

Home / Action areas / Monitoring and assessment / Monitoring Manual / Fish, fisheries and shellfish / Coastal fish

Monitoring programme: Biodiversity - Fish
Programme topic: Fish, shellfish and fisheries

SUB-PROGRAMME: COASTAL FISH

TABLE OF CONTENTS

[Regional coordination](#)

[Purpose of monitoring](#)

[Monitoring concepts](#)

[Assessment requirements](#)

[Data providers and access](#)

[References](#)

REGIONAL COORDINATION

The monitoring of this sub-programme is: **partly coordinated**. The sub-programme is coordinated within HELCOM FISH-PRO II to facilitate comparability of data across areas and harmonized assessments.

- [Common monitoring guidelines](#).
- Common quality assurance programme: missing but national assurances are a common practice.
- Common database: under development.

PURPOSE OF MONITORING (Q4K)

Follow up of progress towards:

Baltic Sea Action Plan (BSAP)	Segments	Biodiversity
	Ecological objectives	Thriving and balanced communities of plants and animals Viable populations of species
Marine strategy framework directive (MSFD)	Descriptors	D1 Biodiversity D3 Commercial fish and shellfish D4 Food webs
	Criteria (Q5a)	1.2 Population size 1.6 Habitat condition 3.1 Level of pressure of the fishing activity 3.2 Reproductive capacity of the stock 3.3 Population age and size distribution 4.3 Abundance/distribution of key trophic groups/species
	Features (Q5c)	Biological features: Information on the structure of fish populations, including the abundance, distribution and age/size structure of the populations.
Other relevant legislation (Q8a)	Common Fisheries Policy (DCF) Habitats Directive Water Framework Directive	

Assessment of: ([Q4k](#))

State/Impacts	X	temporal trends, spatial distribution, status classification
Pressures		
Human activities causing the pressures		
Effectiveness of measures		

Scale of data aggregation for assessments: ([Q10a](#))

HELCOM assessment unit Level 1: Baltic Sea	
HELCOM assessment unit Level 2: Subbasin	
HELCOM assessment unit Level 3: Subbasins with coastal and offshore division	X (see also Assessment requirements)
HELCOM assessment unit Level 4: Subbasins with coastal WFD division	

MONITORING CONCEPTS

Coordination	Elements <u>Q9a (Q5c)</u>	Parameter <u>Q9a (Q5c)</u>	Method <u>Q9c, Q9d</u>	QA/QC <u>Q9e, 9f</u>	Frequency <u>Q9h, 9i</u>	Spatial resolution <u>Q9g, 9i</u>	Link to HELCOM core indicators	Link to MSFD GES characteristics <u>Q5b</u>	Spatial scope <u>Q4i</u>	Monitoring started <u>Q4h</u>	CPs monitoring
Regional (COMBINE)	Coastal fish	Population size (abundance) Population size (biomass)	<u>HELCOM COMBINE Manual Part C Annex C-10.</u> For FI and DK, see <u>HELCOM core indicators report</u>	National	Yearly	Variable	<u>Abundance of key fish species</u> <u>Abundance of fish key functional groups</u>	1.2.1 Population abundance and/or biomass, 1.6.1 Condition of the typical species and communities 4.3.1 Abundance trends of functionally important selected groups/species	Territorial waters	Differ across countries from the 1970s, to be started in 2014. In all countries except PL, DE and DK, some data are available from 1995. See also http://www.helcom.fi/action-areas/monitoring-and-assessment/monitoring-manual/fish-fisheries-and-shellfish/coastal-fish	DE, DK, EE, FI, LT, LV, PL, SE

Brief description of monitoring

Full description available in the [monitoring guidelines](#). Detailed information on monitoring frequency and spatial resolution has not yet been collected from all countries but will be added.

Element / parameter	Coastal fish/Population size (abundance) Coastal fish/Population size (biomass) Abundance/biomass of important functional groups
Method	<p>Gill-net and/or fyke net monitoring, see HELCOM 2008. Guidelines for coastal fish monitoring sampling methods of HELCOM in HELCOM COMBINE manual Part C Annex C-10.</p> <p>The abundance and size of each fish and species that is caught in gill net catches is being monitored, in some areas also the weight. When weight is not measured, it is usually derived from length-weight relationships. The abundance of functional groups, species composition as well as size structures and biomass can be calculated from different species and/or functional groups.</p> <p>In some countries (Finland) data from the small-scale commercial coastal fishery is used for status assessments of coastal fish.</p> <p>In Denmark, assessments will be based on a recreational fishermen survey.</p>
QA/QC	National. No Baltic wide quality assurance is currently undertaken, but data is checked nationally in the Contracting Parties.
Frequency	Annually, except Lithuania (every third year) and Latvia (not undertaken at all).
Spatial Scope	See map for details.
Spatial resolution	Monitoring of coastal fish communities is in some form currently undertaken in all Contracting Parties. The spatial coverage is, however, highly variable, and there are gaps. See HELCOM Baltic Sea Environment Fact Sheet on coastal fish and gap analysis below. Not all the data are reported to HELCOM.

ASSESSMENT REQUIREMENTS

Monitoring requirements and gaps

Monitoring is to be carried out to fulfill assessment requirements of HELCOM ecological objectives that are specified through HELCOM core indicators. The requirements on monitoring can include number of stations, the sampling frequency and replication.

Monitoring requirements

The two HELCOM core indicators for coastal fish, '[Abundance of key fish species](#)' and '[Abundance of fish key functional groups](#)', capture important features of coastal fish communities. To give a more representative view of the status of coastal fish communities, however, indicators reflecting the size-structure and trophic state of the community should be included and assessed.

Coastal fish communities are rather local in their appearance and response to external driving variables (Saulamo & Neuman 2002; Laikre et al 2005; Olsson et al 2011; 2012a). As such, no Baltic wide GES level and reference state could be defined for coastal fish communities. These parameters should instead be based and defined on the basis of the conditions in the specific coastal region or transitional water type, and status assessments are hence generally not transferable across coastal regions or water types. Ideally, coastal fish communities should be assessed within the coastal water type, but with reference to the HELCOM Assessment unit hierarchical system, coastal fish could be assessed at a slightly larger spatial scale: level 3 "Open sub-basins and coastal waters (< 1 NM from baseline)". To capture the local features of coastal fish communities and the heterogeneity of coastal areas within a sub-basin, a few monitoring areas per coastal sub-basin (level 3) should be monitored and assessed.

Assessments within coastal regions could potentially be aggregated up to the subbasin level, but there is no proposed method for this to date. The "one-out-all-out" procedure is likely not fully applicable for aggregations within and across assessment units since the indicators proposed for example are interrelated with each other.

The suggested approach for assessing coastal fish community status relies on a time-series approach of the data within the suggested assessment unit. As there has been considerable turn-over in the species composition of coastal fish communities during recent decades (Olsson et al 2012b), and given that an indicator based status assessment needs to consider effects of strong and weak year classes of certain species as a natural feature, the monitoring serving as the basis for status assessments, needs to cover more than 10 years. Including a five-year assessment period, this requires at least 15 years of monitoring data. For data with shorter coverage in time, trend-based assessments could be executed. The time-interval should hence be annual monitoring. For more information on the assessment procedure as suggested in [Abundance of key coastal fish species core indicator](#).

The MSFD descriptors and associated criteria relevant to the monitoring programme are given in question on MSFD GES Criteria above.

Gaps

Long time-series enough to meet the proposed time-series approach for assessing the status of coastal fish communities are currently available in Sweden, Finland, Estonia, Latvia and Lithuania covering the Gulf of Bothnia and the northern and eastern parts of the Baltic Proper. In Sweden, Finland and Estonia the coasts are extensive and rather heterogeneous, and sampling programmes only covers a part of the total stretch of the coast. Particularly in the northern parts of Finland (Gulf of Bothnia) and the southern parts of the Baltic Proper (Sweden), very little data from gill-net monitoring is available.

In Sweden and Finland, the spatial coverage is increasing when considering the monitoring programmes using Nordic coastal multi-mesh nets HELCOM (2012). These monitoring programmes were initiated in the early – mid 2000s and are too short to assess the status using a baseline approach. Instead, a trend-based approach is desirable.

In Germany and Denmark there are data that will be used for coastal fish assessments, but the time-perspective is short covering the last 5-10 years. As such a trend-based approach for status assessments is applicable. In Poland a coastal fish monitoring programme has been established in 2013, but the data does not allow for any assessments within the coming years.

In Finland data on catch per unit effort from the small-scaled coastal fishery can be used to complement status assessments. This source of data might also be used in additional countries to fill the spatial gaps in monitoring, but the use and quality of the data needs to be addressed.

To summarize, the current coastal fish monitoring coordinated by HELCOM represents a minimum. Whereas the geographical coverage is rather good in the northern parts, there are substantial gaps in many areas. Additional monitoring programmes should hence be established and/or alternative data sources used in order to fully capture the current status of coastal fish communities along all parts of the Baltic coast.

An additional aspect that should be considered is that there is currently lack of funding in some countries for monitoring and assessments of coastal fish. In Estonia there is lack of funding for experts to make assessments of the monitoring data, in Latvia there is no funding for monitoring and assessments, in Lithuania monitoring is currently carried out only every third year which is not in line with the suggested principles of HELCOM, and in Denmark and Germany monitoring and assessments is project based, without any long-term monitoring plan. Especially in Germany, there is no coastal fish monitoring programme, but data can be extracted from other sources of data.

Adequacy for assessment of GES (Q5d)

Monitoring should provide adequate data and information to enable the periodic assessment of environmental status, and distance from and progress towards GES as required by MSFD reporting under Article 9 and 11.

Adequate data?	Yes. But note gaps in monitoring in some coastal areas (see Monitoring requirements and gaps)
Established methods for assessment?	Under development in HELCOM CORESET II
Adequate understanding of GES?	Under development in HELCOM CORESET II
Adequate capacity to perform assessments?	An assessment will be carried out for the upcoming HELCOM CORE Indicator fact sheets in 2014. Funding for assessments is however lacking in some Contracting Parties.

Assessment of natural variability (Q5e)

The reference period is defined as a period of time that covers more than two times the generation time of typical species (in this case 10 years) and is without any significant change in the parameter. As such natural variability is considered. Also, the GES boundaries are defined taking into consideration rare events and unusual values of the indicator value. Since assessments are performed with respect to reference levels within the coastal area of the monitoring station, natural variability across areas is considered. This approach is under development.

DATA PROVIDERS AND ACCESS

Data access point	National databases
Data type (Q10c)	Unprocessed/raw data
Data availability (Q10c)	By request
Data access (Q10c)	Open access to data (covered by ICES data policy)
INSPIRE standard (Q10c)	Species distribution
When will data become available? (Q10c)	Unprocessed/raw data
Data update frequency (Q10c)	Yearly
Describe how the data and information from the programme will be made accessible to the EC/EEA	Not applicable yet on a Baltic wide scale
Contact points in the Contracting parties	Contact point to national monitoring programmes will be added
Data is used in the following Baltic Sea Environment Fact Sheets (BSEF)	Temporal development of Baltic coastal fish communities and key species

Has the data been used in HELCOM assessments?

Yes, e.g. [BSEP131](#) Indicator-based assessment of coastal fish community status in the Baltic Sea 2005-2009 (2012).

REFERENCES

HELCOM 2012 ([BSEP 131](#))

Laikre, L., Palm, S., and Ryman, N. 2005. Genetic population structure of fishes: implications for coastal zone management. *Ambio*, 34: 111–119.

Olsson, J., Mo, K., Florin, A-B., Aho, T., and Ryman, N. 2011. Genetic population structure of perch, *Perca fluviatilis* L, along the Swedish coast of the Baltic Sea. *Journal of Fish Biology*, 79: 122–137.

Olsson, J., Mo, K., Florin, A-B., Aho, T., and Ryman, N. 2012a. Genetic structure of whitefish (*Coregonus maraena*) in the Baltic Sea. *Estuarine, Coastal and Shelf Science*, 97: 104–113.

Olsson, J., Bergström, L., and Gårdmark, A. 2012b. Abiotic drivers of coastal fish community change during four decades in the Baltic Sea – *ICES Journal of Marine Science*, 69: 961–970.

Saulamo & Neuman 2002; Laikre et al 2005; Olsson et al 2011; 2012a Olsson et al 2012b

Saulamo, K., and Neuman, E. 2002. Local management of Baltic fish stocks—significance of migrations. *Finfo* 2002: 9

IMAGE RIGHTS