




Central Fisheries Board
An Príomh-Bhord Iascaigh

Central Fisheries Board Research Division

Project Summaries

December, 2006

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Fisheries Ireland

Our Natural Heritage

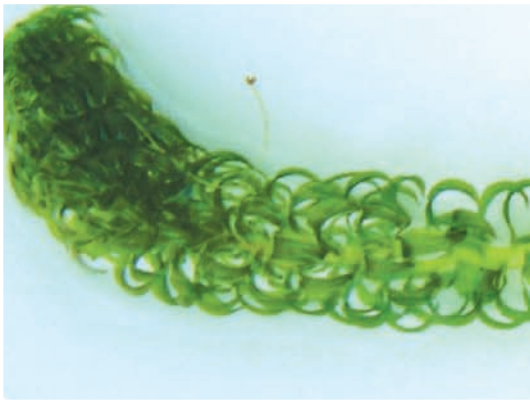
Contents

Overview

This document is a compilation of summary reports of the extensive work programme conducted by the Research Division in 2006. The projects deliver on the four main headings set out in the Business Plan.

1. The National Inland Fisheries Research, Development and Advisory Service (core activities).
2. The National Fish Stock Assessment Programme.
3. The Water Framework Directive.
4. The National Fisheries Environment and Biodiversity Programme.

The following reports, though segregated, for reporting purposes are in effect interlinked. The work carried out by the staff engaged in this programme contributes to further understanding the biology of fish stocks, which constitute the Irish Fisheries Resource. This research is fundamental to the remit of the Board which is to provide necessary advice on the protection, conservation and the sustainable development of fish stocks. Some projects are funded by the Central and Regional Fisheries Boards under the agreed National Research Programme (NRP). Other projects are financed from external sources though National or International Research Programmes.



NATIONAL INLAND FISHERIES RESEARCH, DEVELOPMENT AND ADVISORY SERVICE (CORE ACTIVITIES)

Note

This particular element of our work is delivered in a different format than the other elements.

It is largely driven by policy development, responding to Ministerial and Departmental queries and requests. By their nature these demands require early or immediate responses. While they cannot be fully anticipated they nevertheless constitute an important real time service to the Minister and his officials. It is sometimes difficult to quantify these services either prior or post the event.

Project Title: Wild Brown Trout Review.

(Central Fisheries Board Funded)

Remit of the project:

To prepare this document as one of a series on our more important fish species (and fish farming operations) which will dictate policy in future years.

Progress to date:

A draft document has been prepared, reviewed by the Central Fisheries Board (CFB) and circulated to the Regional Fisheries Boards (RFBs) for comment. We have received comments and suggestions in relation to the current draft from five Regional Boards (Eastern, South Western, Shannon, Northern and North Western).

Final report:

When all Regional Fisheries Board comments have been received a final draft will be prepared.

Project Title: Coarse Fish Review.

(Central Fisheries Board Funded)

Remit of the project:

This document as one of a series of national fisheries policy reviews, the purpose of which is to inform national fisheries policy development on coarse fish using the best professional expertise available, supported by constructive inputs from stakeholders.

Progress to date:

A draft document has been prepared, reviewed by the Central Fisheries Board (CFB) and circulated to the Regional Fisheries Boards (RFBs) for comment. We have received comments and suggestions in relation to the current draft from five Regional Fisheries Boards (Eastern, South Western, Shannon, Northern and North Western).

Final report:

When the remaining Regional Fisheries Board comments have been received a final draft will be prepared.

Project Title: Production of 2007 Calendar on Non-native Invasive Species in Ireland.

(External Funded)

Remit of the project:

In order to create awareness among the Fisheries Boards staff of the ecological, environmental and social dangers associated with non-native invasive species, it was decided to produce a calendar that would portray, photographically, the principal invasives that currently infest our waters. The calendar is developed in order to appeal to a wide and diverse audience, and to create an awareness of the invasive species problem to groups and agencies, such as: primary & secondary schools, universities, libraries, garden centres, angling clubs, cruiser hire companies, Fisheries staff, National Parks and Wildlife Service (NPWS) staff, Waterways Ireland staff, River Basin Districts (RBDs), Government Departments, etc.

Why is the project being undertaken?

Invasive species are spreading rapidly and threaten to destabilise fish communities and aquatic habitats in Ireland. The rate of introductions to this country is accelerating. The highly aggressive non-native invasive plant *Lagarosiphon major* was recorded in Rinneroon Bay, Lough Corrib, in 2005. The plant was probably present in the lake for between 6 and 10 years but had remained undetected. At this time the plant occupied up to 12 hectares of the 20 hectare bay.

It is apparent that insufficient information is available to staff in organisations such as the Central and Regional Fisheries Boards, Waterways Ireland, NPWS, Office of Public Works (OPW), etc., regarding the magnitude of the threat. This calendar will provide a brief insight into the nature of invasive species, while also showing what they look like.

Sponsors / person in charge of the project:

Originally, it was proposed that funding to produce up to 1,000 copies of the calendar would be sourced from projects already in existence. Following discussions with NPWS regarding invasives in general, they offered to sponsor the production of 10,000 copies. In addition, they will issue a grant to aid in the distribution of the calendars to the widest audience. Dr Joe Caffrey is the officer in charge.

When is the project planned to be complete?

The calendar will be printed by 13th December 2006.

Who will benefit from the project?

The calendar will create an awareness of the invasive species problem to a very wide audience; e.g. primary & secondary schools, Universities, libraries, garden centres, angling clubs, cruiser hire companies, Fisheries staff, NPWS staff, etc.

When will the interim and / or final reports be available to the Board?

13th December 2006.




NATIONAL FISH STOCK ASSESSMENT PROGRAMME

Project Title: Catchment Surveys 2006.

(National Research Programme and External Funded)

Remit of the project:

To survey fish stocks in five separate catchments:

- The Owenmore River in Co. Kerry.
- Lough Gill in Co. Kerry.
- The Argideen River in Co. Cork.
- The Currane catchment in Co. Kerry.
- The Mulkear River in Co. Limerick.

Why is this project being undertaken?

Requests to survey these catchments were submitted by the new fishery owner (Owenmore River) and existing angling clubs (Lough Gill and the Argideen River) to determine the status of fish stocks in each system and to make recommendations for their future development/ management. The Owenmore River, an excellent salmon and sea trout fishery has been newly acquired and the owner wants a status report on his fishery with some fishery management options. Lough Gill anglers are concerned about a perceived decline in their brown trout fishery despite a significant improvement in water quality in the lake in recent years. The Argideen is one of the prime sea trout fisheries in the south and the club wishes to develop the fishery, including the spawning stream network, on the basis of scientific data and advice following this survey.

The Currane system is arguably the finest sea trout system in Europe and is also a Special Area of Conservation (SAC). This survey was undertaken to assess stocks in tributary streams and is the fourth survey of these channels conducted over a 20 year period. A new fish counter has been installed on the Mulkear River and this productive system is also an SAC. Juvenile salmon populations were investigated and assessed in order to estimate population densities in the catchment.

Sponsors / person in charge of the project:

- Owenmore River Fishery owner.
- Lough Gill Lough Gill Angling Club.
- Argideen River Argideen Anglers Association.
- Dr William Roche is co-coordinating Central Fisheries Board (CFB) input to the project with the support and assistance of the South Western Regional Fisheries Board.
- The Currane and Mulkear systems were sampled by Dr Paddy Gargan with the support and assistance of the South Western Regional Fisheries Board (SWRFB) and the Shannon Regional Board (ShRFB) respectively.

When is the project planned to be complete?

- Owenmore River – work commenced in 2006 and will complete in 2007.
- Lough Gill – fieldwork programme completed in 2006. Report to issue in early 2007.
- Argideen River – sampling commenced in 2006 and will be complete in 2007.
- Currane catchment and Mulkear River – fieldwork complete.

Who will benefit from the project?

Fishery owners, clubs, anglers, SWRFB, ShRFB and CFB. Other agencies with interests in salmonid data acquisition – Environmental Protection Agency (EPA), National Salmon Commission (Salmon fisheries) etc.

When will interim and / or final reports be available to Board?

- Owenmore River – habitat restoration report was available in spring 2006. Final report in late 2007.
- Lough Gill – interim report issued and final report in early 2007.
- Argideen River – late 2007.
- Currane catchment and Mulkear River – 2007.

Cost of the project and source of funding:

- Owenmore River – fishery owner to fund the project.
- Lough Gill – service provided to SWRFB.
- Argideen River – club to fund project.
- Currane catchment and Mulkear River – service provided to SWRFB and ShRFB respectively.

Who will the findings be made available to?

Fishery owner, clubs and any other parties the contractee may wish to inform or that may request the report, SWRFB, ShRFB.

Progress to date:

Work initiated in Owenmore and Argideen Rivers. Lough Gill, Currane catchment and Mulkear River – fieldwork complete.

Any findings of interest and to whom:

There was a widespread distribution of salmon in the upper reaches of the Owenmore River indicating good penetration of salmon into remote parts of catchment. This suggests good stocks of juvenile salmon are likely to be present throughout the catchment. Lough Gill – the brown trout population structure is imbalanced, which may indicate a problem with annual recruitment. Currane catchment – high densities of juvenile salmon and trout in stream catchment. Mulkear River – very high densities of juvenile salmon in upper reaches of catchment.

What are the next steps?

Deliver findings to fishery owner and clubs, and assist along with the SWRFB in the roll out of any management plans recommended for Owenmore River, Lough Gill and Argideen River. Issue reports to relevant parties in all catchments.

Project Title: National Salmon and Sea Trout Programme.

(National Research Programme Funded)

Remit of the project:

To undertake national research programmes into relevant issues concerning salmon, sea trout and eels as agreed by the National Fisheries Management Executive (NFME) and Central Fisheries Board (CFB) Research Division

This programme has seven specific elements:

1. Investigate the survival rates of "catch & release" grilse using external radio tags.
2. Identify and map the principle spawning areas for salmon in Irish salmon rivers.
3. Completion of wetted area update: extracting Office of Public Works (OPW) data for drained rivers, model refinement to provide revised wetted area estimates.
4. Collation of salmon river index data (redd counts, juvenile estimates etc) for the National Salmon Stock Book.
5. National Juvenile Salmon Stock Assessment Programme - establish Index Sites on major Irish salmon rivers in 2006 with emphasis on SAC salmon rivers.
6. Characterise salmon and sea trout populations in major catchments; scale reading programme to be extended to other catchments and archive material to be examined.
7. Compile archive data on eel populations nationally and eel distribution.

Why is this project being undertaken?

1. To investigate the actual survival rates from "catch & release" of grilse using external radio tags. With the change in salmon management regime from the 2007 season onwards, many salmon rivers will require catch & release by anglers for both grilse and spring salmon. It is important to carry out studies in Irish rivers on the success of catch & release and to develop a proper code of practice.
2. To identify spawning areas, particularly those capable of accommodating significant numbers of spawning fish. Many studies have shown that spawning areas are likely to be important in identifying distinct populations. Identification of distinct populations is critical to quantification, and future management of stocks. The objective of this project is to compile a national database of the spawning areas in all Irish salmon rivers. The first stage of this process was to identify and map sections of river capable of functioning as spawning areas. In areas where salmon currently spawn redd counts are undertaken, and areas where salmon spawned historically also need to be recorded.
3. The wetted area available to salmon is a key element in determining salmon conservation limits. The initial wetted area report used a model to determine the wetted area in all salmon rivers. Changes in the designation of salmon rivers, together with revised channel width data collected over a much broader range of Irish rivers necessitate an update of the wetted area data. In this revision drained rivers are being treated separately as these are artificially modified channels and may have different characteristics to natural rivers.
4. Salmon river data such as redd counts and juvenile estimates need to be collected to provide potentially useful indices which assist in measuring salmon spawning escapement, in order to assess attainment of salmon conservation limits on an individual river basis. Some of these data are being collected under the department of marine, Communications and Natural Resources (DCMNR) funded Salmon Stagiaire placement scheme.

5. National Juvenile Salmon Stock Assessment Programme – This programme will provide a national snapshot on the status of salmon productivity based on sampling a series of selected sites. It would be similar to the EPA National Rivers Assessment Programme also known as the Q value assessment.
6. Characterise salmon and sea trout populations in major catchments – salmon and sea trout life history strategies are required to understand and model salmon and sea trout populations in different systems. Life history strategies such as smolt age, sea age, growth and frequency of spawning can be gleaned from scale readings.
7. The European Union (EU) Commission has proposed that the primary instrument for management of European eel should be the development by Member States of "eel management plans". The objective of each plan should be to achieve an escapement of 40% of migrating silver eels from each river basin. This 40% level is established with reference to a situation in which eel recruitment is at a normal historic level, the full productive extent of the eel habitat is utilised, there are no barriers to migration and no mortalities from fishing, turbines or pollution. A reference level for escapement (e.g. in terms of kg silver eel escapement per hectare of eel habitat) has to be established for each river. Where such data are not available the reference level for escapement has to be inferred from other available data on one of the following (presented in hierarchical order):

    a. Time series of eel (yellow and silver eel) density data
    b. Time series of catch data of silver eels
    c. Time series data of catches of yellow eels
    d. Time series data of recruitment of juvenile eel

    Little data are available for a,b and c above, apart from those limited number of catchments with eel fisheries. The CFB is extracting eel distribution and abundance data from all previous electrofishing surveys of catchments from the 1980's to date. These data are likely to be the only national dataset available to gauge a reference level at the catchment level. The Central Fisheries Board is working in conjunction with the Marine Institute, who are responsible for the delivery of this programme in Ireland.

Sponsors / person in charge of the project:

NFME / Dr Paddy Gargan / Dr William Roche.

There are 148 salmon rivers in Ireland and the national fisheries agencies collate available data on each river from various sources particularly the Regional Fisheries Boards. For administrative reasons responsibility for data collation is divided into two areas: from Kerry Head to Malin Head and the east coast from Dundalk to Kerry Head on the southwest coast.

When is the project planned to be complete?

1. 2007.
2. 2007.
3. Early 2007.
4. Mid 2007.
5. 2007.
6. Successful completion is dependent on funding being continued.
7. 2007.

Who will benefit from the project?

1. The NFME and the fisheries service.
2. The NFME and the fisheries service.
3. The NFME and the fisheries service.
4. The NFME and the fisheries service.
5. The NFME and the fisheries service.
6. The NFME and the fisheries service.
7. EU Data Commission Regulation; Marine Institute; Central and Regional Fisheries Boards; Commercial eel sector.

When will the interim and / or final reports be available to the Board?

1. 2007.
2. Early 2007.
3. Early 2007.
4. Mid 2007.
5. These data will be reported in 2007.
6. 2007.
7. 2007.

Cost of the project and source of funding:

All projects were funded from the allocation for the National Salmon and Sea Trout Programme for 2006 which was €63,000. Other projects funded from external sources also contributed information to the national programme.

Who will the findings be made available to?

The NFME and DCMNR, European Commission and other national bodies.

Progress to date:

1. Salmon caught by angling have been radio tagged and released in two systems, the River Feale in Co. Kerry and the Owenmore River in Co. Mayo. These tags will deactivate early in 2007. Information to date indicates a very high level of salmon survival post catch and release. Final results will not be available until the end of the 2006/2007 salmon spawning season.
2. Salmon spawning areas have been identified nationally. A first draft of these data is available in map format. This information requires ground-truthing.
3. A wetted area revision for natural channels has been completed. The calculation of wetted area in drained rivers (OPW channels) is in progress and will be completed in early 2007.
4. Salmon population index data are being compiled and are currently being entered into a database.
5. Preparatory work has begun on establishing index sites on major Irish salmon rivers in 2006 with emphasis on salmon rivers in Special Areas of Conservation.
6. Salmon scales were collected from salmon in the River Slaney, Munster Blackwater, Lough Currane (Waterville), Kerry Blackwater, River Corrib and the River Erriff salmon fisheries in 2006. Scale collections from a range of Donegal rivers have also been acquired in 2006.
7. Data from many catchments has been entered into the database and all data entered has been Geographical Information Systems (GIS) linked. Data uploaded to the database includes site location, eel distribution, presence or absence data, abundance and length frequency data where available**.**

Findings of interest:

1. Good survival of salmon caught & released by angling.
2. Salmon spawning areas are quite discrete and generally only account for a small percentage of any catchment area.
3. In many rivers the actual wetted area is greater than in the initial analysis using a national model to estimate width.
4. Surveys of juvenile stocks have been carried out in many catchments.
5. Work ongoing.
6. Work ongoing.
7. Available data on eel distribution and abundance nationally is variable in terms of quality.

What are the next steps?

All work programmes will be completed and reports prepared.

Project Title: The Northern Regional Fisheries Board (NRFB) Salmon Rivers Project.

(Northern Regional Fisheries Board Funded)

Remit of the project:

To survey the status of salmon populations in the ten major salmon rivers within the NRFB, and develop remediation programmes for damaged habitat in order to maximize juvenile salmon production in each catchment.

Why is this project being undertaken?

Under the Fisheries Acts, the NRFB has responsibility for the conservation, protection, development, management and promotion of the inland fisheries in its region. In order to deliver on these obligations for salmon the NRFB has identified the ten principal salmon rivers in the region which require a full assessment of stocks and identification of factors impacting on these stocks. Five are in the Letterkenny Fishery District, and the remaining five are in the Ballyshannon Fishery District. Habitat and electrofishing surveys commenced in 2005 and will cover a three year period. The survey results will provide data on the current status of stocks, identify habitat problems and remediation measures to be recommended where necessary.

Sponsors / person in charge of the project:

NRFB/Drs Martin O'Grady, Paddy Gargan and William Roche.

When is the project planned to be complete?

At the end of 2007.

Who will benefit from the project?

NRFB; CFB; anglers; National Salmon Commission; National Parks and Wildlife Service with regard to reporting obligations for salmon under the EU Habitats Directive; any other agency with an interest in salmon conservation and management or the freshwater environment.

When will the interim and / or final reports be available to the Board?

Interim report in early 2007, with a final report at end of 2007 or early 2008.

Cost of the project and source of funding:

Circa €50,000 per annum. The NRFB is providing all funding.

Who will the findings be made available to?

The NRFB.

Progress to date:

Because of the number of rivers and for logistical reasons this project is being conducted over a three-year period. Year 1 was in 2005 and the majority of the catchments were overflown and photographed. This library of photographs was linked to the Geographical Information Systems (GIS) and provided a catalogue of each catchment identifying the habitat type, potential survey locations, access points and identified the presence, type and extent of habitat problems. Electrofishing was conducted on the River Eany catchment and other relevant background data were collated. A site visit to the River Eany in early 2006 provided a habitat remediation

programme although little habitat repair work was required in the catchment. All 2005 data was tabulated and graphed. Year 2 was 2006 and the Eske, Owenea, Gweebarra and Lackagh catchments were surveyed. All data for these catchments is being collated.

Any findings of interest and to whom:

Juvenile salmon are generally well distributed in all catchments surveyed although numbers (densities) are variable. The presence of barriers to salmon migration in these rivers from the national wetted area study was confirmed.

What are the next steps?

Preparation of an interim report to assist the NRFB to deliver a programme of habitat remediation measures as required. Wider distribution of the report to fulfill other national reporting requirements.

Project Title: Tracking of Ferox Trout to Determine Spawning Location on the Lough Corrib Catchment.

(National Research Programme Funded)

Remit of the project:

Determine the spawning locations of ferox trout and provide information on their biology to contribute to the long term conservation of this important species.

Why is this project being undertaken?

Ferox trout are large lake trout known to be genetically separate from the normal brown trout stock. They have stayed genetically isolated with regard to spawning since the ice age circa 12,000 years ago. These fish are being heavily exploited and little is known of their biology or spawning locations in major Irish lakes. A radio telemetry project began in 2005 to tag ferox trout in Lough Corrib in an attempt to determine spawning locations with a view to protecting the stock. It is proposed to extend the study to a small number of other lakes with ferox trout in the long-term.

Sponsors / person in charge of the project:

The project is being conducted jointly by Dr Gargan in the CFB and Dr Greg Forde in the Western Regional Fisheries Board (WRFB).

When is the project planned to be complete?

Sixteen ferox trout were tagged in 2005, thirty two in 2006 and the project is due to be completed in 2007 with an additional 32 fish due to be radio-tagged.

Who will benefit from the project?

Both the WRFB and CFB wish to identify the primary spawning locations of ferox trout in the Corrib catchment so that this valuable trout stock can be conserved.

When will the interim and / or final report be available to the Board?

A final report will be available in 2009 as some of the fish which will be tagged in 2007 can be detected for a period of up to three years.

Cost of the project and source of funding:

The WRFB has purchased the radio receiver. The cost of radio tags are met from the Western Board and the National Salmonid Programme funded by the NFME. The total cost of the project over five years is approx €25,000.

Who will the findings be made available to?

The findings will be made available to the WRFB, CFB and the DCMNR.

Progress to date:

Of the 16 fish tagged in 2005, six were recorded in spawning rivers. Four fish were recorded in the Cong River. In winter 2006, 17 tagged fish (15 from 2006 and 2 from 2005) were recorded in the Cong River. Another ferox trout was detected in the Falomore River in the Maam Cross area.

Any findings of interest and to whom:

From the 2006 findings, the Cong River, with 17 tagged ferox recorded in October/November, appears to be the primary spawning location in the Lough Corrib catchment for ferox trout.

What are the next steps?

The results of this study indicate the importance of the Cong River as the primary spawning location for ferox trout, many of which enter the river from early September. Anglers are targeting the river for these large trout and they continue to fish after the end of the trout season in September, supposedly fishing for pike, however many large trout ferox are being killed. It is likely that, as a result of the findings of this study, the WRFB will seek to have a bye-law introduced on the Cong River to cease angling from September 1st as a conservation measure.

Inserting a radio tag.

A ferox trout of 18.5 lbs.

Project Title: Radio-tracking Study to Determine the Survival of Salmon Following "Catch and Release" by Angling.

(National Research Programme Funded)

Remit of the project:

To determine the survival to spawning of salmon caught by rod and line and released.

Why is this project being undertaken?

Because of the new salmon regulations being introduced for the 2007 season, approx 40 salmon rivers will be open for "catch & release" salmon angling only. No previous studies have been undertaken in Ireland on the success of catch & release and the subsequent survival of released salmon. This project is being undertaken to provide data on the success of "catch & release" in Irish rivers and to provide confidence and support for the use of the method.

Sponsors / person in charge of the project:

The project is being conducted by Dr Gargan.

When is the project planned to be complete?

Tagging of salmon began on a small scale in 2006. It is proposed to tag and release salmon over the 2007 & 2008 seasons.

Who will benefit from the project?

The results obtained from the project on the survival of salmon after catch & release will be important in assessing the effectiveness of the practice and the mortality associated with catch & release in Irish rivers. Based on the results, the Fisheries Boards and the DCMNR will be in a position to assess the appropriateness of having catch & release on certain rivers.

When will the interim and / or final report be available to the Board?

Salmon are being tracked up until late December 2006 and an interim report will be available in January 2007 (on the 2006 programme).

Cost of the project and source of funding:

The cost of the radio receivers, tags and other costs for the 2006 programme were approximately. €18,000. The project is funded by the CFB.

Who will the findings be made available to?

The findings will be made available to the DCMNR and the Fisheries Boards.

Progress to date:

To date 21 salmon were tagged on the Owenmore River in Co Mayo and 15 salmon on the River Feale in Co Kerry. All 36 salmon were detected one month after spawning. The majority of salmon moved upstream, some remained stationary while two moved downstream. A final assessment on the overall survival of released fish cannot be made until after spawning in December. Initial results indicate a very high rate of survival.

Any findings of interest and to whom?

The high rate of survival of released salmon will give confidence that the method of "catch & release" is effective as a conservation measure.

What are the next steps?

More salmon, including spring salmon will be tagged and released in 2007 and findings will be communicated to the DCMNR and Fisheries Boards.

Salmon being fitted with a radio-tag.

Releasing a radio-tagged salmon.

Project Title: Dynamics of Fish Populations in Irish Waters.

(National Research Programme Funded)

Remit of the project:

To gain an understanding of the complex changes which have taken place in many of our larger lakes as a consequence of cultural eutrophication problems, and the introduction of non-native fish and invertebrate species.

Why is this project being undertaken?

This project, now in its second year, has involved a very intensive survey programme on many waters in different Regional Fisheries Boards. A substantial body of information on phyto- and zooplankton, macroinvertebrates and fish has been compiled. The fish data compiled includes:

- Flesh samples for stable isotope analysis
- Fin clips from trout and coarse fish for genetic analysis

Currently laboratory analysis of samples has started. Detailed results/trends will not be available until next year.

Progress to date:

This project, now in its second year, has involved a very intensive survey programme on many waters in different regions. A substantial body of information on phyto- and zooplankton, macroinvertebrates and fish has been compiled. The fish data compiled includes:

- Flesh samples for stable isotope analysis
- Fin clips from trout and coarse fish for genetic analysis

Laboratory analysis of samples has started, but detailed results/trends will not be available until next year, 2007.

Sponsors / person in charge of the project:

This three year National Research Programme is being sponsored by the Central and Regional Fisheries Boards (€210,000) under the supervision of Dr Martin O'Grady.

Two full time Ph.D. students (B. Hayden and A. Gallucci) are engaged in this project. They have been supported by K. Delanty (CFB) and Regional Board staff for field work operations. This project is being jointly supervised by M. O'Grady and J. Caffrey (CFB).

A third Ph.D. student (M. Mullane) is also working on some of these waters in relation specifically to Zebra mussel populations. This project is not being funded by the Fisheries Boards. However the data compiled will be of very significant value to the fishery service.

Who will benefit from the project?

The Central and all of the Regional Fisheries Boards.

Any findings of interest and to whom?

These studies, in combination with other lake surveys carried out by the Central Fisheries Board at the behest of Regional Fisheries Boards, are indicating some interesting trends. To date they suggest the following:

- The abundance of roach in many lakes is linked to a cultural eutrophication problem. Once algal bloom disappear the roach population collapses.
- There appears to be no competition between roach and trout stocks for food in Lough Corrib.
- In contrast, stable isotope results suggest that, adult roach and small (30cm) trout in Lough Conn have very similar diets.
- Isotope analysis suggest that large (≥ 40cm) trout in Lough Conn appear to be feeding almost exclusively on roach.
- Zebra mussel populations can completely eliminate algal blooms despite continuing high discharges of phosphorus to these lakes.
- Many fish species (trout, roach and roach-bream hybrids) are feeding on Zebra mussels. These mussels have also been found in the stomachs of some pike and perch.
- Ducks (mallard, pochard and goldeneye) will feed extensively on zebra mussels.
- Following the elimination of algal blooms by zebra mussel populations, trout stocks tend to recover whether or not a roach population is present. Roach, where present, decline dramatically as already illustrated.
- The elimination of algal blooms is also having a significant impact on swan and great crested grebe populations, both of which are increasing significantly. In the case of swans, the regeneration of rooted aquatic plants (their food supply), explains their recovery. The increase in grebe numbers is probably because they can now see their prey (small fish) in the clear water.

What are the next steps?

A large volume of material needs to be analysed before further findings, of importance to the management of these waters, can be established. Some additional field work needs to be completed in 2007. Among the questions to be addressed are:

- Can we genetically identify lake trout born in different riverine sub-catchments.
- Have the roach and bream stocks in our waters a common genetic ancestry or are they a consequence of different introductions of these fishes to Ireland over several centuries.
- Have cyprinid hybrids a common parentage – i.e. in the case of roach/bream hybrids are the roach always the male parents and the bream the female element of the cross?
- Using stable isotope data can we establish the trophic level of different fish species in lakes? – analysis to date suggest that the interrelationships of fishes, in feeding terms, can be quite different in different waters.
- How has the zebra mussel impacted on other macroinvertebrates living in these waters?
- How important a food item are zebra mussels for different fish species?

Final report:

A further interim report will be available in 2007 with the final report issuing in 2008.

Project Title: Aerial Photographic/Fish Tracking Programme.

(Central Fisheries Board Funded)

Remit of the project:

To generate an aerial photographic database of value to all sections of the fishery service and track radio tagged fish.

Sponsors / person in charge of the project:

The Irish Air Corp is providing a helicopter and crew to service these projects at no cost to the Fisheries Boards. Dr Martin O'Grady is compiling the aerial photographic database and assisting with the aerial aspects of radio tracking programme.

Why is this project being undertaken?

There are a number of objectives. They include:

- Providing a national aerial photographic database for all channels of angling importance in Ireland. When this has been compiled it is proposed to input these data as a layer in the fisheries GIS database.
- Compiling a similar database for all lakes of fishery importance.
- Photographing all shoreline locations of sea angling importance.
- Providing material for all important transitional waters (estuaries and salt marshes) which will aid colleagues in the research section involved in mapping and surveying such areas
- Provide essential images to illustrate a range of publications, including "Channels and Challenges" and the book currently in preparation (Irish Brown Trout).
- Provide database of aerial photographs which illustrate physical damage to river channels for restoration work under Water Framework Directive.

Who will benefit from the project?

These data have already, and will in future be of significant benefit to all sections of the Fisheries Service. The following examples serve to illustrate their usefulness to date:

- They have proved very useful in calculating the nature and extent of habitat degradation problems in river catchments. They have already been used to design riverine enhancement programmes in a number of regions.
- They have proved useful in mapping the extent of invasive plant species in Lough Corrib.
- These data can, and already have, helped to pin point single point pollution sources in some rivers.
- Many of our more important transitional waters have now been photographed from the air – this will provide researchers with an important mapping tool.
- The use of a helicopter has proved successful in locating radio tagged Ferox trout in Lough Corrib – all of the spawning areas in Lough Corrib's sub-catchments (circa 200 km) can be scanned for the presence of radio tagged fish in one day. Once located from the air their movements can subsequently be monitored from the ground.

Progress to date:

- Most sea angling shoreline locations of importance have been photographed and this material has been supplied to the Marketing Division of the Central Fisheries Board and some Regional Fisheries Board personnel on request.
- Approximately 50% of all important angling lakes have been photographed. Some of these pictures have already been used by the Central and Regional Fisheries Boards for marketing purposes.
- Circa 40% of our important riverine catchments have been photographed. These data have been used by both Central and Regional Fisheries Board personnel for a variety of purposes.
- Circa 60% of all important transitional waters have been photographed. These are currently being used as an aid in the UK/RoI Fish in Transitional Waters Project for the Water Framework Directive (WFD).
- The aerial radio tracking programme for Ferox trout is in its second year. It has helped to pin point the spawning locations of these fish – mostly in the Cong River. It is hoped to continue this exercise in the autumn of 2007 and on to the end of the programme in 2009.
- A wide range of aerial photographs were used to illustrate the Boards publication entitled "Channels and Challenges". Every section in the Central Fisheries Board have used individual aerial photographs to embellish reports.

What are the next steps?

As this programme relies entirely on the goodwill of the Air Corps and the vagaries of the Irish weather a precise future planning exercise is not possible. It is hoped that:

- All important river catchments and lakes can be photographed over the next 3 to 5 years.
- Photographic images of all important transitional waters should be completed in 2007.
- The tracking of radio tagged Ferox trout in Lough Corrib will continue to the end of this programme (2009). Tracking radio tagged adult salmon released by anglers in the Owenmore and Feale Rivers may commence in 2007.
- The outstanding aerial photos required to illustrate the pending publication on Irish Brown Trout will be compiled in 2007.
- We will try to accommodate additional requests from Central and Regional Fisheries Board personnel for specific projects.

Project Title: Irish Brown Trout Programme.

(National Research Programme Funded)

Remit of the project:

Write a book on Irish Brown Trout to educate Irish anglers in relation to the biology and ecology of this important species and to highlight the rationale for Central Fisheries Board policy in relation to the management of this fish.

Sponsors / person in charge of the project:

This two year project, which commenced in 2006, is being sponsored by the Central and Regional Fisheries Boards at a cost of €25,000. This book is being researched and written by Dr Martin O'Grady. The graphics will be supplied by Myles Kelly.

Progress to date:

A first draft of the text is nearing completion. A considerable number of photographs have still to be taken. Relevant graphics will be drawn in 2007.

Final report:

This project should be completed by the end of 2007 with the end product being available for printing early in 2008.

Who will benefit from the project?

This is an educational product aimed at Fishery Board staffs, anglers and others with aquatic environmental interests.

Who will the findings be made available to?

Copies will be made available to all staff and the book will be on sale to the general public. This publication will also highlight the Fisheries Boards' valuable role in managing this resource.

Project Title: Status of the Fish Stock on Lough Bridget, Co Clare.

(National Research Programme Funded)

Remit of the project:

The aim of the project was to assess the status of fish stocks in Lough Bridget.

Why is this project being undertaken?

Local anglers have reported a significant decline in the fish population, especially that of bream.

Sponsors / person in charge of the project:

The project is being conducted under the National Research Programme, jointly funded by the Central Fisheries Board and Regional Fisheries Boards. The project is being coordinated by Dr Joe Caffrey and conducted by Dr Silvana Acevedo (Research Officer) and Kevin Gallagher, B.Sc. (Technician), with the assistance of ShRFB staff.

Progress to date:

Lough Bridget was surveyed over 3 days in August 2006. A sharp declined in fish stocks, especially of bream, were recorded when compared with previous survey results. Changes in the fish community structure were also observed.

When is the project planned to be complete?

The preliminary survey provided basic information on fish stocks and the overall condition in Lough Bridget. Long term and more detailed quantitative information on fish biomass, stock density and structure, and species distribution is required in order to properly monitor changes over time and to determine what anthropogenic activities, if any, may be causing or contributing to these changes.

Who will benefit from the project?

The findings will inform management plans for the fishery and will be of benefit to the angling community who use Lough Bridget.

What are the next steps?

The project reports will be forward to the ShRFB.

When will the interim and / or final reports be available to the Board?

The report from the preliminary survey will be presented in December 2006.

Cost of the project and source of funding:

The project has been funded under the NRP. It is one of the projects that are being funded under F103 (coarse fish and pike).

Who will the findings be made available to?

The findings will be available to CFB and ShRFB. All the information compiled will be stored in CFB database, adding to the reservoir of information on fish stock in different Irish watercourses. Furthermore, significant results will be available to the scientific community throughout publications in peer reviewed journals.

Lough Bridget, Co. Clare.

Project Title: Bream (*Abramis brama*) Movements In The River Suck.

(National Research Programme Funded)

Remit of the project:

The aim of the project is to investigate the status, distribution and movements trends of River Suck bream using radio tags.

Why is this project being undertaken?

In the 1970s the River Suck was renowned among Irish, but more particularly among English, anglers for the quantity and quality of the bream that it supported. In the 1990s and early 2000s the picture changed. The large shoals of bream that were the mainstay of the tourism industry in this part of the country apparently vanished. With them went the tourist anglers. The reason for the apparent demise in bream stocks in the river remains unclear. This project aims to locate the stocks, tag representative fish and follow their movements within this large river.

Sponsors / person in charge of the project:

The project is being conducted under the National Research Programme (NRP), jointly funded by the Central Fisheries Board (CFB) and Regional Fisheries Boards (RFBs). The project is being coordinated by Dr Joe Caffrey and conducted by Dr Silvana Acevedo (Research Officer) and Kevin Gallagher, B.Sc. (Technician), with the assistance of ShRFB staff.

Progress to date:

The first phase of this work has already commenced (October 2006) and a number of bream from 'The Bends' at Ballyforan have had radio transmitter tags inserted into their body cavities. The tags emit radio signals that can be tracked by Board staff as they patrol the river.

When is the project planned to be complete?

The life span of the tags is 18 months. Hence, this phase of the project, including data processing and analysis, will be completed by June 2008.

Who will benefit from the project?

The tracking results will shed light on aspects of the ecology of bream previously unknown in large Irish river systems. The findings will also help to inform management plans for the fishery and will be of great benefit to the angling community who fish the River Suck. Furthermore, the findings will help to restore the tourism industry in the River Suck that has suffered since 1990s.

What are the next steps?

The data will be analysed and interpreted as they become available. Pertinent results will be communicated to the ShRFB. These should inform ongoing management programmes for the river and for coarse fisheries generally.

When will the interim and / or final report be available to the Board?

The interim report will be completed by February 2007 and final report by June 2008.

Cost of the project and source of funding:

The project has been funded under the NRP. It is one of a number of projects that are being funded under F103 (coarse fish and pike).

Who will the findings be made available to?

Primarily, the findings will be available to CFB and RFBs. All the information compiled will be stored in the CFB database, adding to the reservoir of information of coarse fish movements in different Irish watercourses. Furthermore, significant results will be available to the scientific community throughout publications in peer reviewed journals.

Bream about to be tagged.

Project Title: Status of Fish Stocks in the Rooskey to Lough Forbes Section of the River Shannon.

(National Research Programme Funded)

Remit of the project:

Assessment of fish stocks in the River Shannon downstream of Rooskey.

Why is this project being undertaken?

Since the installation of the Masonite plant at Drumsna, Co. Leitrim in 1996, the local angling communities have expressed concern due to falling catches. The objective was to assess the status of fish stocks present in the area and to determine if there had been any significant changes in fish behavior or abundance since Masonite was commissioned. In relation to the River Shannon, this data will eventually result in an evaluation of fish stocks along the entire river, examining changes and behaviors in fish stocks over the past ten years in our largest river system.

Sponsors / person in charge of the project:

The project was sponsored under the NDP and conducted with the assistance of the ShRFB.

Who will benefit from the project?

The angling community will have been provided with scientific conclusions addressing their initial concerns, and the Boards will have quantitative information on fish stocks in this part of the River Shannon system. As with all previous fish surveys undertaken, the data will be stored in a database for further comparisons with future surveys.

When will the interim and / or final report be available to the Board?

March 2007.

Bream from the Rooskey area.

Cost of the project and source of funding:

The project is funded under the NRP.

Who will the findings be made available to?

The Shannon Regional Fisheries Board.

Project Title: Status of the Fish Stocks on the River Shannon in Portumna.

(National Research Programme Funded)

Remit of the project:

To assess the coarse fish stocks in the River Shannon at recognised angling match stretches in the vicinity of Portumna.

Why is this project being undertaken?

In the 1970's, 80s and early 90s the match stretches in Portumna were producing a great quantity of quality coarse fish. In recent years many Irish and international anglers have been reporting a decline in the numbers and size of coarse fish and, in particular, in the numbers of bream and pike being caught at the match stretches in Portumna. This project aimes to assess the Coarse fish populations at three match stretches (Bulla Run, Salmon Run, Meelick Run).

Sponsors / person in charge of the project:

The project is being conducted under the National Research Programme (NRP), jointly funded by the Central Fisheries Board (CFB) and Regional Fisheries Boards (RFBs). The project is being coordinated by Dr Joe Caffrey and conducted by Dr Silvana Acevedo (Research Officer) and Kevin Gallagher, B.Sc. (Technician), with the assistance of Shannon Regional Fisheries Board (ShRFB) staff.

Progress to date:

The first phase of this project, the preliminary fish stock assessment, was completed in August, 2006.

When is the project planned to be complete?

A report on the results of the preliminary fish stock assessment is currently being produced and will be presented in January 2007.

Who will benefit from the project?

The findings will inform management plans for the fishery and will be of great benefit to the ShRFB and to the angling community who use the river in the vicinity of Portumna.

What are the next steps?

The project report will be forward to ShRFB

When will the interim and / or final report be available to the Board?

The interim/final report will be presented in January 2007.

Cost of the project and source of funding:

The project has been funded under the NRP. It is one of a number of projects that are being funded under F103 (coarse fish and pike).

Who will the findings be made available to?

The findings will be available ShRFB. All the information compiled will be stored in a CFB database, adding to the reservoir of information of coarse fish stocks in different Irish watercourses. Furthermore, significant results will be available to the scientific community

Project Title: Status of Fish Stocks in Inniscarra Reservoir.

(National Research Programme Funded)

Remit of the project:

To assess the status of fish populations present in Inniscarra Reservoir, Co. Cork.

Why is this project being undertaken?

Inniscarra Reservoir is one of the most important coarse fisheries in the south west of Ireland. In order to investigate declining angling catches, particularly the reduced occurrence of large bream (for which this water is renowned) the Central Fisheries Board (CFB), in conjunction with the South Western Regional Fisheries Board (SWRFB), conducted a fish stock survey of the reservoir.

Sponsors / person in charge of the project:

The project was conducted under the National Research Programme (NRP).

Who will benefit from the project?

The angling community in the area, 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 is the project planned to be complete?

March 2007.

Cost of the project and source of funding:

Funding is provided under NRP.

Inniscarra Resevoir.

Who will the findings be made available to?

The South Western Regional Fisheries Board.

Project Title: Status of Fish Stocks in Lough Ramor.

(National Research Programme Funded)

Remit of the project:

To conduct an assessment of the fish populations present in Lough Ramor, Co. Cavan.

Why is this project being undertaken?

Lough Ramor in Co. Cavan is one of the largest and most important coarse fishing lake in the area. It was, therefore, surprising to note that it had not been scientifically surveyed previously.

Sponsors / person in charge of the project:

The project was conducted under the National Research Programme (NRP), with the assistance of the Eastern Regional Fisheries Board (ERFB).

Who will benefit from the project?

The angling community in the area, tourist anglers and the tourism industry in the area will directly benefit. The information will also be of use to the CFB and the ERFB.

When is the project planned to be complete?

March 2007

Cost of the project and source of funding:

Funding is provided under the NRP.

Lough Ramor, Co. Cavan.

Who will the findings be made available to?

The Eastern Regional Fisheries Board.

Project Title: National Marine Sportsfish Programme.

(National Research Programme Funded)

Remit of the project:

To carry out research into certain marine sportsfish.

- Analysis of trends in the bass angling fishery.
- Analysis of trends in the flounder angling fishery.
- Study the biology of mullet species in Irish waters.
- Study the biology of smooth-hound in Irish waters.
- Study the biology of gilthead bream, a new arrival to Irish waters.

Why is this project being undertaken?

To determine trends in distribution, abundance or life history of these species. To further our understanding and provide scientific information for managing these fisheries. Pure and/or applied research is an important part of the function of the Central Fisheries Board (CFB) Research Division. Each project has specific management and research aims as detailed below:

1. **Bass** is one of the most valuable shore angling species in Ireland particularly along the coast from Galway/Clare through Kerry, Cork, Wexford and extending to Dublin and further north to Carlingford. Bass are a very slow growing and long-lived species. Adults do not mature until they are six years old. Having been in decline for decades due to unsustainable commercial exploitation legislation was introduced in 1990 to protect the species. Bass is one of the only species in Ireland to have specific legislation supporting its protection and conservation. An angling fishery offers the most sustainable fishery option for the species and the current legislation confines exploitation to anglers. This desk study examined the annual distribution and abundance of specimen bass to determine trends over the past 50 years.
2. **Flounder** is probably the most important species for the shore angler in Ireland. It is caught throughout the country at most times of the year being particularly prevalent in estuaries and in most inshore/beach locations. It is an important species for competitions and features regularly in catches. Reports from different sources suggest that the species is in decline. Data for rod-caught flounder are limited, which limits analysis of longer term trends. This desk study examined the annual distribution and abundance of specimen flounder to determine trends over the past 50 years.
3. **Several mullet** species are available to anglers in Irish waters. The **common mullet (grey or thick-lipped mullet)** are habitual residents of estuaries and become available to shore anglers from April onwards when water temperatures begin to increase. They reside in estuaries until October. The grey mullet is an excellent sportsfish species and is becoming a popular species for anglers wishing to try flyfishing at sea. The species could offer suitable alternatives to game anglers where freshwaters conditions are not suitable. Knowledge of the biology of the species and its potential is essential to proper management of the fishery. This desk study examined the annual distribution and abundance of specimen grey mullet to determine trends over the past 50 years. Two other species of mullet, the **golden grey mullet** and the **thin-lipped mullet** have been recorded recently in Irish waters. The golden-grey mullet was first recorded in Ireland in 1995 but

this species, which is usually found in abundance in the Mediterranean, is becoming more common and widespread here. Monitoring its occurrence and determining its lifecycle in Irish waters will provide valuable information on any changes in the ecology of Irish estuaries and a means to monitor possible climate change trends. Climate change will impact on all species and the presence of species such as golden grey mullet may well provide suitable indices of change. Anglers along the south coast are currently taking the species and this study collated all records (literature and specimen fish data) for the species in addition to direct sampling using nets at various locations. Thin-lipped mullet are common in warmer climates but occasional specimens have been recorded in the past. Recently various life stages of the species were recorded along the east coast which suggest that it may be colonising here. Any available data for thin-lipped mullet in Ireland has been collated. Monitoring of mullets is being undertaken in conjunction with a parallel study being undertaken by Dr James King on the status of various Irish estuaries.

4. **The Smoothhound** covers two species of the shark family, the starry smoothound and the smoothound, which are taken by anglers mainly on the east coast from May to October. Both are taken by shore anglers and to a lesser extent by boat anglers. The species has no commercial importance. This is a small shark (generally in the 1 kg to 5 kg size range), which provides good sport for the angler at certain locations. The Irish record fish is 7.5 kg. Little is known about the status of the smoothhound and this project is being undertaken to examine the distribution and ecology of the species. This will provide advice for management. Specimen fish records for the past 20 years since the smoothhound was first included on the listings have been analyzed. In addition data were collected by CFB/ERFB staff on forty rod-caught fish which were subsequently tagged and released. This tagging was part of the CFB Marine Sportsfish Tagging programme and increased the number of smoothound tagged to date by 200%.

Smoothound Tagging.

5. **Gilthead bream** was first observed in Irish waters about five years ago. It is an excellent sportsfish which is also a prized fish for the table. Like the golden grey mullet it is an exotic species which is normally confined to warmer waters like the Mediterranean although it has become established along the south coast of England. Monitoring its occurrence and determining its lifecycle in Irish waters will provide valuable information on any changes in the ecology of Irish estuaries and also a means to monitor possible climate change trends. Climate change will impact on all species and the presence of species such as the

gilthead and golden grey mullet may well provide suitable indices of change. Anglers along the south coast are currently taking the species and this study collated all records (literature and specimen fish data) for the species in addition to direct sampling using nets at various locations. Age and growth data have also been collected.

A Gilthead Bream.

Sponsors / person in charge of the project:

National Research Programme funded by National Fisheries Management Executive (NFME). Dr William Roche is the CFB staff member.

When is the project planned to be complete?

This programme is a series of projects organized by species or by group of species. Projects 1 and 2 are desk studies which are almost complete. Projects 3 to 5 are longer term projects which require data collection over a period of not less than three years as the occurrence of these species is seasonal and a short-term study will not provide substantive data. Thus the project will be ongoing over the next number of years.

Who will benefit from the project?

Research outputs further scientific knowledge, and provide scientific data for fisheries management purposes. Apart from producing desirable research these projects are structured to provide management information by utilizing or acquiring "hard" data. The projects will benefit researchers, managers and anglers.

When will the interim and / or final reports be available to the Board?

Projects 1 and 2 are desk studies which will be complete in early 2007. Projects 3 to 5 are longer term projects for which an interim report will be available in early 2007.

Cost of the project and source of funding:

€10,000 in Year 1; National Research Programme funded by NFME & CFB.

Who will the findings be made available to?

It is intended to publish the findings from all projects in article or scientific paper format which would be available to all interested parties. Summaries could be incorporated into the CFB website.

Progress to date:

1. This desk study examined the annual distribution and abundance of specimen bass to determine trends over the past 50 years. All data are tabulated, mapped and analysed.
2. This desk study examined the annual distribution and abundance of specimen flounder to determine trends over the past 50 years. All data are tabulated, mapped and analysed.

3. This study combines a desk study and direct sampling. Thick lipped mullet data are tabulated and mapped. Samples collected in 2006 require processing.
4. This desk study examined the annual distribution and abundance of specimen smoothhounds to determine trends over the past 20 years. All data are tabulated, mapped and analysed. Forty smoothhounds of varying sizes have been tagged and released. Any returns will indicate the migration patterns of these sharks.
5. Gilthead bream distribution is being collated from available data. Selected anglers have been requested to collect gilthead data and a general appeal for data has gone out on the CFB website. Some data for 2006 has been collated while some further processing is required.

Any findings of interest and to whom:

1. Bass – specimen bass numbers seem to be relatively stable in recent years.
2. Flounder – from Irish Specimen Fish Committee (ISFC) data it is evident that the majority of specimen flounder are taken along the south coast. These data also suggest a decline in flounder numbers or a lack of larger fish.
3. Mullets – Grey mullet have been recognized as a good sports species. The numbers of specimen mullet taken in Dublin has increased substantially during this decade.
4. Smoothhounds – The ISFC database suggests these fish had a mainly east coast distribution but the largest fish (by length) came from the south coast, with summer availability to angling peaking in June and they prefer crab bait.
5. Gilthead bream – they have a wider distribution and are more common than originally thought and are a good sports angling species with crab baits being best. They are not as large as English rod caught fish to date.

Findings are of interest to angling managers, promoters and the angling sector generally. Also of interest to the scientific community, particularly in fisheries sector.

What are the next steps?

These activities and outputs are intrinsically linked with the CFB Angling Division and it is essential that strong links are maintained between the Research and Angling Divisions to maximize relevant interaction and outputs from overlapping programmes.

1. Produce a bass report and prepare an article or paper for publication in a magazine or journal. Explore the possibilities of linking with the ongoing Marine Institute bass programme.
2. Produce a flounder report and prepare an article or paper for publication in a magazine or journal. Consult to develop management measures.
3. Finalise difficult identification features of the mullet species to allow for positive species identification, particularly at juvenile stages. Prepare a paper on the distribution of the three species. Collect additional data in conjunction with Dr King's programme on estuaries.
4. Prepare a report on smoothhound. Publish an article or paper on this species. Explore potential linkages with recently commenced academic study on both species initiated in University College Dublin (UCD)/MI. Continue sampling and tagging in 2007.
5. Finalise an interim report on gilthead bream and seek additional data from anglers through web appeals and other publicity. Publish a paper on the general distribution and basic biology of Irish gilthead bream. Continue programme of direct sampling in 2007.

Additional funding will be required over the next five years to continue this series of projects to

Project Title: Provision of Data on Angler-caught Cod.

(Central Fisheries Board Funded)

Remit of the project:

To sample and collect population data on cod taken by anglers in selected Irish fishing boxes.

Why is this project being undertaken?

Cod stocks are much reduced and significant management measures are in place to conserve stocks in commercial fisheries in the EU. "SGRN (Subgroup of Research Needs of the European Commission) recommended that the recreational species listed in Appendix XI should contain cod (*Gadus morhua*) in Areas III, IV, V, VI and VII (given that it is in a recovery plan in these areas) and that pilot studies be carried out to assess the feasibility of collecting such data." This requires data to be compiled on cod taken by anglers in various sea fisheries boxes (administrative units) in Europe, including the Irish fishery. The Commission relies on commercial fisheries to provide much of the data it uses for stock assessment purposes. Cod recovery plans extinguish legitimate commercial fishing for the species and an alternative data source is anglers. This project will provide data on the numbers and sizes of cod being taken, some information on stock status and will provide data on the distribution and availability of cod to anglers. These data will assist in stock assessment and are likely to put some perspective on the angling fishery. The Marine Institute (MI) is responsible for supplying these data, and together with the CFB is working to deliver this project.

Sponsors / person in charge of the project:

Marine Institute/Peter Green/Dr William Roche are the three key stakeholders in the project.

When is the project planned to be complete?

2006 was the first year of this project. Work commenced in June when initial contacts were made with boat anglers through their respective angling clubs. Year 1 is a feasibility study to assess the usefulness of this approach. Following a review, the duration of the project will be decided. As with any monitoring project it is likely to be a long-term project as the value will be in the long-term dataset, which will provide an ongoing relative assessment of stocks.

Who will benefit from the project?

EU Commission; commercial and angling sector; Marine Institute; Central Fisheries Board; data will be available to aid in the cod management process.

When will the interim and / or final reports be available to the Board?

An interim report will be available in early spring 2006.

Cost of the project and source of funding:

Cost will be minimal as it is mainly an administrative project to date. The MI will fund the project from EU funding as and when project develops and requires more on-the ground input. Funding will be available for any new staff and non-pay costs that may arise.

Who will the findings be made available to?

All those mentioned above. As data will be going to the EU it will most likely become available to a wide audience through EU portals such as research websites etc.

Progress to date:

These data are being collected on a voluntary basis by anglers. Reliable angling club contacts have been selected and specially devised recording cards (printed by the MI) and measuring boards have been circulated to these individuals. Regular follow-up calls have been made to enquire about progress. Anglers have returned cards and data are currently being analyzed.

Any findings of interest and to whom?

Returns were poor as cod seem to be scarce in rod catches. Few cod were taken by anglers in Donegal. Cod numbers were greater in the Irish Sea. These data are of interest to the beneficiaries mentioned above and to the general angling community.

What are the next steps?

Data analysis and preparation of feasibility report.

Project Title: Satellite Tagging of the European Eel to Determine their Spawning Location.

(External Funding)

Remit of the project:

This new project was commenced to investigate the spawning location of European eels using satellite technology.

Why is the project being undertaken?

The spawning location of eels at sea has never been found and this project aims to track eels in the Atlantic Ocean using satellite technology to gain information of migration and spawning location. Large eels are being fitted with miniature satellite tags on their seaward migration. The tags record depth, temperature and light on the eel migration route across the Atlantic. Different tags are programmed to pop-off at differing time periods up until April 2007. The objective is to track the migration route across the Atlantic and see if the final tags pop-off in the Sargasso Sea next April. If so, the tags will float to the surface and connect with the Argus satellite which will download the data on depth etc and give a GPS position of the tag. A research vessel is scheduled to be in the Sargasso Sea in April and if a tag is registered in the area, the vessel will trawl in the area to try and catch spawning eels. This information would be crucial to understanding the reasons for the collapse of European eel stocks. There are 22 tags available, costing €4,000 each. The first three tags were fitted to eels at the Galway eel weir on 29th October and the eels were released on 30th October into Galway bay. A further 19 eels from the Corrib, Shannon and Lough Neagh catchments were taken out by boat to outer Galway bay and released on November 26th.

Sponsors / person in charge of the project:

The project is being conducted jointly by scientists from the Danish Institute for Freshwater Research, The Norwegian Institute for Fisheries Research, the Central and Western Fisheries Board and the Marine Institute. The person in charge of the project is Dr Kim Aaerstrup from the Danish Institute for Freshwater Research working with Dr Gargan of the Central Fisheries Board.

When is the project planned to be complete?

Tags are programmed to pop-off eels from November 2006 up to April 2007 and the project will be complete after in late April.

Who will benefit from the project?

European eels have seen a very severe collapse in the past decade and the reason for the collapse in not understood. If the migration route and spawning location of eels at sea can be found, scientists can begin to shed light on the reasons for the stock collapse of European eels. A wide range of national and international agencies will benefit from the research.

When will the interim and / or final reports be available to the Board?

A final report will be available in the late spring of 2007.

Cost of the project and source of funding:

To date there has been no cost to the Board other than Dr Gargan's time and the support and co-operation of staff from the Western Regional Fisheries Board.

Who will the findings be made available to?

The findings will be published in a peer reviewed scientific journal and will be made available to the European Commission.

Inserting an Eel tag.

The tagged Eel back in the water.

Project Title: Digitise, Collate and Compile Archival Fish Stock Data for Lough Sheelin.

(External Funded)

Remit of the project:

Under this project a biologist has been employed on a one year contract to digitise and help analyse all of the fish stock survey data for Lough Sheelin – this water has been surveyed annually for the last twenty eight years.

Sponsors / person in charge of the project:

The Department of Communications, Marine & Natural Resources are meeting the wage costs through a Stagaire Project under the supervision of Dr M. O'Grady.

Why is this project being undertaken?

Digitisation of the data will afford us the opportunity to analyse this longterm data set in greater detail. To the authors knowledge this is probably the longest monitoring data set for fish stocks in a European lake. The processed data will be of considerable assistance in reviewing management strategies for Irish lake fisheries and will benefit a range of agencies including the Central Fisheries Board and the Shannon Regional Fisheries Board (ShRFB).

Who will benefit from the project?

The digitised data can feed into the C.F.B.'s national data base. Results can be made available to the Shannon Regional Fisheries Board. The major ecological changes in Lough Sheelin over the last 30 years – arterial drainage, eutrophication, roach introductions and the arrival of Zebra mussel populations – are in many ways a microcosm of what has happened throughout the Shannon Catchment, Ireland's largest river.

Progress to date:

This digitised data base will be completed on schedule.

Project Title: Stream Enhancement Exercises.

(External Funded)

Why is the project being undertaken?

A range of stream enhancement projects were designed by Dr Martin O'Grady in 2006. This is a collection of small stream enhancement operations conducted for specific purposes locally.

Sponsors / person in charge of the project:

Sponsors for individual projects were wide ranging. They included Regional Fisheries Boards, County Councils, Office of Public Works, Engineering Consultancy Firms and private fishery owners.

Why is this project being undertaken?

The broad objective for all of these projects was the same – restore natural channel forms. The nature of the design programmes was very varied because some sites were in the countryside while other projects were entirely within urban zones.

What are the next steps?

Demand for design exercises will continue. There has already been three request for our involvement in this area in 2007. It is likely that more requests will follow during the year (2007).

Who will benefit from the project?

Salmon and trout populations.

Project Title: Assessment of Salmon Stocks in the Slaney River and Avoca River Catchments.

(External Funded)

Remit of the project:

To contribute to the delivery of the fisheries elements of multi-partnered European union (EU) INTERREG projects in:

a. The Slaney catchment.
b. The Avoca catchment.

Why is the project being undertaken?

a. The River Slaney, which flows into the sea at Wexford, is arguably the best known spring salmon fishery in Ireland. Over the past twenty years the fishery has been in decline with poor returns to both the rod and the commercial fisheries. This decline reflects a general decline in spring salmon stocks internationally. This project aims to recover the valuable Slaney salmon stock through a series of measures in the freshwater environment. Included under this are juvenile salmon stock monitoring work and an extensive programme of physical habitat works.

b. The River Avoca is another major catchment on the east coast of Ireland. It has been described as the most polluted river in Ireland due to acid mine drainage from the now abandoned mines entering the river near Avoca village. Despite the serious water quality/toxicity problems which have existed for over 200 years salmon and sea trout and other species still inhabit the wider catchment, which is one of the most aesthetically unspoiled catchments in the country. The fishery element of this project aims to alert the public to the potential of the catchment, its fisheries options and to provide the relevant fisheries monitoring and advice.

Sponsors / person in charge of the project:

a. Various interests in the catchment came together to form the Slaney Rivers Trust which convenes under the Celtic Rivers Trust Partnership (CRT). The Eastern Regional Fisheries Board (ERFB), Central Fisheries Board (CFB) and South East Regional Tourism Authority (SERTA) are Irish partners in the partnership project together with Welsh interests. CRT was successful last year in gaining EU funding under the Ireland/ Wales INTERREG IIIA Programme which will be spent from 2005 to 2007. The project is being driven by the Slaney Rivers Trust and the CFB person involved is Dr William Roche.

b. The Celtic Copper Heritage is an INTERREG IIIA funded project with Welsh partners. It is community based with a wide remit including the preservation of mining heritage. One of the main purposes of the project is to explore ways in which all stakeholders can engage with the important mining heritage of Avoca to assist in the economic regeneration of the area. This project has been a central part of ERFB activity for several years and is being driven by Inspector Josie Mahon. The CFB person involved is Dr William Roche.

When is the project planned to be complete?

a. 2007
b. 2008

Who will benefit from the project?

a. All stakeholders including anglers, the Eastern Regional Fisheries Board, the South East River Basin District (SERBD).
b. All stakeholders including the local community, anglers, the Eastern Regional Fisheries Board, the South East River Basin District

When will the interim and / or final reports be available to the Board?

a. Final report in 2007 (reports will embrace the entire project)
b. Final report in 2008 (reports will embrace the entire project)

Cost of the project and source of funding:

a. The budget for the overall Slaney project is €221,000. The CFB is a direct contributor to the project (pay and non-pay) and this contribution goes to make up a portion of the in-kind contribution required to draw down EU funding.
b. The budget for the Avoca project is €365,000. The CFB is a direct contributor to the project (pay and non-pay) and this contribution goes to make up a portion of the in-kind contribution required to draw down EU funding.

Who will the findings be made available to?

All stakeholders and the funding agency

Progress to date:

a. The Slaney Rivers Trust has developed a greater local awareness of the river through community involvement, promoting a self-sustaining river trust, promoting "catch and release" of salmon and provided angling instruction for a new generation of anglers. An extensive amount of instream and bankside habitat work has been carried out under the supervision of Dr Martin O'Grady. Some of this work was identified in the course of overflights of the catchment and the remainder was identified during an extensive electrofishing survey of the catchment conducted in 2005. Salmon scale data collection has improved and more data is now available.
b. Awareness of the potential of the Avoca to contribute to the local economy has been created by highlighting the natural scenic beauty of the catchment, its mining heritage, and the fishery potential. A report by experts from Newcastle University, funded by ERFB, detailing specific proposals to ameliorate the severe impact of the acid mine drainage has been published. A wider review of all options prompted by the Newcastle report, and funded by the Department of the Environment, Heritage and Local Government (DEHLG) at a cost of €500,000 is being conducted. A project officer has been appointed. A bye-law prohibiting the taking of salmon or sea trout by any means has been implemented.

Any findings of interest and to whom:

a. Fishery officers report greater numbers of spawning salmon on rehabilitated spawning beds in the upper reaches of the River Slaney catchment.

b. A feasibility study testing the most likely remedial option was very successful at removing toxic metals. Considerable progress has been made in relation to the development of signed walkways through the mine site to develop visitor access and ultimately to bring greater numbers of tourists to the area. A major fish kill occurred in late April/early May 2006 when many salmon and sea trout smolts were killed on their downstream migration to the sea during a period of low water.

What are the next steps?

a. Monitoring the impact of the remedial measures on River Slaney salmon and publication of the results.

b. Highlighting the feasibility of the treatment while at the same time emphasizing the urgency for remedial measures given the ongoing fish kill problems. The ERFB has been to the fore in this regard and developed the "Avoca salmon story" for the Avoca project website.

Project Title: An Investigation of Salmon Smolt Impingement at six ESB Thermal Generating Stations.

(External Funded)

Remit of the project:

The Electricity Supply Board (ESB) and Dublin Bay Power Plant (DBPP) were authorised by the Department of Communications, Marine and Natural Resources (DCMNR) to operate the cooling water intakes at six thermal generating power stations without installing fine mesh salmon smolt screens during the period March to May, 2004 – 2006. In the absence of smolt screens, power station intakes have the potential to draw in migrating salmon smolts on route to sea, leading to physical damage or mortality. For this reason, the Central Fisheries Board (CFB) and Regional Fisheries Boards were commissioned by the ESB and the DBPP to carry out a fish impingement study at each power station during the period of the derogation.

Why is the project being undertaken?

To investigate the level of salmon smolt impingement and mortality at coastal power station intakes to determine if the derogation issued to allow operation of intakes without smolt screens will impact on migrating salmon smolts at any of the estuary locations.

Sponsors / person in charge of the project:

The project was coordinated by Dr Gargan with the support of Central and Regional Fisheries Board staff.

When is the project planned to be complete?

The project was completed in September 2006 and a final report issued.

Who will benefit from the project?

A report was submitted to the DCMNR, who will determine, based on the report findings, whether smolt screens are required at the intakes of coastal thermal generating stations.

When will the interim and / or final reports be available to the Board?

A final report was made available in September 2006.

Cost of the project and source of funding:

The project was funded by the ESB and a cost of €210,000 over the period 2004 – 2006.

Who will the findings be made available to?

The findings will be made available to the DCMNR, Central and Regional Fisheries Boards and the ESB.

Progress to date:

68 fish species were recorded from all power stations surveyed over the three years. 54 salmon smolts were recorded over the three year spring survey, with 46 salmon smolts recorded at Great Island power station. Based on these results, the low number of salmon smolts indicates that the absence of smolt screens at the six power stations under investigation has not had a significant impact on migrating salmon smolts during the period March to May (2004 – 2006).

Any findings of interest and to whom:

Five species of conservation value, namely salmon (*Salmo salar*), sea trout (*Salmo trutta*), smelt (*Osmerus eperlanus*), sea bass (*Dicentrarchus labrax*) and river lamprey (*Lampetra fluviatilis*) were recorded.

What are the next steps?

The results of this study will be examined by DCMNR in determining whether smolt screens are required at cooling water intakes.

The large numbers of smelt and other more common fish species entering the intake screens at Great Island during the period of the investigation was a cause for concern. It was recommended that, in the absence of smolt screens, an acoustic deterrent system be installed at the intake point at Great Island, subject to a feasibility study. Furthermore, a sampling programme should be conducted to determine the effectiveness of such a deterrent relative to the results from the present study.

A selection of species taken during the surveys.

Note scale loss on the salmon smolts.

The fish species recorded at Great Island power station included: Smelt, Pogge, Herring, Flounder, Cod, Whiting, Poorcod, Bass and Salmon Smolts.

Sampling at Aghada power station.

Sampling basket suspended from sea wall

Coarse screen and large sampling basket

Sampling at Tarbert and Moneypoint power stations.

Tarbert sump and coarse grill

Large trash basket at Moneypoint

Project Title: The use of Genetic Stock Identification (GSI) Techniques to Determine the River of Origin of Irish Salmon Stocks.

(External Funded)

Remit of the project:

The use of genetic stock identification techniques to determine the river of origin of salmon. This project will entail identification and mapping of discrete spawning areas within tributaries of the salmon bearing rivers in Ireland and collection of juvenile Atlantic salmon from these rivers at locations close to the principal spawning areas for establishment of a genetic baseline. Genetic analysis will be carried out by the Zoology Department in University College Cork (UCC). Once a genetic baseline has been established, salmon scale samples from any location around the Irish coast can analysed to determine river of origin. The extent of mixed stock commercial salmon fisheries can then be determined once the baseline has been established.

Why is the project being undertaken?

Up to 2006, (85%) of the commercial salmon catch, the majority was taken in the offshore drift net fishery. Due to the nature of this fishery, (operating up to six miles off the coast), salmon returning to a wide geographical range of rivers may to intercepted at any one location, often long distances from their natal river. Marine Institute (MI) micro-tagging information indicates that up to 50% of salmon taken in a given District can originate from salmon rivers outside the District. This exploitation pattern has lead to the widely used term "mixed stock fishery". This mixed fishery scenario presents a serious problem for management of the resource as the proportion of the fish caught will be destined for Fishery Districts and to rivers within Fishery Districts that are failing to meet their Conservation Limits (CLs). A certain level of mixed stock fishing may also be taking place in inshore commercial fisheries.

Significant technological advances in genetics now make it possible to determine the river of origin of any individual fish caught in the commercial or recreational fisheries as long as a comprehensive genetic baseline of the contributing stocks has been established. This project began in 2004 and has three elements;

1. Collection of juvenile salmon from a range of Irish catchments, funded under an EU Interreg programme.
2. Collection of juvenile salmon from the remainder of the nation salmon resource, funded under the Marine Institute National Development Plan (NDP) programme.
3. Collection of salmon scales from inshore commercial fisheries, both drift-net and draft-net, identified by the National Fisheries Management Executive (NFME) and funded as an extension of the Marine Institute NDP.

Sponsors / person in charge of the project:

The project is being coordinated by Dr P. Gargan and Dr W. Roche, CFB and Dr P. McGinnity, Marine Institute

When is the project planned to be complete?

The project will be complete in late 2007.

Who will benefit from the project?

The degree to which commercial salmon fisheries and specific inshore commercial fisheries exploit mixed stocks will be determined. This information can be used by all agencies to sustainably manage salmon stocks into the future.

When will the interim and / or final reports be available to the Board?

Genetic analysis of identified inshore commercial salmon samples will be available in December 2006.

Cost of the project and source of funding:

The cost of collection of juvenile salmon samples to establish a national baseline has been funded by an EU Interreg programme and a Marine Institute NDP Programme. Total costs for this element is approx €310,000.

Who will the findings be made available to?

The findings will be made available to DCMNR, Marine Institute, Central and Regional Fisheries Boards and the National Salmon Commission (NSC).

Progress to date:

Collection of juvenile salmon from rivers entering Pilot Project inshore areas have been completed and samples have been sent for genetic analysis. Juvenile samples have also been collected from a broad range of Irish rivers nationally. In total 90 rivers have been sampled. Initial genetic analysis shows a high level of similarity between rivers from the same geographic areas.

Any findings of interest and to whom:

Results of the genetic analysis will be of interest to the NFME as the degree to which specific inshore commercial fisheries exploit stocks from a range of rivers will be determined.

What are the next steps?

The results of the genetic analysis will be used to assess the level of mixed stock fishing in remaining commercial salmon fisheries. Depending on the status of individual stocks with regard to meeting conservation limits, decisions can be made on the future operation of commercial fisheries.

Salmon scales were collected from both draft-net and drift-net catches.

A selection of Draft-net caught salmon.

Boxes of Tagged Salmon taken in drift nets.

Project Title: Establish a Framework for Monitoring and Reporting of the Conservation Status of Atlantic Salmon (*Salmo salar*), an Annex II species in The European Union Habitats Directive.

(External Funded)

Remit of the project:

Under S.I. No. 94 of 1997 (European Communities (Natural Habitats) Regulations, the Minister for The Marine (now the Minister for Communications, Marine & Natural Resources) shall, in respect of the fish species specified in Part II of the First Schedule (in this case Atlantic Salmon, *Salmo salar*), undertake or cause to be undertaken, surveillance of the conservation status of the natural habitats and species referred to in Article 2 of the Habitats Directive, (Article 7. (1)). This is a national obligation which must be delivered by the end of the first reporting period, end of 2007.

Why is the project being undertaken?

The Central Fisheries Board and the Marine Institute, have recently begun to address our national responsibilities for surveillance monitoring and reporting of fish species (specifically Atlantic salmon) in a joint programme begun in April 2006. As part of this programme a third level graduate was employed by the Central Fisheries Board in August 2006 under the Stagiaire scheme to:

- put in place a national framework for surveillance monitoring and reporting of the natural habitats of Atlantic salmon.
- compile data supplied by CFB, Regional Fisheries Boards and Marine Institute (MI) and contribute to the preparation of a report which is a national obligation under Article 17.
- compile information on the assessment of conservation status of salmon across the whole national territory which also occur outside the designated SACs.
- contribute to the establishment of a range of indices which can be used to monitor and report on the conservation status of salmon

Sponsors / person in charge of the project:

The project is being conducted by Dr P. Gargan & Dr W. Roche from the Central Fisheries Board.

When is the project planned to be complete?

By the end of the first reporting period in late 2007.

Who will benefit from the project?

Ireland will have fulfilled its responsibility to report on the conservation status of natural habitats and species (Atlantic salmon) under the Habitats Directive by end of 2007.

When will the interim and / or final reports be available to the Board?

In late 2007.

Cost of the project and source of funding:

Funding is being provided by the Department of Communications, Marine and Natural Resources (DCMRN) Stagiaire scheme.

Who will the findings be made available to?

A report will be provided to the DCMNR and will integrated into the National Parks & Wildlife report to DG Environment in Brussels.

Progress to date:

Data is being complied from the Regional Fisheries Boards and the Dundalk, Drogheda and Dublin fisheries districts are complete.

Any findings of interest and to whom?

The conservation status of juvenile salmon is under threat in many catchment areas along the eastern seaboard.

What are next steps?

Compile into a national report.





WATER FRAMEWORK DIRECTIVE

Project Title: Development of a National Fisheries Database.

(National Research Programme Funded)

Remit of the project:

To design and develop a National Fisheries Database. All Regional Fisheries Boards have fish survey information that is either still in paper format or stored in a number of different computer file formats (excel, access, word), that are not easily accessed by other staff. A National Fisheries Database incorporating all fisheries information will allow rapid access to this material by all staff.

Why is this project being undertaken?

To enable all fisheries data to be stored and located on one central database which would be available to all fisheries staff members and will support the Regional Fisheries Boards work under the Water Framework Directive (WFD). Linked to Geographical Information Systems (GIS) the datasets can be used to deliver targeted information in pictorial format to the Regional Fisheries Boards (RFB's) stakeholders.

Sponsors / person in charge of the project:

There is a database committee with representation from all Boards chaired by Pat Doherty. The main contact person for the project is Karen Delanty of the Central Fisheries Board (CFB).

When is the project planned to be complete?

The 1st phase will be completed by January 2007.

When will the interim and / or final reports be available to the Board?

An interim report/presentation was scheduled for the 1st week of December 2006.

Cost of the project and source of funding:

The cost of the 1st phase is €30,000. This project is funded under the National Research Programme.

Who will the findings be made available to?

When completed the database will be available to all Regional Fisheries Boards and the CFB.

Progress to date:

We are at the mid-way point of the project and an interim presentation was be given on 7th December.

What are the next steps?

The next steps are to secure the funding for the next phase of the development of the National Fisheries Database and development of GIS capabilities within the Boards.

Project Title: Analyses of Fisheries Rehabilitation Projects

(External Funded)

Remit of the project:

The morphology sub-group, chaired by Dr Colin Byrne Department of Environment (DoE), have sought an analysis of Central Fisheries Board data relating to the effectiveness of enhancement programmes in salmonid rivers. This will involve a evaluation/assessment and analysis of all such data to try to establish:-

- The extent to which arterial drainage programmes have depressed salmonid production
- The degree, if any, to which specific enhancement techniques are appropriate in different types of river channels.

Cost of the project and source of funding:

Funding has been made available to the Central Fisheries Board from the Shannon River Board District to complete this task. Dr Ciara O'Leary has been employed, for a six month period, to undertake this task. This project, under the supervision of Dr M. O'Grady, commenced on November 27th, 2006.

Who will benefit from the project?

- This exercise will afford the Central Fisheries Board the opportunity to digitise its database in this area.
- The analysis will help to focus attention on the extent to which arterial drainage programmes have led to a decline in salmonid stocks.
- The relative effectiveness of various enhancement programmes in difficult channel types will become more obvious.

Any findings of interest and to whom?

The findings will be made available to the Morphology sub-group. They will also be of assistance to the CFB in relation to designing future enhancement programmes.

Project Title: A Desk Study to Determine a Methodology for the Monitoring of the 'Morphological Condition' of Irish Rivers.

(External Funded)

Remit of the project:

To devise a scheme for assessment of hydro-morphological features in Irish streams and rivers as it is a new concept in the context of monitoring aquatic conditions in Irish waters which is required under the Water Framework Directive (WFD). The aim of the project was to devise a system or protocol that could provide a robust classification of a river in terms of its substratum, banks and riparian zone. The system to be devised should enable classification to be achieved by a combination of on-site visual inspection and the use of Geographical Information Systems (GIS) based information for the more invariant aspects (not influenced by human activity) of river morphology such as sinuosity and slope.

Why is the project being undertaken?

The Environmental Protection Agency (EPA) advertised for tenders to deliver this project and the Central Fisheries Board (CFB) and partners Compass Informatics was successful.

Sponsors / person in charge of the project:

EPA – The project team was Dr Philip Mc Ginnity, Dr William Roche and Markus Mueller, Paul Mills (Compass Informatics).

When is the project planned to be complete?

On production of synthesis report in early 2006.

Who will benefit from the project?

EPA; WFD administration; CFB; other potential users nationally and internationally.

When will the interim and / or final reports be available to the Board?

2006.

Cost of the project and source of funding:

€48,000; EPA Environmental Research Technological Development and Innovation (ERTDI) Programme 2000-2006.

Who will the findings be made available to?

Open access to all through the EPA website.

Progress to date:

Project complete.

Any findings of interest and to whom:

A protocol based on an enhancement of an existing protocol was recommended together with an approach to developing and delivering the required data. Costing for delivery were also included.

What are the next steps?

EPA/River Basin Districts have begun to roll out selected aspects of the approach based on some of the recommendations.

Project Title: North South Shared Aquatic Resources (N/S SHARE); Development of an Ecological Classification Tool for Lakes Using Fish.

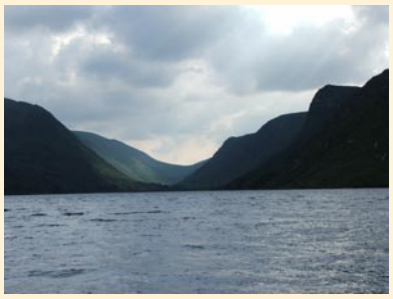
(External Funded)

Remit of the project:

The Central Fisheries Board (CFB) is tasked with the development of an appropriate tool for classifying fish in Lakes and to evaluate a recently developed European Fish Index (EFI) for rivers using Irish data.

Why is the project being undertaken?

The Water Framework Directive (WFD) requires classification tools with which to evaluate the current ecological status of rivers and lakes. The tools will be based on reference conditions for a range of different water body types. No such tool exists for lakes but a pan European Fish index (EFI) has recently been developed using fish data for continental and UK rivers. The CFB is tasked with developing the ecological tool using fish populations/communities in lakes, to test the applicability of the European Fish Index using Irish rivers fish data, (for this we are using data from 476 sites compiled mostly by the CFB/RFBs in the Environmental Protection Agency EPA Q-value and Fish project 2001 – 2004).
The purpose of the project is to develop classification tools for the various biological elements (aquatic insects and other macrofauna, plants and fish) and the status of waters will be determined by reference to chemical and biological criteria. It is intended that the classification tools will be applied throughout Ireland, in the UK and Scotland.



Sponsors / person in charge of the project:

A consortium, led by RPS Engineering Consultants involving Trinity College Dublin (TCD), University of Ulster, Department of Agriculture and Rural Development (DARDNI) (now AFBI) and the CFB, is contracted by N/S SHARE, of which Donegal County Council is the lead authority for this INTERREG IIIa funded project, to develop the necessary classification tools. A Steering Committee (EHS and Department of Environment, Heritage and Local

Government (DEHLG)) with technical guidance from N/S TAG oversees the project. The CFB is sub-contracted through TCD Zoology to deliver the fish element in the Republic of Ireland and the CFB is working jointly with the Agri-Food and Biological

Sciences (AFBI) unit of DARD which is delivering the fish element in Northern Ireland (NI). Dr Trevor Champ is co-ordinating the fish work, Dr Fiona Kelly and Ms Lynda Connor are employed to carry out the task; Dr Robert Rosell is leading a similar team in NI.

When is the project planned to be complete?

The project, awarded in Sept 2004, commenced on signing of contracts in April 2005 and is scheduled for completion in August 2007.

Who will benefit from the project?

The beneficiaries of this project will be the EU, the Irish and Northern Ireland authorities and the fisheries boards. CFB staff participated in a European Intercalibration Workshop (5th & 6th October) with fisheries experts from other EU States. The RoI rivers fish dataset was submitted on the 24th November for inclusion and evaluation in a general dataset for the 'Nordic Regional Group'(Sweden, England, Ireland, Northern Ireland and Scotland. The deadline for the Intercalibration process is December. 31st 2006. Participation by the CFB has demonstrated the Irish commitment to this essential process.

When will the interim and / or final reports be available to the Board?

A series of documents, 'Decontamination procedures for sampling equipment'; 'Sampling Procedures for fish in lakes; testing of gear.'; 'Methods manual for gill netting and fyke netting'; 'Sampling procedures for fish in lakes – review of current practice' and 'Models and metrics for fish in lakes - a review', have been submitted to the SHARE document tracker procedure for peer review. When cleared through this contractual process the documents will be made available through the SHARE website for all interested parties. The final report is scheduled for completion in August 2007.

Preparing nets for the survey.

Retrieving nets.

Cost of the project and source of funding:

The fisheries element of this project is costed at €519,118, the project is funded by INTERREG IIIa through Donegal County Council.

Progress to date:

Several documents have been submitted and others are in draft form. The project is progressing in accordance with the projected task schedule. To date €303,452 has been drawn down and a further €168,417 has been invoiced. The project has created fish data sets for 83 lakes (53 in RoI & 30 in NI) using a standard net sampling procedure developed for the project, in accordance with European Standard Guidelines. This material is currently being processed and analysed.

Any findings of interest and to whom

Accurate reliable information on the fish communities in about 50 lakes in the Northern Regional Fisheries Board (NRFB) and a small number of lakes in the Eastern regional Fisheries Board (ERFB) many of which were never surveyed previously, is now available to the Boards. The presence of char has been confirmed in some Donegal lakes and the species has only now been discovered by this project in others. The presence of Pollan, which were only detected for the first time in Lough Allen by NUIG in 2005, has also been confirmed by this project in 2006. Instruction in Hydroacoustic techniques was provided to the Shannon Regional Fisheries Board (ShRFB) staff during the Lough Allen survey. NRFB & ERFB staff, having participated in the project are now familiar with the sampling methodology.

Char from Lough Sessiagh.

What are the next steps?

The sampling methodology developed by the project will be implemented nationally to deliver the lake fish stock information required under the WFD National Monitoring Programme published by the EPA. This work will be carried out by the CFB and the RFBs on a 3 year rolling programme.

Preparing boats for the survey.

Project Title: Metric Programme – Fish in Transitional Waters for Water Framework Directive.

(External Funded)

Remit of the project:

To provide a sound national platform in bringing forward implementation of monitoring for fish in Transitional Waters under the Water Framework Directive (WFD). This to be done by gathering and standardising existing archival datasets; by carrying out survey programmes to collect new datasets; to field trial and adjudicate on sampling gear; to share datasets with EU colleagues in order to develop a robust database for interrogation – the aim being to develop an Environmental Quality Rating (EQR) scoring system for Transitional waters based on fish community composition and abundance.

A Lesser Spotted Dogfish from the Broadmeadow estuary.

Why is the project being undertaken?

The Central Fisheries Board (CFB), working with the Regional Fisheries Boards (RFBs), has been designated by the Environmental Protection Agency (EPA) as the appropriate agency to undertake monitoring of fish in transitional waters as required under WFD. The CFB has been undertaking surveys of fish in estuaries since 2000, with research and angling personnel working closely with colleagues in the RFBs. The initial aim was to look at the status of key angling species such as flounder, bass and mullet as well as rare anadromous species such as the shad and river lamprey. It quickly became clear that this work fitted with the demands of the Water Framework Directive in relation to fish in transitional waters. From liaison with colleagues in other EU member states it was clear that the biggest deficit for Ireland lay with the small database available for fish in estuaries.

The METRIC project enables Ireland to substantially increase the database on fish in Transitional Waters. It also enables the project team to trial a range of fish sampling gear. In addition, as the

sampling has been spread among the seven RFBs, it has provided an opportunity for the RFBs to acquaint themselves with the logistical problems of estuarine sampling and has developed familiarity among RFB staff with the fish species, sampling techniques and general demands of sampling in this environment. This will be of considerable benefit when the first cycle of monitoring under WFD commences in 2007.

Ballan Wrasse taken during the survey.

Sponsors / person in charge of the project:

This project is funded by the EPA. It is a joint Marine Institute (MI)-CFB submission, with the MI as the lead agency and undertaking project work on phytoplankton and benthic invertebrates. The CFB is managing the fish component. The project is managed within CFB by Dr James King. Two science graduates have been recruited on temporary contracts to service the project.

When is the project planned to be complete?

The project will terminate at end January 2007 at which time the EPA expects submission of final report.

Who will benefit from the project?

Ireland will benefit insofar as the study will contribute to our preparedness to implement the WFD. The CFB benefits through increased knowledge collection and experience, in addition to the networking with EU colleagues within the Northeast Atlantic working group on fish in transitional waters. The datasets collected will be shared with EU colleagues, reflecting well on Ireland and on the project. Survey work was undertaken in all seven RFB jurisdictions. This has provided a framework of familiarity to senior management teams in respect of requirements for monitoring going forward.

Gweebarra Estuary, County Donegal.

When will the interim and / or final reports be available to the Board?

The EPA will publish final report. Thumbnail info packs on individual waters will be placed on the CFB website, in agreement with EPA and the CFB webmaster.

A sampling station on the river Tolka, County Dublin.

Cost of the project and source of funding:

The fish project is costed at circa €110,000 and is fully funded by the EPA. The majority of the cost is allocated to salaries, sub and travel. A significant element was allocated to reimburse the RFBs for staff and logistical support in carrying out the survey work.

Who will the findings be made available to?

The findings will be published by the EPA. The METRIC fish team is preparing thumbnail material on each water examined for placement in the CFB website. The report will be made available to the EPA, CFB, RFBs, MI and European partner agencies.

Project Title: Rehabilitation of Arterially Drained Channels.

(External Funded)

Remit of the project:

Enhance all arterially drained catchments in Ireland. Rehabilitation of physically altered channels as required by the Water Framework Directive (WFD).

Why is the project being undertaken?

In 2006 the engineering services section of the Office of Public Works (OPW) took a decision in principle to enhance all channels in Ireland where, in the past, they had undertaken arterial drainage schemes. It is proposed that this programme would start in 2007. Details of the agenda for 2007 are not yet available.

Sponsors / person in charge of the project:

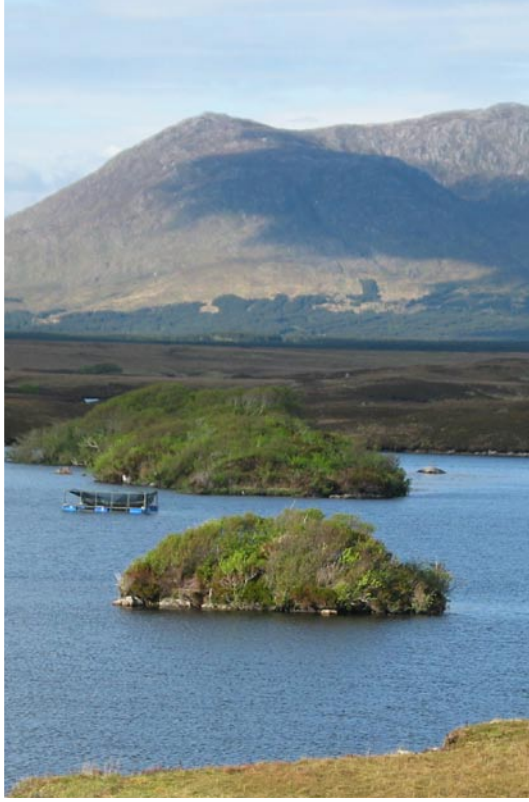
Office of Public Works with design assistance from the Central Fisheries Board (CFB) under the direction of Dr M. O'Grady.

Costs:

A long-term (probably 20 years) exercise costing many millions. Budgets have not yet been allocated for 2007. Major expenditure is not now envisaged until 2008.

Who will benefit from the project?

The salmonid resource nationally. This programme will greatly improve survival and production of juvenile salmon thereby addressing national objectives under EU and National legislation including the Habitats Directive, Biodiversity and the Water Framework Directive.



NATIONAL FISHERIES ENVIRONMENT AND BIODIVERSITY PROGRAMME

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

(National Research Programme Funded)

Remit of the project:

The aim to the project is to investigate the status and distribution of Chub (*Leuciscus cephalu*s) in the River Inny.

Why is this project being undertaken?

Non-native invasives, are species introduced deliberately or accidentally outside their natural range, where they have the ability to establish themselves, invade, out-compete native species and take over new environments. Invasive alien species have a major impact on biodiversity, and can cause significant irreversible environmental and socio-economic impacts at genetic, species and ecosystem levels. Prior to 2001 there were no reports of chub being present in any waters in Ireland. In 2001 and again in 2004 an angler 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. Because of the risk to the biodiversity and community composition of indigenous fish species in the river, the project undertook to determine the distribution and status of Chub in the River Inny.

Sponsors / person in charge of the project:

The project is being conducted under the National Research Programme (NRP), jointly funded by the Central Fisheries Board (CFB) and Regional Fisheries Boards (RFBs). The project is being coordinated by Dr Joe Caffrey and conducted by Dr Silvana Acevedo (Research Officer) and Kevin Gallagher, B.Sc. (Technician), with the assistance of ShFRB staff.

Progress to date:

An electrofishing survey was conducted during summer 2006. During the survey a total of 17 chub were captured. All were taken from one relatively short (c. 0.8km), shallow (0.5m) and moderately fast flowing section of river. The fish ranged in fork length from 15 to 41 cm and in age from 3+ to 6+ years old. Time constraints did not permit the full river to be surveyed.

When is the project planned to be complete?

It was not possible to survey the full length of the channel during this season. Therefore, further investigation work will need to be conducted in summer 2007.

Who will benefit from the project?

The findings will be directly relevant to the angling community who fish in the River Inny and to the ShFRB.

What are the next steps?

The project reports will be forward to the ShRFB.

When will the interim and / or final report be available to the Board?

The preliminary survey results will be submitted to the ShRFB in March 2007.

Cost of the project and source of funding:

The project has been funded under the Invasive Species element of the NRP.

Who will the findings be made available to?

The findings will be available to CFB and RFBs. All the information compiled will be stored in the CFB database adding to the reservoir of information of invasive species in Ireland. Furthermore, significant results will be available to the scientific community through publications in peer review journals.

Chub (*Leuciscus cephalus*) in the River Inny, summer 2006.

Project Title: A Fishery Enhancement Training Manual.

(National Research Programme Funded)

Remit of the project:

A training manual on salmonid habitat enhancement procedures entitled "Channels and Challenges" was finalised, printed and launched by Junior Minister John Brown on May 30th.

Why is this project being undertaken?

Primarily to ensure that new recruits to the fisheries service, at Fishery Officer or biological level, can familiarise themselves with current practice in this area. It is hoped that this publication will also be of value to river engineers, developers, planners and teachers working in both the geography and environmental areas.

Sponsors / person in charge of the project:

This was funded by national research programme. Production costs were €23,000.

Who will benefit from the project?

Fishery Board staffs, anglers, environmentalists, planners and developers.

Progress to date:

Copies have been circulated to all staff in all Regional Fishery Boards. The general public can purchase copies from the Regional Fishery Boards. Sales to the end of December, 2006 will be *circa* 400 copies.

Project Title: Peat Siltation on The River Inny.

(National Research Programme Funded)

Remit of the project:

The aim of the project was to assess the extent of peat siltation in the River Inny.

Why is this project being undertaken?

Peat siltation from Bórd Na Mona (BnM) and other bogs has been a problem for biotic communities on the River Inny for many years. Peat siltation can be detrimental to faunal and floral communities, by reducing the light climate within the water column and by smothering organisms or gravels with fine sediment.

Sponsors / person in charge of the project:

The project is being conducted under the National Research Programme (NRP), jointly funded by the Central Fisheries Board (CFB) and Regional Fisheries Boards (RFBs). The project is being coordinated by Dr Joe Caffrey and conducted by Dr Silvana Acevedo (Research Officer) and Kevin Gallagher, B.Sc. (Technician), with the assistance of ShRFB staff.

Progress to date:

A preliminary survey between Lough Derravaragh and Lough Sheelin was conducted in August 2006. A report presenting the results is currently being produced.

When is the project planned to be complete?

The results of the preliminary survey will be presented in January 2007. It is clear, however, that further work on the river will be required in 2007.

Who will benefit from the project?

The findings will help inform management plans for the fishery and will be of benefit to the ShRFB and to the angling community who fish in the upper stretches of the River Inny.

What are the next steps?

The project report will be forward to ShRFB.

When will the interim and / or final report be available to the Board?

The report will be presented in January 2007.

Cost of the project and source of funding:

The project has been funded under the NRP. It is one of a number of projects that are being funded under F103 (coarse fish and pike).

Who will the findings be made available to?

The findings will be available to the ShRFB. All the information compiled will be stored in CFB databases, adding to the reservoir of information on peat siltation in different Irish watercourses. Furthermore, significant results will be available to the scientific community through publications in peer reviewed journals.

Project Title: National Research Programme on Estuarine Fish and Conservation Fish Species 2006.

(National Research Programme Funded)

Remit of the project:

To compile baseline information, or build on existing data sets, in respect of fish in estuaries for the Water Framework Directive (WFD) and in respect of conservation fish for the Habitats Directive and to service the obligations of the Minister for Marine, Communications and Natural Resources under S.I. 94 of 1997.

Why is this project being undertaken?

The CFB has been undertaking surveys of fish in estuaries since 2000, with research and angling personnel working closely with colleagues in the Regional Fisheries Boards (RFBs). The initial aim was to look at the status of key angling species such as flounder, bass and mullet and at the status of rare anadromous species such as the shad and river lamprey. It quickly became clear that this work fitted with the demands of the Water Framework Directive in relation to fish in Transitional Waters. From communication with colleagues in other EU member states it was clear that the biggest deficit for Ireland lay with the small database available for fish in estuaries. With a view to rectifying this the CFB, through the National Research Programme and in conjunction with the RFBs, increased its sampling effort in both 2005 and 2006. Ongoing database expansion will be required, along with monitoring obligations under WFD.

The CFB has been compiling data on shad, smelt and lamprey through a series of commissioned projects. The Habitats Directive requires a 6-year reporting cycle on the status of Annex II species, including salmon, shad and lamprey. Under S.I. 94 of 1997 there is an onus on the Minister for Marine, Communications and Natural Resources, joined with Minister for Environment, to carry out surveillance on Annex II fish species. The CFB, working with the RFBs is best placed to undertake this task for the Minister for Marine, Communications and Natural Resources.

Sponsors / person in charge of the project:

The investigations are funded under the agreed Central and Regional Fisheries Boards Research Programme for 2006. The investigations are managed by Dr James King of the CFB Research Division.

Progress to date:

In 2006 estuarine surveys were undertaken on the River Boyne (spring and autumn), River Moy and River Bandon estuaries. Work scheduled for the River Ilen estuary was cancelled due to severe weather conditions. Sampling for smelt took place on the Rivers Bandon, Ilen, Munster Blackwater and Slaney estuaries. Sampling for shad via angling effort was undertaken at St. Mullins, River Barrow and Carrick-on-Suir, River Suir. Netting for adult shad, successful in 2005, was undertaken on the Rivers Bandon, Ilen and Slaney estuaries. Investigations of juvenile lamprey populations on the River Erne catchment were concluded in 2006. This survey programme was undertaken over a 3-year period.

When is the project planned to be complete?

The work programme was tailored to be undertaken in 2006, but is part of a long-term requirement for the Regional Fisheries Boards. Survey work was seasonal and was undertaken between March and October working in all cases with officers and staff of the various Regional Fisheries Boards.

Who will benefit from the project?

The project generates core information of immediate importance to the Regional Boards. In regard to estuaries, the information is shared with colleagues of the North East Atlantic (NEA) working group on fish in Transitional Waters for the WFD. The datasets contribute to forming a larger data set for interrogation with a view to identifying boundaries between the various classes of water quality as defined in the WFD. These will, in turn serve to generate Environmental Quality Ratings (EQR) values permitting water management to compare water bodies with each other and with themselves over time. The information on conservation fish forms a national baseline permitting comparison with future trends in distribution of species and in status of species. The Minister for Marine, Communications and Natural Resources is clearly identified in S.I. 94 of 1997 as having a shared role, with Minister for Environment, in monitoring status of Habitats Directive fish species such as shad, lamprey and pollan. The programme being developed by the Regional Fisheries Boards will contribute to fulfilling the Minister's role in these areas.

Ireland as a whole will benefit from the information collected as the programme services obligations under the Biodiversity Plan for Ireland.

When will the interim and / or final report be available to the Board?

Final report will be presented to NFME for spring 2007.

Cost of the project and source of funding:

This project is funded under the National Research Programme. Funding level is very modest (€20,000) and there is a requirement for an increased spend in 2007. The programme requires the development of a national monitoring template and programme for surveillance of juvenile lamprey. This is a requirement for reporting to the EU in six years time on the status of lamprey within the state – not just in Special Areas of Conservation (SACs). A similar programme must be developed for shad.

Who will the findings be made available to?

It is proposed to make some findings available on the CFB website and this has already been advanced with the CFB webmaster. This would provide layman's-type information on the estuary survey findings on a waterbody-by-waterbody basis. Hardcopy reports will be made available to each of the eight Boards in spring 2007.

Progress to date:

The survey programme has been completed and data is being processed for report and website use.

Project Title: Central Fisheries Board Laboratory Support Services.

(Central Fisheries Board Funded and some External Funding)

The Central Fisheries board (CFB) Laboratory provides a centralised analytical support service;

- to the Research staff at the CFB for fisheries (CFB / RFB) projects;
- for self monitoring of CFB fish farm discharges for effluent licence compliance;
- or commissioned externally funded projects e.g. Shannon/Erne, Royal, Grand and Barrow Canals – for Waterways Ireland and N/S SHARE project;
- to the Regional Fisheries Boards for water quality sampling and monitoring (chlorophyll content, suspended solids, nutrients and heavy metals);
- to RFBs for prosecution of pollution offences as necessary.

Analysis of physical and chemical properties of river and lake water provides the fisheries scientists/ecologists with fundamental information about the particular rivers or lakes on which they are working. This basic information helps the scientist to assess whether a river/lake is clean or polluted, to evaluate the potential of any water to support aquatic life and whether it will produce small slow growing or large fast growing fish. A dedicated fisheries freshwater laboratory provides the information required by fisheries scientists to aid understanding, functioning and development of freshwater ecosystems.

The CFB laboratory provides information on fundamental chemistry e.g. alkalinity, conductivity, pH, suspended solids, biochemical oxygen demand, watercolour and hardness. The laboratory is also equipped with a TrAACs 2000 for the determination of nutrients, nitrogen and phosphorus. During the Tourism Angling Measure the CFB acquired an ICP-MS instrument with which to analyse water samples for 70 elements simultaneously at detection levels well below those previously possible for many elements (parts per billion). Following maintenance in 2003/04, the operation of this instrument was suspended pending relocation of the laboratory to Swords.
The information emanating from the CFB laboratory is of direct relevance to the development of any local fishery but it also feeds into national (the CFB data contributes significantly to every report on National Water Quality published by the Environmental Protection Agency (EPA)) and international databases. The CFB ICP-MS results were provided to the Department of the Environment, Heritage and Local Government (DEHLG) as essential baseline information on heavy metals to help draft National 'Dangerous Substances' Regulations. The Water Quality Standards for lakes in the 'Phosphorus' Regulations are based mainly on the results of the CFB / RFB long-term monitoring programme. The analytical precision, quality control and sample validation in the CFB laboratory is of a high standard (the laboratory has consistently achieved the EPA inter-laboratory certification).

The laboratory is staffed by an analytical chemist and a technician, a second technician (for the ICP-MS) is currently on a career break.

Examples of samples processed in 2006 are attached. Each sample is analysed for 4 to 7 separate parameters.

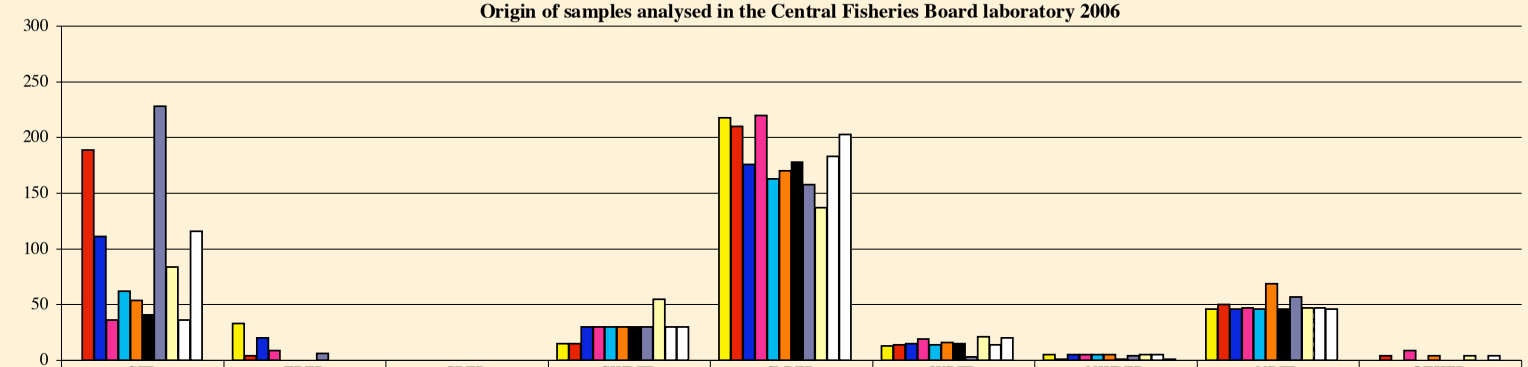
Sample Numbers Analysed for Nutrients
Jan - Dec 2006

	Jan	Feb.	Mar.	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	**Totals per Region**
CFB	0	189	111	36	62	54	41	228	84	36	116		**957**
ERFB	33	4	20	9	0	0	0	6	0	0	0		**72**
SRFB	0	0		0	0	0	0	0	0	0	0		**0**
SWRFB	15	15	30	30	30	30	30	30	55	30	30		**325**
ShRFB	218	210	176	220	163	170	178	158	137	183	203		**2016**
WRFB	13	14	15	19	14	16	15	3	21	14	20		**164**
NWRFB	5	1	5	5	5	5	1	4	5	5	1		**42**
NRFB	46	50	46	47	46	69	46	57	47	47	46		**547**
OTHER	0	4		9		4	0	0	4		4		**25**

Total	**4148**

Number of samples analysed

Origin of samples analysed in the Central Fisheries Board laboratory 2006



	CFB	ERFB	SRFB	SWRFB	ShRFB	WRFB	NWRFB	NRFB	OTHER
Jan	0	33	0	15	218	13	5	46	0
Feb.	189	4	0	15	210	14	1	50	4
Mar.	111	20		30	176	15	5	46	
Apr	36	9	0	30	220	19	5	47	9
May	62	0	0	30	163	14	5	46	
June	54	0	0	30	170	16	5	69	4
July	41	0	0	30	178	15	1	46	0
Aug	228	6	0	30	158	3	4	57	0
Sep	84	0	0	55	137	21	5	47	4
Oct	36	0	0	30	183	14	5	47	
Nov	116	0	0	30	203	20	1	46	4

Project Title: Nuttall's Pondweed (*Elodea nuttallii*) - An Aggressive Invasive Aquatic Plant Species in Carrigadrohid Reservoir, Co Cork.

(National Research Programme Funded)

Remit of the project:

Assess the status and extent of *Elodea nuttallii* in Carrigadrohid reservoir and to explore suitable management strategies.

Why is this project being undertaken?

Non-native invasives are species introduced deliberately or accidentally outside their natural range, where they have the ability to establish themselves, invade, out-compete native species and take over new environments. Invasive alien species have a major impact on biodiversity and can cause significant irreversible environmental and socio-economic impacts at genetic, species and ecosystem levels. During fish stock survey work on Inniscarra Reservoir the presence of Nuttall's Pondweed, an aggressive submerged invasive plant species, was recorded. Subsequently, South Western Regional Fisheries Board (SWRFB) staff informed Central Fisheries Board (CFB) biologists of the presence of this species in Carrigadrohid Reservoir. A preliminary reconnaissance in 2005 revealed extensive populations of the invasive plant in the shallower upper section of the Reservoir. In order to determine the nature and extent of the infestation, a survey was undertaken during the summer of 2006.

Sponsors / person in charge of the project:

The project is being conducted under the National Research Programme (NRP), jointly funded by the CFB and Regional Fisheries Boards (RFBs). The project is being coordinated by Dr Joe Caffrey and conducted by Dr Silvana Acevedo (Research Officer) and Kevin Gallagher, B.Sc. (Technician), with the assistance of SWFRB staff.

Progress to date:

Carrigadrohid Reservoir was surveyed in August 2006.

Any findings of interest and to whom?

As can be seen from the attached map and photograph, large areas of the upper reservoir and feeder rivers are totally overgrown with this invasive weed. Hectares of water are unfishable and are unavailable for any water-based leisure pursuit. The volume of weed present must also pose a threat to water supply (through pipe blockage) and to fish health (through deoxygenation). The results will be directly relevant to the Electricity Supply Board (ESB), SWRFB and the local community at large. Because of the high risk of spread to other waters, a close monitoring must be maintained on adjacent watercourses.

When is the project planned to be completed?

During the 2006 survey insufficient time was available to complete any quantitative work on the density/biomass of the plant or on the impact it was having on water chemistry or indigenous plants, invertebrates or fish. This risk assessment work is important and must be conducted in 2007. At the same time, it will be important to commence weed removal/control trials and monitor their performance. This work will extend into 2008.

Who will benefit from the project?

SWRFB, ESB, angling clubs and local community.

What are the next steps?

The preliminary survey results will be submitted to the SWRFB and it is anticipated that discussions with ESB will follow.

When will the interim and / or final report be available to the Board?

The report from the preliminary survey will be presented in February-March 2007.

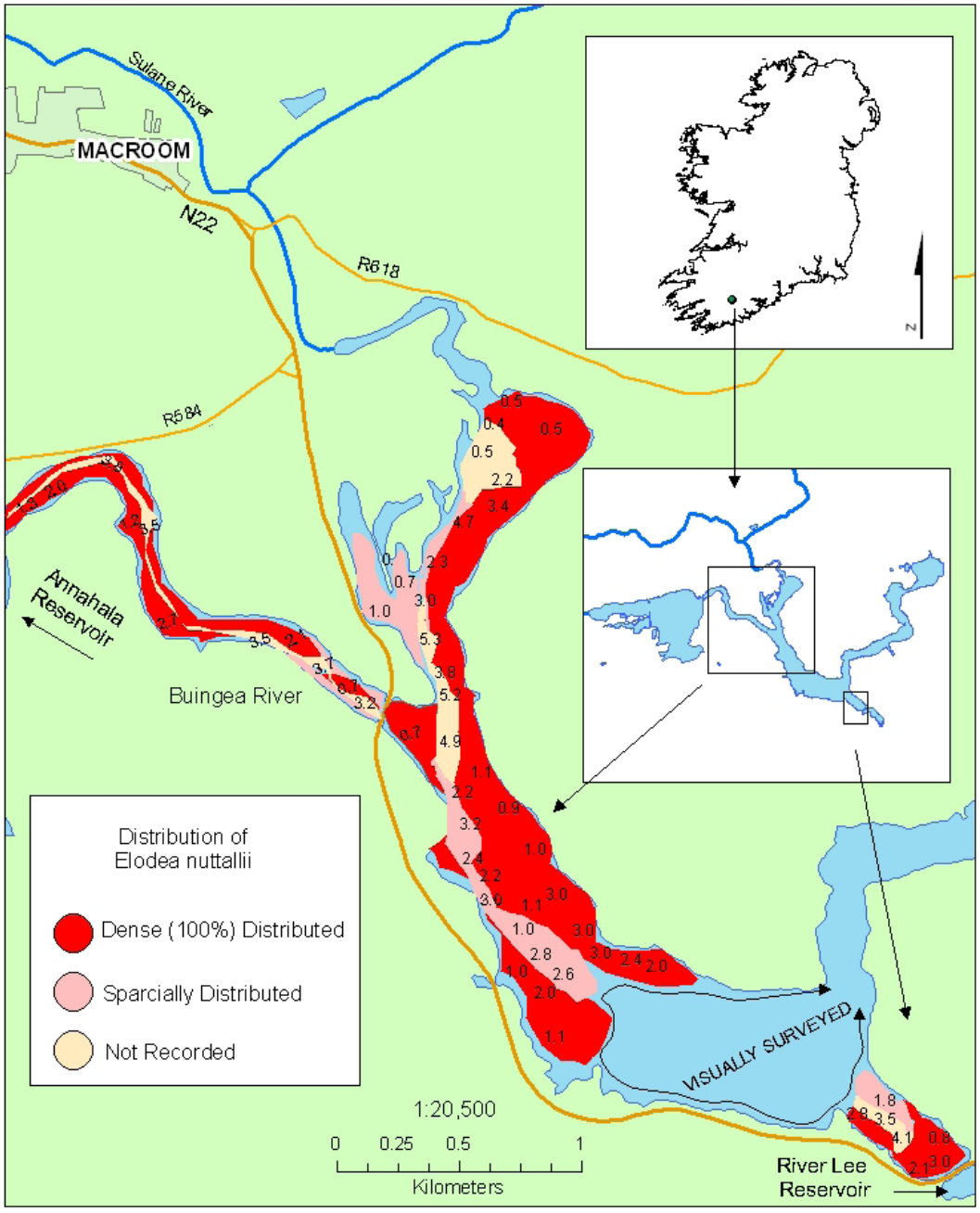
Cost of the project and source of funding:

The project has been funded under the Invasive Species element of the NRP. It may be possible for the SWFRB to secure funding from ESB to progress the project.

Who will the findings be made available to?

Primarily, the findings will be available to the CFB and SWRFB. Through the latter, the ESB will be informed. All the information compiled will be stored in the CFB database, adding to the reservoir of information of invasive species in Ireland. Furthermore, significant results will be available to the scientific community through publications in peer reviewed journals.

***Elodea nuttallii* in Carrigadrohid Reservoir, August 2006**.



Distribution of *Elodea nuttallii* in Carrigadrohid Reservoir, August 2006.

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Project Title: Status of Invasive Riparian and Aquatic Plants Species in the River Slaney.

(National Research Programme Funded)

Remit of the project:

The aim of the project is to assess the status of invasive alien plant species, both aquatic and riparian, on the main channel of the River Slaney, between Baltinglass and Enniscorthy.

Why is this project being undertaken?

Non-native invasives are species introduced deliberately or accidentally outside their natural range, where they have the ability to establish themselves, invade, out-compete native species and take over new environments. Invasive species have a major impact on biodiversity and can cause significant irreversible environmental and socio-economic impacts at genetic, species and ecosystem levels. Japanese Knotweed (*Fallopia japonica*), Himalayan Balsam (*Impatiens glandulifera*) and Giant Hogweed (*Heracleum mantegazzianum*) are invasive riparian species prominent along many Irish watercourses. These three plants have been recorded along the banks of the River Slaney. Communication with personnel from the National Parks and Wildlife Services (NPWS) suggested that the aggressive invasive submerged plant, Nuttall's Pondweed (*Elodea nuttallii*), was also present in the River Slaney. Because of the risk to biodiversity and habitat on the River Slaney, the project undertook to determine the distribution of each of these invasive species and to assess the risk to the integrity of the river corridor.

Sponsors / person in charge of the project:

The project is being conducted under the National Research Programme (NRP), jointly funded by the Central Fisheries Board (CFB) and Regional Fisheries Boards (RFBs). The project is being coordinated by Dr Joe Caffrey and conducted by Dr Silvana Acevedo (Research Officer) and Kevin Gallagher, B.Sc. (Technician), with the assistance of Eastern Regional Fisheries Board (ERFB) staff and the River Slaney Trust (RST).

Progress to date:

A preliminary survey of the section of the River Slaney from Baltinglass and Enniscorthy was undertaken in August 2006.

Any findings of interest and to whom?

Japanese Knotweed, Himalayan Balsam and Giant Hogweed were recorded along the surveyed sections of the River Slaney. Of these three invasive riparian plants, Himalayan balsam was the dominant species. The plant occupied long, continuous stands on both banks, occasionally interrupted by grassy stretches. Such was the density of the vegetation in sections that no understorey plants or associated riparian species were recorded. The elimination of the natural herbaceous plant community that occupies these banksides not only impacts biodiversity but removes the plants that stabilize the river banks. When the balsam dies in autumn (it is an annual) the banks are exposed to the scour of erosive floods and may be undermined or damaged. In term of overall cover, Japanese Knotweed and Giant Hogweed were less frequently recorded. No Nuttall's Pondweed was recorded in the stretch of river examined.

The current extent of the infestation by these non-native invasive plants is worrying, but their potential to ultimately totally overgrow the channel, on both banks, has extremely serious management ramifications.

The findings have significant importance to the ERFB, the Slaney River Trust, to fishery owners and anglers on the River Slaney, communities in the Slaney Valley, and others who have an interest in improving the ecology, fisheries and wildlife of the river.

When is the project planned to be complete?

The preliminary survey highlighted the urgent need to conduct a more thorough and expansive survey of the entire channel, in order to map the detailed distribution of these invasive species. This must be conducted using a combination of survey methods including walking, boat and aerial. The availability of this quantitative data will permit informed management recommendations to be made. Survey work will be conducted through the summer of 2007. Once this task has been completed, management protocols can be developed and applied.

Who will benefit from the project?

The Slaney River Trust, anglers clubs, fishery owners and anglers on the River Slaney, communities in the Slaney Valley, and others who have an interest in improving the ecology, fisheries and wildlife of the river. The risk of spread to other river systems is great; hence, the removal of these species has great significance.

What are the next steps?

The project report will be forward to the ERFB.

When will the interim and / or final report be available to the Board?

The report from the preliminary survey study was presented in December 2006.

Cost of the project and source of funding:

The project has been funded under the Invasive Species element of the NRP.

Who will the findings be made available to?

Primarily, the findings will be available to the CFB and RFBs. All the information compiled will be stored in the CFB database, adding to the reservoir of information of invasive species in Ireland. Furthermore, significant results will be available to the scientific community through publications in peer reviewed journals.

Himalayan Balsam at Scarawalsh Bridge.

Japanese Knotweed in the right bank at Baltinglass Bridge.

Project Title: The Invasion of *Lagarosiphon major* in Lough Corrib.

(National Research Programme Funded)

Remit of the project:

Invasive species are spreading rapidly and threaten to destabilise fish communities and aquatic habitats in Ireland. *Lagarosiphon major* is recognised as a particularly aggressive invasive species. Its discovery of this plant in Lough Corrib in 2005 caused alarm among many interest groups and provided the stimulus for this project. The remit is to describe the detailed distribution of the plant in the lake, to study its biology and ecology and to develop rigorous control methods.

Why is this project being undertaken?

The highly aggressive non-native invasive plant *Lagarosiphon major* was recorded in Rinneroon Bay, Lough Corrib, in 2005. The plant was probably present in the lake for between 6 and 10 years, but had remained undetected. In 2005 the plant occupied up to 12 hectares of the 20 hectare bay. In 2006 the plant was recorded in 24 separate locations (up from 8 in 2005), and appeared to be spreading to the shallower lower lake.

The project aims to garner funding to conduct detailed investigations into the nature and extent of the spread, the characteristics of the plant, and the impact it is having on the native flora and fauna of the lake. A further objective is to develop methods that might be used to eradicate or control the plant.

Sponsors / person in charge of the project:

During 2006 Dr Caffrey produced a report on the problem with *Lagarosiphon* in Lough Corrib. The costs that would be associated with different phases of the study were attached. The National Parks and Wildlife Service (NPWS) have committed to providing €100,000 for Phase 1, which will aim to create a public awareness of the problem as well as providing funds to conduct field trials in Rinneroon Bay. The trials will be conducted in December 2006. Funding for further phases of the project (€1.1 million) will be sought from NPWS (and others) in 2007.

Dr Joe Caffrey is the officer in charge.

When is the project planned to be complete?

Phase 1 will be completed by the end of December 2006. It is difficult to comment on the other phases as no funding to complete these has, as yet, been secured. NPWS have indicated a willingness to contribute funding. The project should run until the end of 2009.

Who will benefit from the project?

The control or removal of *Lagarosiphon* from Lough Corrib will benefit a very wide group of agencies and institutions, in addition to angling clubs, boating enthusiasts, conservationists, etc. Its control or eradication will also minimise the opportunity for spread to adjacent watercourses.

When will the interim and / or final reports be available to the Board?

It should be possible to have an interim report by February 2007.

Project Title: A Fishery Survey of the River Suir Catchment.

(Southern Regional Fisheries Board Funded)

Remit of the project:

To update baseline fishery data on this important catchment and compare its current status with the situation, as previously measured, in 1982/83.

Why is this project being undertaken?

The Chief Executive Officer of the Southern Regional Fisheries Board (SRFB) requested the Central Fisheries Board (CFB) to update the fish stock survey of the River Suir.

Sponsors / person in charge of the project:

The travel and subsistence costs of this two year long programme were met by the Southern Regional Fisheries Board. This programme was directed by Dr Martin O'Grady. Field work operators were led by Karen Delanty with the assistance of Southern Regional Fisheries Board (SRFB) staff.

Who will benefit from the project?

A final report was produced and presented to the SRFB. It was launched in Clonmel in July, 2006 by Junior Minister John Brown. The Southern Regional Fisheries Board is the main beneficiary of this exercise. Fishery management priorities for the Suir, based on the survey findings are outlined in the body of the report.

Project Title: Determination of the Impact of the Sea Louse (*Lepeophtheirus Salmonis*) from Marine Salmon Farming on the Survival of Atlantic Salmon Smolts in Bays in the West of Ireland.

(External Funded)

Remit of the project:

In order to examine the impact of sea lice from marine salmon farms on mortality of salmon smolts migrating to sea, groups of salmon smolts were treated with the in-feed chemical ***Slice*** to confer protection against sea lice while other groups were untreated. By examining the survival and return of these groups of smolts as adults one year later, information can be gained on the impact of sea lice on salmon smolt mortality in bays in the West of Ireland.

Why is the project being undertaken?

Many scientific papers have been published over the past decade on the impact of sea lice originating from marine salmon farms on sea trout stocks in Ireland. Studies have shown that while sea trout with heavy lice infestations return to freshwater in salmon farming areas, salmon smolts have never been recorded returning to freshwater in these areas. The degree to which salmon smolts are also impacted by sea lice in salmon farming areas on their seaward migration is therefore unknown and this project aims to investigate this phenomenon.

Sponsors / person in charge of the project:

The project is being coordinated by Dr Paddy Gargan from the Central Fisheries Board (CFB) with the assistance of Dr Greg Forde and staff from the Western Regional Fisheries Board.

When is the project planned to be complete?

The project will be complete at the end of 2006.

Who will benefit from the project?

A better understanding of the impact of sea lice from marine salmon farms on migrating salmon smolts in aquaculture bays will be a deliverable from the project. The regulatory authorities can put relevant protocols in place if required.

When will the interim and / or final reports be available to the Board?

Interim report has been submitted in spring 2006 and a final report will be available in spring 2007.

Cost of the project and source of funding:

The cost of the project, €448,000, has been 50% funded by the European Union and 50% through staff resources by the Central and Western Regional Fisheries Boards.

Who will the findings be made available to?

The findings will be made available to the Department of Communication, Marine and Natural Resources (DCMNR), the Fisheries Boards and the EU.

Progress to date:

Results from the present study reveal a significantly higher return rate of **Slice**-treated salmon smolts and compared with the control salmon smolts in three of four release groupings; these data suggest reduced mortality of smolts in the treated groups and hence perhaps protection from sea lice infestation in aquaculture bays. Similar results were found using salmon smolts released in western Norway. Given the presence of a significant source of sea lice infestation from marine salmon farms in bays in the present study, increased mortality of salmon smolts can be expected.

Any findings of interest and to whom:

The finding that salmon smolts are also being impacted by sea lice on their seaward migration in salmon aquaculture bays is a new finding and a cause for concern. A number of salmon rivers in the west designated as SAC's for salmon under the EU Habitats Directive discharge into salmon farming bays. Therefore there is a strong possibility that unless very good sea lice control is in place on marine salmon farms, wild salmon smolts will suffer increased mortality migrating through these bays and the conservation status of salmon in these rivers will be affected.

What the are next steps?

A final report will be forwarded to the EU in spring 2007.

Imprinting salmon in lake cages before release.

Examining returning salmon at river trap.

Project Title: Environmental Drainage Maintenance (EDM) Programme.

(External Funded)

Remit of the project:

To examine impacts of standard and environmental maintenance strategies on fish and fisheries habitat in the river corridor; to deliver training programme to the Office of Public Works (OPW) on environmental maintenance and to monitor implementation; to develop pre-maintenance walk-over survey protocol for stakeholders in order to identify channel requirements and feasibility of implementation in maintenance.

Why is the project being undertaken?

OPW has undertaken arterial drainage, since World War II, in the majority of Ireland's large, lowland river catchments. Many of these are important salmonid leisure fisheries, such as the Rivers Moy, Boyne, and Maigue. Others, such as the Lung-Breedoge and the Inny main stem, are significant quality coarse fish waters. All of OPW's arterially drained channels are subject to maintenance. This has the potential to adversely impact the fish populations and fisheries habitat. The EDM programme was initiated by OPW and provides the Central Fisheries Board (CFB) with an opportunity to identify impacts of maintenance and to identify mitigation strategies. In short, it provides an opportunity to achieve a re-balancing between channel management needs, on the one hand, and fisheries – wildlife needs, on the other, along the river corridor. It provides the CFB with a front-seat opportunity to engage constructively with OPW with a view to facilitating mind shifts and strategy shifts in respect of maintenance in the light of environmental demands. These demands have been present, to a very limited degree, in elements of the Fisheries legislation. However, the current EU Habitats Directive and Water Framework Directives and the National Biodiversity Plan are all driving an agenda for change in channel management. The CFB project team is satisfied that the EDM study provides it with an opportunity to facilitate change in OPW's working practises. Such is engagement is consistent with our need to protect the integrity of the fisheries habitat on river corridors.

Sponsors / person in charge of the project:

This is a 5-year programme funded by OPW Drainage Division and operated nationally. The project is managed by Dr James King for CFB.

When is the project planned to be complete?

The current 5-year term concludes at end of 2006.

Who will benefit from the project?

Fisheries and Wildlife should be major beneficiaries of this programme. To ensure full value for money it is essential that strong networking be developed at local level between OPW and Regional Fisheries Boards (RFBs) staff. This is the case in some areas but much stronger links could be forged to RFB benefit. The EDM study is very much an 'added-value' programme which, if fully embraced by RFB officers locally, could be of substantial value to fisheries management. This is the case in isolated circumstances where local RFB staff have seen the potential benefits to be derived from using EDM strategies in OPW scheduled maintenance and have been able to steer maintenance activities in a manner of benefit to fisheries.

When will the interim and / or final reports be available to the Board?

Report issues to OPW as the commissioning body.

Cost of the project and source of funding:

The project is funded at €76,000 annually. This covers salary cost of 1 X Research Officer employed by CFB for this project. It also covers costs for RFBs in respect of electric fishing operations mounted in the course of data collection for this programme.

Who will the findings be made available to?

OPW are happy to make the findings widely available. Some of the findings from the 5-year study are currently being written-up for submission to peer-review scientific journals. Previous findings are available on the CFB website.

Project Title: Inland Fisheries Development Programme for Waterways Ireland.

(External Funded)

Remit of the project:

The Central Fisheries Board (CFB) is 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.

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).

The programme is conducted under three broad headings. A brief synopsis of some of the major elements is included.

Fisheries Development

Regular fish stock assessment operations are conducted across the navigable waterways network. Standardised procedures have been devised and implemented, and innovative methodologies trialled.

Surveys are allied with detailed fish telemetry and fish movement studies. Ongoing experiments are being conducted on fish movement/habitat choice on the Shannon-Erne Waterway and Barrow Navigation.

Applied research into mitigating the impact of routine canal maintenance operations on canal ecology will be conducted from 2007.

Detailed angling maps are being produced using information gained from the current and previous programmes.

Aquatic Plant Management

Aquatic plants play a fundamental role in the functioning of aquatic ecosystems. However, excessive growth can have negative ecological impacts and prevent access to and use of the amenity by a diverse range of end users. An Annual Weed Control Programme, developed specifically for Waterways Ireland, facilitates navigation and amenity use, while retaining habitat diversity and function.

Particular emphasis is being placed upon the distribution, abundance and impact of the non-native invasive plant species New Zealand Pigmyweed (*Crassula helmsii*) and Nuttall's Pondweed (*Elodea nuttallii*).

In 2006 a trial assessing the efficacy of two aquatic herbicides was conducted on the Grand Canal.

Water Quality Monitoring and Pollution Abatement

Water quality monitoring on the Royal and Grand Canals, the Barrow Navigation and the Shannon-Erne Waterway continued during 2006. Water samples were collected on three separate occasions over this period. In order to maintain the recreational amenity value of the waterways it is imperative that EU standards for water quality are met. These standards can be adhered to by closely monitoring waters on a regular basis. This monitoring is conducted by the CFB and involves physico-chemical analysis on-site and in the CFB laboratory.

Part of the project involves developing internationally agreed methodologies that will be used in the ecological classification of canals, in line with the WFD.

Sponsors / person in charge of the project:

The project is entirely funded by Waterways Ireland. Six full time staff are employed under the contract. Dr Joe Caffrey of the Central Fisheries Board is the officer in charge.

When is the project planned to be complete?

The current programme runs from July 2006 to 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. Beneficiaries include all those who utilise these navigable waterways for any leisure or amenity pursuits. The information collected is also useful to the Fisheries Boards, the EPA and a wide range of other organisations.

When will the interim and / or final reports be available to the Board?

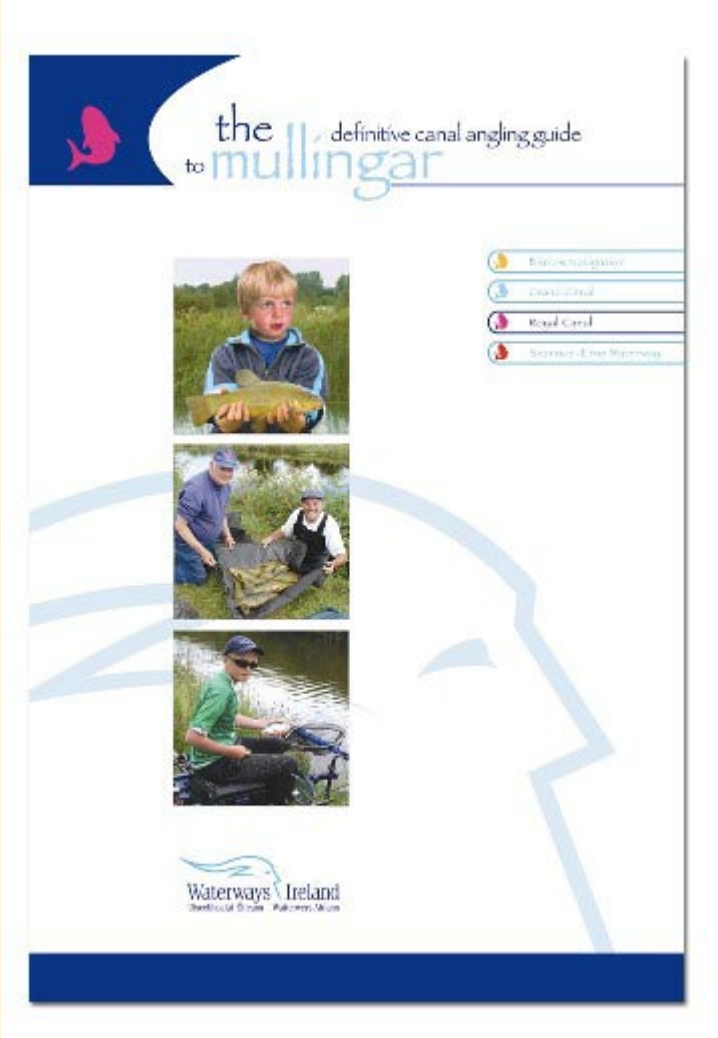
Yearly interim reports will be completed, and a final report following the completion of the project, in 2009. All relevant data will be available to the national fisheries database. Where appropriate, information of scientific merit will be submitted to peer review journals.

In 2006, two peer reviewed articles were published in an international scientific journal.

Caffrey, J.M., Monahan C., and Tireney D. (2006). Factors influencing the distribution of aquatic plant communities in Irish Canals. Hydrobiologia (2006) 570. 133-139

Caffrey, J.M. and Monaghan, C. (2006). Control of *Myriophyllum verticillatum* L. in Irish canals by turion removal. Hydrobiologia (2006) 570

CFB surveying the River Barrow



An Angling Guide produced by the project.

Project Title: Cross - Border Angling Marketing Plan.

(External Funding)

Remit of the project:

To identify and address reasons for the recent decline in tourism angling in Leitrim and Fermanagh. It is an integrated project encompassing fish stock assessment, infrastructural and capital works and marketing and promotion.

Why is the project being undertaken?

There has been a marked decline in angling tourism in both Leitrim and Fermanagh in recent years. Failte Ireland figures indicate a decline in visiting angler numbers from 139000 in 1997 to 56000 in 2002. Concomitantly, eight and three day fishing licence sales in Fermanagh fell by 34% and 66% respectively. The project was initiated to redress this decline.

Sponsors / person in charge of the project:

Project is funded by Irish Central Border Area Network (ICBAN). The steering group involves members of the Shannon Regional Fisheries Board (ShRFB), Central Fisheries Board (CFB) (Joe Caffrey), Department of Culture, Arts and Leisure (DCAL), Department of Agriculture and Rural Development (DARD), Leitrim County Council and Fermanagh County Council. A project officer is employed and based in the ShRFB office in Drumsna.

When is the project planned to be complete?

The project is due for completion at end 2007

Progress/Findings/Next Steps

A number of lakes were surveyed in 2006, including a number which were surveyed using hydroacoustics methodology. Results from these will be used in targeted marketing in future years

Who will benefit from the project?

Knowledge of fish stock in the area will be enhanced. This knowledge will enable appropriate, targeted marketing strategies to be implemented. Increased angler utilisation will benefit stakeholders associated with tourism in the cross-border area.

When will final reports be available to the board?

Following completion of the project, at the end of 2007.