



Central Fisheries Board Research Project Summaries December 2008



Central Fisheries Board
An Príomh-Bhord Iascaigh

About The Central Fisheries Board

The Central Fisheries Board is a statutory body with responsibility for inland fisheries and sea angling operating under the aegis of the Department of Communications, Energy and Natural Resources and was established under the Fisheries Act 1980.

The principal functions of the CFB are to advise the Minister for Communications, Energy and Natural Resources on policy relating to the conservation, protection, management, development and improvement of inland fisheries and sea angling, to support, coordinate and provide specialist support services to the Regional Fisheries Boards and to advise the Minister on the performance by the Regional Fisheries Boards of their functions.

The Boards mission is “to ensure that the valuable natural resources of inland fisheries and sea angling are conserved, managed, developed and promoted in their own right and to support sustainable economic activity, job creation and recreational amenity.”

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Chairman's Statement



This document sets out detailed summaries of the key projects undertaken by the staff of the Research and Development Division of the Central Fisheries Board in 2008. It does not attempt to capture the full spectrum of work undertaken and advice provided by the scientists in the Division.

Under the 1980 Fisheries Act and the 1999 Fisheries (Amendment) Act the Central Fisheries Board undertakes research, as required, into a range of fisheries management and related environmental issues, and provides research and development services to the Regional Fisheries Boards. The Division also provides research and development services to, and works closely with other sister agencies, national and international organisations, academic institutions and our parent Department, the Department of Communications Energy and Natural Resources.

2008 was a very challenging and rewarding year for the scientists in the Division. It was one of the wettest summers in almost 50 years, which hampered the ability to conduct field research, yet despite this the Water Framework Directive project, Conservation Limit Attainment project, Environmental River Enhancement project and the Waterways Management project proceeded and met their key goals and objectives.

The Board are equally delighted and proud to have such committed, experienced and highly qualified scientists working across all research disciplines within inland fisheries. However, without the support and commitment of the management and staff in the Regional Fisheries Boards it would not be possible to undertake many of the key projects reported in this document.

The Board is delighted to provide research and development services to the Regional Fisheries Boards, other state agencies and our parent Department, and in keeping with our core belief of continuous improvement, and taking due cognisance of the current economic climate, the Research and Development Division has been restructured to provide a more project focused and goal orientated approach to our work, which will allow us to deliver even higher standards in 2009 and subsequent years.

On my own behalf and on behalf of my fellow Board members I would like to congratulate all who have contributed to the significant corpus of work which was undertaken in 2008, the key elements of which are reported in this document and wish them continued success in 2009.

A handwritten signature in black ink, appearing to read 'David Mackey', written over a horizontal line.

David Mackey
Chairman

Central Fisheries Board
February, 2009

Foreword



Welcome to the Central Fisheries Board (CFB) Research Project Summaries 2008; by way of introduction the Board is concerned with the management, conservation, protection development and improvement of Ireland's freshwater fisheries. In order to meet these goals we are organised into five divisions: Research and Development, Field Services, Promotion and Marketing, Finance, ICT and Human Resources.

The Research and Development Division identified in the CFB's Strategic Plan (2008-2011) its key strategic goal as "to develop and deliver high quality cost effective applied scientific research and development services to meet the Boards customers needs".

The Division will achieve this strategic goal though;

- conducting scientific research on fisheries to deliver economic and heritage benefits by ensuring sustainability and conservation of fish in their ecosystems
- conducting research with sister agencies to provide advice for the management and understanding of ecosystem function in aquatic fisheries habitats
- ensuring adherence to operational procedures which harmonise with our environment and cultural heritage
- supporting and preserving the quality and diversity of aquatic ecosystems and ensuring compliance with relevant European Union and national legislation
- providing an advisory service to relevant bodies

Each year our planning cycle culminates in the development of a Business Plan which contains details of the specific objectives, goals and expected deliverables for the year ahead. Based on our 2008 business review and detailed project plans this report summarises some of the larger project objectives and achievements; our intent here is to give the reader a flavour of the applied research role of the CFB rather than to document all projects and areas of advice delivered during 2008. The document is structured to deliver a concise summary allowing the reader to extract pertinent details such as; the reasons for undertaking the project, the key findings, the budget, the research dissemination and the key stakeholders. For each project a separate more detailed report is being provided as a deliverable for the main stakeholders.

During 2008, we were involved in a total of circa 30 projects and reported across a broad range of fisheries research and monitoring activities including water chemistry, aquatic vegetation, coarse fish, pike, salmonids, "conservation" species, estuarine and marine fish. Many of the projects are applied fisheries management projects dealing with diverse pressing issues such as measuring the attainment of salmon conservation limits, management of invasive aquatic species and reporting on the conservation status of EU Habitats Directive designated species. Several projects are being delivered through strategic partnerships with other national agencies including the Marine Institute (MI), the National Parks and Wildlife Service (NPWS), the Office of Public Works (OPW), and also with some international agencies including the Environment Agency (EA), the North Atlantic Salmon Conservation Organisation (NASCO) and the European Inland Fisheries Advisory Council (EIFAC).

In addition to the Research and Development Division's mandate to conduct applied research we are also tasked with the provision of advice to our parent Department, the Department of Communications, Energy and Natural Resources. This role increased significantly over the past year with advice offered on the management of most inland fresh water species and in relation to a range of fisheries related questions concerning the riparian corridor.

It is important that I pay tribute to the support and expertise received from our colleagues in the Regional Fisheries Boards (RFB's); it is in coordination with these colleagues that the success in the Research and Development Division was delivered. We work hand in hand with the staff of the Regional Fisheries Boards in delivery of national research projects and also in addressing their regional research requirements.

The year ahead offers many challenges both environmental and managerial; we continue to see rapid changes in our natural aquatic environment, with climate change, water quality and the potential treats from invasive species a continued focus. We must also be cognisant of the changed economic climate, with this in mind we have focused strongly on securing non-exchequer funding and ensuring that our business and project management functions are robust in order to deliver the required research while ensuring quality and value for money. As an organisation the CFB are delivery focused and this in the key message for the 2009 research year.



Dr Cathal Gallagher
Director of Research & Development

Central Fisheries Board
February, 2009



**National Inland Fisheries
Research and Development
Service**

NATIONAL INLAND FISHERIES RESEARCH AND DEVELOPMENT SERVICE

This research area encompasses the role of the Central Fisheries Board, as defined legislatively, in its broadest sense ie. in terms of providing relevant scientific advice for the development and management of freshwater and recreational sea fisheries. The core research and development activities are outlined here with more specific functions defined in subsequent sub-divisions.

Production of a 2009 Calendar on Native Plants of Irish Waterways

REMIT OF THE PROJECT

To produce a calendar that enhances the profile native plant species found in Irish watercourses. The calendar will also provide visual information regarding key morphological features that can be used to identify plants.

WHY IS THE PROJECT BEING UNDERTAKEN?

Native plants are an important part of aquatic and riparian ecologies. The calendar provides a very visual and accessible introduction to many of the species that may be encountered by members of the public.

PLANNED COMPLETION DATE

The calendar was completed in December 2008.

WHO WILL BENEFIT FROM THE PROJECT?

The calendar will enhance awareness of the broad range of aquatic plant species and will aid in their identification. The calendar has a very wide target audience, including primary and secondary schools, universities, libraries, angling clubs, fisheries staff, among others.

WHEN WILL INTERIM/FINAL REPORTS BE AVAILABLE?

The calendar was completed in December 2008.

PROGRESS TO DATE

The calendar was completed in December 2008.

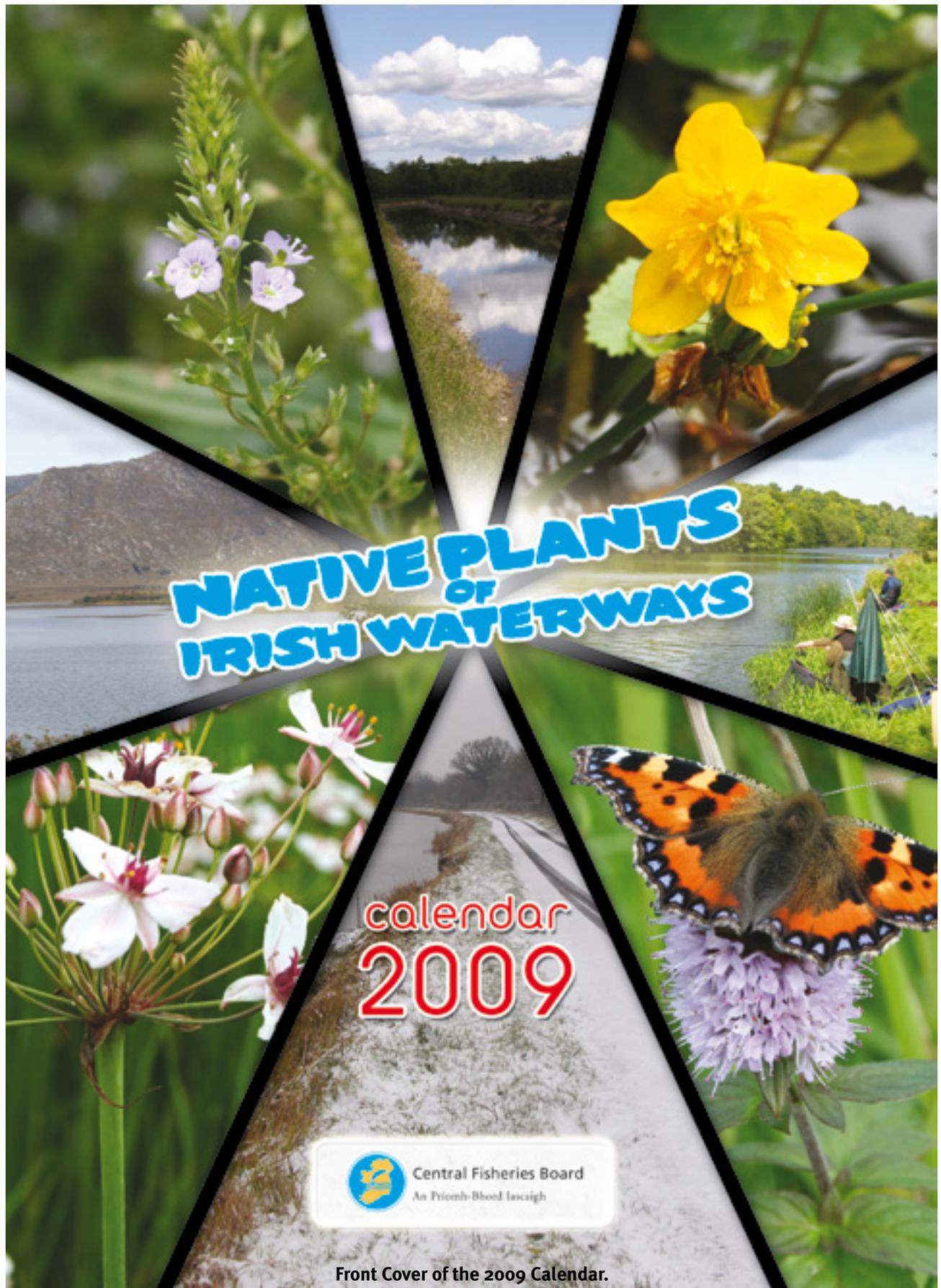
FINDINGS OF INTEREST

The calendar was extremely well received.

NEXT STEPS

To complete a calendar for 2010 depicting the Life and Invasive Species Project.

PROJECT MANAGER	Dr. Joe Caffrey.
TOTAL BUDGET €	€2300
FUNDING SOURCE	CFB core funding.
RESOURCES UTILISED	Staff and resources of the CFB.
DELIVERABLES	Production and delivery of 1000 Calendars.



Front Cover of the 2009 Calendar.

Production of a Book Entitled ‘Brown Trout in Ireland’

REMIT OF THE PROJECT

To produce a book entitled “Brown Trout in Ireland”. A two year project (07/08) funded by the National Inland Fisheries Research and Development Service.

WHY IS THIS PROJECT BEING UNDERTAKEN?

To provide a document of educational value to young staff in the fisheries service, interested anglers and people, generally, with an interest in natural history.

To highlight the valuable work of the Fisheries Boards in relation to the conservation and management of this species.

PLANNED COMPLETION DATE

Q4 in 2008. The nature of this publication is now being illustrated on our web. A launch of this product is planned for March, 2009.

PROGRESS TO DATE

Completed on schedule.

WHO WILL BENEFIT FROM THE PROJECT?

This publication will enable the young Fishery Officer to understand the ecology and biology of brown trout in Ireland. The book will also help to educate anglers in relation to our current depth of knowledge of this species and illustrate that current Fisheries Board management policy is based on sound scientific research. This publication puts the role of hatchery fish in perspective and illustrates the importance of current collaborative habitat enhancement programmes being carried out by the Office of Public Works (OPW) and the Central Fisheries Board (CFB).

WHEN WILL INTERIM/FINAL REPORTS BE AVAILABLE?

The book was completed in December 2008.

FINDINGS OF INTEREST

An opportunity to provide an amalgam of all scientific studies on brown trout in Ireland, over the last 60 years in a format which is “accessible” to the non-scientist. The book incorporates the findings of many research programmes which have been carried out by the Central Fisheries Board over 30 years. Some of these data are being published in this document for the first time.

NEXT STEPS

Publicise the book to ensure its widespread distribution.

PROJECT MANAGER	Dr. Martin O'Grady.
TOTAL BUDGET €	€11,400
FUNDING SOURCE	As above.
RESOURCES UTILISED	Research data compiled by the Board's staff and others over many years.
DELIVERABLES	A published book now available.



Front Cover of 'Brown Trout in Ireland'.



National Fish Stock Assessment Programme

NATIONAL FISH STOCK ASSESSMENT PROGRAMME

This research area relates to the Central Fisheries Board's role in monitoring the status of freshwater and marine angling fish stocks which are of socio-economic importance to the country - salmon, sea trout, brown trout, eels, coarse fish, pike and a range of marine sport fishes.

Long-term Analysis of Coarse Angling Catches and Fish Stock Status on the Shannon-Erne Waterway

REMIT OF THE PROJECT

The Central Fisheries Board (CFB) are commissioned by Waterways Ireland to conduct scientific research aimed at understanding and improving habitat conditions for fish and aquatic life on the Royal and Grand Canals, the Barrow Navigation and the Shannon-Erne Waterway.

WHY IS THE PROJECT BEING UNDERTAKEN?

In common with other angling locations, the number of visiting/tourist anglers using the Shannon-Erne Waterway has fallen in recent years. The perception, both locally and abroad is that fish stocks have, for a variety of reasons declined, with a concomitant reduction in angling quality. However, available data from fish stock assessments and from angling competitions indicates no such reduction. The project investigated the cause and extent of the shift in angler perception and analysed trends in angling competition.

PLANNED COMPLETION DATE

The current phase of the project will be presented as part of the final three year project will be completed in June 2009.

WHO WILL BENEFIT FROM THE PROJECT?

Information is of direct use to fisheries managers and those marketing Irish Coarse Fisheries.

WHEN WILL INTERIM/FINAL REPORTS BE AVAILABLE?

A synopsis of findings has been included in an interim report covering the period June 2007 to December 2008.

PROGRESS TO DATE

Analysis of data is complete.

FINDINGS OF INTEREST

Long-term analysis of angling competition catch reveal no reduction in angling catches, while stock assessments have shown no reduction in coarse fish numbers. While tourist anglers visiting the Shannon-Erne Waterway are broadly happy with the angling available, changes in angler behaviour and angler perception are believed to be responsible for the decline in tourist angler numbers.

NEXT STEPS

The project report will be completed in June 2009.

PROJECT MANAGER	Dr. Joe Caffrey.
TOTAL BUDGET €	Completed as a part of the Fisheries Development Programme for Waterways Ireland which has a budget of €1.4m over 3 years (2006 to 2009).
FUNDING SOURCE	Waterways Ireland.
RESOURCES UTILISED	Six full time staff are employed on the project. They work closely with Regional Fisheries Board and Waterways Ireland Staff.
DELIVERABLES	Improved management information. Project findings were presented at the 5 th World Recreational Fisheries Conference in 2008.



Angling Competitions on the Shannon-Erne Waterway.

National Assessment of Attainment of River Specific Salmon Conservation Limits

REMIT OF THE PROJECT

To determine the level of Conservation Limit (CL) attainment in individual salmon rivers.

WHY IS THE PROJECT BEING UNDERTAKEN?

Conservation Limits (CLs) have been set for all 148 Irish salmon rivers and recreational and commercial inshore fisheries are now regulated based on these CLs being met on a river by river basis. The Standing Scientific Committee (SSC) of the National Salmon Commission (NSC) annually reviews all data for salmon rivers to provide scientific advice on the compliance levels (i.e. CL attainment levels) for the NSC. The NSC and the National Fisheries Management Executive (NFME) use these data to set salmon catch figures for the following year. With the support of the RFBs, this project is reporting and developing additional indices of CL attainment (redd counts, juvenile salmon fry abundance and refinement of partial counter fish counts) to assist the assessment process.

PLANNED COMPLETION DATE

This is the second year of an ongoing project reporting annually in December.

WHO WILL BENEFIT FROM THE PROJECT?

Anglers, commercial fishermen, general public, SSC of the NSC and all relevant Government and State agencies (CFB, NFME, RFBs, MI, DCENR, DOELG/NPWS).

WHEN WILL INTERIM/FINAL REPORTS BE AVAILABLE?

Fieldwork and analysis complete. Report due in Q1 2009.

PROGRESS TO DATE

The attainment of CL can be gauged by direct measures (e.g. counter data or the use of rod catch based estimates to calculate total numbers returning to the river) or by indirect measures such as redd counts or juvenile indices. The various activities undertaken under the CL attainment programme in 2008 are reported.

Indirect Measures

Salmon Redd Counts

A national database of salmon redd counts, based on RFB staff data, has been compiled to provide an indirect relative measure of annual abundance. Where robust data exists, redd counts are being used to provide an index of salmon abundance that can be used to inform the process on attainment of salmon conservation limits.

Juvenile Salmon Index (Catchment-wide electrofishing)

The abundance of salmon fry close to salmon redds in riffle areas has been used previously (Kennedy and Crozier, 1994) as an index of salmon abundance. This technique is now being developed for Irish salmon rivers to provide a 'catchment-wide' index of juvenile salmon abundance. 2008 was the second year of this extensive national programme to develop this index for Irish salmon rivers. Sites in 39 catchments were electrofished. Nine catchments exceeding CL, thirteen which were under CL, and seventeen closed catchments with limited data to assess CL, were sampled.

The use of PIT tag technology to estimate total salmon runs at partial counter locations

Several existing fish counters are partial counters (i.e. cover a portion of the river and only part count the salmon run), where the recorded count has to be raised by a factor to provide an estimate of the total upstream run. This project was designed to improve the accuracy of the ‘raising factor’ and in 2008, adult salmon were captured, using various methods, PIT tagged and returned alive into each river. Salmon were tagged and released in the Boyne, Slaney and Corrib. Numbers tagged on the Boyne and Slaney were small and none were subsequently recorded on the PIT tag reader positioned in the counters. Large numbers of rod caught fish were tagged on the Corrib and the numbers passing through the partial counter, during the summer period, provided a good estimate for a raising factor.

FINDINGS OF INTEREST

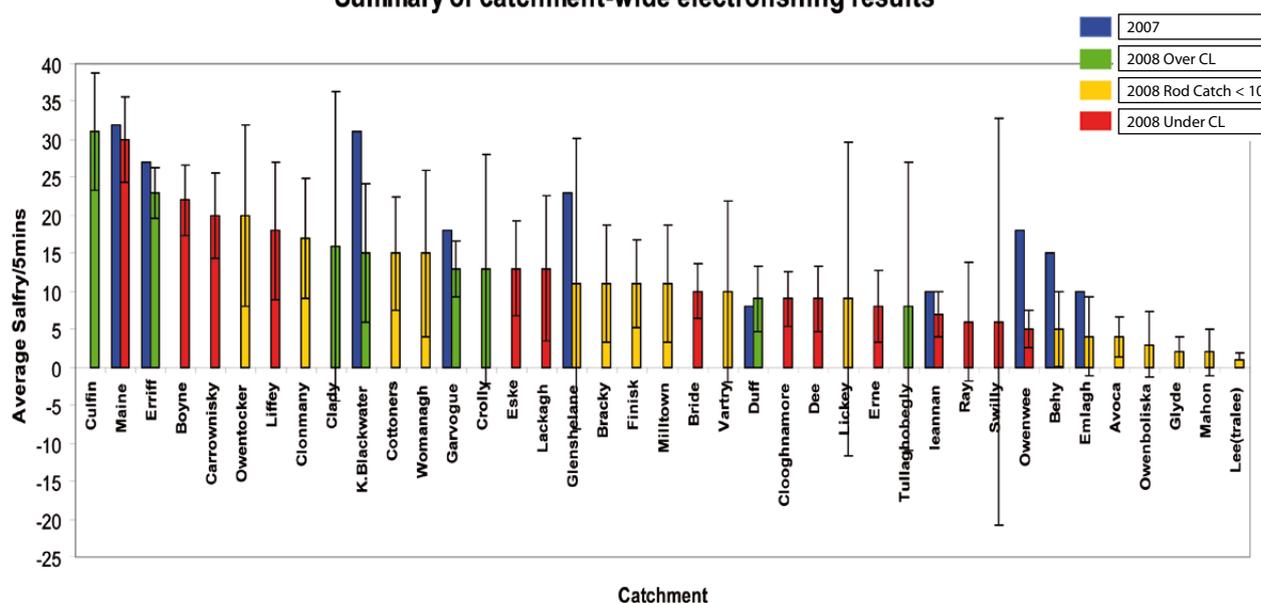
There was a good level of agreement between the mean catchment-wide electro-fishing salmon fry abundance for the nine catchments exceeding CL which were sampled - but two rivers, the Tullaghobegly and the Duff, were underperforming based on fry abundance.

NEXT STEPS

This was Year 2 of a long-term programme. 2009 will see refinements to the existing programme and a greater roll-out of relevant measurement and calibration activities. Development of an index of CL attainment based on fry abundance is a priority which will require at least five years of data.

PROJECT MANAGER	Paddy Gargan/ Willie Roche.
TOTAL BUDGET €	€189,000
FUNDING SOURCE	Salmon Conservation Fund.
RESOURCES UTILISED	Serena Keane, Trevor Stafford, CFB core staff, RFB staff.
DELIVERABLES	Individual report per river for catchment-wide electrofishing; report of all activity.

Summary of catchment-wide electrofishing results



The mean abundance of salmon fry in 39 catchments in 2008 from catchment-wide electrofishing. Mean abundance of rivers surveyed in 2007 also shown.

Fisheries Development on Navigable Waterways

REMIT OF THE PROJECT

The Central Fisheries Board (CFB) are commissioned by Waterways Ireland to conduct scientific research aimed at understanding and improving habitat conditions for fish and aquatic life on the Royal and Grand Canals, the Barrow Navigation and the Shannon-Erne Waterway.

WHY IS THE PROJECT BEING UNDERTAKEN?

Navigable waterways are managed, maintained and developed principally for recreational purposes. CFB research is targeted at the needs of anglers and other waterways users and is conducted in a manner compliant with the Water Framework Directive (WFD). Angling is an important recreational amenity practised on Ireland's Navigable waterways.

PLANNED COMPLETION DATE

The current three year project will be completed in June 2009.

WHO WILL BENEFIT FROM THE PROJECT?

Work conducted under the programme directly aids the rational management and development of the fisheries resource on the inland waterways. Furthermore, knowledge and understanding gained from specific projects conducted within the overall programme can and have been applied on a national and international basis.

WHEN WILL INTERIM/FINAL REPORTS BE AVAILABLE?

An interim report covering the period July 2007 to December 2008 was completed in February 2009. The final report will be completed in June 2009.

PROGRESS TO DATE

Stock Assessment

Stock assessments were conducted on 14 levels on the Royal, Grand and Barrow Canals and three Lakes on the Shannon-Erne Waterway. Canal surveys were conducted using three boat based electrofishing crews, each employing the 'traditional' electrofishing apparatus, with both electrodes deployed at the front of each boat. All of the canal levels surveyed were between 200 and 1000 metres in length. All fish over 6cm in length were fin-clipped and returned to the section from which they were caught. Each site was again electrofished approximately three weeks after the original fishing. On that occasion two boats, each equipped with double anode rings and trailing cathodes, were utilised. The repeat fishing permitted the comparison of both types of gear, while the mark-recapture enabled estimates of fish population to be made.

Fisheries Enhancement and Conservation

In 2008, in excess of 20,000 coarse fish were stocked during enhancement operations conducted at eight locations along the waterways. Some 2,800 rudd were stocked into the 15th level of the Royal Canal at Kilcock in advance of the Waterways Ireland Sponsored Junior Canals Championship held in August 2008.

Fish rescue operations were necessitated by routine dredging and maintenance operations particularly on the Grand Canal Barrow Line. These operations have enabled trials to be initiated investigating the practical implementation of various habitat mitigation measures.

FINDINGS OF INTEREST

Fish stocks across all of the canals were generally excellent. Large stocks of coarse fish (e.g. roach, bream, perch and tench) were identified at many of the locations surveyed. Notably, large increases in relative fish stock abundance (when compared to previous surveys) were recorded at several fisheries. Very large stocks of roach, for example, were identified in the Barrow Line at Athy, the Grand Canal near Sallins and the Royal Canal east and west of Mullingar. Good stocks of coarse fish were also identified from the midland reaches of the Grand Canal. Dace were recorded for the first time from the Barrow Line of the Grand Canal in 2008.

Comparison of the results obtained from both types of electrofishing gear are encouraging and suggest that two boats can be successfully used to survey areas where greater resources would traditionally have been required.

NEXT STEPS

Information derived from the project will be compiled into a final project document, due for completion in June 2009.

PROJECT MANAGER	Dr. Joe Caffrey.
TOTAL BUDGET €	Completed as a part of the Fisheries Development Programme for Waterways Ireland which has a budget of €1.4m over 3 years (2006 to 2009).
FUNDING SOURCE	Waterways Ireland.
RESOURCES UTILISED	Six full time staff are employed on the project. They work closely with Regional Fisheries Board and Waterways Ireland Staff.
DELIVERABLES	Management plans will be developed on foot of project findings. Detailed angling guides based on information gained during the course of the project have been produced.



Electrofishing surveying on the Royal Canal, Mullingar, Co. Westmeath.

Movement and Ecology of Coarse Fish Species and Pike in Navigable Waterways as Determined by Telemetry

REMIT OF THE PROJECT

To investigate the movements and behaviour of selected coarse fish species including pike using telemetric methods, namely radio tracking and acoustic telemetry.

WHY IS THE PROJECT BEING UNDERTAKEN?

Quantification of movement, activity and use of various habitats is integral to any study of animal ecology. In Ireland, coarse fish species and pike are important both ecologically and economically. Knowledge of their habitat selection, as well as their movements, migrations and dispersal are integral components of any management and conservation regime. The movements and behaviour of wild fish in their native surroundings are, however, difficult to observe. Telemetry offers an ideal opportunity to obtain accurate locations of fish and to remotely monitor their activities. Small transmitters, each with a potential lifespan of 12 to 15 months, are surgically implanted into suitably sized fish, thus allowing their locations to be precisely determined.

Since 2002, the Coarse Fish Unit of the Central Fisheries Board (CFB) have been engaged in acoustic telemetry studies involving several species (mainly bream *Abramis brama* and pike *Esox lucius*) in a number of inland navigable waterways, including the Barrow Navigation at St. Mullins, Co. Carlow and a section of the Shannon-Erne Waterway between Ballinamore, Co. Leitrim and Ballyconnell, Co. Cavan.

Since late 2006, an additional program of radio telemetry has been ongoing to accompany and augment the existing program of acoustic telemetry. Radio tracking can provide data regarding movements, behaviour and habitat selection of coarse fish species in environments and situations where acoustic tracking may be unsuitable, i.e. canals and shallow rivers. As well as on the Barrow Navigation at St. Mullins, radio telemetry was undertaken along a 22 km section of the Grand Canal - Barrow Line between Monasterevin and Athy, Co. Kildare, a level which undergoes yearly dredging works. Radio tracking is ideally suited for monitoring fish behaviour within a channel undergoing maintenance and for evaluating the attractiveness of previously dredged areas.

PLANNED COMPLETION DATE

The project will continue to the end of the current contract with Waterways Ireland (July 2006 to June 2009).

WHO WILL BENEFIT FROM THE PROJECT?

Findings will benefit anglers, Regional Fisheries Boards, waterways management organisations, fisheries managers, scientists and other fish researchers.

WHEN WILL INTERIM/FINAL REPORTS BE AVAILABLE?

An interim report covering the period July 2007 to December 2008 was completed in February 2009. The final report will be completed in June 2009.

PROGRESS TO DATE

Acoustic tracking on the Shannon-Erne Waterway continued through 2008. In May, nine large bream were captured and tagged in the centre of the study site and their subsequent movements and dispersal were noted for the duration of the year. On the Grand Canal – Barrow Line, 13 fish (6 pike, 5 bream, a roach-bream hybrid and a tench) were radio-tagged and their individual locations were determined during fortnightly field-trips to the site. In

addition, two pike, from a batch of four fish radiotagged in late 2006, as well as a single acoustic tagged pike, were active on the Barrow Navigation near St. Mullins, Co. Carlow during 2008.

FINDINGS OF INTEREST

The fish telemetry studies conducted across a range of navigable waterways have produced a large bank of data, providing a unique insight into the utilisation by fish of the various habitats available to them. Bream are extremely mobile and wide-ranging in all habitats, namely interconnected lake, river and canal. This trait is also seen with roach x bream hybrids. Pike are, for the main part, locally sedentary. Some individuals are capable of sudden long-distance movements, as evidenced from the Shannon-erne Waterway. Other individuals will range continuously within a smaller area, as documented on the Barrow Navigation and Grand Canal - Barrow Line. On the latter site, fish actively avoided freshly-dredged sections of canal and were most frequently located in areas which are undredged or which were dredged at least 3 years previously. Without the intensive monitoring of tagged individuals, the majority of this behaviour would be undocumented and unquantifiable.

NEXT STEPS

Tagging of fish will continue in 2009. Information derived from the project will be compiled into a final project document, due for completion in June 2009.

PROJECT MANAGER	Dr. Joe Caffrey.
TOTAL BUDGET €	Completed as a part of the Fisheries Development Programme for Waterways Ireland which has a budget of €1.4m over 3 years (2006 to 2009).
FUNDING SOURCE	Waterways Ireland.
RESOURCES UTILISED	Radio tracking is labour efficient and is usually undertaken from land by a single member of staff. Acoustic tracking typically requires at least two persons and a boat. Regional Board Staff are often utilised.
DELIVERABLES	Findings are outlined in annual reports. Results have been presented at meetings and conferences, both home and abroad, and have been submitted for publication in peer-reviewed journals.



Radio tracking along the Barrow Navigation, St. Mullins, Co. Carlow.

Compilation of Habitat-Based Catchment Information and Historical Eel Data in Support of Eel Management Plans (EEL-PLAN)

REMIT OF THE PROJECT

This project will support the compilation and analysis of historical eel data along with the river, lake and transitional water habitat based GIS information. The outputs of this project will form the basis for the development of River Basin Eel Management Plans and particularly for monitoring into the future.

WHY IS THE PROJECT BEING UNDERTAKEN?

The latest scientific advice from the International Council for the Exploration of the Sea (ICES) concerning European eel is that the stock is outside safe biological limits and that current fisheries are not sustainable. ICES have recommended that a recovery plan be developed for the whole stock of European eel as a matter of urgency and that exploitation and other human activities affecting the stock be reduced to as close to zero as possible. The new EU Regulation for the recovery of the stock of European eel requires that current spawner escapement (as silver eel) is measured against the best estimate of escapement that would have existed if no anthropogenic influences had impacted on the stock. It has been assumed that pre-1980s data represents the best potential estimate of pristine production levels. Where comprehensive eel data are lacking, the target level of escapement can be calculated using historical datasets, habitat based assessments of potential eel production and/or with reference to rivers of similar ecology and hydrography. This project is designed to collate and deliver available data.

PLANNED COMPLETION DATE

May 2009.

WHO WILL BENEFIT FROM THE PROJECT?

All stakeholders. CFB, RFBs, RBDs, MI, DCENR, ICES, EU Commission.

WHEN WILL INTERIM/FINAL REPORTS BE AVAILABLE?

Eel Management Plans have been submitted to the EU. Final project report for publication in May 2009.

PROGRESS TO DATE

Historical data are being collated on an ongoing basis and database being debugged. Gap analysis initiated. Excellent added value from Water Framework lakes, rivers and transitional waters monitoring programme which will provide new data on eel distribution, densities, age and parasite status.

FINDINGS OF INTEREST

Historical eel data are scant due to poor record keeping and limited reporting obligations. Eel specific sampling surveys required to generate quality data. Angling for eels is limited due to lack of angler interest compounded by reduction in eel numbers.

NEXT STEPS

Complete project according to schedule.

PROJECT MANAGER	Dr. William Roche.
TOTAL BUDGET €	€149,000 (€69,000 for CFB).
FUNDING SOURCE	National Development Plan 2007—2013. Science, Technology and Innovation Programme - Marine Research Sub-Programme.
RESOURCES UTILISED	CFB core staff, CFB recruited staff, inputs from all RFBs.
DELIVERABLES	<ul style="list-style-type: none">• Provision of a GIS database of sub-catchment lakes, river reaches and transitional waters - providing quantitative data on the presence of natural and artificial barriers• Gap analysis of data using the GIS database• Inventory of historical eel datasets/publications• Digitised eel stock database• Evaluation of acquired eel data against available fisheries models• The provision of a complete GIS database package of catchment information for eel, to be utilised by the Marine Institute and the Fisheries Boards. Database being prepared by project partner.



An Eel from Levitstown, Kildare.

National Marine Sportfish Programme and National Conservation Fish Programme

REMIT OF THE PROJECT

To carry out research into selected marine sportfish and conservation species; it consisted of a 6 month project to:

- Determine distribution and trends in abundance
- Identify conservation issues

WHY IS THE PROJECT BEING UNDERTAKEN?

The main thrust of both programmes was to determine trends in distribution, abundance or life history of selected marine sportfish and conservation fish species to further our understanding and to provide scientific information to support management.

In 2008, juvenile bass, mullet and gilthead bream were targeted in discrete estuarine habitats together with an assessment of general fish assemblages. Two species of mullet, the golden grey and the thin-lipped, and the gilthead bream, are relatively new species in the Irish fish fauna. All are usually associated with Mediterranean waters although they have been recorded in UK waters for many decades.

Recent tagging and recapture data for elasmobranchs (cartilaginous species) from the important Central Fisheries Board Marine Sportfish Tagging Programme were also digitised in preparation for incorporation into a new national tagging database and a major review of these species.

Lamprey distribution survey on remainder of Nore catchment, previously sampled in 2004, was completed to provide comprehensive overview of juvenile populations in this system. Trawling for juvenile shad in estuaries was undertaken to complement existing limited knowledge of early life history.

PLANNED COMPLETION DATE

December 2008.

WHO WILL BENEFIT FROM THE PROJECT?

Estuarine surveys (particularly bass data), conservation fish outputs and tagging study outputs of interest to commercial and angling sector; DCENR; Marine Institute; Central and Regional Fisheries Board, EU Commission, NPWS and general public. Tagging programme will also contribute to relevant ICES, ICCAT and NOAA programmes. Data will be available to aid and inform the management process and future survey protocols.

WHEN WILL INTERIM/FINAL REPORTS BE AVAILABLE?

Q1 2009 for final report.

PROGRESS TO DATE

Surveys are completed and reported. All tagging data are digitised.

FINDINGS OF INTEREST

Several new saltmarsh areas, which are highly productive habitat, often utilised by juvenile bass and mullet were identified and sampled. Capture of juvenile bass in a series of small estuaries and inshore areas on east coast. No gilthead bream recorded. Unexpected high densities of juvenile lamprey in upland areas of the River Nore.

NEXT STEPS

Final report production. Debug tagging data and incorporate into newly developed database. Analysis of tagging data.

PROJECT MANAGER	Dr. James King/Dr. William Roche.
TOTAL BUDGET €	€55,000
FUNDING SOURCE	CFB/RFB National Research Programme.
RESOURCES UTILISED	CFB core staff, CFB recruit, NRFB, WRFB, SRFB and ERFB staff.
DELIVERABLES	Individual estuary reports. Final programme report. GIS linked database material. Tagging data (2002-2007) digitised.

Fish Stock Assessment of Inniscarra Reservoir 2008

REMIT OF THE PROJECT

The objective of the project is to provide information to the South Western Regional Fisheries Board (SWRFB) on the fish stock status of Inniscarra Reservoir.

WHY IS THE PROJECT BEING UNDERTAKEN?

At 489 hectares in size, Inniscarra Reservoir is one of the largest lake systems in the south west of Ireland. The reservoir was created by the ESB in 1956 with the construction of two dams on the River Lee system at Carrigadrohid and Inniscarra. It is also one of the most important coarse fisheries in the region, serving a large local angling community, as well as hosting a series of angling festivals to both local and international competitors.

In order to investigate reported declining angling catches, particularly the reduced occurrence of large bream (for which this water has been renowned) the Central Fisheries Board (CFB), in conjunction with the SWRFB, conducted a fish stock survey of the reservoir in 2008. A similar survey was conducted in 2005. The 2008 survey followed standard methodologies used to sample lake fish populations for the Water Framework Directive (WFD).

PLANNED COMPLETION DATE

The study was completed in August 2008, and a detailed report has been produced.

WHO WILL BENEFIT FROM THE PROJECT?

The local and domestic angling community, tourist anglers and the tourism industry, in the area will be direct beneficiaries. The information will also benefit the CFB, SWRFB and Electricity Supply Board (ESB).

WHEN WILL INTERIM/FINAL REPORTS BE AVAILABLE?

A report has been prepared.

PROGRESS TO DATE

The survey was completed in August 2008, and a final document has been produced.

FINDINGS OF INTEREST

Eleven fish species were recorded in the reservoir in 2008. The fish population was dominated by stocks of perch (*Perca fluviatilis*) and bream (*Abramis brama*). The stock of bream present in Inniscarra Reservoir in 2005 and 2008 remains on the most prolific populations in the country. Moderate stocks of pike (*Esox lucius*), roach x bream hybrids and brown trout (*Salmo trutta*) and low numbers of rudd (*Scardinius erythrophthalmus*) and tench (*Tinca tinca*) were also recorded.

Roach (*Rutilus rutilus*) were recorded in this watercourse for the first time in 2008. A total of 18 individuals were captured in the nets. Roach were first introduced from the UK into the Cork Blackwater in 1889. The rapid spread of this species throughout Ireland in recent decades has impacted negatively populations of naturalised coarse fish species, such as rudd and bream. With roach being present in the reservoir for such a short period, it is impossible at present to determine the true consequences of their introduction on its current fish fauna.

NEXT STEPS

At present Inniscarra Reservoir contains a large diversity of species, dominated by bream. With the recent introduction of roach however, it will be important to monitor the affects this species will on the fish community structure of the reservoir.

PROJECT MANAGER	Dr Joe Caffrey.
TOTAL BUDGET €	N/A
FUNDING SOURCE	National Research Programme.
RESOURCES UTILISED	Staff and equipment belonging to the CFB and SWRFB.
DELIVERABLES	Detailed report on the current fish stock status of Inniscarra Reservoir.



A view of Inniscarra Reservoir, Co. Cork.



European Directives / National Obligations

EUROPEAN DIRECTIVES / NATIONAL OBLIGATIONS

This research section focuses on servicing the many European and national directives in relation to fish stocks and related issues. The Water Framework and Habitats Directives are large elements of the work, with each project having a strong emphasis on collaboration with National and International scientists.

Water Framework Directive (WFD) Surveillance Monitoring – Lakes, Rivers and Transitional Waters

REMIT OF THE PROJECT

The Water Framework Directive (2000/60/EC) and Irish National Legislation (S.I. No. 722 of 2003) came into force in 2000 and 2003 respectively. A principal aim of this legislation is to preserve existing ecosystems where water quality is currently at high or good status and to restore to good status those waters which are currently impaired. The Directive specifies that monitoring of a variety of elements (including fish) in rivers, lakes and transitional waters shall commence in 2007. The Central Fisheries Board (CFB) has been assigned the responsibility by the Environmental Protection Agency (EPA), in accordance with the above legislation, of delivering the fish monitoring requirements of the WFD.

WHY IS THE PROJECT BEING UNDERTAKEN?

Each Member State in the EU is required to implement certain corrective measures to preserve waters in high and good status and to restore waters which are at risk of not achieving good status by 2015. A key step in this process is for Member States to assess the health of their surface waters through national monitoring programmes. Monitoring is the main tool used to classify the status (high, good, moderate, poor and bad) of each water body (section of a river or other surface water). Once each country has determined the current status of their water bodies, monitoring then helps to track the effectiveness of measures needed to clean up water bodies and achieve good status. Corrective measures will be amended where necessary.

Monitoring of certain physical, chemical and biological elements began in 2007 as required by the legislation. Fish are amongst the elements the legislation specifies shall be measured at specific locations selected for surveillance monitoring. These sites are set out in the WFD Water Monitoring Programme published by the EPA in 2006.

SPONSORS/PERSON IN CHARGE OF THE PROJECT

The CFB with the assistance of the Regional Fisheries Boards (RFBs) will carry out the fish monitoring operation on a three year rolling programme. This project will be integrated with, and will compliment the existing river and lakes water quality monitoring programme operated by the EPA since 1971. The WFD programme within the CFB is co-ordinated by Dr Fiona Kelly who was appointed project manager for the monitoring programme.

PLANNED COMPLETION DATE

The first three year phase of the monitoring programme will be completed in 2009 but the WFD is an ongoing programme under which all matters relating to quality, quantity and ecology of freshwater, transitional waters and inshore marine waters will be protected and managed into the future.

WHO WILL BENEFIT FROM THE PROJECT?

The monitoring using standard procedures will provide factual information about national fish stocks that can be compared from one survey to the next allowing evaluation of long-term trends in species composition, abundance and age structure. The information will be of particular importance to the EPA, RFBs, fishery owners, angling organisations and the public. The real purpose of the information will be to check that River Basin Management Plans (RBMPs) are working as intended and to inform management on progress.

WHEN WILL THE INTERIM/FINAL REPORTS BE AVAILABLE?

Interim (preliminary) reports were available weekly during the monitoring field season (July to October) were placed on the CFBs dedicated WFD website (www.wfdfish.ie). A more comprehensive report on the 2008 programme will be completed in April 2009. The data collected will also be provided to the EPA every year as an input to the WFD

River Basin Management Plans. An essential aspect of this work is the rapid feedback of information to the RFBs, fishery owners, angling clubs/associations and the public.

WHAT WAS THE COST OF THE PROJECT AND SOURCE OF FUNDING

A comprehensive assessment of project costs was submitted to the Department of Communications Energy and

Natural Resources (DCENR) and the Department of Environment Heritage and Local Government (DEHLG) in October 2006. The programme operates on a three year cyclical basis and the overall projected costs for the 2007 to 2009 period are €4.95 million. This first year of the project was funded by the exchequer through the DEHLG. Funding for 2008 and 2009 is being directed through the DCENR.

PROGRESS TO DATE

Monitoring of fish stocks commenced in 2007 on a limited basis, European standard methods were used at specified sites on lakes and estuaries.

The WFD fish surveillance monitoring programme in 2008 has been extensive compared to previous years. A total of 32 lakes (→ 8000 fish recorded), 83 rivers (38 wadeable, 45 boat sites) (→ 20,000 fish recorded) and 42 transitional waterbodies (→ 66,000 fish recorded) were surveyed. All fish were counted, measured, weighed, scales and some fish were retained for laboratory analysis.

Preliminary reports from 2007 and 2008 are available to read on the WFD fish website (www.wfdfish.ie). Further processing of the material has yet to be carried out and a more comprehensive report will issue in due course.

FINDINGS OF INTEREST

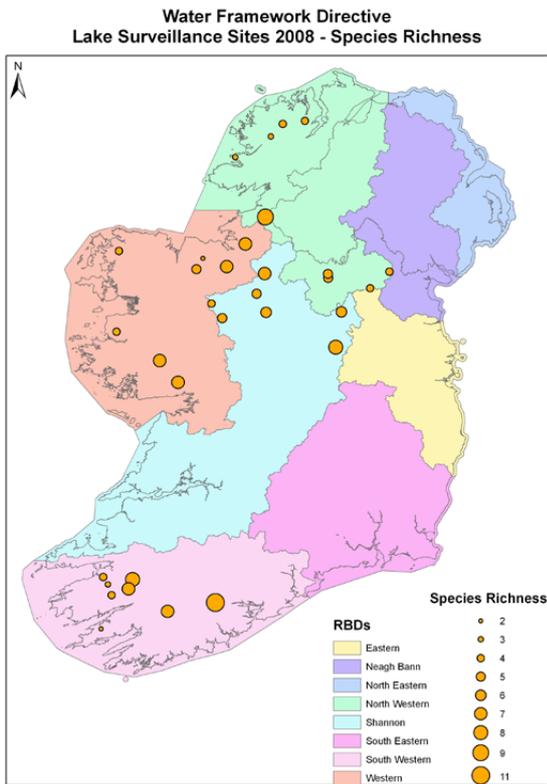
In 2008, trout occurred in all lakes except Allua, Annaghmore, Cavetown, Corglass, Derrybrick, Egish, Nanoge and Upper Skeagh lakes. Char populations continue to exist in Acoose, Caragh, Melvin, Talt and Veagh lakes and the Killarney shad were still present in Lough Leane. Small numbers of adult salmon were also encountered in some lakes.

In 2008, brown trout were found in 96% of rivers, with the highest abundances occurring in the Glashaboy River in Cork and the River Inny at Oldcastle. Sea trout were found in 12 rivers, and abundances were the highest on the Glenamoy River in Mayo, the Gweestin River in Kerry and the Smearlagh River in Kerry. Salmon were found in 64% of rivers, and the highest abundances found in the Tubbercurry River in Sligo and the Shanowen River in Kerry. Roach were recorded at 24% of sites. River/brook lamprey were recorded at 32 sites, and high densities were recorded in the Martin River in Cork and the Gourná River in Clare. A single chub was captured in the River Inny at Shrúle Bridge.

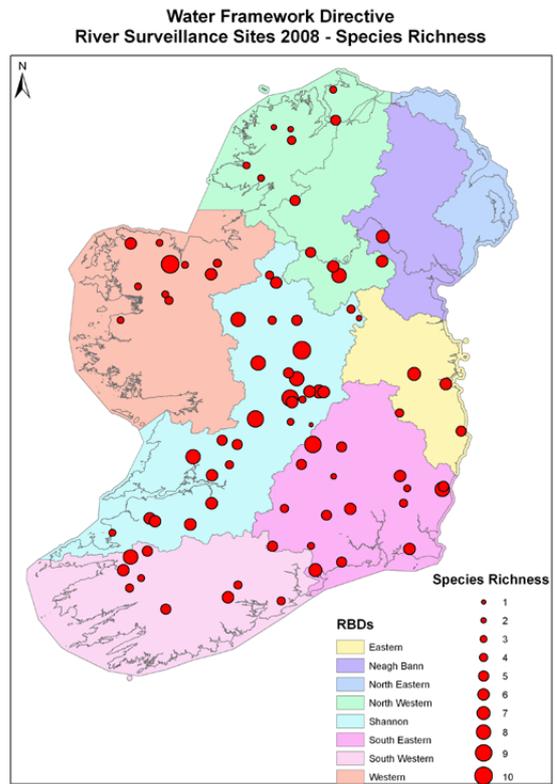
A large species diversity of 65 species was recorded in the transitional waters monitoring in 2008. A juvenile gillthead bream has been recently recorded in a WFD estuary survey off the east coast of Ireland.

NEXT STEPS

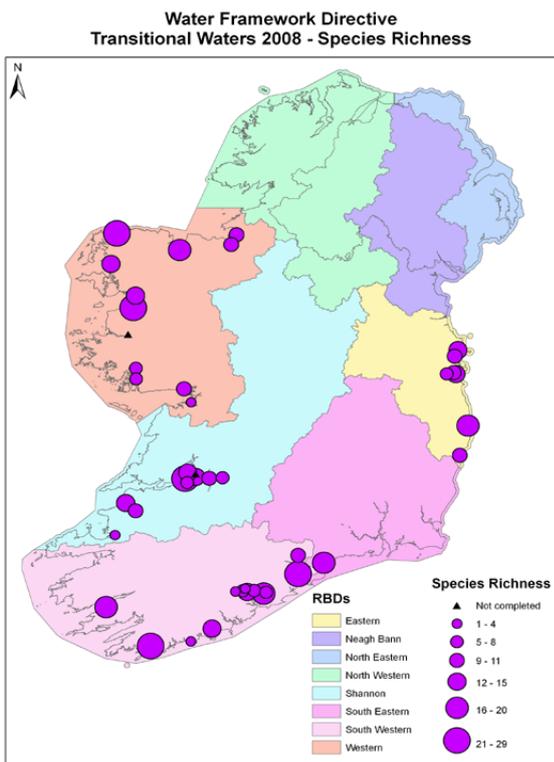
Material retained from the 2008 field survey programme must now be processed and a more comprehensive report compiled. Planning of the 2009/2010 operational programme is in train but progress is totally dependent upon the availability of the necessary resources and on suitable weather conditions. It was not possible to survey a number of river sites in 2008 due to adverse weather conditions and flooding and such locations must now be surveyed in the months July to September of 2009 in addition to the 2009 scheduled sites.



Species richness on lakes surveyed for fish for WFD Surveillance Monitoring 2008.



Species richness on rivers surveyed for fish for WFD Surveillance Monitoring 2008.



Species richness on transitional waters surveyed for fish for WFD Surveillance Monitoring 2008.

PROJECT MANAGER	Dr. Fiona Kelly.
TOTAL BUDGET €	The programme operates on a three year cyclical basis and the overall projected costs for the 2007 to 2009 period are €4.95 million.
FUNDING SOURCE	Funding for 2008 was provided by DCENR.
RESOURCES UTILISED	Ten full time staff and two temporary staff are employed on the project. They work closely with Regional Fisheries Board staff.
DELIVERABLES	CFB dedicated WFD website (www.wfdfish.ie) Weekly preliminary reports circulated to CFB and RFB staff and placed on website during field season Final report for 2008 GIS database



Electrofishing.



National Fisheries Environment and Biodiversity Programme

NATIONAL FISHERIES ENVIRONMENT AND BIODIVERSITY PROGRAMME

Our focus in this research area is to undertake research in a holistic way to support conservation of our natural aquatic ecology. Currently we undertake studies of invasive species and Integrated Constructed Wetlands (ICWs), provide a chemical and nutrient analysis programme, design enhancement programmes for drained river systems and monitor their effectiveness and ensure proper management of the Boards fish farms.

Research and Control Programme for *Lagarosiphon major* in Lough Corrib 2008

REMIT OF THE PROJECT

To halt the loss to biodiversity associated with the spread and invasion of the high impact, non-native species, *Lagarosiphon major* by developing effective control strategies and undertaking a programme of research on the impact and functional ecology of the weed.

WHY IS THE PROJECT BEING UNDERTAKEN?

Lough Corrib supports 14 habitats and six species that are listed on Annex I and Annex II, respectively, of the Habitats Directive. This project seeks to protect and conserve this status through the strategic development of a *Lagarosiphon* control, eradication and research programme. This work will improve and develop both novel and proven control strategies, while also undertaking research of *Lagarosiphon* functional ecology. This approach will help to maintain the socio-economic, lake-based, local tourist industry and the nationally recognised recreational and angling resource that Lough Corrib provides.

PLANNED COMPLETION DATE

Funding for the project has been secured for a further four years from EU Life +. This funding commences in 2009 and will continue until 2013.

WHO WILL BENEFIT FROM THE PROJECT?

Lough Corrib is a focus for both local and national tourism and recreational pursuits from both national and international sources. Therefore, this programme will significantly benefit bodies which are dependant on the environmental, social and economic resources and revenue which is provided by Lough Corrib. These benefits will be most apparent to local organisations such as the WRFB, NPWS, OPW, Galway City Council, local angling clubs/federations, the local/national tourist industry and anyone who utilises the area through tourism and/or recreation.

WHEN WILL INTERIM/FINAL REPORTS BE AVAILABLE?

The 2008 report of progress to date has recently been submitted (February, 2009) to relevant bodies of interest for consultation and will be available for publication in the very near future.

PROGRESS TO DATE

In 2008, a further 49 sites were recorded, giving a total of 113 infested sites and a continued downstream spread towards the shallower, lower lake. Results from biological surveys of the macrophyte, macroinvertebrate and fish populations demonstrated a significant negative impact to these communities caused by *Lagarosiphon*.

Control has been undertaken primarily through the development of both cutting and light exclusion methods. Empirical data from artificial growth chambers indicates that *Lagarosiphon* is susceptible to the deep cut that is applied using the V-blade cutting boats, and rarely regrows following this treatment.

Significant progress has been made with weed control initiatives in 2008 and a total of 29 hectares of *Lagarosiphon*-infested lake area has been mechanically cleared over a six month period (Figure 1). This has resulted in the removal from the lake of approximately 4,700 tonnes of invasive plant material.

In addition, biodegradable jute geotextile was trialed in 2008. This material eradicates the weed through light exclusion. From the initial trials, promising results have led to significant textile application method development. The 2008 trials indicated that this approach has the potential to be expanded to form an effective secondary wide-scale eradication strategy.

FINDINGS OF INTEREST

Research of *Lagarosiphon* life cycle has shown that there are two distinct morphological forms of the plant. The ‘erect’, canopy-forming stage proliferates during the colder winter months, while the ‘collapsed’ stage is most common through the summer time. This finding has influenced the course of the mechanical cutting programme as it has been demonstrated that far greater yields are attained for a similar effort when the cut is applied to erect plants. Thus, cutting during the winter months will be far more productive than cutting in the summer time.

The jute geotextile material application was piloted in 2008. Interestingly, it has been discovered that some of the more diminutive, native *Chara* species are capable of growing through the fine pores in the material, thus reducing the necessity to artificially transplant native macrophytes on the geotextile. No *Lagarosiphon* plants have managed to grow through the material.

From the biological research, it would appear that *Lagarosiphon* provides habitat conditions promoting large numbers of small coarse fish. This result suggests that the invasive macrophyte represents an important predator refuge for these juvenile fishes. This apparent benefit for coarse fish is may be to the detriment of native salmonid species. The continued expansion of this invasive species, clearly, will negatively impact on these more sensitive salmonid groups.

Of further, significant concern is the fact that *Lagarosiphon* appears to be providing a habitat that favours the establishment and proliferation of the invasive Zebra mussel (*Dreissena polymorpha*).

NEXT STEPS

There are a considerable number of avenues still to pursue in order to fully understand the complex biology of *Lagarosiphon*, the factors that favour its establishment and growth in Lough Corrib, its impact on the broad ecology of the lake, and how best to control and eradicate it. Efforts to advance and optimise the weed control methods currently being used will continue. However, it will be necessary to develop alternative and novel approaches to controlling the plant and to investigate mechanisms or strategies that will best exploit any vulnerable life cycle stages.



Figure 1: Weed harvesting boat removing cut *Lagarosiphon* from Rinerron Bay on Lough Corrib.

PROJECT MANAGER	Dr. Joe Caffrey.
TOTAL BUDGET €	€250,000
FUNDING SOURCE	NPWS, OPW, WRBD and Galway City Council. EU life funding to commence mid 2009.
RESOURCES UTILISED	Staffing: Two RO's were employed by the CFB in 2008. In addition, three WRFB staff and personnel from OPW were dedicated to the mechanical weed cutting programme. Two students from GMIT worked on the project as part of summer placements.
DELIVERABLES	Annual Report: Caffrey, J., S. Evers. & Moran, H. (2009) Research and Control Programme for <i>Lagarosiphon major</i> in Lough Corrib 2008. CFB report (draft).

Chub (*Leuciscus cephalus*): An Invasive Fish Species in Ireland

REMIT OF THE PROJECT

The primary remit of the project was to determine the status of chub, a non-native and potentially invasive fish species, in the River Inny. The project further aimed to map distribution of chub, determine the size range and age classes present, assess their potential to become invasive and establish their potential impact upon native and naturalised fish species in the river.

WHY IS THE PROJECT BEING UNDERTAKEN?

Chub are non-native to Ireland, a country with a relatively species-poor fish community that has already been invaded by roach (*Rutilus rutilus*) and dace (*Leuciscus leuciscus*).

There is concern that chub will also become invasive and adversely impact native fish communities. Invasive alien species can have a major impact on biodiversity and can cause significant irreversible environmental and socio-economic impacts at genetic, species and ecosystem levels. They may flourish in a new habitat because they have escaped many of their native predators. Prior to 2001, there were no reports of chub being present in any Irish waters. In 2001, and again in 2004, anglers reported catching chub in a section of the River Inny. On neither occasion were live specimens retained for authentication. In 2005, a live, angler-caught chub from the River was formally identified. In 2006, during a survey conducted by the CFB and the ShRFB, 17 live chub were captured from Shrle Bridge on the lower River Inny. These fish were removed from the river and euthanized. Similar large-scale electrofishing operations were conducted in 2007 and 2008. In 2007, two chub was captured at Ballinalack Bridge, some 30km upstream from Shrle Bridge. In April 2008, one chub (43cm) was captured near Shrle Bridge. This fish was fitted with radio tags and released back to the stretch from which it had been taken. It was hoped that this 'Judas' fish would identify the location of the remaining population, if such a population was present. A further survey undertaken in August 2008, recorded one chub (22cm) and this fish was also tagged and released. Tracking studies have revealed that these two chub occupy the same area of river and have and have not been joined by any other chub.

PLANNED COMPLETION DATE

An electrofishing operation will be conducted in May 2009 and any chub captured, including the two 'Judas' chub, will be removed from the river.

WHO WILL BENEFIT FROM THE PROJECT?

The information will be provided to the CFB, ShRFB, Queens University Belfast and the EPA. The project is providing vital information regarding the impacts that this species may have on aquatic ecology.

WHEN WILL INTERIM/FINAL REPORTS BE AVAILABLE?

An interim report is currently available and a final, comprehensive document will be produced in autumn 2009.

PROGRESS TO DATE

Surveys have been completed in 2007 and 2008, and will continue in 2009. Tracking studies are ongoing.

FINDINGS OF INTEREST

Little evidence of long-distance movements by radio tagged chub has been recorded, with both specimens remaining within 0.4km from their 'home' location.

NEXT STEPS

An electrofishing survey will be conducted in May 2009 and all chub captured, including the radio tagged specimens, will be removed.

PROJECT MANAGER	Joe Caffrey.
TOTAL BUDGET €	€10,000
FUNDING SOURCE	National Parks and Wildlife Service (NPWS).
RESOURCES UTILISED	Staff and resources from the CFB, ShRFB and Queens University.
DELIVERABLES	Removal of chub from the River Inny and report (possibly an M.Sc.) on the status of this river as a fishery.



Chub captured from the River Inny in 2007.

An Assessment of Mitigation Measures In Relation to Dredging Operations on Irish Canals

REMIT OF THE PROJECT

The Central Fisheries Board (CFB) are commissioned by Waterways Ireland (WI) to conduct scientific research aimed at understanding and improving habitat conditions for fish and aquatic life on the Royal and Grand Canals, the Barrow Navigation and the Shannon-Erne Waterway. The CFB have also been commissioned by Waterways Ireland to conduct such work as may be required to assess and insure compliance with the Water Framework Directive (WFD).

WHY IS THE PROJECT BEING UNDERTAKEN?

Navigable waterways are managed, maintained and developed principally for recreational purposes. CFB research is targeted at the needs of anglers and other waterways users and is conducted in a manner compliant with the Water Framework Directive. As part of Waterways Ireland's maintenance programme on the Royal and Grand Canals, sections of the waterways are routinely dredged to maintain the channels for navigational purposes. Dredging has a significant affect on the morphological and ecological character of a water body, with the main impact being loss of habitat and a resultant reduction in biodiversity. The WFD requires the development of procedures to mitigate for management pressures such as dredging in order that watercourses achieve GEP (Good Ecological Potential). Mitigation measures should be designed to protect the ecology of the watercourse without compromising its functional or socio-economic benefits. The CFB, in cooperation with WI, designed an experiment to investigate whether different channel profiles were more conducive to the recolonisation of the margins by aquatic macrophytes, macroinvertebrates and fish, following dredging operations.

PLANNED COMPLETION DATE

The current project will be completed in June 2009.

WHO WILL BENEFIT FROM THE PROJECT?

This project aims to protect both aquatic and riparian habitats and maintain the long term ecological, fisheries and general amenity value of navigable waterways, while ensuring compliance with the WFD.

WHEN WILL INTERIM/FINAL REPORTS BE AVAILABLE?

An interim report covering the period July 2007 to December 2008 was completed in February 2009. The final report will be completed in June 2009.

PROGRESS TO DATE

Survey work for this project was conducted at a section of dredged canal along the Grand Canal – Barrow Line. Sampling commenced in April 2007 and continued for an 18 month period up to September 2008. Sampling involved the qualitative and quantitative monitoring of aquatic macroinvertebrates and submerged and emergent vegetation along the canal margins.

FINDINGS OF INTEREST

Results show a succession of different macrophyte species at the dredged sites over the 18 month period. Sorting and identification of macroinvertebrate samples is ongoing. Preliminary results have shown an increase in the numbers of individuals at all sites reflecting successful recruitment over the monitoring period. Certain crustacean and mayfly species have been particularly successful in recolonising the dredged sites.

NEXT STEPS

The processing of macroinvertebrate samples is ongoing and more comprehensive analyses of macroinvertebrate community patterns at the dredged sites will be carried out in 2009. It is envisaged that results from this project will inform future sediment management procedures in the Royal and Grand Canals.

PROJECT MANAGER	Dr. Joe Caffrey.
TOTAL BUDGET €	Completed as a part of the Fisheries Development Programme for Waterways Ireland which has a budget of €1.4m over 3 years (2006 to 2009).
FUNDING SOURCE	Waterways Ireland.
RESOURCES UTILISED	Six full time staff are employed on the project. They work closely with Regional Fisheries Board and Waterways Ireland Staff.
DELIVERABLES	Best practice guidelines for canal dredging programmes will be developed.



Dredging Works on the Grand Canal – Barrow Line.

Compiling a Series of Aerial Photographs of Irish Fisheries

REMIT OF THE PROJECT

To provide an aerial photographic database of all inland, estuarine and sea shore locations of fishery interest for inclusion as a layer in the Boards G.I.S. database.

WHY IS THIS PROJECT BEING UNDERTAKEN?

To provide a visual database of all inland fishery resources which can be used variously for angling promotional exercises and planning fishery development programmes. It also provides a record, at a particular point in time, of the status of habitats.

PLANNED COMPLETION DATE

Will depend on the availability of Air Corps helicopter flights – possibly circa 2012 to 2013.

WHO WILL BENEFIT FROM THE PROJECT?

All personnel working in the Inland Fisheries sector. These data can be used for a wide range of purposes – planning survey programmes, estimating the degree, location and extent of problem areas, sourcing access points, assessing the impact of landslides, pinpointing pollution sources and many other areas.

Some examples of the usefulness of these data are as follows:

1. A comprehensive survey of ten salmon rivers was completed in Donegal with a view to drawing up management proposals for this resource. Aerial photographic surveys of these rivers were carried out initially. This allowed one to identify the degree and extent of overgrazing, bank erosion problems and possible pollution sources. These data were also used to designate specific zones in river catchments to ensure that subsequent sampling locations were representative of particular zones.
2. Aerial photographic surveys of estuarine areas have proved very valuable in mapping the extent of salt marsh areas – locations which are of key importance as spawning and nursery areas for a number of fish species.
3. In the last few years an exotic plant (*Lagarosiphon*) has started to colonise parts of Lough Corrib. Over the past three years an aerial photographic series has been compiled to obtain baseline data on the location and extent of natural floral colonies on our major lakes before further change occurs.
4. In 2008, there were three serious landslides which impacted on our river catchments – one in Kerry, a second in Leitrim and a third event in Donegal. The degree of disturbance, in each case has been mapped from the air. A repeat of this exercise, over time, will allow one to quantify the long term effects of such events.

WHEN WILL INTERIM/FINAL REPORTS BE AVAILABLE?

Data on individual series are available as soon as the photographs are taken and subsequently indexed. A more permanent digital indexed series will be archived on a “stand alone” server when this becomes available.

NEXT STEPS

To continue enlarging the database, source the funding required for the server and commence the indexation and cross referencing with other layers in the G.I.S. system.

PROJECT MANAGER	Dr. Martin O'Grady.
TOTAL BUDGET €	No major expenditure until a server is purchased.
FUNDING SOURCE	CFB core funds.
RESOURCES UTILISED	MOG'S time in taking and subsequently filing the photos.
DELIVERABLES	A national aerial photographic layer in the CFB GIS system.



Landslide on the Crow River (main) and pollution in Killybegs (inset).

Fisheries Aspects of a Flood Relief Scheme on the Tolka River

REMIT OF THE PROJECT

To assist the Office of Public Works in ensuring that flood relief works on this river will not be detrimental to fisheries interests. To use this opportunity to improve this urbanised channel morphologically to the advantage of fish stocks.

WHY IS THIS PROJECT BEING UNDERTAKEN?

To ensure that the Tolka River is protected, and where possible, enhanced as a salmonid fishery.

PLANNED COMPLETION DATE

Q4 in 2008.

WHO WILL BENEFIT FROM THE PROJECT?

Migratory fish stocks in the Tolka.

WHEN WILL INTERIM/FINAL REPORTS BE AVAILABLE?

To be completed in Q1, 2009.

PROGRESS TO DATE

All riverine works completed in Q3, 2008.

FINDINGS OF INTEREST

The major works in this scheme, from a fisheries perspective, involved the removal and/or adjustment of six man made weirs in the lower reaches of the river (Finglas/Drumcondra) to allow the upstream passage of migratory fish for the first time since the 1840's.

This project has already proved successful. In Q4, 2008, Eastern Regional Fisheries Board staff noted the presence of a fresh sea trout in the upper reaches of the Tolka near Dunboyne the first sea trout in the upper Tolka for 150 years!

NEXT STEPS

Significant improvements in water quality will be required before the full benefits of this scheme will be observed.

PROJECT MANAGER	Dr. Martin O'Grady.
TOTAL BUDGET €	Funded by the Office of Public Works.
FUNDING SOURCE	As above.
RESOURCES UTILISED	Experience in designing river enhancement programmes.
DELIVERABLES	Providing access for migratory fishes to all sections of the Tolka.



Pre and Post Works Photos of the Tolka Fish Pass

Environmental River Enhancement Programme (EREP)

REMIT OF THE PROJECT

To undertake a programme of capital enhancement works and of enhanced maintenance on OPW channels over a 5-year period (2008 – 2012) with an annual target of 100 km of channel specified for inspection and works; to report on the impacts of these works in terms of hydromorphology and biodiversity; to deliver a new environmental training programme for OPW's Arterial Drainage Division; to audit implementation of new environmental guidance in OPW's channel maintenance programme; to undertake additional scientific studies as these arise.

WHY IS THE PROJECT BEING UNDERTAKEN?

Contributes to advancement of national (National Biodiversity Programme) and international (EU Habitats Directive and EU Water Framework Directive) legislative requirements in the context of arterially drained rivers and provides an appraisal of the ecology of river corridor habitats and impact of channel maintenance programmes on them.

PLANNED COMPLETION DATE

5-year programme – 2008 - 2012.

WHO WILL BENEFIT FROM THE PROJECT?

OPW, the commissioning agency is the initial beneficiary. In the larger picture, river corridor biota and stakeholders should benefit. It is also considered that strategies developed in the programme, and shown to be effective in contributing to biodiversity and hydromorphology, may usefully be undertaken by Local Authorities and Drainage Boards undertaking similar channel maintenance activities.

WHEN WILL INTERIM/FINAL REPORTS BE AVAILABLE?

Interim reports to OPW annually.

PROGRESS TO DATE

Project inception, recruitment and training of new CFB staff completed; Programme of works and interim report for Year I completed.

FINDINGS OF INTEREST

Development of comparative baselines on invertebrates, fish and riparian plants in open and shaded channel zones; specification of hydromorphology strategies in uniform glide segments of channels; development of inventory of riparian plant species (herbaceous and woody) in a range of channel types.

NEXT STEPS

The project has a natural element of rolling activity. Development of training programme to commence in 2009.

PROJECT MANAGER	Dr. M O' Grady; Dr. J. King.
TOTAL BUDGET €	€350,000 in Year II.
FUNDING SOURCE	OPW Drainage Division.
RESOURCES UTILISED	Core CFB (MOG, JK); CFB team recruited for project; RFB staff; OPW engineering, technical and ground staff.
DELIVERABLES	Reports; Impact studies; Protocols; Scientific publications.

Water Quality Monitoring and Pollution Abatement Programme for Inland Navigable Waterways

REMIT OF THE PROJECT

The Central Fisheries Board is responsible for monitoring the water quality of the Royal and Grand Canals, the Barrow Navigation and the Shannon-Erne Waterway. In order to maintain the recreational amenity value of the waterways, it is imperative that the EU standards for water quality are met. These standards can be adhered to by closely monitoring waters on a regular basis. The CFB carried out water quality monitoring in the spring, summer and autumn of 2008. This involved physico-chemical sampling on-site, and the collection of water samples for analysis in the CFB laboratory. A subset of forty canal sites was sampled four times in compliance with the Water Framework Directive (WFD).

The CFB also provides a rapid response unit to deal with any pollution problems which occur in the canals and waterways.

WHY IS THE PROJECT BEING UNDERTAKEN?

The Royal and Grand Canals, the Barrow Navigation and the Shannon-Erne Waterway are exploited for a range of recreational activities, including navigation and angling. Water quality monitoring plays a vital role in ensuring that these waterways maintain their amenity value for all users.

A canal is identified in the WFD as an Artificial Water Body (AWB), which is defined in Article 1 of the Directive as 'a body of water created by human activity'. In recognition of their navigational and recreational roles, AWBs must be assessed in terms of their 'ecological potential' as opposed to their 'ecological status', which applies to natural water bodies such as rivers and lakes.

PLANNED COMPLETION DATE

The current three year project will be completed in June 2009.

WHO WILL BENEFIT FROM THE PROJECT?

The aim of the project is to monitor water quality, to identify any possible problem areas and to eliminate contamination of the canals and waterways. All of these objectives will play an important role in the recreational management of these waterbodies. This benefits all those that use the navigable waterways for both leisure and amenity pursuits.

WHEN WILL INTERIM/FINAL REPORTS BE AVAILABLE?

An interim report covering the period July 2007 to December 2008 was completed in February 2009. The final report will be completed in June 2009.

PROGRESS TO DATE

To be completed on schedule.

FINDINGS OF INTEREST

With the exception of the Barrow Navigation, water quality on the main canal systems continues to be of a high standard.

NEXT STEPS

Monitoring is ongoing. Problem feeder streams will be investigated in 2009. Long term trend analysis is being conducted and will be included in the final project report.

PROJECT MANAGER	Dr. Joe Caffrey.
TOTAL BUDGET €	Completed as a part of the Fisheries Development Programme for Waterways Ireland which has a budget of €1.4m over 3 years (2006 to 2009).
FUNDING SOURCE	Waterways Ireland.
RESOURCES UTILISED	Six full time staff are employed on the project. They work closely with Regional Fisheries Board and Waterways Ireland Staff.
DELIVERABLES	Reports; GIS-linked database material; material for insertion on CFB website.



Water Sampling along the Grand Canal, Co. Kildare.

List of Other Projects not Included in Project Summary for 2008

PROJECT NAME	PROJECT MANAGER
Nore Barriers Study	Dr. Paddy Gargan
ICCAT paper on Blue Shark	Dr. William Roche
Specimen Fish Captures in NI Waters	Dr. William Roche
Glenshelene River Project	Dr. William Roche
Electrical Fishing on the Dargle	Dr. Martin O'Grady
Fish Stock Survey on L. O'Flynn & L. Sheelin	Dr. Martin O'Grady
Enhancement Work on Butler's Pool (L. Currane)	Dr. Martin O'Grady
Preparation of Enhancement for the Lee River (Tralee)	Dr. Martin O'Grady
Development Plan for Major Salmon Rivers in NRFB	Drs. W. Roche / M. O'Grady / P. Gargan
Erne Lamprey studies with NRFB	Dr. James King



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An Príomh-Bhord Iascaigh