European Union: Recent Successful Actions on Salmon

1) SMOLTRACK PROGRAMS I - V

In recent decades, the abundance of wild Atlantic salmon has declined, despite regulations set in place to protect them. Evidence suggests that the death rate for salmon is very high at the smolt stage, a phase in their life-cycle during which they migrate downstream towards the sea.

In response to this mortality of salmon smolts, the European Union has been sponsoring the SMOLTRACK programs since 2017, to research the causes and potential mitigation measures to counteract it. This project was established to determine the mortality of salmon smolts during their migration, with a focus on selected rivers, estuaries and near-shore marine areas in European jurisdictions.

To examine their migration patterns, salmon smolts were tracked using acoustic telemetry. Traps were used to catch migrating salmon smolts, which were tagged or implanted with small tracking devices and released. The signals emitted from these tags were recorded by a number of special listening stations that were located strategically throughout important migration routes in European rivers. And in this regard, the program has partners from different European jurisdictions.

SMOLTRACK V, which started in 2023 and ends in 2025 will publish some of the overall results and conclusions.

More information on SMOLTRACK , please visit www.smoltrack.eu

2) PINKTRACK PROGRAM

Pink salmon (*Oncorhynchus gorbuscha*), also known as humpback salmon, are native to river systems flowing into the North Pacific Ocean, the Arctic Ocean and the Bering Sea between Siberia and Alaska. Pink salmon were introduced to rivers in northwest Russia in stocking programmes to support commercial fisheries in the 1950s.

Like Atlantic salmon, Pnk salmon spawn in late-summer to mid-autumn in freshwater streams, rivers and intertidal areas but migrate to sea in springtime to spend their adult life feeding in the open ocean. Pink salmon return to rivers to spawn after spending just one winter at sea, and they die after spawning. This means that populations typically have a two-year life cycle, returning to rivers every other year and thus occurring in odd-year or even-year populations.

This increase in the abundance and geographic distribution of pink salmon is thought to be correlated with increases in water temperature, which helps the growth and survival of both juveniles in freshwater rivers and adults in marine environments. The homing instinct of pink salmon to return to their natal river is not as strong as in Atlantic salmon, which may result in a higher proportion of pink salmon straying outside their established range in good years for the species when their abundance is high. It is anticipated that pink salmon will continue to expand their range as increased water temperatures due to climatic warming continues in the future.

EU member states are concerned that the further spread and establishment of non-native pink salmon around the North Atlantic is an emerging threat to native wild Atlantic salmon. There is currently limited information on the ecological interaction between pink salmon and Atlantic salmon, which makes it important to develop an 'early warning system' to detect when pink salmon invade a river and to monitor their impacts on Atlantic salmon stocks.

This is the reason why in anticipation of the potential re-occurrence of this non-native fish species in 2023, an EU-funded program was set up to assess an environmental DNA (eDNA) surveillance programme to detect the presence of pink salmon in key catchments located throughout Ireland. A second phase of the program will start in 2026.

3) LICETRACK PROGRAM

Infestations of parasitic sea lice have a detrimental impact on both wild salmon stocks and farmed salmon (aquaculture). While sea lice pose little threat to Atlantic salmon in a natural setting, they can be a problem in more crowded situations, such as within or close to a salmon farm. Under such circumstances, sea lice numbers can increase dramatically, with transmission between fish more likely.

This is why LICETRACK program, an EU-funded project, was set up.

Predictive modelling is a way of forecasting what might happen based on observed data. And to build a predictive model, real information was collected on a number of important factors influencing sea lice and their environment. This includes information on their dispersal (how they move about), their distribution (where they are found) and their density (abundance within an area). By including environmental data, such as information on local currents, depth, tides, salinity and temperature, we can learn more about what environmental factors influence sea lice the most.

So the aim of this program was to support the sustainable development of aquaculture and wild salmon stock conservation by informing management practice and reducing the presence of sea lice and their negative impact.

4) ACTIONS IN THE RHINE AND ELBE AREAS

In recent years, numerous measures were carried out in the catchment areas of the Rhine and Elbe for the benefit of Atlantic salmon and other migratory fish species:

- The 16th Conference of Rhine Ministers held in Amsterdam in 2020, adopted the ambitious new forward-looking “Rhine 2040 Program”. Among other things, it aims to achieve ecological continuity for migratory fish upstream and downstream in the main stream of the Rhine from the estuary to the Rhine Falls and within the program waters of the Master Plan for Migratory Fish. As part of this program, several major projects have already been implemented to restore ecological continuity in the Rhine and its tributaries.
- The Netherlands has optimised the operation of the locks at the Haringvliet dam to improve fish migration between the Rhine and its delta.
- The increasing restoration of high quality salmon habitat in the middle reaches of several Rhine tributaries, as well as descent aids and protection facilities at hydroelectric power stations, have helped to increase the availability of habitat for Atlantic salmon.
- Similar to the Rhine, many measures have been implemented in the Elbe and its tributaries to improve ecological continuity and habitat quality.
- For stakeholders along the Elbe River, the International Year of the Salmon was an opportunity to increase efforts for improved coordination of salmon reintroduction projects and to launch a program called "Salmo albis." The launch event for the transnational program took place in 2019.
- Over the past few years, international cooperation on salmon restoration has continued to grow. For example, as part of the Genetic Monitoring of Rhine Salmon project funded by the German Ministry of Food and Agriculture, an international conference was held in 2023 to raise awareness of salmon projects in the European Rhine basin and in all Germany, and

to improve networking between stakeholders. This will form the basis for further cooperation for the benefit of Atlantic salmon in the future.