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Application to NASCO's International Atlantic Salmon Research Board (IASRB) to support research on salmon post-smolts in the Irminger sea southwest of Iceland

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The research ship Arni Fridriksson

Institute of Freshwater Fisheries
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Introduction

For the last two decades Atlantic salmon in the North Atlantic has seriously declined in abundance. This decline in catches has been attributed to increased mortality during the oceanic part of their life cycle. The decline is generally more pronounced with multi-sea-winter fish, but severe decline has also been observed in many one-sea-winter stocks. This trend is especially evident in some southern rivers, on both sides of the Atlantic where wild salmon face extinction. Arguably the greatest challenge in salmon conservation is to increase knowledge on spatial and ecological use of the marine habitat by different regions and river stocks, which are known to show variation in marine growth, condition and survival. Different stocks may be predisposed to use different marine areas where environmental condition may vary and differently affect growth, condition and survival. Until recently it has been impossible to sample and identify the origin of sufficient numbers of wild salmon caught at sea to enable this vital question to be addressed.

The year 2008 marked the initiation of the SALSEA-Merge project, on the marine ecology of Atlantic salmon, through a partnership of ten European nations. The project is funded under the EU 7th framework. The overall objective of SALSEA-Merge is, by merging ecological and genetic research, to advance understanding of stock specific migration and distribution patterns and overall ecology of the marine life of Atlantic salmon and gain insights in increases in marine mortality of the species.

In SALSEA-Merge an important part of the project is to acquire samples of post-smolts and associated critical oceanographic information in key marine areas of the North Atlantic. In 2008 three cruises were taken to areas in the Northern Atlantic (Figure 1) that were considered to be on the migratory route for post-smolts from Europeean salmon stocks (Jacobsen et.al 2008, Holm et.al 2008, Maoiléidigh et.al 2008).

Initial proposal of SALSEA-Merge sampling of post-smolts included sampling of the Irminger Sea southwest of Iceland, but due to insufficient funding, the area was not included in the project. The Irminger area is on the junction of warm Gulf stream and the cold Greenland current and the area is rich in nutricients (Greene et.al. 2003). Toledano

(2006) found relationships between the runs of Icelandic salmon from the west coast of Iceland and SST at certain times and location as well as to abundance of certain groups of zooplankton in the Irminger Sea southwest of Iceland. Recently several salmon, tagged with DST tags were recaptured in a small river in west Iceland, with continuous hourly temperature records and depth regime recorded from the smolt stage until entry in freshwater as 1 SW fish (Guðjónsson et.al 2008). During the winter months the fish stayed in the surface layers of the sea in temperatures around 8°C. Comparison with SST from satellites indicates a strong possibility that the Irminger gear is the main habitat for Icelandic salmon at least from the south and west Iceland (Guðjónsson et.al. 2008). Furthermore the area may also been utilized by North American stocks and some European stocks.

The Marine Institute of Iceland is planning 2 cruises to the Irminger area in the summer of 2009, in cooperation with Germany and Russia due to research effort on redfish. This cruise creates a unique opportunity to include sampling of salmon post-smolts to the cruise program. However the cruise must be extended by some days to be able to include sampling of salmon. Funding of the project is still unclear, but applications have been sent to the Ministry of Fisheries and Agriculture in Iceland.

Research proposal

The main objective of the proposal is to acquire samples from salmon post-smolts and other oceanographic information in the Irminger area. The cruise will start late in June and will last almost through July 2009. The largest research vessel of Marine Research Institute, Arni Fridriksson will be used. Personnel from Institute of Freshwater Fisheries will be on board throughout the cruise. Another shorter cruise is planned in the autumn if sufficient funding will be obtained. Furthermore, sampling of salmon is possible in some cruises in the east and south of Iceland during the summer and autumn. The SALSEA methodology created for previous cruises for the sampling will be followed in the project and same type of sampling gear will be used.

Research cost

The prospects of getting some additional funding from the Icelandic government are reasonable good. However, further funding is needed. Therefore, we ask the *N*ASCO's International Atlantic Salmon Research Board (IASRB) to support this research work by ***25.000 €. (Euros)*** to be able to complete all the work in the cruise that is need.

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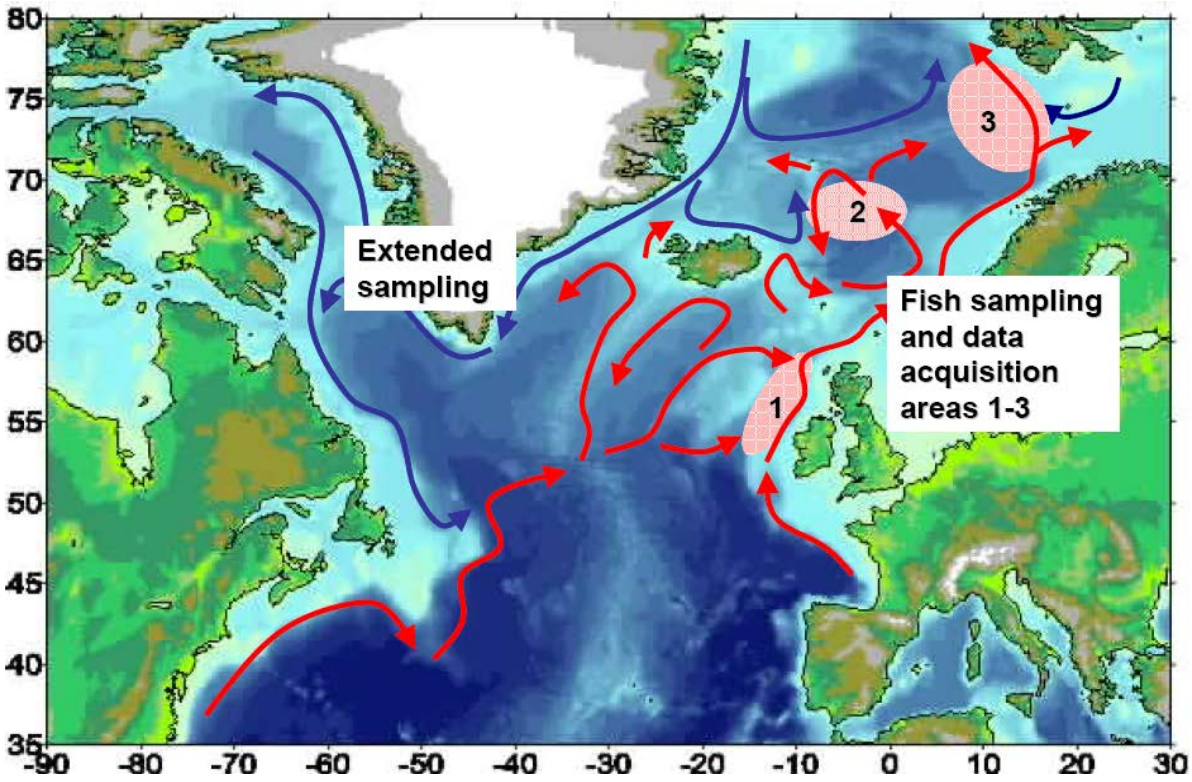

Figure 1.Location of key marine areas for sampling of post smolts, in the North Atlantic in 2008 and 2009 (Jacobsen et. al 2008).

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