Baltic Marine Environment Protection Commission

Working Group on the State of the Environment and Nature Conservation

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STATE & CONSERVATION 5-2016

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Reference	HELCOM TAPAS benthic indicator WS 1-2016 (point 66 in the outcome)

Background

HELCOM HOD 41-2013 (paragraph 2.45 of the outcome) agreed that the indicator 'State of the soft-bottom macrofauna community' (BQI) is a HELCOM core indicator. HOD 48-2015 noted that no GES boundary has yet been proposed for the offshore assessment units and that this development is a high priority, while it was agreed that the benthic macrofauna in the coastal assessment units should be assessed using nationally developed and intercalibrated indexes (paragraph 3.63 and Annex 4 of the outcome).

HOD 48-2015 agreed on a Lead Country approach to further develop the core indicators (paragraph 3.64 of the outcome). No Lead Country has been available for the BQI indicator, and the indicator has been developed further by Co-Lead Countries Estonia, Finland and Germany.

Operationalization of the indicator in the offshore assessment units has been delayed due to the indecision on the use of species sensitivity values for the calculation. Work carried out under the CORESET II project to develop calculated sensitivity values that could be applied throughout the Baltic Sea did not solve the issue, since it was found that the approach is not appropriate for the species-poor northern Baltic Sea. The calculated species sensitivity values consist of a total of 19 sub-sets defined based on geographical areas, environmental factors, sampling gear and the sieve size used in monitoring (see Annex 1). The core indicator assessment protocol has reached expert level consensus of applying the BQI equation as described in Leonardsson et al 2009 already during the CORESET II project (detailed in the document).

Finland presented results of calculating BQI using the calculated- and nationally defined species sensitivity values at the HELCOM TAPAS benthic indicator WS 1-2016 with the aim to analyze differences between BQI results when using the regionally calculated- or nationally determined sensitivity values to explore if assessment unit specific species sensitivity values can be proposed.

For the offshore assessment units in the Gulf of Bothnia (incl. Åland sea) the workshop recommended that the existing sensitivity values developed based on literature and expert judgment and intercalibrated by Sweden and Finland are used, and that the GES boundary determined based on the Swedish approach and intercalibrated by Finland should be used as these are considered to be relevant and applicable.

For the other offshore assessment units the workshop recommended that the calculated sensitivity values should be used, as it was found that these values provide a similar pattern as the nationally defined values. The workshop concluded that the exact monitoring stations that will provide the data for the indicator calculation need to be defined before it is possible to finalize the list of sensitivity values and GES boundaries. Within one assessment unit it is for example possible that the monitoring stations are located in different salinity areas requiring two or more lists of sensitivity values to be associated to the same assessment unit. For these offshore assessment units the GES boundary and sensitivity values are proposed to be determined through a step-wise approach:

1. a group of experts representing each concerned Contracting Party compiles the HOLAS II dataset for the indicator is by extraction of data from COMBINE and complementing it as needed directly by the concerned countries,
2. the assessment unit specific relevant sub-sets of sensitivity values is determined,
3. the GES boundary is calculated using either of the two methods used in Sweden in 2016, (both methods need to be tested especially in the southernmost assessment units - described in the document),
4. the final table of assessment unit specific sensitivity values and GES boundaries developed through this approach are finalized in time for HOD 51-2016.

This document describes the assessment protocol, and the alternative approaches to determine GES boundaries.

The CORESET II project version of the full core indicator report is made available as reference material at the State and Conservation 5-2016 meeting site. The report has not been updated to reflect the proposed approaches described in this document.

Action requested

The Meeting is invited to;

- endorse the GES boundary and associated sensitivity values for the assessment units in the Gulf of Bothnia,
- endorse the GES boundary calculation concept with the associated sensitivity values for the other assessment units considering the planned approach of calculating the boundaries based on the relevant monitoring data, and nominate the experts to represent the contracting party in the expert group,
- endorse updating the assessment protocol accordingly,
- request the Contracting Parties that have not submitted data to COMBINE to do so without further delay.

Methodology to assess the *State of soft-bottom macrofauna community* indicator in the open sea areas

The HELCOM core indicator *State of soft-bottom macrofauna community* was developed in the HELCOM CORESET II project. National benthic indices developed for the WFD are used in coastal areas, but a common approach to be used in the open sea areas has not been agreed on. The TAPAS Benthic indicator WS1-2016 discussed how the indicator can be applied in the open sea areas. Here, we propose a methodology to assess the indicator *Status of the soft-bottom macrofauna community* in open sea areas of the Baltic Sea.

Proposed approach

The proposal is to use Benthic Quality Index (BQI; Leonardsson et al. 2009) in the open sea areas, assessed at a sub-basin level but not including Kattegatt. BQI is used in the coastal assessments in Sweden, Lithuania and Latvia, however Lithuania and Latvia applies the formula by Fleischer & Zettler (2009) and different sets of species sensitivity values. For calculation of BQI in the open water areas of the Baltic Sea the formula presented in Leonardsson et al. (2009) will be used:

$$BQI = \left[\sum_{i=1}^{S_{classified}} \left(\frac{N_i}{N_{classified}} * Sensitivity\ value_i\right)\right] * \log_{10}(S+1) * \left(\frac{N_{total}}{N_{total}+5}\right)$$

The assessment is proposed to be performed only based on data from areas not suffering of permanent hypoxia (due to natural reasons). This area will be indicated with a polygon on the map presenting the results.

Data to be used

For HOLAS II data from years 2011-2015 (updated with data from 2016 in 2017) will be used. Data will primarily be extracted from the COMBINE database and thus, contracting parties need to secure that zoobenthos monitoring data are reported to ICES. Currently, the COMBINE database contains data from Denmark, Finland, Germany, Lithuania, Poland and Sweden, however the Danish and Finnish data is incomplete for the assessment period. For HOLAS II an option to use data not in the COMBINE database may need to be used if problems with the data reporting occur, but for future updates of the indicator the data flow to the COMBINE database need to be secured.

Species sensitivity values

BQI is based on the proportion of sensitive and tolerant species. Species sensitivity values can be set by calculating the $ES50_{0.05}$ value (e.g. Leonardsson et al. 2009) or by using literature information and expert judgment. Schiele et al. (2016) collected a large dataset (>29 000 samples) covering the entire Baltic Sea and calculated $ES50_{0.05}$ values for 19 subsets of the data. The subsets were set based on geographic region, salinity, depth and sampling gear (see Annex 1). The calculated values provide an objective approach, assuming that undisturbed areas have high diversity and disturbed areas have low diversity. In areas with naturally low diversity, such as the Bothnian Bay, this approach can give misleading species sensitivity values. In Denmark a Haps corer is used in the zoobenthos monitoring, thus the sensitivity values which are based on van Veen grabs cannot directly be used. An option to pool 7 Haps corer samples in order to get results comparable to the van Veen results will be tested.

The proposal is to use the species sensitivity values calculated by Schiele et al. (2016) in all sub-basins, except for the Gulf of Bothnia and the Åland Sea, where the Leonardson et al 2009 sensitivity values will be used. These values are used in the coastal assessment in Sweden (east coast) and Finland (Annex 2). In practice, the use of Schiele et al. (2016) sensitivity values will mean that several sets of sensitivity values will have to be used in the same assessment unit (sub-basin). In the Swedish EEZ, compliance between the national GES boundary and the GES boundary for Schiele et al. (2016) subsets need to be secured, either by using a regression to transform the boundaries or by using the Swedish species sensitivity values as a separate

subset. Upon gathering the data to be used, the sets of species sensitivity values to be used can be specified. Table 1 summarizes the proposed approaches to be used.

Table 1. An overview of the sub-basins with proposed species sensitivity values to be used and GES boundary. GES boundaries proposed for Gulf of Bothnia (including Åland Sea) are from the Swedish national assessment protocol (HVMF 2012:18) which have been intercalibrated with the Finnish WFD classification.

Sub-basin open sea area	Bordering countries	Species sensitivity values	GES boundary
Kattegat	Denmark, Sweden	not included	not included
Great Belt	Denmark	Schiele et al 2016	to be tested
The Sound	Denmark, Sweden	Schiele et al 2016	to be tested
Kiel Bay	Denmark, Germany	Schiele et al 2016	to be tested
Bay of Mecklenburg	Denmark, Germany	Schiele et al 2016	to be tested
Arkona Basin	Denmark, Sweden, Germany	Schiele et al 2016	to be tested
Bornholm Basin	Denmark, Germany, Poland, Sweden	Schiele et al 2016	to be tested
Gdansk Basin	Poland, Russia	Schiele et al 2016	to be tested
Eastern Gotland Basin	Estonia, Latvia, Lithuania, Poland, Russia, Sweden	Schiele et al 2016	to be tested
Western Gotland Basin	Sweden	Leonardsson et al 2009	to be tested
Gulf of Riga	Estonia, Latvia	Schiele et al 2016	to be tested
Northern Baltic Proper	Estonia, Finland, Sweden	Schiele et al 2016	to be tested
Gulf of Finland	Estonia, Finland, Russia	Schiele et al 2016	to be tested
Åland Sea	Finland, Sweden	Leonardsson et al 2009	4.0
Bothnian Sea	Finland, Sweden	Leonardsson et al 2009	4.0
The Quark	Finland, Sweden	Leonardsson et al 2009	4.0
Bothnian Bay	Finland, Sweden	Leonardsson et al 2009	1.5

Aggregation methods within sub-basins

As several sets of sensitivity values need to be used in the assessment units, aggregation of BQI results using different species sensitivity values is needed. GES boundaries will need to be defined separately for the different subsets. To aggregate the results, the proposal is standardize the results and use an area based weighing to calculate the sub-basin result. To standardize the results information on the range of values will be needed. If the full range from bad to good is not available in the data, the minimum and maximum values can be derived using the same approach that is used for indicators in the BEAT tool, utilizing the GES boundary and either of the minimum or maximum values. For BQI, this approach would imply that the minimum value is 0 and GES boundary scaled to be 0.6. In order to use area based weighing, the area of the specified environmental conditions (salinity and depth; see Annex 1) in the sub-basins will need to be defined by e.g. modeling, subtracting the naturally hypoxic areas.

GES boundary

In general terms, the GES boundary should be set at a level accounting for the natural variation in areas with no or low disturbance and considered to be in a good state. However, it is difficult to define such areas as the whole Baltic Sea is affected by eutrophication and baseline data are scarce. Thus, a pragmatic approach to derive boundaries for the open sea from the outer coastal waters will be applied where found suitable. Where outer coastal areas are not considered to be representative for the open sea area alternative methods on how to set the GES boundary will be tested. The HELCOM TAPAS benthic indicator WS 1-2016 identified two approaches to be tested. Of these, the approach found more appropriate will be used. In the Gulf of Bothnia (including Åland Sea) the GES boundary as defined in the Swedish national approach will be used (HVMF 2012:18), as this has been intercalibrated with the Finnish approach. Upon gathering the data to be used in the assessment, a better overview of how many sets of species sensitivity values need to be applied in the sub-basins will be available and the choice of method to define GES boundaries and how to aggregate results within sub-basins will become clearer.

The approaches to be tested are:

1) Leonardsson et al. (2009, 2016) and Blomqvist & Leonardsson (2016) present methods to set GES boundary based on baseline data from defined areas with no/low disturbance and considered to be in good status. In this approach the GES boundary is defined as the limit below which the mean BQI value of the assessment unit is significantly lower than what is expected from the baseline data.

2) If data is considered to cover the whole range from disturbed/bad status to undisturbed/good status an approach based on reference conditions can be applied. A method for defining reference conditions and status classification based on this approach is described by Vuori et al. (2009). In this approach the reference condition is defined as the median of the 10% highest values and status classes according to the WFD are set. The GES boundary is then set at the Good/Moderate border.

Way forward

Contracting parties are asked to nominate experts to finalize the indicator. For the sub-basins still lacking a GES boundary, bordering country experts will then agree on the method to be used and propose GES boundaries for the sets of sensitivity values relevant in the sub-basin. Upon agreement of GES boundaries the indicator report will be updated to cover also the open sea areas and submitted to HOD 51-2016 for approval.

References:

Blomqvist M, Leonardsson K (2016) A probability based index for assessment of benthic invertebrates in the Baltic Sea. Deliverable D3.1-4, WATERS Report no. 2016:3 Havsmiljöinstitutet, Sweden. Doi: 10.13140/RG.2.2.31873.45924.

Fleischer D, Zettler M (2009) An adjustment of benthic ecological quality assessment to effects of salinity. Marine Pollution Bulletin 58:351-357. Doi: 10.1016/j.marpolbul.2008.10.016.

HVMF 2012:18. Havs- och vattenmyndighetens föreskrifter om vad som kännetecknar god miljöstatus samt miljökvalitetsnormer med indikatorer för Nordsjön och Östersjön

Leonardsson K, Blomqvist M, Rosenberg R (2009) Theoretical and practical aspects on benthic quality assessment according to the EU-Water Framework Directive – examples from Swedish waters. Marine Pollution Bulletin 58:1286–1296. Doi: 10.1016/j.marpolbul.2009.05.007.

Leonardsson K, Blomqvist M, Rosenberg R (2016) Reducing spatial variation in environmental assessment of marine benthic fauna. Marine Pollution Bulletin 104:129-138. Doi: 10.1016/j.marpolbul.2016.01.050.

Schiele KS, Darr A, Zettler ML, Berg T, Blomqvist M, Daunys D, Jermakovs V, Korpinen S, Kotta J, Nygård H, von Weber M, Voss J, Warzocha J (2016) Rating species sensitivity throughout gradient systems – a consistent approach for the Baltic Sea. Ecological indicators 61:447-455. Doi: 10.1016/j.ecolind.2015.09.046.

Vuori K-M, Mitikka S, Vuoristo H (eds) (2009) Pintavesien ekologisen tilan luokittelu (Guidance on ecological classification of surface waters in Finland). Environmental Administration Guidelines 3/2009. Helsinki, Finland. (In Finnish)

Annex 1. Description of the 19 subsets as defined in Schiele et al. (2016)

Table 1
Overview of 19 subsets separated along environmental gradients and gear type and used for species sensitivity calculations.

Subset	Number of species with $ES50_{0.05}$ value	$ES50_{0.05}$ based on ≥100 records [%]	$ES50_{0.05}$ based on ≥300 records [%]	No. of samples	Mean no. of species S (max)	Mean no. of individuals (max)	Mean ES50 (max)	Region	Salinity range	Depth range [m]	Sampler size [m^2]	Meshsize [mm]
1	188	51	27	1708	26(54)	199(949)	14.25 (28.0)	South	≥30		ca. 0.1	1
2	190	48	19	1900	21(68)	417(7746)	11.41 (26.8)	South	18–30	Shallower than 20 m	ca. 0.1	1
3	140	44	20	2114	15(62)	185(2954)	9.38 (25.0)	South	18–30	Deeper than 20 m	ca. 0.1	1
4	147	47	25	3052	13(68)	394(11,472)	7.71 (23.3)	South	10–18		ca. 0.1	1
5	67	40	18	1100	11(37)	415(3905)	6.89 (15.9)	South	7.5–10		ca. 0.1	1
6	30	60	37	958	8(21)	256(6896)	6.08 (11.4)	South	5–7.5		ca. 0.1	1
7	18	67	33	2337	3(11)	54(1021)	2.69 (9.4)	Central	5–18	Deeper than 60 m	ca. 0.1	1
8	34	56	44	2370	6(19)	225(3030)	4.79 (12.6)	Central	5–18	Shallower than 60 m	ca. 0.1	1
9	16	75	38	657	6(12)	350(12,453)	5.19 (10.2)	Central	5–18	Shallower than 60 m	ca. 0.1	0.5
10	13	54	23	782	3(13)	81(1033)	2.75 (7.2)	East	7.5–10		ca. 0.1	1
11	14	50	36	941	3(12)	96(2447)	2.84 (9.8)	East	5–7.5		ca. 0.1	1
12	17	59	24	582	6(15)	284(2280)	4.37 (9.3)	East	5–7.5		ca. 0.1	0.5
13	30	77	43	2686	5(17)	58(2393)	4.4 (12.0)	East	5–7.5		ca. 0.02	0.25
14	8	25	na	191	4(14)	81(575)	3.57 (11.0)	East	3–5		ca. 0.1	1
15	14	43	na	164	8(14)	271(669)	5.79 (9.1)	East	3–5		ca. 0.1	0.5
16	8	75	38	798	3(8)	299(1358)	2.31 (6.0)	North	7.5–10		ca. 0.1	1
17	14	93	50	3305	3(11)	262(2619)	2.47 (10.0)	North	5–7.5		ca. 0.1	1
18	10	80	50	1678	2(10)	107(2526)	2.1 (7.4)	North	3–5		ca. 0.1	1
19	14	50	36	2155	2(10)	81(754)	2.11 (10.0)	North	0.05–3		ca. 0.1	1

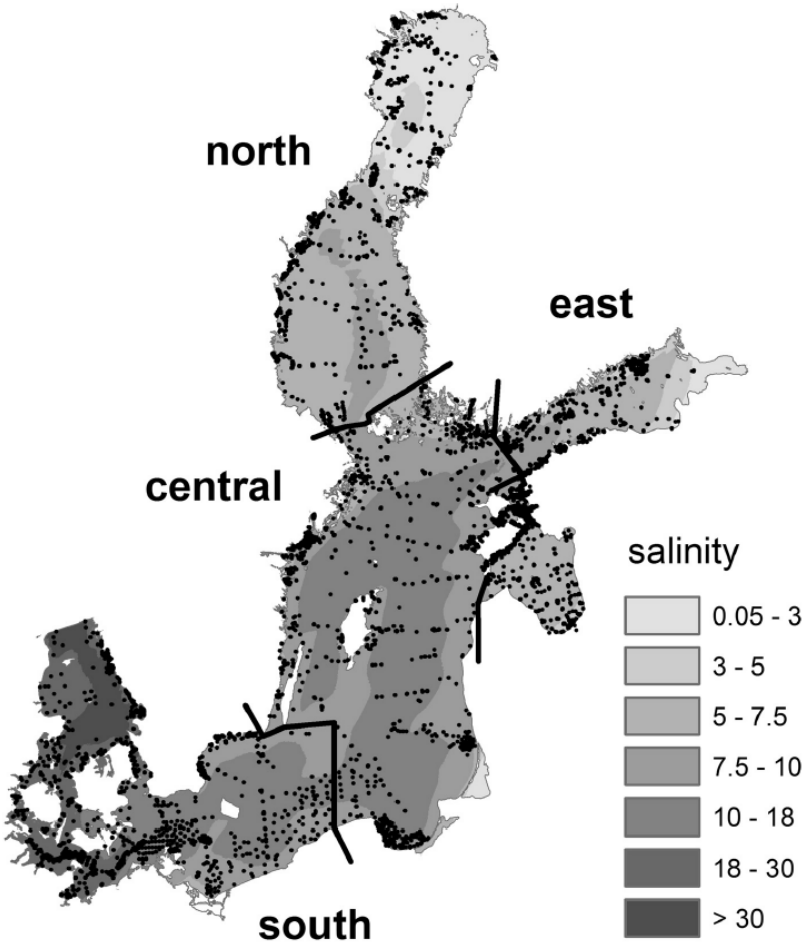

Fig. 1. Bottom salinity in the Baltic Sea and the distribution of samples within the four specified Baltic Sea subregions (north, east, central, south). Borders of subregions are in accordance with the HELCOM subbasins of the Baltic Sea.

Schiele KS, Darr A, Zettler ML, Berg T, Blomqvist M, Daunys D, Jermakovs V, Korpinen S, Kotta J, Nygård H, von Weber M, Voss J, Warzocha J (2016) Rating species sensitivity throughout gradient systems – a consistent approach for the Baltic Sea. Ecological indicators 61:447-455. Doi: 10.1016/j.ecolind.2015.09.046.

Annex 2. Species sensitivity values to be used in Gulf of Bothnia (including Åland Sea). The table has been published as a supplement to Leonardsson et al. (2009).

Taxon	Sensitivity	Rank	Phylum	Class	Order	Family
Oligochaeta *	1	Subclass	Annelida	Clitellata		
Arenicola marina	10	Species	Annelida	Polychaeta		Arenicolidae
Capitella **	1	Genus	Annelida	Polychaeta		Capitellidae
Heteromastus filiformis	5	Species	Annelida	Polychaeta		Capitellidae
Scoloplos armiger	10	Species	Annelida	Polychaeta		Orbiniidae
Aricidea jeffreysi	10	Species	Annelida	Polychaeta		Paraonidae
Aricidea suecica	10	Species	Annelida	Polychaeta		Paraonidae
Levinsenia gracilis	10	Species	Annelida	Polychaeta		Paraonidae
Nephtys **	10	Genus	Annelida	Polychaeta	Aciculata	Nephtyidae
Hediste diversicolor	5	Species	Annelida	Polychaeta	Aciculata	Nereididae
Eteone **	10	Genus	Annelida	Polychaeta	Aciculata	Phyllodocidae
Bylgides sarsi	15	Species	Annelida	Polychaeta	Aciculata	Polynoidae
Alkmaria romijni	5	Species	Annelida	Polychaeta	Canalipalpata	Ampharetidae
Fabricia sabella	10	Species	Annelida	Polychaeta	Canalipalpata	Sabellidae
Manayunkia aestuarina	10	Species	Annelida	Polychaeta	Canalipalpata	Sabellidae
Marenzelleria **	5	Genus	Annelida	Polychaeta	Canalipalpata	Spionidae
Pygospio elegans	5	Species	Annelida	Polychaeta	Canalipalpata	Spionidae
Spio filicornis	10	Species	Annelida	Polychaeta	Canalipalpata	Spionidae
Streblospio shrubsolii	5	Species	Annelida	Polychaeta	Canalipalpata	Spionidae
Terebellides stroemii	10	Species	Annelida	Polychaeta	Canalipalpata	Trichobranchidae
Trochochaeta multisetosa	5	Species	Annelida	Polychaeta	Canalipalpata	Trochochaetidae
Coleoptera **	10	Order	Arthropoda	Insecta	Coleoptera	
Ceratopogonidae **	5	Family	Arthropoda	Insecta	Diptera	Ceratopogonidae
Chaoboridae **	1	Family	Arthropoda	Insecta	Diptera	Chaoboridae
Chironomidae	1	Family	Arthropoda	Insecta	Diptera	Chironomidae
Ephemeroptera **	10	Order	Arthropoda	Insecta	Ephemeroptera	
Trichoptera **	15	Order	Arthropoda	Insecta	Trichoptera	
Ampithoe rubricata	15	Species	Arthropoda	Malacostraca	Amphipoda	Ampithoidae
Leptocheirus pilosus	5	Species	Arthropoda	Malacostraca	Amphipoda	Aoridae
Microdeutopus gryllotalpa	10	Species	Arthropoda	Malacostraca	Amphipoda	Aoridae
Corophium volutator	10	Species	Arthropoda	Malacostraca	Amphipoda	Corophiidae
Gammarus **	10	Genus	Arthropoda	Malacostraca	Amphipoda	Gammaridae
Bathyporeia pilosa	15	Species	Arthropoda	Malacostraca	Amphipoda	Haustoriidae
Melita palmata	15	Species	Arthropoda	Malacostraca	Amphipoda	Melitidae
Phoxocephalus holbolli	15	Species	Arthropoda	Malacostraca	Amphipoda	Phoxocephalidae
Pontoporeia affinis	15	Species	Arthropoda	Malacostraca	Amphipoda	Pontoporeiidae
Pontoporeia femorata	15	Species	Arthropoda	Malacostraca	Amphipoda	Pontoporeiidae
Diastylis rathkei	10	Species	Arthropoda	Malacostraca	Cumacea	Diastylidae
Crangon crangon	10	Species	Arthropoda	Malacostraca	Decapoda	Crangonidae
Cyathura carinata	5	Species	Arthropoda	Malacostraca	Isopoda	Anthuridae
Asellus aquaticus	5	Species	Arthropoda	Malacostraca	Isopoda	Asellidae
Saduria entomon	10	Species	Arthropoda	Malacostraca	Isopoda	Chaetiliidae
Idotea balthica	5	Species	Arthropoda	Malacostraca	Isopoda	Idoteidae
Idotea ***	10	Genus	Arthropoda	Malacostraca	Isopoda	Idoteidae
Jaera **	15	Genus	Arthropoda	Malacostraca	Isopoda	Janiridae

Lekanesphaera hookeri	10	Species	Arthropoda	Malacostraca	Isopoda	Sphaeromatidae
Heterotanais oerstedi	5	Species	Arthropoda	Malacostraca	Tanaidacea	Leptocheliidae
Ostracoda *	15	Class	Arthropoda	Ostracoda		
Mya arenaria	10	Species	Mollusca	Bivalvia	Myoida	Myidae
Mytilus edulis	5	Species	Mollusca	Bivalvia	Mytiloida	Mytilidae
Arctica islandica	5	Species	Mollusca	Bivalvia	Veneroida	Arcticidae
Astarte borealis	15	Species	Mollusca	Bivalvia	Veneroida	Astartidae
Astarte elliptica	15	Species	Mollusca	Bivalvia	Veneroida	Astartidae
Astarte montagui	15	Species	Mollusca	Bivalvia	Veneroida	Astartidae
Astarte sulcata	15	Species	Mollusca	Bivalvia	Veneroida	Astartidae
Cerastoderma edule	5	Species	Mollusca	Bivalvia	Veneroida	Cardiidae
Cerastoderma glaucum	10	Species	Mollusca	Bivalvia	Veneroida	Cardiidae
Pisidium **	15	Genus	Mollusca	Bivalvia	Veneroida	Pisidiidae
Sphaerium **	10	Genus	Mollusca	Bivalvia	Veneroida	Pisidiidae
Macoma **	5	Genus	Mollusca	Bivalvia	Veneroida	Tellinidae
Radix balthica	15	Species	Mollusca	Gastropoda	Basommatophora	Lymnaeidae
Lymnaeidae ***	10	Family	Mollusca	Gastropoda	Basommatophora	Lymnaeidae
Retusa truncatula	15	Species	Mollusca	Gastropoda	Cephalaspidea	Retusidae
Valvata macrostoma	5	Species	Mollusca	Gastropoda	Heterostropha	Valvatidae
Valvata piscinalis	10	Species	Mollusca	Gastropoda	Heterostropha	Valvatidae
Bithynia tentaculata	10	Species	Mollusca	Gastropoda	Neotaenioglossa	Bithyniidae
Potamopyrgus antipodarum	10	Species	Mollusca	Gastropoda	Neotaenioglossa	Hydrobiidae
Hydrobiidae ***	5	Family	Mollusca	Gastropoda	Neotaenioglossa	Hydrobiidae
Littorina saxatilis	10	Species	Mollusca	Gastropoda	Neotaenioglossa	Littorinidae
Rissoa **	15	Genus	Mollusca	Gastropoda	Neotaenioglossa	Rissoidae
Theodoxus fluviatilis	15	Species	Mollusca	Gastropoda	Neritopsina	Neritidae
Limapontia	15	Genus	Mollusca	Gastropoda	Sacoglossa	Limapontiidae
Micrura baltica	15	Species	Nemertina	Anopla	Heteronemertea	Lineidae
Nemertina ***	10	Phylum	Nemertina			
Turbellaria **	10	Class	Platyhelminthes	Turbellaria		
Halicryptus spinulosus	15	Species	Priapula			Priapulidae
Priapulus caudatus	10	Species	Priapula			Priapulidae

Leonardsson K, Blomqvist M, Rosenberg R (2009) Theoretical and practical aspects on benthic quality assessment according to the EU-Water Framework Directive – examples from Swedish waters. Marine Pollution Bulletin 58:1286–1296. Doi: 10.1016/j.marpolbul.2009.05.007.