

Freshwater Fish of Conservation Concern in the Isle of Man 2024

Eeast Awin ta Feme Coadey ayns Ellan Vannin 2024

Freshwater Fish of Conservation Concern in the Isle of Man (FFoCCIoM) 2024 is the first assessment of the conservation status of all native freshwater fish in the Isle of Man.

The primary purpose of this document is to highlight the importance of freshwater fish conservation, better target research and management and collate information on the threats to our native species.

The assessment uses the most recent data available from over decades of research. A traffic light system of Red (greatest concern), Amber (unfavourable), and Green (least concern) is used to indicate the conservation status of each species. A list of invasive non-native species that must be monitored is also included.

Identifying the species of greatest conservation concern can assist with the prioritisation of conservation policy, strategy and funding. As an up-to-date account of the populations and ranges of all freshwater fish in the Isle of Man, FFoCCIoM 2024 is a useful resource to assist those wishing to understand and help to conserve fish populations and the habitats upon which they depend.

1. Methodology

Data

FFoCCIoM 2024 uses data collected by the Fisheries Division within the Environment Directorate of the Department of Environment, Food and Agriculture and the findings of postgraduate research. Several freshwater fish species are not monitored regularly and therefore, it is acknowledged that these species are data poor.

Assessment

The assessment of conservation status includes the importance of the Manx population in an international context. The International Union for Conservation of Nature (IUCN) red list of threatened species has evolved to become the world's most comprehensive information source on the global extinction risk status of animal, fungus and plant species. The Oslo and Paris Convention (OSPAR) is the mechanism by which 15 Governments & the EU cooperate to protect the marine environment of the North-East Atlantic. Any species listed by the [IUCN as Critically Endangered](#) with global extinction or on the [OSPAR list of threatened species](#) were automatically placed on the Manx Red List.

Recent and historical population trends in the Isle of Man were assessed for surveyed fish species including salmonids, as were the risks posed by potential threats. Assigned conservation status is primarily based on survey results, international status and the severity of threats posed to them by impacts such as habitat degradation or climate change.

Non-native fish species are those listed in Schedule 8 of the [Wildlife Act 1990](#).

Only species which have an identifiable freshwater phase within their life history are included (i.e. only species known to be entirely freshwater, anadromous or catadromous).

The fish species *Salmo trutta* has been listed twice – once as the Sea Trout and once as the Brown Trout. They are both the same species; however, they have significantly different life strategies warranting separate listings. DEFA does not currently monitor Sea Trout populations, however it is possible that they are exposed to greater risk than Brown Trout, due to their complex life cycle.

Definitions

Anadromous	A species which moves from salt water to fresh water to spawn.
Catadromous	A species which moves fresh water to the sea to breed.
Climate Change	Means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time period.
Native	A species which is present in the Isle of Man as a result of natural colonisation since the last ice age.
Non-native	A species which is not ordinarily resident in and is not a regular visitor to the Island in a wild state. This definition is taken from Section 14 of the Wildlife Act 1990.
Invasive	A species, being either native or non-native, which can cause significant ecological or economic harm.
Species	For presentational ease within this document the two ecotypes/subspecies of trout (Brown Trout and Sea Trout) are listed as if they were separate species, however they are forms of a single species <i>Salmo trutta</i> but have significantly different life strategies, and conservation statuses to warrant separate listings.

Sources of Information

A variety of recently published reports and journal articles were used. The full source data that have been critically examined are:

Publications:

- [DEFA \(2020\), *Native Freshwater Fisheries Strategy 2015-2020*](#)
- [DEFA \(2024\), *Juvenile Trout and Salmon Monitoring Programme Report 2002-2020 data*](#)
- [DEFA \(2015\), *Coarse Fish Policy April 2015*](#)

Surveys and Datasets:

- [DEFA River Water Quality archive](#)
- Davies, N. (2007), *The distribution of the European eel (Anguilla anguilla L.) in the Isle of Man.*
- Barry, J. (2010), *Assessment of European eel (Anguilla anguilla L.) distribution and abundance in river catchments in the Isle of Man.*

Updates

FFoCCIoM should undergo a periodic review to incorporate analysis of future surveys, any new species to the Island and include further understanding of fish populations, their range, and associated freshwater habitats.

Feedback

Manx Wildlife Trust and DEFA recognise that, owing to data deficiency, this work may contain errors but provides an indication on status based on available information. Feedback from users and interested parties, along with any biological records for the species listed would be gratefully received.

2. Key Findings

The protection and conservation of inland fisheries and their environments is prescribed under the [Fisheries Act 2012](#). Manx freshwater fish comprise of nine species thought likely to be native species. All nine native species were assessed for their conservation status for FfOCCIoM 2024. Data deficiencies for some species make population estimation subjective however, their presence or absence within survey sites surveyed for other species allows an understanding of their distribution, range and rarity. Five species were found to be of conservation concern.

- The Red List Y Rolley Jiarg**
 Two species were placed on the **Red List** and are of **greatest** conservation concern.
- The Amber List Y Rolley Amber**
 Three species were placed on the **Amber List** and are of **unfavourable** conservation status.
- The Green List Y Rolley Glass**
 Four species were placed on the **Green List** and are of **least** conservation concern.
- The Invasive List Y Rolley Quaagh**
 Nine species or genera were placed in the **Invasive List** and are of **negative** conservation concern.

3. The Red List Y Rolley Jiarg

Common Name/Manx Name	Scientific Name	Suspected Reasons for Decline	Reason for Listing & Manx Status	Active Manx Monitoring Programme
European Eel Astan	<i>Anguilla anguilla</i>	<u>Isle of Man/UK/International:</u> <ul style="list-style-type: none"> Death on long distance migration. Poaching and overfishing. Potential impact of the parasitic nematode <i>Anguillicola crassus</i>. Challenges to fish passage. Climate change. Habitat change. 	<ul style="list-style-type: none"> Critically Endangered with global extinction (IUCN3.1). Included in the OSPAR list of threatened species. Davies (2007) & Barry (2010) found the eel populations on the IOM appear healthy. Presence/absence surveys indicate healthy populations. 	Presence or absence monitoring including within Salmonid survey sites.
Atlantic Salmon Braddan Atlantagh	<i>Salmo salar</i>	<u>Isle of Man:</u> <ul style="list-style-type: none"> Habitat change, such as reduced water flow Climate change. Challenges fish passage. 	<ul style="list-style-type: none"> Near Threatened with global extinction, Vulnerable in Europe, Endangered in Great Britain (IUCN3.1). Included in the OSPAR list of threatened species. 	25 surveyed juvenile sites

		<ul style="list-style-type: none"> Poaching and overfishing. <p><u>UK/International:</u></p> <ul style="list-style-type: none"> Poaching and overfishing. Disease and pest transfer from salmon farms. Concerns around genetics from accidental salmon farm escapes. Climate change. Habitat change. 	<ul style="list-style-type: none"> Historic Manx decline. Juvenile population trends vary between rivers. Migration difficulties for the returning adult populations. 	
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4. The Amber List *Y Rolley Amber*

Common Name/Manx Name	Scientific Name	Suspected Reasons for Decline	Reason for Listing & Manx Status	Active Manx Monitoring Programme
River Lamprey Lamprey awin	<i>Lampetra fluviatilis</i>	<u>Isle of Man/UK:</u> <ul style="list-style-type: none"> Habitat change. Climate change. 	<ul style="list-style-type: none"> Once thought to be locally extinct, rarely encountered but spotted in the Neb in 2007 and in the Sulby. 	Presence or absence monitoring
Brook Lamprey Lamprey strooan	<i>Lampetra planeri</i>	<u>Isle of Man/UK:</u> <ul style="list-style-type: none"> Habitat change. Climate change. 	<ul style="list-style-type: none"> Once thought to be locally extinct, surveys conducted since 2007, sporadic distribution throughout Manx watercourses. 	Presence or absence monitoring
Sea Trout Breck gial	<i>Salmo trutta trutta</i>	<u>Isle of Man:</u> <ul style="list-style-type: none"> Challenges fish passage. Habitat change. Climate change. Poaching and overfishing. <p><u>UK/International:</u></p> <ul style="list-style-type: none"> Habitat change, such as reduced water flow Climate change. Poaching and overfishing. Disease and pest transfer from salmon farms. 	<ul style="list-style-type: none"> Population estimates through the Celtic Sea Trout Project. Migration influences to returning adult populations. 	25 survey juvenile sites

5. The Green List *Y Rolley Glass*

Common Name/Manx Name	Scientific Name	Reason for Listing & Manx Status	Active Manx Monitoring Programme
Three-spined Stickleback Birrág ny hawin	<i>Gasterosteus aculeatus</i>	Shows a wide, sporadic distribution throughout many surveyed Manx watercourses although data is deficient.	Presence or absence monitoring
Minnow Mynnag	<i>Phoxinus phoxinus</i>	Healthy populations known in some of the Island's Reservoirs. Occasionally found downstream of these locations although data is deficient.	No
Nine-spined Stickleback Birrág nuy-yialgagh	<i>Pungitius pungitius</i>	Shows a wide, sporadic distribution throughout many surveyed Manx watercourses although data is deficient.	Presence or absence monitoring
Brown Trout Breck awin	<i>Salmo trutta fario</i>	70% of monitoring sites showed good or excellent population density.	25 survey juvenile sites

6. The Non-Native List *Y Rolley Quaagh*

Common Name	Scientific Name	Notes on Manx Legal Status, Distribution and/or Abundance
Common Carp	<i>Cyprinus carpio</i>	Listed on Schedule 8 of Wildlife Act 1990.
Koi Carp	<i>Cyprinus rubrofuscus</i>	Listed on Schedule 8 of Wildlife Act 1990.
Rainbow Trout	<i>Oncorhynchus mykiss</i>	Widely stocked in private still waters and six public reservoirs. No current evidence of breeding as only female and/or sterile triploids are released.
Pacific Pink Salmon	<i>Oncorhynchus gorbuscha</i>	First record was caught in the River Neb in October 2021. Not reported since but vigilance required as this species is becoming more prevalent in UK waters.
European Perch	<i>Perca fluviatilis</i>	Known to be present in limited suitable habitat. Listed on Schedule 8 of Wildlife Act 1990.
Common Roach	<i>Rutilus rutilus</i>	Listed on Schedule 8 of Wildlife Act 1990.
Common Rudd	<i>Scardinius erythrophthalmus</i>	Listed on Schedule 8 of Wildlife Act 1990.
Roach x Rudd hybrids	<i>R. rutilus</i> x <i>S. erythrophthalmus</i>	Listed on Schedule 8 of Wildlife Act 1990.
Tench	<i>Tinca tinca</i>	Listed on Schedule 8 of Wildlife Act 1990.

7. Future Threats

Invasive Species

The Isle of Man currently has no known issue with invasive freshwater fish species due to limitations of suitable habitat. All of the non-native freshwater fish species known to be present on the Island (including ornamental fish species) are of recreational interest and by the nature of the impounded water bodies most occupy, they have never become prolific enough to pose a detectable problem for native fish stocks. Fundamentally, their movement is restricted under the [Aquatic Animal Health Regulations 2009](#) and [DEFA Coarse Fish Policy 2015](#). The recent arrival of a single Pacific Pink Salmon (*Oncorhynchus gorbuscha*) in 2021 was confirmed by DEFA who are monitoring any further reports biannually as this species make their way into UK marine territories.

Invasive species threaten native fish populations by outcompeting them for resources, preying on native juveniles or through rapid population increases disrupting the ecology and food web. Climate change may further enhance this threat if warming temperatures allow invasive species to increase their ranges and abundance. Invasive species can also be vectors for parasites and pathogens.

Climate Change

Climate change predictions forecast increasing the frequency of intense weather cycles. Warmer, drier seasons and colder, wetter autumn and winter periods increase the risk of drought or flooding during key life cycle events, bringing a set of challenges that will impact freshwater fish populations Island wide.

Increasing frequency and intensity of drier periods increase the risk of drought occurrence, leading to habitat loss and migration difficulty for salmonids. Higher rainfall and potential for flooding during autumn and winter months cause greater levels of turbidity and erosion within watercourses, leading to habitat loss. An example of this was Storm Desmond in December 2015 where there was a catastrophic impact on the Atlantic Salmon spawning season. Impacts were seen the following summer with low numbers of Atlantic Salmon fry detected across the Island.

Human Impacts

Activities such as damming, water extraction, riverbank engineering, dredging, construction and channelisation can reduce the variety of physical habitats within a watercourse, reducing its ability to cater for certain life stages of fish, invertebrates and birds, inevitably impacting biodiversity. Dredging especially impacts populations of lamprey as they require silt beds as their main habitat. Obstacles to upstream migration (for example weirs), can cause under-utilisation of catchment range, and in some cases, extinction of diadromous fish within substantial stretches of suitable habitat. Development designs and best practices sensitive to the needs of aquatic life are proven to reduce long term impacts to freshwater fish populations. Specialist organisations are available to assist developers in this.

Land development, the removal of vegetation and draining of wetlands elevate surface runoff leading to higher levels of flood risk and erosion. Higher frequency and sediment loading within runoff can enter rivers, suffocating ova and any developing juveniles within the gravels of fish spawning sites. Agricultural and recreational activities involving the disruption of sediments and riverbeds can also directly disturb spawning grounds.

Urbanisation around watercourses increases the chance of pollution incidents, such as household waste leakage and fly tipping. Such events can lead to nutrient leachate and eutrophication. Equally, heavy grazing of livestock in fields adjacent to rivers can lead to erosion and increased organic matter pollution without suitable buffer zones fenced off.

With the threat of increased drought and a rising human population, river water levels will likely be under ever greater threat, especially those attached to impounded catchments such as the Sulby and Baldwin Rivers, which may be subject to compensation flow management to maintain raw water stocks. Fish rescues may be required when rivers recede from drought (also preventing natural migration) to ensure survival. Conversely, flood defences have the potential to create migration barriers, limiting habitat range. In response, the MUA have developed the [Water Management Plan 2023](#) to address these issues along with a draft 2023 Drought Plan.

Exploitation poses a threat as poaching and overfishing of Atlantic Salmon, wild trout and European Eels reduce their chances of spawning success, overall genetic diversity, population resilience and consequently, their long term chances of survival.

8. Conservation Opportunities

Water Quality Improvements

Maintaining a high standard of water quality in all Manx rivers benefits not only the populations of freshwater fish but also supports biodiversity within the marine, freshwater and terrestrial environments. Clean water is essential to the Island's communities for drinking, while also achieving positive outcomes to the economy (including the tourism industry), leisure activities and general public well-being.

The [Agri-Environment Scheme](#) helps support farmers in safeguarding waterways on their lands through techniques proven to reduce farm pollutants entering our watercourses or from direct damage by cattle. Farmers are encouraged to establish, protect and improve riparian areas, infield grass strips, erect cattle proof fencing to restrict river access and implement effective agricultural waste management plans.

Monitoring

Although annual monitoring and presence/absence surveys provide data on many freshwater fish species, data deficiencies are present, limiting an understanding on population range of all our river systems. Data from monitoring efforts help identify fish population variation and potential improvements to support them. Further, in-depth monitoring of all Manx rivers and all species of fish may establish the health and range of populations but this requires suitable resource support.

As an example, fish counters on the Island's main rivers would be invaluable in monitoring adult migratory fish returns, gauging the impact on Atlantic Salmon populations between marine and inland environments and the effectiveness of conservation initiatives.

The threat invasive and non-native species and the pests and diseases they may carry are also of importance to native fish populations. Effective border controls and monitoring by authorities, conservation organisations (like the Manx Wildlife Trust) and other stakeholder groups help provide an early warning to potential issues.

Education

Our biosphere is recognised by UNESCO for its special environment, culture, heritage and economy and its people's desire to cherish and nurture them. Increasing awareness of the importance of Manx biodiversity help encourage corporate and privately funded projects aimed to conserve and protect environments and the life they support. This is achieved through various organisations (including government Departments such as DEFA and conservation groups like the MWT) through media, events, sponsorship, international agreements, policy and legislation.

Habitat Management

Potential habitat management opportunities need to be identified on a river-by-river basis. An example of this would be to plant upland riparian zones to increase shade and cool the water thereby increasing fish population's resilience to drought conditions. Simple management such as this would benefit freshwater fish species while other ways to tackle the climate crisis are explored.

Management for flood defence does not just have to be in the form of weirs, embankments and dams, habitat management for biodiversity is a good option. A [resource by Newcastle University](#) and the UK Environment Agency nicely outlines ways to slow water to prevent flooding downstream whilst creating habitat for biodiversity. Where these practices cannot be put in place, ensuring adequate fish and eel passes are available is of great importance.

Land management projects are sure to be challenging as wetland areas are often drained for construction or agriculture. Allowing for management projects such as [re-meandering](#) in the Isle of Man could require a change of land use or farming practice. However, there is much scope for improving access for migratory fish to stretches of already excellent stream habitat by improving passage at several of the Island's weirs given sufficient financial and project management resource.

9. Challenges

- Impacts on Atlantic Salmon within marine environments;
- Unsustainable commercial and recreational fishing practices both marine and freshwater;
- Aquaculture increasing risk to migratory fish from disease and raising concerns around genetics;
- Resourcing to solve fish passage issues within watercourses for migratory fish species;
- Frequency and severity of climate change impacts to marine and freshwater environments;
- Habitat loss and degradation from human activity/development;
- Plans to increase the Island's human population placing further demands on natural resources including raw water stocks;
- Increase of pollution risk and subsequent impacts to the environment;
- Non-native, invasive species reaching Manx shores such as Pacific Pink Salmon.

10. Acknowledgements

Manx Wildlife Trust is grateful to the many recorders who, over many years, have undertaken the fieldwork and reporting required to amass the extensive datasets used in this first ever FFoCCIoM assessment, and those who have funded this work.

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