



Newsflash

Since November 2020 **Camilla Sguotti** (work package 1) is co-chair of the Working Group on History of Fish and Fisheries (WGHIST) at the International Council for the Exploration of the Sea (ICES). The Working Group brings together international scientists who study changes in marine and fisheries systems over periods of several decades and even centuries. The WGHIST explores socio-ecological change over time in different geographic regions and across a range of topics and disciplines. Based on the knowledge gained, valuable conclusions can be drawn for today's stock and fisheries management.

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Andreas Kannen (work package 3) was appointed Germany's representative on the ICES Science Committee at the end of February 2021. There, he will build bridges between national and international research - around the research topics of ICES. He has been involved in ICES work since 2006. For six years, he headed the Working Group on Marine Planning and Coastal Zone Management (WGMPCZM). In his new role, he would particularly like to strengthen the perception of the social science perspective.



The first coffee together before the meeting starts, an amused scramble for the best places to plug in the laptop charging cables, a triumphant smile after successfully dialing into the host WLAN: there are certainly many rituals at project meetings. We have missed them in the past months, which were filled with online conferences. That's why we were so happy about the first SeaUseTip meeting in persona with (almost) all partners on October 26 and 27, 2021 in Geesthacht - vaccinated, tested and in good spirits.

In addition to all the topics on our agenda over the two packed days, one very important ritual was of course not to be missed: the posing for a new team photo. You can find out about the other highlights of the past few months in our latest newsletter.

Enjoy reading!

Digital meeting with the steering group

In May, the project team and steering group met for a virtual mid-term meeting. The steering group includes representatives from fisheries, administration, marine spatial planning, nature conservation and offshore wind energy.

For the German fishermen, the past few months have been very challenging: in the first Corona lockdown, important customers such as the catering industry were suddenly absent, and in Morocco, crabs were temporarily no longer peeled. For many of the fishers, this meant a severe drop in sales. The payment of promised Corona funds and the provision of emergency loans were slow in coming. The consequences of Brexit, the full extent of which is not yet foreseeable, and the increasing competition for space due to the advancing expansion of offshore wind energy are also causing increasing concern.

The scientists presented the results of their work to date and then discussed with the steering group representatives the challenge which the changes caused by advancing climate change and ever more intensive human use pose for the socio-ecological system of the North Sea. Together they analysed the strengths and limitations of the models used in SeaUseTip and identified important topics that should be taken into account in further project work.



Strategies of co-use in the North Sea

With the expansion of offshore wind energy in the German Exclusive Economic Zone in the North Sea, numerous fishing grounds will be lost to fisheries in the future. A promising way to compensate for this loss could be strategies of co-use of offshore wind farms. On the one hand, the areas, which are closed to other shipping traffic, could function as protected nursery grounds for important fishery resources, such as cod, lobster or brown crab. On the other hand, so-called spill-over effects could increase the presence of these target species in the immediate vicinity of the parks.

These potentials were investigated by SeaUseTip project leader Vanessa Stelzenmüller together with PhD student Jonas Letschert and other scientists from the Thünen Institute of Sea Fisheries in Bremerhaven. Their focus was on the brown crab, which can potentially be caught by passive pot fishery in the immediate vicinity of wind farms. Near the island of Helgoland, the researchers deployed a total of 205 baited pots. These were recovered after 24 hours and the brown crabs inside were measured, weighed and their sex determined.

Their results indicate that spill-over effects of 300 to 500 meters to the nearest wind turbine occur, i.e. the animals spread from the wind farms to the immediate surroundings. This, in turn, could provide an opportunity for local beam trawlers to profit from an alternative source of income as part of a passive seasonal pot fishery in summer. However, this requires, on the one hand, reliable selling opportunities for the catches and, on the other hand, appropriate legal regulations that allow them to use the crab baskets in the immediate environment of the wind farms.

In September 2021 the team of work package 4 at the Thünen Institute of Sea Fisheries in Bremerhaven welcomed **Rebecca Lauerburg** as a new member. Rebecca, who holds a PhD in fisheries biology, is involved in the evaluation of fisheries adaptation strategies to mitigate the potential impacts of ecological and economic tipping points, and develops recommendations for ecosystem-based and sustainable management together with the project partners.

Year of digital conferences

From June 1 to 4, the World Conference on Natural Resource Modeling took place under the title "Tipping ecological-economic systems towards sustainability". Christian Möllmann (work package 1) was one of the co-organisers. Camilla Sguotti reported as keynote speaker on approaches to understanding the resilience of marine resources.

At the **talk of the Federal Maritime and Hydrographic Agency (BSH)** on June 2, Hermann Held and Benjamin Blanz (work package 2) presented under the title "Sustainable Management of the German Bight: Indicator-based balancing of different use objectives" their results so far in the development of a complex bio-economic model of the socio-ecological system of the North Sea.

Norway lobster: alternative resource for German coastal fisheries

In their current study, the researchers from work package 4 have looked at the development of the Norway lobster fishery in the North Sea since 2000, focusing in particular on the German fleet. Norway lobster is a crayfish species that is an important fishery resource in the North Sea. The habitat-bound animals dig their burrows in soft substrate and form spatially separated populations known as Functional Units (FU) in fisheries management.



There are a total of nine of them in the North Sea. Unlike other

crustaceans, the EU has a catch quota for Norway lobster, which is set in the form of an annual Total Allowable Catch (TAC) for the individual member states.



Once again, the members of work package 2 participated in the **26th Annual Conference of the European Association of Environmental and Resource Economists** from June 23 to 25. Emily Quiroga-Gómez and Benjamin Blanz considered the "Vulnerability of a Socio-Ecological System from the Perspective of a Bio-Economic Model". Benjamin Blanz and Hermann Held also reported on "The value of noise: early warning indicators of tipping points."

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SeaUseTip members contributed to the **ICES Annual Science Conference**, taking place from September 6 to 10, in a variety of ways: Vanessa Stelzenmüller (project lead and work package 4) and Kira Gee (work package 3) each co-chaired two sessions. Alexandra Blöcker (work package 1), Roland Cormier (work package 3), Emily Quiroga-Gómez and Benjamin Blanz presented their results in talks. Jonas Letschert (work package 4) presented a poster.

Since 2006, for part of the German fleet in the small-scale coastal fishery, catching Norway lobster in the German Bight has proven to be a profitable alternative to plaice, and catches have continued to increase in subsequent years. To achieve this, however, Germany had to exchange quotas, especially with the United Kingdom. In order to increase the Norway lobster quota up to 1000 tons, Germany swapped most of the North Sea cod quota. Theoretically, quota swaps between EU member states and the UK can still take place, but Germany's already declining cod quota will be reduced by another 19% as a result of Brexit. Whether Germany will be able to exchange sufficient Norway lobster quota in the future remains uncertain.

In addition, increasing spatial restrictions, mainly due to the considerable expansion of offshore wind farms and an expansion of as well as planned restrictions on fishing activities in designated marine protected areas, will have an impact on the available fishing opportunities. Norway lobster fishing areas in the German Bight, in particular, could overlap up to 45% with future spatial fishing restrictions. However, the exact impact is not yet assessable, as fishing exploitation in future Natura2000 protected areas might be realistic to some extent.

The team has also addressed the issue of sustainable exploitation of the various FU in the North Sea. Unlike other species that can escape increasing sea temperatures by migrating northward, Norway lobster, which depends on soft sediment, is strictly habitat-bound. Thus, additional pressure from intensive fishing can seriously threaten individual stocks unless there is sustainable management at the stock level. This is not the case at present, as maximum catches refer to the entire North Sea and not to individual populations. According to the researchers, there is an urgent need for improvement. The comparison of landings data from the fishing areas in the German Bight with the recommendations that the International Council for the Exploration of the Sea (ICES) regularly publishes for these areas suggests that a reduction in catches must take place in the coming years.

For the German Norway lobster fishery, the study results point to an uncertain future. Possible adjustments could include switching to alternative resources or marketing smaller catches directly at higher market prices. Switching to more selective fishing methods, such as creels or pots, that avoid unnecessary bycatch, could be a powerful argument in favour of sustainable fisheries. Potential co-use by passive fisheries in the safety zones around wind farms could also be an alternative.

Project publications 2021

V. Stelzenmüller, A. Gimpel, H. Haslob, J. Letschert, J. Berkenhagen, S. Brüning (2021). Science of the Total Environment: Sustainable co-location solutions for offshore wind farms and fisheries need to account for socio-ecological trade-offs. Science of the Total Environment

J. Letschert, N. Stollberg, H. Rambo, A. Kempf, J. Berkenhagen, V. Stelzenmüller (2021). The uncertain future of the Norway lobster fisheries in the North Sea calls for new management strategies. ICES Journal of Marine Science



From October 4 to 6, the **mid-term conference of all projects of the international BioTip programme** took place - with a corona-related delay and online. The programme is funded by the German Federal Ministry of Education and Research and includes three terrestrial and four aquatic or marine projects, of which SeaUseTip is one.

Nearly 100 researchers from Germany, Africa and South America attended the conference, which was organised by the DLR Project Management Agency, and reported on initial results and the challenges of the past few months, during which the corona pandemic significantly hampered and slowed down much of the work.

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From November 2 to 4, the **German Fisheries Day** was held in Emden for the first time in a hybrid format. At the event, organised by the Deutscher Fischereiverband e.V., Andreas Kannen spoke about the potentials and challenges of sharing marine space and protecting it.

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SeaUseTip podcast "FishTalk"

In December 2020, we started our project podcast "FishTalk", which deals with the topics, challenges and questions that move us in SeaUseTip.

All episodes (in German) published so far can be found on our website www.seausetip.de.

For this purpose, we ask our project partners to join us in front of the microphone and give us insights into their work. We will also talk to fellow scientists and experts from the fields of fisheries, politics, nature conservation, maritime economy and marine spatial planning - about current, exciting, controversial and surprising issues around the North Sea.



Scientists for Future Hamburg interviewed SeaUseTip reserachers

"How are the fish in the North Sea doing?" Under this motto, some of the SeaUseTip project members could give insights into their research in two episodes of the podcast "Nebelhorn" of the Scientists for Future Hamburg.

In the first interview, Alexandra Blöcker from the Institute of Marine Ecosystem and Fisheries Sciences at the University of Hamburg and Kira Gee from the Helmholtz Center Hereon talk about the ecological and sociocultural issues they are working on. These include modeling fish stocks over space and time to understand how changes occur after exposure to external factors, and the challenges of fisheries management, which involves many different levels and actors with very different interests.

In addition to Kira Gee, Jonas Letschert from the Thünen Institute of Sea Fisheries and Benjamin Blanz from the Research Unit for Sustainable Environmental Development at the University of Hamburg also have their say in episode 2 of the podcast. Among other things, they talk about the different types of data they use to get a picture of fleet and fishing activities, as well as the challenge of transforming a complex system of ecological, economic, and sociocultural elements into a working model.

The two full-length podcast episodes (episode 7 and 8, in German) can be listened to via the following link: <https://s4f-hamburg.de/alle-folgen>