

What is the significance of this research?

This research is important as it gives an insight into the behaviour of the pike species and provides updated information around their relationship with brown trout. The changing food web and altered preferences of predators in the water systems highlights the need for continued monitoring and updated data to inform effective management strategies.

Who initiated this research and why?

This research was initiated by the Board of Inland Fisheries Ireland. The Board identified the research as an important step in the review of the pike and trout policies.

This project aimed to answer some on-going questions relating to the diet of pike and the interactions of pike and brown trout in lakes in Ireland. These questions are central to the informed management of pike and brown trout populations.

Who carried out this research?

This research was conducted by scientists working across the National Research Programme at Inland Fisheries Ireland. Assistance was also provided by Inland Fisheries Ireland staff from across the organisation.

Who funded this research and how much did it cost?

The funding was provided through voted exchequer funding to Inland Fisheries Ireland via the Department of Communications, Climate Action and the Environment. The overall cost of this research over a two year period was €203,000.

How will this document impact current management practises?

This document is a scientific report and will be considered by the Policy Review Group which is in place to review '*Pike management in designated Wild Brown Trout Fisheries*' in the first instance. The policy group will provide recommendations to Inland Fisheries Ireland. These recommendations may progress through to updating the existing Pike and Trout policies as considered appropriate.

There are no recommendations for action arising from this report. Why is this?

This is a scientific report which is produced to inform management, not to recommend a course of action.

What is the status of the Policy Review Group which is reviewing ‘Pike Management in Designated Wild Brown Trout Fisheries’?

The Policy Review Group remains in place and will now reconvene to complete its work. The terms of reference for the group can be found at:

- <https://www.fisheriesireland.ie/media/tor-review-pike-management-in-designated-wild-brown-trout-fisheries>

The Policy Review Group will provide a timeline regarding their work and the recommendations will be made public.

The review group was set up in 2016. Why has it taken so long to conclude this review process and when can we expect to see some outcome?

This has proven to be a very complex issue and it has not been possible to reach agreement between the stakeholder groups. The Policy Review Group embarked on a comprehensive public consultation process and reviewed a large number of written and oral submissions. The group have been awaiting this research which it will now consider in due course.

I thought the group had disbanded because some members removed themselves, is this not correct?

The review group remains in place. Participation of external parties on the group was by invitation and sought to ensure robust and respectful discussion of the issues. One group voluntarily ceased their involvement however full participation is welcomed at this time.

It appears that the report suggests that stock management in some lakes is no longer necessary while it is necessary in smaller lakes, is this the case? If so, will Inland Fisheries Ireland’s plans for 2019 leave out these lakes?

While that would seem like a reasonable synopsis, there is no ‘one size fits all’ solution as we are dealing with biological systems and any management practice will take account of the scientific report.

Will a policy change be required for the 2019 season?

Should a policy change be required, Inland Fisheries Ireland would expect to have it in place to inform management practices for 2019.

Why have you been carrying out stock management activities on pike?

Stock Management is undertaken on certain waters which are managed by Inland Fisheries Ireland as wild brown trout fisheries. Such waters are identified in Inland Fisheries Ireland’s pike and trout policies.

- Pike policy: https://www.fisheriesireland.ie/sites/default/files/migrated/docman/Pike_Policy_Report.pdf
- Trout policy: https://www.fisheriesireland.ie/sites/default/files/2021-06/brown_trout_report.pdf

These stock management operations are informed by previous scientific research, are based on best practice and carried out in accordance with Inland Fisheries Ireland's standing operating procedures for stock management.

But how can you justify continuing stock management practises given the latest research?

A review of pike management in designated wild brown trout fisheries is currently underway following an extensive public consultation last year. The Policy Review Group will provide recommendations to Inland Fisheries Ireland which will be considered and, if appropriate, implemented. It is anticipated that any required policy is likely to be in place before the commencement of the 2019 season.

Were pike killed in order to carry out this research?

No. Standardised electrofishing (using an electrical current to attract fish so they can be caught and later released alive) was the main method used to capture pike. Gastric lavage, a non-lethal method, was used to obtain stomach content samples of anaesthetised pike.

However, euthanized pike (110) from the pike stock management programme on Lough Conn and seven euthanized pike from the whole lake fish stock survey on Lough Conn in August 2016 were used to supplement and verify the results.

Were gill nets used during this research?

In order to minimise disturbance to resident fish stocks, to ensure a broad size range of samples and to allow a live release of all captured fish, electrofishing was the primary method used to capture pike.

However, whole lake fish stock surveys using standardised gill nets were undertaken on both Loughs Conn and Derravaragh in August 2016 and July 2017 respectively. A survey of this type is standard international practice for carrying out such a census of fish populations in lakes.

What can you tell me about roach?

Roach is a coarse fish which is widespread in European waters and found in many Irish waters. They occur on the bottom or midwaters of a water body and migrate within freshwater only. Roach are considered an invasive species and their populations have the capacity to expand rapidly.

Does this mean that roach are beneficial in trout fisheries?

No. Roach are highly invasive and have greatly impacted upon populations of game and coarse fish in Ireland.

As roach are an invasive species and may compete with trout for food and habitat, will Inland Fisheries Ireland implement a roach removal programme?

Any future fish population management programmes will be based on scientific, economic, financial considerations alongside resource availability. Management programmes are prioritised in the overall Inland Fisheries Ireland development plan. Roach removal from lakes where roach are already established would be virtually impossible however where there are new introductions of invasive fish species to any waters, a removal programme could be considered subject to above factors.

Does this research prove that pike and brown trout can co-exist in the same habitat?

The report suggests that relatively large, deep lakes with strong stream connectivity offer a greater chance of coexistence for pike and brown trout in Ireland. However, it also concludes that pike introductions to small water systems have the potential to have negative results on resident brown trout populations.

How does Inland Fisheries Ireland ensure the quality of its research?

Inland Fisheries Ireland scientists provide data and analysis to national and international bodies to support fisheries management within this important sector and results are frequently published in quality, peer reviewed scientific journals. A series of scientific papers have been compiled in parallel to this report and these have been submitted to scientific journals for peer review.

Where and when did you carry out this research and why were those locations chosen?

Inland Fisheries Ireland carried out a seasonal diet study in a managed lake (active pike removal) Lough Conn, County Mayo and an unmanaged lake, Lough Derravaragh, County Westmeath where trout, roach and pike are present with the aim of describing the relative importance of trout, roach and other prey species in the diet of pike in the two systems.

Are the findings transferable to other lakes, for example Lough Corrib?

The overall picture in the lakes studied here is of systems that show strong ecological changes since pike management was initiated in the 1950s. While pike do consume trout (small seasonal peaks in both lakes coincide with the period when juvenile trout move out of streams) pike diet seems to have shifted significantly from trout and perch to roach where the latter species has invaded. This shift means that pike removal may no longer be a very effective trout enhancement tool in larger lakes where the fish community now includes established populations of roach and other potential prey species. The findings are therefore transferable to other large deep well connected lakes with similar fish species, particularly established populations of roach and other potential prey species. These larger well-connected systems also provide habitat diversity and potential spatial refuges that can better support on-going coexistence of pike and trout. A different situation exists in smaller lake systems, where pike may have appeared relatively recently and where brown trout remain the only available prey fish. In these situations, coexistence of pike and trout is unlikely. The mathematical modelling uses real world data and the model outputs have general applicability.

How does IFI ensure that the surveys associated with this research are conducted to the highest standards?

- e.g. Has the study been carried out in accordance with any recognised standard, e.g. CEN 14757 or “O’Grady method”?
- e.g.. Would the study of the preferred diet of pike be enhanced through monthly sampling using the CEN 14757 or O’Grady sampling methods”?
- e.g. Are the research findings consistent with other research programmes findings?
- e.g. Does pre-existing research demonstrates that pike prefer to consume trout, despite the presence of an abundance of coarse fish?
- e.g. Has this study been peer reviewed?

Sampling methods appropriate to the project were reviewed and trialled prior to project start; these included the European standard Sampling of fish with multi-mesh gillnets (CEN 14757), the European standard for Sampling of Fish with Electricity and the O’Grady method. Angling was also reviewed as a method.

Experience of using both the CEN 14757 and O’Grady method has shown that these methods would not provide a large enough sample and length range of pike specimens for the study, therefore Sampling of Fish with Electricity (CEN 14011) was considered the most appropriate method for the project as the aim was to collect as many pike as possible for dietary analysis. In addition gastric lavage was identified as an appropriate minimally invasive non-lethal method of collecting the dietary samples. This method has been used elsewhere by fisheries scientists for collecting dietary information of pike species.

Electric-fishing is a well-established technique used by fishery biologists all over the world for sampling fish in freshwaters. It is generally the most non-destructive, effective and cost efficient means of sampling freshwater fish. The method is considered to be relatively benign when used effectively and it is the least invasive of the methods considered. Fishing effort, fishing equipment and protocols were the same on each sampling occasion. All sites selected were representative of main pike habitats within each lake. Angling was also used on some occasions during the study. These methods are similar to methods used in published studies and habitats are similar to those where pike were sampled in the historical period.

Most peer reviewed pike dietary studies published in Ireland to date were undertaken prior to the expansion of roach in the 1970's. All of those studies also predate the establishment of CEN 14757 standards and O'Grady methods for sample collection methods. A recent study examined the short term diet of pike in several waters and the authors highlighted the need to describe the longer term seasonal diet of Irish pike and also whether the colonisation of roach has influenced pike diet. In response to this IFI initiated this new targeted seasonal study on two large lakes in 2016, Loughs Conn and Derravaragh to provide an up to date understanding of dietary habits of pike.

In parallel to the report a series of scientific papers have also been compiled and these have been submitted to scientific journals for peer review and publication.

Will you be carrying out further research on pike?

Inland Fisheries Ireland's coarse and pike research and monitoring programmes are ongoing.

Where can I get a copy of this report?

The report is available for free download from this page:

- <https://www.fisheriesireland.ie/what-we-do/research/pike-research-programme>

Who can I contact for further information?

Please email research@fisheriesireland.ie.