Abundance of sea trout spawners and parr

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Contents

Key message

The present status of populations of sea trout is in some areas very alarming. Populations especially in Bothnian Bay are considered to be at the risk of extinction, due to capture of young age classes of sea trout as by-catch in fisheries targeting other species. Also trout populations in Bothnian Sea and Gulf of Finland are in poor status due to same reasons. The situation is particularly severe in Finland. A positive tendency in parr densities is observed in Estonia (Gulf of Finland) and Sweden (Bothnian Sea), probably reflecting management changes in these countries.

The state of sea trout stocks is particularly good in southern and SW sub-basins where majority of stocks can reach the 50 % target.

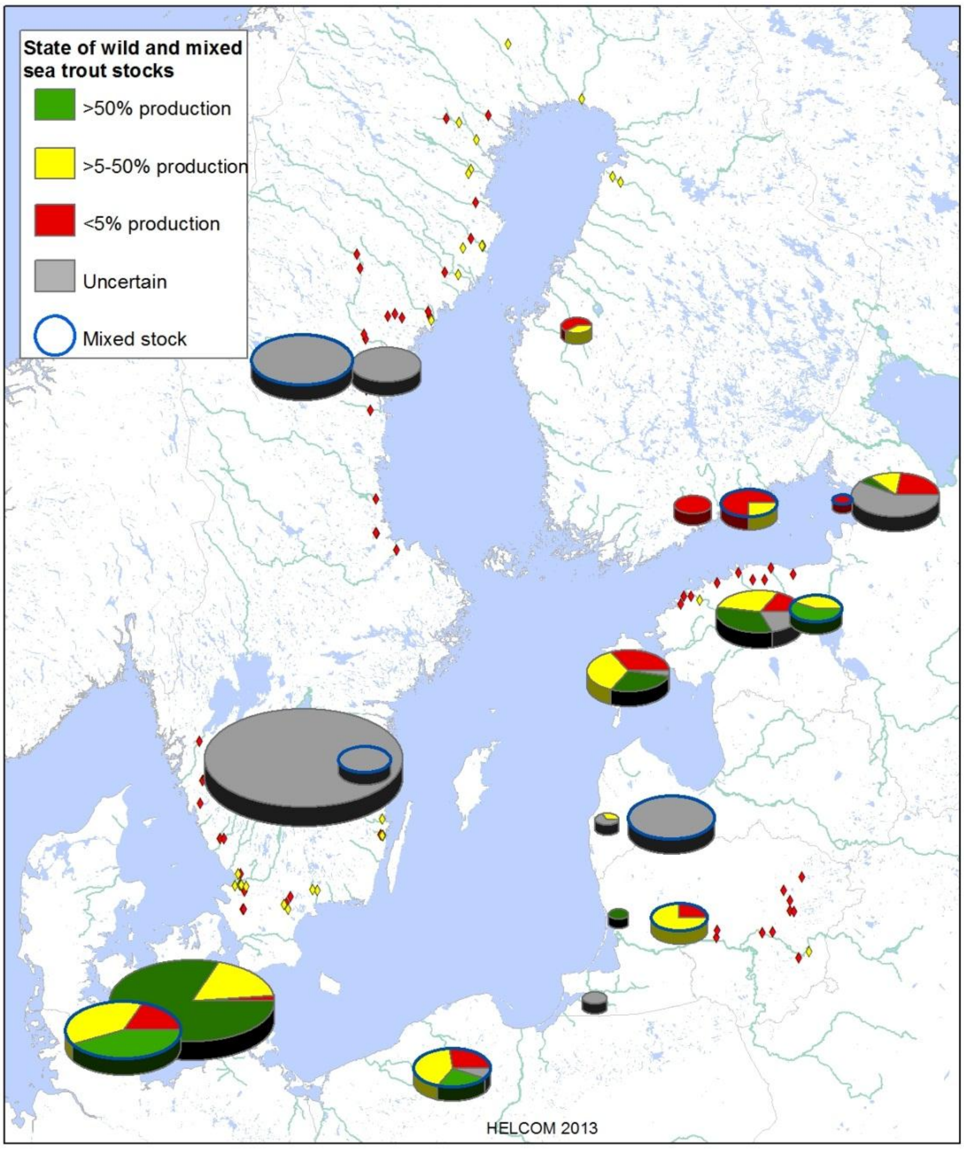

Figure 1. *State of sea trout rivers (wild and mixed stocks) in countries' marine areas. Proportion of sea trout rivers producing >50 % of potential production (green), 5–50 % (yellow) and <5% (red) in river. Grey colour represents rivers where production was not assessed. Size of the pie charts show the relative number of rivers per area. See Table 1 for number of stocks. Diamonds show the locations of river dams (red: non-passable, yellow: partly passable). Source: ICES 2013.*

Description of the indicator

The proposed core indicator follows the sea trout parr densities and compares them with reference densities in good habitats of the spawning rivers. The parameter has a linkage to the number of adult spawners ascending the rivers and, hence, indirectly to fishing pressure at the sea and in the river, which are found very significant factors affecting the sea trout abundance.

The indicator is supported by parameters following the number of rivers with wild sea trout spawning, fishing catches and smolt production.

This core indicator report is based on the annual reports of the ICES Working Group on Baltic Salmon and Sea Trout (WGBAST).

Links to anthropogenic pressures

The sea trout parr densities are negatively affected by high fishing pressure on adults, by-catch of young age classes in gillnets, damming of rivers and poor quality of spawning habitats in the rivers. Thus, the indicator reflects fishing pressure as well as pressures acting on the freshwater environment like siltation, inputs of nutrients and organic matter and river connectivity (HELCOM 2012).

Assessment units

Sea trout are mainly confined to sea areas adjacent to the spawning rivers and therefore the assessment units are defined as the coastal and offshore waters of the sub-basin where the river flows to. There are 19 sub-basins defined for the Baltic Sea (HELCOM Monitoring and Assessment Strategy).

Policy relevance

The proposed core indicator of the Baltic sea trout addresses the Baltic Sea Action Plan's Biodiversity and nature conservation Segment (p. 20 of the BSAP) ecological objectives 'Thriving and balanced communities of plants and animals' and 'Viable populations of species' (HELCOM 2007).

The proposed core indicator also addresses the following the qualitative descriptors of the MSFD for determining good environmental status (Anon. 2008):

- Descriptor 1: 'Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions'; and

- Descriptor 3: 'Populations of commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock';

- Descriptor 4: 'All elements of the marine food webs, to the extent that they are known, occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity'.

and the following criteria of the Commission Decision (Anon. 2010):

- Criterion 1.1 (species distribution), Criterion 1.2 (population size), Criterion 1.3 (population condition, *particularly the genetic structure*), Criterion 1.5 (habitat extent),

- Criterion 3.1 (level of pressure of the fishing activity), Criterion 3.2 (reproductive capacity of the stock), and

- Criterion 4.3 (abundance/distribution of key trophic species).

Also, the indicator has relevance to the BSAP actions of:

- ’Classification and inventorying of rivers with historic and existing migratory fish species no later than by 2012’,

’Development of restoration plans (including restoration of spawning sites and migration routes) in suitable rivers to reinstate migratory fish species, by 2010’.

What is the status of sea trout in the Baltic Sea?

Current status and trends in the Baltic sea trout

The present status of sea trout populations is in some areas very alarming: only 26% sea trout river populations were estimated to reach the 50 % target level in the Baltic Sea (ICES 2013). This is 165 of the 622 river populations in good environmental status (GES), while 177 were assessed to fail GES and 314 were not assessed. Figure 1 shows the state of the wild and mixed river populations in the Baltic Sea countries.

Populations in especially Bothnian Bay are considered to be at the risk of extinction, due to capture of post smolts and young age classes of sea trout as by-catch in fisheries targeting other species (often whitefish). Also populations in Bothnian Sea and Gulf of Finland are in poor status due to same reasons. In the Gulf of Finland the by-catch occurs mainly in gillnets targeted at pikeperch.

A positive trend in parr densities is observed in Estonia (Gulf of Finland) and Sweden (Bothnian Sea), probably reflecting management changes in these countries. The situation is worrying in Finnish waters and sea trout has been listed in the Red book as ‘Critically Endangered’, i.e. facing an extremely high risk of extinction, its numbers have decreased, or will decrease, by 80 % within three generations (Rassi et al. 2010).

The sea trout populations in the Main Basin (all sub-basins south to the Gulfs of Bothnia and Finland) are in general in a good or moderate condition. In the Bornholm Basin (ICES sub-division 25), however, a worrying decline of parr densities in the river Mörrumså has been found, but the densities are still on a reasonable level (ICES 2013).

The ICES WGBAST and SGBALANST recommend that spatial and temporal fishing restrictions are maintained and enforced in the Bothnian Bay, Bothnian Sea and Gulf of Finland to significantly decrease the fishing mortality of immature sea trout. To implement this, the groups recommend that closed areas around river mouths will be established and fishing in rivers will be restricted where this is not already enforced.

The poor and declining status in Russian populations, where sea trout is completely protected, is believed to be mainly due to illegal fishing in rivers (poaching). It is recommended that inspection is enforced.

Parr density

The densities of parr in Swedish rivers in the Sound, Arkona Basin and Bornholm Basin (ICES SD 23–25) have remained stable during 1990–2010 (Pedersen et al. 2011). In the Western Gotland Basin, Bothnian Sea and Bothnian Bay (ICES SD 27, 30, 31) the densities have increased during the period but the densities in Bothnian Bay are very low.

Parr densities in Estonian rivers in the Gulf of Finland, Northern Baltic Proper and Gulf of Riga have increased since 2001 in all the spawning rivers with good or very good habitat quality (Pedersen et al. 2011). However, the Northern Baltic Proper stocks on the islands of Saaremaa and Hiiumaa are on very low levels.

In Finland the parr densities have been far below the reference production level in all rivers for several years. Annual fluctuations are high in the observed densities and most of the rivers show densities of less than 1–5 parr per 100 m2

(Pedersen et al. 2011). In the Gulf of Finland, the river Ingarskila had parr density of over 80 per 100 m2 in 2009, but the annual variance is very high.

In Russian part of the Gulf of Finland, the parr densities are estimated to be on the level of 5–10 parr per 100m2, which is considered low and below optimal (Pedersen et al. 2011).

In Latvia, the rivers Salaca, Gauja and Venta are the three most important sea trout rivers in terms of wild smolt production (Pedersen et al. 2011). In Salaca, the parr density was on average 6.3 parr (0+ and older) per 100 m2, which is below average for previous years. In Gauja the average density was 5.3 parr pr 100 m2 in 2010, which is less than average in previous years. No recent data are available for the river Venta but in the period from 2007–2009 average varied between less than one to 2.2 parr per100 m2. Sea trout in Latvian rivers seems not to be improving, but very recent data are not available, and consequently there is much uncertainty.

In Lithuania, almost all spawning rivers are not in the good state. The average density of juveniles (0+ – 2+) in rivers are fluctuating, in last years – from very high number to very low (Pedersen et al. 2011). Surveys were done in 75 sites, average mean density in the rivers of juveniles varied from 2.9 to 28.2 (mean – 12 ind./100 m2). The main reason for the present decline is too high fishing pressure in the sea and coastal fishery and illegal fishing in rivers during spawning migration and spawning period. Majority of sea trout are caught in coastal areas as a by-catch by gillnets for other species.

In Poland, there is only one stream with a wild sea trout stock and 16 mixed and 8 reared stocks (Pedersen e al. 2011). The average density of 0+ parr on monitored spawning grounds usually is around 50 per 100 m2, but on some sites can exceed 150 inds/100m2 (Pedersen et al. 2011). There are not great changes in the densities within the last 6 years. The main problem with the poor status sea trout stocks is the lack of suitable spawning habitats due to dams, water discharge times and gravel extractions. However, also poaching, by-catch of smolts in the coastal herring fishery and diseases affect negatively the stocks.

In Germany, there are nine rivers with natural reproduction (eight of them initiated with stocking). The numbers of parr have increased during the recent 11 years.

In Denmark, a recent status report showed that approx. 26 % of the streams (either small entire streams or parts of larger streams) with original populations of trout produce less than 50 % of stream capacity (HELCOM 2011). The reason for this is in most cases poor habitat conditions (including heavy sand transport) or barriers, including newly established artificial lakes in the lower parts of the streams. The wild trout smolt production has, however, increased in the entire country and not least in the streams inside the Baltic area, where wild smolt production has increased more than twofold over the last decade.

Smolt production and post-smolt survival

The smolt production of the rivers in the Russian Kaliningrad region is estimated to be 3500 smolts per year. In Lithuania, it was estimated that in 1999 the rivers produced 323 800 sea trout smolts annually, but in recent years that has dropped to 34–46 000 smolts (Figure 2) (Pedersen et al. 2011).

Table 1. *Smolt production in Russia and Latvia. Source: Pedersen et al. 2011.*

Region/Country	Smolt production	Potential
Kaliningrad region	3 500	200 000 – 250 000
St. Petersburg region –Northern part	6 000-8 000	

St. Petersburg region –Southern part	4 000	
Latvia	61 000	

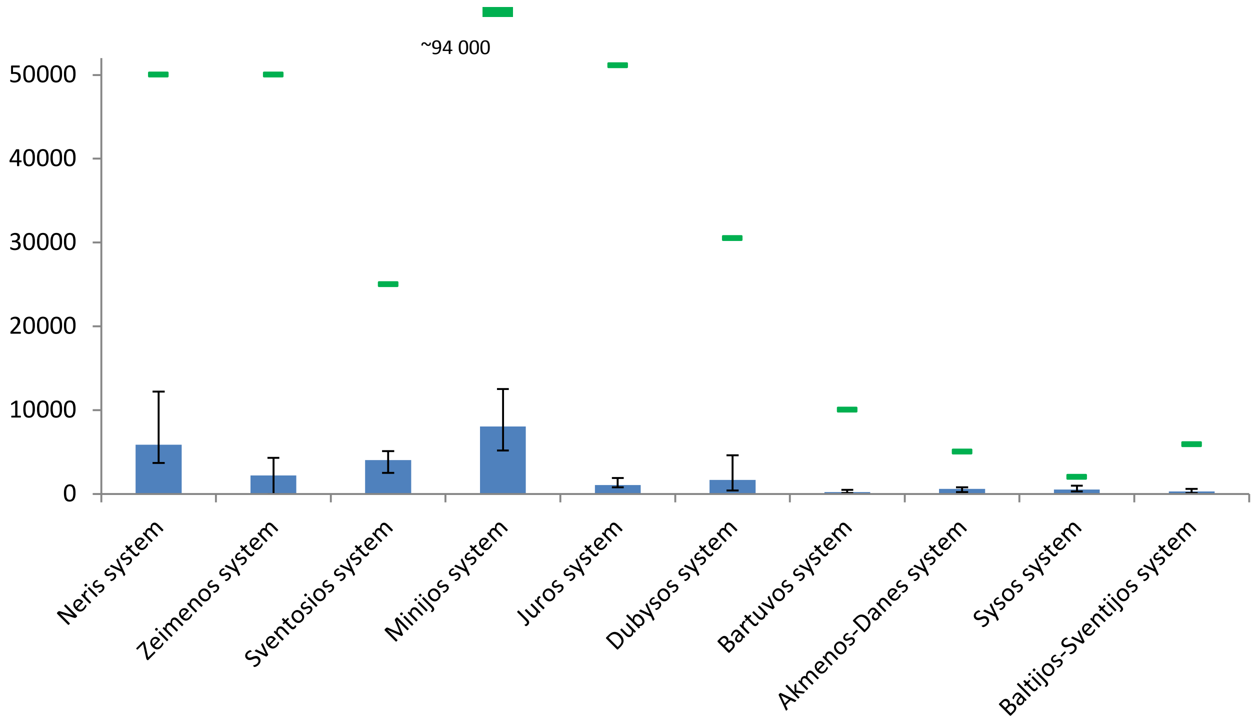

Figure 2. *Smolt production in Lithuanian river systems (mean and range) during 2005-2010 and the potential smolt production capacity (green lines). Source: Pedersen et al. 2011.*

Tagging studies on post-smolts at the sea show a continuous decrease in returns (ICES 2012). Carlin tagging results in the Gulf of Bothnia and Gulf of Finland show a large and increasing proportion, often the majority, of the sea trout to be caught already during the first year in sea. Trout are caught as by-catch in the whitefish fishery by gillnets and fykenets. Based on tagging data, the proportion of fish caught as undersized during the first sea year still is increasing even though the total effort of gillnet fishery by professional fishermen has not changed during the past ten years. The recapture rate of sea trout shows a continued decreasing trend for more than 20 years in the Gulf of Bothnia, although it may have leveled off in recent years. In the Gulf of Bothnia, recapture rate in Sweden was similar to Finland in the period 1980–2002.

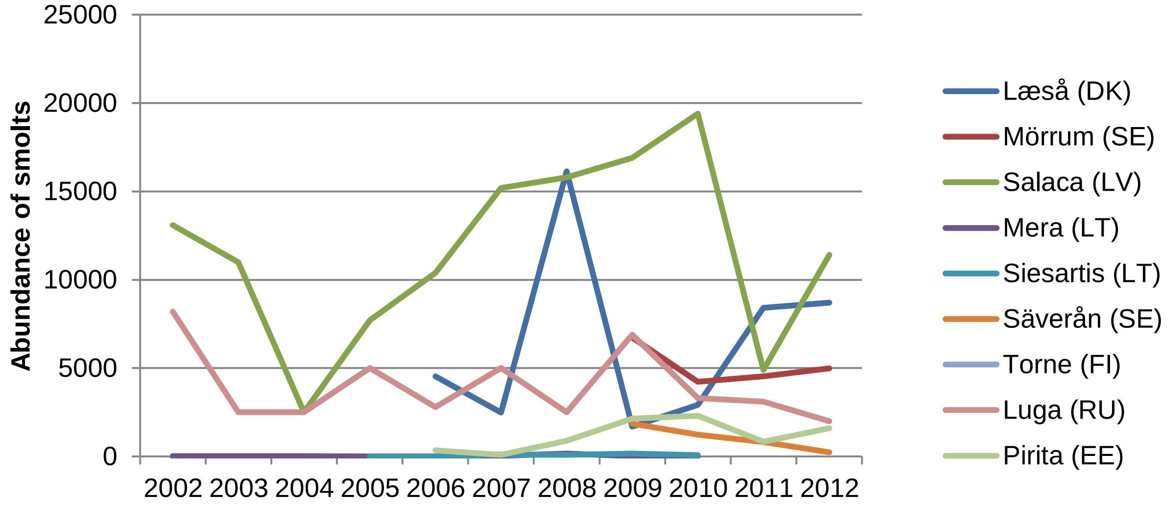

Figure 3. *Abundance of sea trout smolts in nine rivers. Source: ICES 2013.*

Number of sea trout spawners

The number of sea trout spawners ascending the rivers is followed in a few large rivers only. Five Swedish rivers in the Bothnian Sea and Bothnian Bay have automatic or manual counting. According to Pedersen et al. (2011) the number of spawners in the five Swedish rivers was too low to populate all available habitats. The average number of spawners for the period 2000–2011 was 111 in River Kalixälven, 303 in River Piteälven and 76 in River Vindelälven. In River Piteälven the number has increased continuously (Figure 4), and for some years there was also an increase in Kalixälven, Vindelälven and Byskeälven. However, the number of spawners ascending Kalixälven and Byskeälven again declined between 2010 and 2011. The increase in the River Piteälven is likely due to the closing of salmon traps in the river estuary (Pedersen et al. 2011).

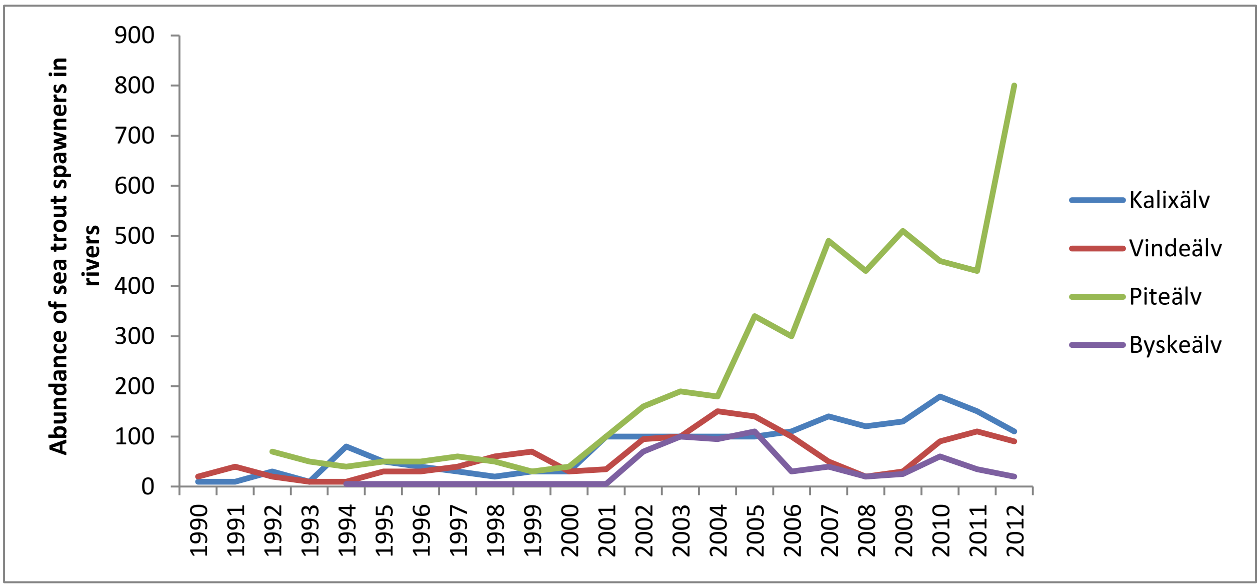

Figure 4 *Abundance of sea trout spawners in four Swedish rivers. Source: ICES 2013.*

Even though the number of spawners has increased in R. Piteälven during the period 2001–2012, compared to previous years, the number of spawners observed entering rivers in northern Sweden is extremely low, taking into account the size of the rivers. This is likely due to both low recruitment and elevated mortalities at sea. In addition, anglers' catch – indicating the number of spawners to some extent – does not suggest any progress in the number of spawners in this area either.

The estimated number of spawners migrating to the Lithuanian Nemunas catchment area varies between 11 500 individuals (1992) and 1 800 in 2003, but in average it is around 4 000 individuals each year (Pedersen et al. 2011).

In the German river Hellbach, a pilot counting of adult spawners accounted for nearly 1600 ascending fish in 2009 (Pedersen et al. 2011). In 2010, this number was 500, but that was considered an underestimate due to flood conditions.

Number of sea trout rivers and streams

There are around 1000 sea trout rivers and streams in the Baltic Sea (HELCOM 2011).

ICES has estimated that there are 382 populations of wild sea trout (and 83 mixed populations) in the Main Basin; 25 populations of wild sea trout (and 31 mixed populations) in the Gulf of Bothnia; 85 wild populations in the Gulf of Finland (and 16 mixed population). Altogether this makes up to nearly 500 wild sea trout populations in brooks/rivers in the Baltic Sea area (ICES 2012).

The status of sea trout populations in the Main Basin (all sub-basins south to the Gulf of Bothnia and Gulf of Finland) was partially revised in 2012 and is known in 176 and unknown in 206 rivers with wild populations. Status of 40 (wild and mixed including tributaries in large systems) populations is poor, mainly due to habitat degradation, dam building and overexploitation.

Fishing catches of sea trout

Catches of wild sea trout have declined considerably over a long time period, indicating a very large overall reduction in population size. In support of this conclusion, the recapture rate of sea trout shows a continued decreasing trend for more than 20 years in the Gulf of Bothnia, although it may have leveled off in recent years.

The total reported sea trout catch in the Baltic Sea marine area was 302 tonnes in 2012, which is 22 % (86 tonnes) less compared to 2011 and 74 % less than in 2000 when the decrease of catch begun (ICES 2012) (Figure 5). In addition, 84 tonnes were fished in rivers in 2012 (ICES 2013).

The Main Basin is the most important area for professional sea trout catches; the catch in this area was close to 60 % of the total marine catch in 2012. Marine catch in the Gulf of Bothnia was 101 t in 2012 and was close to the ten year average catch. In the Gulf of Finland, marine catches were on the level of 80–100 t a few years until 2010 when it fell to <30 t (ICES 2013).

Around half of the total Baltic catch was taken by the coastal fishery, mainly in the Gulf of Bothnia and slightly less in the Main Basin (Figure 5). About one third was caught by the offshore fishery, almost exclusively by Polish vessels. It is important to note that the actual catch of sea trout by Poland may be heavily overestimated due to possible misreporting of salmon as trout.

River catch was 84 t in 2012 (Figure 5). The largest part (41 t) was reported from Swedish rivers flowing to the Gulf of Bothnia, mainly as anglers' catch, and from Polish rivers (39 t) partly as commercial catch in lower Vistula and partly as broodstock fishery in Vistula and Pomeranian rivers.

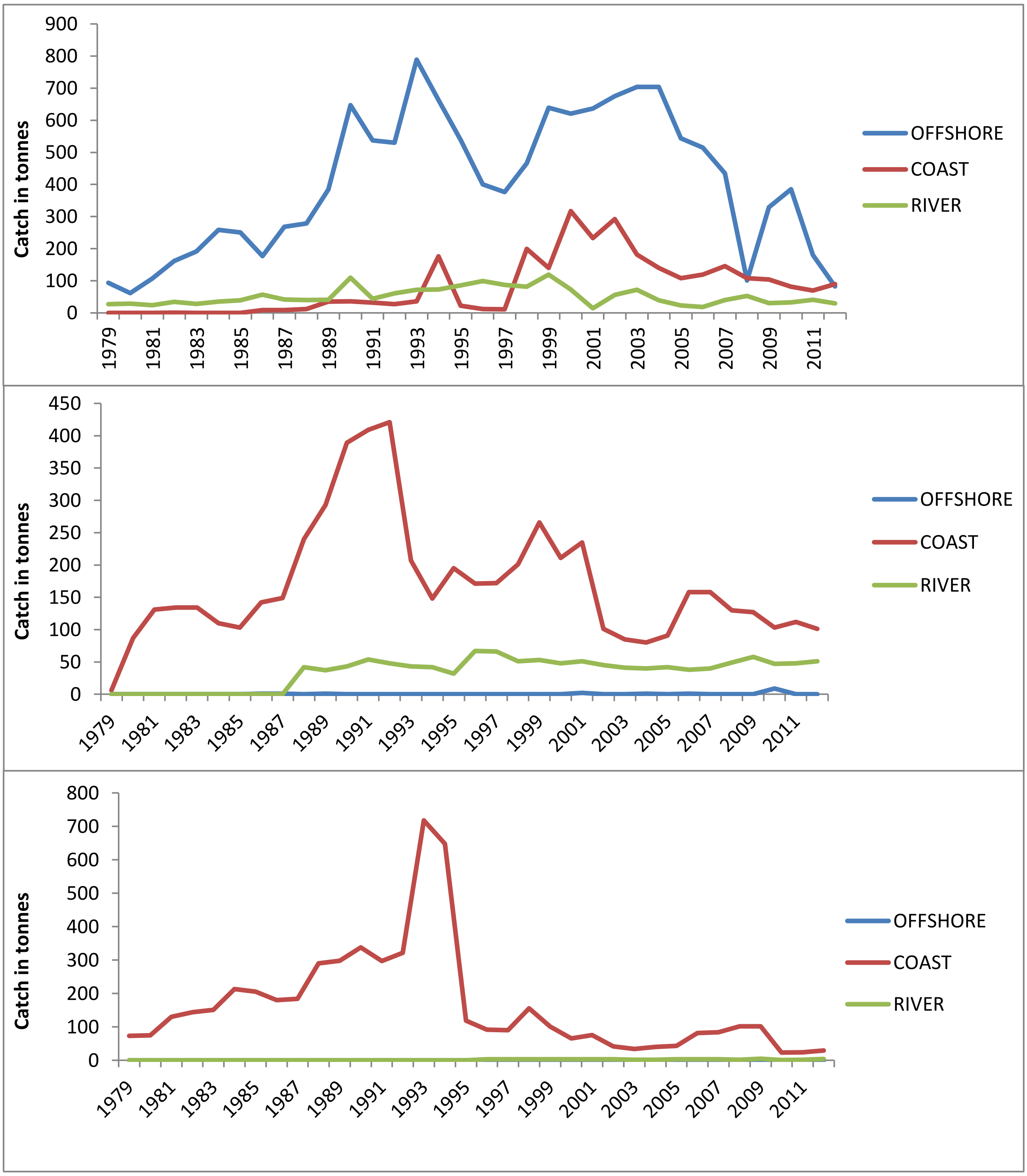

Figure 5. *Fishery catches of sea trout in* ***(A)*** *Main Basin,* ***(B)*** *Gulf of Bothnia and* ***(C)*** *Gulf of Finland. Note that offshore catches include in some countries and years also coastal catches and riverine catches have not been reported from all countries (ICES 2012).*

In 2013 the Swedish offshore fishery targeting salmon and sea trout will be phased out. The sea trout is only targeted directly by commercial fishing in the sea in the Main Basin, but is to some extent caught as bycatch along the Swedish coast in the Bothnian Sea and Bothnian Bay in the commercial coastal salmon trapnet fishery too.

How the indicator describes the Baltic marine environment

Relevance of the indicator for the ecosystem

The definition of parr in this indicator and the ICES SGBALANST work is 'young trout that have dispersed from the redd until the smolt stage' (Allan & Ritter 1977). The parr stage is sometimes subdivided according to age, where parr 0+ are young fish less than one year old etc.

Densities of sea trout parr depend on several factors, including climate, the size of the river and habitat characteristics (ICES 2009, ICES 2011). The habitat quality consists of several parameters for which there is an optimal value: physical conditions (water velocity, depth, slope, shade, stream wetted width), temperature, oxygen, nutrients, suspended solids, pH and iron. The optima for these parameters have been investigated for summer parr. The spatial niche in the winter parr habitat can be narrower than in the summer (ICES 2011).

The ICES study group on data requirements and assessment needs for Baltic Sea trout (SGBALANST) has conducted mapping of the parr habitat as well as introduced a common classification system of the habitats. The mapping of trout parr habitat has been conducted by electrofishing, field surveys, and GIS analysis (ICES 2009).

Sea trout is the sea migrating form of brown trout (Salmo trutta). Sea trout spawn in gravel in their home river or stream, generally in smaller rivers than salmon (ICES 2011). Predators of sea trout include cormorants (Phalacrocorax carbo) which have increased dramatically in the Baltic area.

Responses to anthropogenic pressures

The main reason for the poor status of sea trout populations in the northern areas is too high fishing pressure and particularly by-catch of post smolts in the net fishery.

In addition, the deterioration of habitat quality and damming of rivers affescts the populations. Channelizing of rivers has altered the spawning habitats which decreases the number of spawners (ICES 2009). The status is poorest in the Bothnian Bay and Bothnian Sea (ICES 2012. 2013).

Also dredging, pollution, acidification and siltation of rivers affects negatively the sea trout populations. The different factors influence sea trout to a varying extent depending on the sub basin.

The increase in the cormorant population, a predator of sea trout, may have an effect. The sea trout stock size may have decreased in areas where large cormorant colonies are present, but this should be further investigated (Bzoma 2004, Leopold et al. 1998).

Metadata

Data source

Sea trout is monitored by all Baltic countries by electrofishing for parr in the natal streams, giving a good index measure of recruitment.

The intensity and period during which monitoring has been going on, varies between countries (ICES 2008). Some countries started monitoring during recent years, while very long data series exist for a few streams. No data were available from Latvia, Lithuania and Germany.

Number of adult spawners ascending rivers is being monitored in five Swedish rivers in the Bothnian Bay.

The information of the sea trout spawning rivers originates from ICES WGBAST, ICES SGBALANST and the HELCOM project SALAR.

Description of data

Due to continuous concerns about the status and information available on sea trout in the Baltic Sea, a Study Group on Data Requirements and Assessment Needs for Baltic Sea Trout (SGBALANST) was established by ICES to work for a period of two years identifying a common classification system of habitats between countries (ICES 2011).

Part of the monitoring of sea trout parr takes place when monitoring salmon populations. This will result in less precise estimates of sea trout recruitment, because of differences in habitat between the two species. More electrofishing sites should be established in smaller rivers and streams, e.g. tributaries of salmon rivers, to ensure sufficient coverage of trout nursery areas.

Assessment units

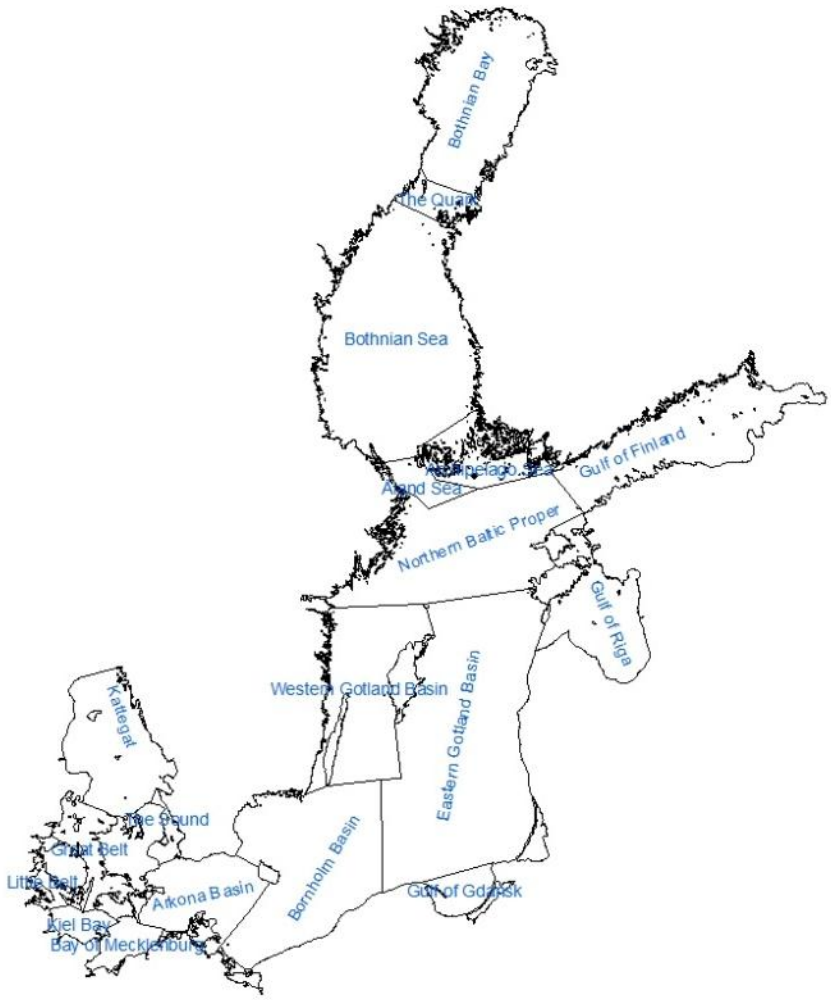

Figure 6. *Suggested assessment units for the sea trout in the Baltic Sea. Note that smaller sub-basins can be combined if boundaries of the units will not be moved.*

Migration patterns are known for only a few populations. While it appears that most populations make relatively short feeding migrations (distances being a few hundred kilometres), it is known that all sea areas have populations with long migration patterns, spreading into neighbouring sea areas. Fish tagged in Finland in the Gulf of Finland are found from Estonia and Russia and vice versa. Similarly, tagged fish from the Finnish side of Gulf of Bothnia are found from Sweden and vice versa.

There is not sufficient data from genetic monitoring to use as a basis for forming as-sessment units. Through the previous work of SGBALANST (ICES 2008, 2009) the Bothnia Sea, Bothnian Bay and Gulf of Finland (ICES subdivisions 30, 31 and 32) have been pointed out as highly separate units with respect to stock status and migration patterns. The fourth unit could be the Main Basin, but that can also be divided to smaller units if necessary. For the HELCOM core indicator work it is suggested that the sea trout indicator follows the sub-basin division used in HELCOM (see Figure 6), but it is good to recall that some sub-basins can be combined if necessary.

Geographical area

Southern Baltic sea =Subdivisions 21–25 (n=35 rivers)

Eastern Baltic sea =Subdivisions 26 and 28 (n=11 rivers)

Western Baltic sea =Subdivisions 27 and 29 (n=19 rivers)

Gulf of Bothnia =Subdivisions 30 and 31 (n=31 rivers)

Gulf of Finland =Subdivision 32. (n=47 rivers)

More information of the rivers and streams is given in ICES 2012.

Relevance of the indicator for the Baltic Sea sub-basins

Sea trout is not as mobile species as salmon, preferring to stay in coastal waters and within the same sub-basins as their natal river. Because all the Baltic sub-basins have naturally reproducing stocks, the indicator is relevant in the entire Baltic Sea.

Recommendation for monitoring

It is recommended that the monitoring of sea trout is carried on in the main stocks and expanded to stocks which are poorly known. The number of sea trout rivers and brooks are too many to monitor them all.

Temporal coverage

The status is assessed annually.

Methodology

In a couple of countries sampling of parr densities is used to calculate the smolt production by a relation of parr to smolt survival either developed in the same stream or in different streams (ICES 2008c). In most countries (not in Denmark or Poland) this is supplemented with monitoring of smolt escapement by trapping and counting smolt numbers in one or more streams. In total, smolt production estimates exist for nine rivers in the entire Baltic area, but the time-series are not complete for all years.

In only one river (Åvaån in Sweden) the number of spawners is monitored by trapping and inspection of the ascending sea trout. In Lithuania, the spawning run is estimated by test fishing in a couple of rivers. In nine rivers (eight in Sweden, one in Poland) the number of spawners is monitored by automatic fish counters. Determination of species is possible in these, but exact size, sex, etc. cannot always be determined. In three rivers the total run of salmonids is determined with an echosounder. This technique does not allow discrimination between sea trout and salmon.

An indication of spawning intensity by count of redds is collected from a number of streams in Poland, Lithuania and Denmark (ICES 2008c). In a couple of streams in Denmark the catch in sports fisheries has also been used to estimate the development in the spawning run. Catch numbers from the sports fishery in rivers are available from some Swedish rivers.

Tagging and marking are used as methods to obtain quantitative and qualitative information on trout populations.

An evaluation of status of rivers is done based on national expert opinions as well as on factors influencing status.

Parr abundance was divided into underyearlings (0+) and older trout (>0+). In total, data was available from 140 sites in 89 streams and rivers. ICES Subdivisions 21 to 32 were represented. At least ten sites were included from each of the ICES Subdivisions 25, 27, 30, 31 and 32. No data were available from Latvia, Lithuania and Germany.

Parr abundance data was transformed using Log10(x+1) to minimize variance and improve the fit to a normal distribution. Due to lack of data, underyearlings (0+) and older trout (>0+) was aggregated, not analysed separately.

Trend over time was calculated for each site as Pearson r using bivariate correlation between parr abundance and year (2000–2011), resulting in values from -1 to +1. Values close to -1 indicate a high correlation to a straight line indicating a negative development.

More information of the methodology is given in ICES 2012.

Determination of GES boundary

GES is reached when the parr density is more than 50 % of the reference parr densities in good habitats of spawning rivers.

Further work required

WGBAST has the intention to further develop the sea trout model in order to estimate potential parr densities in the rivers.

The ICES SGBALANST concluded that:

The importance of establishing sea trout Index Streams in all ICES subdivisions was stressed by the group. This would allow stock-recruit parameters to be followed precisely, providing much needed information on smolt production, spawning population structure, parr densities, parr-smolt survival and influence from environmental variables. The report of the SGBALANST 2011 discusses the Index Rivers.

To facilitate the use of information from Index Rivers on a wider scale, a common classification system of habitats should be established.

More electrofishing sites should be established in smaller rivers and streams, e.g. tributaries of salmon rivers, to ensure sufficient coverage of trout nursery areas.

It is suggested that knowledge on catches in the non-commercial coastal fishery is improved, possibly by inquiries supplemented with field obser-vations or voluntary reporting.

Knowledge on by-catches of trout in other fisheries needs to be increased.

ICES WGBAST concluded that:

- For the future it is important to get data from all participating countries.

- In Subdivision 30–32 data from smaller rivers/tributaries (i.e. from typical trout streams) are needed for comparisons with other areas.

- Data on spawning–stock status should be added (fish counters or traps, count of spawning pits, catch in sport fishery, expert opinion).

- Additional data is required for constructing a model of predicted parr abundance at sites with good habitat independent from sites used in the assessment.

- An attempt should be made of also constructing a model for potential parr abundance (maximum) at sites using a similar approach.

- Sites with less than five years of monitoring should not be included.

- Results from more Index streams in different parts of the Baltic would greatly contribute to the assessment.

- Optimal densities for sites in areas heavily affected by sea fishing should be evaluated using also information from outside the Baltic and/or observed densities at sites being stocked.

- It should be evaluated if the model would gain by including information on e.g. distance to sea and existence of migratory obstacles.

- The possible inclusion of tagging results in the model should be evaluated.

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View data

Table 1. *Number of rivers with wild and mixed stocks where sea trout parr production has reached <5%, 5-50% or >50% of the potential production and where the production estimate is uncertain. Based on 2013 report of WGBAST.*

	Wild				Mixed				
	<5%	5-50%	>50%	Uncertain	<5%	5-50%	>50%	Uncertain	**Total**
Gulf of Bothnia (FI)	3	2	0	0	0	0	0	0	**5**
Gulf of Bothnia (SE)	0	0	0	25	0	0	0	26	**51**
Gulf of Finland (FI)	7	0	0	0	6	2	0	0	**15**
Gulf of Finland (RU)	9	6	2	23	1	0	0	0	**41**
Gulf of Finland (EE)	6	12	13	7	0	3	4	0	**45**
Main Basin (DK)	2	23	114	0	6	13	15	0	**173**
Main Basin (EE)	12	11	11	1	0	0	0	0	**35**
Main Basin (LV)	0	1	0	2	0	0	0	19	**22**
Main Basin (LT)	0	0	2	0	2	6	0	0	**10**
Main Basin (PL)	0	0	0	0	4	6	4	1	**15**
Main Basin (RU)	0	0	0	3	0	0	0	0	**3**
Main Basin (SE)	0	0	0	200	0	0	0	7	**207**
TOTAL	**36**	**53**	**142**	**261**	**22**	**32**	**23**	**53**	**622**