



Iascach Intíre Éireann
Inland Fisheries Ireland

S P O T L I G H T
series

Using science to support
salmon conservation

Did you know? Inland Fisheries Ireland counts and samples wild salmon in over 140 rivers every year.

Our wild Atlantic salmon stocks are under pressure. The numbers say it all: Ireland's salmon quota has reduced from just under 69,000 salmon in 2007 to 45,000 in 2023.

The incredible lifecycle of a salmon

Atlantic Salmon are migratory, going out to sea and coming back to spawn in winter. They lay their eggs in fast-flowing, well oxygenated water, buried in gravel where they are protected from debris and predators, and often well upstream in a river's headwaters – those waters near or part of its source. Once hatched, the young salmon typically spend 1-3 years in a river, then swim out to sea each spring. Even after spending months feeding in northern latitudes of the North Atlantic, in the Norwegian Sea and in West Greenland, they can swim thousands of kilometres back to Ireland and, incredibly, make their way back to their river of origin to spawn.

Under threat

Climate change is causing summers to become hotter and drier, and water temperatures to rise. Increased flooding in wetter, warmer winters causes debris and silt to clog rivers. These factors can all create unfavourable conditions for our native salmonid fish.

Habitats are also impacted where drainage schemes have altered the natural course and depth of rivers, removing spawning gravel and affecting natural flow regimes. Agricultural run-off can reduce water quality. When river banks are cleared, the removal of vegetation reduces shade cover which can otherwise act as a refuge for sensitive native fish species such as salmon when water temperatures are high for extended periods.

Salmon farming is also a significant threat to wild salmon and indeed sea trout. High concentrations of farmed fish can result in high levels of parasitic sea lice, which can infest wild salmon. In addition, when farmed salmon escape, they can interbreed with wild salmon. Wild salmon are of different genetic stocks, each pertaining to its river of origin, and each specifically adapted to that habitat. Interbreeding can reduce the integrity of the natural genetic stock, leaving native salmon populations less able to survive.



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Wild salmon being released back into the water.



Scientific research

Inland Fisheries Ireland support the scientific assessment of Ireland's wild salmon population annually through their involvement in the Technical Expert Group on Salmon. "We support the assessment of the status of salmon stocks in over 140 rivers in Ireland every year so that we can determine what river stocks can be sustainably fished without unduly affecting the health of these stocks. To do this, we use information from fish counters which are present in over 30 of our rivers, and also angling and commercial catches," says Dr Michael Millane, Senior Research Officer at Inland Fisheries Ireland (pictured above).

The Erriff river system in Co. Mayo forms what is known as the National Salmonid Index Catchment (NSIC): it is an optimal location for research as it represents a model river system for wild salmonids, the family of fish that includes salmon and trout. Here, a dedicated research facility includes traps to intercept out-migrating and returning fish, to assist with annually counting and sampling both wild salmon and sea trout stocks. The team also use electrofishing to assess juvenile stocks each year. This technique captures young fish using handnets while temporarily stunning them, and they are then released unharmed afterwards. In addition, there is a telemetry network in place to monitor the movements and survival of tagged fish.

Michael describes the tagging process in more detail: "We anaesthetise the fish before tagging them, and release them unharmed. One method we use is called PIT tagging, which involves injecting a very small tag into their body cavity. Other methods include radio and acoustic tagging, which involve making an incision in a fish and surgically implanting a small tag. We tag fish on a number of our rivers, including around 1,000 salmon on the Erriff annually." Detection devices placed throughout the river can pick up the signal of nearby tagged fish, and the resulting data is gathered and analysed.

"We are building up our knowledge of the biology, life histories and population dynamics of wild Atlantic salmon each year in the NSIC Erriff and using our knowledge to better inform the wider sustainable management of salmon in Ireland and further afield. As well as that, we are monitoring rivers for the presence of invasive Pacific pink salmon, for fish farm escapes, for sea lice, and for diseases of concern such as red vent syndrome and red skin disease. We also work closely with other colleagues in Inland Fisheries Ireland on climate change studies: for instance, Inland Fisheries Ireland have around 400 data loggers in rivers and lakes that give us information on water temperatures, water levels and dissolved oxygen, and we collaborate on projects of common interest with scientists from many other countries around the North Atlantic who are also facing similar challenges," says Michael.





Lough Inagh anglers



Sustainable angling

Each salmon-angling river in Ireland has a set conservation limit (CL), which sets out the minimum number of spawning salmon required to maintain a healthy stock in a river. Rivers are assessed to determine their stock status and the most recent 5-year average data of returns of adult spawning salmon is compared against their CL. Scientific catch advice based on this is provided to Inland Fisheries Ireland and rivers are classified for salmon angling as follows:

- **Open** - rivers exceeding 100% of their CL: salmon can be harvested
- **Catch-and-release** - rivers meeting between 50%-100% of their CL: salmon angling can take place on a catch-and-release only basis
- **Closed** - rivers below 50% of the CL: no salmon angling can take place unless catchment-wide electrofishing results showing an average of 15.0 or greater warrant the opening of rivers on catch-and-release only basis.

This overview is underpinned by more detail, and is subject to review during the year.

Each year, Inland Fisheries Ireland review their research findings and recommend any changes to the [salmon angling legislation and bye-laws](#). “In 2008, of the 148 listed salmon rivers, 84 rivers were open for angling, of which 22 were

catch-and-release only,” says Kealan O’Higgins, Salmon Management Co-Ordinator (pictured above). “In 2023, this was reduced to 81 rivers open for angling, of which 34 were catch-and-release only.”

Salmon angling in Ireland can only be carried out once a rod licence is purchased. The maximum angling harvest of salmon permitted is ten per person, per season, with further daily limits that vary by time of year. All salmon harvested must be tagged, in line with the Wild Salmon and Sea Trout Tagging scheme regulations. In addition, on catch-and-release only rivers, or where the bag limit is met, single or double barbless hooks must be used, and the use of worms is forbidden in order to protect salmon.

When anglers buy a salmon angling licence, they are supplied with a logbook to complete and return at the end of season to Inland Fisheries Ireland with their catch details. “The logbooks are a great tool, as they give us a picture of how many salmon are being caught year on year,” explains Kealan. “On average anglers return 65% of total logbooks annually, a number we hope to increase. We also hope to roll out an online logbook to enable anglers log their catch more easily.” The catch details are published via the Wild Salmon and Sea Trout Statistics Report annually.





Electrofishing

A look to the future

Although a number of Irish rivers continue to have healthy stocks, overall, from a national perspective, the decline in salmon stocks is continuing to become more evident in recent decades. “We are seeing anglers embrace catch-and-release angling more and more, as they realise the important role they play in conserving our salmon,” observes Kealan.

Inland Fisheries Ireland collaborate on salmon projects with other organisations at home and overseas, for example on projects studying the Pacific pink salmon, which could establish in Ireland in coming decades and impact our native wild Atlantic salmon stocks. This invasive species has increasingly become established in Norway, and countries further south, including Ireland, are starting to encounter pink salmon in recent years.

“Atlantic Salmon are an important cultural and socio-economic resource for Ireland and an iconic species of huge conservation value. We are obliged to protect them, maintain the stocks that are in a healthy state and help those stocks that are under pressure to survive,” says Michael. They are also extremely valuable for tourism. “Our research in Inland Fisheries Ireland aims to contribute to helping sustain our unique populations of these amazing fish and better understand and address the numerous man-made challenges they face.”

For more on the work of Inland Fisheries Ireland, please visit www.FisheriesIreland.ie



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