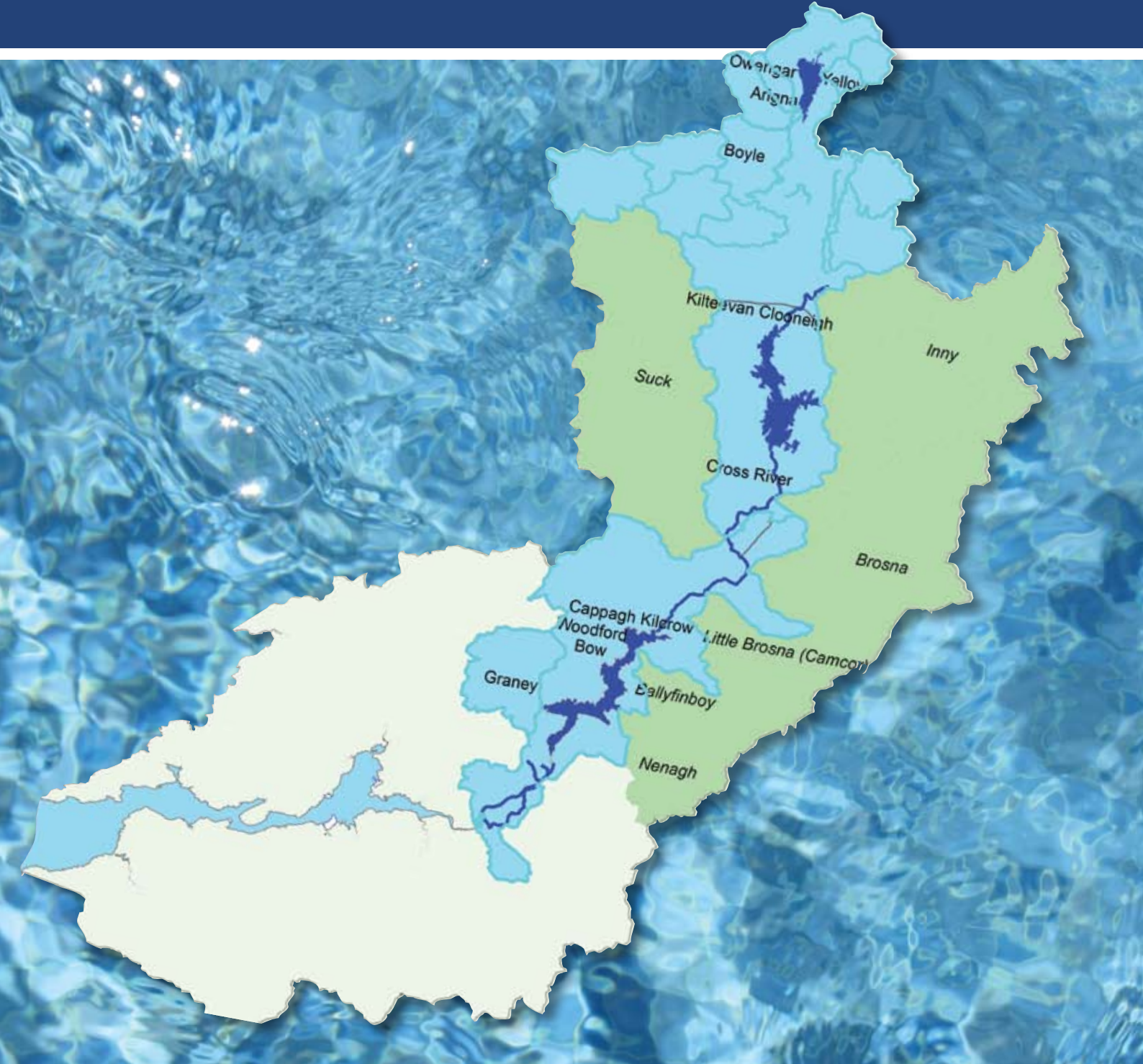
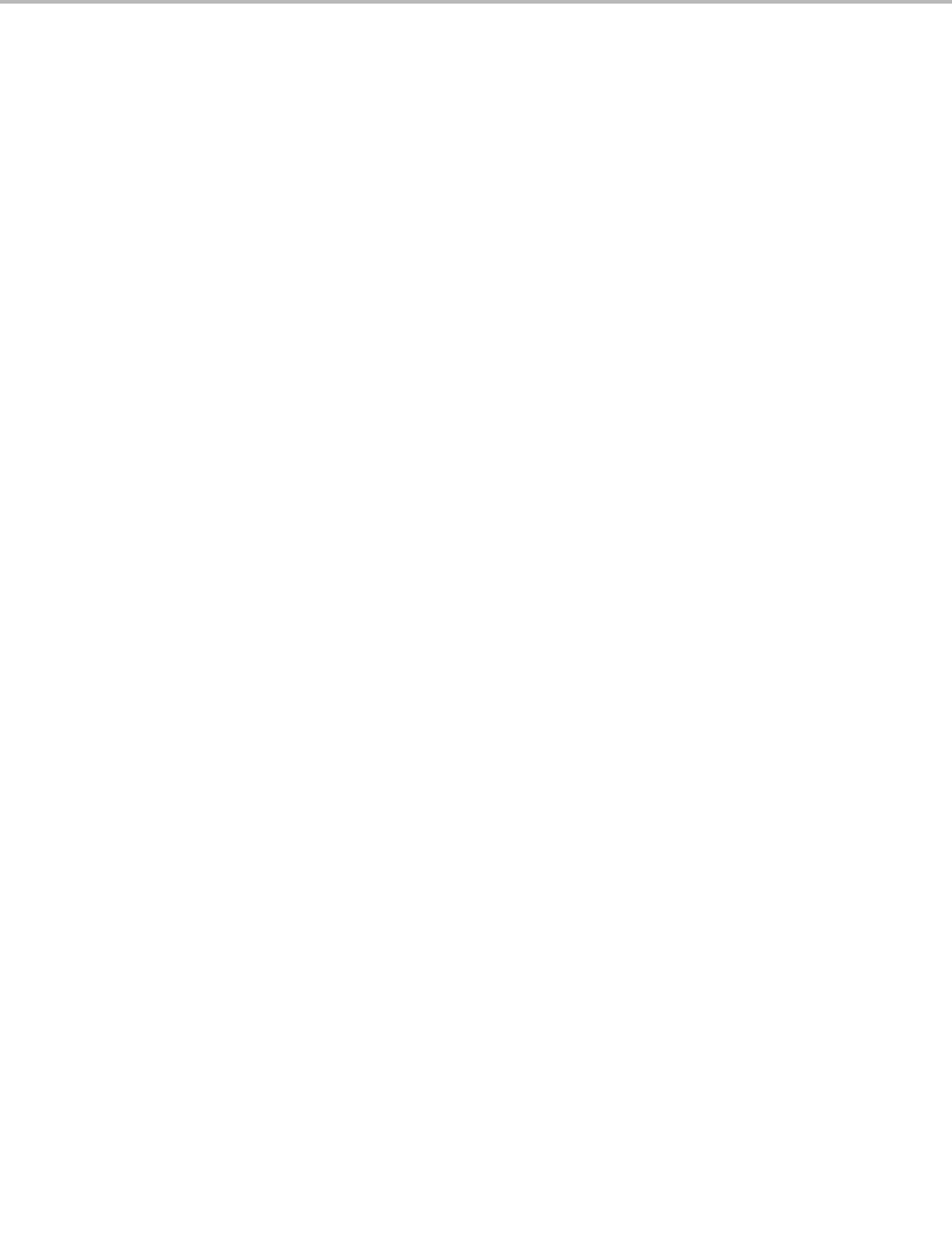




# SHANNON FISHERY PARTNERSHIP PLAN





# Shannon Partnership Plan for 2011

## Introduction

### Shannon Partnership Initiatives

Develop Five Year Programme

Instream Work Program

Woodford river	Lough Derg Catchment
Bow River	Lough Derg Catchment
Nenagh River	Lough Derg Catchment
Kilteevan River	Lough Ree Catchment
Camcor River	Mid -Shannon catchment
Cross River	Lough Ree Catchment
Tang/Dungolmen	River Inny catchment
Owengar River	Lough Allen

Angler led Initiatives

Lough Ree Fish Hatchery

Lough Derg Native Fish Biodiversity Project

ESB led Initiatives

Eel Restoration and Scientific Plan.

Shannon Salmon Restocking and Scientific Programme .

Fisheries Enforcement.

IFI led Initiatives

Shannon Salmon Restoration Plan

Atlantic Aquatic Resource Conservation (AARC) Project.

Fisheries Enforcement

Managed Fisheries Programme

Plan Review

## Introduction

The River Shannon fishery is owned and managed by the ESB, which has the primary function of hydro electric generation. Subject to that, it performs the duty of managing, conducting and preserving the Shannon fisheries under the Shannon Fisheries Act (1935).

Following ongoing discussions between the ESB and the Shannon Fisheries Preservation and Development Co Ltd, over several years agreement was reached to establish the Shannon Fishery Partnership. The Partnership Group comprises of representatives from the following stakeholders; ESB, Shannon Fisheries Preservation and Development Co. Ltd (SFPDC), Inland Fisheries Ireland (IFI) and an independent Chairman. The areas to be involved are those ESB owned fisheries i.e. unleased fisheries, above the stations.

## Objectives

1. To develop a sustainable, operational, collaborative structure, operating through partnerships and consensus.
2. To identify the needs of the Fishery, ensuring the conservation and sustainable yield of fish in line with prevailing scientific advice.
3. To develop and implement a rolling 5 year strategic plan to incorporate fishery maintenance and enhancement.
4. To enhance recreational angling and eel fisherpersons' ability to input into the operation plans of the Shannon Fishery Partnership.
5. Ensure "*buy in*" from all stakeholders in the catchment in association with the Strategic Plan.

## Terms of Reference

1. Develop a sustainable fishery (management) system for the Shannon Catchment, based on prevailing scientific advice.
2. Progress the elements of the Shannon Fisheries Partnership and work with other stakeholders to progress the Strategic Plan.
3. Consider the views of all stakeholders of the Shannon Fishery and through consensus arrive at sustainable operational plans.
4. Develop new funding opportunities for the entire fishery.

5. Provide educational and awareness programmes on fisheries' issues for the catchment.
  
6. Develop the capacity of the Partnership Group to co-operate on the development of plans for the fishery into the future.

This document outlines the projects agreed by the Shannon Fishery Partnership and initiatives which the three partners have proposed for 2011.

### **Development of a Five Year Programme**

A key element of the Partnership is to develop and implement a five year rolling strategic plan. During the course of the 2011 Work Plan the Strategic Plan will be put in place. The Plan will cover all elements of the operation of the fisheries in the Shannon Catchment. The membership of the Partnership will seek to ensure that all aspects of the fishery are included.

Areas to be addressed in the Plan will include.

- The Overall Vision for the Fisheries Program
- Assess the stock of the river – all fish species,
- Identify what work needs to be done,
- Scientific Principles
- Habitat Strategies
- Artificial Production Strategies
- Recreational Angling Strategies
- Ecological area
- Geographical Structure
- Sub Catchments Plans
- Implementation Provisions
- To develop the existing IFI GIS maps with all catchment with the Q values, OPW channels, etc.
- Gather all available information for GIS input, especially with regard to stock assessments
- Disseminate information on fishery awareness throughout the catchment
- Educational awareness



## Instream Work Program 2011

### Woodford River



The Woodford River is situated on the western shore of Lough Derg and has traditionally held stocks of both Salmon and Brown trout. During the catchment wide electrofishing survey carried out by both ESB and IFI in 2010, there were no salmon fry or parr found in any of the sites fished (except for small numbers at one site), while good numbers of brown were found in most sites.

From EPA studies, water quality ranges from Q3-4 (Moderate) at a site in the upland areas, to Q4 (Good) and Q4-5 (High) at 2 sites below the village. Therefore the water quality is above moderate and therefore suitable for salmonids.

The river is not in a Special Area of Conservation at this location but downstream it flows through Derrycrag Wood Nature Reserve which is a SAC.

### Works to be undertaken

A barrier to migration for both salmon and trout is located in Woodford town. Just above the main road bridge the river is dammed and broadens out into a small artificial lake called Woodford Bay or simply "The Bay". The proposal is to create a rock ramp type of fish pass here to facilitate fish movement both upstream and downstream.

### Steps to completion:

Complete plan with an ESB Fisheries Conservation engineering input.

Identify and gain permission from landowners

Identify and consult with relevant stakeholders

Clarify planning issues

Location Accessed At	Salmon CPUE (m <sup>2</sup> )	Trout CPUE (m <sup>2</sup> )	Other species present
Rosmore Bridge	0	0.1	Stoneloach
Clonco	0	0.8	Brook lamprey
Bolag Bridge	0	1.6	Eel
Woodford	0	0.6	Stoneloach
Woodford	0	0.1	Stoneloach
Knockauncarragh	0	0.1	
Alleendarra West	0	0.0	
Sleive Eachtai Mountains	0	0.0	
Inchy	0.2	0.2	Stoneloach

**Groups involved;** ESB Fisheries Conservation (lead group) and IFI.

**Constraints:**

A full listing of the constraints to the success of the project is listed below:

- Approval from; NPWS, Coillte, OPW and both Galway and Clare County Councils.
- Permission of adjoining land owners.
- Resolution of all planning permission issues.
- Any possible local objections.

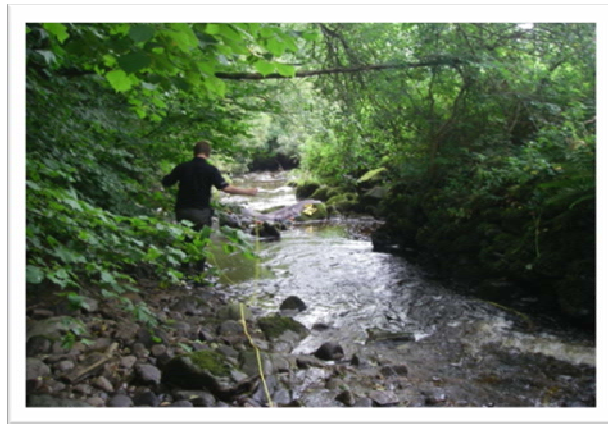
**Key Tasks**

- Provision of detailed plan for the fish pass (ESB)
- Securing permission of local land owners (ESB)
- Ensure all safety documentation and procedures are adhered to (ESB)
- Meet with local NPWS staff (ESB & IFI)
- Meeting other interested stakeholders (ESB & IFI)

**Time Line**

The project should be completed by December 2011 (subject to water discharge). All instream works will have to be completed within the period April-September, whilst all de-tunneling works will have to be completed outside of the bird nesting season, i.e. nesting from March – September.

## Bow River



The Bow River although relatively small, is one of the main tributaries on the Western shore of Lough Derg. It has excellent gravel suitable for spawning salmon and trout. Traditionally the river has a good stock of trout and is capable of producing large numbers of trout to L Derg.

Location Accessed At	Salmon CPUE (m <sup>2</sup> )	Trout CPUE (m <sup>2</sup> )	Other species present
Bow (Bow bridge)	0.0	0.4	
Bow River (Lowermost bridge - R352)	0.0	0.0	Brook Lamprey

From EPA studies, water quality ranges from Q4 (Good) and Q5 (High) at 2 sites below the village. This means that the water quality is excellent, therefore suitable for salmonids.

The river is not in a Special Area of Conservation or any other protected nature area but it flows into the SAC along the margins of Lough Derg.

### Works to be undertaken

Bankside tunnelling is a recurring problem in many streams around the western shore of Lough Derg. This reduces productivity in the streams as light is blocked out during long periods of the year. It is planned to undertake selective bank clearance in the area immediately above and below the main road bridge (R 352), so as to allow light in, and also provide an assessment of any future instream works which may also take place. These instream works would include construction of stone weirs and placement of spawning gravel. Fencing of the areas would also be undertaken.



### **Steps to completion**

Identify and gain permission from landowners

Identify and consult with relevant stakeholders

**Groups involved;** ESB Fisheries Conservation (lead group) IFI.

### **Constraints:**

A full listing of the constraints to the success of the project is listed below:

- Consultation from; NPWS, Coillte and OPW.
- Permission of adjoining land owners.
- Any possible local objections from other stakeholders.

### **Key Tasks**

- Securing permission of local land owners (ESB)
- Ensure all safety documentation and procedures are adhered to (ESB)
- Meet with local NPWS staff (ESB & IFI)
- Meeting other stakeholders (ESB & IFI)

### **Time Line**

The project should be completed by December 2011. All instream works will have to be completed within the period April-September, whilst all de-tunneling works will have to be completed outside of the bird nesting season, i.e. nesting from March – September.

**Nenagh River**



The Nenagh River flows into Lough Derg on the Eastern shores of the lake near Dromineer, Co. Tipperary. The River rises in the Silvermines mountains and covers a large catchment area with variable land uses. The main Nenagh River is extremely valuable as it currently holds a wild salmon population in addition to a healthy trout stock. Downstream of Ballyartella Weir there are also coarse fish although these are mostly concentrated at the mouth of the river during spawning times.

Water quality varies within the catchment. The main channel varies from Q3-Q4 to Q4 and has been described by the EPA as “Fair”. The Ollatrim has been described as “Unsatisfactory” regarding water quality standards. The upper catchments such as the Dolla have recorded Q4-Q5 in recent years. The lower catchment is under significant agricultural pressure. The EPA operates automated river samplers in the Clarianna catchment near Nenagh which aims to increase the knowledge of movement of nutrients from fields to surface water under a 3-4 year study.

**Works to be undertaken**

In 2010 works began to upgrade the angler and public access from Scotts Bridge upstream to Lisbunny Bridge. For 2011 these infrastructural works will be completed which will also involve the addition of instream features in the section immediately downstream of Lisbunny bridge. Instream works identified are the addition of a number of paired deflectors and a section of bank protection using rock. Fencing is also planned here to prevent access by livestock to the river.

Tributary	Location Accessed At	Salmon CPUE (m <sup>2</sup> )	Trout CPUE (m <sup>2</sup> )	Other species present
Ollatrim	Ollatrim Bridge	0.0	0.3	eels
Ollatrim	Bessborough	0.0	0.1	
Ollatrim	Ballinahemery	0.0	0.1	
Ollatrim	Rathurles Br.	0.2	0.0	
Ballintotty	Coolderry	0.0	0.1	eels
Ballintotty	Ballynalick	0.0	0.0	eels
Ballintotty	Ballintotty	0.0	0.6	eels
Ollatrim	Cunnahurt	0.1	0.0	
Ollatrim	Gourdeen Br.	0.1	0.1	
Nenagh	Dolla	0.5	0.2	
Nenagh	Toreen	0.4	0.2	
Nenagh	Sand Trap (Latteragh)	0.1	0.1	
Nenagh	Lacken Br.	0.1	0.1	
Nenagh	Ballysolloughshaun	0.1	0.2	eels
Nenagh	Ballynacloch	0.1	0.2	
Nenagh	Nenagh Br.	0.0	0.0	eels
Nenagh	Gurteen	0.1	0.2	eels

### Steps to completion

Identify and gain permission from landowners

Identify and consult with relevant stakeholders

**Groups involved;** ESB Fisheries Conservation (lead group), IFI.

### Constraints:

A full listing of the constraints to the success of the project is listed below:

- Consultation with NPWS and OPW.
- Permission of adjoining land owners.
- Any possible local objections from other stakeholders.

### Key Tasks

- Securing permission of local land owners (ESB)
- Ensure all safety documentation and procedures are adhered to (ESB)
- Meet with local NPWS staff (ESB & IFI)
- Meeting other stakeholders (ESB & IFI)

## Time Line

The project should be completed by December 2011. All instream works will have to be completed within the period April-September, whilst all de-tunneling works will have to be completed outside of the bird nesting season, i.e. nesting from March – September.

## Cross river



In 2008 four partners came together to implement a habitat restoration plan on the Cross river comprised of the Shannon Regional Fisheries Board, ESB Fisheries Conservation, Elan Corporation and the Cross River Angling Club. The programme of work was undertaken in a series of river length units. The main phase involved the main channel between Millnagh Mill and Bealnamullia, one of the main angling stretches in the river. This involved the clearance of weed and stabilisation of banks both sides of the river. A number of cattle drinkers were also installed along the site. ESB Fisheries Conservation fenced a large section of the river that had been rehabilitated from the previous year.

Water quality varies in the catchment. It declines in the upper sections to Q2-3 and intermittently in sites moving downstream it improves to Q4-5. There isn't electrofishing data available at present for this catchment.

### Works to be undertaken

Fencing will be erected on the lowermost section of the Cross River by June 2011.

An electro-fishing survey of the Cross River system will also be completed by IFI staff by end of September.

**Groups involved;** ESB Fisheries Conservation (lead group), IFI.

**Constraints:**

A full listing of the constraints to the success of the project is listed below:

- Permission of adjoining land owners.
- Any possible local objections from other stakeholders.

**Key Tasks**

- Securing permission of local land owners (ESB)
- Ensure all safety documentation and procedures are adhered to (ESB)
- Meeting other stakeholders (ESB &IFI)

**Time Line**

The fencing of the Cross river is in progress at present and will be completed by September 2011.

## Camcor River (Little Brosna)



The Camcor is an important tributary of the Little Brosna catchment holding good stocks of trout and salmon, including the unique migratory trout locally known as Croneen. It rises in the Slieve Bloom mountains, which is a Special Area of Conservation, and joins the Little Brosna in Birr, Co. Offaly.

Since 2006, ESB Fisheries Conservation has commenced major habitat improvement works from Fortel Bridge to the environs of Birr town. Together with the local angling club "The Little Brosna and Camcor Anglers" who have also carried out instream works, it has enhanced the productivity of the catchment.

Water quality in the catchment varies from Q4 and Q5 above Breaghmore, and in the upland areas to Q3 in the lower sections of the main channel. Generally the EPA describes it as mostly satisfactory, but with some changes and threats. This means that it is suitable to carry out any works on the catchment.

Previously the river had been adversely impacted by drainage and flood alleviation works, and this program seeks to alleviate that while maintaining drainage needs.



## Works to be undertaken

The final phase of the plan in 2011 see bank stabilization, instream works to be completed in the Sandymount area of Birr. An electrical fishing survey of the catchment will also be completed.

**Groups involved;** ESB Fisheries Conservation (lead group), IFI.

## Constraints:

A full listing of the constraints to the success of the project is listed below:

- Consultation with NPWS and Offaly Co Co
- Permission of adjoining land owners.
- Any possible objections from other local stakeholders.

## Key Tasks

- Securing permission of local land owners (ESB)
- Ensure all safety documentation and procedures are adhered to (ESB)
- Meet with local NPWS staff (ESB & IFI)
- Meeting other stakeholders including the local angling Club (ESB & IFI)

Location	Salmon CPUE (m <sup>2</sup> )	Trout CPUE (m <sup>2</sup> )	Other species present
Forelacka	0.0	0.0	Eel
Coneyburrow bridge	0.0	0.1	
Castletown Bridge	0.0	0.0	
Moneyguyneen	0.0	0.0	
Drumcullen Bridge	0.0	0.1	
Ballyshane Bridge	0.0	0.5	
Carrig Bridge	0.1	0.5	
Breaghmore Bridge	0.0	0.1	Stoneloach, Crayfish
Kilyon Bridge	0.1	0.2	Eel, stickleback
Fortel Bridge	0.1	0.2	
Springfield Bridge	0.1	0.1	
Elmgrove Bridge	0.3	0.1	Eel, minnow.
Oxmanstown Bridge	0.0	0.2	
Weir Bridge	0.1	0.3	
Gortcreen	0.0	0.2	
Miltown Bridge	0.0	0.2	
Bunnow Bridge	0.0	0.3	
Brosna Bridge	0.0	0.0	

## Time Line

The project should be completed by end of September 2011. All instream works will have to be completed within the period April-September, whilst all de-tunneling works will have to be completed outside of the bird nesting season, i.e. nesting from March – September. The electrical fishing survey will be completed by the end of August.

## Clooneigh River /Kilteevan River



The Clooneigh River holds good stocks of brown trout, lamprey, eel and stickleback and is an important tributary of Lough Ree for spawning lake trout. The Shannon Regional Fisheries Board has previously carried out some work on the river below Belderg Bridge. This work has been successful, but there are many other areas that also need improvement.

The Kilteevan River is a tributary of the Clooneigh River and this tributary is the primary focus of riverine works. The Kilteevan River rises north of Roscommon town and flows in a south easterly direction until it meets the Clooneigh River in the townland of Derrinturk in Mid Co. Roscommon. The river flows through only one village, Kilteevan. The rest of the area it flows through is predominantly rural. The surrounding catchment is medium to low lying, and the last  $\frac{1}{2}$  kilometre is bordered by coniferous woodland. Small farming is the main land use along the 10 kilometre river.

Water quality is classified as Q3-4 in general. The EPA has stated that the upper Clooneigh river was slightly polluted but a significant improvement was recorded in the lower reaches in 2002. Land use in this sparsely populated catchment is predominantly high productivity pasture on grey-brown podzolic soils.

While the Clooneigh river is not a SAC it flows into the Lough Ree Special Area of Conservation.

There is no electrical fishing data available at present for this catchment.

### **Works to be undertaken**

Continue with the existing plan to remove overgrowth and allow assessment of any instream works which may be carried out. To carry an electrical fishing survey of the catchment.

**Groups involved;** ESB Fisheries Conservation (lead group) IFI.

### **Constraints:**

A full listing of the constraints to the success of the project is listed below:

- Consultation the NPWS and OPW.
- Permission of adjoining land owners.
- Any possible local objections.

### **Key Tasks**

- Securing permission of local land owners (ESB)
- Ensure all safety documentation and procedures are adhered to (ESB)
- Meet with local NPWS staff (ESB & IFI)
- Meeting other interested stakeholders (ESB & IFI)

### **Time Line**

This section of the Clooneigh Plan should be completed by September 2011. All instream works will have to be completed within the period April-September, whilst all de-tunneling works will have to be completed outside of the bird nesting season, i.e. nesting from March – September. The electrical fishing survey will be completed by the end of September.

## Owengar River, Lough Allen



### IFI Work Programme 2011

The River Owengar, like the River Arigna and Yellow River, are spate systems which provide ideal habitat for salmonids. The predominant species in these three river systems are wild brown trout. These rivers flow into Lough Allen at the top of the River Shannon system in County Leitrim

Water quality in systems prior to the landslide has been described as satisfactory by the EPA ranging between Q4 and Q5. Upland blanket bog dominates the catchment land use while there is also a high proportion of forestry and low intensity animal grazing. The catchment is not in a Special Area of Conservation.

Following a major peat landslide at Garvagh Glebe Windfarm and associated fish kill a remediation plan for the catchment was drawn up to be implemented on a 3 year phased basis. As a result of the major physical damage to the river's natural course a suite of instream works including bank protection and fencing are planned. These works will also include a comprehensive monitoring programme.

### Works to be undertaken

Instream works will be carried out regarding remediation post a recent landslide. These works are mainly fencing and bank protection to encourage channel stabilization in 2011 and 2012.

**Groups involved;** IFI (lead Group) and ESB Fisheries Conservation.

### Constraints:

A full listing of the constraints to the success of the project is listed below:

- Consultation NPWS, Coillte
- Permission of adjoining land owners.
- Any possible local objections.

### **Key Tasks**

- IFI to carry out works in accordance with agreed plan

### **Time Line**

The project should be completed by December 2011. All instream works will have to be completed within the period April-September, whilst all de-tunneling works will have to be completed outside of the bird nesting season, i.e. nesting from March – September.

## Angler led Initiatives

### Lough Derg Native Fish Biodiversity Project

**Phase 1.** Approval has been received from 'Leader' for the purchase and installation of a 'VAKI River watcher' fish counter on the Ballyartella Weir on the Nenagh river during 2011.

**Phase 2.** A Feasibility Study will be carried out in order to fully evaluate options for the development of angling on Lough Derg and its tributaries. Tenders have been invited for this project, with a final report scheduled for May 2011.

**Phase 3.** On completion of 1 and 2 above, a further feasibility study will be carried out in relation to the Tourism potential and marketing of Lough Derg.

There is also an **International dimension** to this Project, and groups in both Sweden and Scotland have been identified with similar aims and aspirations. A group from Sweden has already visited the Project in Nenagh and it has been found that there is a lot in common. It is hoped to visit both Sweden and Scotland in 2011 and it is expected to have a visit from the Scottish group in 2011. These contacts should be mutually beneficial to all concerned.

Several angling clubs in the Lough Derg area propose to carry out habitat restoration work during 2011. These Plans will not be finalised until after Club AGM's early in the 2011, and following advice and direction from the Partnership Group, ESB or IFI.

### Lough Ree Trout Fish Hatchery

#### Background

Lough Ree Fish Hatchery was officially opened in 2002. The Association represents nine angling clubs on the surrounds of Lough Ree. The Hatchery located at Coosan, Athlone, is constructed away from a natural feeder stream to Lough Ree and the water feed to the Hatchery is from a well sunk some 40 metres below ground level. The committee had looked at some feeder streams to Lough Ree; however the water quality contained many impurities that deemed it unsuitable for rearing fry to unfed fry stage. Other suitable sites had a volatile water system that could make it difficult for hatching the ova to unfed fry stage.

#### Role

- To provide feeder streams to Lough Ree with a stock of trout fingerlings and to assist with feeder stream development plans where appropriate.
- To promote and encourage recreational angling on Lough Ree and its tributaries
- To encourage anglers' participation in catch-and-release methods with recreational angling.
- To trap brood fish and assist the Shannon Regional Fisheries Board with the stripping process.

#### Hatchery Quality Control

- Oxygen level control (recorded daily and maintained at 90 – 100%).



- Removal of mortalities (if any)
- Water temperature (recorded daily and maintained at 6 degrees by a thermostatically controlled heater).

This work is carried out by various club members associated with the hatchery who volunteer their time to maintain the hatchery and its contents.

### **Release of unfed Fry**

The fry are released to the relevant feeder streams to Lough Ree under the guidance of IFI. The Hatchery located at Coosan is licensed by the Department of Marine and Natural Resources to rear 75,000 ova to unfed fry stage at the Hatchery. It is also used by IFI to provide educational awareness with local schools in the Lough Ree area.

### **Angling Clubs Main Activities**

- Organising meetings in accordance with the constitution, complying with legislation, informing club representatives of any changes etc. that may impact on the activities of the association.
- Fundraising to cover the annual running costs of the hatchery.
- Running maintenance of the hatchery buildings and ancillaries.
- Liaising with IFI on the adult broodstock trapping process.
- Processing the fertilisation of ova.
- Assisting with the release of unfed fry to Lough Ree and its tributaries.
- Assisting IFI with nursery stream electro-fishing .

### **Conclusion**

It is imperative that this programme be maintained and further stream enhancement work be carried out. To date this programme has been successful and the fruits of our labour have been enjoyed by many visiting and resident anglers around the shores of Lough Ree and its tributaries.

## ESB led Initiatives

### The River Shannon Management Plan:

The River Shannon Management Plan was initiated by ESB Fisheries Conservation in 1992. A considerable body of work has been undertaken on the salmon populations of the R. Shannon. Presently, ESB fisheries has a Scientific Advisory Group (ESB FC SAG), which gives ESB scientific guidance on a variety of environmental roles with which it is involved.

Issues relating to R. Shannon fish passage at the large scale ESB owned hydroelectric stations have been dealt with through a series of investigations which include;

- (1) The annual R. Shannon smolt passage protocol.
- (2) The use of a Heisey Turbine test undertaken in 2004 (resulting in a survival rate of 88%),
- (3) The use of batches of micro-tagged salmon smolt (resulting in a survival rate of 82%).

At present, it appears nationally as if very low marine smolt survival rates are having a serious negative effect upon Irish salmon populations.

### The Parteen ESB salmon hatchery and associated electrical fishing surveys

Parteen hatchery was constructed at Parteen Regulating Weir in 1959 and was extended in 1970. A phased refurbishment project was initiated in 1997 and the hatchery now has a capacity to incubate up to 4 million salmon ova, with an upper limit of 400 pairs of salmon. Several areas within the hatchery will also be upgraded in 2011, including the provision of a new water supply and filtering system and a hoist system for the removal of gravid adult salmon from holding pens. A total of approximately 150,000 adipose fin-clipped salmon smolt are released each year as part of the ranching programme.

The main goal of the hatchery is to assist in the recovery of the wild salmon populations upstream of Parteen and Ardnacrusha, and secondly to increase knowledge of salmon through the use of an educational centre. The educational centre, located at the hatchery, provides a resource for visiting school tours and other interested parties such as angling clubs etc.



Parteen regulating weir on the Lower River Shannon, showing the weir structure which diverts water through the headrace canal to Ardnacrusha hydroelectric station. The location of the Parteen hatchery unit, where some of the experimental rearing of salmon will take place, is also shown.

Since 1991, all hatchery reared smolt have been adipose fin-clipped and selected breeding lines have been micro-tagged, thus allowing the separation of reared, wild, grilse and multi sea-winter adult salmon. Although restocking began in the 1960s, the restocking programme since 1991 has moved to large scale unfed fry planting, with the retention of a limited number of unfed fry for smolt production the following year. These unfed fry plantings are evaluated using electrical fishing survey equipment. ESB Fisheries Conservation led surveys and other ESB contracted surveys have found that the performance of the restocked unfed fry has generally been good compared to the first baseline survey (1990-1992). However, fishery habitat degradation (arterial drainage, water quality issues, afforestation and peat harvesting), along with fishery access issues at Athlone and Tarmonbarry, all complicate the issue of the restoration of Shannon salmon stocks. It is proposed that the Big and Little Brosna's, Ballyfinboy, Carrigahorrig and Kiltveevan Rivers be electrically fished in 2011. The unfed fry/summer parr restocking areas for 2011 will all be in the mid-Shannon catchment (to be located mainly within the Inny catchment). Therefore, the Lower Shannon catchment area (particularly L. Derg), will not form part of the ESB restocking programme for the present time.

### **Works to be undertaken**

- Management of the ESB hatchery will be to a high standard (ISO 14001 and ). Upgrade works will be completed at the Parteen hatchery unit including the provision of a new water supply and filtration unit and an automatic flow monitoring system. In addition there will also be an upgrade of the fish feeding system.
- Rear approx. 150,000 smolt for ranching purposes in the Lower Shannon.
- Rear approx. 1,000,000 unfed fry for release in the mid-Shannon catchment
- Electrical fishing assessments will be undertaken in the Big Brosna, Little Brosna, Ballyfinboy, Carrigahorrig and Kiltveevan rivers.
- The ESB Hatchery educational centre will be maintained and visits encouraged by all interested stakeholders.

**Group involved;** ESB Fisheries Conservation.

### **Eel Restoration and Scientific Programme**

The analyses of River Shannon silver eel migration have been undertaken annually by the NUI Galway Eel Research Group on behalf of ESB since 1992. Considerable experience has been gained since the initial intensive studies of 1992-1994. However, the focus has changed in recent years from fishery monitoring to eel conservation issues including the development of a Lower River Shannon silver eel trap and transport (T+T) programme, in which ESB arranged for release of the entire Killaloe eel weir catch down stream of Parteen weir.

The Shannon IRBD Eel Management Plan has set trap and transport targets for the period 2009-2012. Therefore, the work undertaken in 2011 will be primarily aimed at the need to provide accurate assessments of the population characteristics of the silver eel populations, especially in respect of the trap and transport fishing zones, and the spawner escapement from the Lower River Shannon.

The National and River Basin District Eel Management Plans specify management actions that include: closure of fisheries and markets; mitigation of adverse effects of hydropower generation facilities, improvement of water quality and bio-security issues. In respect of hydropower, and because of the overall objective of the plans is to increase the biomass of spawning eel leaving Irish waters, there are specified targets for the trapping and trans-

port of silver eels from locations upstream of hydropower stations for safe release downstream. The target for the Shannon T+T is set at 30% of the current eel escapement.

### **The Shannon trap and transport programme**

Research scientists from the National University of Ireland, Galway (Eel Research Group), working in partnership with Electricity Supply Board (Fisheries Conservation) staff, have and will continue to monitor the ESB silver eel trap and transport (T+T) programme on the River Shannon. At present the silver eel fishing sites are located at:

- Rooskey (one crew)
- Finea - outlet of Lough Sheelin (one crew)
- Athlone (2 crews)
- Killaloe eel weir (one crew).

There is an ESB set quota of 17 tonnes of silver eel on the upper and mid-Shannon sites. However, Killaloe is fished at its maximum efficiency, which typically is in the region of 30-40% (which is variable but dependant upon flow, nets fished, etc). The captured silver eel are weighed onto an ESB vehicle and transported downstream by ESB staff. Inland Fisheries Ireland staff also monitor the ESB T+T system.



*Lifting Coghill nets at Killaloe silver eel weir on the Lower Shannon catchment.*

In addition to monitoring the R. Shannon ESB T+T, the NUI Galway research team has been asked to provide an independent assessment of the silver eel migratory populations in these rivers and to establish, where possible, eel spawner escapement. Other aspects of eel population biology and issues relating to management of eels in rivers used for hydropower generation by ESB have also been investigated. Knowledge of the dynamics and composition of the seaward migrating silver eel population in the River Shannon is important for the evaluation of the effectiveness of the ESB silver eel trap and transport program.



*The ESB vehicle which is used to transport live healthy catches of silver eel from the catchment area above the hydro -electric station and release them below Parteen Weir on the Lower Shannon.*

### **The Shannon elver programme.**

ESB have been capturing upward migrating juvenile eel at several Lower Shannon locations over the past few decades. In recent times, efforts have been concentrated at Ardnacrusha station and Parteen Regulating Weir. However, small catches of juvenile are also recorded elsewhere, such as the Inagh, Maigue and Feale. The catches of juvenile eel at Parteen Regulating Weir and on the Inagh River are a mixed catch of fingerling eel and elvers. All catches of juvenile eel are released into various areas of the Shannon catchment above Ardnacrusha station and Parteen Weir. Although both the Shannon and national elver catches are in rapid decline (along with the European trend), the trapping of juvenile eel will continue.

### **Works to be undertaken**

- Continued trap and transport of silver eels from locations upstream of hydropower stations for safe release downstream to meet the targets set down by the National Eel Management Plan.
- Continued monitoring of the silver eel T+T system by NUIG and calculation of R. Shannon Eel escapement.
- Continued trapping of juvenile eel at Parteen Regulating Weir and their subsequent release upstream.

**Groups involved;** ESB Fisheries Conservation , NUI Galway, IFI.

### **Fisheries Enforcement;**

ESB has entered into a contract with Inland Fisheries Ireland (IFI) to provide enforcement services on the Shannon, and in particular on the lower Shannon. IFI is responsible for the protection of all Trout and Coarse fish in the Managed Fisheries ( Suck, Brosna, Little Brosna, Camlin and Inny Catchments).

ESB is also committed to working with all Government Agencies (Garda, Local Authorities, EPA, NPWS, ) and Angling Groups in seeking to educate and identify those at risk of damaging the Fishery environment

## Inland Fisheries Ireland ( IFI ) led Initiatives

### Shannon Salmon Restoration Plan

### Atlantic Aquatic Resource Conservation (AARC) Project

Some of the most productive rivers in the EU inter-reg Atlantic area, such as the River Shannon, have been harnessed for hydro electric power generation. In Ireland alone, some 35% of the potential salmon producing habitat is impounded above hydroelectric dams. In compensation for the effect of these dams, salmon mitigation programmes were established in most of these rivers in order to make up for the loss of this productivity, and to maintain natural runs and to preserve bio-diversity. Many hatchery programmes (such as the large ESB Shannon hatchery/restocking operation) continue to exist, but are increasingly coming under the spotlight from cost benefit analyses and their success in maintaining fisheries and protecting biodiversity. Most of these mitigation schemes were developed many decades ago before much of the contemporary information about sub-species population genetics was developed. Thus, this EU funding may allow a re-assessment and re-direction of mitigation programmes. This programme will be a demonstration project of the effectiveness of an innovative and integrated approach, attempting to reproduce natural recolonisation processes by combining knowledge of ecological and evolutionary biological principles that can be harnessed to resolve this most difficult fisheries management problem.

The programme involves three main partners which include, University College Cork (UCC), Inland Fisheries Ireland (IFI) and the Electricity Supply Board (ESB). The IFI staff involvement will largely be at the Shannon River Basin District (SRBD) level, and ESB involvement will be at ESB Fisheries Conservation level. EU funding is €1.2 million, over a three year period. The successful application for funding was largely based upon the calculation of the 'own-resource' inputs of both ESB and IFI SRBD. The ESB own-resource includes the ESB hatchery facility and salmon stock, plus the ongoing restocking activities and staff inputs into the conservation hatchery unit. The lead organisation for funding is UCC (Dr. Philip McGinnity), who be undertaking all of the genetic analyses.

### Actions and main aims

The main aim of this EU funded inter-reg project is the development and testing of practical protocols, consistent with evolutionary biology and population genetic theory, for the restoration of threatened Atlantic salmon in the Shannon River, Ireland.

The various work packages which will be undertaken are as follows:

- *To identify and protect residual wild and feral populations.*

This will be undertaken by both ESB and Inland Fisheries Ireland (IFI) staff who will undertake electrical fishing surveys of the various tributaries and sub-catchments of the R. Shannon. This will allow for an assessment and mapping of the wild salmon populations, whilst also locating areas of suitable habitat for the further re-establishment of wild salmon populations.

- *To identify and relieve fish access issues.*

While fieldwork activities are being undertaken, both ESB and IFI staff will note all major and minor obstacles to the natural upward migration of adult salmon. These structures (usually weirs associated with old mill sites but also culverts associated with bridging points across rivers), will be catalogued and assessed as to the degree of their accessibility.

- *To continue a tributary specific moratorium on restocking to facilitate genetic assessment.*

From 2007 onwards all ESB restocking has occurred within the catchment area above Lough Derg.



This has effectively led to a decrease in the competitive and breeding inter-action between hatchery stocked juvenile salmon and naturally spawned wild salmon. This hatchery management initiative will continue.

- § *To select candidate genetic material for restoration populations and to operate a hatchery programme for gene banking and brood-stock management.*

Samples (25 pairs), of adult gravid salmon, i.e. ready to spawn, will be captured alive from four locations and taken to the ESB salmon hatchery located at Parteen regulating weir.

A total of 25 pairs of salmon will be stripped in the Parteen hatchery unit by ESB staff. The young arising from these fertilised eggs will be reared within the hatchery unit, and a set amount of juvenile salmon will be released into two specific sites above the hydro electric stations. A full assessment of the survival of these juvenile salmon populations will be undertaken by staff, which will allow for the calculation of a survival rate for each group of salmon. Thus the rate of survival of the current Parteen ranched stock will be compared to the other populations.

As the Parteen ranched stock will have been assessed it will also allow for a comparison with the current stock of wild salmon ascending the ESB-owned fishes passes located at the station and weir. Thus the degree of genetic fitness needed to ascend these type of fish passes and to survive in the Shannon catchment will be available for the first time. Future decisions on the locations of restocking activity and the broodstock to be used for such restocking will be taken with a view as to their suitability of purpose. Thus the release strategy will be complimentary to the natural re-colonisation processes.

Finally the genetic characterisation of Shannon salmon from several sites within the Shannon catchment will be available for comparison with other Irish populations of fish. The degree of straying (i.e. hatchery salmon breeding with other local populations), will also be known.

- § Mapping of distribution and quality of spawning habitats onto a Geographic Information System (*GIS*). All wild spawning sites, located through the electrical fishing surveys and using local information such as ESB / IFI staff and local anglers will be mapped onto GIS. Similarly, the locally known spawning beds or spawning beds from former times will also be mapped.
- § *Genetic characterisation of Shannon scale archive material and the genetic assessment and selection of current stocks.* Sampling of all known archive material which would have been taken from R. Shannon salmon for the period (1920-2010), will be analysed by UCC staff. This will then allow for the comparison with analysis of more recent material to see what effect the restocking activity has had upon the population, and also to see what effect the 80 year time period has had upon the population's genetic health.

## **Fisheries Enforcement**

Inland Fisheries Ireland is tasked under legislation to enforce the regulations as set out in the Fisheries Acts. IFI will continue to carry out its functions in this area as available resources allow.

IFI has entered into an agreement with ESB to carry out some of ESB's enforcement duties during 2011 in the Shannon Catchment.

### **IFI Launch 24 Hour Phone Service**

To assist in its enforcement duties a new 24 Hour Phone Service has been launched. This phone line is designed to encourage the reporting of incidences of illegal fishing, water pollution and invasive species. The all-important number is **1890 34 74 24** or for easier recall **1890 FISH 24**.

The normal contact numbers and communication channels will continue to be available.

## **Managed Fisheries**

IFI has, under licence with ESB, control of some fisheries in the Shannon Catchment for trout and coarse fish. The fisheries include the Inny, Camlin, Suck, Brosna and Little Brosna catchments. IFI will continue to manage these in line with its Business Plan.

## **Plan Review**

The 2011 Work plan will be reviewed throughout the year with bimonthly updates on each Project which will be provided by the lead agency. The Group is aware that weather and other constraints can be a deciding factor in the successful completion of projects; therefore, where major difficulties arise in the progression of the project, the Group will be advised as soon as possible.

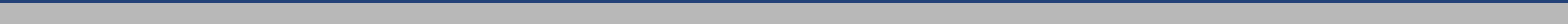
The Group shall review all Projects in October / November 2011 and provide a report on the progress of the Project. The Report will be issued by 20<sup>th</sup> December 2011.

Where a Shannon Fisheries Partnership project is to be terminated, it will be done as soon as possible. Where possible the funds and resources will be transferred to new projects.

The Group will seek to visit the site of each instream project.







SHANNON FISHERY  
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2011

