COUNTRY NOTE ON NATIONAL FISHERIES MANAGEMENT SYSTEMS -- FINLAND

1. Introduction

1. Finland has a long sea coastline, 200 000 lakes and a large number of rivers. That's why it is natural that fishing is an important hobby for many i.e. almost every second Finn. In Finland, there are about 3 500 professional fishermen. The share of fishery in the Finnish gross domestic product is at the level of 0.2%. In Finnish professional fisheries, herring, sprat, cod and salmon have quotas in the sea area. Herring and salmon are the most difficult species to manage. For that reason the management of herring and salmon fishery has an important role when discussing fishery management in Finland in this report.

2. The structure of this report is the following:

- 2. The characteristics of the fisheries sector
- 3. Analysis on the management development
- 4. Conclusions

3. The history of the Finnish management system was largely described in the Finnish country report submitted in 1997. Thus this particular report will concentrate only in the latest development of management measures put into place after 1997.

2. Characteristics of the fishing sector

Physical characteristics of the Baltic Sea and the Finnish coast

4. The Baltic Sea is a 374 000 km^2 big brackish water basin, with an average depth of 60 meters and a maximum depth of 459 meters. The deepest parts of the Baltic are in the Main basin, whereas the Finnish fishing zone generally is shallower. The average depth in the Gulf of Finland is 38 meters, in the Archipelago Sea it is 23 meters, in the Bothnian Sea it is 68 meters and in the Gulf of Bothnia it is 43 meters.

5. The water in the Baltic Sea is salty, but the salinity is much less pronounced than in the North Sea, for example. In the Baltic Sea, the salinity is usually 0.1-1.3% depending on the area and depth. The water inflow through the Danish sounds regulates the salinity. The magnitude of the water inflow varies greatly, large inflows occur while persistent western winds occur. The salinity level largely affects the ecosystem in the Baltic Sea and many changes in the abundance of fish stocks depend on it.

6. The Finnish coastline is quite long in relation to the size of the country. Measured without curves it is about 1 100 km, and measured on the general map it is about 4 600 km (islands not included). There are many islands in the Finnish area and the main part of them are quite small; there are about 81 000 islands with an area of at least 100 m^2. The biggest islands are Aaland mainland 685 km^2, Kemiö 524 km^2 and Hailuoto 195 km^2.

The fish resources

General

7. In Finland the most important commercially exploited fish stocks are living in the Baltic Sea. Commercial catches of 17 species are reported on a regular basis, but in addition, individuals of other species are caught now and then. Most of the species are fished only in the coastal waters, but the biggest volumes are caught in the offshore fisheries. In the Baltic Sea the most important commercially exploited stocks are Baltic herring, salmon and whitefish (*Coregonus Lavaretus*). By volume, sprat is the second important species after Baltic herring but its value is low because it is almost solely used for fodder.

8. The fishing of four species, Baltic herring, sprat, salmon and cod, are managed jointly by the countries around the Baltic Sea. The catches of these stocks have accounted for about 95% of the total catch taken by the Finnish professional fishermen and about 75% of the total firsthand value. The stocks of these species are assessed yearly in the International Council for the Exploration of the Sea.

9. Baltic herring, sprat, salmon and cod all interact with each other and the status, and sometimes also the behaviour, of one stock therefore depends on that of the others. As a very rough generalisation, one could say that Baltic herring and sprat are alternative sources of food for both salmon and cod. For example, when the cod stocks have been weak, the mortality of Baltic herring and sprat caused by the decrease of cod has dropped, and therefore these stocks increase. At the same time, the competition for food among Baltic herring and sprat has increased. Further, the growth of Baltic herring in some parts of the Baltic occurring where cod used to grow has diminished. At the same time, the growth of salmon has increased since there has been more food available. Also the migration patterns of salmon partly depend on the state of the Baltic herring stock-during years with good abundance of Baltic herring, a bigger share of the Bothnian salmon stays in the Bothnian Sea instead of migrating to the Baltic Main Basin.

10. Despite the huge amount of lakes in Finland, the inland waters are of less importance for the Finnish fishing industry than marine areas. The main reason for the low utilisation of the inland waters is the uneven and small volume of catch per unit of effort. The inland waters are very important in the recreational and subsistence fishery. The main species in the inland waters are vendace, whitefish, perch and pike.

The Baltic herring and sprat stocks

11. Yearly catch (of all countries) of Baltic herring has diminished from over 400 000 tonnes of the beginning of 1980's to 273 000 tonnes in 2002. However, reproduction of Baltic herring in the Gulf of Bothnia grew over the average in 2002, due to good environmental circumstances. For Finland the most important herring stock is in the Gulf of Bothnia, where it is on a biologically safe level. The stocks in the Main Basin and the Gulf of Finland are in less good shape and fishing has been more severely limited by quotas.

12. The spawning biomass of sprat has diminished severely from 1997 but the stock is still six times as high as in the beginning of the 1980's. The fishing of sprat has to be regulated by quotas especially in the Main Basin because the fishing of sprat causes also fishing mortality to herring, the catch being often mixed of two species.

The salmon stocks

13. The salmon and sea-trout stocks in Finland are supported by stocking programs. There are only two rivers left in Finland, flowing to the Baltic Sea, with wild salmon stocks; the River Simojoki and the

River Tornionjoki. The status of these wild salmon stocks has improved during the last years, due to effective protection measures.

14. The Gulf of Finland has its own almost totally rearing based salmon stocks that don't migrate widely out of the Gulf. The management problems are therefore different compared to those in the main Baltic Sea; and have therefore been dealt with separately.

15. Most salmon migrate to the Baltic Main Basin, but some stay in the Gulf of Bothnia. After one to three years at sea the salmons start their spawning migrations back to the rivers were they were born. A salmon leaving its river in the north of the Gulf of Bothnia on its feeding migration can swim in the fishing zone of nine different countries before it eventually can return to the river to spawn if it has not been caught. Even within the Finnish fishing zone it must survive different fishing methods and fishermen living hundreds of kilometres apart.

16. Most of the stockings of salmon take place in the river mouths in the northern part of the Gulf of Bothnia, as compensation for damming of the rivers. Since the releases take place near the only two rivers which still has wild salmon production, the salmons based on stockings and those with wild origin mainly have the same migration patterns and therefore the stocks are fished together, which makes management difficult.

17. The success of the releases varies a great deal from year to year. One of the most important factors affecting the success is the survival during the first year in the sea - called post-smolt survival As reasons for big changes in the post-smolt survival both the abundance of predator populations and the temperature during the first year has been given.

18. Also the growth of salmon depends on the environment and on the status of other species. Factors that support rapid growth could be exceptionally mild winters, increased smolt-size and decreased amount of cod competition for the same food (herring, sprat).

Other species

19. The cod stock in the Baltic Sea started to decrease in the mid-1980s. The weak recruitment is connected to the stagnation of the Baltic Sea. The high fishing mortality and low recruitment have reduced the spawning stock to the lowest level observed.

20. Most of the whitefish stocks, as well as other freshwater species off the coast of Finland are sustainably fished.

Stocking programs

21. With the aim of improving catches, both commercial and recreational ones, and as compensation for environmental damages, stocking programs are carried out. Stockings are carried out both in the lakes, the rivers and the Baltic Sea. 24 different species are released each year.

22. The most important releasing areas are in the northernmost part of the Gulf of Bothnia and the most important species are salmon, sea trout and whitefish. Moreover, some other freshwater species stockings are carried out in the sea-area (pike-perch, pike).

23. A large proportion of salmon and sea-trout releases are based on the obligations imposed by Environmental Permit Authorities, according to legislation that states that when damage has been done, fish stocking should be carried out by those who have caused the damage. In addition to these stockings,

voluntary programs are also carried out financed by the state, local authorities or the owners of the water areas.

The professional fishermen, the fleet and the catch

24. The amount of fishermen, vessels and gear as well as the catch they obtain is an outcome of the management instruments used, the characteristics of the fisheries sector and other exogenous variables at earlier stages. These outcomes will therefore be dealt with in detail in section 3.

25. In 2003 there were about 2 709 professional fishermen fishing in the sea. About 1 000 of them received more than 30% of their income from fishing (full-time fishermen). The number of professional fishermen has decreased continuously for many years but the number of full-time fishermen has been more stable.

26. The number of fishing vessels was estimated to be about 3 494 in2003. 95% of the vessels are shorter than 12 meters.

27. During the years 1990-2003, the total catch of the Finnish professional marine fisheries fluctuated between 60 000 and 120 000 tonnes and its first hand value roughly between EUR 20 million and EUR 40 million. The total catch was at the highest level in 1998. The value of the catch has seen a decreasing trend.

Recreational fisheries

28. Recreational fishing is one of the most popular recreational activities in Finland. The marine area is the most important fishing area for over 400 000 recreational fishermen, whereas over 1.5 million recreational fishermen mainly fish in lakes and rivers.

The catch by the recreational fishers

29. The most important species in recreational fishery are perch and pike. In 2002 the recreational fishers in the marine area caught 2 707 tonnes of perch and 1 820 tonnes of pike. The recreational fishermen's share of the total marine catch was about 10%. The recreational fishermen's share was about 85% of the catches in the lakes.

The utilisation of the catch

30. The processing rate and the number of fish products on the market have increased in the 1990s. Processing has been the most growing sector of Finnish fisheries in the past years.

31. There were 243 fish processing enterprises in Finland in 2003. About 30% of these were very small enterprises using less than 10 000 kg of fish annually. Seven per cent of enterprises belong to the biggest class using over 1 million kg of fish. The use of fish for processing amounted to 50.5 million kg (domestic and imported fish).

32. The main species used by the Finnish processing industry are Baltic herring and farmed rainbow trout. In 2003 the fish industry bought 20 438 tonnes of Baltic herring for processing. Some 13 100 tonnes were filleted and most of the rest were filleted or smoked. Some 15 400 tonnes of rainbow trout was filleted, smoked or otherwise processed. Besides domestic rainbow trout, Baltic herring and whitefish the processing industry imported fish, mostly salmon from Norway.

33. Over 70% of the Finnish marine catch (Baltic herring and sprat) is used for animal fodder.

Social characteristics

34. There is general concern about the possibilities for people to continue to live and work in the rural areas of Finland. This is also important with respect to fishing, especially in the archipelago areas where there are few other employment opportunities. It has therefore been seen as a cause of concern that the amount of people employed in fisheries industry in these areas has been dropping.

The Private ownership of seawater

35. Finland differs from most other countries in the respect that not only the land but also water areas are objects of private ownership. This is of great importance for the management of fisheries, especially since the legal position of private ownership is traditionally strong in Finland.

36. The private ownership has its roots in the times when Finland was part of Sweden. During the years up to 1766, there was no general fishing act in Sweden. There were however specific rules and regulation and local habits had a huge importance for the legislation to come. The fisheries act from the year 1776 was a compromise, between three interest groups: the farmers, the town based fishers and the king. The farmers wanted private ownership of land to be increased to incorporate water areas as well, town based fishermen wanted an open access fishery and the king was interested in getting a way to tax fisheries but was also a big land owner and wanted to secure the fishing rights in these areas. The result was different rules in different parts of the country. On the south and the west coast of Sweden, the town based fishers were strong and the tax interest of the king dominated. The result was therefore a system where private ownership stops at the coast and fishing in the sea was free. In the Baltic Sea area of Sweden, farmers were strong and the result was a connection of the fishing rights and the ownership of the land on shore and on the islands.

37. Today the Finnish water areas can be divided into three groups on the basis of ownership: some areas are owned by individual persons, i.e. parcelled water areas, these areas are most common in the southern and western parts of the country. Secondly, there are areas that are jointly owned by groups of private real estate holders. Finally, outside the village boundaries (and in the middle of the largest lakes) there are public water areas owned by the state.

38. In legal terms the proprietor of the areas owned by groups of private real estate holders is a shareholders' association for a registered village's common areas. The shareholders are not always organised, but sometimes they are replaced by the statutory shareholders' fishery association for the (respective) registered village's common waters. The shareholding estates per village vary between two and several thousands. The system is furthermore complicated by the fact that the archipelago water area is split by a network of village and estate boundaries.

39. Within a system based on private ownership of water areas, there has also been a need to ensure public interests. The public rights of access and related citizens' rights, which are traditional attributes of the Nordic legal system, limit the rights of the private water owners. There are also additional limitations as the explicit provisions for moving in the water areas, in the Water act, and some specific common rights of fishing, in the Fisheries act. The Fisheries act grants the citizens the right to angle with rod and to practise a form of ice fishing - jigging - without permission from the owner of the water area.

Aquaculture

40. One factor which has characterised the market for fish and fish products in Finland for a long time is the large role of farmed fish, especially rainbow trout. In addition to food fish production, juveniles are reared for stocking purposes.

41. The Finnish aquaculture production increased fairly steadily from 1978 to 1989 and from that year onwards up to 1991 the production remained more or less constant. The total food fish production was 3 205 tonnes in 1978 and increased subsequently reaching the level of 19 000 tones in 1989. Since then the production has had a continuous decreasing trend and in 2003 it was only 12 558 tonnes. In 2003, the value of food fish production was nearly EUR 36 million.

3. Management objectives and responsibilities

Management objectives

42. As a member of the European Union, Finland complies with the rules of the Common Fisheries Policy. At the national level, the main objectives for the management of the Finnish fisheries are stated in the first paragraph of the Fishing Act (1982/286):

> "When engaging in fishing, effort shall be made to maintain the maximum permanent productivity of the waters. Special attention should be paid to exploiting the fish stock rationally, with consideration for the aspects of the fishing industry, and to caring for and increasing the fish stock. Consequently, such measures shall be avoided that might harmfully or adversely affect nature or the balance of nature".

43. Principally the main goals of the fisheries' management at the national level are to aim at a maximum permanent production and to assure the round-the-year income of the professional fishermen.

Management systems analysis

44. The Common Fisheries Policy (CFP) creates a basis for the Finnish fisheries management system. TACs and international technical regulations are based on EU regulations. The Ministry of Agriculture and Forestry gives national regulations to ensure the implementation of EU regulations as well as for national purposes.

Pelagic fish species

45. The European Union has managed the pelagic fishery by catch quotas by countries and fishery zones. The TACs for Baltic herring and sprat has led yearly to a closure of a fishery. For example in 2003, the national authority created five regulations for the management of pelagic fishing and all these regulations defined closed periods or time restrictions for pelagic fishing. The aim of these regulations was to ensure round-the-year fishing.

Baltic herring

46. In recent years the TACs and quotas approved at the IBSFC and EU level have restricted the herring fishery heavily. For example in 2003, the national authority initiated five regulations for the management of herring fishery to ensure constant and even supply of herring round the year. All these regulations defined closed periods or time restrictions for pelagic fishing.

47. During the Finnish EU-membership, the Finnish catch monitoring system has improved and has based an inevitable basis for effective quota management.

48. In Finland, the marketing problems, and also the low price of herring, have limited fishing effort. About 70% of the catch is used as animal fodder. In periods when the need for fodder has been great, herring catches have increased, and vice versa. The variations in demand and catches of herring for human

consumption have been much smaller. The demand of herring for human consumption has been decreasing slowly during the recent years.

49. The EU ban to use fish which exceeds a certain level of dioxin concentration for human consumption has caused severe problems to the herring fishery, since herring is one of the species in which these levels have been exceeded in Finnish catch area.

Sprat

50. During the last years the Finnish sprat quotas have been almost fully exploited. Since the Baltic herring and sprat fisheries are practiced side by side, the restrictions normally concern both herring and sprat fisheries.

Baltic cod

51. In the Baltic Sea, there are two cod stocks. The distribution area of the western cod stock is in the areas west of Bornholm Island and the eastern cod stock inhabits areas to the east and north of the Bornholm Island. The Finnish fishery has exploited the eastern cod stock.

52. During recent years, the Finnish cod quotas have been fully exploited. There have been periods of closure to ensure the supply of cod throughout the year. Finland has also divided the Finnish cod quota between net vessels and trawlers. The aim has been to assure reasonable fishing opportunities for both types of cod fisheries.

Salmon

53. The salmon fisheries have a vast management history. Technical regulations, as minimum fish size and mesh size, and closed periods and areas have been used for over a hundred years. Also international collaboration has been realised for the Baltic salmon fisheries for more than a century. Despite the long management history, permanent solutions have not been found and therefore many of the measures change almost annually.

54. At the moment management system is based on time, area and size restrictions. In coastal area of Gulf of Bothnia the salmon fishing season begins step by step starting from the southern part of Finland. The idea behind this is that among the early running spawners there is a larger share of wild-origin salmon than among the late running spawners. The coast is therefore divided into three areas with different opening dates. The exact dates have been decided until the year 2007 by the Government of Finland.

55. The Finnish drift net fishery, which is currently exploiting running salmon in the sea, is going to end because of the EU-regulation which bans drift net fishing in the Baltic Sea by the end of 2007.

56. A large part of the salmon catch in Finland is based on reared fish, even though the natural salmon production has been increasing during the last years. The profitability of salmon fisheries has also been decreasing because of the restrictions in catching (especially closed season in coastal fisheries) and decreasing prices. The prices have gone down mainly because of the heavy price competition from the Norwegian salmon farming industry.

57. Like herring fishery, the salmon fishery has faced difficulties because of the EU restrictions to use fish which exceed a certain level of dioxin concentration for human consumption. Also the fast increase in seal populations in the northern Baltic Sea is causing serious losses in broken traps and nets and damaged catches. Thus, it is threatening the profitability of the coastal salmon fishery.

Other professional fishing

58. The coastal Finnish fisheries have mainly been managed by technical regulations. The access to fishing on the state owned waters have mainly been open, whereas access to the private water areas has been limited by the owners. National legislation regulates the minimum size limits for some commercial fish species such as pike-perch and trout.

59. The private water owners also use technical regulations. In addition, many private water owners limit the access by limiting the number of permits they sell or limit the amount of gear to be used. For example, the city of Helsinki sells permits for nets to the town waters to the inhabitants.

Recreational fisheries management

60. When fishing in Finland, fishermen have to buy fishing licences and pay pure-fishing fees. Ice fishing or angling with hook and line requires no permits or licences, because this is covered by public right of access. Also people less than 18 years old and over 65 years old don't need to have licences

61. At the moment fishing a management fee is required for a person who is 18-64 years old and wishes to practise fishing. In addition to this, each person who is 18-64 years old and wishes to practice lure fishing must either obtain permission from the holder of the fishing right or pay the provincial lure fishing fee.

4. Conclusions

Baltic herring

62. Herring stocks have never collapsed in the northern Baltic Sea, as has happened for many oceanic herring stocks. The sustained herring yield in the northern Baltic Sea is not, however, a result of successful management, but is rather a consequence of biological and economical properties of herring fishery.

63. In the northern Baltic Sea, herring form dense pre-spawning and spawning shoals in spring, but in other seasons the distribution of herring is fairly scattered. Thus the catch per unit of effort is rather small outside the spawning season.

64. In the Finnish fishery zone especially in the Bothnian Bay, the herring stocks are at this time in good shape and the quotas are fully exploited.

65. At present the herring fishing in the northern Baltic Sea does not cause any major biological concern. The profitability of the fishery could probably be increased by more efficient management. Individual catch quotas would decrease the marketing difficulties, because then the number of catches would be more constant throughout the year. The dioxin problem still has effects on the future expectations in herring fisheries.

Salmon

66. Fishery has had effects on the salmon stocks. An even stronger effect than fishery on stocks is the man made changes in the rivers. Before industrialisation in Finland, there were 18 salmon rivers flowing to the Baltic Sea. It was estimated that Finnish rivers produced about 2.5 million smolt individuals annually. At the moment only two naturally reproducing stocks are left. Most of salmon rivers have lost their salmon stocks because of damming the river for hydroelectric demand.

67. A large part of the Finnish salmon catch is based on re-stockings. However, the natural salmon production has increased during the last years. The profitability of salmon fisheries has also decreased because of the catch restrictions. Secondly, the prices have gone down mainly because of the heavy price competition from foreign fish imports.

68. The Baltic Sea fishery has also been struck by EU restrictions to use fish containing dioxin containing higher than is accepted levels for human consumption. Moreover, the rapid increase in seal populations causes serious losses in broken traps and nets and damaged catches. Thus, it is threatening the profitability of coastal salmon fishery. In addition it has caused serious losses also to fish farmers.