Developments in Inland Fisheries Ireland Research

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Welcome to the Newsletter

This publication was developed specifically to update all Inland Fisheries Ireland staff on elements of our research programme and to further encourage engagement, comments and inputs on IFI's research initiatives. It also gives me an opportunity to thank you all for your dedicated work and support, without which the Research & Development Division could not function. I look forward to further updates on other research programmes in future newsletters. Slán,

Dr. Cathal Gallagher, Head of Research & Development

In this issue:

National Salmonid Index Catchment, tracking fish migrations, protected species surveys, elver monitoring, trout genetics

New PIT Tag Reader on the National Salmonid Index Catchment

New PIT tag reader during installation at Aasleagh Falls

The Erriff is the National Salmonid Index Catchment, where Inland Fisheries Ireland is investigating the migration, distribution, habitat and survival of salmon and sea trout. Situated on Killary Harbour, the Erriff is one of Ireland's premier salmon fisheries. Salmon and sea trout migrating up the Erriff from the sea must pass through counting facilities at Aasleagh Falls. These facilities have now been enhanced by a new Passive Integrated Transponder (PIT) tag reader, thereby providing an opportunity to monitor fish as they return back up the Erriff.

PIT tagging a salmon smolt

PIT tags are tiny microchips which can be injected into fish. A short-range radio signal from the reader activates the tags, which transmit a code identifying each fish. The new reader was partly financed by the Salmon Conservation Fund, which promotes the recovery of Ireland's salmon stocks and habitats. According to Dr. Willie Roche, a co-ordinator of the National Salmon Monitoring Programme, the new facility shows how the fund will help to refine the metrics that measure smolt-to-adult survival—a key factor in determining recruitment to a fishery.

Rotary screw trap capturing smolts for PIT tagging

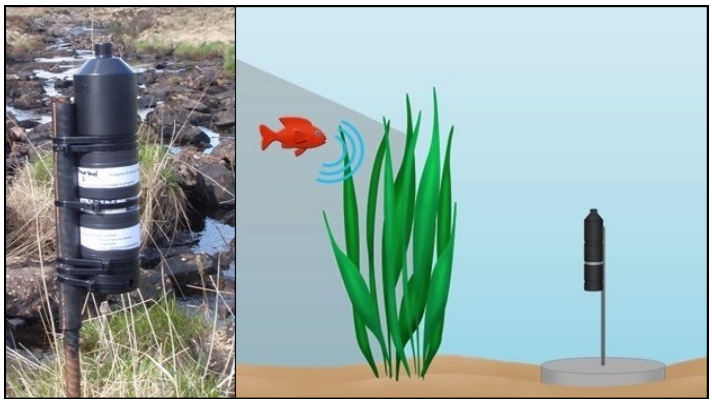
Projects are already benefiting from the new reader's capabilities. During the summer, the new reader detected sea trout returning to the Erriff; these fish had migrated to sea as smolts in spring 2016 after being PIT tagged as juvenile trout as part of a PhD study by Trevor Stafford. This research will help IFI to identify the freshwater habitat and life history parameters that determine which juvenile trout will become migratory sea trout.

In spring, a rotary screw trap in the Erriff captured almost 1,000 salmon smolts migrating downstream, which were PIT tagged and released. A direct measure of salmon survival-at-sea will be obtained when the receiver detects these fish return to the Erriff as adults. Dr. Paddy Gargan, who also leads the salmon monitoring programme, says that this research is a unique opportunity to determine the marine survival rate of wild Atlantic salmon.

Chasing Salmon and Sea Trout in the Wild, Wild West

The Salmonid West project is investigating the migration, distribution, habitat usage and survival of sea trout and salmon in the marine environment of Ireland's west coast. In a R&D Division seminar at Inland Fisheries Ireland Citywest earlier this year, Glen Wightman outlined how these studies will be extended to Galway Bay in 2016 after initially focusing on Killary Harbour and on the Erriff, which is IFI's National Salmonid Index Catchment.

So far this summer, Glen has been busy capturing salmon smolts and sea trout smolts and adults in Galway Bay, surgically implanting tiny transmitters into their body cavity, then re-releasing them. These transmitters emit an acoustic signal that can be detected by receivers deployed on the seabed around the bay. This work is a collaborative project which also involves Queen's University Belfast and SmartBay. The project will take advantage of SmartBay's array of acoustic receivers between Spiddal and Black Head to monitor the movements of tagged fish.



An acoustic receiver and diagram of one in situ on the seabed

Sea trout with a floy-tag, circled in yellow

As well as using acoustic telemetry, Glen is also capturing and floy-tagging sea trout in Galway Bay with the help of local anglers, who are engaged with the Salmonid West project as citizen scientists. Together, these telemetry and tagging studies will lead to a better understanding of the migration of salmon smolts and sea trout from rivers such as the Corrib and Dunkellin, their movement patterns in Galway Bay and their survival at sea. Ultimately, the Salmonid West project will help the development of improved conservation management strategies.

Tagged Bass Around the Irish Coast—Keep Your Eyes Peeled!

The National Bass Programme aims to provide scientific advice to support management and conservation of sea bass, a prized sport fish for sea anglers. In 2013, the programme began to tag bass in collaboration with experienced and trained bass anglers to study the size, age, distribution and migrations of bass around Ireland.

Bass with floy-tag. Inset: tags may be fouled by algae

To date over 900 bass have been tagged, with a large proportion of these tagged in Co. Kerry in 2015. Preliminary data indicate that bass return to their summer feeding grounds in subsequent years, with two-thirds of recaptures less than 10 km from the tagging location. One bass was recaptured from the same location ten months later. The furthest distance travelled was 66 km.

Please be aware that bass caught in Irish waters may have small, yellow tags near the base of the second dorsal fin; the tag may be fouled by algae and difficult to see.

You've Found a Tagged Fish? Please. . .

1. Record the tag number
2. Measure the fish length and take a scale sample
3. Take a photo of the fish and a close-up of the tag
4. Return the fish unharmed to the water with the tag intact
5. Report the location and other information to:

IFI Research & Development Division
3044 Lake Drive, Citywest Business Campus, Dublin D24 Y265
phone: 01 8842600
email: sea trout: william.roche@fisheriesireland.ie
bass: bass@fisheriesireland.ie

Tracking Shad with Acoustic Telemetry

Twaite shad are a marine fish that migrates into rivers on the south coast to spawn. There are concerns about the conservation status of shad due to anecdotal evidence for decline in numbers. Since 2012, the R&D Division's Habitats Directive team, led by Dr. James King, has tracked the movements of shad migrating through Waterford Harbour using acoustic telemetry.

Twaite shad with tagged with acoustic transmitter

Shad are surgically implanted with ultrasound transmitters that can be detected by an array of receivers positioned from the tidal limits of the Barrow and Nore rivers down through Waterford Harbour. Previous results indicate that shad are highly mobile during their spawning migration, making forays up and down the estuaries with the tides before aggregating at their spawning sites; the telemetry showed that spawning coincided with a steady rise in water temperatures during late May–early June.

Shad tagged by IFI have been detected moving between the Barrow and Nore as well as moving to estuaries further afield, such as Wexford Harbour and the Munster Blackwater. This summer, Dr. Seán Rooney started using new transmitters with an extended battery life, allowing individual fish to be tracked for longer periods. The Habitats Directive team hope that this will help to provide more insights into the migration behaviour of shad, thereby helping conservation efforts for this species.

So How Are They Doing? Surveying for Protected Fish Species

Under the Habitats Directive, Inland Fisheries Ireland reports on the status of protected fish species in Ireland. This summer, the Habitats Directive team, comprised of Tara Gallagher, Nicola O'Gorman, Seán Rooney and Brian Coghlan, is gathering information on shad, lamprey and pollan for the 2013–2018 reporting cycle. The team works closely with RBD colleagues around the country and also surveys for Arctic char and smelt, which are listed in the Red Data Book.

An adult lamprey after transformation from larval ammocoete

The team relies on different survey methods depending on the target species. Lamprey monitoring includes both redd counts and electric-fishing to ensure that lamprey are detected at all stages of their life cycle. During 2016, the Garavogue and Suir catchments will be surveyed for larval lamprey. In contrast, to survey lakes for pollan and Arctic char, the team suspends pelagic nets at different depth zones to monitor the whole water column. A survey of Lough Ree during June and July 2016 found that pollan were present in 10 out of the 15 nets deployed.

Bongo nets

Bongo netting is one of the methods used for estuary surveys. Funnel-shaped nets are suspended from the bow of a boat, which trawls against the tide to collect fish from just below the water's surface. During July 2016, bongo netting on the River Barrow between St. Mullins and Barrow Bridge found juvenile shad and smelt at several sites.

Can You Help Us???

We are always interested in any sightings of lamprey, shad and pollan to expand the distribution records.
If you have any information on these fish, please contact Nicola O'Gorman at 087 2801423 or nicola.ogorman@fisheriesireland.ie

Elver Traps Refurbished With New Designs

European eels have a fascinating life cycle. In spring and summer, eel larvae arrive on the Irish coast after crossing the Atlantic and transform into elvers before migrating up rivers to spend their adult life in freshwater. Since the 1980s, eel recruitment has dramatically declined, and in 2008, the European eel was classified as critically endangered by the IUCN.

Since the mid-1990s, ShIRBD staff has monitored recruitment using elver traps, in which a bristled ramp in the river directs a small sample of elvers into a holding tank, where they remain until they are counted and released. This year, R&D Division and ShIRBD colleagues have collaborated on upgrading the old traps with new designs. New traps were installed on the Inagh and Maigue rivers, and traps on other rivers around the country will be refurbished to maintain this informative index of elver recruitment.

New elver trap on the Inagh

Elver trap during construction on the Maigue

Dr. Ciara O'Leary, who works on Inland Fisheries Ireland's eel monitoring programme, says that the new designs have performed well so far, and preliminary results indicate that a good run of elvers has migrated up Irish rivers in 2016.

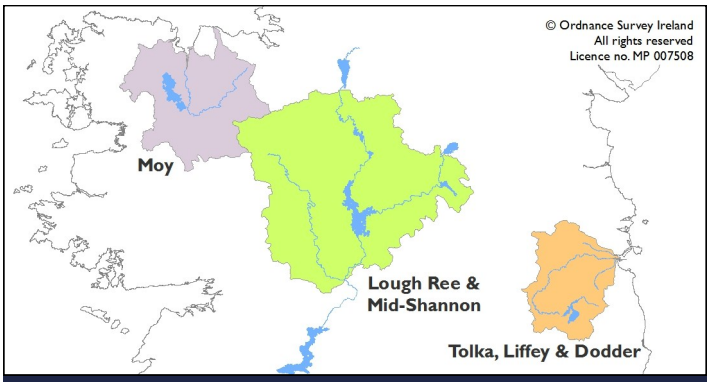
Interim Reports on Brown Trout Genetics Now Available Online

Since 2006, Inland Fisheries Ireland has collaborated with genetic researchers to study the population genetics of wild brown trout in various catchments across Ireland. In the latest projects, interim reports for Lough Ree and its subcatchments, the Moy Catchment and the Tolka, Liffey and Dodder Rivers have been released.

All three interim reports describe how population structure analysis has found evidence of distinct genetic groups of trout in the catchments investigated.

The next phase of the project will involve statistical analyses by the project partners, the Beaufort Fish Genetics Group, Queen's University, Belfast. Final reports are expected in mid-2017. Meanwhile, a final report for another trout genetics study focused on Lough Sheelin is in preparation. Please contact Dr. Karen Delanty and Dr. Fiona Kelly for further information.

The interim reports can be downloaded from our web site by clicking on the catchment map below:



Online: Moy, Lough Ree & Mid-Shannon and Tolka, Liffey & Dodder

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INLAND FISHERIES IRELAND

We Hope You Enjoyed the Newsletter

Feedback is always welcome, so please get in touch if you have any comments.

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