

10 LAKE HJÄLMAREN PIKEPERCH FISH-TRAP AND GILL NET

10.1 Introduction

For the Pikeperch (*Sander lucioperca*) gillnet and fishtrap fishery, the Principle 1 and 2 PIs were mapped against the following indicators within the stated reports:

FAM PI:	Assessment Report 2006 Performance Indicator:	
1.1.1 Stock status	1.1.4.1	Is there evidence that stock status is consistent with that providing long-term productivity?
1.1.2 Reference points	1.1.3.2	Is the stock status evaluated relative to appropriate reference points?
1.1.3 Stock rebuilding	-	-
2.1.1 Retained species	2.1.2.1	Is information available on the nature and extent of the bycatch (capture of non-target species)?
2.2.1 Bycatch species	2.1.2.2	Is information available on the extent of discard (the proportion of the catch not landed)?
2.3.1 ETP species	2.2.1.3	Do interactions pose an unacceptable risk to ETP species?
2.4.1 Habitats	2.1.3.1	Is there adequate knowledge of the physical impacts on habitat due to use of gear?
	2.1.3.2	Is any gear lost during fishing operations and can 'ghost fishing' occur?
	2.1.4.3	Does the fishery have unacceptable impacts on habitat structure?
2.5.1 Ecosystems	2.1.4.1	Does the removal of target stocks have unacceptable impacts on ecosystem structure and function?
	2.1.4.2	Does the removal of non-target stocks have unacceptable impacts on ecosystem structure and function?
	2.1.4.4	Are associated biological diversity, community structure and productivity affected to unacceptable levels?

10.2 Principle 1

(GN = gillnet FT = fishtrap)

Principle 1 - FAM reference (PI)	August: AR	August: SR1	November: SR2	October: SR3
Year	2006	2007	2008	2009
1.1.1 Stock status score	1.1.4.1 95 (GN) 1.1.4.1 95 (FT)			
1.1.2 Reference point score	1.1.3.2 60 (GN) 1.1.3.2 60 (FT)	Condition 1 On target	Condition 1 On target	1.1.3.2 80 (GN/FT)
1.1.3 Stock rebuilding	-			
Total score for Principle	84 (GN/FT)			

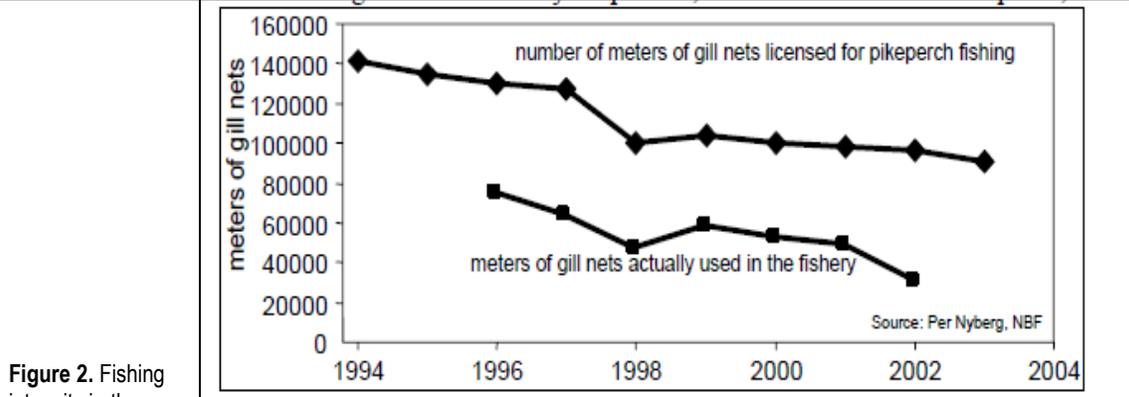
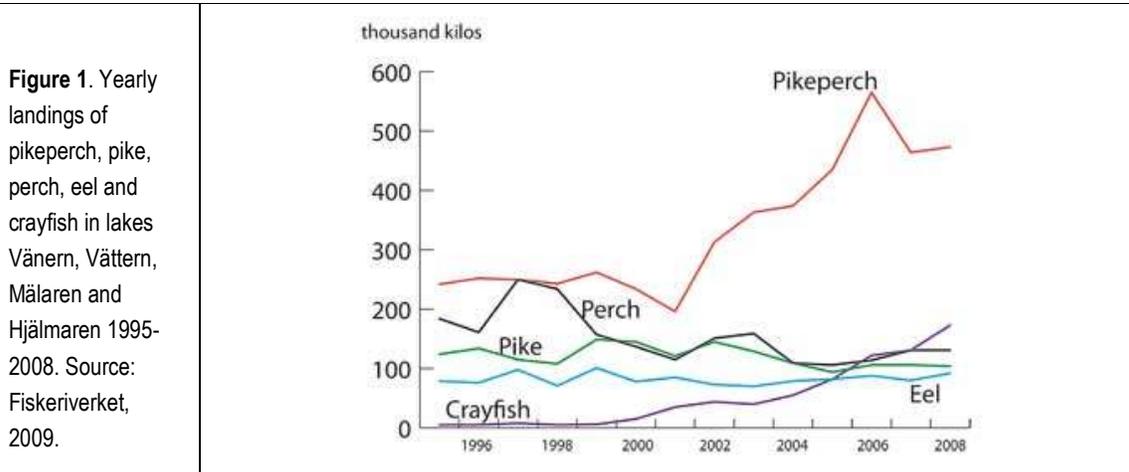
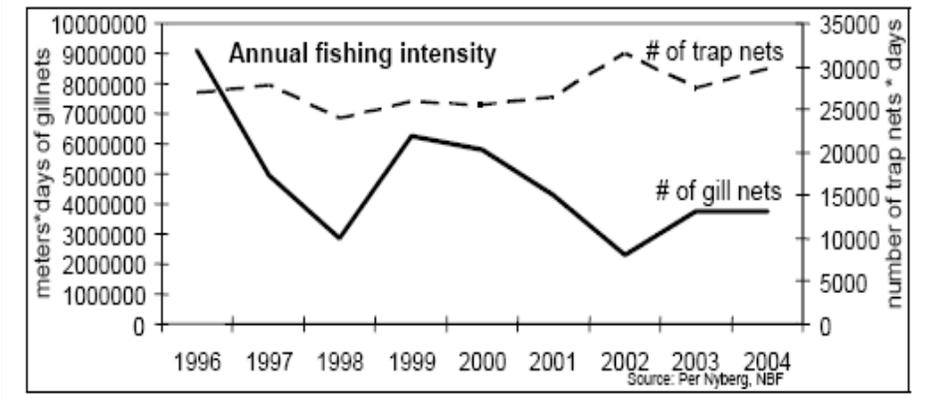


Figure 2. Length of gillnets in the pikeperch fishery(AR, 2006).



10.2.1 Indicator trend

Stock status 1.1.1

In the early part of the 20th century, the commercial fishery in Lake Hjälmaren targeted crayfish with a ‘subsistence’ fishery of fin-fish species, consisting predominantly of pikeperch. The loss of the native crayfish through crayfish plague resulted in an increased fishery for pikeperch. Catches were high in the middle of the Century, but by the end of the Century there was a dramatic decrease in catches. Drastic management measures were implemented, and in recent years, information on pikeperch stock structure has shown positive and consistent trends in year class abundance and overall stock status (AR, 2006). In lakes Vättern and Hjälmaren the landing has increased approximately three times since 1995, and in 2008 173 tonnes was caught (Figure 1). There has been no corroboration, however, from fishery-independent indices (AR, 2006).

Reference points 1.1.2

There is an ongoing analysis of stock status relative to historical data (informal reference points) that allows forecasts to be made on the health of the stock and management actions to be taken. However, formal reference points linked to indices of stock status such as Catch per unit effort (CPUE), stock size and pre-recruit year-class strength have not been established (AR, 2006).

10.2.2 Performance Indicator scores

The stock status indicator was scored at 95 in 2006 and has not been re-scored since. The reference point indicator was initially scored at 60 in 2006, and re-scored at 80 in 2009.

10.2.3 Conditions

No pre-conditions were required prior to certification being granted (AR, 2006).

Condition 1. Reference levels and decision rules**Action required:**

There is an ongoing, implicit analysis of stock status relative to historical information that allows forecasts to be made for the pikeperch stock and management actions to be taken. However, there are no formalised reference/action points, nor a documented, agreed action plan (decision rules) to be put in place as and when stock levels reach such reference levels. This is potentially problematic if additional licensed gears, not currently used, were to be activated, thereby increasing total effort (AR, 2006).

Pike-perch recruitment index and CPUE research continued during the 2006/09 period with fishers continuing the counting of Year 3 fish from the specific traps distributed throughout the lake (data has been collected since 1993). This monitoring programme is continuing and will do so for the foreseeable future. The draft reference levels have now been formalised and corresponding management action plans are in place. As a result, this condition was closed (SR, 2009).

10.3 Principle 2

	Aug: AR	Aug: SR1	Nov: SR2	Oct: SR3
Principle 2 - FAM reference (PI)	2006	2007	2008	2009
2.1.1 Retained species	2.1.2.1 90 (GN) 2.1.2.1 90 (FT)	-	-	-
2.2.1 Bycatch species	2.1.2.2 95 (GN) 2.1.2.2 95 (FT)	-	-	-
2.3.1 ETP species	2.2.1.3 80 (GN) 2.2.1.3 80 (FT)	-	-	-
2.4.1 Habitats	2.1.3.1 95 (GN) 2.1.3.1 95 (FT) 2.1.3.2 100 (GN) 2.1.3.2 100 (FT) 2.1.4.3 95 (GN) 2.1.4.3 95 (FT)	-	-	-
2.5.1 Ecosystems	2.1.4.1 80 (GN/FT) 2.1.4.2 95 (GN) 2.1.4.2 85 (FT) 2.1.4.4 90 (GN) 2.1.4.4 90 (FT)	-	-	-
Total score for Principle 2	87	-	-	-

10.3.1 Indicator trend

Retained species 2.1.1

Bycatch species 2.2.1

Discards are very limited because of the large mesh size used in this fishery and the high selectivity of gillnets. Undersized pikeperch and other discarded fish are released alive and have a high survival rate (AR, 2006). Raised from a depth of only 5m, fish suffer minimal expansion of their swim bladder (rapid expansion can cause buoyancy problems which make discarded fish prey for gulls).

Besides pikeperch, the fishery catches perch and pike, both of which are of commercial value. The main bycatch species is bream (*Abramis brama*), with more caught by the fish traps than in gillnets. This is of limited or no commercial value and so is generally either returned or used for bait in crayfish traps, with a very small proportion of bream catches fed to sea eagles (*Haliaeetus albicilla*) that overwinter at the lake (AR, 2006). Bream stocks are considered healthy and fishers and managers are aware of overall proportions of bream in catches. There are no indications that any of the non-target fish species that are landed in the gillnet fishery are fished at unsustainable levels (AR, 2006).

ETP species 2.3.1

There are two Red Listed fish species in the lake: eel (*Anguilla anguilla*) and asp (*Aspius aspius*). Asp can be caught by gillnets and traps, but this happens very seldom and they are usually released alive. Eel are not caught in the nets (AR, 2006). Other than the eel and asp, no animals are substantially negatively impacted by this fishery.

The bream (from bycatch) fed to the sea eagles present at the lake during winter is likely to have contributed to the winter survival of these birds and possibly also allowed them to start nesting around the lake. Because of the ice, there are no bycatches of birds in gillnets during the winter fishery, but when gillnet fishing during the ice free season (late fall and early spring) there can be occasional cormorants (*Phalacrocorax carbo*) and other species of piscivorous diving birds (e.g. mergansers) caught in the nets (although none are on the IUCN Red List of Threatened Species). There are also some incidental catches of piscivorous birds in fish traps during seasonal migrations when birds are present on the lake in relatively high numbers. Catch of birds in gillnets are recorded by fishers during late autumn and after ice break. The caught birds were all cormorants, which are regarded as too abundant and are hunted annually to cull 1500 birds (SR, 2007). Ornithologists have expressed no particular concerns over this fishery.

As river otters do not occur in Lake Hjälmaren, the only mammal that may be trapped is American mink *Neovision vision*, an introduced species; however, there have been no records or indications that this occurs (AR, 2006). Impacts on endangered/threatened species are not considered significant (AR, 2006).

Habitats 2.4.1

Gillnets are generally set under ice and so are static with known locations. Gillnets may rest on the bottom but have very limited impact. Infrequently, ice breaking may prevent recovery of nets, or nets may move, however GPS positioning allows recovery of nets. Therefore, the impact of gear loss on target and non-target species has been shown to have negligible effects on habitats, ecosystems or species of concern through, for example, 'ghost fishing'.

Fish traps are set in areas which avoid sensitive habitats (e.g. macrophyte beds). No gear loss is possible as fish traps are large and nets are well anchored to permanent moorings. Fish trap locations are all mapped and liable to inspection by county managers (AR, 2006).

The sensitivity of habitats to all current fishing operations is considered to be very low and not significant, but effects are not tested against predetermined limits (AR, 2006).

Ecosystems 2.5.1

Information available on the overall levels of fish species, water quality etc in Lake Hjälmaren suggests no significant changes in ecosystem structure and function due to the removal and management of predatory pikeperch (AR, 2006). The ecological consequences of current extremely low levels of removal of non-target stocks have been evaluated and determined to be within acceptable limits (AR, 2006).

10.3.2 Performance Indicator scores

All performance indicators were scored between 80 and 100 so will not be re-scored until re-assessment takes place.

10.3.3 Conditions

There were no conditions opened for Principle 2 outcome indicators.

10.4 References

Fiskeriverket, 2009. A sustainable fishery. The Swedish Board of Fisheries.

<https://www.fiskeriverket.se/otherlanguages/welcome/aresourceworthmanaging/asustainablefishery.4.7e2791921225aba85fa800055.html> [Accessed 17.1.2011].

MSC, 2009. Net Benefits: the first ten years of MSC certified sustainable fisheries.

<http://www.msc.org/documents/fisheries-factsheets/net-benefits-report/Lake-Hjälmaren-pikeperch.pdf>

The following documents from the MSC website were used as reference material in this case study:

Assessment Report (AR) (2006)	http://www.msc.org/track-a-fishery/certified/inland/lake-Hjälmaren-pikeperch/assessment-downloads-1/PubCertRep_GillNet.pdf
SR1 (2007)	http://www.msc.org/track-a-fishery/certified/inland/lake-Hjälmaren-pikeperch/assessment-downloads-1/Surv_Report_2007.pdf
SR2 (2008)	http://www.msc.org/track-a-fishery/certified/inland/lake-Hjälmaren-pikeperch/assessment-downloads-1/Lake-Hjälmaren-Pikeperch-Surv-Report-2008-v1.pdf
SR3 (2009)	http://www.msc.org/track-a-fishery/certified/inland/lake-Hjälmaren-pikeperch/assessment-downloads-1/02-11-09-lake-Hjälmaren-pikeperch-surv-audit-3.pdf