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IOW researcher Maren Voß will be the first Björn Carlson Baltic Sea Prize laureate

The Björn Carlson Baltic Sea Prize of the Swedish Björn Carlson Baltic Sea Foundation, which will be awarded for the first time this year, goes to Prof. Maren Voß from the Leibniz Institute for Baltic Sea Research Warnemünde. She is being honoured for her groundbreaking research on the importance of nitrogen in marine cycles and particularly its role in the overfertilisation of the Baltic Sea. Using innovative methods, she identified the different sources and transformation processes of this nutrient and thus contributed to the increased focus on nitrogen in fighting the Baltic Sea eutrophication. The prize, endowed with 3 million Swedish kronor, will be awarded in Stockholm on June 3, 2022.

Eutrophication is one of the largest environmental problems of the Baltic Sea. It results from an excess of nutrients – especially nitrogen and phosphorus – and is caused by human activities, such as the use of fertilisers in agriculture or the discharge of untreated sewage. This leads to massive algal blooms, which have a severely adverse impact on the ecosystem, when their decomposition deprives the water of oxygen.

This year's Björn Carlson Baltic Sea Prize winner Maren Voß has been working on the nitrogen cycle in the Baltic Sea for over 25 years and has published almost 70 studies on the topic. In 1992 she came from the University of Kiel to Warnemünde to the Institute for Baltic Sea Research, which was newly founded in the same year. There she was key in significantly expanding the field of biological oceanography through the establishment of specialised laboratories and innovative analytics. In the Baltic Sea region, Maren Voß was the first to apply stable isotope analysis in water and organic matter to unravel the processes within marine nutrient cycles. Measuring microbial metabolic rates and extrapolating them to create budgets, as well as important method developments (e.g. measuring nitrogen fixation), are central elements of her work. Furthermore she showed that, in addition to rivers, precipitation and nitrogen-fixing microorganisms are important sources of nutrients for the Baltic Sea: Together with her colleague Norbert Wasmund, she was the first to describe that not only the large colony-forming blue-green algae fix nitrogen, but also unicellular species – a finding that she and her team recently were able to elaborate on.

Based on this research, the Swedish Environment Protection Agency invited her as one of five experts to write a report on "Eutrophication of the Seas along Sweden's West Coast". The report stressed the essential role of nitrogen for eutrophication in this marine area, thereby modifying the previous focus on phosphorus. Furthermore she participated in a workshop that proposed that internal ecosystem feedbacks, described as a "vicious circle", complicate management of Baltic Sea eutrophication, and require the reduction of external loads of both nitrogen and phosphorus. She also contributed her expertise to the "European Nitrogen Assessment", which highlighted the problematic pollution caused by nitrogen compounds in the environment and the need to regulate them, both in the Baltic Sea area, and for all of Europe.

Cited from the foundation board's statement on awarding this year's Björn Carlson Baltic Sea Prize: "[Maren Voß'] laboratory is still a leader in the application of [stable isotope analysis] to identify sources of eutrophication and to understand critical processes of the nitrogen cycle. [...] Her continued work at the highest scientific level has led to a better perception of the problems of the Baltic Sea also in the international context. She has pointed out in various media interviews and publications that a lower meat consumption is an effective means of reducing nitrogen inputs to the Baltic Sea.[...]

[Maren Voß'] work has become a cornerstone in our understanding of Baltic Sea eutrophication and how to combat it. Her continued cooperation with Baltic Sea colleagues in many EU projects has produced recommendations for EU and HELCOM that have influenced Baltic Sea eutrophication management. Based on her pioneering work on river-borne nitrogen isotopes, ^{15}N values are used today as a standard indicator of eutrophication. A further contribution [...] is her important work educating students on the complexity of the nutrient cycling and the potential of stable isotopes for the quantification of nutrient inputs. These activities include teaching at her home University of Rostock, as well as international courses, and an engagement in major initiatives for interdisciplinary education of doctoral students on Baltic Sea issues. With her focus on teaching next generation scientists on the ecology of the Baltic Sea, she has laid the knowledge foundations for tackling future environmental problems of the Baltic Sea."

The **Björn Carlson Baltic Sea Foundation** is a private foundation established in 2005 through a donation of SEK 500 million by Björn Carlson (1935–2021) with the aim of promoting improvement of the Baltic Sea environment. Initially, the foundation awarded grants for research and applied projects. In 2021, it redirected its focus and established an annual prize – the Björn Carlson Baltic Sea Prize, which will be awarded in 2022 for the first time. The prize honours research and initiatives that make a valuable contribution to improving the environment of the Baltic Sea. The foundation's nomination committee had proposed three people, from which the foundation board selected Maren Voss as the prize winner 2022. The award ceremony will be held on June 3, 2022, at the Baltic Sea Science Center in Stockholm and the prize will be bestowed by the Swedish Crown Princess Victoria. Further information: bcop.se

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