

*A Baltic Health Index to assess the health and benefits of the Baltic Sea*

Thorsten Blenckner, Christian Möllmann, Julia S Lowndes, Jennifer R Griffiths, Eleanore Campbell, Andrea De Cervo, Andrea Belgrano, Christoffer Boström, Vivi Fleming, Melanie Frazier, Stefan Neuenfeldt, Susa Niiranen, Annika Nilsson, Henn Ojaveer, Jens Olsson, Christine S Palmlov, Martin Quaas, Wilfried Rickels, Anna Sobek, Markku Viitasalo, Sofia A Wikström, and Benjamin S Halpern

Many environmental assessments ask 'what are the components of a healthy ecosystem, and how are they faring in the region' and leave it to others to question how these supply value to society. The Ocean Health Index (OHI) framework asks first 'what do humans value about these environments or ecosystems,' and then 'which components allow or diminish the ability of the ocean to supply these things?'

Reframing and quantifying the status of oceans from a perspective of human-and-nature interactions powerfully supports a capacity to weigh priorities and effectively examine trade-offs between the different uses. This capacity is critical for modern ocean resource management, given the many ways people use oceans, the complex impacts of these uses on ocean environments, and the need for public policy to serve multiple goals and interests (e.g., species conservation, food production, aesthetic and cultural values, recreation, economic growth).

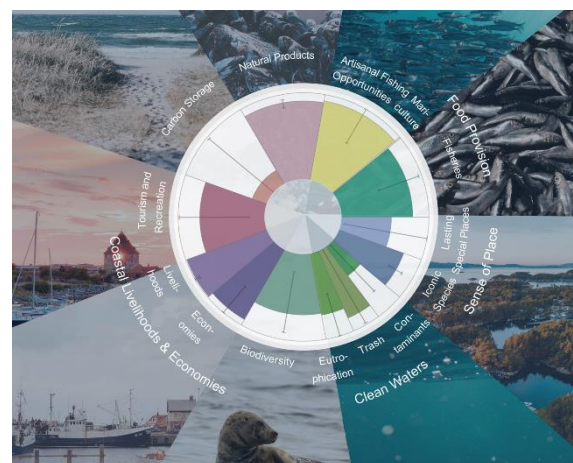
Based on the OHI framework, the Baltic Health Index (BHI) builds on established and regularly updated environmental, ecological and social datasets, to comprehensively assess the health of the Baltic Sea. We use open science tools and collaborate with a network of scientists, environmental management authorities and representatives from non-governmental organizations to ensure an objective, representative, transparent and well-informed assessment. Aiming to reflect regional societal objectives, the study adopts management objectives from scientific working groups, regional policy or agencies working in the relevant subject area. In this paper, we present the complete process, methods, and results from the first BHI assessment.

Collectively, the BHI details an unhealthy

relationship between ecosystems and social systems of the Baltic Sea. There have been small improvements, for example in cleanliness of the water and fish stocks. However, the Baltic Sea overall falls short of management objectives by 24%, and some subbasins fall short by nearly 45%.

While it is not perfect, the BHI provides a robust platform for a constructive dialogue on strengths and weaknesses and the required next steps to improve the assessment. For more detailed results and to join the discussion, visit our Shiny app at <https://baltic-ohi.shinyapps.io/dashboard/>.

As the first trans-boundary application of the OHI framework in a region governed by a multitude of comprehensive national and international policies, the BHI can serve as an example for areas with similar policy landscapes in Europe and beyond.



*A schematic figure of the Baltic Health Index.*

Plain language summary from article: Blenckner T, Möllmann C, Stewart Lowndes J, et al. The Baltic Health Index (BHI): Assessing the social-ecological status of the Baltic Sea. *People Nat.* 2020;00:1–17.

<https://doi.org/10.1002/pan3.10178>