



Energy for
generations

ESB SUSTAINABLE RIVERS SUMMARY ANNUAL REPORT

(YEAR ENDING DECEMBER 2024)

A report on ESB Sustainable Rivers activities to the Department
of Environment, Climate and Communications.

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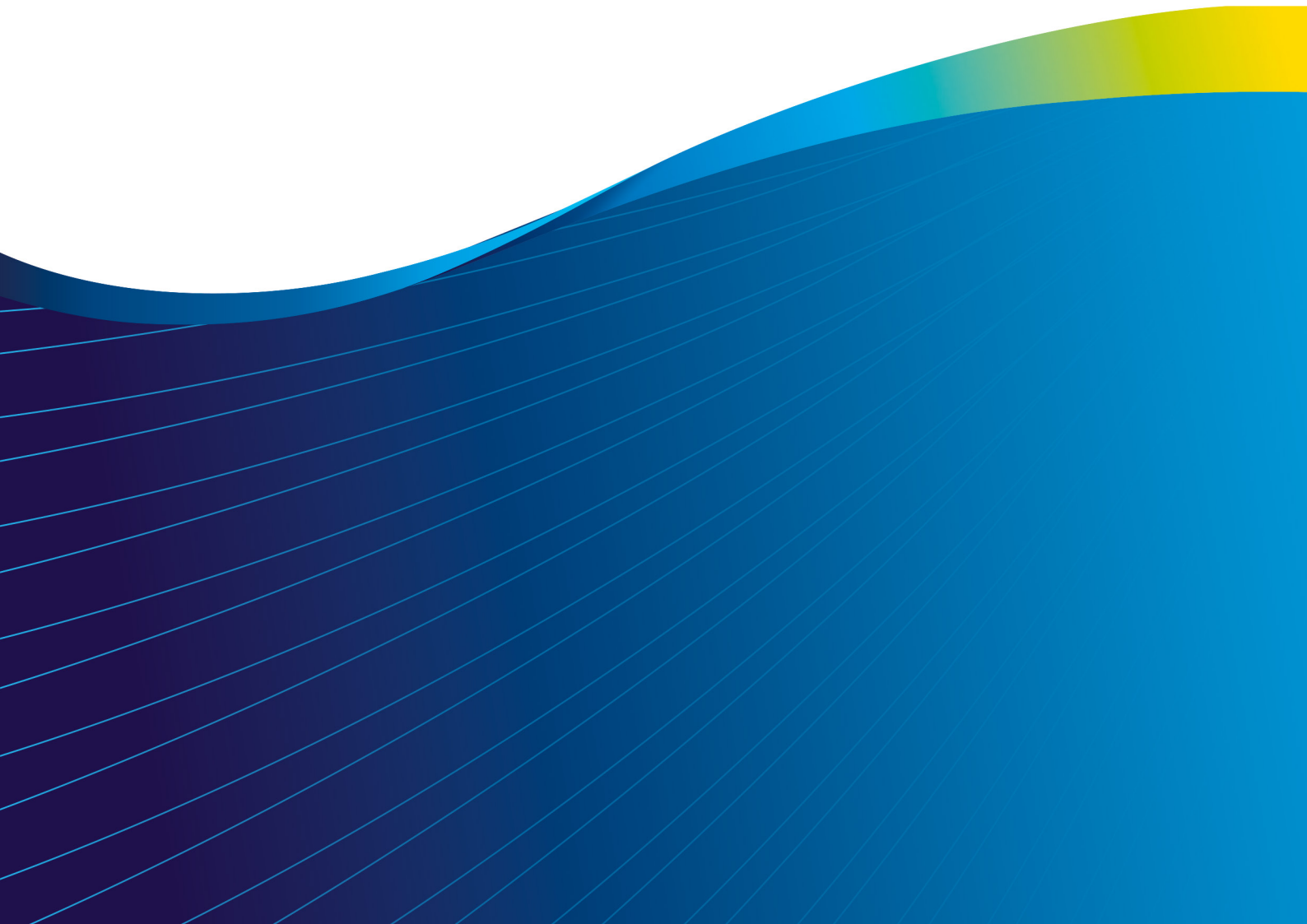


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Introduction

ESB has been responsible for the management and preservation of fisheries on the rivers where we work since the beginning of ESB's hydro generation operations in Ireland.

ESB's fleet of hydroelectric stations have a combined production capacity of 220MW located on five rivers across Ireland. Together, they provide enough renewable energy to supply up to 180,000 customers, contributing to ESB's Driven to Make a Difference: Net Zero by 2040 strategy. Complementing ESB's overarching ambition to eliminate carbon from electricity, our strategy commits to stepping forward on social and environmental responsibility. In support of ESB's Driven to Make a Difference: Net Zero by 2040 Strategy, ESB's Sustainable Rivers Strategy was launched in 2023. This Strategy further outlines the steps ESB is making in River Connectivity, Sustainability, Nature Positive Initiatives, and stepping forward into the Communities that we operate in.

ESB's Sustainable Rivers Team continues the conservation works through the operation of three salmon conservation hatcheries, the river habitat restoration programme, and the eel trap and transport programme, as well as day to day fisheries management activities. You can find the details of these activities for 2024 in the following report.

This work is only possible thanks to the support and partnership of local and national stakeholders which includes angling clubs, community groups, University College Cork, Queens University Belfast, Inland Fisheries Ireland, The Marine Institute, The Department of Environment, Climate and Communications, The Department of Agriculture, Food and the Marine and The Department of Agriculture, Environment and Rural Affairs, Northern Ireland.

On behalf of ESB, I would like to thank each of our stakeholders for their guidance and support over the past year.



Jim Dollard,
Executive Director Generation & Trading

ESB Sustainable River Strategy



Fish passage consultants undertaking an assessment of the Cathleen's Fall fish pass.

In 2023 ESB updated our fisheries conservation strategy. The updated strategy is aligned with ESBs' Driven to Make a Difference: Net Zero by 2040 Strategy.

It consists of a suite of high-level principles that are effectively a road map for ESB as it delivers a new strategy for rivers on which we operate.

This Strategy is structured around the following three strategic goals:

1. Shift the balance between fisheries conservation and renewable generation based on scientific evidence.
2. Implement a Nature Positive Approach along 30% of ESB owned river channels or lakeside habitats by 2030.
3. Commit to a measurable net gain of ESB's contribution to our communities through sustainability initiatives.

The development and implementation of actions under each of these high-level goals will be based on the application of scientific and other technical expert advice; the outcome of trials and feasibility studies; and consultation with key stakeholders.

Projects already commenced include:

- River Erne: Two key areas for improvement have been identified at hydro stations— repurposing the Erne smolt gates and the addition of a lamprey trap located at the lower end of Cathleen's Fall fish pass.
- River Clady: Construction of a new vertical slot fish pass at Gweedore Weir.
- Lower Shannon: Blackwater River: ESB is evaluating the replacement options of an aging wooden fish ladder.

In parallel, ESB is engaging with fish passage experts both in Ireland and internationally to explore innovative solutions, e.g., behavioral guidance systems, fish-friendly turbines, and novel fish pass technologies.

In addition, planning and identification of suitable habitat improvement projects have commenced. Community engagement on ESB's commitment to sustainability and social responsibility will continue throughout the life of the Strategy.

Annual Work Progress

ESB's Sustainable Rivers Team continues a rolling annual programme of work across all catchments. This programme is critical to ongoing conservation and maintenance of existing stocks and habitats.

A rolling annual work programme is broadly managed as outlined in Table 1 below.

Table 1. The annual work programmes completed by ESB staff during the year.

Task	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Salmon Conservation												
Adult broodstock trapping												
Stripping broodstock												
Hatchery egg to fry stage												
Restocking juvenile salmon (unfed, fry, parr)												
Smolt release												
Eel Conservation												
Silver Eel Trap and Transport												
Juvenile Eel Trap and Transport												
Conservation Management												
Electrical fishing surveys												
Fish Counters (Operation and Management)												
Smolt & elver generation protocols												
River Enhancement & Conservation												
Tree/Shrub clearance (with NPWS)												
Instream habitat works												
Construction of fishing stands, stiles & footbridges												

Salmon Conservation

The rivers on which ESB operate hydroelectric generation are all salmon rivers. Hydroelectric generation schemes form a barrier to the connectivity of salmon across the river catchments.

Mitigation measures involve the restocking of the three larger catchments with annual releases of juvenile salmon produced at hatcheries. While the hydro schemes have an impact on salmon in the rivers, other factors also have an impact such as extensive drainage schemes, water regulation and canalisation, intensive farming, afforestation, and water pollution have also impacted negatively. Increased marine and coastal exploitation levels since the 1960's followed by the incidence of Ulcerated Dermal Necrosis (UDN), and more recently decreasing marine survival have also added to the reduction in numbers of self-sustaining stocks of salmon.

ESB operates three salmon ranching and hatchery units, on the Shannon, Erne, and Lee. The number released into the upper catchment of each catchment and the number of juvenile salmon (termed smolts) released from each hatchery unit in late spring is shown in Table 2. Genetic analyses of the Lee, Shannon and Erne undertaken by University College Cork have found that naturally occurring stocks of wild fish above the lowermost hydro stations are extinct. However, for the Clady/Crollly and the Liffey, there are still self-sustaining populations of wild salmon present. The census of all populations is assessed on an annual basis by using automatic fish counters (Table 2). Currently these are managed by Inland Fisheries Ireland under a service level agreement. These counters are located within the various types of fish passes that are present on each of the hydro regulated catchments.

Table 2. Salmon produced and returning to the salmon hatcheries in our ESB hydro regulated rivers.

	No. of Smolt Released	Census Data	Broodstock Returns	Hatchery Juveniles Restocked
Shannon	87,622	715	93	276,295
Erne	50,447	1,109	127	148,201
Lee	69,430	44	151	0
Liffey	-	193	-	-
Clady	-	130	-	-
Total	207,499	2,191	371	424,496

The census data for the Shannon (Figure 1) and Erne (Figure 2) is shown on the next page.

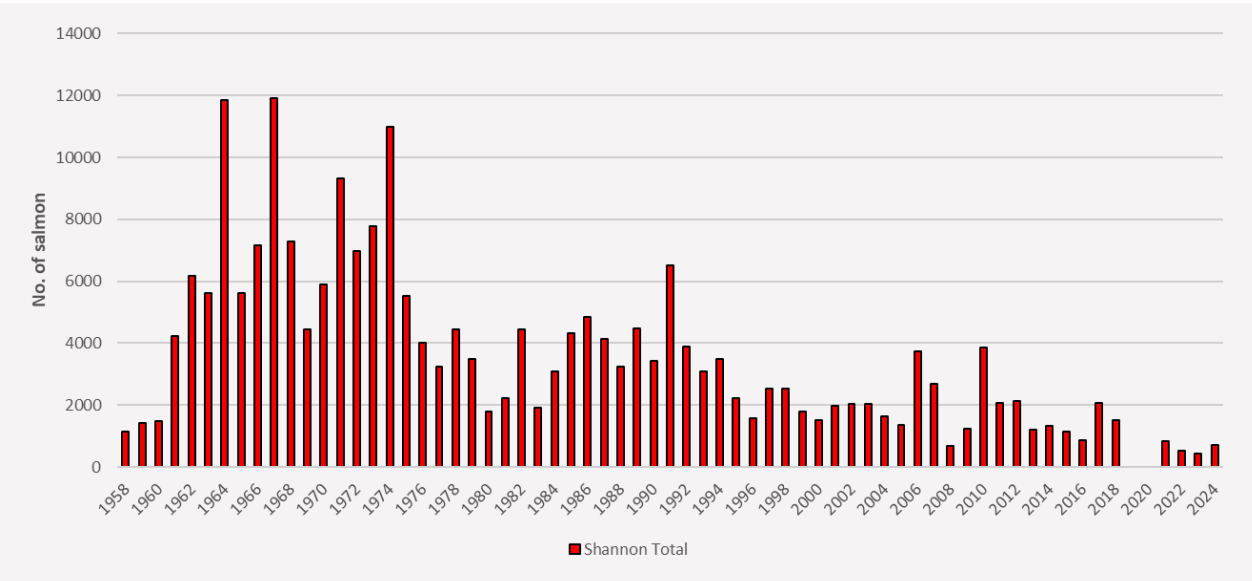


Figure 1. The number of ascending adult salmon through Ardnacrusha and Parteen Regulating Weir on the Lower Shannon catchment for the period 1959 to 2024.

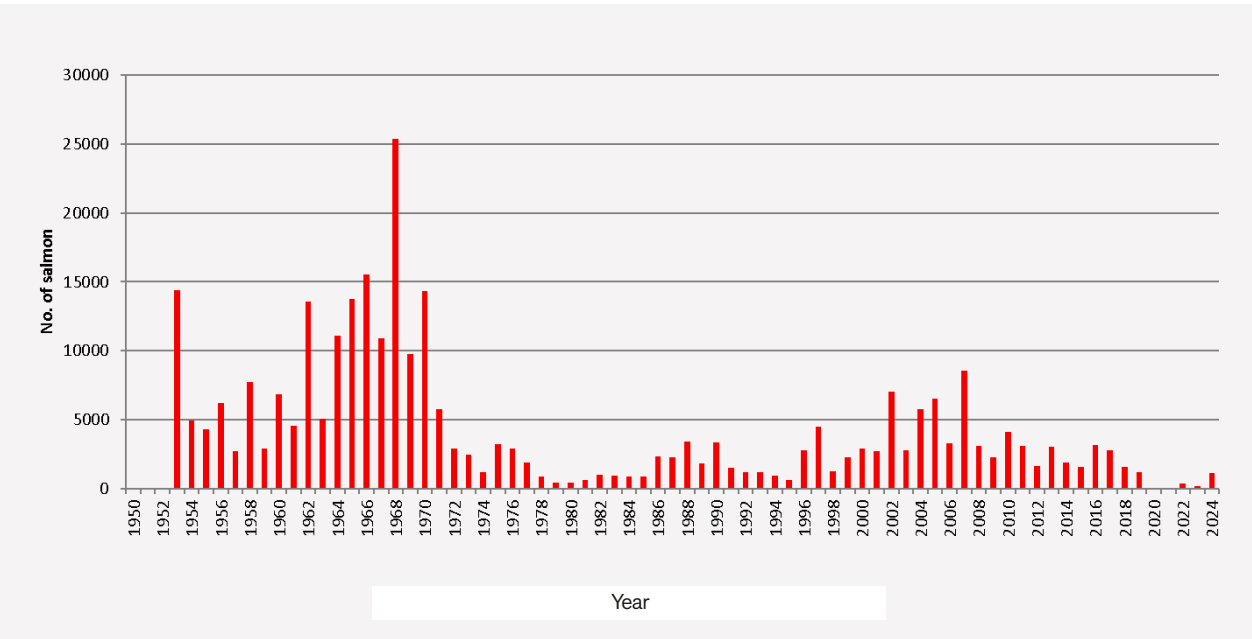


Figure 2. The number of salmon ascending the fish pass at Cathaleen's Fall hydroelectric generating station on the Lower Erne from 1953 to 2024. There was no census data for 2020 and 2021.

The lifecycle and times for the rearing of hatchery salmon is shown below in Figure 3.

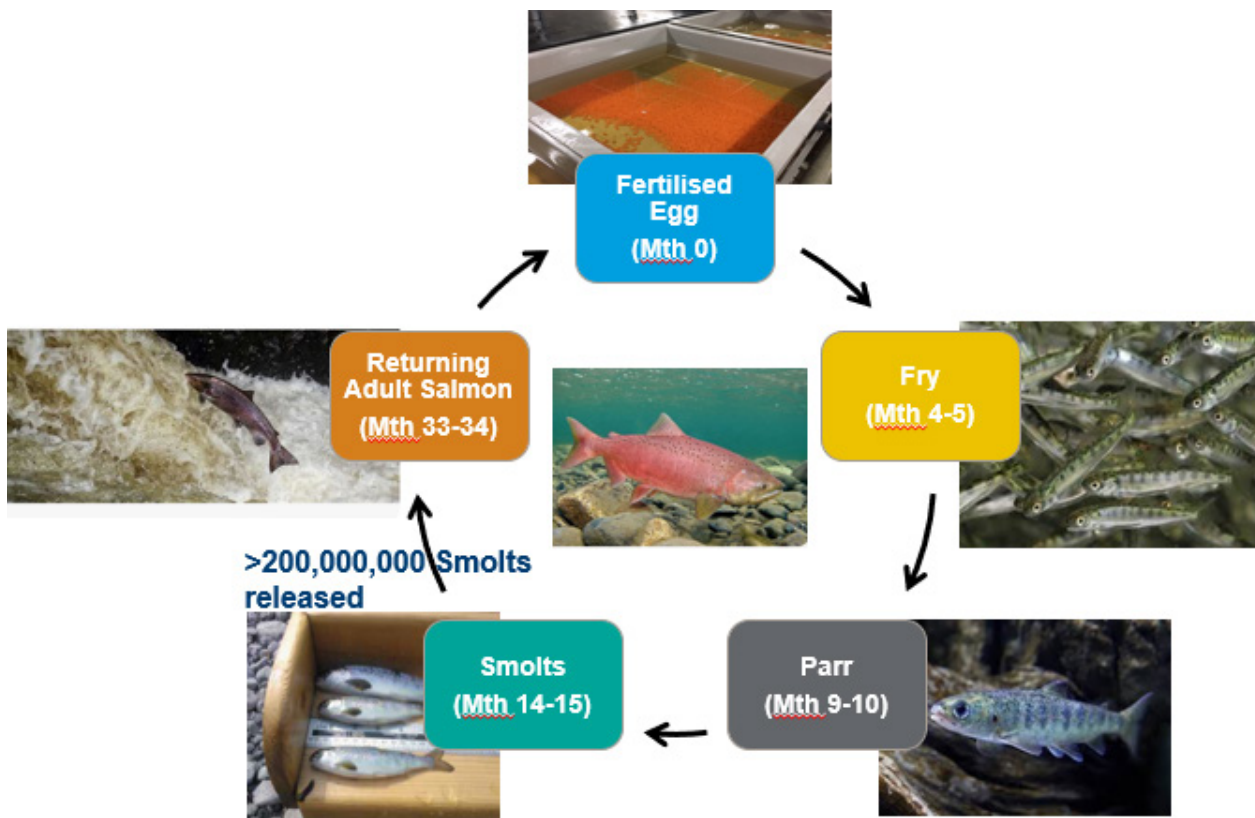


Figure 3. The lifecycle of the Atlantic salmon.

The assessment of naturally spawned wild salmon and those fish that are released (Table 2) is completed by annual electro-fishing surveys. In 2024, the Clady and Crolla rivers were surveyed. Stock were found to be relatively good, and the density of salmon decreased towards the upper catchment which was dominated by brown trout stocks. Surveys of catchments in future years will be undertaken on a phased basis, with each catchment being covered over a five-year period.

Eel Conservation

The main fisheries management focus for ESB in the conservation of the European eel has been that of 'Trap and Transport.' This means that juvenile eel are captured at the lowermost side of a hydro station on three catchments. These eels are trapped using 'elver traps' into which the juvenile eels climb and fall into an aerated box of water. The contents of this box are emptied, catches weighed and transported upstream of the stations for release. Juvenile eel trap and transport programmes are carried out on Shannon, Erne, and Lee catchments. The weight of juvenile eel captured and transported at each of the three catchments during 2024 is shown in Table 3.

ESB has been capturing upward migrating juvenile eel at several locations for many decades. In recent times, efforts have been improved through a greater number of trap locations and an upgrading of the trap facilities. This includes the addition of a bristle mat substrate (varying sized to allow for varying age cohorts of eel).

Due to the eel lifecycle (see Figure 4), these eels then grow over a period of 14-19 years in freshwater. During the period September-March each year the mature eels begin their downstream migration to the sea. This usually happens during periods of high flows and lunar darkness. ESB utilises contractor eel fishing crews to capture these downstream migrating eels at several sites upstream of the stations. This programme has been ongoing since 2009, following the adoption of the 2009 EU Regulation on the Conservation of European Eel. Again, the catches are weighed and released downstream of the stations where the eel may continue their migration to the sea. This operation is only carried out on those catchments where large populations of eel are known to occur, such as the Shannon, Erne, and Lee, which all have large lakes, within which large populations of eel live. The weight of adult eel (often termed as 'Silver Eel'), captured and transported at each of the three catchments during 2024 is shown in Table 3.

Table 3. The 2024 silver eel catches, sites fished and the relation to the annual targets according to the National Eel Management Plan. Also included are the 2024 juvenile eel catches for the three catchments.

	Trap and Transport Catch (Kg)	National Eel Management Plan Target	Relation to Target	No of Silver Eel T&T Fishing Crew Sites	Juvenile Eel Catch (Kg)
Shannon	32,248	30%	97.4%	3	196.55
Erne	29,081	50%	81%	5	1,791.6
Lee	1,162	500Kg	232.4%	1	0.1
Totals	62,491				1,988.35

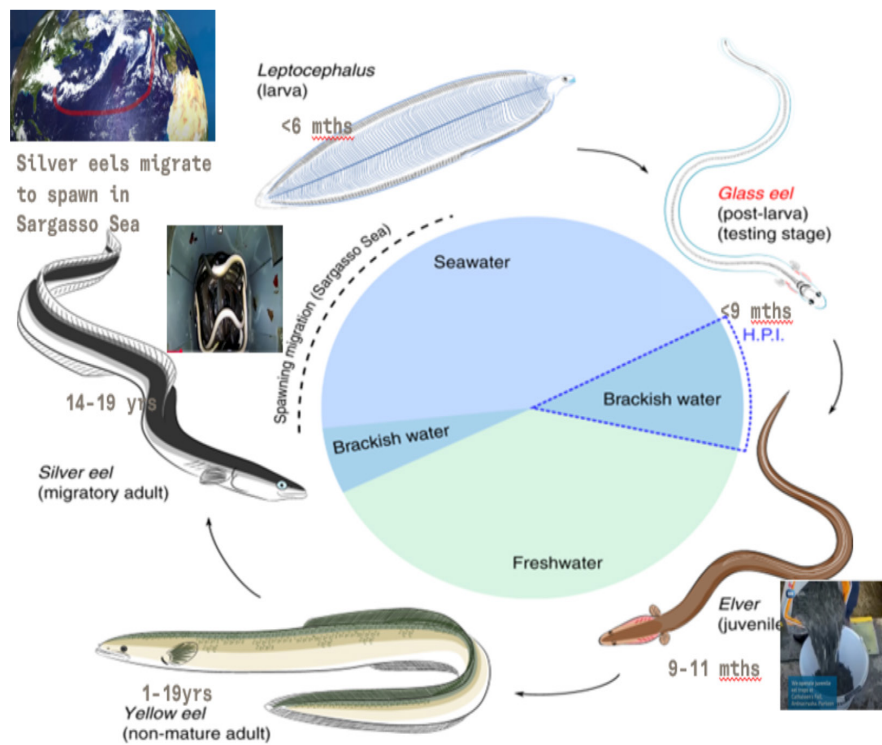


Figure 4. The lifecycle of the European eel.

ESB Fisheries Conservation Management

The focus of ESB Sustainable Rivers management in recent decades has been towards the conservation of wild stocks of fish.

The future role of hatcheries has been highlighted in recent times by the Technical Expert Group on Salmon. Thus, the high level of the Ballyshannon hatchery and ranching production unit on the Erne has been reduced and will be assessed in future years. Allied to this will be increasing focus on fisheries connectivity projects which will help wild fish to become self-sustaining.

ESB is committed to working with all Government Agencies including Inland Fisheries Ireland, An Garda Síochána, the local government Authorities, the Environmental Protection Agency and the National Parks and Wildlife Service and many angling groups. One such angling group that ESB works in close partnership with is, the Shannon Fisheries Partnership Group. The Shannon Fisheries Partnership Group encompasses nearly the entire unit of the Upper and Lower Shannon catchment. Several fisheries under ESB ownership have also been leased to angling clubs and IFI.

For those hydro stations that lie in the path of migratory salmon, ESB has a series of generation protocols which utilise the station infrastructure specifics of each site to try and enhance the downstream movement of migrating juvenile salmon. These protocols are modified somewhat to suit the upstream migration of juvenile eel which also occurs during the same time periods each year (mid-March to Mid-June). Where bypass facilities such as spillways are available, they are utilised wherever possible, but in general the generation protocol is to generate just under 'maximum efficiency' which is the current best practice and allows for the highest survival rates through the turbines for the passage of fish. The key periods for fish movement are dusk and dawn and the nighttime hours, which are the focus of these protocols.

ESB undertakes the sale of recreational angling permits on those fisheries where recreational angling is allowed. This is undertaken in close partnership with Inland Fisheries Ireland whilst abiding by the national angling advice.

River Enhancement & Conservation

In general, the specific areas of the Shannon catchment which have been selected for habitat restoration works, are those catchments which have been previously drained, and which presently suffer from having a homogenous canalised type of habitat, with a capacity of supporting a limited number of fish species and life stages. The list of sites with planned work is shared with the Shannon Fisheries Partnership Group, which is a partnership arrangement made up of ESB Sustainable Rivers, Inland Fisheries Ireland (IFI) and local angling clubs.

The catchments worked upon in 2024 included:

1. The Mulkear.
2. Castleconnell.
3. The Little Brosna (Camcor tributary).
4. The Ballyfinboy River.

Each specific site work plan is drafted by IFI staff working in partnership with ESB Sustainable Rivers staff. Where appropriate, the Office of Public Works (OPW) and the National Parks and Wildlife Service (NPWS) are notified of these works, and a screening report for an Appropriate Assessment is completed, as per Article 6(3) of the EU Habitats Directive. Permission for access to individual work sites is also requested from local landowners, and with the co-operation of the local angling clubs and other recreational riverine users.

Due to some of the selected areas having undergone arterial drainage during the past few decades, the individual plans aim to change the physical habitat from a drained homogeneous area towards re-creating a naturally heterogeneous habitat. Therefore, many stages of fish will be able to inhabit the newly formed areas, and many species of fish will be able to populate a given stretch of river. All the areas being worked upon have a favourable water quality status to ensure the survival of the various fish populations both during and after the habitat works.

The habitat work programme may be categorised into two different areas:

(1) Instream work: This work involves the recreation of the riffle-glide-pool sequence that would normally be representative of a healthy, un-drained river.

(2) Riparian/bank side work: This work is carried out during the winter months as tree pruning is prohibited under law during the bird nesting season. Works include the removal of excess overhanging vegetation, where it causes excessive shade or 'tunnelling' of the river. Excessive tunnelling by riverbank vegetation prevents light entering the river and thereby reduces the instream productivity.

Provision is made for access to the river by footpaths, gates, footbridges, stiles, etc., but only after the prior permission of the landowner. Fencing is to the farming 'Acres' scheme standard where required.

ESB is committed to conservation work on the rivers in which we operate, we hope this report provides you with an overview of that conservation work.

Notes

ELECTRICITY SUPPLY BOARD
BORD SOLÁTHAIR AN LEICTREACHAIS

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