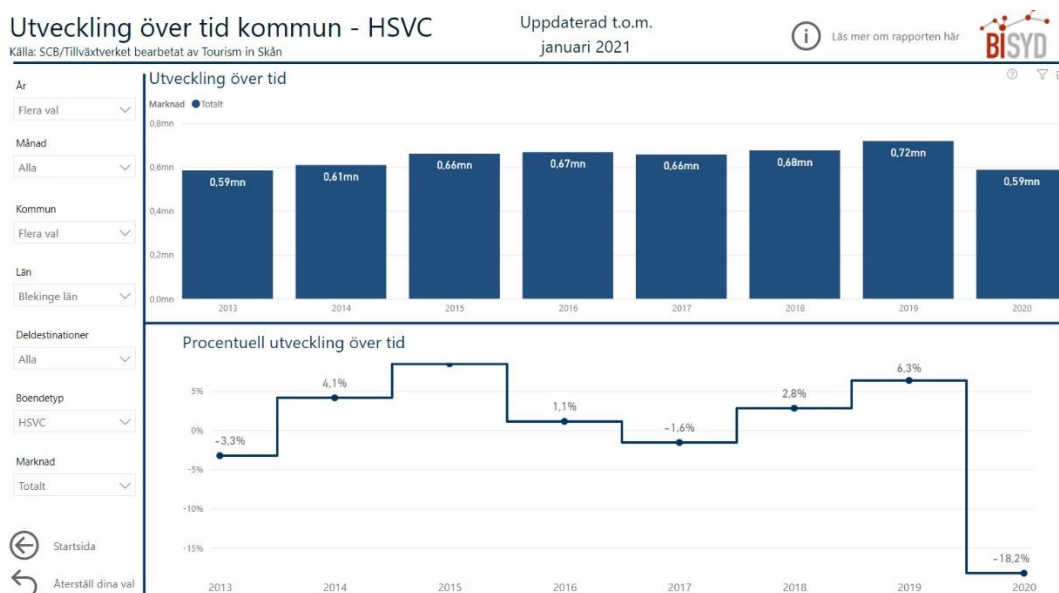
The major manufacturing industries produce, among other things, pulp, vegetable oils, flooring, and machinery. The shipbuilding and port industry is also important in the area. In general, these industries have experienced good financial returns over the past decade and several of them are continuously expanding and developing their operations.

The pandemic in 2020 has resulted in a rapidly declining trend for both the tourism and the industrial sectors. In the regional hospitality and tourism sector, however, the outcome has depended largely on which service(s) the companies offer and what opportunities they had to quickly switch to a domestic market if they previously had the foreign market as their main target group. For the manufacturing industry and related service companies, the pandemic has generally meant an economic fluctuation down to the same levels as during the financial crisis in 2008, looking at the

industrial production index and the industry's order intake, but the recovery has been much faster during the pandemic than during the financial crisis. At the time of writing (January 2021), indices and order books point to a decline at the same levels as before the outbreak of the pandemic.

**5.2 Describe the tourism industry in the biosphere reserve. Has the tourism increased or decreased since the nomination or the latest evaluation? What new projects or initiatives have been undertaken? Which types of tourism activities? What effect have these activities had on the biosphere reserve's economy, ecology, and society? Are there any studies examining whether the designation of the area as a biosphere reserve has affected the number of tourists? Enter bibliographic information about any examinations and/or attach a hard copy.**

The tourism industry has grown steadily over the decade. Above all, the inter-municipal initiative Visit Blekinge has initiated campaigns and marketing of hospitality companies, the whole county and the biosphere reserve, something the municipal tourism bodies individually could not manage on their own. Visit Blekinge started as a project, partly financed with municipal funds, but now in 2021 has transformed into a permanent organisation that also takes responsibility for municipal and regional goals for the county's increased attractiveness for residents, immigration, and business establishment. Several of the county's municipal tourist offices have been dismantled or closed in favour of this joint county-wide body.



Number of overnight stays in Karlskrona, Ronneby and Karlshamn municipalities during 2013-2020. About 80-90% of these overnight stays take place within the biosphere reserve. Source: SCB/Tillväxtverket.

In addition to Visit Blekinge, Blekinge Arkipelag has played a major role for the concept that tourism and the hospitality industry are a common concern for Blekinge's municipalities. Project Arkipelagrutten, later the brand ARK56 with associated overall routes, map, app, and other products, has meant a tangible project that involves all companies and regional and municipal participants in the biosphere reserve. According to evaluation after the opening of the trails and associated products in 2019, many business owners indicated that they focused more on collaboration and marketing under one brand, that they worked towards making their business more sustainable, and that they created more joint offerings where service and service offerings are combined into holistic experiences. (See the project's final report:

<http://files.builder.misssite.com/76/b0/76b04300-1801-4d16-8137-9853fe05b648.pdf> ).

The hospitality and tourism companies in the biosphere reserve offer accommodation in the form of hotels, bed and breakfasts, cottages, glamping, RV-parks for motorhomes, and regular camping. There are several restaurants, and there are companies offering water transport, both smaller water taxi companies and larger companies procured by the municipalities to handle boat services in the archipelago. There are a number of rental companies that offer kayaks and bicycles, often in combination with accommodation. There are guest harbours, sport fishing facilities with boats for rent, equipment, and guides, as well as several other small and medium-sized companies that offer more specific experiences like guided tours, survival courses, sporting events, hunting, and game and bird safaris. Museums also play an important role in attracting and making visitors to the biosphere reserve happy with their visit. More non-institutionalized and outdoor-related travelling and discovery excursions of the biosphere reserve is also common, mainly among Blekinge residents, but also among visitors from outside.



Information about ARK56 at the service hub Järnavik which has rental of kayaks, accommodation at the guest house, meals and camping to offer. You can get here by bike and change to kayak, hiking or archipelago boat.

The existing tourism companies and their activities primarily have a positive economic effect, partly for the companies and their employees and partly for the municipal and regional economy. The establishment of ARK56 has had a large and important objective in making the entire biosphere reserve an attractive, sustainable and accessible destination with the hope that companies along the trails will have an increased flow of visitors and become financially more sustainable and solid. The range of sustainable travel by kayak, sailing boat, hiking, and cycling, and the variation between untouched natural environments and proximity to services, create different challenges and experiences which appeal to different target groups. Already two years after the inauguration you can see a trend moving in the desired direction, despite the pandemic. The development of ARK56

also means that more visitors are given a reason to stay longer in the area compared to if they otherwise only visit, for example, a museum or a fishing lake, which is also of great importance for the local and regional economy.

Tourism together with municipal and regional projects strengthen the hospitality and tourism industry and provide more entry-level jobs for young people. Many jobs in the tourism sector are relatively easy to perform. Socially, it is an important way of meeting Blekinge's demographic challenges, where many young people annually choose to move from the county after completing primary and secondary school.

The increasing tourism has also resulted in an increased demand for trained guides with specific expertise about the Blekinge landscape, its wildlife, and cultural environments, which is why Blekinge Arkipelag will, in collaboration with Blekinge Folkhögskola, be able to offer a 1.5-year guide training course starting in 2021.

The largest ecological impact of the established tourism activities has been the boat traffic, both archipelago boat services and private small boats. This is partly because the archipelago boats are heavy and often powered by older diesel engines and partly because large quantities of nutrient- and bacteria-rich latrines were dumped from the boats directly into the sea. Since 2015, Swedish law has prohibited the dumping of toilet waste in the water and every marina and guest harbour are required by law to offer emptying of latrines and accept garbage. Blekinge Arkipelag has applied for, received and distributed funds as a contribution to the municipalities' development of latrine emptying stations. Both guest harbours and other leisure harbours have increased amounts of toxic substances that derives from boats' anti-fouling paint. This has also improved and Blekinge Arkipelag distributed information campaigns about the alternatives to toxic paints. Different types of land-based boat washers have also been evaluated, but there is still a lot to do in this area.

Another ecological mark from current tourism is the littering of the coast and archipelago. It has never been exceptionally high in the biosphere reserve and has often not been considered a problem by the public, but with increasing number of visits, the levels of leftover and forgotten rubbish have also risen. Both the municipalities and Blekinge Arkipelag are therefore annually involved in cleaning the beaches, with the help of employees and volunteers. During 2021, Blekinge Arkipelag applied for and received funding to produce and distribute information about the importance of taking waste back after a visit to coastal and archipelago nature. On Blekinge Arkipelag's website there is a function on reporting the cleaning efforts from voluntary groups and the municipality.

Otherwise, the purpose of the ARK56 trail network is to lead visitors in a sustainable way to both the most worthwhile places to visit but also to the places that have the highest level of service and where it is possible to use the toilet and throw away their rubbish. If the participants succeed in jointly guiding and showing visitors in a correct and sustainable way how to visit the biosphere reserve, the trail structure and natural environments will withstand a greater visitor pressure than we have today.

There is an ongoing survey on how the use of the mobile application ARK56 has contributed to the discovery of the biosphere reserve among the inhabitants of the three biosphere municipalities. The survey has no real tourism focus, even though the residents of Blekinge are counted as tourists when they visit and spend the night in the neighbouring municipalities. The survey, which is carried out by students in the Landscape Science program at Kristianstad University, is mainly expected to provide answers to how the use of the app has contributed to the view of the biosphere reserve, outdoor habits, and each person's own landscape identity.

**5.3 Describe in current cases other important sectors and industries, e.g. agriculture, fishing, forestry. Have they grown or shrunk since the nomination or the latest evaluation? What kind of new projects or initiatives have been undertaken? What impact have they had on the biosphere reserve's economy and ecology and on its biodiversity? Are there any studies examining whether the designation as a biosphere reserve has affected the frequency of these activities? If applicable, provide bibliographic information about these surveys and/or attach a hard copy.**

**Agriculture** in the biosphere reserve has declined slightly over the last 10 years. It is mainly small farms that have not found buyers or those that had no heirs when retiring. Regionally, there is still a perception among mainly middle-aged residents in Blekinge about agriculture as something unprofitable and belonging to the historical industries. At the same time, increased awareness of the positive environmental and health effects of locally produced food is a trend that is clearly noticeable in the emerging local sales initiatives that attract more and more local consumers to buy honey, vegetables, venison, sausages, and fruit from farms around the biosphere reserve. The amount of environmentally certified, organic farming has grown by at least 10% in the last decade.

Blekinge Arkipelag has, in collaboration with the biosphere municipalities and Länsstyrelsen, arranged lectures on the theme of Sustainable Agriculture and focused on organic farming, natural grazing and local consumption. We have continued to inspire to this via our website, which has its own tab for Sustainable Agriculture and Forestry. During March-October 2021, a new lecture series will be held, focusing on natural pastures, natural pasture animals and local natural pasture products. Like previous initiatives, it aims to increase knowledge of different values linked to natural pastures and natural pasture lands as well as local production and consumption in order to continue to have financial sustainability for the keeper as well as high biological diversity and an open, accessible archipelago landscape.

Other development efforts to lift agriculture and its status have been to investigate how irrigation can be optimized using new algorithms and long-term weather scenarios. In that way, the farmer and the region can save water and electricity and reduce leaking nutrients. At the same time, the farmer provides the crops with maximum growth potential despite possible extreme weather due to the climate changes and thus an increased yield on the harvest. The surveys have been carried out by Mälardalen University and we are now trying to get permission for a joint regional calibration and application of the optimization model within the biosphere reserve to see how the result relates to traditional irrigation.



*Solar panels on agricultural land*

Mälardalen University is Blekinge Arkipelag's partner in another development project where we want to calculate and demonstrate the benefits of being able to use the agricultural land for both continued food production and electricity production through the installation of vertical solar panels. This project also investigates how innovation can meet climate change through some shading in extreme weather like drought. It is also an important project in the transition to sustainable electricity production to meet the climate challenges - a fine development to drive or contribute to the locally condemned agriculture.

**Forestry** has been constant during the 10-year period, both in terms of activity levels and the amount of timber produced. The same applies to the number of forest owners in the biosphere reserve, which now, as before, is relatively small, with only a few larger forest properties. In general, the amount of coniferous forest has decreased somewhat in favour of the proportion of deciduous forest, which is positive for the resilience in the forests, both against pests and climate change.

Blekinge Arkipelag has initiated and runs Skogs nätverket, which is based on a broad participation in the entire value chain for forest ownership, forest management, felling and processing. Small and large forest owners, entrepreneurs in the care and felling industry, and the larger forest companies are involved in various meetings where we seek increased collaboration, skills development and greater consensus on the opportunities the biosphere reserve's forests offer, both from an economic and ecological perspective. It can, for example, be about jointly looking at how to optimize oak forest management, what it means, who can be hired to carry out the desired work, what benefits it entails for the biotope and the benefits of felling. By creating a common Blekinge Arkipelag area directive, we can raise the social, economic and ecological values of biosphere reserve forests.

During 2020-2021, Länsstyrelsen has developed a new forest strategy for Blekinge, and Blekinge Arkipelag has participated in the process. A similar strategy has not existed in recent years and applies to unprotected forest/nature. It will also be able to contribute to an increased value of existing forest, increase the proportion of deciduous forest and mixed forest in relation to the proportion of coniferous forest, and raise awareness of how production forest in Blekinge can be managed and developed to become more sustainable and more valuable for stakeholders and participants.

Skogsstyrelsen (the Swedish Forest Agency), Länsstyrelsen, and Region Blekinge, together with other countries around the Baltic Sea, managed the EU project (Interreg South Baltic) Attractive Hardwoods during 2015-2018. Among several successful results, a plan was created for how tourism could be conducted on forest terms and attract more people to visit the deciduous forests around the Baltic Sea. In addition to these guidelines, the project has identified a number of additional places worth visiting, map material, film clips and descriptions of social, ecological and economic values in deciduous forests. Blekinge Arkipelag was an associated partner in the project.

**Fishing** in the biosphere reserve has virtually disappeared during the decade, due to the decline of fish stock and increased morbidity. The fishermen who are still active have often had to diversify their fishing and focus on several species to be able to conduct their business regardless of season and under current regulations. One way to increase the value of fish catches has been to shorten the path between fishermen and consumers by excluding various intermediaries and selling fish directly to the local consumer. A successful concept that has provided greater financial returns for the fisherman is the so-called FiskOnline initiative. It started as a project funded by Leader Blekinge and has since been given a natural continuation and is now run by the local fishermen. On the website the customer can see when the fisherman is on his way with different catches and directly contact



the fisherman for an order, which is then picked up when the boat arrives at the fishing port. Blekinge Arkipelag informs about/markets FiskOnline on the association's website.

The purpose of the ongoing Round Goby project, which is run by Kalmar municipality and where Blekinge Arkipelag is an associated partner, is the purpose to further strengthen the fisherman's diversification. It is a matter of finding out whether the invasive species Round Goby can be fished under current regulations, how it can most easily be prepared, how it can be refined and marketed to different target groups. The result is expected to show that fishing for Round Goby can improve the fisherman's financial sustainability.



The invasive fish species Round Goby has come to the Baltic Sea to stay.

The restoration measures Blekinge Arkipelag is undertaking to running water, the research efforts on the unhealthy Baltic salmon that we support, and the project that Sportfiskarna in Blekinge runs with our support for more spawning and growing environments for perch in the archipelago, will all mean financial benefits for entrepreneurs in the sport fishing industry, commercial fishing and for associations that sell fishing licenses.

#### **5.4 What benefit does the local community have from economic activities in the biosphere reserve?**

As the city centers of Karlskrona, Ronneby and Karlshamn are all located within the biosphere reserve, the entire society's economic activities are linked to various forms of services, trade, transport, care, school and manufacturing in both the private and public sector. In order for this lively economic activity to continue to exist but also to develop in a sustainable direction, it is of utmost importance that people want to continue to both live and work in the biosphere reserve. If this is going to work for future generations as well, it is crucial that most, perhaps all, businesses continue to consciously develop their offerings, their working conditions, their collaboration, their innovations, and their adaptation to the surrounding natural and cultural environment.

Fishing and agriculture are also of economic importance. The greater return the contractors receive for their products locally, the more important they are for the local economy. Both fishing and agriculture are important for the landscape and the cultural environment of the biosphere reserve. The activities are of great importance for the landscape identity and this creates conditions for more genuine values in the tourism sector. In this way, both fishing and agriculture have great economic significance for tourism.

Agriculture is also important for the biological diversity of the biosphere reserve. Both natural pastures and arable land that are managed correctly create a species richness that contributes to better conditions for, for example, pollinators. Therefore, agriculture and other initiatives for increased biodiversity operated by Blekinge Arkipelag are of great and important significance for the biosphere reserve's economy in both the long and short term.

### **5.5 How is the impact of the measures or strategies assessed? (Describe methods and indicators.)**

Both the rural developer and business units in each municipality drive economic development through the exploitation of and establishment in the biosphere reserve's development areas. They also have support programs to facilitate the development and collaboration of various activities. How they succeed in developing the business climate is published in Svenskt Näringslivs (the Confederation of Swedish Enterprise's) annual national survey and ranking of 290 Swedish municipalities' business climate. During the last ten years, Karlskrona has fallen from position number 172 to 203, Karlshamn has fallen from 186 to 225 and Ronneby has risen from position number 273 to 171. During the last two years, all three municipalities have improved their positions.

There are also forums for county-wide and regional collaborations for business and economic promotion initiatives. For example, both the tourism-developing Visit Blekinge and the industrial and technology-developing Techtank, have implemented measures based on their respective strategies. In Tillväxtverket's (the Swedish Agency for Economic and Regional Growth's) visitor report for 2019 (before covid-19), Blekinge had approximately 1,042,000 guest nights during the year, an increase of 5.9 per cent compared to 2018, which was also a good year. The number of international guest nights increased by 2.8 percent and domestic guest nights by 6.9 percent. The corresponding figure for Sweden was an increase of 4.1 per cent, international up 0.4 per cent and the domestic was an increase of 5.4 per cent. For Blekinge, it was the second year in a row that the rate of increase was higher than the national increase.

Blekinge Arkipelag's collaboration plan and strategic tools have had a great impact - partly for tourism, but also for fishing, forestry, and agriculture as well as a number of ecosystem services that can be calculated economically. Regarding tourism, we have created the new infrastructure and the sustainable products that are connected to ARK56. The network of coastal and archipelago trails has increased the number of visits to the biosphere reserve and has probably increased the number of *sustainable* visits, which is of economic value. By March 2021, the ARK56 app had been downloaded 17,000 times. The association's strategic tool contains a business plan that is updated annually and clearly shows the goals which have been achieved and which focus areas are promoted by the various activities.

### **5.6 Economic development initiatives in society. What programs are in place to promote comprehensive strategies for economic innovation, change and adaptation in the biosphere reserve, and to what extent have they been implemented?**

There are several ongoing programs. **SydostLeader** provides project funding for rural development of, for example, social innovations, societal common initiatives, and business ideas, but also for development in, for example, fisheries. **Landsbygdsprogrammet** plays a major economic role in rural development. It is a comprehensive program that ranges from direct environmental support for pastures and coastal meadows to opportunities for the construction of new wetlands and skills development. Both SydostLeader (formerly Leader Blekinge) and **Landsbygdsprogrammet** have been implemented and have had a major impact on the development of the biosphere reserve and agricultural companies.

Blekinge Arkipelag's collaboration plan contains 22 strategies for preservation, development, and support efforts in the biosphere reserve. Together with the association's strategic tools and business plan, much of the planned work has been carried out, but with a clear emphasis on the past five years, especially with a focus on tourism.

With current projects, there is great potential that, for example, commercial fishing can diversify its activities with fishing for Round Goby. It can help save their businesses and at the same time maintain a highly valued activity that has belonged to our coastal culture for thousands of years. If the association's efforts lead to research being able to prevent Baltic salmon from dying of thiamine deficiency in the Mörrum River, then the ecosystem service "salmon in the Mörrum River" is estimated to be worth approximately 50 MSEK/year for the area. Blekinge Arkipelag's measures for restored watercourses and wetlands create new playgrounds and nursery grounds for fish, birds, and various types of vegetation. It creates improved grazing conditions, cleaner coastal waters and reduces algal blooms and death of seabeds - economically valuable for livestock, municipalities, and tourism.

There are various participants who act as support for mainly trade and technology-oriented companies. Region Blekinge's innovation strategy (2015) contains descriptions of participants, who together create innovation and act as growth forces in the region. Among others, Blekinge Institute of Technology, Blekinge Business Incubator, Techtank, Net Port Science Park, Blue Science Park and Energy Office Southeast are mentioned.

**5.7 Local companies or other economic development initiatives. Are any specific environmentally friendly alternatives being implemented to address sustainability issues? What connections (if any) are there between the different activities?**

Several local companies have made various investments to expand their businesses and make them more financially profitable. This is of great importance for the economic activity of the biosphere reserve, not least in the tourism sector. During the project to establish ARK56, Blekinge Arkipelag held several workshops and training courses with sustainability issues in focus. After the project, an evaluation was made with the approximately 60 member companies involved in the project and become important parts of ARK56's lead network. The evaluation showed, among other things, that:

- Three companies had installed solar cells at their facilities
- Karlskrona municipality produced new rubbish bins on the trail with a solar-powered signal indicating time of emptying, which means that unnecessary checks can be avoided.
- 75% of participating companies had benefited from the handbook that was produced on sustainable hospitality and tourism industry during the project
- 74% stated that sustainability has become more important
- After the project 68% had an increased understanding of and greater insight into sustainability efforts
- 38% fewer persons stated that sustainability work is a difficult challenge

In 2021, Visit Blekinge will run a crisis package project for covid-affected companies in the hospitality and tourism industry throughout Blekinge. Blekinge Arkipelag has been commissioned to work out a sustainability plan for the project, which otherwise further develops the companies' digitization and products.

The biosphere reserve's industries and other companies are also working to make their operations more sustainable. During the past period of operation, however, Blekinge Arkipelag has focused on

the hospitality and tourism companies, but sees great potential in the future to work with other sectors in industry and trade.

**5.8 Describe the (possible) most important changes expressed in cultural values (religious, historical, political, social, ethnic) and other values, if possible with a distinction between tangible and intangible cultural heritage.**

Above all, it is the inter-municipal development of ARK56 that highlights different cultural environments and cultural-historical remains from different eras. In the same way, Blekinge Arkipelag highlights several of the cultural-historical values within the biosphere reserve, partly via the association's website but also within the ambassador training, where guided tours and visits to sights on ARK56 are mandatory. By this, awareness and knowledge increases for the historical significance of fishing, the Stone Age, the Bronze Age culture, the Danish era, the small wooden boat yards, and the world heritage Örlögsstaden Karlskrona,. This can primarily be perceived as social and identity changes for residents in the biosphere reserve, which also creates greater cultural commitment. Knowledge and commitment have also been shown to lead to product development around cultural monuments and cultural environments as well as greater preparedness for conservation measures.

**5.9 How does the biosphere reserve work to support and act for different groups in society? Which programs/activities in or for the biosphere reserve are focused on issues such as employment preparation and skills-enhancing initiatives, health and medical services and social services, as well as issues related to social justice? What is the relationship between these and the economic development of society?**

Blekinge Arkipelag works on behalf of different social groups. The work in the hospitality and tourism industry is primarily aimed at tourism entrepreneurs who for several years have been offered skills development in both entrepreneurship and sustainability. They have also been offered to participate in networks where the opportunities for cross-border work and collaboration between different companies are great. Entrepreneurs who have not yet started a business have also been invited to participate.



Guided nature walks in the biosphere reserve as part of cultural and labour market integration for immigrants during Friluftslivets År 2021 (the Year of Outdoor Life 2021). Translation in Arabic and Dari for the participants.

The work in sustainable agriculture and forestry has primarily been aimed at landowners and users, but also at larger companies in these industries. Here, competence-enhancing initiatives and network meetings are held, where everyone has been invited, for example in Skogsnätverket and a series of lectures on values in the county's natural grazing and cultivation landscape.

Furthermore, the work in sustainable fishing is aimed at both commercial fishing and sport fishing. Here, too, the objective is that the various measures will lead to more people enhancing their skills, their network, and finding new ways to both economically and ecologically strengthen and develop their business.

In general, there are always business development opportunities and jobs included in this type of investment from Blekinge Arkipelag, sometimes intensely to create more job opportunities and sometimes to preserve existing jobs. At the same time, there are units in each municipality that work for both job opportunities and better health. Regarding health initiatives, Blekinge Arkipelag together with the municipalities, among others, has created ARK56 as an important and increased opportunity for more urban people to come to areas closer to city centres where the connected coastal trails offer hiking, biking, kayaking, and sailing as an important source of both recreation and physical exercise. Here, the public is a more important target group than specific industries, which is evident in, for example, the investment in Friluftslivets År 2021, as children, immigrants, and people who are less familiar with outdoor life and who also have an important health focus, are invited.

#### **5.10 What indicators are used to assess the effectiveness of activities aimed at promoting sustainable development? What have these indicators shown?**

When the Collaboration Plan for Blekinge Arkipelag was compiled in 2010, Open Standards for nature preservation was used. The tool provided (with the associated application Miradi) good strategies/overview images of how the association and other participants can work in different theme areas and towards common goals, sometimes with the same, sometimes with different measures. No less than 22 strategies of this type are included in the Collaboration Plan and have been a good help in understanding complexity, threats, rules of procedure, and success factors. Above all, the sub-goals of the strategies are important indicators where Blekinge Arkipelag and other participants have contributed to and have implemented to various degrees during these 10 years. Below is a list of the strategies, goals, and sub-goals, which, regardless of the stated years, *have been initiated or have contributed to achieving, or have been partially or fully achieved* during the past 10 years. (The strategies and sub-goals that were not implemented during the period are not included in the list below). To assess to which extent the objectives have been achieved, the biosphere office and the board have compared the results of the historical and ongoing activities, as well as other participants' known operating results, to the various objectives and then given each of them an assessment - *initiated, contributed to, partially achieved or fully achieved*.

#### **Strategy 2: Development project – living archipelago**

Participants in collaboration: Blekinge Arkipelag, Blekingetrafiken, Municipalities, Entrepreneurs in archipelago boat services

Important goals for the strategy: The coastal and archipelago landscape is grazed and kept open, cultural environments are restored and maintained

Promotes preservation objectives: Deciduous forest coast with oak fields, cultural landscape, shallow bays, cultural remains

Sub-goals to which the participants have contributed, which have been partially or completely met (indicators):

- By 2015, transport to the hubs for tourism must be good - *achieved*.
- By 2020, public transport in the coastal and archipelago area must be diversified and competitive - *partly achieved*.

### **Strategy 3: Stimulate entrepreneurship in the cultural environment**

Participants in collaboration: Blekinge Arkipelag, Municipalities, Entrepreneurs in the hospitality and tourism industry, Länsstyrelsen, the DUNC project

Important goals for the strategy: Cultural environments are restored and maintained

Promotes preservation objectives: Cultural remains

Sub-goals to which the participants have contributed, which have been partially or completely met (indicators):

- By 2020, cultural environments are seen as an asset and all areas of national interest for the cultural environment are secured - *partially achieved*.

### **Strategy 5: Create conditions for an open landscape**

Participants in collaboration: Länsstyrelsen, Blekinge Arkipelag, municipalities, animal keepers and farmers, WWF, Biodiversitet AB, local competencies in related areas, SLU

Important goals for the strategy: The coastal and archipelago landscape is grazed and kept open

Promotes preservation objectives: Shallow bays, cultural landscape, deciduous forest coast with oak groves

Sub-goals to which the participants have contributed, which have been partially or completely met (indicators):

- By 2011, meadow and grazing inventory must be completed - *achieved*.
- By 2015, the claimed area will be maintained or increased compared to 2011 - *initiated*.
- By 2015 and 2020, profitability in animal keeping has increased - *initiated*.
- By 2015, the number of grazing animals must have been maintained or increased - *initiated*.
- By 2015, the number of animal keepers must have been maintained or increased - *initiated*.

### **Strategy 6: Better knowledge regarding bait and practice**

Participants in collaboration: Blekinge Arkipelag, animal keepers and farmers, Länsstyrelsen, WWF, Biodiversitet AB, local competencies in related areas, SLU

Important goals for the strategy: The coastal and archipelago landscape is grazed and kept open

Promotes preservation objectives: Shallow bays, cultural landscape, deciduous forest coast with oak groves

Sub-goals to which the participants have contributed, which have been partially or completely met (indicators):

- By 2012, there is a skills development project with advice, courses and information regarding pastures and hay meadows - *achieved*.
- By 2012, 10 contractors completed a shorter course in manual complement (e.g. disforestation) to good practice - *partially achieved*.

### **Strategy 7: Reduce nutrient leakage from individual sewers**

Participants in collaboration: Länsstyrelsen, municipalities, property owners, Blekinge Arkipelag

Important goals for the strategy: Minimized nutrient leakage from individual sewers

Promotes preservation objectives: Fish, shallow bays, hard seabeds, deep soft seabeds

Sub-goals to which the participants have contributed, which have been partially or completely met (indicators):

- By 2011, Länsstyrelsen's supervision of the municipalities will work - *achieved*.
- By 2014, work is underway to develop a VA plan for the entire coastal and archipelago area - *achieved*.
- By 2020, nutrient leakage from individual sewers will have decreased by 50% compared to 2010 - *partially achieved*.

**Strategy 8: Promote recycling solutions in water and sewage *and***

**Strategy 9: Reduce nutrient leakage from municipal treatment plants**

Participants in collaboration: Länsstyrelsen, municipalities, Blekinge Arkipelag, municipal companies in sewage treatment, property owners

Important goals for the strategy: Minimized emissions of nutrients from sewage treatment plants

Promotes preservation objectives: Fish, deep soft seabeds, hard seabeds, shallow bays

Sub-goals to which the participants have contributed, which have been partially or completely met (indicators):

- By 2015, emissions from municipal treatment plants should not have increased compared to 2010 - *achieved*.
- By 2020, all treatment plants have maximum treatment - *initiated*.
- By 2015, all property owners follow the General regulations for use of the public water and sewage system (ABVA) - *partially achieved*.
- By 2015 and 2020, emissions of nitrogen and phosphorus from overflows must have decreased - *achieved*.
- By 2016, the three major treatment plants have a nitrogen purification of 80% and a maximum of 0.2 mg phosphorus/litre of outgoing water - *partially achieved*.

**Strategy 10: Develop the sustainable agriculture**



One of Blekinge Arkipelag's newly developed coastal wetlands at Gisslevik in Karlskrona. The purpose is nutrient retention from agricultural and forestry land and increased biodiversity.

Participants in collaboration: Blekinge Arkipelag, Länsstyrelsen, municipalities, farmers, LRF southeast, Hushållningssällskapet, Naturvårdsingenjörerna, Havs- och Vattenmyndigheten, SydostLeader

Key objectives of the strategy: Reduced nutrient leakage from agriculture

Promotes preservation objectives: Deep soft seabeds, fish, shallow bays, hard seabeds

Sub-goals to which the participants have contributed, which have been partially or completely met (indicators):

- By 2011, there is a competence development project with courses, advice and information regarding wetlands, protection zones, phosphorus dams, etc. - *partially achieved*.
- By 2014, the proportion of protection zones increased - *achieved*.
- By 2015, the number of wetlands in agriculture must have increased - *achieved*.
- By 2015, there is a clear purpose for all newly created wetlands - *achieved*.
- By 2020, nutrient leakage from agriculture has decreased by 50% - *partially achieved*.
- By 2020, the wetland area will have increased by 80 ha - *achieved*.

### **Strategy 11: Develop the sustainable forestry**

Participants in collaboration: Blekinge Arkipelag, forest owners, entrepreneurs in the forest industry, forest companies, Skogsstyrelsen (the Swedish Forest Agency), Länsstyrelsen

Important goals for the strategy: Minimized nutrient leakage from forestry, Good access to valuable deciduous forest

Promotes preservation objectives: Deep soft seabeds, fish, shallow bays, hard seabeds, deciduous forest coast with oak groves

Sub-goals to which the participants have contributed, which have been partially or completely met (indicators):

- By 2012, the proportion of valuable deciduous forest will be developed for Blekinge Arkipelag - *achieved*.
- By 2015, functioning collaboration meetings are arranged - *achieved*.
- By 2022, the proportion of valuable deciduous forest must be maintained or have increased - *achieved*.
- By 2020, nutrient leakage from forestry has decreased by 30% compared with 2010 - *partially achieved*.
- By 2023, the proportion of established protection zones have increased compared with the aerial image interpretation in 2017 - *achieved*.

### **Strategy 12: Develop sustainable boating**

Participants in collaboration: Blekinge Arkipelag, Länsstyrelsen, municipalities, boat owners, Blekinge Boat Association, boat clubs, kayak and canoe rental

Important goals for the strategy: Minimized sewage from boating, minimized wear and tear on natural and cultural environments from boating and other tourism, minimized noise, minimized littering

Promotes preservation objectives: Fish, shallow bays, hard seabeds, deep soft seabeds, islets and skerries, cultural landscape, deciduous forest coast with oak groves

Sub-goals to which the participants have contributed, which have been partially or completely met (indicators):

- By 2011, the noise level is perceived as negligible in the Listerby archipelago - *partially achieved*.
- By 2014, there are emptying stations for boat tanks in all major guest harbours - *achieved*.
- By 2015, there are information boards about Blekinge Arkipelag in strategic places – *achieved*.
- By 2015, there is good waste management in the coast and archipelago - *partially achieved*.
- By 2019, litter in the archipelago has decreased compared with 2016 - *achieved*.
- By 2019, there is better access to toilets compared with 2016 - *achieved*.
- By 2020, all leisure boats with toilets will empty their drains in existing emptying stations - *achieved*.
- By 2020, designated sensitive areas have not been exposed to wear and tear from tourism and outdoor life - *partially achieved*.



### **Strategy 13: Reduced use of toxic anti-fouling paints for boats**

Participants in collaboration: Blekinge Arkipelag, Länsstyrelsen, boat owners, Blekinge Boat Association, boat clubs

Key goals for the strategy: Reduced pollution from recreational boats

Promotes preservation objectives: Fish, shallow bays, hard seabeds, deep soft seabeds

Sub-goals to which the participants have contributed, which have been partially or completely met (indicators):

- By 2014, each municipality has at least one boat wash - *initiated but discontinued*.
- By 2020, 50% of the boat owners within Blekinge Arkipelag will use environmentally friendly alternatives/methods to keep their boats clean - *partially achieved*.

### **Strategy 15: Stimulate sustainable tourism and**

### **Strategy 16: Stimulate entrepreneurship along the coast and archipelago and**

### **Strategy 17: Establish the brand Blekinge Arkipelag**

Participants in collaboration: Blekinge Arkipelag, municipalities, Blekinge Region, Visit Blekinge, hospitality and tourism companies, Länsstyrelsen, Friluftsförbundet, Naturum Blekinge, Tillväxtverket, SydostLeader

Important goals for the strategies: A living coast and archipelago, coastal and archipelago landscape grazed and kept open, cultural remains are restored and maintained, viable and sustainable small-scale business

Promotes preservation objectives: Shallow bays, cultural landscape, deciduous forest coast with oak fields, cultural sites

Sub-goals to which the participants have contributed, which have been partially or completely met (indicators):

- By 2012, a map and information has been produced for sailing routes - *achieved*.
- By 2013, there is a developed and accessible network of cycling and hiking trails - *achieved*.
- By 2014, the number of visitors to Blekinge Arkipelag increased by 25% compared to 2010 - *achieved*.
- By 2021, the number of visitors will have increased at the identified tourist points during April-May and September-October - *partially achieved*.
- By 2015, the number of tourist companies within Blekinge Arkipelag has increased - *achieved*.
- By 2015, the proposed Arkipelagrutten is presented to all parties and there is an interest in developing it - *achieved*.
- By 2020, entrepreneurs will experience that it is easy to establish and run companies in the archipelago compared to 2011 and 2015 - *partially achieved*.
- By 2020, there is an established boat line, Arkipelagrutt - *achieved*.
- By 2011, the criteria for the brand have been developed and accepted - *achieved*.
- By 2012, all network members adhere to the brand and its meaning - *partially achieved*.
- By 2013, all network members are aware of the total range of Blekinge Arkipelag's products and services - *partially achieved*.
- 
- By 2014, there are at least two points of sale for Blekinge Arkipelag's products in each municipality - *partially achieved*.
- By 2014, we have at least 20 products/services that use the brand - *achieved*.
- By 2016 and 2021, the number of entrepreneurs who joined the business networks have increased – *achieved*.

### **Strategy 18: Support small-scale commercial fishing**

Participants in collaboration: Länsstyrelsen, Havs- och vattenmyndigheten (the Swedish Agency for Marine and Water Management), commercial fishermen, SydostLeader, Blekinge Arkipelag, SLU, Stockholm University

Key objectives for the strategies: Local commercial fishing that is sustainable

Promotes preservation objectives: Fish

Sub-goals to which the participants have contributed, which have been partially or completely met (indicators):

- By 2012, there is a clear seal and cormorant management that is respected - *partially achieved*.
- By 2015, there are cod quotas that the cod population can tolerate - *achieved*.
- By 2012, it is possible for small-scale fishing to conduct mixed fishing (on different species) - *partially achieved*.
- By 2020, fisheries legislation supports sustainable fishing compliance within Blekinge Arkipelag - *initiated*.

### **Strategy 20: Stimulate sustainable recreational fishing**

Participants in collaboration: Blekinge Arkipelag, Sportfiskarna Blekinge, Visit Blekinge, sport fishing companies, Länsstyrelsen, Havs- och vattenmyndigheten (the Swedish Agency for Marine and Water Management), Fisheries Preservation Associations, municipalities, the Coast Guard, regulators

Key goals for the strategies: Sustainable recreational fishing

Promotes preservation objectives: Fish

Sub-goals to which the participants have contributed, which have been partially or completely met (indicators):

- By 2012, the impact on catch & release fishing is minimal - *partially achieved*.
- By 2018, 80% of anglers surveyed are aware of how they should handle the fish in catch & release fishing - *achieved*.
- By 2012, tourists and other fishing visitors know which local rules/regulations apply - *partially achieved*.
- By 2012, the fishermen conduct information initiatives in youth activities - *achieved*.
- By 2013, there is a clear proposal on how spawning areas and regulations for recreational fishing are coordinated - *partly achieved*.
- By 2013, there are proposals/updates on the location of the protected areas - *achieved*.
- By 2020, there will be no illegal fishing for eel and no illegal fishing for pike - *partially achieved*.
- By 2015, there is a clear proposal on how catch & release fishing should be conducted for the least possible impact on the fish, if it is a sustainable method - *achieved*.
- By 2015, all sport fishing competitions will be organised, based on the fish's spawning periods - *partially achieved*.

The biosphere reserve's municipalities are part of the national network SEKOM - Sweden's Eco - municipalities. This means that for longer time series there are measurements of 12 different so-called Green key figures. A positive development of the key figures promotes the preservation objectives of the biosphere reserve in several ways, while a negative development of the key figures can have a negative effect on the nature of the biosphere reserve and thus also on its development potential. Conversely, there are several of the collaboration plan's sub-goals that, when met, can affect the biosphere municipalities' Green Key Figures. In 2021, the figures look as follows:

Key figures	Karlshamn	Ronneby	Karlskrona
1a. Carbon dioxide emissions from industry	In the right direction since 1990 1.3 tonnes/inhabitant (2018) <b>Worse than SEKOM</b>	In the right direction since 1990 0.2 tonnes/inhabitant (2018) <b>Better than SEKOM</b>	In the right direction since 1990 0.1 tonnes/inhabitant (2018) <b>Better than SEKOM</b>
1b. Carbon dioxide emissions other sectors	In the right direction since 1990 2.2tonnes/inhabitant (2018) <b>Better than SEKOM</b>	In the right direction since 1990 3.2 tonnes/inhabitant (2018) <b>Worse than SEKOM</b>	In the right direction since 1990 1.8 tonnes/inhabitant (2018) <b>Better than SEKOM</b>
2. Travel with public transport	<b>No change since 2013</b> 30 trips/inhabitant (2013) <b>Worse than SEKOM</b>	In the right direction since 2013 36 trips/inhabitant (2019) <b>Worse than SEKOM</b>	In the right direction since 2013 85 trips/inhabitant (2019) <b>Better than SEKOM</b>
3. Renewable fuels in public transport	<b>No change since 2013</b> 5% (2013) <b>Worse than SEKOM</b>	In the right direction since 2013 100% (2019) <b>Better than SEKOM</b>	In the right direction since 2014 100% (2019) <b>Better than SEKOM</b>
4. Organic farming	<b>No change since 2013</b> 4.5% (2013) <b>Worse than SEKOM</b>	In the right direction since 2013 13.8% (2019) <b>Worse than SEKOM</b>	In the right direction since 2013 7.1% (2019) <b>Worse than SEKOM</b>
5. Environmentally certified forestry	In the right direction since 2013 77% (2017) <b>Better than SEKOM</b>	In the right direction since 2013 81% (2017) <b>Better than SEKOM</b>	In the right direction since 2013 68% (2017) <b>Better than SEKOM</b>
6. Protected nature	In the right direction since 2013 6.1% (2019) <b>Approx like SEKOM</b>	In the right direction since 2013 5.9% (2020) <b>Approx like SEKOM</b>	In the right direction since 2013 2.6% (2019) <b>Worse than SEKOM</b>
7. Quantity household waste	In the right direction since 2013 568kg/pers (2019) <b>Worse than SEKOM</b>	<b>In the wrong direction since 2013</b> 366 kg/pers (2019) <b>Better than SEKOM</b>	<b>In the wrong direction since 2013</b> 478kg/pers (2019) <b>Better than SEKOM</b>
8a. Lead in sewage sludge	In the right direction since 2013 7.4 mg/kg (2019) <b>Better than SEKOM</b>	<b>In the wrong direction since 2013</b> 13.7 mg/kg (2019) <b>Better than SEKOM</b>	<b>In the wrong direction since 2013</b> 11.2mg/kg (2019) <b>Better than SEKOM</b>
8b: Cadmium in sewage sludge	In the right direction since 2013	In the right direction since 2013	In the right direction since 2013

	0.33 mg/kg (2019) Better than SEKOM	0.71 mg/kg (2019) Better than SEKOM	0.63 mg/kg Better than SEKOM
8c. Mercury in sewage sludge	In the right direction since 2013 0.39 mg/kg (2019) Approx like SEKOM	In the right direction since 2013 0.36 mg/kg (2019) Better than SEKOM	In the right direction since 2013 0.39 mg/kg Approx like SEKOM
9. Renewable energy to municipal premises	No change since 2013 97% (2013) Better than SEKOM	In the right direction since 2013 96% (2019) Approx like SEKOM	In the right direction since 2013 100% (2019) Better than SEKOM
10a. Energy for business trips	No change since 2013 1420 kWh/annual employed (2013) Worse than SEKOM	In the right direction since 2013 568 kWh/annual employed (2019) Better than SEKOM	In the right direction since 2013 635 kWh/annual employed (2014) Better than SEKOM
10b. Carbon dioxide emissions for business trips	- Data not available -	In the right direction since 2013 0.05 tons/annual employed (2019) Better than SEKOM	In the right direction since 2013 0.10 tons/annual employed (2014) Better than SEKOM
11. Organic food	In the right direction since 2013 34% (2019) Better than SEKOM	In the right direction since 2013 32% (2019) Approx like SEKOM	In the right direction since 2013 33% (2019) Approx like SEKOM
12. Certified schools and preschools	In the wrong direction since 2013 14% (2020) Better than SEKOM	In the right direction since 2013 10% (2020) Worse than SEKOM	In the wrong direction since 2013 12% (2020) Approx like SEKOM

The data in the table are taken from <https://sekom.miljobarometern.se/>

A look at Blekinge Arkipelag's business plan for 2018-2021, shows that the association during two years of operation (June 2018 - July 2020) has reached 24 objectives and has started the work of achieving another 24 during 2020-2021. 11 new objectives were added between September 2019 and July 2020. Within the work theme **Sustainable hospitality and tourism industry**, we have achieved 6 objectives and has ongoing work with another 6. These objectives achievement primarily promotes the focus area "Sustainable Business and Prosperous Tourism". Theme **Sustainable fishing** resulted in 3 achieved objectives and ongoing work with additional 3. They mainly promote the focus area "Water in balance and a living coast and archipelago". On the theme **Sustainable agriculture and forestry**, we have achieved 5 objectives and are working on further 5, which primarily promotes the focus area "Biodiversity and intact ecosystem services". The theme **Keep the biosphere clean** contains 3 achieved objectives and another 3 ongoing, all of which primarily promote the focus area "Water in balance and a living coast and archipelago" and "Biodiversity and intact ecosystem services". Finally, the theme **Information, learning and participation** resulted in 7 achieved goals and we continue to work with another 7 that all promote the focus area "Learning and commitment for a sustainable development" and "Health and vitality in sustainable societies".

**5.11 Name the most important factors that (in a positive or negative direction) have influenced the success of development efforts in the entire biosphere reserve? With the experience and lessons learned over the last ten years, what new strategies or methods will be most effective?**

The question which factors were most important for Blekinge Arkipelag's success was asked in our evaluation survey. 93 people answered the question and they had to choose 3 out of 11 factors that they considered to be most important for success during the years 2017-2020. The answers were distributed as follows:

SVARSVAL	SVAR
Vet ej	6.45% 6
Annat, nämligen:	6.45% 6
Större efterfrågan på insatser för bevarande och hållbar utveckling i biosfärområdet	11.83% 11
Tydligare initiativ och kommunikation mellan kommuner och styrelse	12.90% 12
Fler forskningsanknutna projekt	15.05% 14
Mer intensivt arbete	21.51% 20
Omorganiseringen 2017-2018	30.11% 28
Mer relevanta projekt och aktiviteter	30.11% 28
Fördjupad samverkan med fler av biosfärområdets aktörer (offentliga och privata)	34.41% 32
Bättre förankrade projekt och aktiviteter	38.71% 36
Mer lokala och konkreta projekt och aktiviteter	38.71% 36
Bättre informationsspridning om verksamheten via hemsida, nyhetsbrev, sociala medier, föredrag, e t c	46.24% 43
Totalt antal svarade: 93	

The three response alternatives with most votes were the associations success in disseminating better and more relevant information about projects and activities, that the projects became more local and more tangible than before, and that the projects became increasingly established. This is also in line with the office's view on the importance of the reorganisation made in 2017.

Furthermore, we asked the question which three factors were considered most important in order to continue to develop the biosphere business in a positive direction in the future. The three response alternatives that received the most votes were to deepen collaboration with the biosphere reserve's participants, to have more local and tangible projects, and to increase the basic funding for more employees in the association.

## 6. THE SUPPORT FUNCTION

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

### **6.1 Describe the main institutions that conduct research or monitoring activities in the biosphere reserve and their programs. Comment on (possible) organisational changes in the last ten years to that extent that they affect their work in the biosphere reserve.**

Länsstyrelsen Blekinge has several important monitoring and development functions in the biosphere reserve. The authority is constantly under development, and reorganisations are made continuously to suit the county's needs and the availability of state funds as well as project funds to carry out surveys and monitoring programs. Blekinge Arkipelag and Länsstyrelsen are partners in several completed and ongoing projects, for example, theme days in sustainable agriculture have been carried out together, and a longer series of lectures focusing on values in the county's natural pastures and arable land. For supervision and administration, Länsstyrelsen has to a large extent been responsible for its own competence and resources during the program period.

Another example from Länsstyrelsen is the monitoring of the pike population on the coast, where workshops were held for anglers, commercial fishermen, Blekinge Arkipelag and other regional and local participants. These meetings aimed at improving the joint management of the pike population on the coast.

Another example from Länsstyrelsen is the national project "Greppa Näringen" (Grasp the industry) - a knowledge and counselling project that aims to provide farmers with increased knowledge about agricultural nutrient leakage and to reduce greenhouse gas emissions, reduce eutrophication and work for safe use of plant protection products. "Greppa Näringen" is a collaboration between Länsstyrelsen, Jordbruksverket (the Swedish Board of Agriculture), Lantbrukarnas riksförbund (the Swedish Farmers' Association) (LRF) and other advisory organisations.

Stockholm University (SU) and the Department of Environmental Science have conducted sampling of fish in the biosphere reserve on several occasions since 2009, most recently in 2018. At the same time, Statens Veterinärmedicinska Anstalt (SVA) (the Swedish Veterinary Institute) also conducted samplings and initiated a digital monitoring function that can be used by both professionals and the public to report deviations linked to fish populations. Both SU's and SVA's surveys have been facilitated and communicated in collaboration with the company Mörrums Kronolaxfiske, local commercial fishermen and Blekinge Arkipelag.

Sveriges Lantbruksuniversitet (the Swedish University of Agricultural Sciences) (SLU aqua) also monitors changes in fish populations linked to, for example, the Mörrum River. Measurements are made on migrating salmon and sea trout smolts that are marked and registered, and continuous automatic fishing checks are made to monitor the game's success in terms of number and condition of salmon and sea trout fry.

Another department of SLU has conducted interviews and questionnaire studies in the biosphere reserve to identify what information is lacking for increased knowledge about invasive plant species and how they can be handled more safely. A third part of SLU, together with Trafikverket (the Swedish Transport Administration), is looking at how the management of roadsides can contribute to increased or maintained biological diversity.

Mälardalen Folkhögskola (adult education center) has a comprehensive project plan to develop, implement and calculate new technology for agriculture in the biosphere reserve. The university's researchers have visited the area several times, and together with Blekinge Arkipelag they have received several innovation awards for a specific model of how artificial irrigation in agriculture can be optimized.

Blekinge Institute of Technology (BTH) has an internationally recognized department for sustainable development where research on, for example, sustainable transport is conducted. A master's program is also offered, the so-called MSLS (Masters in Strategic Leadership towards Sustainability). Blekinge Arkipelag has benefited from exclusive lectures from BTH at our ambassador training and two of the association's employees have undergone the MSLS training.

**6.2 Summarize the main directions of research and monitoring over the last ten years and the area or areas in which they have been undertaken to address specific issues related to the management of the biosphere reserve and the implementation of the action program (see variables in Appendix I). (Provide references for each specific topic. Enter the references in alphabetical order by lead author at the end of section 6 or in a separate appendix.)**

Relatively few research and monitoring programs directly aimed to add knowledge about how the biosphere reserve is to be managed or developed are implemented or have been implemented during the decade. On the other hand, several of the research initiatives mentioned in Chapter 6.1 can indirectly lead to improved ways of managing and coordinating actions in Blekinge Arkipelag.

Länsstyrelsen's monitoring of the pike population with the subsequent discussions about the consequences of a reduced population has resulted in a new administration. The participants agreed to introduce new protection areas and restrictions for pike fishing in a number of bays where the pike aggregate and play.

Several farmers have joined the program "Greppa Näringen", which have had a direct impact on how authorities and farmers together manage the biosphere reserve's water and agricultural landscape in an improved way.

The research and monitoring of fish carried out so far in Mörrumsån has not resulted in changes in the fish trustee's actions or plans, but may have an impact on how the fishery should be managed in the future.

The SLU projects for the management of roadside and invasive plants will within a two-year period most likely involve different management from garden owners, allotment holders, municipalities, and Länsstyrelsen.

BTH's research on sustainable transport partly forms the foundation for an implementation project for the conversion of public transport starting in 2021. Researchers are working together with Blekingetrafiken for the objective of changing the management of public transport step by step. Blekinge Arkipelag may receive a communication assignment directed to the public.

Provided that the new innovations from Mälardalen University can be realized and implemented in the biosphere reserve, it will also mean improved management of water, fertilizer and electricity resources as well as crop growth in the agricultural landscape.

**6.3 Describe how traditional and local knowledge derived from the implementation of previous measures/activities linked to the biosphere business have been collected, synthesized and**

**disseminated. Explain how such knowledge is applied in new measures/activities/businesses and how and if it has been incorporated into the educational activities.**

Traditional and local knowledge is often disseminated through a direct transfer from experienced to new practitioners and managers. Blekinge Arkipelag has sometimes recorded such undocumented knowledge, skills, and tradition on websites and in film recordings, such as in the RECORDI project, which emphasized the importance of carry on different parts of our coastal cultural heritage.



Local skills are used in the creation of genuine craft products that have also become profile products for Blekinge Arkipelag and ARK56.

Local knowledge about forests and biological diversity in the biosphere reserve is used in the project management of related projects. Both Blekinge Arkipelag's Forest Network and work with diversity in ditches along the roads and on golf courses, are managed with help from local resources and local expertise. The same applies to our wetland program and restorations of watercourses there.

Experiences from previous wetland facilities and restoration projects have also been documented with film clips and in writing - an important inspirational material for other landowners, instructors and people with a connection to sustainable agriculture and biodiversity. In the same way, the work with entrepreneurs in the hospitality and tourism industry has been summarized in a handbook to support new business members who want and need to develop their business in a way that aims at social, economic and ecological sustainability.

The knowledge and experience generated during the project to create ARK56, is constantly in demand from other regions and outdoor destinations. Every month since the inauguration of ARK56, Blekinge Arkipelag has informed about how the successful project has proceeded and pointed out success factors as a model area for a sustainable destination and worked with sustainable companies and sustainable products through lectures, demonstrations, or digital meetings.

Documenting experiences and knowledge with film clips, information material or a handbook is a rewarding way of working. The areas of business and industries that are subject to new projects can sometimes draw from existing material and in other cases on the established working methods so that new documentation can be carried out and disseminated in relevant ways.

The created documents, film clips, books and marketing tools are all part of the association's training of new biosphere ambassadors, the members and the general public. They are spread via our social media, newsletters, website and in working groups at different levels. The biosphere ambassadors' training programs are arranged based on both local knowledge and research-based knowledge. At



several of the educational meetings (12 during April-October), visits are made to the areas where local guides and their knowledge are key to understanding the biosphere reserve's natural and cultural values.

**6.4 Education about environment/sustainability. Which are the main educational institutions ("formal" - schools, colleges, universities - and "informal" - services for the public) that conduct activities in the biosphere reserve? Describe their educational programs/activities, including special school or adult education programs, to the extent that they contribute to the functions of the biosphere reserve. Comment on (possible) organisational changes in the institutions and in the programs/activities that were identified in the biosphere reserve about ten years ago (e.g. if they have been closed down, redone, new initiatives). See the programs and initiatives of UNESCO Associated Schools Networks and UNESCO Chairs and Centers where applicable.**

The main departments for more formal education about the environment and sustainability are Blekinge Tekniska Högskola (Institute of Technology) (BTH), Blekinge Folkhögskola and the Upper Secondary Schools in the biosphere reserve's three municipalities. BTH offers a masters program, the so-called MSLS program (Masters in Strategic Leadership towards Sustainability). Blekinge Folkhögskola offers education in fisheries conservation and nature guidance as well as a collaboration with Blekinge Arkipelag in its advanced courses. In the upper secondary schools' scientific subjects, many connections are made to the environment and sustainable development.



Blekinge Arkipelag's future biosphere ambassadors on a seal and nature grazing safari at Abramsäng.

The more informal educations include Naturum Blekinge's annual activity program and general education exhibitions about the nature of the biosphere reserve and Blekinge. Blekinge Arkipelag's biosphere ambassador training and the association's information and knowledge dissemination in

connection to various projects and news, is a growing element in the county's education about the environment and sustainable development. In 2020, many efforts were made to reach out, inform, raise awareness and build knowledge. (See section 6.5)

Länsstyrelsen Blekinge also gives annual lectures, lecture series and reports on development opportunities, natural environments, and sustainable development. They focus on different target groups and sometimes also the general public.

There are companies, especially in the hospitality and tourism industry, that take on the role of informal educators in nature and sustainable development. Through so-called "edutainment", for example, Eriksbergs Vilt och Natur, and Mörrums Kronolaxfiske can occasionally offer hikes, lectures and events related to this theme.

### **6.5 How is the impact of the measures or strategies used assessed? (Describe methods and indicators.)**

Blekinge Arkipelag's method for the support function is based on both the needs of the biosphere reserve and the interests of members and participants. Where these two coincide and we see that a support effort also follows Blekinge Arkipelag's mission, we have chosen to act. The support measures are then created based on the specific need and the wishes of the contributing participants, and can last until Blekinge Arkipelag has run out of time and resources or until the goal of the support measure is met.

One way to assess the impact of the support measures is to look at how the support for the association has developed (see section 2.3.9). Another way is to assess how well the sub-goals for the association's strategies in the Collaboration Plan have been affected and achieved, and how many of the association's goals in the current business plan that have been achieved (see section 5.10).

A third way to see which support measures reach out, is to measure the number of information and knowledge dissemination efforts made during a financial year. In 2020, it looked like this:

- 19 certified ambassadors with participants from all three biosphere municipalities
- 15 newspaper articles, mostly local but also at national level
- 2 news reports on Swedish Television (Public service)
- 2 new information leaflets
- 2 new film clips
- 2 newsletters
- 118 facebook posts
- 53 instagram posts
- 1 completed biosphere day on June 2, with about 35 participants
- 1 two-day tour of the biosphere reserve, about 20 participants
- 1 new website with about 45 informative subpages
- 12 lectures on Blekinge Arkipelag's activities, physical and digital.

If one looks at these efforts, Blekinge Arkipelag's operations have reached a total of about 100,000 people. The app for ARK56 has been downloaded about 17,000 times and the ongoing projects in 2020 involve about 1,000 people directly.

Another way to assess the impact of various support measures is how different projects have been appreciated. In the survey that preceded this evaluation report, a question on how to look at eight of the association's completed and ongoing projects was asked. The 94 respondents were allowed to rank the content as follows:

	MENINGSLÖST	HAR VISS BETYDELSE	BRA PROJEKT	MYCKET BRA	FANTASTISKT!	TOTALT	VIKTAT GENOMSnitt
RECORDI (Lyfte olika traditionsbärare och kunskaper i vårt kustkulturarv tillsammans med andra Östersjöländer)	2.22% 2	23.33% 21	38.89% 35	26.67% 24	8.89% 8	90	3.17
Biosphere for Baltic (Utbytesprojekt för biosfärområden runt Östersjön - berör bättre vattenkvalitet och hållbar turism)	3.37% 3	12.36% 11	29.21% 26	41.57% 37	13.48% 12	89	3.49
Ullbroschyr (Ungdomsinnovationstävling, infomaterial för minskad användning av syntet, marknadsföring av lokala ullprodukter)	4.40% 4	17.58% 16	37.36% 34	26.37% 24	14.29% 13	91	3.29
Skapa opinion för sjuklig östersjölax och forskning kring problemen (Brev till myndigheter, insamling, film, infospredning, m m)	1.11% 1	8.89% 8	30.00% 27	37.78% 34	22.22% 20	90	3.71
Våtmarksprogram (Förstudie, inspirationsmaterial, finansiering och skapande av våtmarker)	3.33% 3	6.67% 6	31.11% 28	35.56% 32	23.33% 21	90	3.69
Friluftslivets År 2021 (Engagerar allmänhet, föreningsliv och besöksnäring i ökat tätortsnära och enkelt livslångt friluftsliv på ARK56)	0.00% 0	5.56% 5	18.89% 17	50.00% 45	25.56% 23	90	3.96
Strandstädningar (Engagera frivilliga för att ta bort plast och annat skräp från kust och skärgård)	1.10% 1	6.59% 6	20.88% 19	38.46% 35	32.97% 30	91	3.96
Etablerande av ARK56 och hållbar besöksnäring (Leder som gör biosfärområdet till en hållbar destination för outdoor-turism)	2.22% 2	1.11% 1	15.56% 14	43.33% 39	37.78% 34	90	4.13

The results clearly indicate that all 8 projects are perceived as high in importance. Of course, the content and results of the projects are important in the assessments, but the extent to which they are appreciated by more than 90 assessors also depends on how well they have been communicated and established, i.e., they depend on the success within the support function. The fact that 8 projects of a completely different nature are ranked as good, very good or fantastic indicates that the impact of the support function is good.

### 6.5.1 Describe the biosphere reserve's most important internal and external communication systems.

Internal communication between the board, collaboration group and office employees take place through physical and digital meetings, email correspondence, telephone, chat group via Messenger, Facebook groups for hospitality and tourism companies and biosphere ambassadors, summonses, agendas and minutes. The collaboration group meets 4 times a year, and board meetings take place 7-8 times a year as well as a full-day meeting for strategic planning.

Externally, as previously mentioned, we use several channels and tools. The most important are:

- The association's website with sections for each theme area
- Newsletter
- Social media (Facebook and Instagram)



Figge Mattias och dottern Emma Holmquist och Alva Holmquist har tagit sig hela vägen genom ARK56. De har tagit sig från både till och med hjälp och cykel.

## Far- och dottertid genom Blekinges Skärgård

Familjen Holmquist tog sig hela vägen genom ARK56. Under sex dagar paddlade de kanot och cyklade genom skärgården och såg både gröntäckta paddor och gräsilar på vägen.

**BLEKINGE** Ut på Blekinges Skärgård med sig upp Mattias Holmquist och dottern Emma Holmquist. De har tagit sig hela vägen genom ARK56. Under sex dagar paddlade de kanot och cyklade genom skärgården och såg både gröntäckta paddor och gräsilar på vägen.

Ut på Blekinges Skärgård med sig upp Mattias Holmquist och dottern Emma Holmquist. De har tagit sig hela vägen genom ARK56. Under sex dagar paddlade de kanot och cyklade genom skärgården och såg både gröntäckta paddor och gräsilar på vägen.

**"Det här var ett fantastiskt och bra resor för oss."**  
Mattias Holmquist



**FAKTA ARK56**  
ARK56 är ett naturreservat som omfattar Blekinges skärgård. Det består av 23 öar och skär. ARK56 är ett naturreservat som omfattar Blekinges skärgård. Det består av 23 öar och skär.

## Guide: Så tog sig familjen hela vägen

**BLEKINGE** En svårare, varken så enkelt som det låter. Här har tagit sig familjen Holmquist genom Blekinges Skärgård.

**ETAPP 1: Mörne-Väggö-Törn.**  
Med hjälp av Mattias Holmquist tog vi oss över till Mörne. Där var vi välkomna och fick hjälp att packa upp våra saker. Vi paddlade ut till Väggö och sedan vidare till Törn. Där var vi välkomna och fick hjälp att packa upp våra saker.

**ETAPP 2: Törn-Törn-Törn-Törn.**  
Vi paddlade vidare med hjälp av Mattias Holmquist. Vi paddlade ut till Törn och sedan vidare till Törn. Där var vi välkomna och fick hjälp att packa upp våra saker.

**ETAPP 3: Törn-Törn-Törn-Törn.**  
Vi paddlade vidare med hjälp av Mattias Holmquist. Vi paddlade ut till Törn och sedan vidare till Törn. Där var vi välkomna och fick hjälp att packa upp våra saker.

**ETAPP 4: Törn-Törn-Törn-Törn.**  
Vi paddlade vidare med hjälp av Mattias Holmquist. Vi paddlade ut till Törn och sedan vidare till Törn. Där var vi välkomna och fick hjälp att packa upp våra saker.

**ETAPP 5: Törn-Törn-Törn-Törn.**  
Vi paddlade vidare med hjälp av Mattias Holmquist. Vi paddlade ut till Törn och sedan vidare till Törn. Där var vi välkomna och fick hjälp att packa upp våra saker.

**ETAPP 6: Törn-Törn-Törn-Törn.**  
Vi paddlade vidare med hjälp av Mattias Holmquist. Vi paddlade ut till Törn och sedan vidare till Törn. Där var vi välkomna och fick hjälp att packa upp våra saker.



Familjen Holmquist och Emma Holmquist, paddlade ut till Törn, där de var välkomna och fick hjälp att packa upp våra saker.



Det blev mycket att läsa på Blekinge. Det är bra att ha med sig.



Familjen Holmquist och Emma Holmquist, paddlade ut till Törn, där de var välkomna och fick hjälp att packa upp våra saker.



Familjen Holmquist och Emma Holmquist, paddlade ut till Törn, där de var välkomna och fick hjälp att packa upp våra saker.

Article about experiences on ARK56 in the region's largest daily newspaper.

- News reports and articles in the daily press, TV and magazines
- Trained ambassadors who spread information about Blekinge Arkipelag
- The Biosphere Site is used as an information opportunity, especially for members
- Sometimes news and invitations are communicated via the municipalities' websites, or other project partners' websites (companies, associations or authorities)
- Blekinge Arkipelag's corporate network is a forum that we use to communicate ARK56
- Every month the Biosphere Program Sweden holds a digital meeting where all Swedish biosphere reserves meet and communicate experiences and projects. Here they can get help with communicating common questions to, for example, Swedish national authorities.
- Lectures, viewing trips, theme days, lecture series, newspaper articles/advertisements and project events are other important communication channels in the external system
- Swedish Unesco sometimes shares our posts on social media, and on the UNESCO Council's website there are descriptions of Blekinge Arkipelag's activities:  
<https://unesco.se/vetenskap/biosfaromraden/sveriges-biosfaromraden/biosfaromrade-blekinge-arkipelag/>
- The Biosphere Program Sweden has a full description of Blekinge Arkipelag on its website  
<https://biosfarprogrammet.se/biosfar/biosfaromrade-blekinge-arkipelag/>
- There are also opportunities to communicate internationally through NordMAB, EuroMAB, WNBR (World Network of Biosphere Reserves) and WNICBR (World Network of Coast and Island Biosphere Reserves).

### 6.5.2 Does the biosphere reserve have a website? If so, please enter the link.

<http://blekingearkipelag.se>

**6.5.3 Is an electronic newsletter distributed? How often is it published? (Please enter the link if applicable.)**

A digital newsletter is normally published 3-5 times a year.

[https://mailchi.mp/78f230931770/nyheter\\_nov\\_20?e=e64cb6cee4](https://mailchi.mp/78f230931770/nyheter_nov_20?e=e64cb6cee4)

**6.5.4 Does the biosphere reserve belongs to any social network (Facebook, Twitter or similar)? Please enter the contact information.**

Facebook: <https://www.facebook.com/blekingearkipelag>

Instagram: <https://www.instagram.com/blekingearkipelag/>

**6.5.5 Are there any other internal communication systems? If applicable, please describe them.**

See 6.5.1

**6.6 Please describe how the biosphere reserve currently contributes to the World Biosphere Reserve Network and/or how it may do so in the future.**

Blekinge Arkipelag has contributed with a single film to the world network's initiative "Proud to share". The reason is the scarce resources for translation into English or other languages.

Blekinge Arkipelag held a workshop in Menorca during the general meeting of WNCIBR (World Network of Coast and Island Biosphere Reserves) 2017. In 2018-2019, we also contributed with a longer article on sustainable hospitality in WNCIBR's documentation of activities in the connected biosphere reserves. Finally, the association has been involved in WNCIBR's efforts to reduce the amount of plastics and microplastics in the marine environment.

Blekinge Arkipelag will probably be able to contribute in more international context in the future when the operation has developed an increasingly clear identity. Although the work in its own area will be prioritized in the near future, the association experiences an increased number of inquiries from other Swedish regions about the ongoing activities and the existing organisation. This could also arouse some international interest, for example for future biosphere reserves around the world that want another country's perspective on possible organisation and activities.

**6.6.1 Describe possible cooperation with existing biosphere reserves at national, regional, and international level, and also within the framework of regional and bilateral agreements.**

Blekinge Arkipelag has collaborated with its sister area a few kilometres to the southwest, Kristianstads Vattenrike, when it comes to funding one of the research projects in agriculture, the model for optimized irrigation.

At national level, there are several biosphere reserves participating in the Swedish University of Agricultural Sciences' project for improved communication on invasive plant species, and we have an exchange and collaboration as a pilot study within the project.

Otherwise, the Biosphere Program Sweden holds a digital meeting every month where all Swedish biosphere reserves meet and share experiences and help each other to move forward in different initiatives. A meeting every year is usually physical and lasts for two or three days, the so-called island council.

In 2020, we initiated a national collaboration with all Swedish biosphere reserves to prepare the so-called Biosphere Challenge. The biosphere challenge has been initiated and implemented by the Vänerskärgården Biosphere Reserve with Kinnekulle, where it has attracted a great deal of attention.

The reason for the challenge is to inform about the biosphere activities at primary schools and challenge their innovative abilities within sustainable development. Blekinge Arkipelag is now compiling an application to be able to create and spread the biosphere challenge in more schools in Sweden's biosphere reserves.

Since 2018, Blekinge Arkipelag has been part of the transnational project Biosphere for Baltic. The biosphere reserves around the Baltic Sea participate in the exchange to share experiences about, among other things, measures for improved water condition and a more sustainable tourism industry. An inspiring project in several ways that contributes to new angles and approaches to our common goals.



Representatives from several biosphere reserves at a meeting of the Biosphere for Baltic project. Korpoström, Finland, 2019.

#### **6.6.2 What are the current and expected benefits of international cooperation for the biosphere reserve?**

International cooperation has advantages on various levels. It is primarily a matter of gaining an outside perspective on the challenges and qualities of the specific biosphere reserve and operations.

Benefits of international work can be new perspectives and methods to use in our own business but also in other areas' activities, and the opportunity to work toward common goals and thus go further with efforts to eliminate threats and challenges. The work for improved coastal and marine environments in the Baltic Sea is an example of such work where the biosphere reserves could achieve significantly greater goals with joint efforts compared to if they had worked with distinct projects and initiatives.

### **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?**

From a regional point of view, Blekinge Arkipelag is still perceived as a young biosphere reserve where organisation, working methods and local commitment will be developed and strengthened at the beginning of the coming 10-year period. In the near future the intention is to attend more meetings within NordMAB and EuroMAB than during the past five-year period. With a maturing identity for the association, the hope is to be able to contribute to the world network with good examples from Blekinge Arkipelag that can also spread and be applied in more biosphere reserves.

Regionally, it will still be important to contribute to the thematic networks through various projects and collaborations.

### **6.7 What are the most important factors that have influenced activities that contribute to the support function (positive and/or negative)? With the experience and lessons learned over the last ten years, what new strategies or methods will be applied as they are the most effective?**

What we perceive as the most important factor in creating activities within the support function is the public's and members' curiosity, commitment, willingness to preserve, and continuous sustainable development. Without the demand for Blekinge Arkipelag's natural and cultural values, the association's strengths as an arena for meetings between authorities and the public, and the office's ability to contribute to projects that will disseminate science, learning and cultural history, no support function would have been initiated. Ambassadors, members, support teams, researchers, Länsstyrelsen and schools all contribute to activities within this function.

The second most important factor will therefore be an adequate style of communication, information, and dissemination of knowledge that in different ways teaches and involves people who can participate in activities contributing to the support function. To establish projects and activities in a way that opens for participation, involves learning and shows potential effects of what can be done is of great significance.

Several other factors are also important, but perhaps not as specific to the support function. Resources for staffing, well-functioning meeting forums for the organisation's participants, clear assignments through assigned principals and governing documents as well as challenges in the biosphere reserve that are in line with the assignment - all this is also crucial to influence activities that contribute to the support function.

Ahead of the coming operating period, both the offices of Blekinge Arkipelag and the board are more focused on efforts to strengthen the commitment, which includes more visits to associations, companies, and municipalities. In this way, we increase the information efforts about the biosphere reserve's functions and previous success factors, as we welcome proposals for both work content and working methods. This documentation then needs to be compared to the association's focus areas and governing documents and finally offset against the announcements and resources that are available for implementation. In the same way, efforts to strengthen the commitment needs to be

done vis-à-vis authorities (also at national level) and research institutions that can become part of the support function from a monitoring and scientific perspective. We already get assistance from the Biosphere Program Sweden, which in its strategy works consciously to draw attention to achievements and universities to the possibilities of collaborating with biosphere reserves in the country. We already get help from the Biosphere Program Sweden, as they consciously work to draw attention to agencies (governmental offices) and universities on opportunities to interact with the biosphere reserves in the country.

Please see section 5.11

#### **6.8 Further comments/observations from a biosphere reserve perspective.**

No further comments.



## **7. FORMS OF MANAGEMENT ADMINISTRATION PROCEDURES, FACILITATION AND COORDINATION OF THE BIOSPHERE RESERVE**

[The biosphere reserve coordinators/leaders collaborate with a large number of authorities, companies and a mixture of non-governmental organisations and societal groups. Together, these shape the form of management of the biosphere reserves. The ability to perform the functions of the biosphere reserves can, to a very large extent, depend on collaborations that are developed with these organisations and participants. Two important tasks for those responsible for the coordination/management of the biosphere reserves are to learn more about the collective form of administration and to explore ways to increase the collective capacity to fulfil the functions of the biosphere reserves.]

### **7.1 What are the technical and logistical resources for the coordination of the biosphere reserve?**

The municipalities of Karlshamn, Ronneby and Karlskrona are the principals of Blekinge Arkipelag together with Havs- och vattenmyndigheten (the Swedish Agency for Marine and Water Management). With the principals' basic financing and external project financing, the association currently has three people employed in the office at 100% and 50% and 50% respectively. In addition, there is a part-time project manager. Ronneby municipality is today responsible for the permanent employment and the association's office premises. Blekinge Arkipelag works closely with the principals, companies, associations, and the public in the biosphere reserve.

### **7.2 What is the overall structure for the management and coordination of the biosphere reserve? Mention the main components and their contribution to the biosphere reserve.**

The co-management of the biosphere reserve is adaptive, which means that collaboration, measures, and participants change in relation to the nature of the various projects and challenges. The biosphere office and the board are responsible for coordinating the work that the participants wish to develop within Blekinge Arkipelag, based on given control documents, the area's needs and support, development, and conservation function.

The biosphere office and the association have no exercise of public authority, but instead a combined low level and government perspective on the actions needed to be taken. Members, Länsstyrelsen, the Support team and the municipalities all have a place in the biosphere business and in their organisation. (Please see section 2.3.)

### **7.3 Describe evaluations of social impact or similar tools and guidelines used to support the rights and cultural initiatives of indigenous peoples and local people (e.g., CBD guidelines: Akwé: Kon; program/policy for free and well-founded prior approval [FPIC]; institutional arrangements for supply and sharing of benefits [ABS], etc.).**

The question is irrelevant for Biosphere Reserve Blekinge Arkipelag which lacks indigenous peoples. No evaluations of the social impact of local rights and cultural initiatives have been made.

### **7.4 Which are the most important conflicts (if applicable) concerning the biosphere reserve and what solutions have been implemented?**

The most important conflicts concern fish and fishing in the biosphere reserve, where local commercial and sport fishermen usually want to protect the fish resource from larger pelagic, more industrial trawling companies and other negative environmental impacts. From a local point of view, research grants are also required to overcome emaciation and morbidity of important fish species. These conflicts have not reached a solution, but Blekinge Arkipelag continuously informs authorities and the government about the prevailing conditions and what is desirable from a regional and sometimes even a national perspective. In addition to information and dialogue, Blekinge Arkipelag

has supported the research, participated in projects that can contribute to the diversification of fishermen's activities and contributed to a better condition of coastal waters. However, these efforts are to be regarded as consolation rather than grasping the evil by the root. Despite this, we sometimes find ourselves perceiving a slow and positive change in attitude to small-scale, coastal fishing and how to look at the distribution of the ecosystem service Baltic Sea Fish.

**7.4.1 Describe the main conflicts concerning the access to or use of resources in the area and the relevant time frame. If the biosphere reserve has contributed to preventing or resolving some of these conflicts, then explain what has been resolved or prevented and how this has been accomplished for each zone.**

See section 7.4 above.

**7.4.2 Describe any conflicts of competence at the various administrative authorities that are affected by the management of the area where the biosphere reserve is located.**

Conflicts between different roles in the authority and municipality with competence in, and focus on development issues and conservation issues may occur. For example, a proposal for increased beach protection has been a source of discussions regarding how it contributes to the area's development. Those in favour of development think that the proposal acts in a counter-productive way for real development in a relatively unexploited part of the country, while those in favour of preservation acknowledge the value of increasing protection based on, for example, biodiversity and intact ecosystem services.

**7.4.3 Explain what measures have been taken to resolve these conflicts and their effects. Describe how the measures were implemented, how they worked and how a solution was achieved from case to case. Are there local mediators and are they approved in such cases by the biosphere reserve or by another authority?**

Blekinge Arkipelag sees its role and model of the association's possible areas of action (section 2.3.1) as an attempt to bridge conflicts of this kind and to be an arena open for conflicting interests, fully possible to resolve with more knowledge and creative dialogue. The association's and the board's ambition to have both development and preservation issues in focus for all projects the association participates in, is becoming an increasingly accepted idea among the biosphere reserve's participants. It is gaining acceptance in accordance with communication efforts and positive project results where both entrepreneurs, authorities and the public feel involved and satisfied.

**7.5 Updated information on local communities, associations and other community groups' representation and consultation, and how they are part of the biosphere reserve's activities.**

**7.5.1 Describe how local residents (including women and indigenous peoples) are represented in the planning and management of the biosphere reserve (e.g., assembly of representatives, consultation with communities, women's groups).**

**7.5.2 What form does this representation take: companies, associations, environmental organisations, trade unions (list the different groups)?**

The biosphere reserve organisation includes the following groups:

- Blekinge Arkipelag's board - 33% women
- Blekinge Arkipelag's Collaboration Group - 55% women
- Blekinge Arkipelag's office, permanent employees, and temporary project employees - 75% women
- Blekinge Arkipelag's corporate network - 45% women
- Blekinge Arkipelag's support team/ambassadors - 60% women

- Blekinge Arkipelag's members (not companies) - 55% women
- In addition to these groups, there are several local and regional associations, three municipal boards, interest organisations, municipal companies, schools, and universities, as well as a number of functions at Länsstyrelsen that collaborate with Blekinge Arkipelag in various contexts. There is no significant predominance of men or women
- Temporarily composed project groups with representatives from relevant participants and stakeholders

**7.5.3 Indicate whether there is a method for integrating representatives of local communities (e.g., financial, election of representatives, traditional authorities).**



A lot of volunteers often join beach cleaning events. Göhalvön, spring 2019.

In addition to municipal representatives and a representative from Länsstyrelsen, the board should consist of one representative of the local association community, one representative from the business sector and one representative from the areal sectors. These representatives are appointed by the nomination committee and elected at the association's annual general meeting.

Representatives in the Collaboration Group are appointed in consultation, based on the desire to include the municipal and Länsstyrelsen's functions that are most relevant to the biosphere work. It is often assessed on the basis of historical common similarities and objectives.

Current company members (the corporate network) have joined the association in connection with the development of ARK56. All entrepreneurs with an ambition towards sustainable development for their activities in the hospitality and tourism industry have been able to become members. After the project period, the requirements have increased somewhat, nowadays those who apply for

membership must not only have an ambition but also actually develop the business in a sustainable direction.

When it comes to our ambassadors and the support team, it is free for anyone (including young people) to apply for training or to join the team to improve or participate in the association's activities. No prior knowledge needed. Members from various communities with an interest in the association's projects, activities, and assignments, are also invited. The association consciously tries to market the public's opportunities to participate in these groups with images from different activities and of people of different genders and ages.

In addition, the association often puts together specific groups with broad representation among those affected by various projects, as for ARK56 and the Forest Network. In the case of ARK56, a large part of the project group switched to a more permanent corporate network.

#### **7.5.4 How long is the consultation mechanism (e.g., permanent assembly, consultation on specific projects)?**

The Board, the Collaboration Group, the Support Team, the Corporate Network and the General Meeting are permanent structures where, although individuals join and resign, the organisational structure itself remains.

The specific project groups usually only exist during the project's life-span, but still constitute important contact networks after completed projects.

#### **7.5.5 What impact does this consultation have on decision-making (making decisions, advising, or just informing the public)?**

- Blekinge Arkipelag's Board - The highest decision-making body for the biosphere activities (at the general meeting together with the association's members)
- Blekinge Arkipelags Collaboration group - Advisory and gives proposals for collaboration projects to the board, strives for the same or similar goals.
- Blekinge Arkipelag's offices, permanent employees, and temporary project-specific employees - Make less important simpler decisions, advisory and executive function in relation to the board.
- Blekinge Arkipelag's corporate network - Advisory but primarily executors of common goals.
- Blekinge Arkipelag's support team/ambassadors - Advisory but mainly execution and externally informing function.
- Members of Blekinge Arkipelag (no companies) - Eligible to vote and thus with the right to decide at meetings, can provide information externally and participate in various activities.
- In addition to these groups there are several local and regional associations, three municipal boards, special-interest organisations, municipal companies, schools and universities and a number of functions at Länsstyrelsen that in various contexts collaborate with Blekinge Arkipelag - Advice and information in both directions.
- Temporarily composed project groups with representatives from relevant participants and stakeholders - advisory, decision-making in certain cases, informative.

#### **7.5.6 During which phases of the biosphere reserve's existence is the public involved: in the educational process, in the development and/or implementation of the biosphere reserve's action program, in the daily work? Give some practical examples.**

During the formation process: Yes. Several theme groups were put together and worked out a foundation for the application, where not only municipalities and authorities were represented in the

formation of the Collaboration Plan, but also an interested and knowledgeable public, representatives from associations and businesses, and academia.

When implementing action programs: Yes. As described throughout this report, there are very few activities and projects in which the public and interested participants from different communities are not welcome to participate. An example is the RECORDI project, which aimed to bring to life and at the same time document the coastal cultural heritage. The invitation was sent out widely and unconditionally and the project involved fishermen, storytellers, and people from different industries. Another example is our ambassador training, where the public and members are invited to participate and, through evaluation, also contribute to the coming years' program. People who participate as guides and lecturers in the education are sometimes government officials, but more often recruited in the capacity of private individuals with great interest and commitment.



Bird watching on Lindö with future biosphere ambassador Jörgen Pisch as leader.

The public is informed and involved in the daily work through Blekinge Arkipelag's information initiatives and general invitations to participate in the activities. Every week, 2-6 posts are shared with information and knowledge on our social media, which can also be seen on two of our website's tabs (start page and news page). Every month lectures are given about the business and every

quarter we try to produce a newsletter that goes out to all email contacts and is shared via website and social media.

The public is welcome as members of the association and thus also has the right to vote and gain certain decision-making rights at the general meeting.

## **7.6 Update of organisation for management and coordination**

**7.6.1 Describe any changes concerning the administrative bodies responsible for the zones of the biosphere reserve (the core areas, the buffer zones, and the development areas). If anything has changed since the nomination form or the most recent evaluation was submitted, attach the updated original documents for each zone concerned.**

Since the nomination, no significant change has taken place in the authorities responsibilities for the biosphere reserve's zones.

**7.6.2 Updated information about the biosphere reserve coordinator/leader, and how he or she has been appointed.**

Former coordinator for Blekinge Arkipelag, Heleen Podsedkowska, resigned in spring of 2018. The current coordinator, Mattias Holmquist, took office in May 2018 after an external recruitment. Mattias had worked in the association in 2015-2016 as a project manager and then had a seat on the association's board 2016-2018.

**7.6.3 Has anything changed regarding the coordination structure of the biosphere reserve? (In that case, describe in detail its function, composition, and the relative proportion for each group in this structure, its role and competence.) Is this form of coordination self-governing or does it fall under any local or central authority or the biosphere reserve coordinator?**

A lot has changed since 2011. The body, formally called the Principal Group, equivalent to the current Collaboration Group, had unclear mandates. It has now been made clear that it ultimately is the association's board that is the organisation's highest decision-making body (together with the members at the association's general meeting), which has remedied previous ambiguity in communication and responsibility issues. Previously, the coordinator and the office's permanent staff were employed directly through the association Blekinge Arkipelag, while they now have a formal employment via Ronneby municipality. This has given the office a relief in payroll management and an additional security for the employees. The group called the Business Network has been added during a project process between 2015-2019. The collection group for trained ambassadors, and other non-profit forces like the Support team, has also been added and has existed since 2018.

**7.6.4 How has the administration/coordination adapted to the local situation?**

As Blekinge Arkipelag Biosphere Reserve is located within three of Blekinge's coastal municipalities, the activities have not been able to be housed in only one municipal organisation for administrative reasons and legal reasons. In addition, since the idea of a biosphere reserve was first launched, it has been a clear wish that the organisation should to some extent be independent of its principals and Länsstyrelsen to be able to launch collaborative projects in an easier way and involve the public and various other participants. A non-profit association was seen as the best alternative where financial interests could not prevail and where members would have the opportunity to participate in the management of the business through the general meeting and participation in various working groups.

Prior to the past 10-year period, the Collaboration Plan was created together with participants in different sectors of society (non-profit, private, and public) and at different decision-making levels in the society. Through this approach, networks were built up with key people who represent different parts of the local community, which enables a competent and adapted participation in each project based on the needs and challenges that come into focus. Blekinge Arkipelag will, in a similar way, establish, inform about, invite to, and collaborate on projects and activities also in the coming 10-year period.

#### **7.6.5 Is the efficiency of the administration/coordination evaluated? If so, did it happen in any particular way?**

The reorganisation that the association commissioned in 2017-2018 was preceded by an external evaluation of the business. It showed opportunities for reorganisation and greater efficiency regarding various measures, project results and participation from the biosphere reserve's various participants (Review of Biosphere Reserve Blekinge Arkipelag, Ernst & Young, 2017).

A later evaluation was made in 2020 by Sveriges Lantbruksuniversitet (the Swedish University of Agricultural Sciences) on behalf of Naturvårdsverket (the Swedish Environmental Protection Agency) and covered all Swedish biosphere reserves. This evaluation showed precisely the difficulties that the association had when the previous evaluation was made, but that they have now found an improved way of working with more projects, greater commitment, and a clearer organisation. (Building model areas for sustainable development: A study of organisational forms and collaboration processes in Sweden's biosphere reserves, Naturvårdsverket, 2020).

### **7.7 Updating the action program**

#### **7.7.1 Has anything changed in terms of the action program and the stakeholders involved? In such cases, provide detailed information on how stakeholders were involved, and how the plan was adopted and revised.**

During 2011-2017, the association Blekinge Arkipelag worked with the Collaboration Plan as an action program. After the reorganisation in 2017-2018, the board and the Collaboration Group felt the need for a simpler and more transparent action program, which is why the association created the new strategic tool and associated business plan. All participants destined to be involved in the work 2018-2021 have been given a role in the new business plan. As the association's work has been slow during the first years of operation due to an unclear organisation and lack of initiatives, the most eager participants wanted the project results to be prioritized to some extent before establishing the business plan and projects.

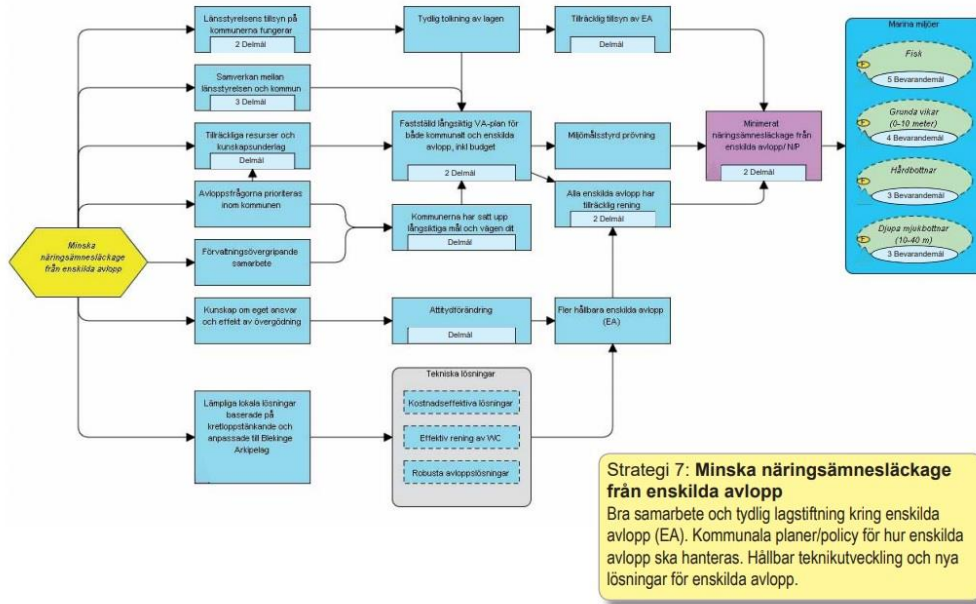
Current trends now show that parts of the older Collaboration Plan could be updated and merged with the newer business plan. This new action program can be given a more rigorous foundation for the coming operating period.

#### **7.7.2 Describe the content of the action program (give some examples of measures and guidelines). Is the plan binding? Is it based on consent?**

The content of the Collaboration Plan is divided into one part describing the character and challenges of the biosphere reserve and one part that is strategically designed based on several thematic areas where the need for action to preserve, develop and/or support is significant. The collaboration plan contains 10 theme areas, 9 conservation goals and 22 strategies with several important sub-goals. An example is the theme area "**Reduced eutrophication**" to which 5 different strategies are linked. One of these strategies is "Reduce nutrient leakage from individual sewers". The strategy contains, for

example, the sub-goal "All individual sewers have sufficient treatment" and promotes the conservation goals "Fish", "Shallow bays", "Hard seabeds" and "Deep soft seabeds". Within the strategy, there are also time indications and division of responsibilities for different participants. The collaboration plan comprises a total of 122 pages and was created in 2011 and updated in 2015.

Strategier och åtgärdsförslag inom temaområde minskad övergödning (kapitel 2.6.5 i planen)



From the Collaboration Plan for Blekinge Arkipelag: Strategy and proposed measures within the theme area reduced eutrophication

Strategiskt verktyg och verksamhetsplan för biosfärområde Blekinge Arkipelag 2018-2020.



Tema 1: Hållbar besöksnäring				
Vad?	Mål (Syfte)	Hur?/Aktiviteter	Tid	Ansvar Samverkan
<p>1) Förbättra <b>infrastruktur och tillgänglighet av natur och kultur</b> i BBA (ARK56)</p>	<ul style="list-style-type: none"> <li>Fler besökare på områdets leder, till besöksnäringföretag kultur lämningar, reservat och skärgårdsmiljöer.</li> <li>Fler informeras om och ökar sin förståelse för områdets ekosystemtjänster och kulturhistoria.</li> <li>Ökad fysisk och psykisk rekreation i området.</li> </ul>	<ul style="list-style-type: none"> <li>Utveckla och fastställa rutten samt infrastruktur</li> <li>Utveckla digital karta och app med info om leder och produkter</li> </ul>	<ul style="list-style-type: none"> <li>Invigning av leder juni 2019</li> <li>Första testapp färdig inför sommaren 2018, lansering av app i vår 2019</li> </ul>	<p>Samarbete med ledutvecklingsdel (kommuner och länsstyrelsen)</p> <p>Team Arkipelaggruppen T-Kartor Outdoormap</p> <p>Projekt Attractive Hardwoods</p>
<b>Genomfört juni -19</b>				

From Blekinge Arkipelag's Strategic tool with business plan, Theme Sustainable hospitality and tourism industry.



Blekinge Arkipelag's strategic tool with business plan (picture above) 2018-2021, comprises of 30 pages and is updated at least once a year. It contains a brief description of the association's governing documents, its five constant focus areas, five changing theme areas and several projects and measures that have been given specific goals, proposals for working methods, time frames and division of responsibilities. For example, improvement of infrastructure and accessibility has been included under the theme Sustainable hospitality and tourism industry, which is primarily considered to promote three of the focus areas:

Each action in the matrix (see above) is described with objectives, activities, time frames, responsibilities and collaboration partners

### **7.7.3 Describe the role of the authorities in implementing the action program. Describe institutional changes since the nomination or most recent evaluation. Provide evidence for the role of these authorities.**

Länsstyrelsen Blekinge has a role in some of the action program's listed actions and projects. Sometimes it is a voluntary responsibility in the capacity of collaboration partner, other times the authority needs to be involved because the action needs a permit or overlap an ongoing work.

In the national program committee, Naturvårdsverket (the Swedish Environmental Protection Agency) ensures, among other things, work in each Swedish biosphere reserve reaches out to researchers and authorities. Naturvårdsverket also contributes to film clips displaying how the biosphere reserves contributes to the goals in Agenda 2030.

Havs- och vattenmyndighetens (the Swedish Agency for Marine and Water Management) most important role for Blekinge Arkipelag has so far been as a financier for parts of our basic operations with employees and the operation of the office. However, in future projects, the authority could have other roles based on the expertise on water-related issues that can benefit the biosphere reserve.

### **7.7.4 Specify how the action program focuses on the objectives of the biosphere reserve.**

Both the Collaboration Plan and Blekinge Arkipelag's strategic tools highlight the vision for the biosphere reserve, that Blekinge Arkipelag should be a sea of possibilities. It also describes how we can achieve the goals through work to preserve natural and cultural environments, develop trails and make the biosphere reserve accessible as a destination for sustainable outdoor life and nature tourism, and support educational and research initiatives.

The program is focused on the goals of the biosphere reserve, something that becomes particularly clear in the description of the association's five constant focus areas. Each focus area is made up of the objectives in the Lima Action Plan, Agenda 2030, national and regional environmental goals, and other regional plans. See section 2.3.1.

### **7.7.5 What progress has been made in accordance with the guidelines in the action program?**

In section 5.10, it was noticed that of the Collaboration Plan's 22 strategies for the biosphere activities, 16 have been dealt with during the past 10-year period. The 22 original strategies comprise of 159 sub-goals, of which 66 were affected and fully or partially achieved during the period. In addition to these sub-goals, just over 20 goals have been achieved completely in Blekinge Arkipelag's newer strategic tools (2018-) and a little over 20 goals have been started and will be completed in 2021.

This work and these objectives have implied that the vision for Blekinge Arkipelag is closer now than 10 years ago in most areas. The supportive, preservative and developing work has created many new networks where communication works, where the standards for sustainability are strengthened, where many have been involved in the actual measures, and where the positive results are appreciated by many residents and visitors.

**7.7.6 Were there any factors and/or changes that made it more difficult or easier to implement the action program? (Local reluctance, conflicts between different decision-making levels.)**

The initial work during the 10-year period was more complicated, as there was no transition of continuity from the thematic working groups from the application period to the implementing work of the established biosphere reserve. The key people and structures that existed in the work with the application were not included in the organisation that was created after the appointment as a biosphere reserve. The newly appointed coordinator had the Collaboration Plan's 10 theme areas and 22 strategies to work with without active networks or clear priorities from the former board.

As previously mentioned, during the biosphere reserve's first 5-year period, there was a significant lack of clarity in the communication between the board and the former so-called principal group (equivalent to the current Collaboration group). On a few occasions, ambiguities arose as to who owned the ultimate decision-making power and there was a lack of initiative from the biosphere office to further investigate the issue.

The collaboration plan was also based on the biosphere office having a coordinating task, i.e., to greatly communicate and compile other participants' projects and results. When the initiatives failed and the communication between the board and the principal group failed, the association's local and tangible results also failed temporarily.

Correspondingly, Blekinge Arkipelag's reorganisation, the association's new strategic tool with a business plan and work that to a greater extent is based on its own specific project initiatives has facilitated the work. It has also given the association greater clarity externally and in communication with other participants, which has led to more members and other stakeholders joining the association, which in turn has further facilitated the work.

**7.7.7 If applicable: how is the biosphere reserve and/or biosphere work integrated into regional/national strategies? Conversely, how are local/municipal plans integrated into the planning of the biosphere reserve? (Provide detailed information if anything has changed since the nomination or most recent evaluation.)**

See section 2.3.1

## 8. CRITERIA AND PROGRESS

[Finally, highlight major changes, successes and advances that have been accomplished in the biosphere reserve since its nomination or most recent evaluation. How well does the biosphere reserve meet the criteria? Explain why the site should be a biosphere reserve and reason about its zoning. What is missing and how can it be improved? How can the biosphere reserve be a model area for how sustainable development is converted into practical action?]

**Brief description of how the biosphere reserve meets each of the criteria set out in Article 4 of the Statutes of the World Biosphere Reserve Network.**

1. **"The area should have a mosaic of ecosystems that represent a larger biogeographical region and include a scale of human impact" (The term "significant biogeographical region" is not strictly defined, but it may be a good idea to look at the classification system Udvardy [[http://www.unep-wcmc.org/udvardys-biogeographical-provinces-1975\\_745.html](http://www.unep-wcmc.org/udvardys-biogeographical-provinces-1975_745.html)].)**

Blekinge Arkipelag really constitutes of a mosaic-like landscape, broken up into constantly changing ecosystems. From south to north, it is clear how the barren archipelago with its islands, cobs and skerries turns into a more fertile coastal strip. From west to east, the landscape rolls slightly with fertile deciduous forests and cultivated landscapes in the valleys, while the pine forest spreads out on the ridges. Both on the islands and in the coastal landscape there are cities and relatively untouched land.

The only two Swedish regions that, according to Udvardy's classification system, belong to the landscape type Central European forest are Blekinge and Skåne. For Sweden, Blekinge Arkipelag Biosphere Reserve is a unique combination of ecosystems of this Central European character:

- Deciduous forests
- Coniferous forests
- Natural pastures and meadows
- Cultivated land, fields, and grasslands
- Built environments
- Watercourses and lakes
- Inner archipelago, shallow bays, and straits
- Outer archipelago, open sea
- Beaches, islands and skerries
- Wetlands

2. **"It must be of importance for the preservation of biological diversity"**

The biosphere reserve's small and mosaic like landscape provides a high biological diversity, especially in relation to landscape types in other parts of the country. The fact that Blekinge Arkipelag is mosaic-like also gives its diversity a fragility - partly because the many different landscape types and ecosystems are small and fragmented which hinders species and individuals' connectivity, partly because Blekinge is Sweden's fifth most densely populated county, which means there is a greater burden on ecosystems along the coast where most people have settled.

Species richness exists thanks to existing ecosystems. The challenges with preservation lie in the population and our habits and activities. Of all Swedish provinces 2021, Blekinge is worst when it comes to performing, if looking at finds of red-listed species per unit area according to the Species Data Bank. Traditionally, the general knowledge and awareness has been limited as to how the

Blekinge residents' everyday lives and changed lifestyles have affected local diversity. Today we have better knowledge and Blekinge Arkipelag is leading the way in showing different ways of recreating landscape types and ecosystems on which the endangered species depend. See chapters 3 and 4.

**3. "Opportunities shall be given to develop and demonstrate opportunities for a sustainable development at the regional level" (Include examples or experiences from having transformed sustainable development into practice.)**

Blekinge Arkipelag is continuously working with specific projects that develop habits and activities in a sustainable way and demonstrate the results both regionally and nationally. Based on the five focus areas in the association's model of sustainable development, a good biosphere project provides something for learning and commitment, for a living coast, for species richness and ecosystem services, for thriving businesses, and a sustainable society. Here are some examples of projects that result in more social, economic, and ecological sustainability:

- Thanks to the trail infrastructure ARK56, the visitors can walk on fossil-free trails through the biosphere reserve, which leads to the greatest nature and cultural experiences. Several of the natural and cultural environments are described in more detail in the app ARK56, and shows the sensitive environments not to be visited. It also shows the way to the trails' service points where it is possible to throw rubbish and go to the toilet - so far several nice contributions to ecological sustainability, but also to social sustainability as the trails are helping to avoid conflicts over tourism in the area.



Marketing material for ARK56 - connected coastal trails in a Unesco biosphere reserve.

The trails' service points usually offer accommodation options, the opportunity to shop for necessities or visit restaurants, rent vehicles, or buy a complete experience package, which provides support for the companies' financial sustainability. During the project, several companies also received tools to make their operations more sustainable. This resulted in, for example, a more environmentally sustainable energy use and waste management, something that sends signals to

visitors about a sustainability effort and leads to higher visitor statistics and greater revenue.

- Blekinge Arkipelag's wetland program promotes the creation of restored wetlands and watercourses as well as new construction of wetlands. The wetlands themselves contribute to preserved or developed biological diversity on the actual site and for the entire area. Several of the initiatives improve the conditions for the fish's spawning, which also provides greater opportunities to maintain the developed fishing activities, both commercial fishing and sport fishing. These forms of fishing are important for the hospitality industry - the sport fishing facilities, and the commercial fishing's deliveries of fish to smokehouses and restaurants. The wetland program is also important for both economic and ecological sustainability. When the efforts lead to an increased presence of fish, it can in itself be good for social sustainability for and in the groups that depend on the resource.

Wetlands and restored watercourses also provide larger groundwater reservoirs, important for the historically affected cultural landscape that has become drier from draining, backfills and straightened watercourses. The existence of water during a development towards warmer climate is essential for agriculture and animal husbandry - economically important. One of the most important functions for wetlands in the biosphere reserve is also purification of the water on its way to the Baltic Sea - ecologically important. The Baltic Sea's biggest problem today is eutrophication, which through algal blooms leads to oxygen deficiency and dying seabeds. The algal bloom has negative effects economically as it changes the conditions for the hospitality and tourism industry, outdoor life, and recreation. To remedy eutrophication also contributes to the preservation of a number of species - the dead seabed surface in the Baltic Sea is today as large as the whole of Denmark.

- The most important way to preserve endangered species is to prevent the reduction, or facilitate expansion or restoration of their specific habitat. Many species in the biosphere reserve are dependent on both natural pastures and deciduous forests, and Blekinge Arkipelag works to promote them both. By informing about the importance of natural pastures for, for example, pollinators and several plants, the interest in creating and recreating some of the lost habitats increases. The natural grazing animals are put in a context, and we hope to be able to support this animal husbandry with new networks and cooperation between, among others, animal keepers, but also with, for example, local sales initiatives and restaurants. The natural pastures promote both the ecology and the economy.

In the same way, there are several ecological aspects of preserving our original deciduous and pine forests with the right care, which have a greater resilience to climate change than, for example, the faster-growing spruce forest. The fact that the nature of the landscape is considered when new forests are planted and that the right management methods are put in place at the right time, has a great effect on social and ecological values. The fact that the forest grows and feels good creates great economic value for the forest owner, and the fact that the forest is cared for based on social values, for example along our trails, also has economic values in the context of the hospitality and tourism industry.

#### **4. "It must be large enough to fulfill the three functions of the biosphere reserve."**

Today, the Biosphere Reserve Blekinge Arkipelag has a total size of 212,600 ha, and has everything from pristine islands to dense city centers, rich coastal deciduous forests and cultivated landscapes with natural pastures. Several of the businesses that people run are dependent on the area's natural and cultural environments characteristic and its ecosystem services. To secure both the area and the

activities for the future, a transition to sustainability is needed, which in turn requires diligent work with measures for preservation, support and development.



Blekinge Arkipelag is large enough but looks forward to including parts of Sölvesborg municipality.

During the past decade, many projects have been carried out in the biosphere reserve and clearly demonstrates that the area's content and size are sufficiently extensive to provide the right conditions for operations. An expansion with the municipality of Sölvesborg will, however, complement the area and the business in a fruitful way. Blekinge Arkipelag, Länsstyrelsen, municipalities, Region Blekinge, several associations and companies are in the middle of this exciting work and together with private individuals' contributions make the biosphere reserve a sustainable legacy to leave for future generations.

##### **5. Appropriate zoning to meet the three functions**

The distribution between the three zones is as follows:

Core areas consist of protected nature and culture: 38,600 ha (incl. Sölvesborg 45,500 ha). Buffer zones consist of other protections, such as beach protection, and amount to 39,100 ha (incl. Sölvesborg 46,100 ha). Development area makes up 135,000 ha of the biosphere reserve (incl. Sölvesborg 168,200 ha). The zoning is important to clearly show where the largest marine and terrestrial core values are, and what needs extra protection and where development and exploitation can be carried out without directly affecting the extra protection value. However, it is not uncommon for Blekinge Arkipelag's preservation work to also take place in development areas and for development work to also include core areas.

##### **6. " Organisational structures that initiate and enable an appropriate spectrum of, among others, authorities, local communities and private interests to collaborate in the design, development, and activities of the biosphere reserve."**

The Biosphere Reserve's activities are initiated by several different participants at different levels. In a review of operations of about 30 ongoing projects and activities in 2019, 50% of these were initiated by Blekinge Arkipelag's board and office. However, several of the ideas behind these

projects derived from both authorities and the general public in the area. The association's ambassadors and the so-called Support team had in 2019 initiated about 15% of the ongoing projects and actions. About 30% of the activities were done in very close collaboration with the biosphere reserve's municipalities and their various functions. Several of these projects were also initiated by one or more municipalities. Finally, about 15% of the projects had a clear research connection, where the initiatives came from the general public as well as companies and universities.

The organisational structure that enables the distribution of initiatives and collaboration described above has been explained in section 2.3. It contains a board and a biosphere office as an arena between, on the one hand, authorities, governing documents, and the Collaboration Group, and on the other hand members, corporate networks, and ambassadors (Support teams). Through clarity and a commitment to this complex structure, there is an opportunity for learning, participation, and influence in the biosphere activities regardless of social group.

## 7. Mechanisms for implementation

### a) Mechanisms for managing human use and activities



2021 Blekinge Arkipelag runs activities to recruit more people to a lifelong and healthy outdoor life.

The biosphere reserve is used by humans in a variety of different ways. These include agriculture and forestry, fishing, outdoor life, nature tourism, areas for buildings and industrial exploitation, quarrying, port operations, etc. During the past decade, there has been a clear direction from Blekinge Arkipelag to work more with the areal use, outdoor life, and tourism and less with activities in cities and industry. Since Blekinge Arkipelag is a biosphere area, not a biosphere reserve, the municipalities and Länsstyrelsen need close cooperation when it comes to legal aspects of use and development opportunities. The role of Blekinge Arkipelag is to inspire, involve and in various ways create the commonly requested changes to meet the preservation, development, and support functions. Blekinge Arkipelag can, with the help of several participants, regulate the use through these functions and a voluntary commitment. Increased learning, improved communication and

inspiring information are important mechanisms for Blekinge Arkipelag in a cultural change where man and nature are gradually brought closer together.

#### **b) Action program or policy.**

Blekinge Arkipelag works together with the biosphere reserve's participants to achieve the objectives that have been jointly formulated, partly in the older Collaboration Plan and partly in the newer and continuously updated Business Plan. For the coming operating period, a merger and renewal of these two documents is planned. The objectives of this new action program must also be set in collaboration and through a solid anchoring process.

#### **c) Authority or mechanism for implementing policy or plan**

A well-implemented and established process and joint prioritization of objectives for Blekinge Arkipelag's action plan is an important mechanism for the implementation of the plan. The biosphere organisation's partners, collaboration group, members, board, ambassadors, corporate networks and support teams are all important elements of the planning and execution mechanism. Länsstyrelsen and the biosphere municipalities are also represented here, although these authorities carry out measures on their own that aim to achieve common goals. Meetings with various participants, handling of project funding applications and the biosphere office's and project managers' daily work are other crucial mechanisms for implementing the action plan.

The biosphere organisation at national and international level is also important for the implementation of the action plan, especially in various forms of collaboration with other biosphere reserves.

#### **d) Programs for research, monitoring, training and practice**

Blekinge Arkipelag's program for research is included in the Collaboration Plan and the Business Plan, both of which propose thematic areas and objectives where research is important and relevant for other measures in the biosphere reserve. It is more often a matter of researching phenomena in the biosphere reserve than researching how the biosphere organisation works or what it results in, even though such research has also taken place. Blekinge Arkipelag has received help in highlighting their own specific way of working and the project results, especially with the help of university students.

In this way, students have been welcomed to do internships or work-based studies at the association over the years. Upper secondary school work and degree projects have also been promoted by students taking part in the activities through lectures or internships and then having the biosphere office's support to carry out surveys and essays.

Blekinge Arkipelag and other Swedish biosphere reserves have, with the help of the Swedish biosphere program, developed a strategy to attract more researchers, universities and national authorities to the opportunities that exist to use the biosphere reserves for various surveys, result, and knowledge dissemination.

Regarding different educations, Blekinge Arkipelag conducts a six-month ambassador training every year on the biosphere reserve and Blekinge Arkipelag's activities. Members are invited to lectures, the biosphere day and participation in the support team. The corporate network is offered training for sustainable activities. The public has access to newsletters, websites, and social media where the association informs and educates on different conditions in the biosphere reserve and why different projects are carried out, what they are aimed at, and so on.



Monitoring has to a very small extent been Blekinge Arkipelag's role so far. This is the responsibility of Länsstyreslen, which also keeps the biosphere office, the board, and the collaboration group updated on new monitoring findings. Involving non-profit forces in inventory of species could, however, become relevant in the coming business period.

**8. Does the biosphere reserve cooperate with other biosphere reserves (exchange of information and staff, joint programs, etc)?**

**At a national level**

Every month, the Biosphere Program Sweden is arranging a digital meeting with all Swedish biosphere reserves and candidate areas. In addition, a physical meeting is arranged annually, which the biosphere reserves take turns to host. At both the digital and physical meetings, possible collaborations, common needs, and a current topic are discussed.

**At a regional level**

The biosphere reserve Kristianstad Vattenrike is located 50 kilometers southwest of Blekinge Arkipelag. The coordinators in Blekinge Arkipelag have both initially had good support from Vattenriket's employees in various matters and issues, because Vattenriket is a slightly older biosphere reserve. Vattenriket's evaluation report has also been a pioneering template for Blekinge Arkipelag's evaluation. Blekinge Arkipelag and Kristianstads Vattenrike have also made joint efforts to fund research and development of an optimized model for irrigation, which can be an important innovation to apply in Vattenriket where the cultivation areas are large. The relationship is good, and the contact is maintained, which will result in more joint projects in the long run.

**Through twinning and/or transnational biosphere reserves**

The Biosphere Reserve Blekinge Arkipelag is not an interconnected or transnational area, but is completely within the country's and county's borders.

**Within the world network**

During the 10-year period, Blekinge Arkipelag has had an exchange program with the German Biosphere Reserve Südost Rügen. It has been research-based with focus on the herring's spawning areas and living conditions in the central and southern Baltic Sea, and a general exchange of knowledge about trails and physical information about the biosphere reserve in the terrain. Blekinge Arkipelag has also participated in education on Open Standards for Nature Conservation together with the biosphere municipalities' representatives in Rügen's biosphere reserve in 2015.

Blekinge Arkipelag has also participated in workshops arranged in Menorca's Biosphere Reserve 2018.

The project Biosphere for Baltic 2018-2021 has been an important, and for Blekinge Arkipelag, very rewarding transnational exchange of knowledge and experience. It was initiated by the Swedish biosphere program and includes biosphere reserves from seven different countries around the Baltic Sea. This has involved meetings with the exchange of both work content and working methods to improve the condition of the Baltic Sea and to make nature tourism more sustainable for the visited landscapes.

Blekinge Arkipelag has also participated in meetings within NordMAB, EuroMAB and at the meeting in Lima, Peru regarding the Lima Action Plan.

**9. Difficulties encountered, measures to be taken and, where appropriate, expected assistance from the Secretariat**

The greatest difficulty encountered by Blekinge Arkipelag's activities is related to the working method proposed in the older Collaboration Plan and the relatively small resources given to the association to work in the proposed way. In short, Blekinge Arkipelag's board and office were given overall responsibility for collecting and compiling results of various participants' projects within 10 thematic work areas with the help of 22 strategies. This broad focus, the many measures and the somewhat vague role and communication of the partners paralyzed offices and boards that had difficulty engaging the resources needed for this way of working.

With the help of evaluation, reorganisation, and a changed way of working, Blekinge Arkipelag is now working well. The organisation around the biosphere business has been re-established and is functioning well.

#### **10. Overall objectives for the biosphere reserve**

*Describe the overall objectives for the biosphere reserve where the three functions and objectives for sustainable development in the coming years are integrated.*

The overall objectives for the biosphere reserve can be stipulated at different levels. Basic objectives for the activities are that Blekinge Arkipelag continues its work based on the Lima Action Plan, Agenda 2030, and the various plans for sustainable development and preservation that exist at national and regional level - to be able to continue with work that is permeated by UNESCO's intentions for biosphere reserves, to preserve, develop, and support.

These basic objectives have been used to develop Blekinge Arkipelag's five focus areas, which in themselves are formulated as general objectives:

- To increase learning and commitment to preservation and sustainable development
- To reach water in balance as well as a vibrant coast and archipelago with strengthened cultural heritage and preserved cultural history
- To preserve biodiversity and maintain intact ecosystem services
- To create sustainable companies and thriving tourism
- To ensure health and vitality in sustainable societies with strengthened cycles, increased attractiveness, and a healthy local environment

During the survey conducted in the biosphere reserve for the 10-year evaluation, the informants were asked to rate the importance of different theme/focus areas. The question includes seven theme areas from the older Collaboration Plan and five from the new Business Plan. The ranking of the respondents can be read from the table next to it.

Four of the five areas from the new Business Plan ranked highest in the vote: No 1 Keep the biosphere clean, No 2 Sustainable hospitality and tourism industry, No 3 Sustainable fishing and No 4 Learning and commitment to sustainable development. In fifth place we find one of the older theme areas Reduced eutrophication, incorporated in the work with the newer area Sustainable agriculture and forestry, which ended up in seventh place in the ranking. Over the past five years, Blekinge Arkipelag has worked extensively with companies in the hospitality and tourism industry, but not to the same extent with companies from other industries. Given that Sustainable companies have ended up in sixth place in the ranking, perhaps the work should be expanded to include companies in other industries in the coming period.

Other distinct goals and sub-goals the association can and needs to prioritize for the next activity period is a little too early to say, a bigger process together with several participants will show this.

	OVIKTIG	HAR VISS BETYDELSE	VIKTIG	MYCKET VIKTIG	HÖGSTA PRIORITET	TOTALT	VIKTAT GENOMSNITT
Hållbar bebyggelseutveckling	0.00% 0	24.42% 21	32.56% 28	27.91% 24	15.12% 13	86	3.34
Infrastruktur och samhällsservice	1.18% 1	16.47% 14	30.59% 26	42.35% 36	9.41% 8	85	3.42
Nyttjande och bevarande av kulturmiljöer	0.00% 0	11.63% 10	34.88% 30	40.70% 35	12.79% 11	86	3.55
Hållbart båtliv	0.00% 0	4.65% 4	39.53% 34	41.86% 36	13.95% 12	86	3.65
Bibehållet öppet landskap	1.18% 1	7.06% 6	29.41% 25	43.53% 37	18.82% 16	85	3.72
Hållbart lant- och skogsbruk	1.18% 1	5.88% 5	25.88% 22	42.35% 36	24.71% 21	85	3.84
Hållbara företag	0.00% 0	2.38% 2	29.76% 25	48.81% 41	19.05% 16	84	3.85
Minskad övergödning	0.00% 0	8.05% 7	21.84% 19	42.53% 37	27.59% 24	87	3.90
Lärande och engagemang för hållbar utveckling	0.00% 0	6.90% 6	21.84% 19	42.53% 37	28.74% 25	87	3.93
Hållbart fiske	0.00% 0	3.57% 3	19.05% 16	52.38% 44	25.00% 21	84	3.99
Hållbar besöksnäring	0.00% 0	0.00% 0	24.42% 21	50.00% 43	25.58% 22	86	4.01
Håll biosfären ren	0.00% 0	3.53% 3	18.82% 16	47.06% 40	30.59% 26	85	4.05

The results from the survey with the least prioritized/desired theme area at the top. 75-78% of the respondents believe that it is very important or has the highest priority to continue working with Sustainable Fishing, Sustainable hospitality and tourism industry and Keep the Biosphere Clean.

During the survey, however, the question was also asked which project ideas one would like to see realized in the coming period. Here are some representative answers that also need to be considered when setting new goals:

- Sustainable tourism
- Attractive forms of collaboration to connect entrepreneurs, for example link experiences such as accommodation, activities, food, etc. in a regional cluster
- Develop wetlands
- To raise interest in the cultural heritage (including buildings) in the archipelago but also the cultural landscape on the mainland. The mosaic landscape. Through collaboration with current participants. Lectures, seminars.
- Children/youth ambassadors
- Natural pastures
- Fishing
- More nature accommodation along ARK56 - develop hubs
- Continue to prioritize work on sustainable tourism
- Develop hiking, biking, and riding trails in the northern parts of Blekinge.
- Sustainable archipelago – for example, make various efforts to reduce the impact of boating in the archipelago.

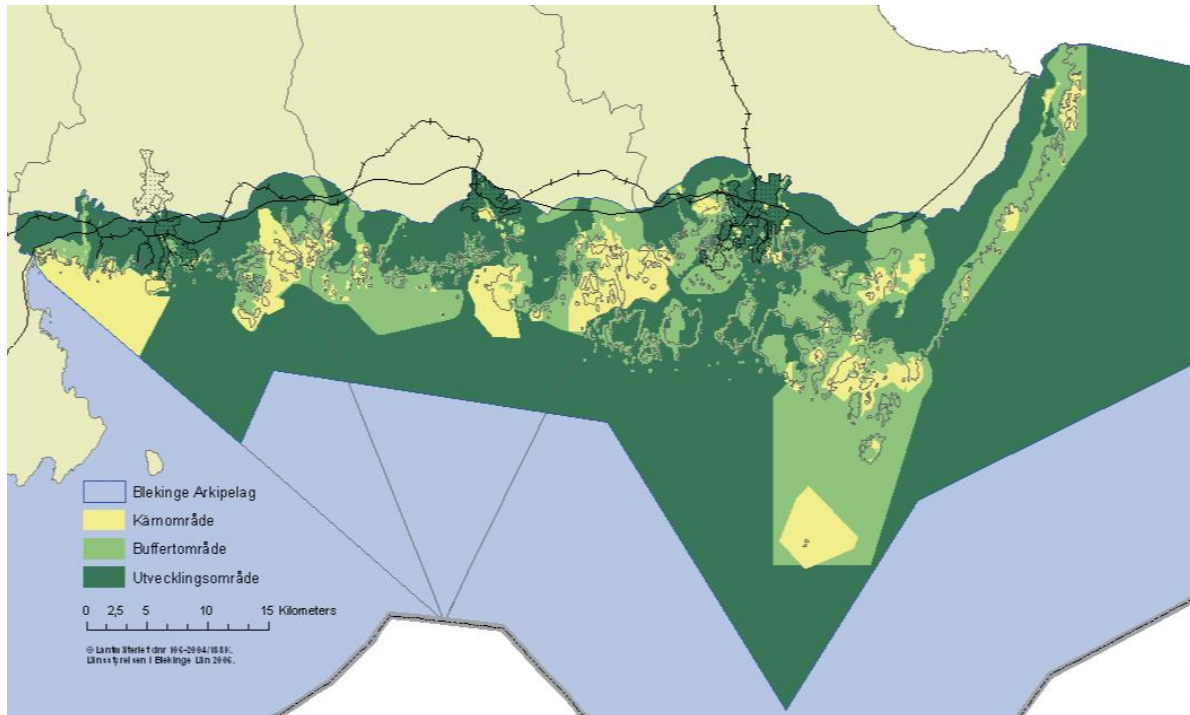
- Wetland expansions
- A broad school activity on sustainable development in BA
- Learning for sustainable development
- Something about the seal problems versus coastal fishermen
- Gather all organisations and private initiatives for a cleaner Blekinge archipelago
- Sustainable destination development
- The entire Blekinge coast will live and flourish
- Reduced eutrophication
- How we can use the wool in Blekinge
- Sustainable and attractive hospitality industry in the archipelago
- Continue to develop ARK56/the hospitality and tourism industry
- Coastal cycle path
- To build a Nature Room in Torhamn, "Torhamns Naturrum "
- Green communities from both a visitor point of view and a climate point of view
- Akr56 and Ronneby loops
- Information signs about the bird fauna along hiking trails
- Activities, packages between members
- It's just a matter of working on and keeping your spirits up, both research, education, and fun expressions. Somehow it has to pay off, too.
- Work against urbanization – it is possible to live everywhere!
- Information for visitors with tangible tips on how to keep the biosphere clean
- Archipelago map/nautical map digitally and in folded format in scale 1:10 000 from Gyön to Torhamn
- Blekinge as an outdoor destination
- School projects
- Edge zones in agriculture
- Create/highlight a destination, a place brand like Österlen, together with other tourism
- Protect and preserve Blekinge's unique environment
- Sustainable fishing, that gives us fish to eat and not to play with
- Availability, island-hopping
- Inventory of possible wetlands in Blekinge
- Sustainable boating throughout the biosphere reserve
- Locally produced natural pasture meat
- Work to create more fish nurseries to be able to restore fish stocks in the Baltic Sea. This is specifically about banning fishing in marked areas. For this to be received in a good way, follow-up is also important, which can show that the fish stock has increased. A ten-year plan for evaluation should therefore be included in the business plan. The focus should also be on fish that are close to commercial fishing, rather than sport fishing. The sport fishing is already well established.
- Contribute to research and work against more dead bays, beaches that nowadays are muddy, eutrophication, reeds that grow over entire bays and bathing bays...

## 9. SUPPORTING DOCUMENTS

[A list of appendices to the evaluation.]

### (1) Updated location and zoning map with coordinates

[Enter the geographical standard coordinates of the biosphere reserve (according to reference system WGS 84). Attach a map on a topographic layer of the exact location and demarcation of the three zones in the biosphere reserve. The map/maps must be submitted in both paper format and electronic format. The Shape files (including those in reference system WGS 84) that have been used to produce the map must also be attached to the electronic version of the form. In this case, provide a link to access the map on the internet (for example, a Google map or a website).]

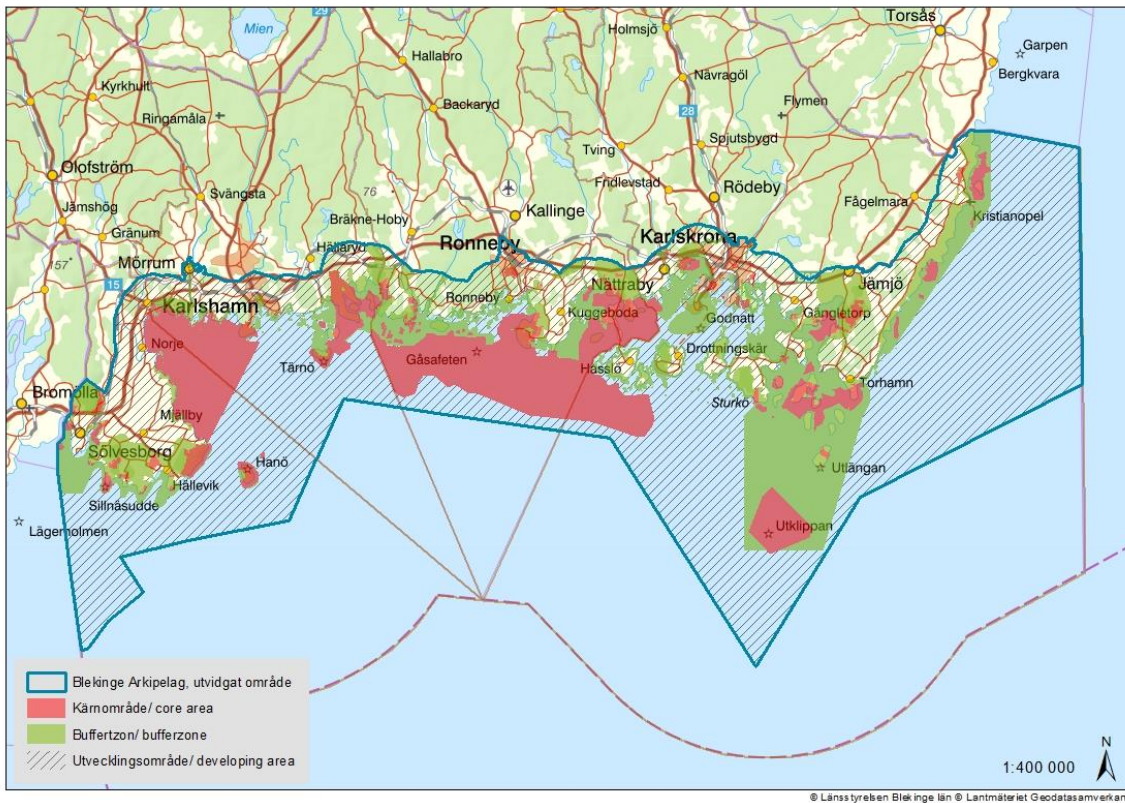


Current zoning map- Yellow: Core areas, Light green: Buffer zones, Dark green: Development areas.

Points of the compass	Latitude	Longitude
Most central point	56° 5' 53,53"	15° 25' 25,74"
Northernmost point	56° 19' 22,08"	16° 2' 51,36"
Southernmost point	55° 49' 51,96"	15° 40' 41,52"
Westernmost point	56° 0' 43,20"	14° 31' 58,08"
Easternmost point	56° 18' 16,20"	16° 13' 20,28"

Links to map: <http://blekingearkipelag.se/v%C3%A5rt-biosf%C3%A4romr%C3%A5de/kartor>

The design of the biosphere reserve, including the new part of Sölvesborg municipality, with zoning:



## (2) Updated vegetation map or land cover map

[A vegetation map or land cover map showing the main habitat types and land cover classes in the biosphere reserve should be provided if one exists.]



Beige: farmland, Light green: forest, Blue: sea, lakes and rivers, Dark green: pastures  
Please also see the map of value areas and core values in chapter 4.2

**(3) Updated list of legal documents (if possible with a summary in English, French or Spanish of the content and a translation of its most relevant provisions)** [If applicable, update the main legal documents since the nomination of the biosphere reserve and submit a copy of these documents.]

**Decided nature reserves, Natura2000 areas\*, revised reserve decisions, biotope protection areas, the municipalities' general plans and examples of in-depth general plans within the Biosphere Reserve Blekinge Arkipelag during the evaluation period.\*** no new Natura 2000 sites have been created during the evaluation period.

<i><b>New nature reserve</b></i>	<i><b>Latest valid date</b></i>	<i><b>Municipality</b></i>
Jordö	2011-12-06	Ronneby
Stärnö-Boön	2014-09-24	Karlshamn
Garnanäs	2014-12-10	Ronneby
Björkelycke	2016-09-26	Karlskrona
Biskopsmåla	2016-12-01	Ronneby
Ronneby blåmusselbankar	2020-12-17 (överklagat)	Ronneby

**Extended biosphere reserve, Sölvesborg municipality**

<i><b>Nature reserve</b></i>	<i><b>Latest valid date</b></i>	<i><b>Municipality</b></i>
Brötalyckornas naturreservat	2007-07-24	Sölvesborg
Hanö	2020-07-21	Sölvesborg
Hjärthalla	2008-01-05	Sölvesborg
Listershuvud	2010-07-16	Sölvesborg
Ryssberget	2004-04-26	Sölvesborg
Siesjö östra	2015-07-10	Sölvesborg
Sillnäs	2015-12-25	Sölvesborg
Spraglehall	2010-07-16	Sölvesborg
Stiby backe	2015-01-09	Sölvesborg
Sölvesborgsviken	2018-01-19	Sölvesborg
Valje	1993-05-27	Sölvesborg
Västra Näsnabben	2018-01-18	Sölvesborg
Västra Torsö	2020-01-04	Sölvesborg

**Revised reserve decisions since 2011**

<i>Nature reserve</i>	<i>Latest valid date</i>	<i>Municipality</i>
Stilleryd	2012-09-14	Karlshamn
Gö	2012-10-19	Ronneby
Tjärö	2013-04-27	Karlshamn
Tromtö	2018-09-22	Ronneby
Utklippan	2019-01-03	Karlskrona
Eriksberg	2019-06-19	Karlshamn
Almö	2019-12-31	Ronneby
Färskesjön (utvidgning)	2017-03-16 (överklagat)	Karlskrona
Steneryd	2020-11-20	Karlskrona

**Natura 2000 in an extended biosphere reserve, Sölvesborg municipality**

<i>Name</i>	<i>Area code</i>	<i>Area type</i>	<i>Municipality</i>
Björkenabben	SE0410188	SCI	Sölvesborg
Hanö	SE0410158	SCI	Sölvesborg
Hjärthallaberget	SE0410187	SCI	Sölvesborg
Kråkenabben	SE0410157	SCI	Sölvesborg
Kråkenabben nordväst	SE0410189	SCI	Sölvesborg
Listershuvud	SE0410012	SCI	Sölvesborg
Näsabbarna	SE0410155	SCI	Sölvesborg
Pukaviksbukten	SE0410068	SCI	Karlshamn, Sölvesborg
Ryssberget	SE0410152	SCI	Sölvesborg
Siesjö	SE0410153	SCI	Sölvesborg
Sillnäs	SE0410156	SCI	Sölvesborg
Spraglehall	SE0410066	SCI	Sölvesborg
Stiby backe	SE0410010	SCI	Sölvesborg
Sölvesborgsviken	SE0410259	SPA	Sölvesborg



Tocken	SE0410190	SCI	Sölvesborg
Valje	SE0410062	SCI	Sölvesborg
Vållholmen	SE0410044	SPA	Sölvesborg
Västra Torsö	SE0410065	SCI	Sölvesborg

**New biotope protection since application:**

<b>Name</b>	<b>Effective date</b>	<b>Municipality</b>	<b>Decision-making authority</b>
Biotopskydd 2011:161	2011-06-09	Karlskrona	Skogsstyrelsen
Biotopskydd 2011:417	2011-12-15	Karlskrona	Skogsstyrelsen
Biotopskydd 2011:416	2011-12-15	Karlskrona	Skogsstyrelsen
Biotopskydd 2012:500	2012-12-08	Ronneby	Skogsstyrelsen
Biotopskydd 2014:187	2014-08-04	Karlskrona	Skogsstyrelsen

**Sölvesborg:**

Biotopskydd 1999:139	1999-05-26	Sölvesborg	Skogsstyrelsen
Biotopskydd 2007:71	2007-02-22	Sölvesborg	Skogsstyrelsen
Malkvarn	2018-01-18	Sölvesborg	Länsstyrelsen

All decisions and conservation plans can be found in Protected Nature: [Skyddad natur \(naturvardsverket.se\)](http://skyddad.natur.naturvardsverket.se)

**New municipal master plans and in-depth master plans have been adopted since the application:**

Overview plan Karlshamn municipality adopted in 2015

Overview plan Ronneby municipality adopted in 2018

Overview plan Karlskrona municipality adopted in 2010

In-depth overview plan for the archipelago, Karlskrona municipality (adopted 2014)

*The in-depth Overview Plan mainly describes how the development of housing in rural areas can take place in harmony with the area's nature and cultural values. Furthermore, the opportunities to develop outdoor life, tourism and the hospitality industry are treated so that the area's great natural and cultural environmental qualities can benefit more people without these values being harmed.*

**(4) Updated list of collaboration plans for land use and landscape management**

[List of existing collaboration plans for land use and landscape management (with date and reference number) for the administrative areas in the biosphere reserve (e.g., master plan, regulations for the reserve, etc.). Attach a copy of these documents. We recommend that the content be summarized in English, French or Spanish and that the most relevant provisions be translated.]

In 2019, Blekinge's municipalities compiled a joint sea plan, the first ever together. This has been decided by the municipal council and is an extension of the general plans.

**Nature reserve decision about the reserve and management plan decision within Biosphere Reserve Blekinge Arkipelag**

***New nature reserve, decisions, and management plan***

	<b><i>Latest valid date</i></b>	<b><i>Municipality</i></b>
Ronneby blåmusselbankar	2020-12-17 (överklagat)	Ronneby
Biskopsmåla	2016-12-01	Ronneby
Björkelycke	2016-09-26	Karlskrona
Garnanäs	2014-12-10	Ronneby
Stärnö-Boön	2014-09-24	Karlshamn
Jordö	2011-12-06	Ronneby

**In the case of an expanded biosphere reserve with the municipality of Sölvesborg**

***Nature reserve*** ***Decision date management plan*** ***Municipality***

<b><i>Nature reserve</i></b>	<b><i>Decision date management plan</i></b>	<b><i>Municipality</i></b>
Hanö	2020-06-24	Sölvesborg
Västra Torsö	2019-12-04	Sölvesborg
Valje	2019-03-26	Sölvesborg
Sölvesborgsviken	2017-12-20	Sölvesborg
Sillnäs	2015-11-25	Sölvesborg
Siesjö östra	2015-06-15	Sölvesborg
Stiby backe	2014-12-17	Sölvesborg
Spraglehall	2010-06-21	Sölvesborg
Hjärthalla	2007-12-04	Sölvesborg
Brötalyckornas naturreservat	2007-06-25	Sölvesborg
Ryssberget	2004-03-08	Sölvesborg
Listershovud	1993-09-20	Sölvesborg

**Revised management plans** since 2011 within current Biosphere Reserve Blekinge Arkipelag:

<i>Nature reserve</i>	<i>Decision date management plan</i>	<i>Municipality</i>
Färskesjön (utvidgning)	2017-03-16 (överklagat)	Karlskrona
Steneryd	2020-10-20	Karlskrona
Sonekulla	2018-12-11	Ronneby
Utklippan	2018-12-06	Karlskrona
Eriksberg	2016-12-20	Karlshamn
Hallarumsviken	2014-06-10	Karlskrona
Listerby skärgård	2013-08-28	Ronneby
Almö	2013-06-17	Ronneby
Kvalmsö	2013-06-13	Ronneby
Tjärö	2013-04-04	Karlshamn
Järkö	2012-12-19	Karlskrona
Gö	2012-09-24	Ronneby
Stilleryd	2012-08-16	Karlshamn
Eriksbergs stränder	2011-09-30	Karlshamn
Tromtö	2011-05-20	Ronneby

**Platform for the work with green infrastructure** in Blekinge County, report 2019:14. According to a Government decree, Länsstyrelsen has prepared a Regional Action Plan for Green Infrastructure - which was adopted in 2019. [2019:14 Plattform för arbetet med grön infrastruktur i Blekinge län | Länsstyrelsen Blekinge \(lansstyrelsen.se\)](#)

#### **Update of conservation plans.**

According to a Government decree, Länsstyrelsen updated the conservation plans for all Natura 2000 areas in the county during the years 2016-2017. All management plans and conservation plans can be found in Protected Nature: [Skyddad natur \(naturvardsverket.se\)](#)

#### **(5) Updated list of species (in an appendix)**

[List of important species occurring in the biosphere reserve, if possible, with their common name (for documents submitted to Unesco, give general English names if possible).]

#### **Globally and nationally red-listed species, as well as species listed by the EU**

The attached lists report internationally and nationally red-listed species occurring in the biosphere reserve. In Sweden, the Species Data Bank has got a mission to gather knowledge about Sweden's fauna and flora and to continuously update the red lists according to guidelines from the

International Union for Conservation of Nature (IUCN). In Sweden, the current red list follows IUCN's categorization.

Species categorized as Data Deficient (DD), Regionally Extinct (RE), Critically Endangered (CR), Endangered(EN), Vulnerable (VU) and Near Threatened (NT) are called red-listed. When shortening the categories, the English terms are used to facilitate comparisons between countries.

In the application to have Blekinge Arkipelag approved as a Biosphere Reserve, lists of known endangered species in the area were reported in 2010. Since then, knowledge has been built through various inventories and compilations of existing knowledge. Knowledge about endangered species in the biosphere reserve has increased and the number of known endangered species has thus increased. During the period, the national red lists were revised twice (2015 and 2020) with major changes in the lists, see below. The revisions of the national red lists have led to major changes in the species content of the lists for the biosphere reserve. The main reason for the increase in the total number of red-listed species is nevertheless the accumulation of knowledge that has taken place after 2011. New areas for previously known species have also been discovered. However, it is difficult to draw conclusions about how the condition of endangered species has generally changed in the biosphere reserve during the current period. A longer period with more targeted follow-ups is needed to be able to make reliable analyses of such changes. There is updated knowledge available and compiled for many species groups, but much work remains regarding inventories, compilations, and analyses to obtain current occurrence and distribution for all groups.

The compilation of nationally red-listed species on the following pages is based on data from the Species Data bank. The reported data apply to observations from 1970 and later. Among red-listed bird species, only regularly nesting or regularly resting species are reported.

### **Globally red-listed species IUCN Redlist**

Species in the biosphere reserve that are globally red-listed according to the IUCN Red List of threatened species. Categories in IUCN redlist: Critically endangered (CR), Endangered (EN), Vulnerable (VU), Lower risk (LR), Conservation Dependent (CD), Near Threatened (NT), Least Concern (LC).

Listed globally endangered species within Blekinge Arkipelag. Source: list from the Species Data Bank (Ulf Bjelke 210408) with a manual processing by Länsstyreslen and information from Species Portal (210507)

<b>Swedish Name</b>	<b>Scientific name</b>	<b>Global red list IUCN</b>
flat dammussla	<i>Pseudanodonta complanata</i>	VU
flodpärlmussla	<i>Margaritifera margaritifera</i>	EN
lamellsnäcka	<i>Spermodea lamellata</i>	NT
smal dammsnäcka	<i>Omphiscola glabra</i>	NT
smalgrynsnäcka	<i>Vertigo angustior</i>	NT
tjockskalig målarmussla	<i>Unio crassus</i>	EN
barbastell	<i>Barbastella barbastellus</i>	NT
dammfladdermus	<i>Myotis dasycneme</i>	NT

tumlare (östersjöpopulationen)	<i>Phocoena phocoena (Baltic population)</i>	CR
utter	<i>Lutra lutra</i>	NT
kusttobis	<i>Ammodytes tobianus</i>	DD
sik	<i>Coregonus maraena</i>	VU
torsk [fisken]	<i>Gadus morhua</i>	VU
ål	<i>Anguilla anguilla</i>	CR
brunand	<i>Aythya ferina</i>	VU
ejder	<i>Somateria mollissima</i>	NT
kornknarr	<i>Crex crex</i>	NT
röd glada	<i>Milvus milvus</i>	NT
rödvingetrast	<i>Turdus iliacus</i>	NT
storspov	<i>Numenius arquata</i>	NT
strandskata	<i>Haematopus ostralegus</i>	NT
svarthakedopping	<i>Podiceps auritus</i>	VU
svärta	<i>Melanitta fusca</i>	VU
tofsvipa	<i>Vanellus vanellus</i>	NT
tordmule	<i>Alca torda</i>	NT
ängspiplärka	<i>Anthus pratensis</i>	NT
grönfläckig padda	<i>Bufo viridis</i>	DD
flodkräfta	<i>Astacus astacus</i>	VU
ask	<i>Fraxinus excelsior</i>	NT
flocksvalting	<i>Baldellia ranunculoides</i>	NT
skogsalm	<i>Ulmus glabra</i>	DD
vanlig backsippa	<i>Pulsatilla vulgaris subsp. vulgaris</i>	NT
vildapel	<i>Malus sylvestris</i>	DD
almbloombock	<i>Pedostrangalia revestita</i>	VU
kardinalfärgad rödrock	<i>Ampedus cardinalis</i>	NT
läderbagge	<i>Osmoderma eremita</i>	NT
rödpalpad rödrock	<i>Ampedus hjorti</i>	VU
större ekbock	<i>Cerambyx cerdo</i>	VU
trubbtandad lövknäppare	<i>Crepidophorus mutilatus</i>	NT
blodsandbi	<i>Andrena labiata</i>	DD

hagtornssandbi	<i>Andrena carantonica</i>	DD
jordsnylthumla	<i>Bombus bohemicus</i>	DD
kal skogsmyra	<i>Formica polyctena</i>	NT
ljunghumla	<i>Bombus jonellus</i>	DD
mosandbi	<i>Andrena barbilabris</i>	DD
röd skogsmyra	<i>Formica rufa</i>	NT
skogsjordhumla	<i>Bombus cryptarum</i>	DD
slättersandbi	<i>Andrena humilis</i>	DD
smultrontapetserarbi	<i>Megachile alpicola</i>	DD
tandsandbi	<i>Andrena denticulata</i>	DD
veronikasandbi	<i>Andrena semilaevis</i>	DD
videsandbi	<i>Andrena clarkella</i>	DD
väddgökbi	<i>Nomada armata</i>	NT
väddsandbi	<i>Andrena hattorfiana</i>	NT
ängsmyra	<i>Formica pratensis</i>	NT
ärtsandbi	<i>Andrena wilkella</i>	DD
lakritsmusseron	<i>Tricholoma apium</i>	VU

### EU-listed species

More than 900 plant and animal species and over 170 habitats that are endangered or unique from a European perspective are listed in the EU Habitats and Birds Directive. Species, according to the EU Habitats Directive, added since 2011 are; narrow-mouthed whorl snail, the great diving beetle, water beetle, Capricorn beetle, barbastelle, porpoise, wolf, lynx, and green shield moss.

### Species, plants, and animals according to the EU Habitats Directive, which occurs in the area in 2021

Species code	Species Swedish name	Species Latin name
1014	Smalgrynsnäcka	<i>Vertigo angustior</i>
1029	Flodpärlmussla	<i>Margaritifera margaritifera</i>
1032	Tjockskalig målarmussla	<i>Unio crassus</i>
1042	Citronfläckad kärrtrollslända	<i>Leucorrhinia pectoralis</i>
1081	Bred gulbrämad dykare	<i>Dytiscus latissimus</i>
1082	Bred paljettdykare	<i>Graphoderus bilineatus</i>

1083	Ekoxe	<i>Lucanus cervus</i>
1084	Läderbagge	* <i>Osmoderma eremita</i>
1088	Större ekbock, utplanterad	<i>Cerambyx cerdo</i>
1106	Lax (i sötvatten)	<i>Salmo salar</i>
1166	Större vattensalamander	<i>Triturus cristatus</i>
1308	Barbastell	* <i>Barbastella barbastellus</i>
1318	Dammfladdermus	<i>Myotis dasycneme</i>
1351	Tumlare	<i>Phocoena phocoena</i>
1352*	Varg	<i>Canis lupus</i>
1355	Utter	<i>Lutra lutra</i>
1361	Lodjur	<i>Lynx lynx</i>
1364	Gråsäl	<i>Halichoerus grypus</i>
1365	Knubbsäl	<i>Phoca vitulina</i>
1383	Hårklomossa	<i>Dichelyma capillaceum</i>
1386	Grön sköldmossa	<i>Buxbaumia viridis</i>
1936	Hålträdsklokrypore	<i>Anthrenochernes stellae</i>

#### Species according to the EU Birds Directive that breed or rest regularly in the area in 2021

Species – Latin name	Species – Swedish name	Species code
<i>Aegolius funereus</i>	Pärluggla	A223
<i>Alcedo atthis</i>	Kungsfiskare	A229
<i>Anser erythropus</i>	Fjällgås	A042
<i>Aquila chrysaetos</i>	Kungsörn	A091
<i>Asio flammeus</i>	Jorduggla	A222
<i>Bonasa bonasia</i>	Järpe	A104
<i>Botaurus stellaris</i>	Rördrom	A021
<i>Branta leucopsis</i>	Vitkindad gås	A045
<i>Bubo bubo</i>	Berguv	A215
<i>Calidris alpina schinzii</i>	Sydlig kärrsnäppa	A466

<i>Caprimulgus europaeus</i>	Nattskärra	A224
<i>Charadrius morinellus (Eudromias morinellus)</i>	Fjällpipare	A139
<i>Chlidonias niger</i>	Svarttärna	A197
<i>Ciconia ciconia</i>	Vit stork	A031
<i>Circus aeruginosus</i>	Brun kärrhök	A081
<i>Circus cyaneus</i>	Blå kärrhök	A082
<i>Circus pygargus</i>	Ängshök	A084
<i>Crex crex</i>	Kornknarr	A122
<i>Cygnus columbianus bewickii</i>	Mindre sångsvan	A037
<i>Cygnus cygnus</i>	Sångsvan	A038
<i>Dryocopus martius</i>	Spillkråka	A236
<i>Emberiza hortulana</i>	Ortolansparv	A379
<i>Falco columbarius</i>	Stenfalk	A098
<i>Falco peregrinus</i>	Pilgrimsfalk	A103
<i>Falco rusticolus</i>	Jaktfalk	A102
<i>Ficedula albicollis</i>	Halsbandsflugsnappare	A321
<i>Ficedula parva</i>	Mindre flugsnappare	A320
<i>Gallinago media</i>	Dubbelbeckasin	A154
<i>Gavia arctica</i>	Storlom	A002
<i>Gavia stellata</i>	Smålom	A001
<i>Glaucidium passerinum</i>	Sparvuggla	A217
<i>Grus grus</i>	Trana	A127
<i>Haliaeetus albicilla</i>	Havsörn	A075
<i>Lanius collurio</i>	Törnskata	A338
<i>Larus minutus</i>	Dvärgmåås	A177
<i>Limosa lapponica</i>	Myrspov	A157
<i>Lullula arborea</i>	Trädlärka	A246
<i>Luscinia svecica</i>	Blåhake	A272
<i>Mergus albellus</i>	Salskrake	A068



<i>Milvus milvus</i>	Röd glada	A074
<i>Pandion haliaetus</i>	Fiskgjuse	A094
<i>Pernis apivorus</i>	Bivråk	A072
<i>Phalaropus lobatus</i>	Smalnäbbad simsnäppa	A170
<i>Philomachus pugnax</i>	Brushane	A151
<i>Pluvialis apricaria</i>	Ljungpipare	A140
<i>Podiceps auritus</i>	Svarthakedopping	A007
<i>Porzana porzana</i>	Småfläckig sumphöna	A119
<i>Recurvirostra avosetta</i>	Skärfläcka	A132
<i>Sterna albifrons (nytt namn Sternula albifrons)</i>	Småtärna	A195
<i>Sterna caspia (nytt namn Hydroprogne caspia)</i>	Skräntärna	A190
<i>Sterna hirundo</i>	Fisktärna	A193
<i>Sterna paradisaea</i>	Silvertärna	A194
<i>Sterna sandvicensis</i>	Kentsk tärna	A191
<i>Strix nebulosa</i>	Lappuggla	A457
<i>Surnia ulula</i>	Hökuggla	A456
<i>Sylvia nisoria</i>	Höksångare	A307
<i>Tetrao tetrix tetrix</i>	Orre	A409
<i>Tetrao urogallus</i>	Tjäder	A108
<i>Tringa glareola</i>	Grönben	A166

### Nationally red-listed species

A total of 648 different finds of nationally red-listed species are listed in the area. Not all findings are quality assured but provide guidance on the number of species in each category and the total number of endangered species in the biosphere reserve, see tables below.

- Two species are listed as nationally extinct (RE), but have probably never existed in the county.
- CR, 17 acutely endangered species, mainly vascular plants and fungi.
- EN, 67 highly endangered species, not least vascular plants, beetles and lichens.
- VU, 162 vulnerable species, mainly butterflies, birds, vascular plants, and beetles.
- NT, 383 species are near endangered, mostly beetles, vascular plants, butterflies, birds and fungi.

When extracting from the Artportalen (Species Portal) as per 3 May, 2021, red-listed species within Blekinge Arkipelag from 2011 and onwards, the following was noted:

<b>Group</b>	<b>Number of species</b>
Algae – (alger)	3
Mollusk – (blötdjur)	4
Mammals – (däggdjur)	13 framförallt fladdermöss
Fish – (fiskar)	7
Insects – (insekter)	274 varav 97 arter av fjärilar och 149 skalbaggar
Birds – (fåglar)	68
Frogs and lizzards – (grod- och kräldjur)	5
Crustacea – (kräftdjur)	3
vascular plants – (kärlväxter)	156
Lichens – (lavar)	42
Moss – (mossor)	2
Centipedes – (mångfotingar)	1
Spiders – (spindeldjur)	6
Mushrooms – (storsvampar)	64

**Red-listed species in category CR (acutely endangered) within Blekinge Arkipelag.**

Extract from Artportalen from 2011 – Maj 2021.

<b>Swedish name</b>	<b>Scientific name</b>	<b>Organism group</b>
ål	<i>Anguilla anguilla</i>	Fiskar
vitribbat strandfly	<i>Conisania leineri</i>	Fjärilar

pungmes	<i>Remiz pendulinus</i>	Fåglar
sydlig kärrsnäppa	<i>Calidris alpina schinzii</i>	Fåglar
flodkräfta	<i>Astacus astacus</i>	Kräftdjur
	<i>Hieracium concinnatum</i>	Kärlväxter
blymaskros	<i>Taraxacum plumbeum</i>	Kärlväxter
kritsuga	<i>Ajuga genevensis</i>	Kärlväxter
skogsalm	<i>Ulmus glabra</i>	Kärlväxter
sydäppelros	<i>Rosa micrantha</i>	Kärlväxter
vanlig skogsalm	<i>Ulmus glabra subsp. glabra</i>	Kärlväxter
almoranglav	<i>Cerothallia luteoalba</i>	Lavar
större ekbock	<i>Cerambyx cerdo</i>	Skalbaggar
apeltagging	<i>Sarcodontia crocea</i>	Storsvampar
blek borstticka	<i>Funalia trogii</i>	Storsvampar
igelkottstaggsvamp	<i>Hericium erinaceus</i>	Storsvampar
saffransticka	<i>Aurantiporus croceus</i>	Storsvampar

### Red-listed species in category EN (highly endangered) within Blekinge Arkipelag.

Extract from Artportalen from 2011 – Maj 2021.

Swedish name	Scientific name	Organism group
flodpärlmussla	<i>Margaritifera margaritifera</i>	Blötdjur
tjockskalig målarmussla	<i>Unio crassus</i>	Blötdjur
nymffladdermus	<i>Myotis alcathoe</i>	Däggdjur
större musöra	<i>Myotis myotis</i>	Däggdjur
hålträdssvampmal	<i>Triaxomasia caprimulgella</i>	Fjärilar
mjölfly	<i>Eublemma minutata</i>	Fjärilar
mnemosynefjäril	<i>Parnassius mnemosyne</i>	Fjärilar
tryfjäril	<i>Limenitis camilla</i>	Fjärilar
vitfläckig praktmal	<i>Denisia albimaculea</i>	Fjärilar
bergand	<i>Aythya marila</i>	Fåglar
brunand	<i>Aythya ferina</i>	Fåglar
ejder	<i>Somateria mollissima</i>	Fåglar

grönfink	<i>Chloris chloris</i>	Fåglar
roskarl	<i>Arenaria interpres</i>	Fåglar
rödspov	<i>Limosa limosa</i>	Fåglar
sommargylling	<i>Oriolus oriolus</i>	Fåglar
storspov	<i>Numenius arquata</i>	Fåglar
tornseglare	<i>Apus apus</i>	Fåglar
årta	<i>Spatula querquedula</i>	Fåglar
ängshök	<i>Circus pygargus</i>	Fåglar
	<i>Xanthochilus quadratus</i>	Halvvingar
trumgräshoppa	<i>Psophus stridulus</i>	Hopprätvingar
alpklöver	<i>Trifolium alpestre</i>	Kärlväxter
ask	<i>Fraxinus excelsior</i>	Kärlväxter
backjungfrulin	<i>Polygala vulgaris subsp. collina</i>	Kärlväxter
dikesskräppa	<i>Rumex conglomeratus</i>	Kärlväxter
dvärgjohannesört	<i>Hypericum humifusum</i>	Kärlväxter
ekorrsvingel	<i>Vulpia bromoides</i>	Kärlväxter
grusnejlika	<i>Gypsophila muralis</i>	Kärlväxter
huvudtåg	<i>Juncus capitatus</i>	Kärlväxter
kal knipprot	<i>Epipactis phyllanthes</i>	Kärlväxter
kattmynta	<i>Nepeta cataria</i>	Kärlväxter
klubbfibbla	<i>Arnoseris minima</i>	Kärlväxter
klätt	<i>Agrostemma githago</i>	Kärlväxter
mosippa	<i>Pulsatilla vernalis</i>	Kärlväxter
stor ängsmaskros	<i>Taraxacum lamprophyllum</i>	Kärlväxter
tofsäxing	<i>Koeleria glauca</i>	Kärlväxter
vårval	<i>Lathyrus sphaericus</i>	Kärlväxter
åkerklätt	<i>Agrostemma githago subsp. githago</i>	Kärlväxter
ädelmynta	<i>Mentha × gracilis</i>	Kärlväxter
ölandskungsljus	<i>Verbascum densiflorum</i>	Kärlväxter
granlundlav	<i>Bacidia laurocerasi</i>	Lavar
grynig påskrislav	<i>Stereocaulon incrustatum</i>	Lavar

klippzonlav	<i>Enterographa hutchinsiae</i>	Lavar
kraterorangelav	<i>Caloplaca ulcerosa</i>	Lavar
liten ädellav	<i>Megalaria laureri</i>	Lavar
savlundlav	<i>Bellicidia incompta</i>	Lavar
skorpdagglav	<i>Diploicia canescens</i>	Lavar
storsporig kraterlav	<i>Gyalecta derivata</i>	Lavar
ädellav	<i>Megalaria grossa</i>	Lavar
almbloombock	<i>Pedostrangalia revestita</i>	Skalbaggar
almvedvivel	<i>Cossonus cylindricus</i>	Skalbaggar
blåsvart brunbagge	<i>Melandrya caraboides</i>	Skalbaggar
gropig blombagge	<i>Ischnomera sanguinicollis</i>	Skalbaggar
ribbdyngbagge	<i>Euheptaulacus sus</i>	Skalbaggar
svart guldbagge	<i>Gnorimus variabilis</i>	Skalbaggar
almrostöra	<i>Hymenochaete ulmicola</i>	Storsvampar
eklackticka	<i>Ganoderma resinaceum</i>	Storsvampar
fransig stjälskröksvamp	<i>Tulostoma fimbriatum</i>	Storsvampar
fältjordstjärna	<i>Geastrum campestre</i>	Storsvampar
grönticka	<i>Albatrellus cristatus</i>	Storsvampar
gul strävsopp	<i>Leccinellum crocipodium</i>	Storsvampar
hartsticka	<i>Ganoderma pfeifferi</i>	Storsvampar
lilafotad fingersvamp	<i>Ramaria fennica</i>	Storsvampar
tungticka	<i>Buglossoporus quercinus</i>	Storsvampar
	<i>Systemus tener</i>	Tvåvingar
åttafläckig getingfluga	<i>Chrysotoxum octomaculatum</i>	Tvåvingar

**Red-listed species in category VU (vulnerable) within Blekinge Arkipelag.**

Extract from Artportalen from 2011 – Maj 2021.

Swedish name	Scientific name	Organism group
	<i>Parvicardium hauniense</i>	Blötdjur
mindre brunfladdermus	<i>Nyctalus leisleri</i>	Däggdjur
sydpipistrell	<i>Pipistrellus pipistrellus</i>	Däggdjur

lake	<i>Lota lota</i>	Fiskar
torsk [fisken]	<i>Gadus morhua</i>	Fiskar
berberisfältmätare	<i>Pareulype berberata</i>	Fjärilar
brunt timjansmott	<i>Delplanqueia dilutella</i>	Fjärilar
flenörtskapuschongfly	<i>Cucullia scrophulariae</i>	Fjärilar
glänsande sandgräsmott	<i>Catoptria lythargyrella</i>	Fjärilar
gulbrunt nejlikfly	<i>Hadena perplexa</i>	Fjärilar
kardväddsknölfly	<i>Heliothis viriplaca</i>	Fjärilar
kattostmal	<i>Platyedra subcinerea</i>	Fjärilar
korkmusslingsmal	<i>Nemapogon fungivorellus</i>	Fjärilar
lindbrokmal	<i>Chrysoclista linneella</i>	Fjärilar
lungrotsmal	<i>Heliodines roesella</i>	Fjärilar
mjölkörtsspinnare	<i>Lemonia dumii</i>	Fjärilar
sandfältsljusmott	<i>Pyrausta aerealis</i>	Fjärilar
skuggmalmätare	<i>Eupithecia immundata</i>	Fjärilar
sorgsvampmal	<i>Nemapogon falstriellus</i>	Fjärilar
töcknig trymal	<i>Perittia obscurepunctella</i>	Fjärilar
vitbandat glansfly	<i>Deltote deceptorica</i>	Fjärilar
åkervindefly	<i>Acontia trabealis</i>	Fjärilar
ängsskäreplattmal	<i>Agonopterix bipunctosa</i>	Fjärilar
backsvala	<i>Riparia riparia</i>	Fåglar
berguv	<i>Bubo bubo</i>	Fåglar
brushane	<i>Calidris pugnax</i>	Fåglar
gråtrut	<i>Larus argentatus</i>	Fåglar
gulhämpling	<i>Serinus serinus</i>	Fåglar
havstrut	<i>Larus marinus</i>	Fåglar
hussvala	<i>Delichon urbicum</i>	Fåglar
höksångare	<i>Curruca nisoria</i>	Fåglar
kricka	<i>Anas crecca</i>	Fåglar
kungsfiskare	<i>Alcedo atthis</i>	Fåglar
stare	<i>Sturnus vulgaris</i>	Fåglar

stjärtand	<i>Anas acuta</i>	Fåglar
svarthakad buskskvätta	<i>Saxicola rubicola</i>	Fåglar
svärta	<i>Melanitta fusca</i>	Fåglar
tofsvipa	<i>Vanellus vanellus</i>	Fåglar
östersjötrut	<i>Larus fuscus fuscus</i>	Fåglar
grönfläckig padda	<i>Bufotes viridis</i>	Grod- och kräldjur
hasselnok	<i>Coronella austriaca</i>	Grod- och kräldjur
sandödla	<i>Lacerta agilis</i>	Grod- och kräldjur
slät lövbarkskinnbagge	<i>Aneurus laevis</i>	Halvvingar
sydlig gräsängsskinnbagge	<i>Acetropis gimmerthalii</i>	Halvvingar
	<i>Hieracium maurostylum</i>	Kärlväxter
backsilja	<i>Peucedanum oreoselinum</i>	Kärlväxter
backsippa	<i>Pulsatilla vulgaris</i>	Kärlväxter
engelsk skörbjuggsört	<i>Cochlearia officinalis subsp. anglica</i>	Kärlväxter
fintandat björnbär	<i>Rubus decurrentispinus</i>	Kärlväxter
fläckmaskros	<i>Taraxacum maculigerum</i>	Kärlväxter
grenigt kungsljus	<i>Verbascum lychnitis</i>	Kärlväxter
hartmansstarr	<i>Carex hartmanii</i>	Kärlväxter
hedblomster	<i>Helichrysum arenarium</i>	Kärlväxter
hjärtstilla	<i>Leonurus cardiaca</i>	Kärlväxter
klotgräs	<i>Pilularia globulifera</i>	Kärlväxter
knippnejlika	<i>Dianthus armeria</i>	Kärlväxter
knutört	<i>Lysimachia minima</i>	Kärlväxter
knärot	<i>Goodyera repens</i>	Kärlväxter
knölval	<i>Lathyrus tuberosus</i>	Kärlväxter
krypfloka	<i>Helosciadium inundatum</i>	Kärlväxter
kråkkrossing	<i>Lepidium coronopus</i>	Kärlväxter
källgräs	<i>Catabrosa aquatica</i>	Kärlväxter
ljungsnärja	<i>Cuscuta epithimum</i>	Kärlväxter
luddvicker	<i>Vicia villosa</i>	Kärlväxter
lungrot	<i>Blitum bonus-henricus</i>	Kärlväxter

mörk solvända	<i>Helianthemum nummularium subsp. obscurum</i>	Kärlväxter
plattsäv	<i>Blysmus compressus</i>	Kärlväxter
rapunkelklocka	<i>Campanula rapunculus</i>	Kärlväxter
revig blodrot	<i>Potentilla anglica</i>	Kärlväxter
revsvalting	<i>Baldellia repens</i>	Kärlväxter
rödsäv	<i>Blysmus rufus</i>	Kärlväxter
slättergubbe	<i>Arnica montana</i>	Kärlväxter
smalruta	<i>Thalictrum simplex subsp. tenuifolium</i>	Kärlväxter
smalstäkra	<i>Oenanthe lachenalii</i>	Kärlväxter
småvänderot	<i>Valeriana dioica</i>	Kärlväxter
stortimjan	<i>Thymus pulegioides</i>	Kärlväxter
svarttandad maskros	<i>Taraxacum duplidentifrons</i>	Kärlväxter
taggkörvel	<i>Anthriscus caucalis</i>	Kärlväxter
vanlig backsippa	<i>Pulsatilla vulgaris subsp. vulgaris</i>	Kärlväxter
vanlig luddvicker	<i>Vicia villosa subsp. villosa</i>	Kärlväxter
vildris	<i>Leersia oryzoides</i>	Kärlväxter
vit kattost	<i>Malva pusilla</i>	Kärlväxter
väggört	<i>Parietaria officinalis</i>	Kärlväxter
åkersyska	<i>Stachys arvensis</i>	Kärlväxter
ålgräs	<i>Zostera marina</i>	Kärlväxter
äkta hjärtstilla	<i>Leonurus cardiaca subsp. cardiaca</i>	Kärlväxter
ängssalvia	<i>Salvia pratensis</i>	Kärlväxter
almlav	<i>Gyalecta ulmi</i>	Lavar
blek kraterlav	<i>Gyalecta flotowii</i>	Lavar
blå halmlav	<i>Lecanora sublivescens</i>	Lavar
ekpricklav	<i>Inoderma byssaceum</i>	Lavar
ekspik	<i>Calicium quercinum</i>	Lavar
fläderlundlav	<i>Bacidia friesiana</i>	Lavar
gulvit blekspik	<i>Sclerophora pallida</i>	Lavar
klosterlav	<i>Biatoridium monasteriense</i>	Lavar
kortskaftad parasitspik	<i>Sphinctrina turbinata</i>	Lavar



kustskinnlav	<i>Scytinium magnussonii</i>	Lavar
liten blekspik	<i>Sclerophora peronella</i>	Lavar
parasitsotlav	<i>Acolium sessile</i>	Lavar
rosa lundlav	<i>Bacidia rosella</i>	Lavar
röd pysslinglav	<i>Thelopsis rubella</i>	Lavar
ädelkronlav	<i>Gyalecta carneola</i>	Lavar
flikbålmossa	<i>Riccardia multifida</i>	Mossor
	<i>Hypebaeus flavipes</i>	Skalbaggar
	<i>Paederus littoralis</i>	Skalbaggar
	<i>Carphacis striatus</i>	Skalbaggar
	<i>Cryptolestes duplicatus</i>	Skalbaggar
becksvart kamklobagge	<i>Prionychus melanarius</i>	Skalbaggar
bokblombeck	<i>Stictoleptura scutellata</i>	Skalbaggar
bokskogsrödbeck	<i>Ampedus rufipennis</i>	Skalbaggar
brokig barksvartbagge	<i>Corticeus fasciatus</i>	Skalbaggar
brun lövsvampbagge	<i>Tetratoma desmarestii</i>	Skalbaggar
dubbelhårig brunbagge	<i>Anisoxya fuscula</i>	Skalbaggar
eksköldlusbagge	<i>Anthribus fasciatus</i>	Skalbaggar
enbandad brunbagge	<i>Hypulus bifasciatus</i>	Skalbaggar
entandad plattbagge	<i>Silvanus unidentatus</i>	Skalbaggar
färgkullaspetsvivel	<i>Omphalapion dispar</i>	Skalbaggar
hårdyngbagge	<i>Trichonotulus scrofa</i>	Skalbaggar
ljus nästingbagge	<i>Choragus sheppardi</i>	Skalbaggar
läderbagge	<i>Osmoderma eremita</i>	Skalbaggar
matt mjölbagge	<i>Tenebrio opacus</i>	Skalbaggar
mulmknäppare	<i>Elater ferrugineus</i>	Skalbaggar
månhornsbagge	<i>Copris lunaris</i>	Skalbaggar
platt punktbagge	<i>Clypastraea pusilla</i>	Skalbaggar
rombjättekäppare	<i>Stenagostus rhombeus</i>	Skalbaggar
rödvingad kapuschongbagge	<i>Bostrichus capucinus</i>	Skalbaggar
stillfröjordloppa	<i>Psylliodes tricolor</i>	Skalbaggar

stillfrövivel	<i>Ceutorhynchus sophiae</i>	Skalbaggar
större vedvivel	<i>Cossonus parallelepipedus</i>	Skalbaggar
trubbtandad lövknäppare	<i>Crepidophorus mutilatus</i>	Skalbaggar
vägsenapsjordloppa	<i>Psylliodes cuprea</i>	Skalbaggar
fläckig myrlejonslända	<i>Euroleon nostras</i>	Sländor
prickig flinkspindel	<i>Phrurolithus minimus</i>	Spindeldjur
tapetserarspindel	<i>Atypus affinis</i>	Spindeldjur
sotsandbi	<i>Andrena nigrospina</i>	Steklar
stäppsmalbi	<i>Lasioglossum brevicorne</i>	Steklar
svartblodbi	<i>Sphecodes niger</i>	Steklar
väddgökbi	<i>Nomada armata</i>	Steklar
almdyna	<i>Hypoxylon vogesiacum</i>	Storsvampar
almsprängticka	<i>Inonotus ulmicola</i>	Storsvampar
apelticka	<i>Aurantiporus fissilis</i>	Storsvampar
bleksopp	<i>Hemileccinum impolitum</i>	Storsvampar
finporing	<i>Gloeoporus pannocinctus</i>	Storsvampar
hjärntryffel	<i>Hydnobolites cerebriformis</i>	Storsvampar
lilamusseron	<i>Rugosomyces ionides</i>	Storsvampar
liten diskröksvamp	<i>Disciseda candida</i>	Storsvampar
lundtaggsvamp	<i>Hydnellum ioeides</i>	Storsvampar
lundticka	<i>Loweomyces wynneae</i>	Storsvampar
pälsticka	<i>Inonotus hispidus</i>	Storsvampar
saffransfingersvamp	<i>Ramariopsis crocea</i>	Storsvampar
silkeslidskivling	<i>Volvariella bombycina</i>	Storsvampar
skillerticka	<i>Inonotus cuticularis</i>	Storsvampar
sommarsopp	<i>Butyriboletus fechtneri</i>	Storsvampar
svartfjällig musseron	<i>Tricholoma atosquamosum</i>	Storsvampar
sydlig platticka	<i>Ganoderma adpersum</i>	Storsvampar
tårticka	<i>Pseudoinonotus dryadeus</i>	Storsvampar
violgubbe	<i>Gomphus clavatus</i>	Storsvampar
	<i>Ctenophora ornata</i>	Tvåvingar

	<i>Villa longicornis</i>	Tvåvingar
getingrovfluga	<i>Asilus crabroniformis</i>	Tvåvingar
rödhornad mulmstyltfluga	<i>Systemus scholtzi</i>	Tvåvingar

## **(6) Updated list of the most important bibliographic references (in an appendix)**

[List the most important publications and articles relevant to the biosphere reserve.]

### **Reports published by Länsstyrelsen Blekinge:**

<i>Inventory and monitoring of species</i>	<i>Report no.</i>
Utklipporna-Groddjur och reproduktionshabitat maj 2010	2011:1
Varför minskar ejdern ( <i>Somateri mollissima</i> ) på Utklippan och i övriga Östersjön?	2011:2
Grönfläckig padda i Blekinge 2011 – Utplantering på Flaskär	2012:2
Groddjuren på Utklipporna – Populationerna på Norraskär och Mellanskär, reproduktionsframgång samt återfynd på Södraskär	2012:3
Projekt strömstare i Blekinge - Sammanställning av inventering 1996-2010	2012:6
Forsärlan - En studie inom det regionala miljöövervakningsprogrammet 2002-2012	2012:14
Övervakning av epifytiska indiaktorarter i utvalda nyckelbiotoper.	2013:5
Grönfläckig padda i Blekinge 2012 - Utplantering på Flaskär	2013:7
Groddjuren på Utklipporna - Sex arter och två hybrider	2013:8
Inventering av fjärilar och vedlevande skalbaggar i Gö naturreservat 2012	2013:13
Grönfläckig padda i Blekinge 2013 – Utplantering samt uppföljning på Flaskär	2013:14
Epifyter i bokskog -en inventeringsrapport från miljöövervakning 2012-2013	2013:20
Grynig påskrislav <i>Stereocaulon incrustatum</i> - Åtgärder och aktiviteter 2013-2016	2014:1
Inventering av trumgräshoppa i Blekinge 2012-2014	2014:14
Flodpärlmusslan i Bräkneån – En värdfiskstudie inför populationsförstärkningsåtgärder	2014:15
Kentsk tärna i Blekinge 2007-2014	2014:16

Nya utsättningslokaler för gröNFLäckig padda i Blekinge - Inventeringsresultat och förslag	2014:19
Övervakning av sandödlor och dess livsmiljöer i Blekinge 2014	2014:21
Förvaltningsplan för rovdjur i Blekinge län 2015–2019	2015:9
Ejder på Utklippan	2015:12
Stormusselinventering i Mörrumsån 2015	2016:4
Groddjuren på Utklipporna – uppföljningsresultat och populationstrender 2007-2016	2017:2
Häckande strandängsfåglar i Blekinge län 2009-2016	2017:6
Den kentska tärnan i västra Blekinge 2017 samt röjning och minkjakt på Falkaholmen	2017:22
Inventering av faunadepåer i Blekinge 2017	2018:3
Kentsk tärna i Blekinge 2015-2018	2018:28
Inventering av vildbin i Blekinge 2017	2020:1
Dyngbaggar i Blekinge 2018-2019	2020:2
Inventering av skalbaggar knutna till tall i 10 utvalda naturvårdsobjekt i Blekinge län sommaren 2018	2020:3

### ***Climate and energy***

Klimatförändringar i Blekinge	2011:5
Klimatanalys för Blekinge län	2012:1
Färdplan 2050-Hur kan Blekinge bidra till ett samhälle utan utsläpp av växthusgaser år 2050	2012:9
Framtida högvatten - Scenarier för havsnivå och översvämningssområden i Blekinge 2100	2012:11
Energibalans 2010 Blekinge län	2012:15
Klimat- och Energistrategi för Blekinge – Åtgärder 2013-2016 med utblick till 2020	2013:21
Extrema vattenstånd i Blekinge	2014:7
Solenergipotentialen för Blekinges bebyggelse enligt två framtidsscenarier	2014:10
Anpassning till ett förändrat klimat - Blekinges regionala handlingsplan	2014:12
Handlingsplan för Bioenergi Blekinge län	2014:17

Mer bioenergi i Blekinge – Uppdatering och komplettering av underlag till handlingsplan	2014:18
Blekinges miljömåltid Ekologisk mat	2014:22
Illustrerade energibalanser för Blekinges kommuner	2016:14
Kombinerade sannolikheter för hög havsnivå och höga flöden i Blekinge län, idag och i framtiden	2017:12
Klimat och energistrategi för Blekinge – Åtgärder år 2017-2020	2018:4
Solelpotentialen i Blekinge per kommun	2018:11
Klimat- och energistrategi för Blekinge. Med sikte mot ett klimatneutralt Blekinge	2019:15
Biogas i ett hållbart Blekinge	2019:16

### ***Cultural environment***

Vattenanknutna kulturmiljöer vid Silletorpsån	2015:4
Vattenanknutna kulturmiljöer vid Mieån	2015:13
Vattenanknutna kulturmiljöer vid Mörrumsån	2016:6
Blekinges kulturmiljöer – översvämning till följd av ett förändrat klimat	2016:12
Långörens lotshus, Vård- och underhållsplan	2017:14
Vattenanknutna kulturmiljöer vid Bräkneån	2017:20
Förstudie inför översyn av världsarvet Örlogsstaden Karlskronas general- och managementplan	2018:8
Vattenanknutna kulturmiljöer i Lyckebyån	2019:8
Världsarvet 20 år	2019:19
Riksintressen under vatten	2019:20
Kulturmiljöprogram för Blekinge län	2020:24
Riksintressen under vatten	2020:26

### ***Limnic studies***

Naturvärdesbedömning av vattendrag i Blekinge län 2013. System Aqua bedömning av sju vattendrag.	2013:22
Biotopvårdsplan för Bräkneåns södra del	2014:6
Rapport - Vattenbalansberäkningar i Blekinge, Lyckebyån	2018:5

Mörrumsån förstudie fiskräkning	2018:25
Strategi för ny fiskräkning i Mörrumsån	2018:26
<b><i>Marine surveys</i></b>	
Inventering av sikyngel i Blekinge skärgård 2011	2011:11
Inventering av sikyngel i Blekinge skärgård 2013	2013:23
Inventering av fiskyngel vid Blekingekusten och nordöstra Skånes kust	2014:3
Inventering av torrlagda havsvikar i Blekinge	2014:24
Nätprovfsfiske i Valjeviken – Undersökningar 2015 för Länsstyrelsen i Blekinge län	2015:20
Inventering och kartläggning av blåmusselbottnar i Blekinge hösten 2015	2015:21
Marin inventering av naturvärden vid Utlängan 2016	2016:16
Naturvärdesbedömning för interkomunal översiktsplanering och grön infrastruktur för havet i Blekinge	2016:20
Näringsbelastning på Brunnsviken -utredning av befintlig påverkan samt utredningsförslag	2016:23
Restaurering av två invallade havsvikar i Blekinge Utredning av förutsättningar och förväntat resultat	2016:24
Marin inventering av Listerlandets nabbar i Blekinges skärgård 2014-2016	2017:8
Kartläggning av Blekingekustens ekosystemtjänster	2017:23
Inventering av sikyngel vid Blekingekusten 2017	2017:24
Marin inventering av naturvärden vid Ungskär - Vieskär 2017	2018:9
Kartläggning av kustfiskbestånd vid Biskopmåla- Bräkne Hoby samt vid Utlängan Mellanskär. 2018	2018:21
Marin inventering av naturvärden vid Järkö-Ornö och Uttorp 2018	2018:22
Marin inventering av naturvärden vid Flaskär-Kållefjärden 2018	2018:23
Marin inventering av Natura 2000 områden i Blekinge 2018.	2018:29
Provfsfiske i Tromtö och Listerby Skärgård	2018:31
Provfsfiske utanför Hanö -Listershuvud	2018:32
Inventering och övervakning av vegetation och fiskyngel vid Blekingekusten 2017	2019:1
Riktlinjer för tävlingsfiske i Blekinge	2019:10
Undersökning av fritidsfisket i Blekinge	2019:11

Inventering av fisk vid Gåsefjärden i Karlskrona skärgård med nätprovfiske och eDNA	2019:21
Inventering av marina värden vid Hanö och Listershovud.	2019:22
Marin videokartering runt Tärnö 2019 – inventering av marina värden	2019:23
Inventering av marina värden vid Hanö och Listershovud	2020:25

### ***Development and planning***

Till landet! Kustnära fritidshusbygge i Blekinge	2011:12
Kustbebyggelseprojektet Slutrapport skede 2 - Blekinge och Västernorrland	2012:10
Utredning av möjlig våtmark i anslutning till pumpstationen vid Vesankanalen i Sölvesborgs kommun	2016:22
Mat & Livsmedelsstrategi Blekinge 2018–2025	2018:6
Plattform för arbetet med grön infrastruktur i Blekinge län	2019:14

### ***Environmental objectives and environmental monitoring***

Utveckling av en miljögiftsindikator – kiselalger i rinnande vatten	2012:12
Ett hållbart Blekinge- Regionalt åtgärdsprogram för miljö kvalitetsmålen 2013-2016	2013:6
Regionalt miljöövervakningsprogram för Blekinge län 2015-2020	2014:20
Våtmark i Åbyåns nedre lopp	2015:7
Havsstrandängar i Blekinge- Förlust och bevarande av habitatet vid en förändrad havsnivå	2015:14
Ett hållbart Blekinge – Regionalt åtgärdsprogram för miljö kvalitetsmålen 2017-2020	2017:19
Satellitbaserad övervakning av våtmarker – Slutrapport södra Sverige	2018:01
Hydromorfologiskt åtgärdsprogram för Lyckebyåns avrinningsområde	2019:7
Hydromorfologiskt åtgärdsprogram Lillåns avrinningsområde	2019:12
Miljömålsuppföljningen för 2020	2020:29

## **(7) Other supporting documents**

## 10. ADDRESSES

### 10.1 Contact address for the biosphere reserve

[Authority, organisation, or other unit that acts as a contact and to which all correspondence within the world network for biosphere reserves should be sent.]

Name: Biosphere Reserve Blekinge Arkipelag

Street or postal address: Kurpromenaden 4

Postal code and city: 372 36 Ronneby

Country: Sweden

Phone: +46(0)70 – 63 22 545 alt. +46(0)70 – 852 23 33

E-mail address: info@blekingearkipelag.se

Websites: <http://blekingearkipelag.se>

### 10.2. Administratively responsible unit for core areas

Name: Länsstyrelsen Blekinge

Street or postal address: Skeppsbrokajen 4

Postal code and city: 371 86 Karlskrona

Country: Sverige

Phone: +46(0)10 – 224 00 00

E-mail address: blekinge@lansstyrelsen.se

Website: [www.lansstyrelsen.se/blekinge](http://www.lansstyrelsen.se/blekinge)

### 10.3 and 10.4 Administratively responsible unit for buffer zones and development areas

When it comes to Swedish biosphere reserves and Blekinge Arkipelag, the right administrative unit may depend on the issue. Different matters can belong to national authorities, municipalities, Länsstyrelsen, or the biosphere office.

Länsstyrelsen Blekinge (the County Administrative Board): [www.lansstyrelsen.se/blekinge](http://www.lansstyrelsen.se/blekinge)

The municipality of Karlshamn: [www.karlshamn.se](http://www.karlshamn.se)

The municipality of Ronneby: [www.ronneby.se](http://www.ronneby.se)

The municipality of Karlskrona: [www.karlskrona.se](http://www.karlskrona.se)

Naturvårdsverket (the Swedish Environmental Protection Agency): [www.naturvardsverket.se](http://www.naturvardsverket.se)

Skogsstyrelsen (the Swedish Forest Agency): [www.skogsstyrelsen.se](http://www.skogsstyrelsen.se)

Havs- och Vattenmyndigheten (the Swedish Agency for Marine and Water Management): [www.havochvatten.se](http://www.havochvatten.se)

**Appendix I to the evaluation of the biosphere reserve, January 2013**  
**MABnet's catalogue of biosphere reserves**



## **Administrative tasks**

**Country:** Sweden

**Name of the biosphere reserve:** Biosphere Reserve Blekinge Arkipelag

**Year of appointment:** 2011

### **Administrative authorities:**

Länsstyrelsen Blekinge (the County Administrative Board): [www.lansstyrelsen.se/blekinge](http://www.lansstyrelsen.se/blekinge)

The municipality of Karlshamn: [www.karlshamn.se](http://www.karlshamn.se)

The municipality of Ronneby: [www.ronneby.se](http://www.ronneby.se)

The municipality of Karlskrona: [www.karlskrona.se](http://www.karlskrona.se)

Havs- och Vattenmyndigheten (the Swedish Agency for Marine and Water Management):

[www.havochvatten.se](http://www.havochvatten.se)

Naturvårdsverket (the Swedish Environmental Protection Agency): [www.naturvardsverket.se](http://www.naturvardsverket.se)

Skogsstyrelsen (the Swedish Forest Agency): [www.skogsstyrelsen.se](http://www.skogsstyrelsen.se)

**Contact person:** Coordinator Mattias Holmquist or chairman Carl-Martin Lanér

**Contact address:** Biosphere Reserve Blekinge Arkipelag

Street or postal address: Kurpromenaden 4

Postal code and city: 372 36 Ronneby

Country: Sweden

Phone: +46(0)70 – 63 22 545 alt. +46(0)70 – 852 23 33

E-mail address: [info@blekingearkipelag.se](mailto:info@blekingearkipelag.se)

**Related links:** Websites: <http://blekingearkipelag.se>

**Social networks:** See section 6.5.4

## **Description**

### **General description:**

Blekinge Arkipelag is the first biosphere reserve in Sweden with a focus on Baltic Sea issues. The area comprises of mostly Blekinge archipelago and coastal landscape within the municipalities Karlshamn, Ronneby and Karlskrona. 156,000 ha consist of water and 54,000 ha of land. Here is the world heritage Örlogsstaden Karlskrona, castles and fortifications from the Danish era, remains from the stonemasonry era, wooden boat yards and the small-scale coastal fishing. The mosaic-like, slightly undulating landscape includes a number of different ecosystems. Cultivated landscapes, the typical deciduous forest coast with oak groves, the shallow bays, the many islands, the skerries, and the watercourses give the area its character and fantastic biodiversity.

Blekinge Arkipelag was named a biosphere reserve for its high natural and cultural values by the UN agency Unesco in 2011. This means that together with the municipalities of Karlshamn, Karlskrona and Ronneby, we have a unique area to administer for the future. Nature and culture must be preserved at the same time as business and society must be able to develop in a long-term sustainable way. Our vision is that Blekinge Arkipelag should be a sea of opportunities, without being limited by short-sightedness and negative human impact. Therefore, new methods are being tested and new knowledge is being sought to show examples of how we can preserve the nature area while people in three cities live and work here. It is based on a local commitment to sustainable societal

development. In this way, our biosphere reserve is an arena for implementing, among other things, the global sustainability goals in Agenda 2030.

Blekinge Arkipelag works, among other things, to:

- Preserve biological diversity through a grazed and open landscape, as well as through restored wetlands and watercourses that, among other things, contribute to reduced eutrophication of the Baltic Sea.
- Develop infrastructure and sustainable products to make the biosphere reserve a sustainable outdoor destination with focus on kayaking, hiking, sailing, and cycling.
- Support research on, among other things, fish in the Baltic Sea and on how the water resource is used most wisely.

**Main ecosystem type:** Deciduous forest, cultivated landscape with natural pastures and oak groves, inner archipelago with shallow bays, beaches, islands and skerries, outer archipelago and open sea, lakes and streams, coniferous forest

**Main habitat types and land cover classes:** Forest, archipelago, arable land, open sea, buildings

**Bioclimatic zone:** Warm temperate according to Köppen's climate classification

**Location** (latitude and longitude):

Points of the compass	Latitude	Longitude
Most central point	56° 5' 53,53"	15° 25' 25,74"
Northernmost point	56° 19' 22,08"	16° 2' 51,36"
Southernmost point	55° 49' 51,96"	15° 40' 41,52"
Westernmost point	56° 0' 43,20"	14° 31' 58,08"
Easternmost point	56° 18' 16,20"	16° 13' 20,28"

**Total area** (hectares), **Core area(s)**, **Buffer zone(s)**, **Development area(s)**:

	Current situation, at evaluation 2021	Proposed changes with Sölvesborg municipality
Area for terrestrial core area(s)	5 900 ha	7 400 ha
Area for terrestrial buffer zone(s)	16 700 ha	20 900 ha
Area for terrestrial development area(s)	34 400 ha	43 700 ha
Area for marine/limnic core area(s)	29 200 ha	34 700 ha

Area for marine/limnic buffer zone(s)	28 100 ha	30 800 ha
Area for marine/limnic development area(s)	98 200 ha	122 000 ha
<b>Total:</b>	<b>212 500 ha</b>	<b>259 500 ha</b>

**Other existing zoning:** None

**Elevation range.** On land: 125,5 m above sea level - 1,5 m below sea level. At sea: 0-40 m sea depth.

**Zoning maps** (see section 2.2.2 and chapter 9 (1) and (2)).

### **Overall goals for the biosphere reserve**

#### **Short description**

To increase learning and commitment for preservation and sustainable development

To reach water in balance as well as a living coast and archipelago with strengthened cultural heritage and preserved cultural history

To preserve biodiversity and maintain intact ecosystem services

To create sustainable businesses and thriving tourism

To ensure health and vitality in sustainable societies with strengthened cycles, increased attractiveness and a healthy local environment

### **Research**

#### **Short description**

Research is ongoing on increased morbidity and mortality of Baltic salmon and cod in collaboration with Stockholm University. Research on how communication around invasive plants can be improved is also carried out in collaboration with Sveriges Lantbruksuniversitet SLU (Swedish University of Agricultural Sciences). We have ongoing research to develop a model for optimized irrigation and solar production on agricultural land in collaboration with Mälardalen University. We plan to be part of a research and development project for sustainable transport in collaboration with BTH. In addition, it would be good to do research on, for example, the nature of coastal water and drinking water, and what the biosphere activities should prioritize in a longer perspective seen from the preservation and sustainability aspect.

### **Follow-up and monitoring**

#### **Short description**

Monitoring of terrestrial, limnic, and marine environments and species will continue to be primarily performed by Länsstyreslen in Blekinge. Länsstyreslen's actionprogram and competence often form the basis for the projects that Blekinge Arkipelag carries out with a bearing on the conservation of species and environments.

Follow-up of Blekinge Arkipelag's work and what else is done for preservation and sustainable development in the biosphere reserve is done continuously through updates of the association's activity plan and through annual reports including membership numbers, followers on social media, downloads of the app ARK56, completed projects and achieved results. In the Collaboration Group, it should be possible to establish more coordinated follow-up work for the biosphere reserve in general. It is also desirable that the wetland establishments that Blekinge Arkipelag carries out are followed up in various respects.

**Specific variables (fill in the table below and tick the relevant parameters)**

<b>Abiotic</b>		<b>Biodiversity</b>	
Abiotiska faktorer	X	Skogsplantering/återplantering	x
Surt nedfall/atmosfäriska faktorer	X	Alger	
Luftkvalitet	X	Främmande och/eller invasiva arter	x
Lufttemperatur	X	Amfibier	x
Klimat, klimatologi	X	Arida och semiarida system	
Föroreningar	X	Autekologi	
Torka	X	Strandsystem/system med mjukbotten	x
Erosion		Bentos	
Geologi	X	Aspekter av biologisk mångfald	x
Geomorfologi	X	Biogeografi	
Geofysik		Biologi	x
Glaciologi		Bioteknik	
Global förändring	X	Fåglar	x
Grundvatten	X	Boreala skogar	x
Habitatfrågor	X	Uppfödning	
Tungmetaller	X	Kustsystem/marina system	x
Hydrologi	X	Samhällsstudier	x
Indikatorer	X	Bevarande	x
Meteorologi	X	Korallrev	
Modellering		Degraderad mark (t ex erosion)	
Övervakning/metodik		Ökenspridning	
Näringsämnen	X	Sanddynssystem	
Fysisk oceanografi		Ekologi	x
Miljöförstöring, miljöfarliga ämnen	X	Ekosystembedömning	x
Slamavsättning/sedimentering		Ekosystems funktion/struktur	x
Jordmån		Ekosystemtjänster	x
Speleologi		Ekotoner	
Topografi		Inhemska arter	x
Toxikologi		Etologi	
UV-strålning		Evapotranspiration	x
		Evolutionära	
		Fauna	x
		Bränder/brandekologi	
		Fiskar	x
		Flora	x
		Skogssystem	x
		Färskvattensystem	x
		Svampar	x
		Genetiska resurser	

		Genetiskt modifierade organismer	
		Hemträdgårdar	x
		Indikatorer	x
		Ryggradslösa djur	x
		Ösystem/östudier	x
		Lagunsystem	
		Lavar	x
		Däggdjur	x
		Mangrovesystem	
		System av medelhavstyp	
		Mikroorganismer	x
		Migrerande populationer	x
		Modellering	
		Övervakning/metodik	x
		Bergs- och höglandssystem	
		Naturresurser och andra resurser	x
		Naturmedicinprodukter	
		Störningar och återhämtningsförmåga	x
		Skadedjur/sjukdomar	
		Fenologi	
		Fytosociologi/ordning	
		Plankton	x
		Växter	x
		Polsystem	
		Pollinering	x
		Populationsgenetik/-dynamik	
		Produktivitet	
		Sällsynta/utrotningshotade arter	x
		Reptiler	x
		Återställning/rehabilitering	x
		(Åter)införande av arter	x
		Artinventering	x
		Subtropiska/tempererade regnskogar	
		Taxonomi	
		Skogar i tempererade klimat	
		Grässlätter i tempererade klimat	
		Tropiska torra skogar	
		Tropiska grässlätter och savanner	
		Tropiska fuktiga skogar	
		Tundrasystem	
		Växtlighetsstudier	
		Vulkaner/geotermiska system	
		Våtmarkssystem	x
		Djurliv	x

		<b>Integrated monitoring</b>	
Jordbruk/andra produktionssystem	x	Biogeokemiska undersökningar	
Agroforestry		Bärförmåga	
Antropologiska studier		Klimatförändring	x
Vattenbruk	x	Konfliktanalys/-lösning	

Arkeologi	x	Ekosystemmetod	
Bioprospektering		Utbildning och folkbildning	x
Kompetensutveckling	x	Miljöförändringar	x
Hemindustri		Geografiska informationssystem (GIS)	x
Kulturella aspekter		Effekt- och riskstudier	x
Demografi		Indikatorer	
Ekonomiska studier		Indikatorer på miljö kvalitet	x
Ekonomiskt viktiga arter	x	Infrastrukturutveckling	
Energi/strömningssystem		Institutionella och juridiska aspekter	
Etnologi/seder/kunskap	x	Integrerade undersökningar	
Ved	x	Tvåvetenskapliga undersökningar	x
Fiske	x	Besittningsrätt till mark	
Skogsbruk	x	Landbruk/marktäckning	
Människors hälsa	x	Inventering/övervakning av landskap	x
Migration	x	Skötsel frågor	x
Jakt	x	Kartering	x
Indikatorer		Modellering	
Indikatorer på hållbarhet	x	Övervakning/metodik	x
Frågor som rör urfolk		Planerings- och zoneringsåtgärder	
Industri		Policyfrågor	
Försörjningsåtgärder		Fjärranalys	
Boskap och deras effekter	x	Landsbygdssystem	
Lokalt deltagande		Hållbar utveckling/hållbart bruk	
Mikrokrediter		Gränsöverskridande frågor/åtgärder	
Gruvdrift		Stadssystem	
Modellering		Undersökning/övervakning av	
Övervakning/metodik			
Naturliga faror			
Skogsprodukter andra än timmer			
Pastoralism			
Förhållanden mellan människa och natur	x		
Fattigdom			
Ekonomi/marknadsföring med hög kvalitet			
Rekreation	x		
Resursbruk			
Kvinnors roll			
Heliga platser			
Småföretagsinitiativ			
Sociala/socioekonomiska aspekter			
Intressenters intressen			
Turism	x		
Transporter	x		

## Appendix II to the evaluation of the Biosphere Reserve, January 2013

### Marketing and communication materials for the biosphere reserve

*Attach some marketing material related to the biosphere reserve, preferably high quality photos and/or short film clips about the biosphere reserve so that the secretariat can prepare suitable files for press events. This requires a number of high-resolution photographs (300 dpi) with information about the photographer and captions as well as video images (working copies) without comments and subtitles in professional quality - only DV CAM or BETA.*

On Blekinge Arkipelag's website there are pictures and videos that can be used with reference to Biosphere Reserve Blekinge Arkipelag: <http://blekingearkipelag.se>

UNESCO Photo Library

### Bureau of Public Information

#### AGREEMENT GRANTING NON-EXCLUSIVE RIGHTS Reference:

1. a) I the undersigned, copyright-holder of the above mentioned photo(s) hereby grant to UNESCO free of charge the non-exclusive right to exploit, publish, reproduce, diffuse, communicate to the public in any form and on any support, including digital, all or part of the photograph(s) and to licence these rights to third parties on the basis of the rights herein vested in UNESCO  
  
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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: Mattias Holmquist, Kurpromenaden 4, 372 36 Ronneby, Sweden

Signature :

Date : 24 juni 2021

(Sign, return to UNESCO two copies of the Agreement and retain the original for yourself)

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## **Appendix III to the Biosphere Reserve Periodic Review, January 2013**

### **The Statutory Framework of the World Network of Biosphere Reserves**

#### **Introduction**

Within UNESCO's Man and the Biosphere (MAB) program, 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 Program, 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 program 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) programs 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 program 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 program 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.