

Pike (*Esox lucius*) in Ireland: Developing Knowledge and Tools to Support Policy and Management

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Iascach Iníre Éireann
Inland Fisheries Ireland



Public Briefing Note

Research Report: *Pike (Esox Lucius) in Ireland. Developing knowledge and tools to support policy and management*

Background to this research

- This project was initiated by the Board of Inland Fisheries Ireland to answer some on-going questions related to the diet of pike, to pike-brown trout interactions in lakes in Ireland. These questions are central to the informed management of pike and brown trout populations.
- Most pike dietary studies published in Ireland to date were undertaken prior to ecological changes such as the expansion of roach in the 1970's and zebra mussel invasion in the 1980's.
- The aims of the research were to:
 - Describe the seasonal diet of pike in two Irish lakes and assess any dietary change since the colonisation of roach.
 - Develop statistical models to predict if pike and brown trout could co-exist in Irish lakes.
 - Investigate any changes in the effect of pike removal on brown trout populations after the roach invasion in Lough Sheelin.
 - Develop a mathematical modelling tool which can be used to assess fisheries management strategies.

About the research

- The research was conducted by scientists working across the National Research Programme at Inland Fisheries Ireland. Assistance was also provided by staff across the organisation.
- Electrofishing (*using an electrical current to attract fish so they can be caught and later released*) was the main method used to capture pike. Gastric lavage (*a non-lethal method of stomach pumping*) was used to obtain stomach content samples of pike.
- The research was carried out in Lough Conn, County Mayo and Lough Derravaragh, County Westmeath in 2016 and 2017.
- Diet information was available from 1,481 pike which was compared with archival pike diet data from 1,538 pike in Lough Derravaragh and Lough Sheelin (located across Westmeath, Meath and Cavan) in the 1960s and 1970s.
- Whole lake fish stock surveys were also conducted on both lakes in August 2016 and July 2017 respectively while pike diet data was also available from pike captured in Lough Conn during stock management operations in spring 2017.
- Records of fish species collected during Inland Fisheries Ireland surveys from 1951 - 2015 from 891 lakes across Ireland were used for the coexistence study.



Key findings of this research

1) Diet of Pike

Analysis of the pike diet data collected in the 1960s and 1970s in Lough Derravaragh and Lough Sheelin indicated that pike predominantly ate brown trout and perch as they were the most abundant species in the lake at that time. However, the latest research in Loughs Conn and Derravaragh reveals that pike diet has changed, and that roach are now the most important fish prey in those systems. It is thought the changes in diet are due to the invasion of roach in these waters.

2) Coexistence of pike and trout

It found that pike and brown trout could coexist within relatively large deep lakes with strong stream connectivity; however in small, low-complex systems pike introductions could potentially have devastating impact on resident brown trout populations.

3) Stock Management

The research also looked at the practice of stock management and the impact it has on brown trout stocks. The findings suggest that pike removal may be effective in protecting brown trout populations in systems where roach are absent, but may have little effect in systems where other prey, such as roach are abundant.

4) Mathematical Model

A mathematical model of pike and trout populations was developed. This model can be used to explore the likely outcomes of possible fisheries management strategies, such as angling size limits or predator control. Model results suggest that pike removal may enhance trout populations in lakes which have no alternative fish prey, but removal is unlikely to be effective in lakes with abundant alternative prey, e.g., perch or roach.

Next Steps

- The Policy Review Group, which is working on the review of the management of pike in designated wild brown trout fisheries, will now examine this research.
- The research will be considered in conjunction with historic, socio economic and management factors which all inform fisheries management and development work.
- On completion of the above review, Inland Fisheries Ireland expects to have a recommendation to inform an updated policy on the management of pike in wild brown trout fisheries.

Further information

- To read a copy of the full report, visit www.fisheriesireland.ie.
- Email: research@fisheriesireland.ie .