



Welcome to the Newsletter

Publishing data produced by the public sector in free and open formats is now government policy and implements an EU Directive that aims to strengthen the data economy, to ensure fair competition and to enhance innovation.

This issue highlights progress the Research & Development Division has made on making more open data publicly available through IFI's Open Data Portal, which provides an important resource to share knowledge that has been built up by IFI staff in research projects, assessments, reports, etc.

As always, we thank all IFI staff who contribute to our research programmes and to this newsletter.

Slán,

Dr. Cathal Gallagher, Head of Research & Development

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Data Flows Freely — Inside IFI's Open Data Portal

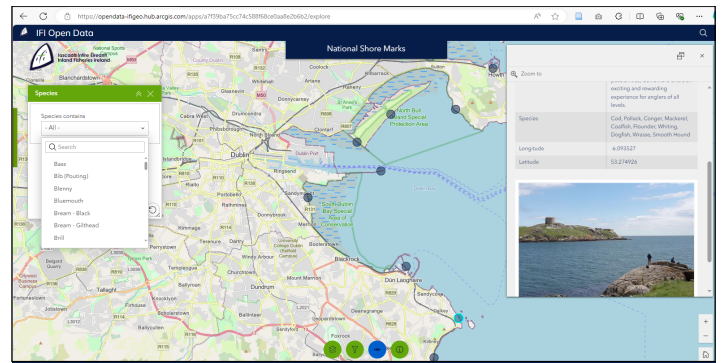


Look for our open data at <https://opendata-ifigeo.hub.arcgis.com/>

The Open Data and Reuse of Public Sector Information Regulations 2021 require all public bodies to make high-value datasets available in a machine-readable, open format. IFI fulfils this obligation with its [Open Data Portal](#) built on ArcGIS Hub, a cloud-based platform which not only offers data for download, but also provides users with easy-to-use tools to explore the data and to understand its context.

Combining maps with multimedia content into an interactive narrative is a way of using geographic information systems (GIS) to create awareness about environmental issues. The Open Data Portal uses this approach for the National Barriers Programme, with a [GIS dashboard](#) to allow users to explore over 73,000 potential barriers to fish passage, as well as an informative [storymap](#) to provide an overview of the impacts of barriers and strategies for their mitigation.

The portal also contains information that is directly useful for anglers and provides some of the science behind it. For example, a web app for [salmon fishery status](#) is updated



Screenshot from the National Shore Marks web app

annually based on the advice of the Technical Expert Group on Salmon. This expert group uses geographic data made available in the [Migratory Salmonid Habitat 2003](#) assessment, which quantifies habitat available to salmon and sea trout in Ireland's designated salmonid river systems.

The [National Shore Marks](#) web app is an exciting new addition to the portal, providing locations and descriptions for 571 shore angling marks around the coast. The app provides a wealth of information for sea anglers, such as photographs of marks where available, notes on where bait can be dug locally and filters for fish species present at the marks.

As well as serving public interest in the environment and the angling community, the portal is a resource for data sharing with government departments, local authorities and State agencies, linking IFI's open data to the public sector network via <https://data.gov.ie/>. The portal enables IFI to contribute high-quality data to strategic planning for water quality, barrier mitigation, renewable energy and marine conservation.



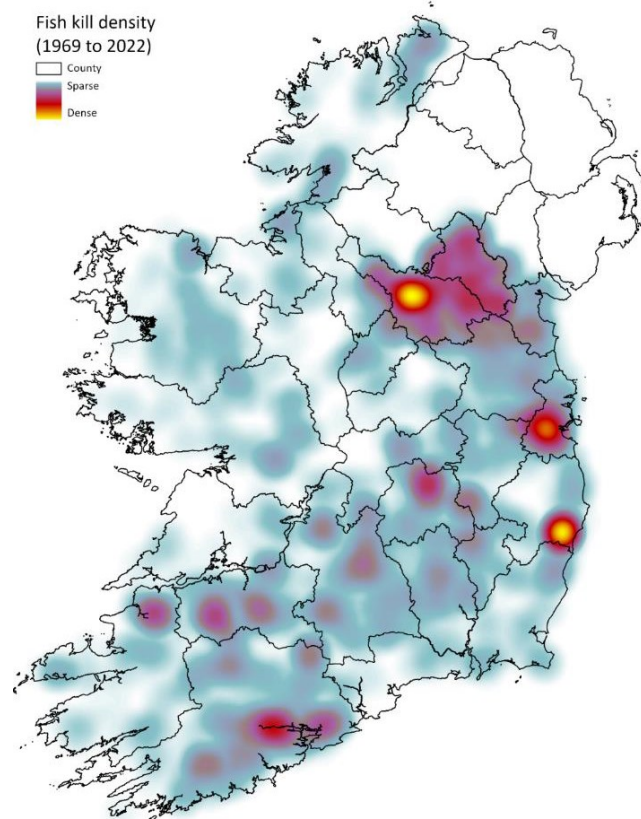
IFISH Report: “Fish Kills in Ireland — History, Current Status and Recovery”

Fish kills occur when sudden deterioration of environmental conditions in a waterbody causes mass mortality of fish due to anthropogenic and/or natural causes. Although fish kills are usually short-lived events, it can take years for fish stocks in rivers to recover, and fish kills are distressing to witness for local anglers and communities. A major new report from IFI provides the first comprehensive national overview of trends in fish kills in Ireland over recent decades.

IFISH — Fish and Habitats: Science and Management is an electronic publication produced by the IFI R&D Division to provide access to information gathered by IFI on fisheries ecology and environmental management. In the latest volume entitled “[Fish Kills in Ireland — History, Current Status and Recovery](#)”, Ronan Matson and Fiona Kelly compiled data on 2,107 fish kills reported in Ireland from 1969 to 2022. This study especially relied on the work of IFI’s Fisheries Environmental Officers and Operations staff, who lead IFI’s emergency response to investigate fish kills.

The report shows that fish kills occurred in every county throughout the 53-year period studied, with hotspots in areas of intensive agricultural activity and around large urban centres. The worst years for fish kills were in the 1980s, with a generally downward trend in frequency since 1992. Nevertheless, fish kills still occur regularly, especially in summer months, when higher temperatures and low water levels make fish vulnerable to any pollution that impacts their habitat.

The spatial pattern of fish kills around Ireland documented in this report can be explored on a web app on IFI’s Open Data Portal at the following link: <https://arcg.is/01i9b9>.



Key Findings

- **Reported causes:** agriculture (23%); eutrophication (13%); industrial (12%); other (9%), municipal, e.g., WTP & WWTP, (8%); mining (3%); and construction (2%).
- **Worst years for kills:** 1984 (114), 1987 (121) & 1989 (112).
- **Counties with most kills:** County Cork & County Cavan.
- **Most impacted waterbodies:** Rivers (81%).
- **Fish species most impacted:** Brown trout, Atlantic salmon, roach and European eels.

Report on Fish Kill of Adult Salmon in the Ballisodare River, Summer 2024

A scientific report on unprecedented mortality of adult Atlantic salmon in the Ballisodare River in County Sligo during summer 2024 highlights the complexity of determining the causes of fish kills.

From June 28th, dead adult salmon were found in the lower Ballisodare River, with the number reported rising to 1,079 in total by July 19th. This represents an estimated death rate of 12.8% of fish returning to the river based on fish counter data. Salmon with signs of infections, abrasions and damage to their gills were also observed.

With the support of the Ballisodare Fishing Club, IFI R&D staff, Operations staff and Fisheries Environmental Officers liaised with the Marine Institute and Department of Agriculture, Food and the Marine officials to undertake veterinary and environmental investigations to try to establish the causes of the mortalities.

Overall, the evidence indicates that the cumulative impact of a number of stressors—exposure to marine algae; consequential gill damage; secondary fungal and bacterial infections; and low water levels—may have caused the mortalities. The report concludes with recommendations to mitigate against an incident like this in the future. The report is available to download at <https://tinyurl.com/ysf4nceu>.

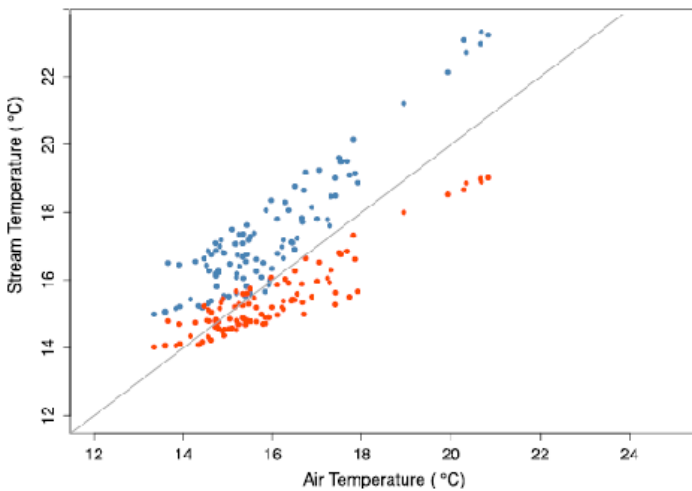


A dead salmon in the Ballisodare River

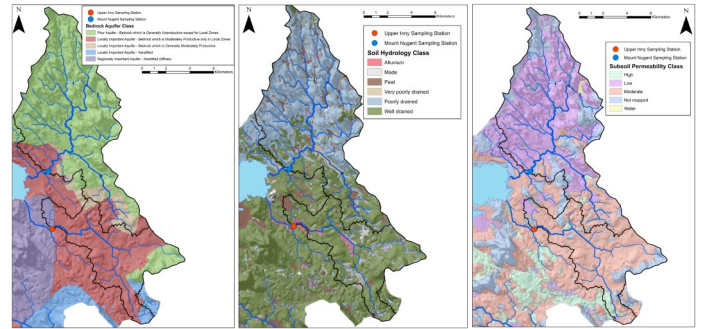
Refuge From Above and Below — The Role of Riparian Shading & Soil Permeability

Fish habitat in a stream ecosystem is influenced by more than just the water flowing in streams. Shade from trees growing along riverbanks maintains cooler water temperatures, and riparian tree planting is a vital strategy in river restoration. Less visible but nonetheless important are the permeable subsoils and bedrock underneath the streambed through which aquifers flow and recharge water levels in streams.

Whether this interchange between shade, soils, geology and water temperature can provide fish with refuge from heatwaves was explored in April in *Fisheries Management and Ecology* by Seán Kelly and Fiona Kelly of the IFI R&D



Response of stream temperature to air temperature contrasts in streams with more shade & aquifers (red) versus less shade & aquifers (blue)



GIS data on bedrock aquifers, soil drainage & subsoil permeability

Division, who reported results from the Office of Public Works Climate Resilience Research Project (OPWCRP). In a stream with relatively little shade or input from subsurface water, increases in temperature and decreases in dissolved oxygen reached levels that were stressful to fish throughout summer. In contrast, a stream with more shade, aquifers and permeable soils in its watershed was more resistant to this oxythermal stress, and subsurface water helped to maintain higher water levels in the stream in dry spells.

Overall, the study shows that shaded streams in watersheds with more groundwater aquifers and permeable soils to store water create so-called sanctuary reaches that provide a refuge for fish in warmer, drier summers. Identifying and prioritising streams with these watershed characteristics for conservation will be an important strategy for building resilience to climatic change in river restoration.

Outreach Events by the Eel Monitoring Programme

European eels are unmistakable, yet mysterious. Their long, snake-like bodies make instantly recognisable to anyone interested in aquatic life, but scientists are still actively researching some basic unknowns about the life-history of this otherwise familiar species. Outreach events for the public and stakeholders interested in this fascinating fish is an important element of IFI's Eel Monitoring Programme (EMP).

Back in May, the EMP was invited by Friends of Castle Lake in Bailieborough, County Cavan, to come and give a talk on eels. This voluntary group had engaged an environmental consultancy to survey the lake, including environmental DNA (eDNA) work. This picked up the presence of eels, and the group contacted IFI to learn more about the eels in the area. The talk coincided with World Eel Day, so it was nice timing.

In August, the EMP continued an annual arrangement for the river catchment trust Nore Vision by giving a Heritage Week talk on eels in Durrow, County Laois. Nore Vision has been engaged in a citizen-science study monitoring elvers with the EMP for three years now, using sites along the River Nore from Inistioge to Thomastown.



Rob Cruikshanks of the Eel Monitoring Programme giving outreach talks to the Friends of Castle Lake (top) and Nore Vision (bottom)

The Marine Sportfish Tagging Programme — Tracking Tope Migration

The tope (*Galeorhinus galeus*) is a migratory shark found in temperate waters along the coasts of Europe, Africa, the Americas and Australasia. Despite this worldwide distribution, the tope is now classified as critically endangered globally by the IUCN and as vulnerable in Ireland’s Red List for threatened elasmobranchs (sharks, skates & rays). With the help of citizen scientists and other research partners, IFI’s Marine Sportfish Tagging Programme (MSTP) is tracking the movements of tope around Irish coastal waters and beyond.



Irish record specimen tope just before release, caught off Greystones, 2018

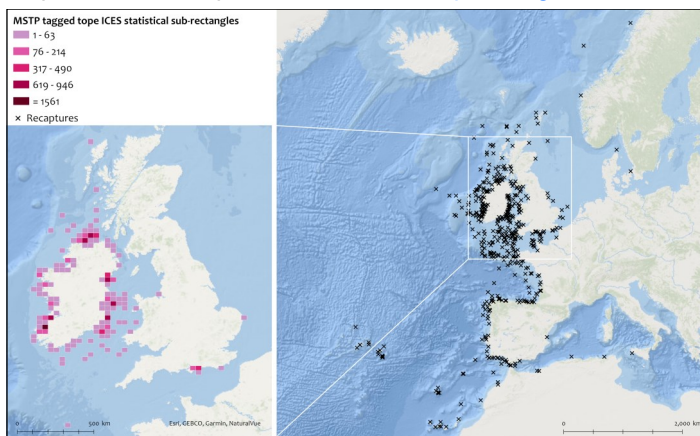
Tope are small, brownish grey sharks with short, triangular fins, and they can be readily identified by the distinctive shape of their tail lobe. Their snouts are elongated, with many sharply pointed teeth, some of which are serrated. They are opportunistic predators, often hunting in packs and feeding mostly on whatever fish are available, as well as squid, crustaceans and echinoderms, usually near the seabed.

In summer, tope move inshore to shallower waters to breed. Tope are ovoviviparous, with the embryos developing inside females for about a year until they are born in litters of ‘pups’. Tope are estimated to live for up to 55 years but do not mature until they are over 10 years old. This slow maturation and low rate of reproduction makes tope vulnerable to overfishing by commercial fisheries and loss of population.

Tope are a popular target for inshore boat anglers, and the Irish record specimen tope was caught in 2018 off Greystones, County Wicklow, weighing in 34.02 kg (75 lbs). Anglers should always **catch-&release** elasmobranchs to help protect these vulnerable species. Angling charter skippers who work with the MSTP ensure that all fish tagged swim away fully recovered.

Tope are the second most tagged species in the MSTP, with almost 9,000 tagged up to 2019; hotspots include Lough Swilly, Tralee Bay and along Ireland’s east coast. Over 600 tagged tope have been recaptured, with some travelling as far as Norway and the Canary Islands. Recapture data has confirmed their breeding migration between offshore waters in winter and offshore waters in summer. There is also evidence for some degree of site fidelity, with some individuals recaptured close to their original tagging location.

Interactions of marine species with offshore renewable energy infrastructure is now an important question in marine planning, and IFI is a partner in the **CETUS** project, which is tracking tope with satellite and acoustic telemetry in the Irish Sea. MSTP data on tope and other marine sportfish can be explored on the Open Data Portal at <https://arcg.is/TnWHn>.



Map of numbers of tope tagged by the MSTP and recapture locations



Tope on a measuring mat (note the green floy tag near the dorsal fin)



We Hope You Enjoyed the Newsletter

Feedback is always welcome, so please get in touch if you have any comments. Contact Rory Feeney at 01 8842636 or Rory.Feeney@fisheriesireland.ie
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