



## Eelgrass shoots piloting for new field methods

This summer, CoastClim researchers will start tackling several new questions on the path of revealing if the coastal zone is a carbon sink or source. Upcoming field projects include measuring greenhouse gases in different habitats, such as eutrophied bays in Sweden and very shallow waters in Finland, as well as more mechanistic experiments. Get a deeper insight by reading about a few projects below!

*Novel project in Finland:*

## Quantifying BVOCs from coastal underwater vegetation

This summer, CoastClim researchers will start tackling questions regarding BVOC (biogenic volatile organic compounds) emissions from coastal ecosystems. Specifically, the team is going to investigate how much and what kind of BVOCs two common Baltic Sea macrophytes (eelgrass *Zostera marina* and bladderwrack *Fucus vesiculosus*) emit. Measuring BVOC concentrations in seawater is challenging, and therefore an important objective is also to develop an optimal method with which marine BVOCs can be identified and quantified accurately. These first experiments will be performed in a controlled environment (pictured above) at Tvärminne Zoological Station, but later on the team aims to develop protocols with which BVOC emissions can be measured *in situ* in the Baltic Sea and other marine areas.

### ***What are BVOCs?***

Biogenic Volatile Organic Compounds (BVOC) are released by all living things, and especially photosynthetic organisms emit these compounds in large quantities. It is well known that BVOCs emitted from terrestrial environments (e.g., forests), can contribute to the formation of organic aerosols in the atmosphere and thus impact cloud formation and climate. However, many uncertainties remain concerning the types and amounts of marine BVOC emissions and what impact these can have on atmospheric aerosol formation.

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*Watch a video of field work!*

### **Join researchers on a sampling day in Sandviken Bay, Sweden**

Is there a difference between healthy and degraded coastal bays in terms of greenhouse gas emissions and uptake? To answer this question, researchers from different disciplines are working together carrying out a range of measurements along the Swedish coast. Come with us to Sandviken Bay for the first sampling day of a new sampling campaign!

These measurements will continue throughout the year and only then will the researchers have enough data to assess whether Sandviken is a carbon sink (taking up greenhouse gases over the annual cycle) or a carbon source (emitting more gases over the year than is taken up).







*Project on rarely studied habitats in Finland:*

## **What is the role of the very shallow coastal zone for climate change?**

This is the question CoastClim's ecologists Janina, Anna, Leena and Alf, together with biogeochemist Nicolas-Xavier will investigate.

*"We will measure the greenhouse gas fluxes from two shallow, bare sediment sites to determine whether these ecosystems are a carbon sink or a source, and how it varies with season" the scientists say.*

The experiments are done at about knee-depth, since these very shallow ecosystems are understudied and usually fall in between the scopes of both marine and terrestrial research.

The researchers focus on bare sediment sites, which are covered with microphytobenthos, that is microscopic algae living on the sediment surface. They aim to reveal the role of the microphytobenthos for primary production, secondary producers and carbon storage in these seasonally variable habitats. In addition, greenhouse gas fluxes are measured. All measurements are done at two sites differing in organic loading, to explain which habitat is more effective at carbon storage and cycling.

It is important to know more about the potential of coastal ecosystems to recycle carbon, and to understand when and why these ecosystems emit greenhouse gases.



*Project on coastal restoration and resilience in a changing climate:*

## **Investigating the link between loss of predatory fish and carbon turnover**

The decline of predatory fish, such as pike and perch and the increase of sticklebacks affects the entire ecosystem. The situation has contributed to turbid bays with more filamentous algae and severe eutrophication symptoms. In an ongoing survey along the Swedish coast, researchers explore the relation between larger populations of predatory fish and possible climate effects.

*"We will investigate if areas where we have a lot of predatory fish have better carbon storing capacities than stickleback-dominated ones where the turnover of carbon is greater, which could instead contribute to climate change", says Johan Eklöf, project leader of FORCE.*

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### **Biology teachers learning new field work skills in Tvärminne!**

Tvärminne Zoological Station and CoastClim is collaborating with the region's upper secondary schools to offer an in-depth course for students interested in natural sciences in autumn 2024.

The course Functional Coastal Ecology provides a deeper understanding of the carbon cycle and its importance for marine

biodiversity. Increased ocean awareness and knowledge of the role of the oceans is central to creating sustainability in how our oceans are valued, understood and managed.



*EU Parliament election:*

### **Swedish result could bring good news for the Baltic Sea**

In Sweden the situation of the Baltic Sea environment got surprisingly much attention in the election campaign, with nearly all Swedish parties expressing concern and presenting proposals for the

Baltic Sea. All the three largest parties included marine issues in their election manifestos,

and although they did it to different extents, this provides a basis for further joint work on marine issues in the European parliament. Photo Daniella Baumann/Mostphotos.

### **CoastClim Event in Helsinki in June**

The funders and supporters of CoastClim got to meet the researchers and listen to the latest results at the CoastClim event in Helsinki in June.

*Thank you to everybody participating!*



### **CoastClim spring meeting in April**

We met at Tvärminne Zoological Station for our Spring Meeting, where we focused on the new interesting results produced, but also on strategic planning for the near and more distant future of CoastClim.

*There are many important questions that need answers!*



### **Busy summer school at Askö**

In the 2024 summer school for Stockholm's CoastClim PhD students, the Askö laboratory provided intensive courses on sampling techniques for deep water and sediments, along with methods for sampling biodiversity and water quality in shallow areas. These practical sessions were complemented by workshops on

science communication, and how to make science matter by translating environmental information into economic values or engaging in EU regulatory processes.

# **Short news at a glance**



- **Congratulations to CoastClim researcher Susanne Kortsch**, who was awarded a Research Fellow grant by the Research Council of Finland! Her research is focusing on the consequences of global warming on coastal ecosystems and food webs.
  - **Summer reading suggestion:** A summary of key measures for a healthy Baltic Sea has been compiled by experts at the Baltic Sea Centre.
  - **New publication** by collaboration, Forsblom et al. (2024) Warming drives phenological changes in coastal zooplankton. Marine Biology
  - **New publication** by collaboration, Żygadłowska et al. (2024) Eutrophication and deoxygenation drive high methane emissions from a brackish coastal system. Environmental Science and Technology
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*Who are we?*

**Meet CoastClim staff:**

### ***Who are you?***

I am Isabell Stenson, science communicator at the Stockholm University Baltic Sea Center and coordinator of the graduate school "[Perspectives on Climate Change in Coastal Seas](#)." I have the privilege of supporting researchers and PhD students in sharing their projects and findings with diverse audiences beyond academia.

### ***What are you doing in CoastClim and why?***

I coordinate the new CoastClim graduate school at Stockholm University, where 17 PhD students from diverse disciplines study the environmental conditions of our coastal areas in a changing climate. They also explore the societal and economic values connected to these environments and what role laws, regulations and political decisions play in how we take care of the coasts. In this transdisciplinary context students as well as staff members discover new ways to integrate research areas, which is exciting to facilitate and observe firsthand. But I do feel particularly passionate about the parts where students develop skills in outreach and how to apply scientific knowledge in society, for instance by engaging in and supporting environmental management and decision-making.

### ***My recommendation to you...***

Is to utilize scientific findings in one of the best ways possible: through a hands-on field guide to the life in the Baltic Sea. In the Swedish version, [Livet i havet](#), some of our leading researchers and communicators present everything you need to know about the marine species you find along the coast. You easily bring it in your phone for a summer day in, on, or by the sea. Similar guides are also available in [Finnish](#) and [English](#).

[Meet the CoastClim team >>](#)

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## **Available position**

### **Senior Researcher with focus on marine microbial environmental genomics**

The Baltic Sea Centre at Stockholm University is looking for a senior researcher with a background in microbial environmental genomics to investigate the function of the coastal zone in the Baltic Sea ecosystem and related feedbacks to the climate system. The researcher will be employed at Stockholm University, but half of their work will be at

SciLifeLab.

The position is with a research group that studies the environmental factors that affect the turnover of carbon and nutrients in the coastal region of the Baltic Sea. Various research techniques will be used, including metagenomics, metatranscriptomics, metabarcoding, coupled genomics-biogeochemistry studies will be performed on environmental samples (water, sediments, etc) as well as in mesocosm studies as part of the CoastClim project performed at the field station Askö (SU).

The candidate must have experience and a strong interest in at least one of the fields below, preferably in combination with a special focus on the coastal zone:

- Microbial environmental genomics
- Link between microbial genomics and biochemical cycles
- Bioinformatic analysis of large-scale metaomics datasets.

Closing date 7.7.2024



## Spread the word!

Do you need information about CoastClim? We have flyers available in three languages: English, Swedish and Finnish. Get in contact with us at [coastclim@helsinki.fi](mailto:coastclim@helsinki.fi)



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