

The Finnish Environment Institute SYKE – Effective cooperation in conservation of the seas

We offer solutions for improving the condition of the sea and for securing its sustainable use.

We produce information on the state of the sea and on changes that support the decisions.

We engage in close cooperation with domestic and European universities, research institutes, and companies.

Our work also extends to the Arctic regions and to developing countries.

international partners



INTERNATIONAL COOPERATION IMPROVES STATE OF THE GULF OF FINLAND

Persevering cooperation involving Finland, Estonia, and Russia has improved the state of the Gulf of Finland and the quality of its evaluation, while supporting conservation methods. SYKE's scientific understanding of eutrophication and its knowledge and skills in fighting it have played a significant role in the cooperation. SYKE pinpointed and evaluated the gypsum mountain of the EuroChem Fosforit plant on the Luga River as the largest single source of phosphorous emissions into the Baltic Sea. As a consequence, EuroChem upgraded the treatment of its waste water which improved the state of the eastern Gulf of Finland. Thanks to SYKE studies, the water utility of the city of St. Petersburg introduced chemical phosphorus removal which reduced the nutrient load on the Baltic Sea.

political actors and ministries



BRINGING INVASIVE SPECIES AT SEA UNDER CONTROL – FINLAND RATIFIES SHIPS' BALLAST WATER TREATY

Finland made history by ratifying the Ballast Water Management Convention of the International Maritime Organisation in the autumn of 2016. As a result of this, the convention is taking effect globally. The convention makes it more difficult for harmful invasive species to spread through the ballast water of ships. For the convention, SYKE produced information on invasive species in the Baltic Sea, the routes along which they spread, and on ways to fight them. With its expertise on the marine environment, SYKE also prepared legislation. International research cooperation has supported the production of information on invasive species.

regions



GOALS FOR MARINE ENVIRONMENT SUCCESSFULLY PLANNED IN KYMENLAAKSO

The regional plan for Kymenlaakso (2014) was drawn up for the first time with consideration for marine nature. The goals of maritime transport, conservation, and tourism were brought together in the zoning plan for the sea area. Information on underwater nature – species, habitats, and geology – produced by the VELMU programme coordinated by SYKE were utilised in the zoning. The extensive VELMU surveying work supports the planning of the conservation area network and the securing of ecosystem services in Finland's coastal areas. Tanzania also utilises SYKE's know-how in developing the planning of sea areas in the Zanzibar region.

AUTOMATIC OIL SPILL DETECTION SYSTEM FOR THE BALTIC SEA



SYKE and Meritaito Ltd are developing an oil spill detection and alert system for the Baltic Sea, based on modern Smart Buoys. The system will improve the detection of oil spills, reducing their impacts on northern sea ecosystems. SYKE and its partners are investigating the environmental effects of various oil spill response methods, particularly in cold climates. The work will benefit countries in the Arctic Region and international organisations that plan and implement cross-border oil spill response cooperation in maritime areas.

LESS NOISE FROM ACTIVITIES OF SHIPPING COMPANIES IN THE BALTIC SEA



Noise of human origin is expected to increase in marine areas. Underwater noise can cause serious harm to sea mammals and fish, including disturbances in communication, changes in behaviour, and even physical damage. SYKE and its partners did pioneering work by producing noise maps for the entire Baltic Sea area and a set of guidelines for measuring and controlling the level of noise. Instructions by SYKE and the Finnish Transport Safety Agency Trafi for abatement of ship noise have been implemented by all shipping companies in the Baltic Sea. Noise is also reduced through sea area planning, the assessment of projects for environmental impact, and measures for the protection of marine areas.

ARANDA MODEL UTILISED AROUND THE WORLD



The outstanding model of SYKE's marine research vessel Aranda has been used around the world in the planning of research vessels. Aranda's special techniques for studying the food webs of the Arctic regions and seas are utilised around the world. Aranda is used in research by the Finnish Meteorological Institute, the Natural Resources Institute Finland, as well as the Swedish Meteorological and Hydrological Institute (SMHI). Cooperation with neighbouring countries helps unify and develop follow-up methods and in conserving resources.

FISH FARMS IN THE ARCHIPELAGO SEA ARE DIRECTED TO THE LEAST SENSITIVE SEA AREAS







SYKE surveyed the area impacted by the nutrients from a large fish farm located in the northern part of the Archipelago Sea. SYKE used modelling to study the movements and dilution of the nutrient load in the sea area. Thanks to this work fish farms and other large installations with emissions into the sea can be directed to less sensitive coastal areas already in the planning stages.

Photos: Esa Nikunen, Maiju Lehtiniemi, Visa Hietalahti, Lars Demant-Poort, Antti Below, Ilkka Lastumäki, Riku Lumiaro.



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