Report for the "Nordisk Ministerrads beidsgruppe for Genbanksamarbeide for fisk" 1990

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In recent years aquaculture, mainly salmon culture has increased rapidly. Over ten million salmon smolts were produced in Iceland in 1990. That is ten-fold the production 5 years ago. Thereof, about 6 million smolts were used in ocean ranching and about 2 million smolts went to cage rearing operation. The rest is reared in land-based tanks. Farming of char has been growing last two years a its consequences should be evaluated.

The number of farmed fish, both cage escapees and ranched strayers, entering salmon rivers has increased as the salmon culture grows.

The Institute of Freshwater Fisheries has for some years now evaluated the proportion of farmed fish in salmon rivers. Scale samples have been taken from the catch in rivers of Iceland. The scales have been used to identify escapees from cage farms and straying fish from ocean ranching stations. From such analysis of scales it is seen that the proportion of farmed fish is low in rivers in North Iceland but is high in rivers in SW Iceland and has been growing from year to year. For example 36 % of the catch in River Ellidaar, a good salmon river, were of farmed origin both cage reared salmon and ranched salmon. This is threatening the existence of many natural stock of salmon especially near the areas with large salmon culture and ranching operation, such as in SW-Iceland (Gudjónsson 1991).

A new regulations were put in effect in 1988 by the Minister of Agriculture in order to diminish the disease and genetic threat. Since then the native stock must be used for salmon enhancement in rivers. Cage rearing must be 15 km away from the estuary of salmon rivers with average annual catch over 500 salmon and 5 km away from

salmon rivers with average annual catch over 100 salmon. Companies operating before the regulation were not affected as companies in SW-Iceland. In the regulation there are also provision that certain amount of smolt in cages and in ocean ranching stations should be microtagged. It has been difficult to fulfill the condition in the regulation concerning the tagging of smolt in cages, which could give important information on the dispersion of that fish if it escapes. The regulation is now being revised.

A gene bank was established in 1989 preserving frozen milt. Milt from several stocks were taken in the fall of 1989 and 1990. The gene bank is run by the Institute of Freshwater Fisheries.

In 1990 the Institute initiated a genetic survey of Icelandic salmon stocks using protein-electrophoresis. This research will continue through next year. Hopefully the result from the survey will give better ground for managing the movement of fish. Furthermore work on the life history of the salmon stocks in Iceland in relation to their environment has been done (Gudjónsson 1990).

Further measures must be taken. By using sterile fish in cage rearing at least near salmon rivers the genetic threat will be eliminated from the cages. Research on sterilization and the performance of such fish is now going on in Iceland and is supported by the National Research Council.

In Iceland, cage rearing of salmon has not proved to be successful, due to low winter sea temperatures and high wind exposures. The salmon culture is likely to move more towards culture in land based tanks and to ocean ranching. Cages will probably be using during the summers for large fish by companies using land tanks. Ocean ranching will be growing slower next years. This will decrease the threat

of genetic mixing.

Ocean ranchers should have to use in the beginning, a salmon stock from a river in the vicinity of the ranching site and build up the operation slowly to minimize the straying and hence the genetic threat. In the area where most of the precious salmon rivers are aquaculture should not be allowed. These measures will also help preventing spread of diseases and parasites.

Further research on the genetics interaction of farmed and native Atlantic salmon is needed. Aquaculture should always be operated on the basis of minimum impacts on wild stocks.

References

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