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Salmon Watch Ireland is the process of launching a new resource which may help researchers and public to understand various topics surrounding the threats to salmon both in their ocean migration and near coastal migration.

We have also integrated some of our submissions regarding applications for the renewal of salmon farm licenses.

This resource is public, and we encourage users to go forward to access and use the materials to become better informed.

The resource is being updated constantly and is under construction at present.

SALMON WATCH IRELAND NEWSLETTER

Pearl Mussel and Atlantic salmon

The relationship between Atlantic salmon and the Pearl Mussel (*Margaritifera margaritifera*) is a complex and unique relationship which must be protected and nurtured into the future. The threat of extinction to both species is real and cannot be overstated. We need healthy rivers and healthy levels of Atlantic salmon to safeguard one of Irelands truly wonderful species which are a strong indicator of a healthy ecosystem. Unfortunately, Ireland's populations of Pearl Mussels are in continuing decline caused by declining water and habitat conditions and a declining salmon population.

Salmon as a Host Species: A Symbiotic Lifeline

Freshwater pearl mussels have a complex life cycle that depends on salmonid fish, particularly Atlantic salmon and brown trout, for successful reproduction. Here's how the relationship works:

1. Glochidia Attachment

- **Pearl mussel larvae, known as glochidia, are released by adult mussels into the water in summer.**
- **These microscopic larvae must attach to the gills of a host fish within a few days—or they die.**
- **In many western Irish rivers, Atlantic salmon are the dominant and often sole effective host.**
- **It is important to note that it is the juvenile salmon that carry the glochidia. (0+ and 1+ juveniles.)**

2. Parasitic Stage

- **Once attached to salmon gills, glochidia encyst and remain for about 9–10 months.**
- **During this period, they draw nutrients from the fish (though with minimal harm), allowing them to develop into juvenile mussels.**

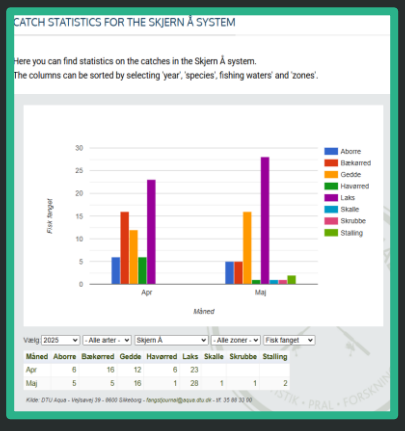
Lack of Multi Sea Winter Salmon

The apparent lack of MSW salmon is certainly not unique in Ireland

A recent report regarding the much heralded and famous salmon river Skyern in Denmark notes a poor start to their season. On top of a disappointing season last year, it is evident that the forcing factor is at sea as such a wide decline cannot be attributed to localized issues.

This is an interesting website where you can track catches on Danish Rivers over recent years.

Decline is evident



3. Detachment and Settlement

- **The juveniles then drop off the host's gills the following spring and settle into clean, well-oxygenated gravel in the riverbed, where they may live for over 100 years if conditions are right.**

Why Salmon Matter So Much

Looking at recent publications including *Guist et al.,2018* and *Johnson and Moorkens 2017* the following findings demonstrate that we must at all costs protect our stocks of Atlantic salmon and effectively manage our rivers to ensure that habitats are not unduly affected by our land use policies.

- **Host specificity: Pearl mussels are highly selective. In western Irish rivers like the Bundorragha (Delphi), salmon are often the only successful hosts.**
- **Genetic integrity of salmon matters: Farmed salmon may carry maladaptive traits. Hybridisation with wild salmon through escapees could disrupt this crucial host-parasite relationship by reducing the suitability of salmon gills for mussel development.**
- **Healthy salmon populations are vital: Rivers with declining salmon numbers (due to barriers, pollution, or salmon farming impacts) show collapse in mussel recruitment.**

The Delphi system in County Mayo is a prime example of a system which supports one of the only viable reproducing catchments for Pearl Mussels.

Scottish Salmon Catch 2024

Overall catches were up on 2023 values which saw the lowest catch of the time series.

There has been a dramatic decline since 2010 when the catch was recorded as 111,405 salmon to 46,978 in 2024.

Inland Fisheries Ireland announce closure of fisheries due to water temperature increase

The Bundorragha River is part of the western cluster and exhibits key characteristics associated with conservation success:

- **Host Species: Atlantic salmon (*Salmo salar*) – consistent with the genetic grouping of salmon-dependent western rivers.**
- **Genetic Diversity: Moderate to high suggesting a healthy and resilient population.**
- **Population Size: Estimated at 2 million individuals – among the largest surveyed in Ireland.**
- **Inbreeding and Drift: Low inbreeding and low common ancestry, supporting its status as a genetically robust population.**

Bundorragha's genetic and ecological profile marks it as a critical stronghold for freshwater pearl mussels in Ireland. Its continued success depends on maintaining pristine water quality, supporting healthy salmon populations, and preventing habitat degradation from factors like siltation or eutrophication.

Conservation Implications

- **Dual-species approach: Protecting pearl mussels requires protecting their salmon hosts.**
- **Genetic monitoring (like the GeneFlow project) is vital to ensure host fish populations remain viable.**
- **Habitat quality and connectivity must be maintained for both mussel settlement and salmon migration.**

Freshwater Heatwave - What are the implications for wild salmon juveniles and returning adults

We are essentially going through a weather pattern presently that is destructive to the wild Atlantic salmon population. Extremely low rivers, rapidly warming water temperatures, land surface temperatures soaring, poor vegetation growth and no real outlook of cooling temperatures or significant rainfall in near future affect juvenile salmon in a highly negative manner.

Drainage and extraction of water for agriculture and domestic use is certainly not helping and with the intensification of the dairy industry and reliance on water for cattle this situation will only deteriorate.

A paper produced by Inland Fisheries Ireland in 2018 is essential reading with similar weather patterns experienced.

We are also concerned that adult Atlantic salmon entering estuarine waters may experience increased predation from seals as they may become trapped in tidal waters and may be reluctant to enter freshwater due to low flows and high temperatures.

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Please contact us

Email:

Salmonwatchireland@gmail.com

Phone 086 3991074

Point of Contact: John Murphy

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We are also concerned that a higher proportion of MSW salmon may be harvested from rivers with commercial netting during May and we are requesting that limitations should be introduced if catches are higher than normal.

High Water Temperature and Low Flows affect juvenile salmon in several different ways as follows:

Temperature increases metabolic rate – More energy usage to survive

Reduced growth- Mortality Increased

Density related mortality – Habitat shrinks in low water- Overcrowding of available habitat.

Increased predation by avian predators

Natural processes in freshwater may be impacted by reduction in available dissolved oxygen. This may lead to reduced availability of resources for young salmonids.

Low and warm water may negatively affect smolt migration leading to delays and can leave smolts highly vulnerable to predation especially to avian predators and mammalian predators – This frequently occurs at bottlenecks on rivers such as weirs.

The delay in migration may constitute a mismatch in timing of entry to the ocean which may have implications for survival.

Unfortunately, we may enter or indeed have entered a period of climate change which may not benefit our wild Atlantic salmon stocks, and it is essential that we strive to protect our habitat and improve water quality. It is becoming increasingly common that certain areas of the country are experiencing low rainfall in the period from April to October and our once prolific salmon rivers in the South and Southeast are certainly experiencing poorer productivity and rapidly declining adult returns.

Unlike spate systems, it takes a considerable amount of rainfall to impact water levels on these large systems and summer rainfall is essentially absent thus causing ecological and economic issues in these catchments.

NASCO
North Atlantic Salmon Conservation Organisation

Pure Salmon Campaign

patagonia

DMA