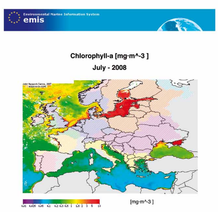
GRÜNE LIGA Netzwerk Ökologischer Bewegungen

Wetlands for Clear Water

Baltic Sea eutrophication

Cyanobacterial bloom (blue algae) in the Baltic Sea, summer 2008.



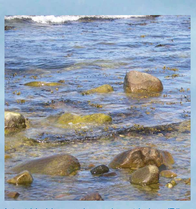
Chlorophyll-a concentrations in European seas in July 2008. Red indicates high concentrations while yellow, green and blue indicate successively lower concentrations. Map: Environmental Marine Information System (emis); Joint Research Centre (JRC). © European Union, 1995-2011.

The whole Baltic Sea except the open Bothnian Bay and certain coastal areas in the Gulf of Bothnia were affected by eutrophication during 2003-2007 (HEAT: HELCOM Eutrophication Assessment Tool).

Heavily eutrophied bed of mytilus. Foto: W. Fiedler (Deutsches Meeresmuseum - DMM)

Slightly eutrophied bed of marine eelgras
Foto: W. Fiedler (DMM)

Bladder wrack
Foto: D. Florian (DMM)



Intact bladder wrack meadow at Lohme/Rügen, Foto: Ines Podszuck (DMM)

Eutrophication is the most severe ecological problem of the Baltic Sea. Baltic rivers carry large amounts of nitrogen and phosphorus, more than 50 percent originate from agricultural lands. Eutrophication of the Baltic Sea leads to algal blooms which deteriorate marine habitats through drastically decreased water transparency and oxygen depletion. The HELCOM Baltic Sea Action Plan addresses the need for action in its programmatic "clear water" objective.

In the context of river basin management for Baltic Sea tributaries, wetlands can play an important role in reducing diffuse nutrient inputs from agriculture. This is reflected in many water and marine protection policies, from the Water Framework Directive to the Baltic Sea Action Plan and the EU Strategy for the Baltic Sea Region.

In practice however, little use is made of wetlands for nutrient retention. There is still a great potential for improvement, particularly in Germany, Poland and the Baltic countries. Drained peatlands are significant hot spots for CO_2 emissions and should be targeted more intensely in the context of climate change mitigation strategies.

Furthermore, restoration, creation and adapted management of wetlands can provide important benefits for biodiversity as bogs and fens are rarely preserved in natural status.

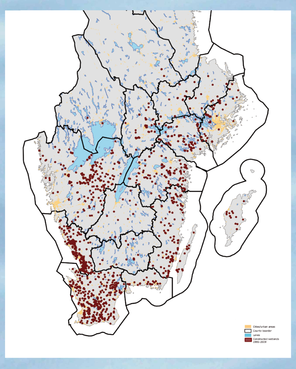
Constructed wetlands in Sweden

An effective narrow nitrogen trap in the south of Sweden. Foto: John Strand

In Southern Sweden, a large number of created wetlands have been integrated in the agricultural landscape with the aim to reduce eutrophication in lakes and sea. The goal set by the Swedish Board of Agriculture was to create a total wetland area of 12,000 ha by 2010.

Research on over a thousand wetlands constructed between 1996 and 2002 has shown that wetlands in the right location can retain up to 1,000 kg of nitrogen per ha wetland area and year. The average nutrient retention capacity is less than 100 kg N per ha and year, which is only 50% of the goal stated by the Swedish Board for Agriculture.

Wetlands function as nutrient traps as incoming water is purified by denitrification processes where nitrate is transformed into nitrogen gas and as phosphorus sinks to the bottom of the wetland. Additionally, constructed wetlands contribute to increased biodiversity, provide storage of water for irrigation or act as storage basins to reduce flooding. To be cost-effective, constructed wetlands need to be properly located.



Distribution of constructed wetlands in Sweden. Map: DAWA 2010, Swedish Board of Agriculture

Large-scale Conservation Project Uckermark Lakes

Lakes, forests and fens are charecteristic of the Uckermark Lakes region. Foto: Rüdiger Mauersberger

In the past, large forests and bogs covered the Uckermark lakes region. Gradual intensification of land use since around 1700 has resulted in environmental problems, caused primarily by the drainage, destruction and eutrophication of habitats. In 1996 the area became part of the federal program „Establishing and Securing Conservationally Important Components of Nature and Landscapes of National Importance" (www.uckermaerkische-seen.de). Until 2011, a large number of nature conservation measures have been instated, which have increased the water retention capacity of the landscape and thus have stabilized the water balance of wetlands increasingly strained by climate change.

More than 230 lakes lie in the project area. Foto: Rüdiger Mauersberger

Rock ramps located at the outflow of standing waters and peat-lands support water retention and help to replenish empty aquifers. Artificially connected catchments were disconnected. Surface runoff has been reduced, which at the same time reduces water-bound pollutants (nutrients, humic substances) and flood levels. Inappropriately deepened streambeds are raised and flattened. Drainage systems of bogs have been restored to a more natural state, so that water can trickle on the surface and seep through the peat layers.

Beavers dam obsolete drainage ditches efficiently and at low cost.
Foto: Rüdiger Mauersberger

Drained wetland before and after the removal of artificial drainage.
Foto: Rüdiger Mauersberger

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Layout: Kommunikatisten
March 2011

Umwelt Bundes Amt – Für Mensch und Umwelt

Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit

The poster is financially supported by the Federal Ministry for Environment, Nature Conservation and Nuclear Safety, the Federal Environment Agency and the Federal Agency for Nature Conservation through the Advisory Assistance Programme for Environmental Protection in the Countries of Central and Eastern Europe, the Caucasus and Central Asia. The responsibility for the content lies with the authors.