S. 37

File With Section

SECTION 131 FORM

Appeal NO:_PL 16.207212 **Defer Re O/H** ☐

TO:SEO

Having considered the contents of the submission ~~dated~~/ received 12/07/04 from Martin Harrington I recommend that section 131 of the Planning and Development Act, 2000 ~~be~~/not be invoked at this stage for the following reason(s):. No new issues.

E.O.: Kieron Somers **Date:** 13/07/04

To EO: _____

Section 131 not to be invoked at this stage. ☑

Section 131 to be invoked – allow 2/4 weeks for reply. ☐

S.E.O.: M. Dunlea **Date:** 13/7/04

S.A.O: _____ **Date:** _____

M _____

Please prepare BP _____ **- Section 131 notice enclosing a copy of the attached submission**

to: _____

Allow 2/4weeks – BP_____

EO: _____ **Date:** _____

AA: _____ **Date:** _____

File with Section

OBSERVER FORM

Appeal No: PL 16.207212 **S.37**

Received: 12/07/04.	**Date Appeal Lodged:** 19/05/04.
	Date Last Appeal Lodged: 27/05/04.
	Date of E.I.S. Publication: 14/06/04.

Name: Martin Harrington

Address/Agent: Tallaghan, Geerala, Ballina, Co. Mayo.

Status: Invalid – (insert reason):

VALID	INVALID
M: S Fagan	
1. Acknowledge with BP 40.	1. RETURN TO SENDER with BP _____
2. Keep copy of Board's letter ☐	2. Keep envelope ☐
3. Prepare refund form ☐	3. Keep copy of Board's letter ☐
	4. Prepare refund form ☐

Attach to file	
(a) R/S ☐ (d) Screening ☐	RETURN TO EO ☑
(b) Mapping ☐ (e) Inspectorate ☐	
(c) Processing ☐ _____	

EO: Kieran Somers	**AA:** James Fagan
Date: 13/07/04	**Date:** 13/7/04
Comments:	

J:\abp\Forms\200ActForms(s37)\observer.dot

Observations on the proposal by Shell E and P Ireland to build a gas refinery at Ballinaboy, Co. Mayo.

Reference no. - PO3/3343

Submitted by - Martin Harrington

Tallaghán,
Lyeasala,
Ballina,
Co. Mayo

Bord Pleanala Ref. no.
16.207212

Phone no. - 097-86783

Date - 12-7-04

Page 1 of 21 (including cover) and Publication from NWRFB

There are aspects of this project which have the potential for serious negative impact on the Inis area, both short term and long term, in relation to the health and safety of the residents and the quality of the environment in which we live. The developer of this project, Shell E and P Ireland limited, has consistently failed to give a comprehensive response to these legitimate concerns. The following pages contain details of Websites relevant to this proposal (not included by Shell E and P Ireland in any of their documentation) which can be accessed and studied

Definition of TENORM - see "Health Physics Safety NORM Working Group".

"A review of NORM in Oil and Natural Gas extraction" - by Dr. C.J. Bland.

National Academies Press - "Major sources of TENORM"

Radwaste.org

Euratom council directive 96/29

Planet Ark

Boron poisoning - see "all info about: Chemistry"

Tetrahydrocatechol - see "K.K. Poonja and Sons, Chemical Manufacturers".

Hexavalent Chromium - see "Environmental Health Perspectives V. 108, N.9, Sept 2000

The reality of Shell operations vs. the Shell definition of reality.

"Behind the shine - the other Shell report 2003"

"Corporate Watch - Shell: 100 years is enough"

"Project Underground - Shell alternative Annual Report"

Miscellaneous

ASSE - The American Society of Safety Engineers

Scotsman.com - Shell admits failings on safety prior to deaths of oil workers.

Evaluate Energy - Australia, August 2001, Shell takeover of Woodside Petroleum blocked by Australian Government as not being in the national interest.

North Atlantic Skyline - Dispatches from the West of Ireland 27-11-03

"Holidays in the danger zone - the violent coast" - Ben Anderson, BBC 2, 29-6-04

Emission sampling and monitoring for the proposed refinery does not include phosphorus or boron

"Towards a New Era for the ~~Owenmore~~ Fisheries Catchment Management Plan for the Owenmore River System, Co. Mayo" - This is a comprehensive study produced by The North Western Regional Fisheries Board (not mentioned by Shell) of the aquatic environment of the Erris area and is, by itself, sufficient reason to refuse planning permission for the proposed refinery. However, committee members involved in this study (~~NWRFB~~ NWRFB, EPA, Mayo County Council, Bord na Móna) are also fully supportive of

Shells' proposed refinery at Ballinaboy. There is clearly an unresolved dichotomy here and leads one to conclude that Shell has undue influence over the decision making policies of various government bodies. (A copy of this publication is included)

Also included are copies of the submissions I made to Mayo County Council in relation to this project (PO 3/3343) and which were apparently ignored.

Sincerely yours

~~Martin Harrington~~

Martin Harrington

Observations, comments and objections relating to the proposed Shell Gas Refinery at Ballinaboy, Co. Mayo.

Submitted by - Martin Harrington
Tallaghan,
Leesala,
Ballina,
Co Mayo.

Date - 30-1-04

I

2.4.1 If the life of the Corrib field is estimated at 15-20 years, why is the terminal given a design life of approximately 30 years and what is meant by: "Without modification it would not be possible to extend the plant to cater for reserves from other fields"?

2-21 "It is assumed that the peak rainwater and seawater flowrates are not co-incidental" – is this a safe assumption?

Table 2.3(2) What is meant by "extremely unlikely overpressure event" – is this a friendly-sounding euphemism for a large explosion?

2-31 Why is "coincident operation of two detectors" necessary to initiate executive actions"? What are "executive actions" and if only one gas detector operates will it be ignored?

2.3.8 Will workers be able to breathe if they are within the gas turbine enclosures when the extinguishing system activates?

3.3.1 Are there any safety ramifications involved in constructing the "peat stack" in an area where the peat will remain in-situ"? (Stability, fire risk?)

3.15 What happens if there is a fire on-site when the freewater ponds are being used as reservoirs during pressure testing - what are the safety implications? (See also 3.9)

4.2.2 "The relatively moderate size of the predicted Corrib reserves" - there has been no definitive answer given to the question of how much gas is actually there.

In regard to the rejection of fixed steel jacket or compliant tower - "the more benign environment of the Gulf of Mexico" is far more prone to hurricane weather conditions than the area of the Corrib field.

4.4.3 Regarding the rejection of Killala because this - "would require an umbilical which would be longer than current industrial experience" - this statement is false and misleading as Shell have constructed and are constructing subsea tiebacks which are considerably longer than the 65 KM run from Corrib to Ballinaboy.

4-12 "Environmental risks to watercourses caused by the disaggregated nature of pumped peat" - what condition will the peat be in after being excavated dumped and driven for 10 KM?

5-12 How is it possible to equate - "The most popular reasons for visiting Mayo" with the construction of a gas refinery?

5.5.2 Misleading and irritating.

6-22, 6-23 "Minimization of impacts ... dependant on the successful implementation of pollution control measures / there is potential in the event of accident for impact to sections of the Castoremore Lake Complex / potential for such an incident will be minimised" etc, etc - minimised, not eliminated the integrity of the lake cannot be guaranteed and there is no mention of the fact that Castoremore Lake is the source of drinking water for the people of Ennis.

7-1 Figure 3.1 is a picture of an excavator and has no relevance to the topic under discussion - misspent information given.

7.3.2 Once again, Figure 3.1 which is irrelevant.

8.3.3 "Faulting and cleavage are commonplace and provide the main planes of weakness (discontinuities) within the body of the rock" - this would not appear to be the basis for a suitable, safe foundation

IV

8.4.7 How much phospate " can be carried into streams with soil in runoff "? - what levels are dangerous for flora | fauna | humans.

8.7 Mitigation measures - " expected to be | should be | minimised | may have " - etc, etc, - not very reassuring

10-9 In relation to radioactive materials, are "two available gas samples from the Cottle reservoir" sufficiently representative? In Table 10.9 what do the numbers in the " Proposed Design Criteria from Enterprise" mean? What relationship does the Thorntonmore formation have to the Cottle formation and is it valid or relevant?

10.12 How is it possible for hourly average and daily average figures to be identical?

10.13 Why only year 2? Then there is the fact that the two largest contaminants in this table (boron and phosphorus) do not already exist in Broadhaven Bay (See Table 10.7) and why, throughout this section, has the existence and potential dangers of TENORM been conspicuous by its absence?

Kirk McClure Norton Dispersion Modelling Study - what are pages 8, 9, 11, 12, 14, 15, 17, 19, 20, 21 supposed to tell a person?

V

11.13.1 "Other pollutants potentially emitted have not been modelled as they will not be emitted in (sic) significant quantities relative to air quality standards" – there is no guarantee of this. Also, is the dispersion model fundamentally flawed (and therefore irrelevant) as a result of not inputting all relevant data?

11.14 "Concentrations of carbon monoxide are clearly insignificant and are not discussed further" – other people may wish to discuss them.

12.2.3 Why exclude from baseline noise data conditions that are common in the area – "... traffic movements on wet roads after periods of rain"?

Figure 12.5 Would these have been higher than usual traffic movement at this time as a result of clean-up work following the Dunraven landslide a few weeks previously? If this is the case, the noise levels would not represent the usual prevailing conditions.

12-8 "... any rock blasting which may be required in certain areas." – previous mention that blasting would be unnecessary?

12-10 What is meant by "... the introduction of additional plant or variations to the proposed installation..."?

VII

13-4 "Figure 13.1 illustrates an aerial photograph .... proposed terminal superimposed" - no, it is not.

13-16 "Both the day and night time photographs are taken from the same location" - this statement is false: there is a branch in close-up in the foreground of plate 13.2 which is not in plate 13.1, also the night time lights are in the top half of the picture whereas in the daytime picture everything is in the bottom half - why lie about this?

14.1.3 "Leaks are not considered to be significant in the context of site operations." - this is a very reckless attitude; what are the safety implications?

Also, there are no worst-case scenario figures given in relation to the effects of a major incident.

16.2.10 "If there is soil contamination all foundations will be removed and other non-soil type material to a depth of 1m below grade." - contaminated with what and removed to where?

Table 16.10 What measures are in place to ensure the safety of people in the event of a sulphuric or hydrochloric acid spill?

VIII

19-5 Is a waste management audit once a year sufficient?

18.6 "... further industrial development in North West Mayo cannot be precluded..." could this possibly be connected to 2.4.1 - "... extend the plant to cater for reserves from other fields"?

19-1 This proposed development is completely at odds with Sustainable Development Policy in Ireland - Irelands National Sustainable Development Strategy (1997) aims "to ensure that the economy and society can develop to their full potential within a well-protected environment, without compromising the quality of that environment and with responsibility towards present and future generations and the wider international community". Shell is a company whose disdain for the environment is well documented (Nigeria, Philippines et al) and there is no way whatsoever that the economy of Ireland can develop to its full potential if hundreds of millions (and potentially billions) of Euro are siphoned out of the country and into the Shell coffers through the exploitation of Corrib (and possibly other) gas fields as a result of the quite unbelievable concessions they have been granted.

19.3 Assumptions made for the review - "... a similar checklist for gas infrastructure is unavailable" - how relevant is the checklist to the proposals?

VIII

19-2 "The weightings have been developed for construction activities. As equivalent weightings have not been developed for gas terminal operations, these construction weightings have also been applied to the operational phase of the project".
- differences have already been identified between construction and operational activities, so how can these weightings be applied?

19-3 Everything in Table 19.1 has either "lower performance against SD principle or priority" or "insufficient data to compare performance" - this is unacceptable.

19-5 Table 19.3, Scenario 1 - "If Bord Gais decides to supply ... this could result in a shift ..." - no guarantee that any of this will happen - is this more of the "carrot-for-the-donkey" technique?

19-6 Scenario 1 - "Use of gas close to its source rather than gas transported thousands of kilometres will be more energy efficient" - this statement is misleading as most of the gas will be pumped into the Gas Network.

All of the points made in the bottom of 19-6, through 19-7 to the end of 19-8 have "insufficient data to compare performance" - consequently the premises are fundamentally flawed and therefore meaningless

IX

Appendix A, Photomontage methodology.

1 Reference points - temporary masts to facilitate the preparation of accurate photomontages - if the tallest mast available was 11.20m lower than the top of the proposed flare stack then every photomontage is based on incorrect, misleading information and consequently everything perpetrated by Brady, Shipman Martin in this section is worthless.

Summary

Throughout this EIS there has been a constant stream of misinformation, disinformation, unsafe assumptions and in some cases outright lies - this is synonymous with the arrogance for which Shell is well known. However, not only does this proposed gas refinery have the potential for major negative impact on the environment and people of Erris, it also has major negative economic impact for country as a whole (refer to previous section 19-1) Therefore, until these issues can be satisfactorily resolved, I feel that planning permission for the proposed gas refinery at Ballinaboy cannot and should not be granted.

4 Pages including Cover

Observations and comments on
Corrib Gas Field Development :
Response to request for further information
including Appendix H : Traffic Management Plan

Ref - PO3/3343

Submitted by - Martin Harrington
Tallaghard,
Geesala,
Ballina,
Co. Mayo.

Volume 1, item 17, 3.5

Having previously requested clarification on how Shell propose to deal with the issue of TENORM I was surprised to see that there is still no information forthcoming and that they revert to reliable NORM. TENORM is a well documented phenomenon of the gas industry and the following information may be of some use to concerned parties:

~~Tenorm~~

TENORM – "Naturally occurring radioactive material, not subject to regulations under the Atomic Energy Act, disturbed or altered from natural settings, or present in a technologically enhanced state due to human activities, which may result in a relative increase in radiation exposures and risks to the public above background radiation levels".

Technologically enhanced – "Technologically enhanced means that the physical, chemical, radiological properties and concentrations [of NORM] have been altered and that there exists a potential for;

- Redistribution and contamination of environmental media (soil, water and air)

- Increased environmental mobility in soils and groundwater.

→

- Incorporation of elevated levels of radioactivity in products and construction materials.

- Improper disposal or use of disposal methods that could result in unnecessary and relatively high exposures to individuals and populations via any environmental pathway and medium.
(Health Physics Safety NORM Working Group. See also Euratom Council Directive 96/29)

I would, therefore, once again request clarification on the issue of TENORM.

The Traffic Management Plan submitted on behalf of Shell completely disregards one vital point contained in the letter of Consent issued by Minister Fahey on 15-4-2002 which specifically states that - " Construction traffic management shall be such as to avoid peak hours and particularly those hours when children will be likely to be going to or coming from school". The failure to address this point leads one to conclude that either ;

(a) The entire traffic management plan is fundamentally flawed and needs to be completely re-written in order to comply with the above - mentioned ministerial directive OR ;

(b) The aforementioned letter of Consent is merely worthless paper to be conveniently ignored by the developer and other vested interests and therefore brings into question the validity and/or necessity of the entire project.

It would seem, therefore, that Mayo County Council has been placed in a somewhat invidious position. Rejection of the proposed traffic management plan would incur the wrath of Shell, and acceptance of it would imply that Mayo County Council ignore ministerial directives and have little or no regard for the safety of schoolchildren.

Towards a New Era for the Owenmore

A Fisheries Catchment Management Plan for the Owenmore River System, Co. Mayo

The North Western Regional Fisheries Board
Bord Iascaigh Réigiúnach an Iarthuaiscirt

Towards a New Era for the Owenmore

A Fisheries Catchment Management Plan for the Owenmore River System, Co. Mayo

owenmore catchment management committee

Chairman:

Mr Vincent Roche - CEO
The North Western Regional Fisheries Board

Committee Members:

Mr Michael Hughes - District Inspector
The North Western Regional Fisheries Board

Ms Siobhan Shiel - Senior Fisheries
Environmental Officer
The North Western Regional Fisheries Board

Dr Michael Flanagan
Environmental Protection Agency

Mr Denis Strong, Mr Eoin McGreal
Heritage Service, Dept of Environment,
Heritage & Local Government

Dr Philip McGinnity
Marine Institute

Mr Joe Doyle
Forest Service, Dept of Communications,
Marine & Natural Resources

Ms Margaret Sweeney
Mayo County Council

Mr Richard Cosgrove, Mr John Lynch
Bord na Mona

Mr John McNamara, Mr Hugh Corrigan
Drift Net Representative - Bangor District

Mr Eddie Doocey
Draft Net Representative - Bangor District

Mr Seamus Gaughan
Bangor Angling Club

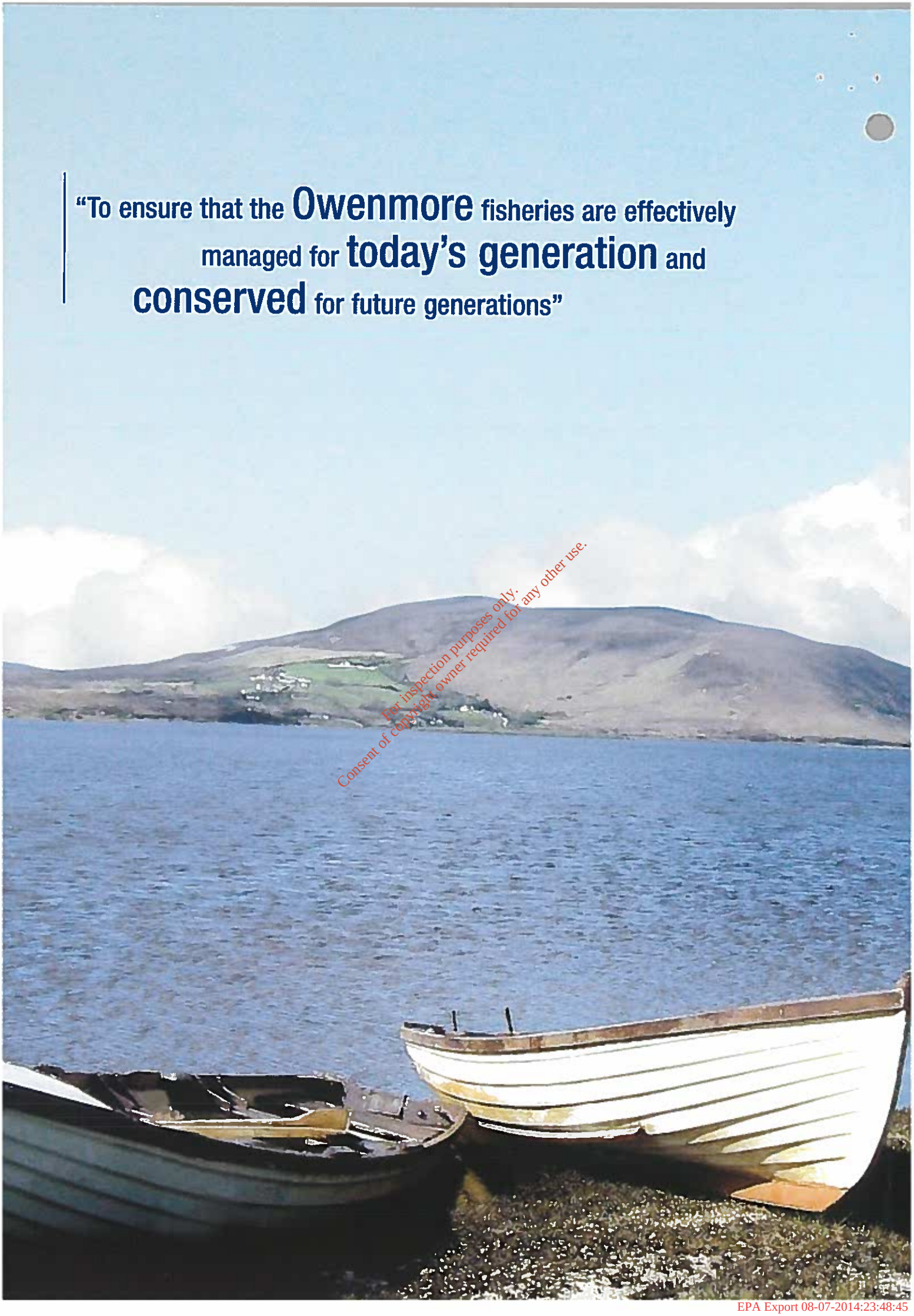
Mr Richard Hewat
Private Fishery Owners - Owenmore River

Fisheries Catchment Manager:

Mr Bryan Kennedy
The North Western Regional Fisheries Board

contents

"To ensure that the **Owenmore** fisheries are effectively managed for **today's generation** and **conserved** for future generations"



foreword

By Vincent Roche, C.E.O., The North Western Regional Fisheries Board

This Fisheries Catchment Management Plan has been prepared by the Board in accordance with its obligations under the Fisheries Act, 1980, as amended by the Fisheries (Amendment) Act, 1999. Its publication is the culmination of three years of work by the Board and by a committee established by it to advise on, and assist with, management of the fisheries resource of the Owenmore River catchment.

The plan brings together the views of a wide range of sectoral interests as expressed at committee meetings and in written submissions. It includes a comprehensive assessment of the fisheries resource and of the various environmental and other factors which impact on it. Most importantly, however, it sets out proposals for the future management of the fishery. These are based primarily on the need to ensure that sufficient salmon are allowed upstream to spawn in order to ensure the future of the fishery.

The document highlights the need for good quality fisheries management information and, also, the ability to collect, store and use such information. Considerable progress has already been made in this regard since commencement of the catchment management initiative. A Geographic Information System (GIS) has been established for the catchment, an aerial photographic survey has been carried out, a fish counter has been installed on the Munhin River (outflow from Carrowmore Lake) and selected sites are now surveyed on an annual basis. These developments, together with the proposed installation of a fish counter on the main Owenmore channel, will ensure that the catchment will be well placed to avail of the best information and technology for the more effective management of the catchment's fisheries.

It should be noted that this is a rolling plan. It contains a lot of information about the catchment and its fisheries and sets out the broad framework within which these fisheries will be managed in the future. However, it is not written in stone and can be amended or updated as necessary to take account of changing circumstances. The Catchment Committee will continue to meet and issues which are of concern to stakeholders will be discussed openly with a view to reaching a consensus on the way forward. As Chairman of the committee, I hope that riparian landowners will see fit to participate in the Catchment Management process. If they do so, they will see the merits of working with the other stakeholders in order to ensure that the Owenmore fisheries are effectively managed for today's generation and conserved for future generations.

Finally, I wish to thank all members of the committee for their support and co-operation in developing this innitiative. In particular, I wish to thank Mr. Bryan Kennedy, Fisheries Catchment Manager with the Board, for his commitment and dedication to the initiative and for his work in bringing forward this plan.

executive summary

The Catchment Management Concept

While it has long been recognised that inland fisheries can best be managed at river/lake catchment level, the concept of Catchment Management has been given new impetus in recent years given the complexity of issues that arise in relation to fisheries management and protection of the aquatic environment. In the Fisheries (Amendment) Act, 1999, the Regional Fisheries Boards were given a specific responsibility to promote and co-ordinate the voluntary development of Inland Fisheries Catchment Management Plans. With a continuing decline in stocks of Atlantic salmon, and increasing pressure on the aquatic environment, there has never been a greater need for all sectors to work together to ensure that salmon stocks are managed on a sustainable basis. Catchment Management provides a mechanism through which this can be done effectively

Managing Fisheries on a Catchment Basis

Catchment Management provides a means by which the various factors which impact on fisheries management can be addressed and conflicting views can be taken into account. It provides a channel of communication between the various interest groups and a means through which all sectors can seek a fair and equitable division of the fisheries resource while, at the same time, ensuring that the resource is managed on a sustainable basis.

A new approach for the Owenmore

The Regional Fisheries Board selected the Owenmore as a catchment which it considered suitable for the Catchment Management process. The selection was made having regard to the complexity of the system in terms of its fishery resources, the methods of exploitation of the resource, the ownership and management structure on the river and the range of environmental factors which could have adverse impacts on the fisheries environment. The Board decided to establish a Fisheries Catchment Management Committee and invited the various stakeholders to nominate representatives to sit on the committee which was chaired by the Board's CEO. A full-time Fisheries Catchment Manager was appointed by the Board to work on the project. The objectives were to ensure a sustainable resource for future generations; optimise the socio-economic benefits of the resource; to provide a mechanism for avoiding conflict and improving communications; to ensure a fair and equitable sharing of the resource; to compile fisheries management information and to produce a plan which provided for these requirements.

Catchment Resources and Statistics

The Owenmore catchment, in North West Mayo, covers an area of 340 km^2. The Owenmore River is formed by the confluence of the Oweninny and the Altnabrocky Rivers at Bellacorick and it is joined by the Munhin River, the outflow from Carrowmore Lake, a short distance west of Bangor Erris. Much of the catchment is composed of blanket bog and large areas of it are very important in terms of their relatively pristine environment. About one third of the catchment has been designated, under various legislative provisions, as a result of its unique habitats and the presence of various species of international importance. The main land use activities are agriculture, forestry and peat harvesting. Tourism in the area is relatively underdeveloped and the only major industrial enterprises are Bord na Mona peat harvesting operations and the ESB peat fired power station at Bellacorick. Carrowmore Lake is the main water body in the catchment. As well as being an important fishery, it is the source of water supply for large areas of North Mayo including Bangor Erris, Belmullet and Blacksod. There is a modern sewage treatment system at Bangor Erris which was designed to cater for a population of 1,000 people.

The Fisheries Resource

The Owenmore River system enjoys good runs of spring salmon, grilse and sea trout. The run of spring salmon to the main river channel has been in decline in recent years while Carrowmore Lake has continued to get a good run. Salmon produced by the Owenmore are exploited at sea, by licenced drift nets, and in the estuary, by licenced draft nets, as well as on the river by rod and line. Fishing rights on the main Owenmore channel are privately owned but a section of the river, as well as Carrowmore Lake, is managed by Bangor Angling Club under licence from one of the owners. Recent research has indicated that fishing rights on Carrowmore Lake are state owned but a private syndicate maintain that they purchased the rights in 1967. This is an important issue that needs to be resolved as soon as possible.

An Assessment of the Resource

Water quality in the Owenmore system is generally good but there have been problems for many years caused by discharges of peat silt which have a detrimental impact on salmon spawning and, also, on angling during certain conditions. There have, in recent years, been some severe algal blooms in Carrowmore Lake and a monitoring programme has been put in place to try to pinpoint the cause of this. There is a lack of sufficient detailed information available in relation to fish stocks in the system and, in the absence of accurate information on numbers of salmon entering the various river systems, it is difficult to provide an accurate assessment in regard to the health of the fishery. For effective fisheries management, on a sustainable basis, it is necessary that the carrying capacity of each river is assessed; that accurate and reliable fish counters be installed; that spawning escapement be regulated and monitored in order to achieve the conservation limit and that river habitat be monitored and protected.

Environmental Impacts

Water quality and land use are inextricably linked. Degradation of the environment can also result from fundamental change in the physical processes operating within the catchment. Peat harvesting has resulted in discharges of peat silt to the Owenmore system for many years and has had a detrimental effect on salmon and trout spawning as well as on angling. Extensive sheep grazing of blanket bog can lead to the overgrazing of some areas and this can result in peat being deposited in rivers during heavy rainfalls. Afforestation has resulted in problems with run-off of silt and fertilizer to the aquatic zone. The siting of septic tanks, from single or group housing developments, in unsuitable areas, may also pose a threat to water quality.

The Future of Fishery

Overall Approach

The overall objective is to ensure that the fishery resources of the Owenmore system are managed on a sustainable basis, to optimise the socio-economic benefits and to ensure fair and equitable sharing of the resource. The plan provides a framework within which the fishery can be managed sustainably while taking account of the various interests. In this regard, it is hoped that riparian landowners will agree to participate in the catchment management process. The plan is a "rolling" one, which can be changed if the Catchment Committee so decides, with the approval of the Regional Fisheries Board. It addresses a range of issues that are important for the effective management of the fishery and sets out proposed action in relation to each issue.

The Environment

A healthy aquatic environment is essential for the future of the salmon resource. A number of initiatives will be pursued which will assist in enhancing the environment. Meetings with Coillte resulted in agreement on a number of proposals for funding under Government and EU funded initiatives for environmentally sensitive forestry. A major improvement in the aquatic environment is expected following implementation of a Bord na Mona rehabilitation plan for cut away bog. The EU Water Framework Directive will provide a means

whereby progress can be made in the protection and restoration of water quality generally. The protection of the riparian zone from overgrazing and bank erosion can be addressed by a partnership approach involving the Fisheries Board, riparian landowners and fishery owners.

Protecting the Resource

Protecting the fisheries resource is primarily the responsibility of the Regional Fisheries Board. Illegal fishing in the Owenmore catchment is now much less a problem than the past. It will be necessary, however, to maintain the protection effort. The Board will, therefore, continue to patrol the coastal and inland waters of the area subject to availability of resources. Efforts will also be made to forge greater links with stakeholders, through the Catchment Management process, in order to improve co-operation in regard to protection of the fisheries resource.

Managing the Resource

At present, the commercial salmon quota for each Fisheries District is decided by the Minister following the setting of a Conservation Limit for each District. The Conservation Limit is determined on the basis of information extrapolated from reported catches since 1970. It is planned that, in future, quotas will be based on actual assessment of the spawning requirement in each catchment. Such assessment, combined with more accurate data emanating from the tagging scheme, and data from fish counters, will facilitate "real time" management of salmon stocks. The possibility of a set-aside scheme, for commercial fishing, for a four-year period, will be pursued. Efforts will be made to integrate the individually owned stretches of the Oweninny River under a single management structure with a view to facilitating more effective management, development and marketing of this fishery. Discussions will be held between the Fisheries Board and the fishery owners in the catchment with a view to exploring options for improved fishery management arrangements.

Development

The options for developing and improving the resource will be considered following further assessment of the system. Development and improvement works are likely to include river bank restoration, excavation of angling pools, improvement of spawning and nursery habitat, improvement of access, provision of parking areas, provision of facilities for disabled anglers etc. Once specific development works have been identified, funding will be sought, through all available channels, to enable identified works to be carried out.

Promotion and Marketing

The Regional Fisheries Board has a statutory responsibility to promote and market angling in the region. The possibilities for improved promotion and marketing of the angling resource in the Owenmore catchment will be considered in conjunction with private fishery owners, Bangor Angling Club, tourism organisations and other relevant groups.

Information Requirements

Much work has already been done in relation to the gathering, storage and use of fisheries management information on the Owenmore system. A Geographic Information System (GIS) has been put in place, an aerial photographic survey has been carried out and a fish counter has been installed on the outflow from Carrowmore Lake. However, further work is needed in order to establish the fish carrying capacity of the system and to facilitate the setting of a salmon spawning target. The most fundamental requirement in this regard is the provision of a fish counter on the main Owenmore River.

Seal Predation

Predation on salmon and trout stocks by seals is a major problem that needs to be addressed. It is proposed that further research be carried out to obtain more accurate information on populations of Irish and non-Irish seal colonies. The need to control seal numbers will continue to be highlighted.

introduction

The Catchment Management Concept

While it has long been recognised that the inland fisheries resource can best be managed at river/lake catchment level, the concept of catchment management has been given much greater attention in recent years. Ministers for the Marine have supported the concept for management of inland fisheries and Environment Ministers have also supported moves to protect and restore water quality on a catchment basis. The EU Water Framework Directive also underlines the need for protection of water quality at catchment level.

In 1996, the Salmon Management Task Force strongly advocated use of the catchment management model for the more effective management of salmon stocks. Meanwhile, in 1992, The North Western Regional Fisheries Board had published a major Integrated Management and Development Plan for the River Moy System. This plan was largely implemented during the 1990's and was highly effective in improving management of that system which now attracts anglers from all over the world each year.

The management of fisheries on a catchment basis was put on a statutory footing in the Fisheries (Amendment) Act, 1999 which introduced a number of changes in relation to the role and functions of the Fisheries Boards. An amendment to section 11 of the Fisheries Act, 1980 states that a Regional Board shall-

"encourage, promote, organise and co-ordinate together with the inland fisheries owners, bodies and organisations in its fisheries regions; the voluntary development of inland fisheries catchment management plans in its fisheries regions and for that purpose have regard to the distinctive circumstances which pertain in each of the catchment systems in its region and consult with and involve local authorities and other interested bodies and organisations and comply with any directions the Minister may from time to time give to it"

In passing this amendment, the Oireachtas clearly recognised the need to manage the fisheries resources of each catchment having **"regard to the distinctive circumstances which pertain in each of the catchment systems"**

The circumstances which pertain in a catchment will, obviously, include the health, or otherwise, of the catchment's fish stocks but will also include issues such fish habitat, the environment, the commercial and recreational fisheries, the position in regard to ownership of fisheries etc.

Declining salmon stocks

In order to be successful, a catchment management initiative must, obviously, have regard to the context and circumstances in which the initiative is being developed. As the Owenmore is primarily a salmon fishery, it is necessary to examine the position both nationally and locally in relation to salmon stocks. As is evident from the graph below (figure 1), stocks of Atlantic Salmon have been declining in Ireland over the last number of decades. Overexploitation, habitat degradation, disease, predation and climate change have all been identified as factors relating in this decline.

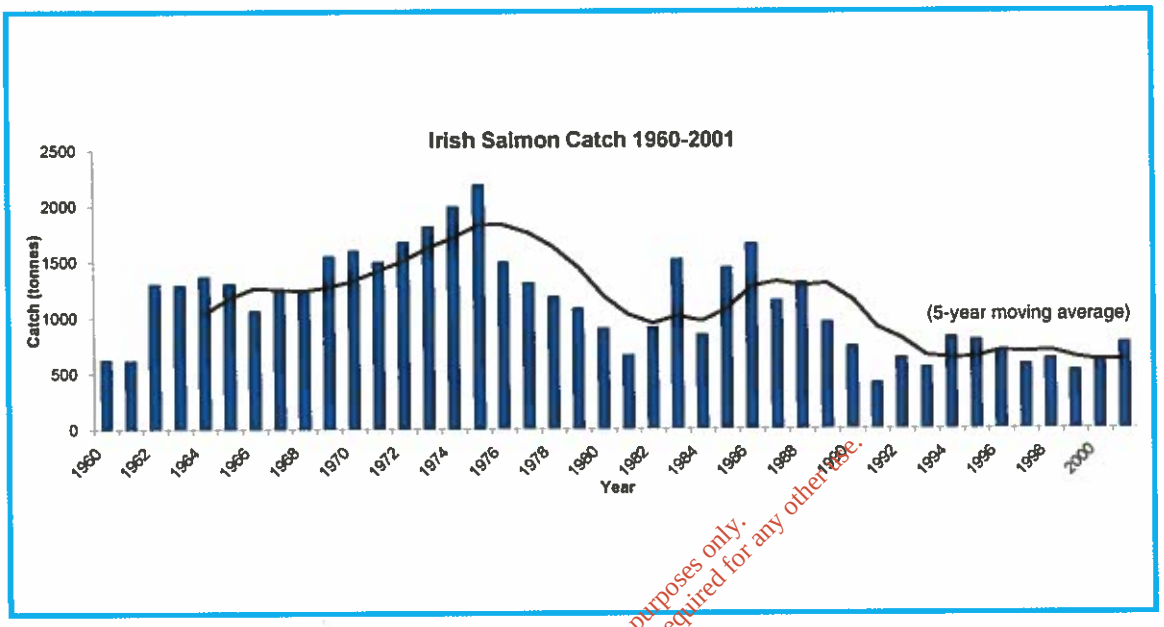


Figure 1: Irish Salmon Catch 1960- 2001
(Central Fisheries Board)

In the Bangor District, stocks of salmon have declined so much in recent years that the government's scientific advisers have suggested that all commercial fishing for salmon should cease to allow stocks to recover. In the Owenmore catchment, stocks of salmon, especially Spring salmon, have been in serious decline although the run of salmon into the Carrowmore Lake part of the catchment has held up well. The trend in catches in the Bangor District, since 1980, is illustrated graphically in Figure II.

Water Quality

Environmental indicators such as the long-term trends in water quality in Ireland and the number of recorded fish kills all point to a loss of the freshwater habitat which is vital in order to sustain healthy fisheries. The integrity of our watercourses and, therefore, our fisheries depends on the surrounding landscape and the activities that take place there.

In the Owenmore catchment, water quality is generally of good quality but discharges of large volumes of peat silt, over many years, has had a negative impact on fish productivity and on angling.

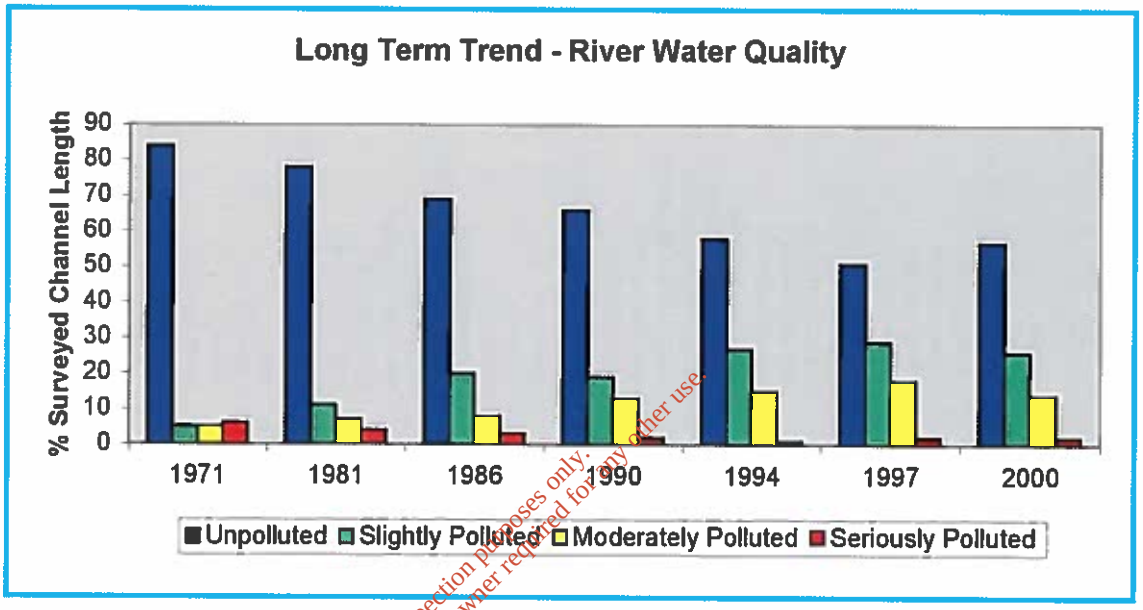


Figure 2: Long Term Trend in River Water Quality in Ireland
(Modified form The Environmental Protection Agency, Water Quality in Ireland 1998-2000)

managing fisheries on a catchment basis

The Challenge

If the catchment management process is to succeed, it must demonstrate that it can provide a satisfactory mechanism for dealing with the many problems facing the fisheries sector as outlined below.

A Declining Stock

Stocks of Atlantic Salmon have been declining throughout their geographic range, including Ireland, over the last number of decades.

Environmental Degradation

Healthy and self-sustaining populations of salmon require a clean unpolluted habitat for their survival. This freshwater habitat faces problems as a result of changes in land use practices, industrial development and other activities.

Sustainability

Sustainability is a key concept with regard to the development and management of our natural resources. Sustainable fisheries management ensures that the resource is guaranteed for future generations. The goal is to exploit the resource while ensuring that it is maintained at a sustainable level.

Access to accurate Information

Accurate information and statistics on fish populations and catches must be available if sustainability is to be achieved. This information is not always available.

Management of the Resource

Management of the salmon resource in the past has focused largely on restrictions in relation to the length of the season and methods or type of gear used. Sustainable fisheries management requires action on a broader basis to ensure that conservation limits are met in order to maintain the integrity of the stock and maintain the biodiversity of individual stock units.

Conflict

There is a wide range of conflicting interests, all of which have the potential to affect the status of the aquatic ecosystem. Conflict within the sector is also evident with stakeholders competing for what is a limited, or even diminishing, resource.

Communication

Good communication is essential for the management of a resource that is dependant on the interaction of a variety of activities with the involvement of many different interest groups at the catchment level. In the past, communication between competing interests has often been poor.

Fair and Equitable sharing of the Resource

Management of fisheries, on a catchment basis, facilitates a fair and equitable sharing of the resource among all sectors. It is not intended that this process be used to undermine, challenge or contest the rights or statutory obligations of others.

The Benefits

There are immediate benefits to be gained from a catchment based approach to management of our fisheries. The process

- brings all stakeholders together with a common objective of sustainable development and management;
- provides a forum for previously non-represented groups to have an input into how the resource is managed;.
- identifies the catchment as the natural landscape unit where the maintenance and management of a self-sustaining fisheries resource is the goal.

The Catchment Boundary

The catchment is the natural geographic area for the effective management of the aquatic resource. A catchment is the area of land that is drained by a particular river or lake system. Each catchment is separated from other catchments by a line called a watershed. All the watercourses within a watershed belong to an individual catchment area having distinct features that will have a bearing on management requirements.

Rivers can be viewed as arteries of the catchment area. Each river has unique features depending largely on the geomorphology, hydrology and anthropogenic influences. It is the sum total of all of these that will determine the integrity of watercourses. A catchment also has biological significance in terms of the discrete and unique stocks of salmon that it sustains.

a new approach for the owenmore

Following the successful implementation of the Fisheries Board's major management and development plan for the Moy system, and the enactment of the Fisheries (Amendment) Act, 1999, the Regional Board considered other important systems that could benefit from the catchment based approach. The Owenmore catchment was recognised as a system that possessed several criteria that would enable it to benefit from such an approach.

- The Owenmore/Carrowmore Lake system comprised important spring salmon, grilse and sea trout fisheries;
- Salmon stocks were exploited by three separate fisheries - drift net, draft net and rod and line;
- Ownership and Management of the Owenmore/Carrowmore Lake system was fragmented and it was considered that it would benefit from implementation of an effective management structure;
- A range of environmental impacts relating to habitat deterioration in the catchment could be identified and addressed.

In line with the Fisheries Board's statutory obligation, it set out to identify the stakeholders in the Owenmore catchment. The Board decided to establish a committee which would represent the various stakeholders in the catchment and which would, under the overall direction of the Board, draw up a Fisheries Catchment Management Plan. Meetings were held with stakeholders and a public meeting of riparian landowners was organised by the Board in order to explain the catchment management process. Stakeholders were invited to nominate representatives to sit on a catchment committee and the inaugural meeting of the Owenmore Catchment Committee took place in Bangor Erris on 11 December 2000. The CEO of the Fisheries Board chaired the committee. In October, 2001, a Fisheries Catchment Manager was appointed by the Fisheries Board to work full-time on the project

The Stakeholders

The North Western Regional	Bord Na Mona
Fisheries Board (NWRFB)	Private Fishery Owners
The Environmental Protection Agency (EPA)	Draft Net Fishermen
The Heritage Service	Drift Net Fishermen
The Forest Service	Bangor Angling Club
Mayo County Council	Riparian Owners*

(*Following discussion, the riparian owners decided not to nominate a participant in the catchment committee)

Objectives

The objectives for the catchment management initiative were to:

- Ensure a sustainable resource for future generations.
- Optimise the socio-economic benefits which can be derived from the resource.
- Reduce conflict and improve communication.
- Ensure fair and equitable sharing of the resource.
- Compile the required information for sustainable fisheries management.
- Provide a plan which caters for these requirements.

Plan Contents

It was agreed that the plan should:

- Describe the physical extent and activities that take place in the catchment;
- Describe the Fisheries Resource;
- Assess the threats to the sustainability of this resource;
- Highlight management requirements to guarantee the future of this resource;
- Set management targets and proposals for the achievement of the above.

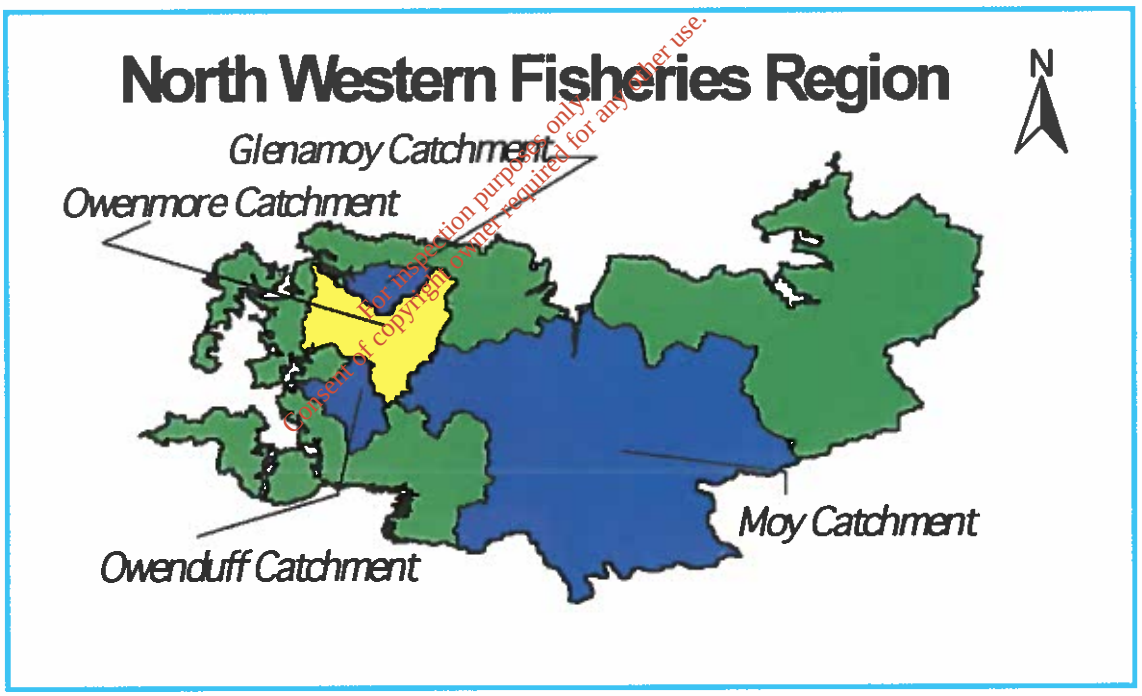


Figure 3: Outline of the catchments in the North Western Regional Fisheries Region where a catchment based approach to fisheries management has been applied.

catchment resources and statistics

Physical Characteristics

Geographic Area and Typography

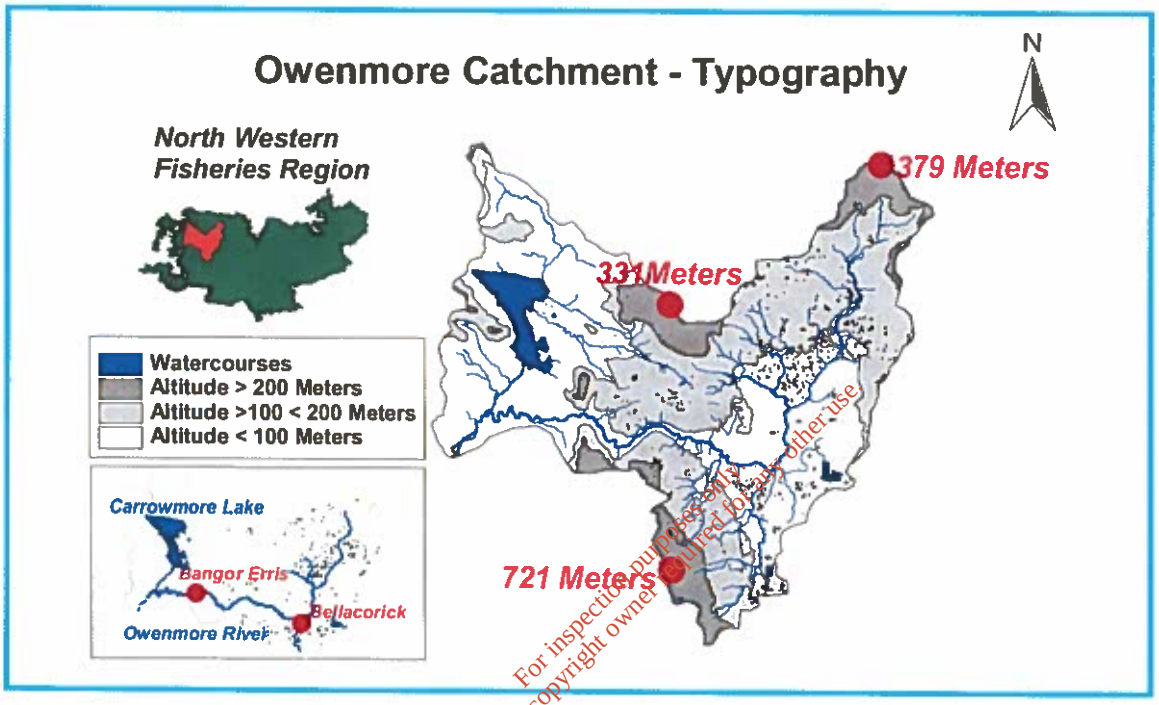


Figure 4: Topography of the Owenmore Catchment

The Owenmore catchment is situated in north west Mayo, due west of Ballina and due east of Belmullet. It covers an area of 340 km² making it the largest catchment in the Bangor Fisheries District and the fourth largest in the North Western Fisheries Region. At 379 meters and 331 meters altitude respectively, the peaks of Maumkeogh and Slieve Fyagh form the northern boundaries of the catchment. The highest peak, at 721 meters, is in the Nephin Beg range, which forms the southern boundary of the catchment. Undulating lowlands, which resulted in the formation of Carrowmore Lake, dominate the area due west of Bangor Erris. Lowland areas of less than 100 meters in altitude cover 49% of the catchment area. An additional 40% of the catchment can be found between 100 meters and 200 meters altitude with the remaining 11% dominated by altitudes in excess of 200 meters.

The Catchment's Rivers and Lakes

The Owenmore River is formed by the confluence of the Oweninny and Altnabrockey Rivers at Bellacorick. The Oweninny River flows southwards from Maumkeogh and Slieve Fyagh and the Altnabrocky River flows northwards from the Nephin Beg range. From Bellacorick, the Owenmore follows a westerly course and is joined by a number of smaller tributaries before reaching Bangor Erris, fourteen kilometres away. Seven kilometres downstream of Bangor Erris, it is joined by the Munhin River, the outflow from Carrowmore Lake. The river reaches the sea at Tullaghan Bay, a further two kilometres from this point.

The catchment contains numerous lakes of variable size. Carrowmore Lake, at 960 hectares, is, by far, the largest lake in the catchment. It is fed by the Glencullin, Glenturk and Bellanaboy Rivers, which drain the north western part of the catchment. Lough Dahybaun, at approximately 60 hectares, is the only other lake of significant size. A number of small lakes in the Nephin Beg mountains hold stocks of brown trout and other pool systems, associated with the blanket bog, have hydrological and ecological significance. The largest concentration of these can be found around Knockmoyle.

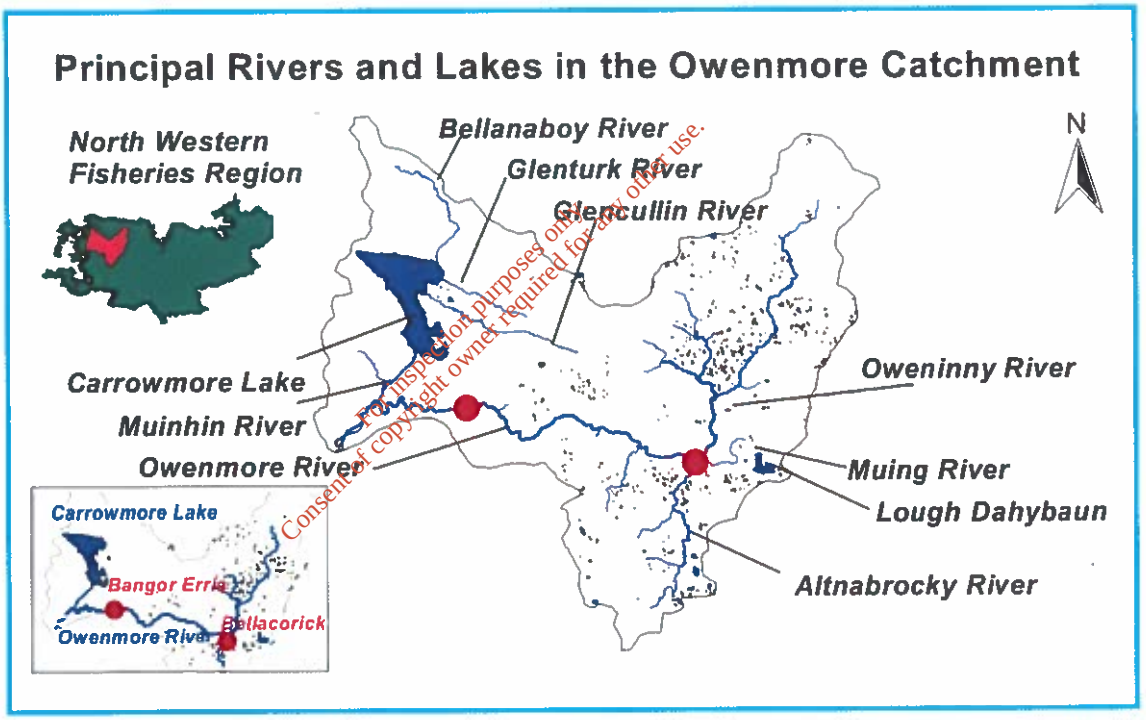


Figure 5: The Location of Rivers and Lakes in the Owenmore Catchment

Climate

Being situated in the West of Ireland, the Owenmore catchment is influenced by the relatively warm waters of the Gulf Stream. The catchment is exposed to frontal systems coming in from the North Atlantic with a south westerly prevailing wind direction. There is a high level of rainfall which can be expected for over 200 days of the year. The average rainfall recorded by the Met Eireann Meteorological Station at Belmullet is 1,143 mm per year from the period 1961 - 1990. Data provided by Bord na Mona, from a rainfall gauge maintained in the catchment, reveals an average of 1,588 mm per year from the period 1971 - 2001. This gauging station is located at 80 O.D. and large areas of the catchment experience levels in excess of 2,000 mm per year due to their higher altitude.

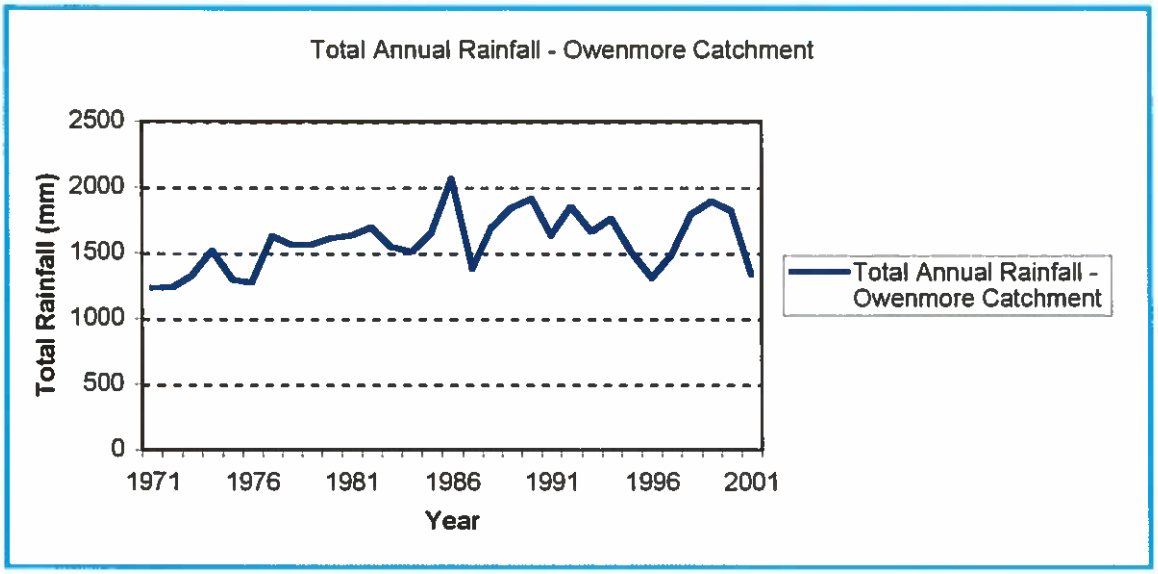


Figure 6: Total Annual Rainfall Recorded at Bord na Mona's Weather Station at Bellacorick

Geology

The underlying geological characteristics of a catchment are important in relation to fish habitat and productivity.

The bedrock geology of the Owenmore catchment is generally comprised of two distinct rock formations laid down in the late Precambrian period and in the Lower Avonian/Carboniferous period. Formations from the latter period consist of sedimentary rocks with a medium to high Acid Neutralising Capacity (ANC), including shales, carboniferous slate and calciferous sandstone. Metamorphic rock series with a low ANC from the Precambrian period consist of quartzite, schist and gneiss. The ANC is a measure of the ability or a rock series to buffer the overlying soils and watercourses with acid neutralising base cations, primarily of calcium and magnesium. Therefore, the composition of the rock series has important chemical and biological consequences for the watercourses that drain them.

The Quaternary geology, the most recent geological series, consists of deposits and accumulations laid down over the last 1.6 million years. Quaternary sediments form a discontinuous, but often thick, blanket concealing much of the bedrock. The North Mayo area is particularly rich in Quaternary deposits that are typical of glaciated areas. Much of the Owenmore catchment area is covered with glacial drift, a material that varies greatly in quantity and composition. It consists of surface drift from earlier glacial stages and it is not as obvious as the kames, drumlins and eskers located outside and deposited to the east of the catchment boundary. This surface drift is further overlain by extensive areas of blanket bog, which varies from one to several meters in thickness, concealing most of the underlying geology.

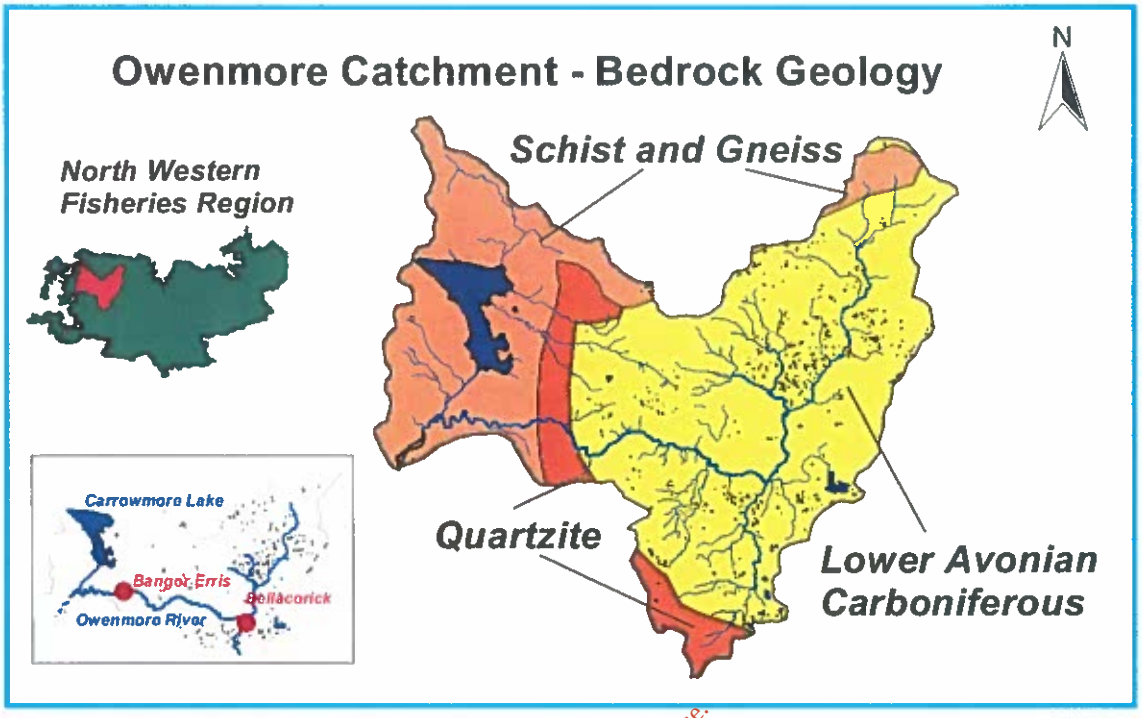


Figure 7: Bedrock Geology in the Owenmore Catchment

Soil and Land Cover

The general soil map of Ireland reveals that much of the catchment is composed entirely of blanket peat. This is not unexpected considering the prevailing climatic conditions that have existed over the last 4,000 years and which have led to the formation of this type of landscape. High level or mountain blanket bog occurs in relatively flat terrain above the 200m O.D. and this occupies approximately 11% of the catchment area. Low level, Atlantic or Western blanket bog occupies areas below this contour line.

Land cover in the catchment can be derived from the Corine land cover dataset. This dataset was extracted from a series of satellite images for Ireland recorded circa 1991. The dataset does not include any fragments of landcover smaller than 25 hectares. The dataset categorises the catchment into nine divisions;

- Watercourses
- Natural Grasslands
- Pastures
- Land principally occupied by Agriculture
- Broad-leaved Forests
- Coniferous Forests
- Transitional Woodland-scrub
- Sparsely Vegetated Areas
- Peat Bogs

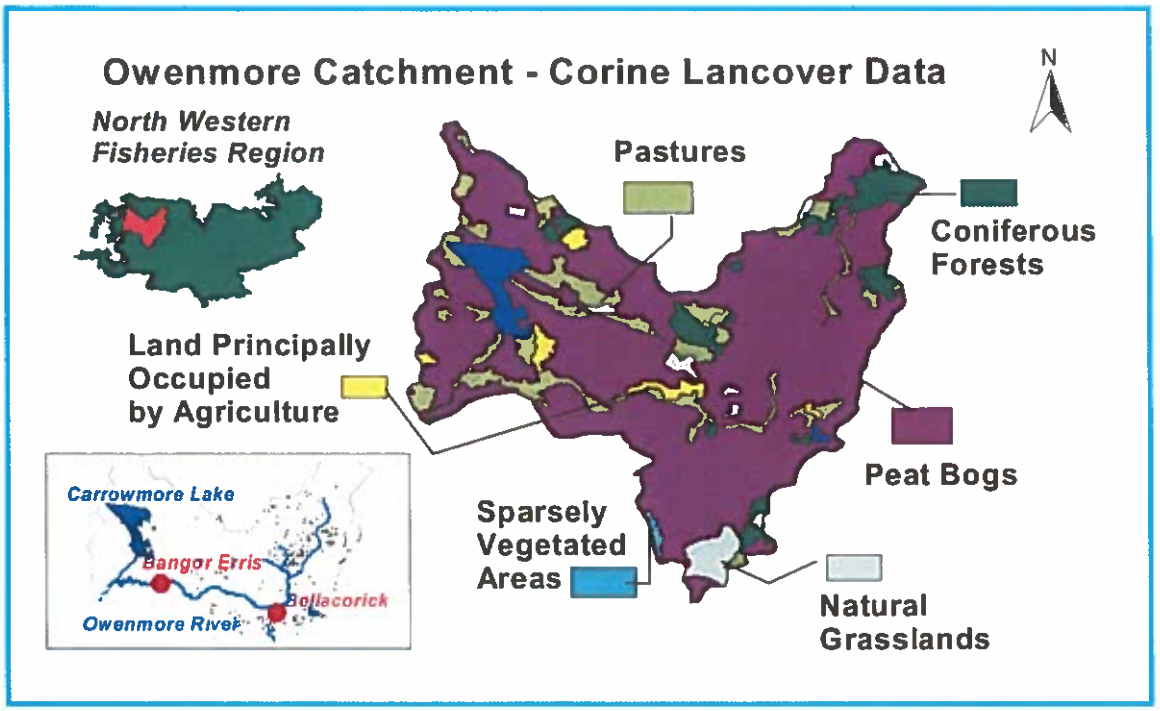


Figure 8: Corine Landcover Dataset for the Owenmore Catchment

Ecological significance

The Owenmore catchment is hugely important in terms of its relatively pristine environment and it contains a large number of sites designated for special protection under Irish and European legislation. About one third of the catchment area is designated as a result of its unique habitats and the presence of various species of international importance. Designated habitats include extensive areas of intact blanket bog, with associated pool systems, mountain blanket bog, coastal habitat and a rich flush habitat. Internationally important colonies of Brent and Greenland White Fronted Geese can be found on a number of the sites. Also found are Merlin, Terns, Common Gulls and a large variety of other waterfowl including Dunlin, Plovers, Godwits, Redshank and Sanderling. A Goosander has been recorded on one occasion from Carrowmore Lake. Rare and internationally important species include the Marsh Saxifrage, a rare bog orchid, a number of rare mosses and the Slender Naiad. Other important species include the Otter and a semi aquatic snail.

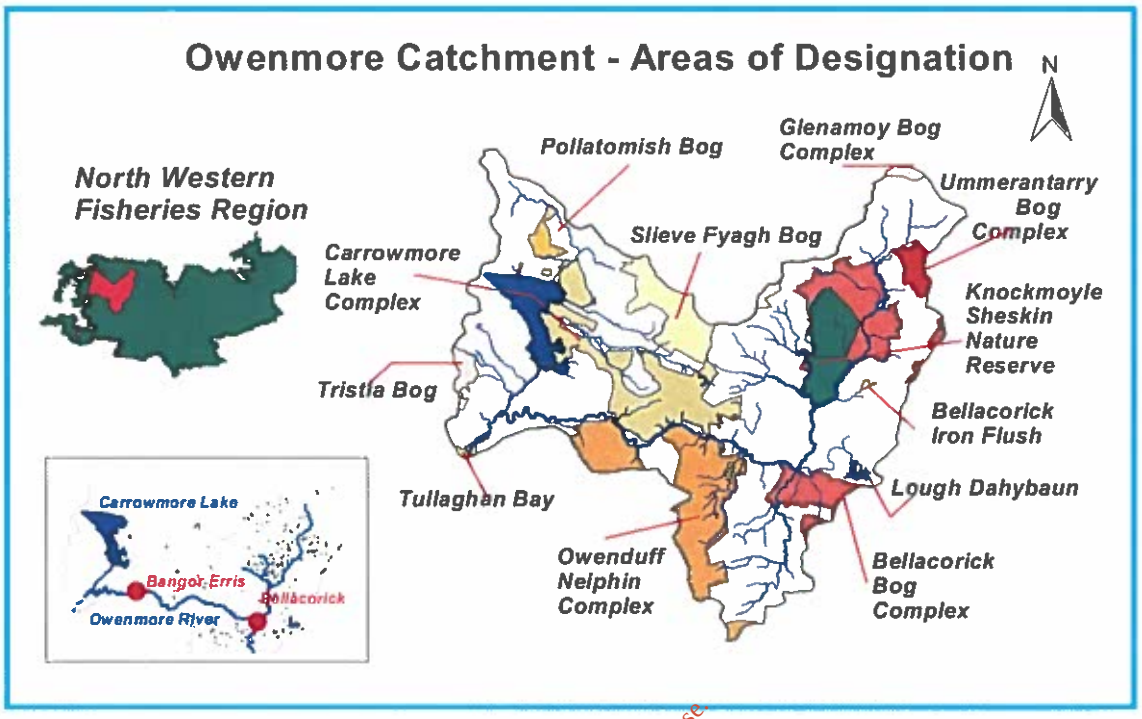


Figure 9: Designated sites of Ecological and Scientific Interest in the Catchment

Native Irish fish species recorded in the catchment include the Atlantic Salmon (*Salmo salar*), the Brown trout and Sea trout (*Salmo trutta*), the Three-spined stickleback (*Gasterosteus aculeatus*) and the European Eel (*Anguilla anguilla*). Unconfirmed reports of migratory lampreys, from a lower section of the Owenmore River, predate the 1950's. Recent electro fishing operations have recorded the presence of another lamprey species in various locations Introduced species are limited to the Minnow (*Phoxinus phoxinus*) and the catchment is ecologically significant due to the absence of any of the other exotic introductions e.g. Pike, Perch, Loaches or Cyprinids that are now widespread elsewhere.

Activities in the Catchment

Land Use

Land in the Owenmore catchment is used mainly for agriculture, forestry and peat production.

Agriculture

Agriculture is still an important industry in Co. Mayo. Farming on western upland and lowland blanket bogs, typical in this catchment, is largely confined to livestock production, with sheep and extensive cattle grazing being the main enterprises. Sheep are now, by far, the most important of these. Due to the incentives of the headage and ewe premium payments, under the Common Agricultural policy, sheep numbers increased rapidly in the 1980's and 1990's. This led to overgrazing in some of the more vulnerable areas. Compulsory destocking was introduced in 1998, due to environmental concerns, with further plans to cut numbers in early 2003. Much of the fertile land in the catchment is located along the valley floor, adjacent to the river, while other areas of improved land can be seen dispersed throughout the catchment. This can be accounted for by their location along the floodplain and tending by farmers. As a result of CAP reform, direct payments now contribute significantly to farm incomes and in Co. Mayo the impact of these payments is very substantial for the vast majority of farmers.

Forestry

Due to the decline in natural forest cover, over the previous millennia, the State Afforestation Programme was initiated in the early 1920's in order promote reforestation in Ireland. Restrictions in the programme during this period meant that the state was only allowed to acquire land that was deemed unsuitable for agriculture. This resulted in planting being restricted to areas of mountainous, peaty or wet land. Plantings of Lodgepole Pine and Sitka Spruce dominated due to their availability and growth characteristics. In the mid 1980's, as a result of EU-funded programmes, the incentives for private forestry plantation resulted in a huge increase in plantation in the private sector. The semi-state body, Coillte, was established in 1989 in order to manage state forests on a commercial basis. Approximately 36% of the Owenmore catchment is planted with forestry. Coillte owns 74.5% of this and the remaining 25.5% is in private ownership.

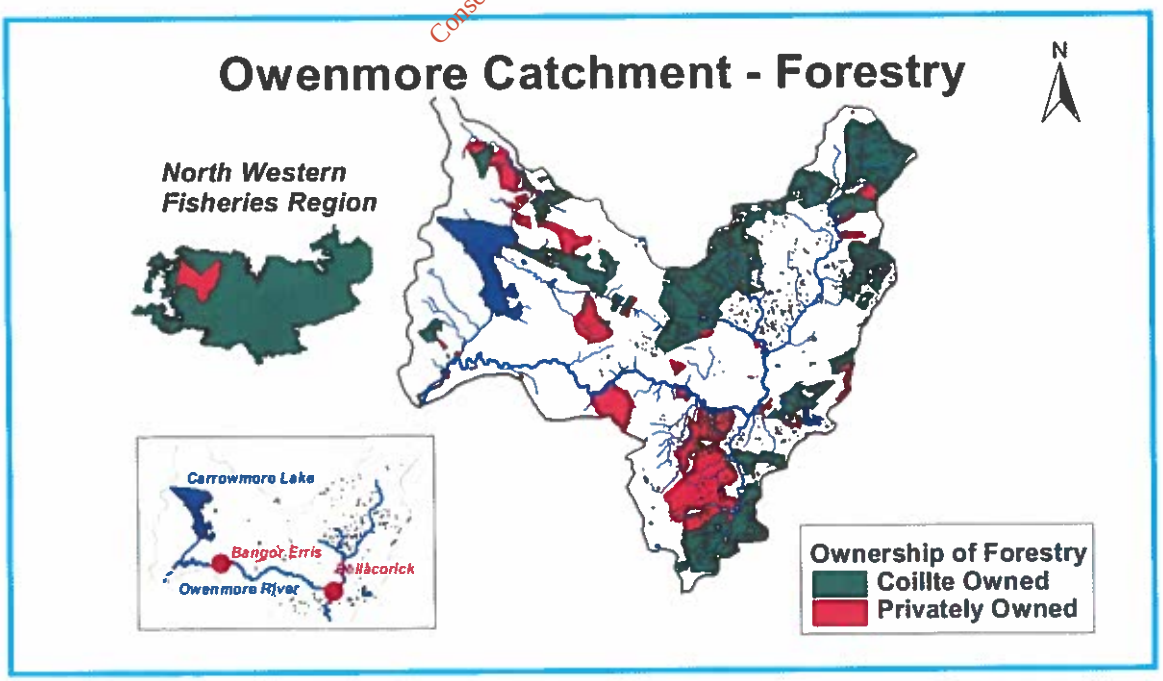


Figure 10: The location of the Principal Forestry Belts in the Owenmore Catchment

- **Peat Production**

Bord na Mona is responsible for the development of peat resources in two locations which occupy a significant percentage of the Owenmore catchment area. The company owns a total 7,590 hectares of land, 5,456 hectares of which is located at Bellacorick with 2,134 hectares located due west of Bangor Erris. A total of 2,373 hectares of bog were in production in 2003. Milled peat is produced at the sites and it is sold to the ESB for combustion in the peat-fired power station at Bellacorick. The work practices consist of a number of different processes including development, drainage, milling, harrowing, ridging, harvesting, loading and haulage. Bog development began in the 1950's with the first peat delivered to the ESB in 1962. The company received an Integrated Pollution Control licence, in respect of their operations, in May 2000, from the Environmental Protection Agency. The key elements of the licence relate to the management of the peat harvesting activity, environmental control measures and cutaway bog rehabilitation plans. The company has allocated significant resources to complying with the terms of this licence. Peat production is likely to cease at the end of the 2003 season, due to the planned closure of the power station, and Bord na Mona is preparing a rehabilitation programme for the cut-away bog.

Tourism

Nationally, there has been a rapid growth of the tourism industry over the last number of years and it is now one of the fastest growing sectors in the Irish economy with eight successive years of growth during the period 1991 to 1999. The west coast of Mayo is rich in scenic resources, unpolluted beaches, spectacular cliffs and ecologically rich peatlands. The area also boasts some of the best angling in Europe. Outdoor activities such as walking, general sightseeing and relaxing, water sports, fishing, golf and eco-tourism are the primary tourist attractions in the area. Westport, Achill and Mulranny are established tourist resorts on the periphery of the Owenmore catchment while Ballina is a well established angling centre. The Erris area itself, including the Owenmore catchment, has a much lower level of tourism activity. Important tourist resources in the catchment include the Bangor Trail and fishing on Carrowmore Lake and the Owenmore River. The town of Bangor Erris is strategically placed as a possible gateway for redirecting the flow of touring visitors from Achill, Westport and Mulranny to the wider Erris area. This strategic advantage is not currently being utilised with many of these visitors turning east at Bangor Erris and departing from the area.

Industry

The only major industrial enterprises in the catchment are Bord na Mona and the ESB peat-fired power station at Bellacorick. Bord na Mona employs a total of 95 permanent staff and 115 staff on a seasonal basis. Both enterprises are to cease operations in the near future and the loss of these industries will be a major economic blow to the area. There is one quarry located in Bangor Erris for the extraction of rock and crushed stone.

The principal characteristics that make it difficult to attract inward investment into the area include:

- Poor service and communications infrastructure
- Agricultural disadvantage
- Little economic or industrial development
- Low and declining population density
- Outward migration of young people

Services

Road infrastructure in the catchment area consists of the national secondary road, the N59, which runs westwards from Ballina to Bangor Erris and then south to Mulranny. The two regional roads, the R313 and the R314, run from Bangor and Glenamoy, respectively, towards Belmullet. All of these roads have been designated as scenic routes in the Draft Landscape Appraisal of County Mayo recently compiled by Mayo County Council.

Carrowmore Lake is used to abstract the water for supply to Belmullet, Blacksod and Bangor Erris. The treatment plant, located on the northern shore of the lake, currently has a capacity of 4,500m³/day. On completion of phase two of the extension of the water supply, to the Glenamoy and Carrowteige areas, this will increase to 9,100m³/day. There are also a number of group water schemes in the catchment area including Goolamore, Muingerroon and Bellanaboy. A number of private water supplies are also in operation serving houses to the east of Bangor Erris.

Bangor Erris has a sewerage scheme designed for a population equivalent of 1,000. It provides secondary treatment and discharges to the Owenmore river approximately 1km downstream of Bangor Bridge. Mayo County Council has issued one licence, to the mart in Bangor-Erris, in respect of trade discharges to the sewer. Dispersed and clustered rural populations are serviced by domestic septic tanks.

the fisheries resource

Fish Stocks

The Owenmore River system enjoys good runs of Spring salmon, grilse and sea trout. Carrowmore Lake also holds a stock of brown trout. While there has been a serious decline in the numbers of Spring salmon returning to the main river in recent years, Carrowmore Lake still gets a good run of Spring fish as does the nearby Owenduff River.

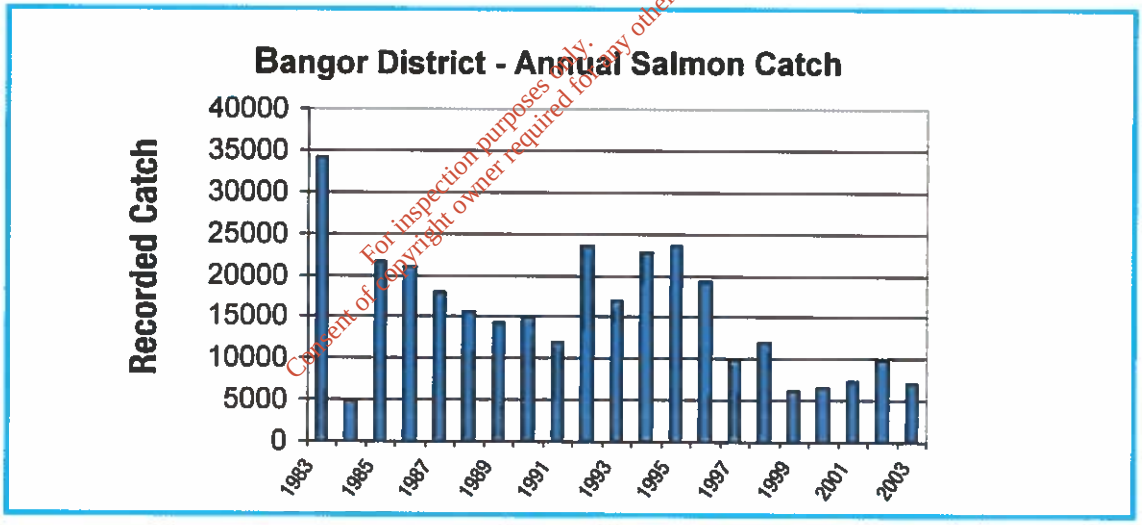


Figure 11: Annual Salmon catch for all engines Bangor District 1983 - 2003

The Commercial Fishery

In common with other parts of the country, commercial fishing for salmon is carried out, under licence, along the coast of the North Western Fisheries Region. Both drift net and draft net fishing is practised and these methods account for about 90 % of the salmon catch in the Bangor District. The District accounts for approximately 20% of the commercial catch figure in the North Western Region. In 2003, the commercial salmon quota for the Bangor District was 6,202 and 75% of this quota was allocated to drift nets with 25% to draft nets.

The Draft Net Fishery

Twenty five special local draft net licences are issued by the Fisheries Board in respect of draft net fishing in Tullaghan Bay. These fishermen exploit salmon stocks returning to the Owenmore and Owenduff river systems.

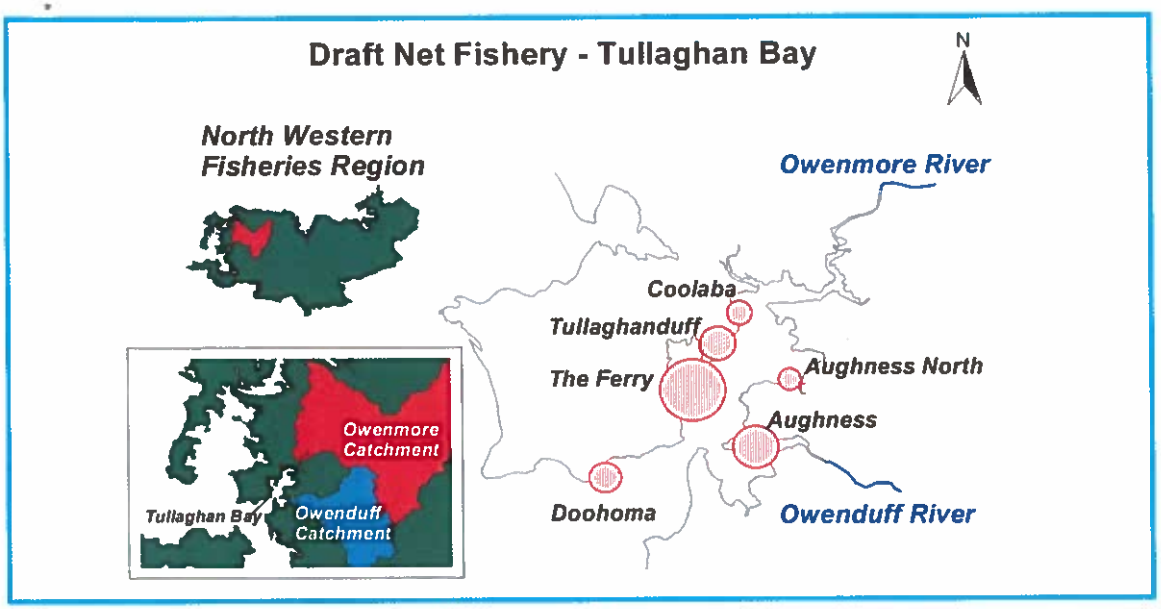


Figure 12: Locations of Main Draft Net Fishing Stations on Tullaghan Bay

The location of the principal fishing and landing areas in the bay can be seen in figure 12. Draft net fishermen concentrate their efforts in localised sites throughout most of the bay depending on extent of individual tides. The draft net season opens on 12 May and closes on the 31 July. Fish are intercepted on the incoming tides and successful fishing can be adversely affected by floods in the river. From two to three weeks fishing may be lost due to floods in a bad year. A number of hauling grounds in the estuary have been lost, primarily due to the build up of peat and the shifting of a sandbar. A total of 1,554 salmon were captured by draft nets in 2003 according to commercial logbook returns. The fishery is a valuable source of income to a number of small scale part-time fishermen.

The Drift Net Fishery

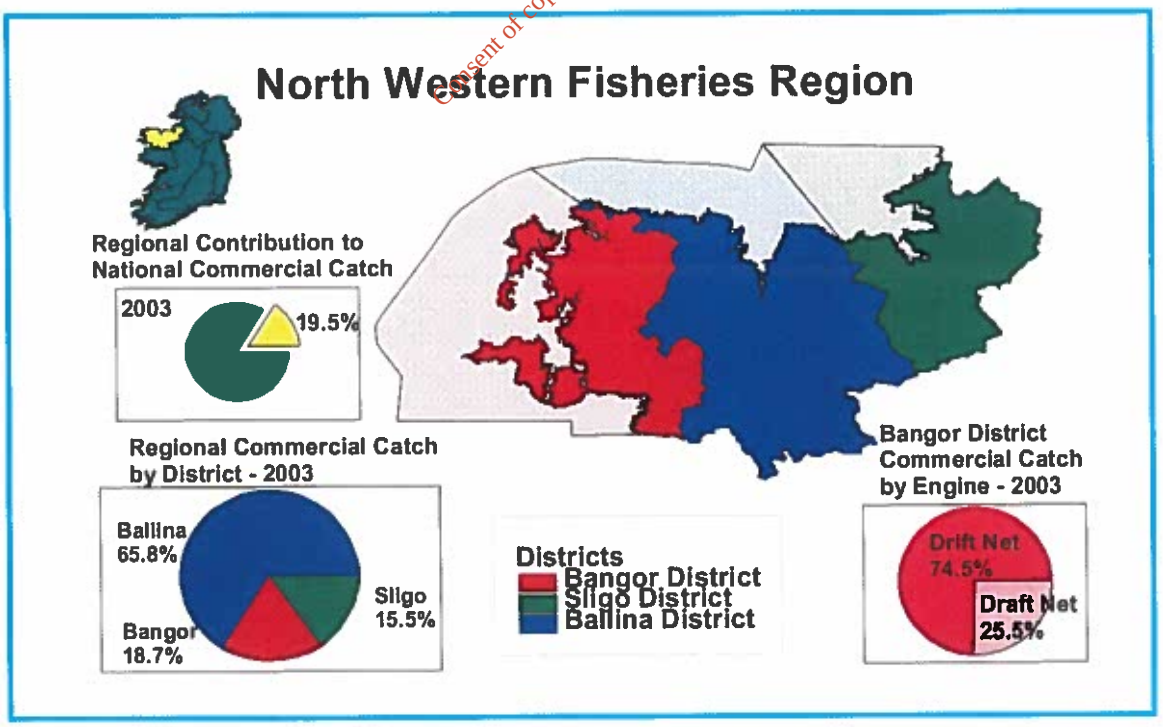
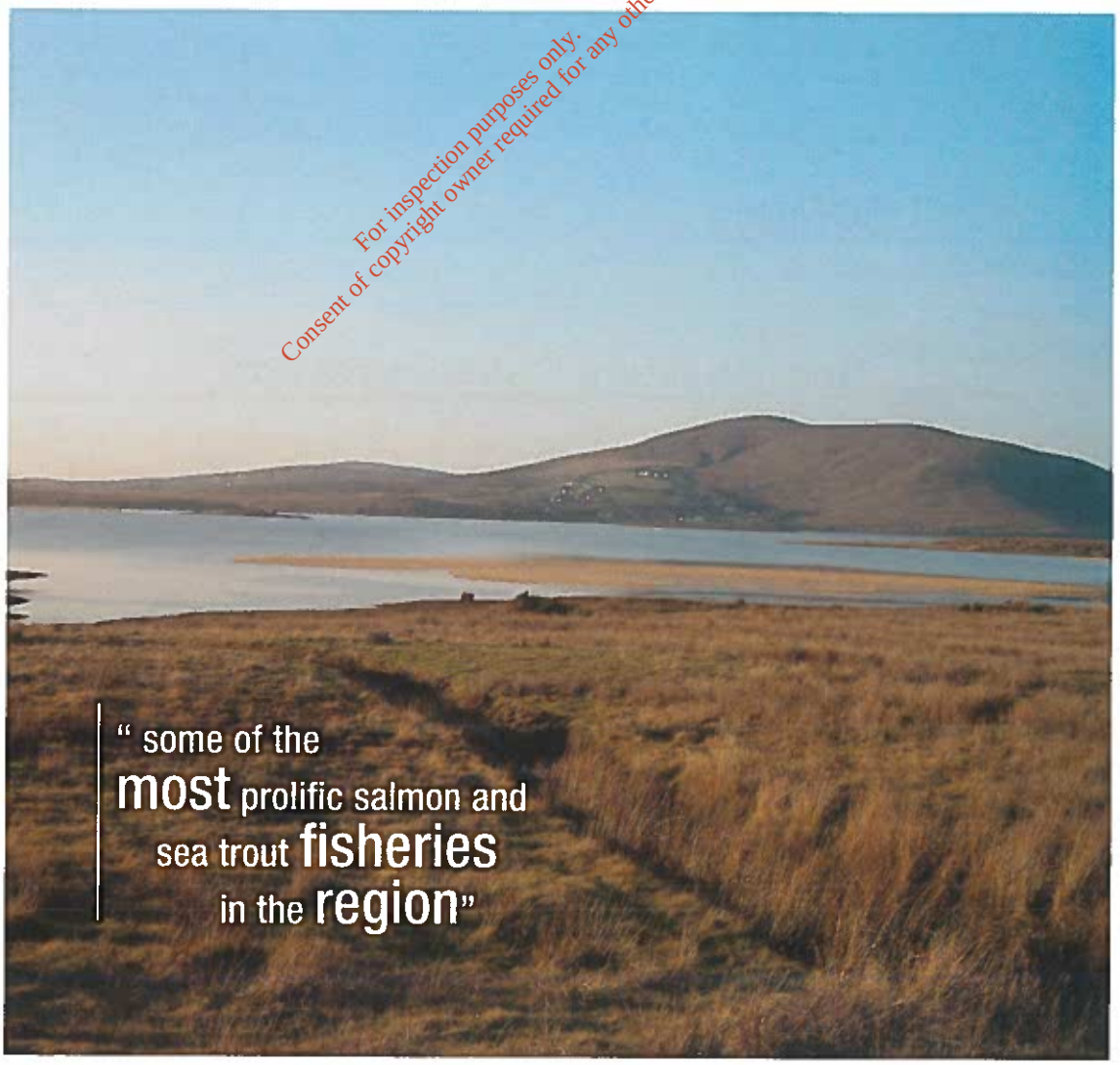


Figure 13: District boundaries and commercial salmon catch data for North Western Fisheries Region

Drift nets exploit mixed stocks of salmon returning to different river systems. The Owenmore catchment is situated in Bangor District which extends from Clew Bay to Benwee Head on the North Mayo coast. Twenty five drift net licences are issued in respect of Bangor District with twenty boats fishing from Achill and five from the Belmullet area. Although drift net fisheries exploit fish migrating back to different river systems, tagging evidence reveals that the nearer to a river that a drift net is fished, the more likely it is to catch fish destined for that river. Therefore, it is likely that Owenmore salmon are intercepted by boats from Achill and Belmullet but also by boats fishing out of Carrowteige and Porturlin in the Ballina Fisheries District. The drift net season runs from 1 June to 31 of July. In 2003, licensed drift net fishermen in the Bangor District caught 4,541 salmon.

The Angling Resource

The catchment contains some of the most prolific salmon and sea trout fisheries in the region. The surrounding area is characterised by its scenic views, with a sense of remoteness and isolation due to the unspoilt landscape. This sense of character adds immensely to the overall angling experience on the various fisheries. The Owenmore can be described as a large spate river with angling conditions depending on the water levels and wind conditions. The level of Carrowmore Lake was raised in the early 1980's for water abstraction purposes and since then, it has gained the reputation as one of the finest spring salmon fisheries in the country. This was greatly assisted by the substantial improvement in protection of fish stocks following the establishment of the Regional Fisheries Board at the end of 1980. For the purpose of describing the angling resource, the Owenmore catchment is divided into four separate sections;



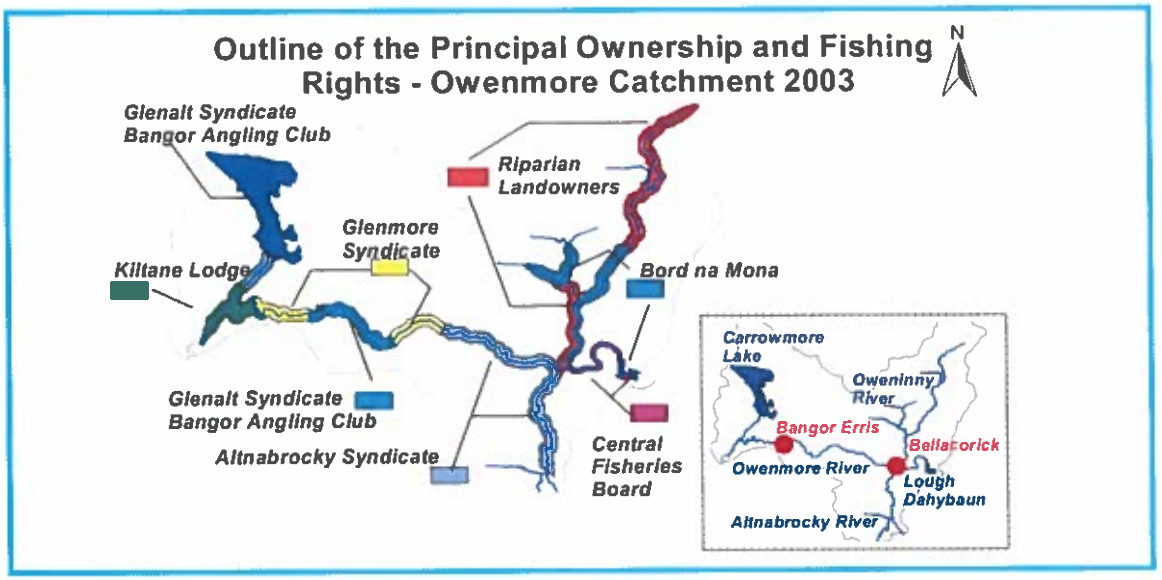


Figure 14: Ownership and Management of Fishing Rights in the Owenmore Catchment

1 The Oweninny River

The Oweninny rises in the slopes of Maumkeogh and flows south for approximately 17km to where it joins the Altnabrocky River, at Bellacorick Bridge, to form the Owenmore. In its upper reaches, the Oweninny is very much a small spate river with a considerable distance between angling pools in the section upstream of the forest track near Garanard Post office. Below this, the river follows the course of a wild moorland river to the footbridge located above the confluence with the Srahmeen. This section consists of a series of pools and shallows for the most part but a mile of deep slow water can be found below the bridge. The best of the fishing on the Oweninny is located from below the junction with the Sheskin River, at Srahnakilly, to Bellacorick. In general, the banks of the Oweninny are free from all obstructions making for easy walking and access along its entire length. Traditionally, spring salmon entered the system from April onwards but, in recent years, there has been a collapse in the spring run to this river. Grilse and sea trout are available from June onwards with the quality of angling depending on the summer floods. The river has a complicated ownership pattern along its length, including a number of private landowners, Bord na Mona, Altnabrocky syndicate and the Central Fisheries Board.

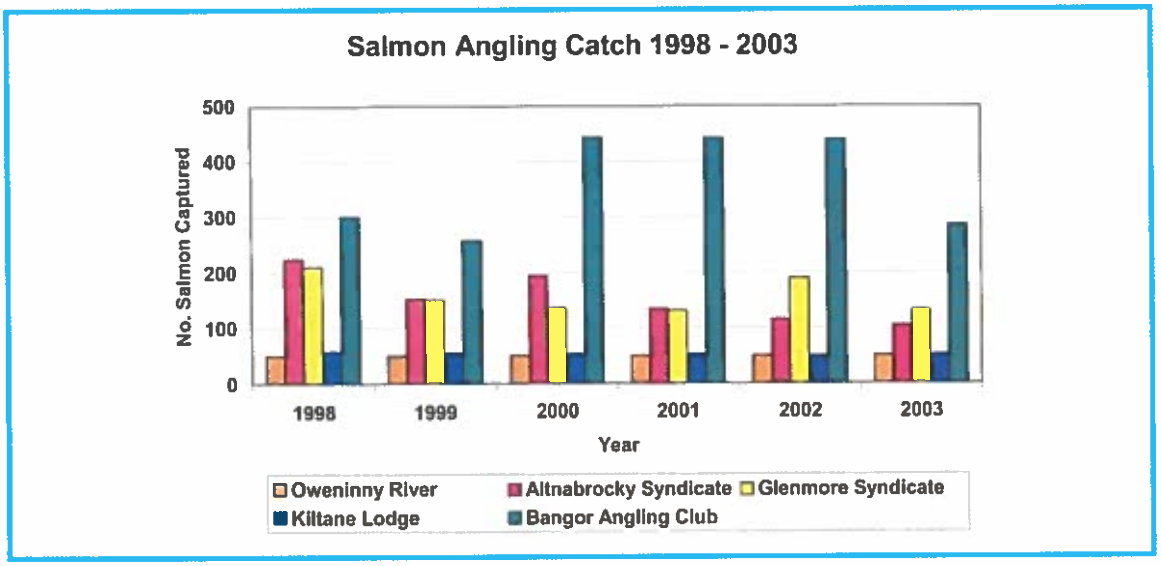


Figure 15: Salmon Angling Catch for the Owenmore Catchment 1998-2002.
(Catches for the Oweninny River section are estimated, as accurate returns are unavailable)

2 The Owenmore River

Introduction

Except for a small section of the tidal waters, which is vested in the state, three private syndicates and a family own the fishing rights on the Owenmore River from Bellacorick Bridge to the tidal waters at Tullaghan Bay. The spring salmon run returning to the river has virtually collapsed, in recent years, in comparison with the adjoining Carrowmore Lake and the nearby Owenduff system, which have continued to get good runs of spring salmon. The main channel has suffered badly from peat siltation for many decades and fishing is frequently disrupted due to the severe discolouration of the water from turbary works in the catchment. Excellent returns of grilse are still available to the rod and line from June to September and substantial numbers of sea trout are also taken. A fly only bye-law is in operation throughout the river.

Kiltane Fishery

This fishery is located on the lower stretch of the river and is owned and managed by the Sweeney and Finlay families. A several draft net fishery, consisting of three fixed engines, operated in the tidal stretches until it was relinquished in the 1970's by the owners in an attempt to boost numbers of fish entering into the system. The rod fishery consists of approximately 4km of double bank fishing from the junction with Glenmore syndicate to below the salmon weir at the Doctor's Pool. This fishery and contains some of the finest pools in the river. The fishery also includes a section below the salmon weir where angling is not as productive due to tidal restrictions. Fishing on the Kiltane Fishery is restricted to members of the owning families and their guests and currently there is no access available for other anglers. The owners have a long tradition in the area, dating back to 1931, and maintain seven houses in the locality.

Glenalt Syndicate Fishery

This syndicate consists of two sub-syndicates, the Altnabrocky syndicate and the Glenmore syndicate. Ownership of these fisheries dates back to 1967, although some of the members had been fishing on a lease, or other basis, for many years prior to that. The owners maintain two lodges and these are continuously occupied from May to September, with occasional use before and after the season. The lodges have accommodation for twenty-one people and while numbers of anglers in each party may vary, the average number of rods to each lodge is eight. The Glenmore fishery contains two sections, with approximately 6 km of double bank fishing. The Altnabrocky Fishery also consists of 6 km of double bank fishing from the boundary with Glenmore Fishery to the junction with the Oweninny at Bellacorick. The fishery also includes the rights on the Altnabrocky River but this is seldom fishable for salmon due to its narrow width and high banks. The owners apply rules and guidelines, including bag limits, which are adhered to by all anglers on the fishery. Excellent records of all catches are maintained. Angling is reserved on both fisheries to occupants of the lodges and their guests. The Glenalt Syndicate also lets the fishing on Carrowmore Lake, and on a section of the Owenmore River, to Bangor Angling Club by way of annual licence. The syndicate reserves the right to put boats on the lake subject to notification of the club.

3 Carrowmore Lake / Bangor Angling Club Fishery

This fishery comprises Carrowmore Lake and the Muinhin River as well as a section of the Owenmore River.

Bangor Angling Club was formed in the late 1970's and early 1980's and has a total membership of approximately one hundred members. Membership is made up mostly of local people and control of the club is constitutionally vested in the local community although the club also has many members from outside the area.

Management of Carrowmore Lake, the Muinhin River and a section of the Owenmore River is let to the club under an annual licence, for a nominal fee, by Glenalt syndicate. The licence is structured in such a way as to allow the local community to benefit from the fishing. The nominal licence fee is to enable the Club to generate a large net income from the sale of permits on the fisheries. The syndicate believes that other benefits should arise from this valuable tourist asset, including benefits to guesthouse owners, local businesses, boat owners and local gillies. The club has been unable to provide reliable figures for the total number of permits issued in respect of visiting anglers to the area but it is believed that between 2,500 and 3,000 bed nights were generated during the 1998 season due to the club's efforts.

The club is responsible for day to day management of both fisheries under the terms and conditions of the annual licence. Glenalt syndicate assist in the overall management of the fishery. Daily permits are issued to visiting anglers to Carrowmore Lake at a cost of €15 (2003 price), plus the cost of boat hire for the day at €20 (2003 price). A maximum of 15 boats is allowed on the lake per day. Although the season may open on 1 January, the club upholds the close season until 1 February for conservation purposes. Spinning is allowed on the lake until the end of March and a "fly only" rule is in operation from that date. A bathymetric survey carried out by the Board reveals the shallow extent of the lake and it quickly becomes unfishable in windy conditions due to water discolouration.

The club also manages a 3km double bank section of the Owenmore River. Two sessions are operated daily on the river at a cost of €25 per permit (2003 price), up to a maximum of four rods per session, which may include local members. Weekend fishing is reserved to full club members only. A bag limit is in place. For the past ten to twelve years, the club has, in conjunction with local landowners and syndicate, carried out bank protection and pool improvement works. The Bangor Angling Club fishery has produced excellent salmon and sea trout fishing in recent years and has attracted an increasing numbers of anglers from all over Ireland and abroad.

State Waters

Recent research carried out on the ownership of Carrowmore Lake has indicated that the fishing rights are owned by the State. The Glenalt Syndicate, however, maintains that it purchased the fishing rights on Carrowmore Lake in 1967. At the time of publication of this plan, the Regional Fisheries Board was endeavouring to have to have this important matter clarified. The Central Fisheries Board also holds a 1/3 share of the fishing rights on Lough Dahybaun at Bellacorick. The remaining 2/3 is held by Bord na Mona. A put and take fishery operated on the lake for a number of years. A section of the tidal waters of the Owenmore River is vested in the state and draft netting is carried out on part of that stretch.

an assessment of the resource

Water Quality

Good water quality is a fundamental requirement for a healthy salmon and trout fishery. The EPA carries out a programme of water quality analysis in the Owenmore River. As can be seen from figure 16, the overall assessment of water quality in the catchment is good with an improvement in overall quality since 1986. This index is based on a weighted combination of eight key physiochemical characteristics that is used to summarise water quality. Water quality Index scores in excess of 80 generally represent unpolluted conditions. It should be noted, however, that the samples are not analysed for peat silt content which causes a significant problem for both salmon spawning and angling.

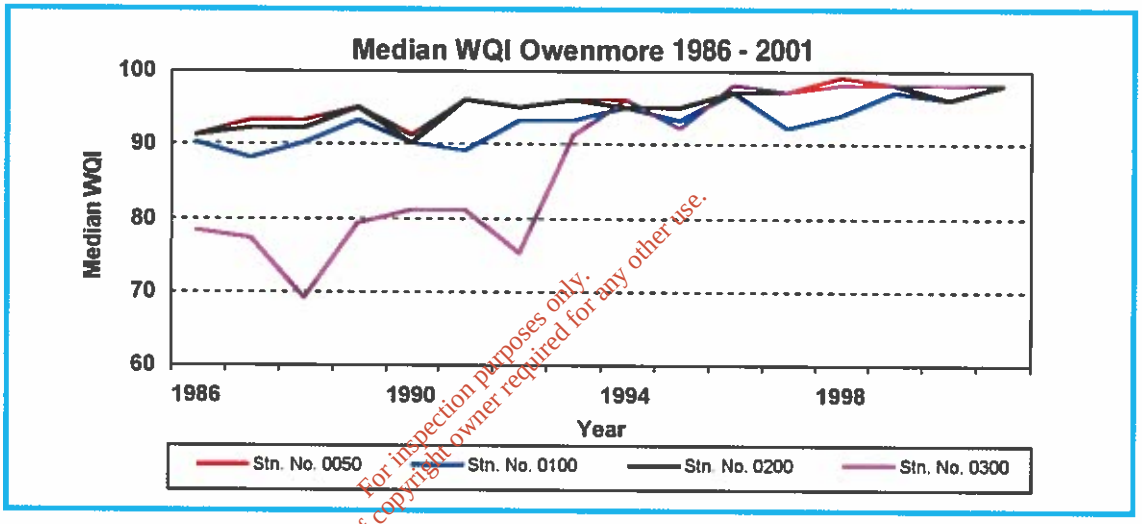


Figure 16: Water Quality Index for four sites on the Owenmore River
(Environmental Protection Agency – Castlebar Regional Inspectorate)

Biological monitoring is also carried out at thirteen sampling stations in addition to the physiochemical monitoring in the catchment. It is clear from Table 1 that water quality in the catchment is generally good.

Site Name	1990	1994	1997	1999	2002	Current Status
Altnabrocky	5	4-5	4-5	4-5	4-5	Unpolluted
Bellanaboy	4-5	4	4	4-5	4	Unpolluted
Glencullin	4-5	5	5	4-5	-	Unpolluted
Muing	4	3-4	3-4	3-4	3-4	Slightly Polluted
Munhin	4-5	4	4	4	3-4	Slightly Polluted
Owenmore (at Srahnakilly)	5	4-5	4	4-5	4	Unpolluted
Owenmore (below Bellacorick Bridge)	4	4-5	4	4	4-5	Unpolluted
Owenmore (bridge at Bangor-main flow)	4	4	4-5	4-5	4-5	Unpolluted
Owenmore (3km u/s Munhin confluence)	5	-	-	4-5	4	Unpolluted
Owenmore (700 metres u/s Munhin confluence)	4	4	4-5	4	4-5	Unpolluted
Sheskin Stream	5	4-5	4-5	4-5	4	Unpolluted

Table 1: Biological assessment of water quality in the Owenmore catchment

The EPA also assesses water quality in Carrowmore Lake. The change in the trophic status of a lake can be used as a measurement of the degree of enrichment or deterioration in the water quality over time. The trophic status is assigned by reference to a scheme based on the measurement of key parameters such as total phosphorous, chlorophyll and water transparency. It is evident from Table 2 that the water quality of Carrowmore Lake is generally good. However, there was an increase in planktonic algal growths in 1999, possibly related to an exceptional flood event that occurred in 1997, resulting in the transportation of a large amount of material into the lake. A project completed on the eutrophication processes in the littoral zones of Western Irish Lakes, published in 2001, reported localised enrichment in the lake. A persistent and dense algal bloom occurred in Carrowmore Lake in 2003. The bloom persisted for a period of four months during the peak angling season and it was necessary to close the fishery with a substantial loss to the local economy resulting. A sediment core study carried out in 2003 revealed a two-fold to a five-fold increase in the measured total phosphorous concentrations in the sediments in recent years.

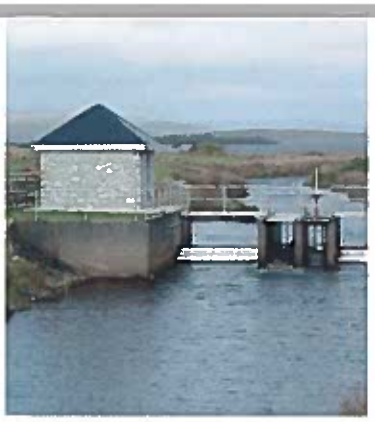
Year	Trophic Status
1995	Mesotrophic
1996	Mesotrophic
1997	Oligotrophic
1998	Oligotrophic
1999	Mesotrophic

Table 2: The Trophic Status of Carrowmore Lake

Salmon Stocks

In general, the detailed data which is required for the interpretation of population dynamics of salmon stocks, for individual river and lake systems, is lacking or of poor quality. Apart from index systems, or systems with accurate and reliable fish counters, adequate data for the management of individual systems is not available.

The Burrishoole system is an index system located in Bangor District where information on the wild salmon run has been continuously monitored since the 1960's. Catches in the North Western Region and in Bangor district are statistically correlated with the actual returns to the Burrishoole River over the years. An estimation of the spawning stocks and conservation limits for Burrishoole and Bangor district were modelled in 2001 in order to assess the level of attainment of the conservation limit for the district (See Figure 17). The conservation limit is an assessment of the spawning stocks required to ensure that productivity of a catchment is maintained at its optimum carrying capacity. The results of this study indicate that the District has not achieved its conservation limit in recent years. This poses a major challenge in regard to future management of the District's river systems. For example, a scientific committee, which advises the National Salmon Commission, did not consider it appropriate to recommend that there should be any commercial salmon fishing in the Bangor District in 2002 or 2003.

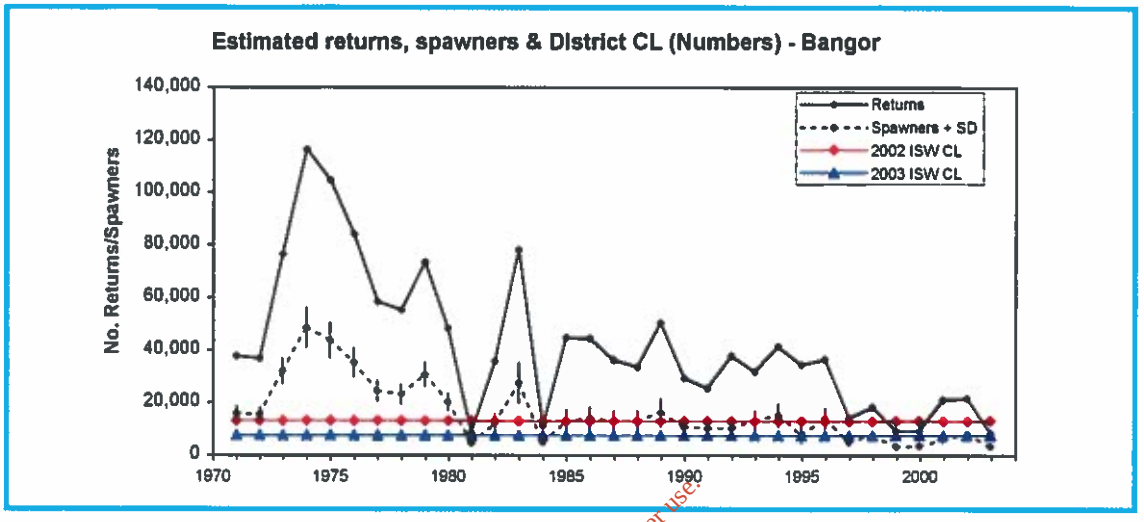



Figure 17: Attainment of the Conservation Limit for Bangor District.
(The Marine Institute)

However, in the absence of accurate details of the numbers of salmon entering the various river systems in the District, it is impossible to provide an accurate assessment of the health of the Owenmore salmon fishery. The use of rod catches, where accurate catch figures are available, is inadequate without knowing the catch per unit effort (CPUE). This is especially so in the case of spate rivers where catches correlate more significantly with the prevailing weather conditions.

Rod catches, over a relatively long timescale, which are more reliable, have shown a dramatic decrease in spring salmon catches from the river. A comparison with Carrowmore Lake and the Owenduff catchment, which have maintained reasonable returns, would support the widely held view that the spring component of the stock has severely declined in recent years.

The Information Gap

Quality information for the management of individual fisheries is not available for most catchments. The collection of appropriate, good quality, high-resolution spatial and temporal data is essential for good fisheries management. For effective management of fisheries, on a sustainable basis, the following requirements, for individual rivers, must be satisfied.

- The carrying capacity of each river to must be scientifically assessed;
- Accurate and reliable fish counters must be installed;
- Spawning escapement must be regulated and monitored in order to achieve the conservation limit;
- River habitat must be monitored and protected;

With the development of Geographic Information Systems (GIS) and other remote sensing tools, the carrying capacity of individual rivers can now be readily assessed. Accurate and reliable fish counters can establish whether spawning escapement is sufficient to meet the conservation limit.

Accurate rod catch statistics are also essential for the effective management of the resource. These are not always maintained or available to staff of the Fisheries Board whose remit covers the collection of these statistics for management purposes. It is essential that accurate and reliable rod catches be maintained on all fisheries. The onus and responsibility is on all fishery managers to maintain these records and make them available to Fisheries Board staff at all times.

environmental impacts

General

Apart from natural catastrophes, which occur very occasionally, salmonid habitat deterioration is most likely to occur as a result of anthropogenic affects or man's impact on the surrounding environment. The assessment of water quality parameters in a catchment will give an indication of the status, or degree of deterioration, of the aquatic zone. Water quality and land use are inextricably linked. Water quality degradation resulting from man's impact is termed pollution. Point and diffuse sources of pollution result in the discharge of deleterious substances into the receiving watercourses, including suspended solids, nutrients and heavy metals. Any increase in these substances may have important consequences for the aquatic habitat and the species that interact with it.

Degradation of the environment can also result from a fundamental change in the physical processes operating within a catchment area. The impacts of urbanization, drainage, channelisation and gravel extraction can all have observable effects on the catchment hydrology. River bank erosion and sedimentation are natural processes that have a dynamic and stable interaction with the surrounding landscape features and the prevailing climate. However, this dynamic is often altered by changes in catchment hydrology due to man's intervention, usually resulting in an increase in the quantity and velocity of water leaving a catchment. This may accelerate bank erosion. The degree of ecological damage, as a result of these processes, depends on the sensitivity of the river channel and its ability to buffer the effects of these alterations.

The following sections outline the threats to the aquatic environment specific to the Owenmore catchment. They are an attempt to quantify the threats to the future sustainability of this resource.

Peat Siltation

Siltation has a number of consequences for aquatic life. It results in the loss of diversity and abundance of aquatic invertebrate and vertebrate communities. It also affects fish populations directly by reducing the hatching success of eggs and killing juvenile fish. Discharges of peat silt can also have a highly detrimental effect on angling due to the severe discolouration of waters.

The deposition of peat sediments in the Oweninny and Owenmore rivers has been an ongoing problem for many years. Silt traps installed by Bord na Mona have not always had the capacity to retain the run-off off from the worked bog areas, especially during periods of intense rainfall. Siltation has resulted in the loss of spawning areas in the Owenmore channel and in a substantial part of the Oweninny River. Eyed ova studies carried out by the Fisheries Board, in the 1980s, revealed an extremely low level of survival of salmon eggs in artificial and natural redds located in the affected areas. The implementation of a successful rehabilitation plan by Bord na Mona is essential to ensure an improvement in the ecology and fisheries in much of the Owenmore catchment area.

Afforestation has also contributed to silt run-off. Many of the afforested areas of the catchment were planted at a time when social, economic and environmental factors were very different to today. Plantation of large areas took place prior to the introduction of many of the environmental guidelines that were designed to mitigate the effects of forestry on the receiving watercourses. The run-off of silt can occur during harvesting and replanting operations in sensitive, afforested sites with relatively steep slopes and this can result in degradation of the aquatic zone. An additional problem, arising from the early plantations, is that extensive areas of stream habitat are completely overgrown with conifers due to the absence of buffer zones along their course.

Hydrology and Bank Erosion

Bank erosion is a natural process that has been ongoing since rivers were formed. It is the increase in the rate of erosion, however, partly due to the extensive areas of drainage, over large areas of the catchment that can result in the loss of valuable farmland in the floodplain.

This acceleration of erosion also has ecological consequences for the river habitat including the alteration of physical features, braiding of river channels and the loss of biological diversity.

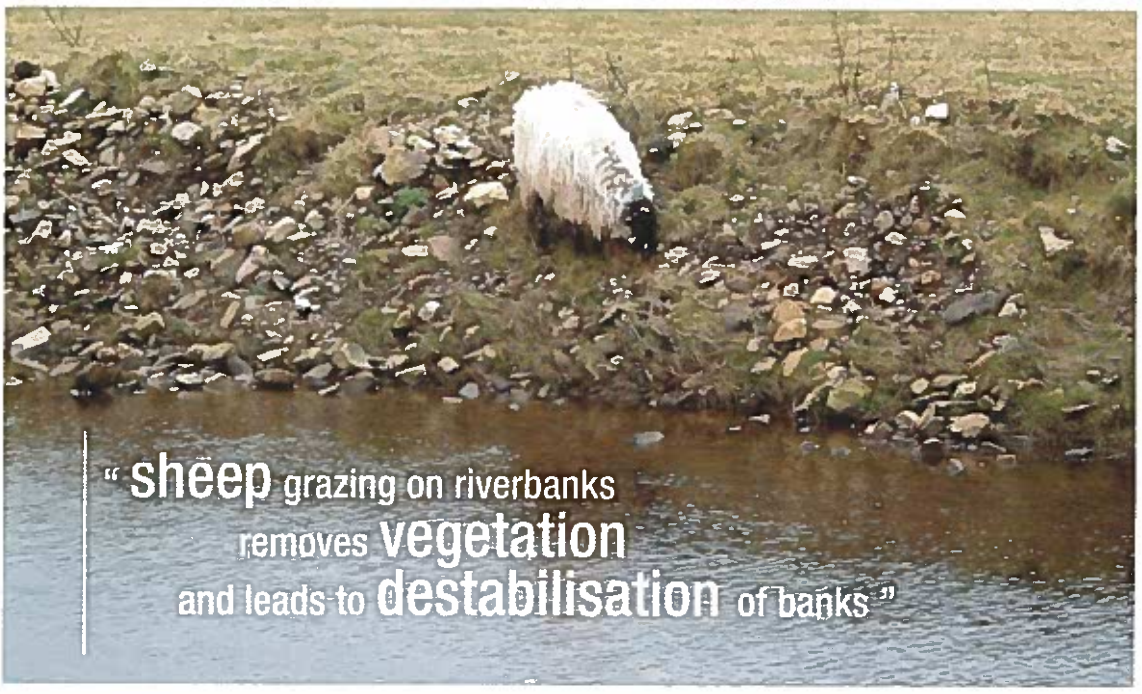
Bank erosion is an ongoing problem observable in many catchments in the west of Ireland. Sensitive banks consisting of peat, overlying unconsolidated glacial till, are easily eroded. During periods of intense rainfall, floods can result in the erosion of large sections of bank material.

For much of its course, the Owenmore river has a low, wide floodplain which dissipates the energy from floods. River sections with higher banks can experience extensive erosion e.g. on the Altnabrocky River and from the townland of Briska to the estuary at Tullaghan Bay. Strategic placement of channel reinforcements is expensive and not always a solution to what is a catchment wide problem. Frequent landslides, in afforested and other areas of the catchment, testify to the sensitivity of the surrounding landscape.

Extensive sheep grazing on blanket bog has led to the overgrazing of some areas of the Owenmore catchment. Overgrazing can result in the erosion of large volumes of peat during heavy rainfall events. This alters the catchment hydrology and contributes to an increase in bank erosion and siltation of spawning gravels. Sheep grazing on riverbanks removes vegetation and leads to the destabilisation of the banks during flood events.

Afforestation in the catchment has also resulted in problems. The installation of a large and extensive drainage network was necessary prior to the plantation of much of the afforested area. This has important consequences for the hydrology of afforested areas and their receiving watercourses. It can result in an alteration in the dynamic processes of bank erosion in areas downstream of afforested catchments.

A hard and impervious iron pan formed readily in this type of landscape due to leaching of the upper soil layers. For effective drainage to be achieved, the breaking up of this pan is necessary. Where this is done, the iron pan may result in deposits over the substrate of the stream bed. This renders it inert to macroinvertebrate fauna that form the base of the food chain for fish species.



Diffuse Source Pollution

Eutrophication

Nutrient loss from sewage systems not served by the Local Authority treatment plants can be a source of localised pollution and can contribute to the enrichment of sensitive watercourses. This is a problem with peaty, hilly and mountainous areas which have shallow soils and steep slopes and are not suitable for percolation of septic tank effluent. Carrowmore Lake and its immediate surroundings is a popular area for housing developments as recent planning applications to Mayo County Council have shown. The locating of septic tanks, from single and group housing developments, in unsuitable areas may pose a threat to the water quality of this lake in the future. However, the new Mayo County Development Plan contains special provisions relating to the siting of septic tanks in lakeshore areas and it is hoped that this will minimise the risk of pollution from this source

Due to the exposure, poor fertility and drainage problems, plantations in the catchment have generally developed into forest stands of poor to medium productivity with a low yield class. Fertiliser application is essential for their growth cycle. These plantations are growing on blanket peat or areas where the underlying soil is thin and poor in minerals thus limiting their capacity for nutrient retention. This may result in and run-off from these areas to the aquatic zone causing a water quality problem.

In agricultural terms, the catchment area can be described as disadvantaged. Due to the relatively low numbers of livestock produced, the problem of eutrophication, resulting from slurry application, is unlikely in the near future. However, due to the marginal nature of the land and the location of the best land in the floodplain, any intensification of nutrient application would pose a threat to the adjacent watercourses.

Acidification

The process of acidification of surface waters due to plantation forestry, in areas of poorly buffering bedrock, is well documented. These conditions exist in the western part of the catchment although the extent of the problem in these areas has never been investigated.

Point Source Pollution

Little or no information is available on the use or disposal of spent sheep dip substances in the catchment. Although no problems have been documented to date, it is possible that quantities of these dangerous substances are discarded or land spread in areas where pour-on applications are not in use. Due to the hydraulic conductivity in the catchment generally, the possibility of these chemicals reaching the aquatic zone is high if spread close to adjacent watercourses.

Any widespread application of insecticides or herbicide, in afforested areas, may result in the chemicals reaching watercourses depending on the volume of the chemicals used and the timing of the application.

the future of the fishery

Overall Approach

The overall objective is to ensure that the catchment's fisheries resource is managed sustainably, that the economic return to the local area is optimised and that the resource is shared on a fair and equitable basis. This management plan sets out proposals for the sustainable management of the fishery in accordance with the catchment based approach to fisheries management. These proposals have been agreed by the Owenmore Catchment Committee although it should be noted that individual representatives on the Committee may not be in agreement with all statements, opinions and proposals contained in this document which is intended to provide the broad framework for the future of the fishery. The proposals have also been approved by The North Western Regional Fisheries Board.

It is evident that the status of the fisheries resource is dependant on a large number of extraneous factors at the wider catchment level. Some issues affecting the catchment's fisheries can be dealt with only at national level e.g. policy issues relating to buy-out or set-aside of salmon licences. Management of the resource at catchment level is further complicated by the diversity of sectoral interests and some of these are also governed by the statutory obligations of individual state bodies whose remits can cause conflict in relation to protection and conservation of the fisheries resource. Implementation of the plan will be on a voluntary basis. Conflicting statutory responsibilities and ownership issues cannot be ignored. Where conflict exists, every effort will be made to resolve issues through the catchment management committee. Indeed, this is the very essence of the catchment management approach.

This plan is a "rolling plan" which can be changed if the catchment committee so decides and subject to the approval of the Regional Fisheries Board. On going dialogue and co-operation will be needed to ensure that the management proposals are implemented and that other issues which arise are dealt with to the satisfaction of all parties. Where funding is required, the implementation of proposals will obviously be subject to the availability of finance.

Consultation

The first principle of catchment management is that all reasonable attempts are made for all sectors to be adequately represented on the catchment committee. Following some initial confusion regarding representation of riparian landowners on the catchment management committee, the Regional Fisheries Board made a number of efforts to encourage this sector to become involved in the process. Landowners were invited to a public meeting in Bangor-Erris, an information leaflet was published and distributed to landowners in the area and two notices placed in the local press inviting comments from the public on a draft of this plan. In addition, two letters were sent to the IFA inviting them to make an input to the management plan. Unfortunately, a positive response had not been forthcoming up to the time of publication of the plan. Both the Owenmore Catchment Committee and the Fisheries Board considers it important that these major stakeholders in the catchment become involved in the catchment management process and hope that an input will be made by this sector in due course.

Proposed Action:

- **Continue all efforts with farming organisations and riparian owners to encourage nomination of a committee member for the purposes of representing this sector on the Owenmore Catchment Committee.**

NWRFB, Farming Organisations

The Environment

In order to guarantee a future for the salmon resource, a healthy aquatic environment is essential. There are many environmental threats from activities carried out at the catchment level that affect, or have the potential to affect the aquatic environment. While there is a large volume of statutory provisions and guidelines that are available for protection of the environment, these have not always been successful in preventing deterioration of the aquatic resource.

During the course of this initiative it became clear that there was a possibility of developing a number of projects that could result in an enhancement of the aquatic environment. For example, meetings with Coillte resulted in agreement on a number of proposals for funding under various government and European funded initiatives for environmentally sensitive forestry. With a partnership and consultative approach between the various sectors, there may be potential for further progress under environmentally orientated funding programmes.

A major improvement in the aquatic environment in the catchment is expected following implementation of Bord na Mona's rehabilitation plan for cut away bog over the next few years.

The EU Water Framework Directive will provide a means whereby progress can be made in the protection and restoration of water quality. The directive will be implemented at the level of river basin districts and will complement the catchment management process.

The protection and enhancement of the riparian zone from overgrazing and bank erosion is a manageable and realistic exercise possibly involving a partnership approach between the Fisheries Board, riparian owners, fishery owners and others. This could result in benefits to the landowner and to the adjacent watercourses. Opportunities for funding under environmentally sensitive farming schemes may become available in the future.

Proposed Action:

- **Co-operate closely with Bord na Mona in the preparation and implementation of the company's bog rehabilitation plan.**

  NWRFB, Bord na Mona

- **Quantify the extent of bank erosion in the catchment and prepare a plan for its remediation.**

  NWRFB, Riparian Owners, Fishery Owners, Farming Organisations

- **Seek agreement and funding for the strategic fencing of riparian zones in sub-catchments contributing significantly to freshwater fish production.**

  NWRFB, Riparian Owners, Fishery Owners, Farming Organisations

- **Carry out a survey of the interaction between forestry and the fisheries resource in the catchment including an assessment of buffer zones, culverts, tunnelling affects etc.**

  NWRFB, Riparian Owners, Fishery Owners, Farming Organisations

- **Publicise the benefits of a healthy aquatic environment and the benefit of this and of the angling resource to the local community.**

  NWRFB, Bangor Angling Club, Private Fishery Owners, Local Community, Mayo County Council, EPA, Heritage Service

- Seek to ensure that salmon or trout farming is not permitted in the catchment or its coastal zone.

  NWRFB, Fishery Owners, Bangor Angling Club, Commercial Fishermen

- Continue to monitor water quality on Carrowmore Lake and its feeder streams.

  EPA, Mayo Co.Co., NWRFB

- Avail of the opportunity presented by implementation of the Water Framework Directive to ensure effective management of the catchment's aquatic resource.

  EPA, Mayo Co. Council, NWRFB, Heritage Service, other agencies

- Carry out farm surveys in the catchment on a periodic basis as the need arises.

  NWRFB, Mayo Co. Council

- Monitor proposals for developments which could impact negatively on the aquatic environment and ensure that appropriate action is taken for protection of the environment.

  Mayo Co. Co., NWRFB, Heritage Service, EPA

Protecting the Resource

Responsibility for protection of the fisheries resource of the Owenmore catchment rests primarily with The North Western Regional Fisheries Board. A wide range of legislative provisions are available to the Board for this purpose. Since the establishment of the Board, in 1980, a great deal has been achieved in this regard and illegal fishing in the area is now much less prevalent than in the past. It is very important, however, that the protection effort is maintained in the catchment and, indeed, there is every indication that any curtailment in patrols by Board staff would quickly result in an increase in illegal activity on the fishery. The Board will, therefore, continue to patrol the coastal area, the estuary, the river and Carrowmore Lake as in the past subject to availability of resources. The Board will, however, use the catchment management initiative to forge greater links with all stakeholders in order to improve co-operation in relation to protection of the resource and to encourage local people to appreciate and protect a very important local resource which has the potential to make an even greater contribution to the local economy.

Proposed Action:

- Continue to provide patrols at sea, on the estuary, river and lake for the purpose of enforcing the provisions of the Fisheries Acts and all relevant statutory provisions.

  NWRFB

- Encourage co-operation between all stakeholders in relation to protection of the resource against illegal fishing.

  NWRFB, Heritage Service, Fishery Owners, Bangor Angling Club, Riparian landowners

Managing the Resource

Sustainable Management

The overall objective for the effective management of the fishery is to ensure that enough salmon and sea trout are allowed escape upstream to spawn. This is the most fundamental requirement for the future of the fishery. The main legislative provision, which is available at present in this regard, is the Wild Salmon Tagging and Quotas scheme. This scheme is managed and administered by the Fisheries Board under regulations made annually by the Minister. Quotas apply only to salmon caught by commercial fishermen and there is no quota for the rod catch although individual anglers are now limited to a catch of twenty salmon per year. There is a bag limit of six sea trout per day in operation in the North Western Fisheries Region and there is a minimum size limit of eleven inches (27.94 cms.) in force for sea trout taken on Carrowmore Lake.

Sharing the Resource

Once it is guaranteed that the spawning target will be achieved, the next critical management issue is the achievement of a fair and reasonable distribution of the resource among the competing interests. The commercial salmon quotas which apply to each Fisheries District are set annually by the Minister having taken advice from the National Salmon Commission. The Commission, in turn, is advised by a Standing Scientific Committee established for this purpose. The committee's recommendations are based on a fairly complex formula which is used to estimate the Conservation Limit (minimum number of spawners required) for each Fisheries District on the basis of reported catches since 1970. It is planned that, in the future, quotas will be based on the spawning requirement in each catchment following appropriate assessment of the carrying capacity of each river system. Such an assessment, combined with the more accurate data emanating from the tagging and quota scheme and data from fish counters on individual rivers, will facilitate "real time" management of salmon stocks in the coming years. For this reason, it is very important that the best possible information gathering and storage systems are put in place in the Owenmore catchment. Some considerable progress has been made in this regard since commencement of the catchment management initiative. However, much more needs to be done over the coming years to ensure that the best possible information is available on which to base decisions in relation to quotas and fair and equitable sharing of the resource among the various sectors.

Commercial Fishing

Commercial fishing accounts for about 90% of the salmon catch in the Bangor District. However, catches have been in decline for some years and the draft net fishery has been particularly affected. Fishermen accept that salmon stocks generally are declining and have indicated that they would be prepared to consider a set-aside scheme if reasonable terms were available. The draft net sector is not

prepared to consider a buy-out scheme but at least some drift net fishermen have indicated that they would consider a buy-out if one were to be made available. Following discussions with the former Minister for the Marine and Natural Resources, Mr. Fahy, in 2001, the issue of a possible set-aside was discussed at catchment committee meetings and at meetings with individual sectors. All sectors agreed that a set-aside scheme, for a minimum of four years, was the only sensible management option available to guarantee a sustainable future for the fishery. The basis for the proposed set-aside was:

- An average, annual payment of IR£3000 per licence, divided pro rata, on basis of individual historic catch figures but with a minimum payment of IR£1000 per licence;
- The scheme to be funded on a 50:50 basis between the state and other sources;
- Setaside for a minimum of a four year period with a minimum 80% uptake of the scheme;
- Payments made under the scheme to be tax free

As no progress could be made in relation to the proposed tax exemption element of the proposal, the scheme was not pursued.

The Rod Fishery

Due to the fragmented ownership situation on the Oweninny River, the fishery is not being marketed or utilised relative to its potential at present. In 2002, the Fisheries Board carried out a title search of fishing rights on the river in order to clarify the ownership along its course. On the basis of this information, the Board will endeavour to integrate the individually owned stretches into a single fishery with an overall management structure. New management arrangements would include angling pool development, improved access to the river and marketing of the resource. An integrated structure would result in an increase in angling spaces and utilisation of this fishery which has the potential to make an increased contribution to the local economy in terms of angling tourism.

Except for Carrowmore Lake and a 5.5 km section of the river, angling on the the Owenmore system is restricted to the private fishery owners and their guests. The North Western Regional Fisheries Board has expressed the view that the river is in need of an improved and overall management structure. There are differing views between the Board and the owners in relation to the possibility of increased access for tourist anglers visiting the area. It is accepted by both parties that the potential for an increased level of angling is limited by virtue of the river being a spate system, by the need to conserve stocks and, also, by the need to limit the number of rods that are allowed to fish to ensure that the quality of the angling experience is not diminished. In order to resolve this issue, to the satisfaction of both parties, meetings will be held to discuss the matter with a view to reaching an agreement to which both parties can subscribe.

Proposed Action:

- Carry out a catchment wide survey to assess the carrying capacity of the system having regard to the condition of the riparian zone, river morphology, biological characteristics, spawning gravels, peat siltation etc.

  NWRFB, CFB Marine Institute, Bord na Mona, Forest Service, Coillte

- Pursue the issue of a set-aside scheme for the district subject to availability of funding and agreement among all sectors on its implementation and management.

  NWRFB, Commercial Sector, Private Fishery Owners, Bangor Angling ClubDept of Communications, Marine and Natural Resources.

- Seek agreement on the future management arrangements for fair and equitable access to the resource for all sectors including commercial fishermen, private fishery owners, local anglers, the wider local community and the tourism sector.

  NWRFB, Private Fishery Owners, Bord na Mona, Bangor Angling Club, Local Community, Tourism Interests

- Investigate the possibilities for further conservation measures for the angling sector, especially in relation to spring salmon.

  NWRFB, Private Fishery Owners, Bord na Mona, Bangor Angling Club

- Integrate all data onto the Board's GIS for the Bangor District and include recommendations and costing of plans for remedial works as identified.

  NWRFB, CFB, Marine Institute

Developing the Fishery

The potential for carrying out physical works which would improve the Owenmore fisheries resource will be considered on an ongoing basis. Development and improvement works fall into two broad categories – those aimed at improving fish production and survival and works which are aimed providing better facilities for anglers or other users of the resource. The former should only be carried out following a comprehensive assessment of fish habitat in the system and on the basis of scientific advice emanating from such assessment (see previous section on Managing the Resource). Works which may be beneficial would include river/stream bank restoration, introduction and raking of gravels, narrowing and deepening of river/stream channels, construction of weirs, introduction of cover logs etc.

Such works have been very effective in other catchments in improving survival rates among juvenile trout and salmon. The angling product could be developed by excavation of holding pools for adult fish, improving access to, and along, rivers, provision of parking areas, construction of facilities for disabled anglers etc. Boat mooring and parking facilities around Carrowmore Lake could also be improved.

Proposed Action:

> **Carry out a comprehensive assessment of fish habitat, access to fisheries and facilities for users of the fisheries resource.**

NWRFB, CFB, Marine Institute, Fishery Owners, Bangor Angling Club

> **Seek funding for remedial and enhancement works as outlined in the report on the habitat assessment and carry out works subject to availability of funding.**

NWRFB, CFB, Private Fishery Owners, Bord na Mona, Bangor Angling Club, Coillte, Forest Service

> **Assess potential for development of angling waters and for provision of improved facilities at fisheries.**

NWRFB, Fishery Owners, Bangor Angling Club, Riparian landowners

> **Seek funding for the development of angling waters, improvement of access etc as well as provision of facilities for disabled anglers on suitable beats.**

NWRFB, CFB, Private Fishery Owners, Bord na Mona, Bangor Angling Club

Promoting and Marketing the Resource

The Regional Fisheries Board has a statutory responsibility to promote and market angling in the region. The Board discharges this role in a number of ways. It now deploys one officer on an almost full-time basis in the dissemination of angling information, responding to requests for information on the region's fisheries, meeting and assisting visiting anglers, preparing a weekly angling report etc. The Board is also an active participant in the Ireland West Game Angling Marketing Group which is comprised of Fisheries Boards, the Western Regional Tourism authority and private tourism angling operators. The Board has produced a range of angling guides and maps and is regularly represented at overseas promotional events. As part of the implementation of this plan, the scope for accommodating more anglers on the fisheries of the Owenmore catchment will be explored. Possibilities for improved promotion and marketing of the angling resource will be considered in conjunction with the private fishery owners, Bangor Angling Club, tourism organisations and other relevant groups.

Proposed Action:

> **Consider the potential for accommodating more anglers on fisheries in the catchment, subject to sustainable management.**

NWRFB, Fishery Owners, Bangor Angling Club

> **Possibilities for improved promotion and marketing of fisheries in the catchment will be considered & follow-up action taken as appropriate.**

NWRFB, Fishery Owners, Bangor Angling Club, Tourism Bodies

Information Requirements

Work to date

From the beginning of the catchment management process, it was recognised that the ability to collect, store and manipulate fisheries management information was vital for the success of the initiative. For this reason, the Fisheries Board commenced a programme of works which included:.

- The development of a Geographical Information System for the Owenmore Catchment (GIS);
- A digital aerial photographic survey of 35km of river length in the catchment;
- Annual electro fishing surveys of index sites in all sub catchments (GIS Integrated);
- The selection and monitoring of spawning reference sites in the catchment (GIS Integrated);
- The installation of a fish counter for Carrowmore Lake;

These measures will provide the information that is needed for a more accurate and rapid assessment of the catchment and its fisheries resource on an on-going basis.

Further Work

Another fundamental requirement for the effective management of the fishery in the future is the provision of a fish counter on the main Owenmore River and this requirement will be pursued as part of the plan implementation.

The Wetted Area Study, carried out by the Central Fisheries Board, in 2003, is aimed at establishing the fish carrying capacity of Irish river and lake systems. Utilising the information available from that study, and the data already collected by the Marine Institute and the Board in relation to the Owenmore system, the carrying capacity of the system will be established and a salmon spawning target will be set. This target may need to be revised in the coming years as more suitable habitat become available as a result of the implementation of a rehabilitation plan for cut away bogs by Bord na Mona.

Proposed Action:

> **Secure funding for the installation of a reliable and accurate fish counter on the Owenmore River to allow for monitoring of the spawning escapement to the river and to complement the counter in the Carrowmore Lake sub catchment.**

NWRFB, CFB, Marine Institute, Private Fishery Owners, Bangor Angling Club

> **Establish the fish carrying capacity of the system and set a salmon spawning target for the system.**

NWRFB, Marine Institute, CFB

> **Monitor habitat of important salmon producing sub-catchments**

NWRFB, EPA & Mayo County Council

> **Monitor extent and effects of peat siltation and sedimentation in all important sub catchments and improvements resulting form BNM Rehabilitation Plan.**

NWRFB, EPA, Bord na Mona

- Continue with annual electro fishing surveys on index sites.

  NWRFB

- Continue to monitor index spawning sites.

  NWRFB

- Develop a management information system that will facilitate the integration, and allow the interrogation of, all data required for effective fisheries management.

  NWRFB, CFB, Marine Institute

- Compile an annual report to include information from the fish counters, rod and commercial catches, water quality analysis and biological monitoring programmes.

  NWRFB, Private Fishery Owners, Bord na Mona, Bangor Angling Club, EPA, Others

- Complete the analysis of the digital photography and other GIS applications in order to assess the carrying capacity of the system and to set a salmon spawning target for the catchment.

  NWRFB, CFB, Marine Institute

- Agree the format for the compilation of daily rod catch statistics on all fisheries and agree times for access to this information for Fisheries Board staff as required.

  NWRFB, Private Fishery Owners, Bangor Angling Club

- Seek agreement on a format for the compilation of statistics needed for effective promotion and marketing of the area.

  NWRFB, Private Fishery Owners, Bangor Angling Club, Bord na Mona, Tourist Organisations

Seal Predation

In order to successfully manage salmon populations, it is necessary to maintain information on all aspects of the fish's lifecycle and its environment. For example, it is widely believed that seals are a major predator of salmon stocks. However, there is a lack of basic information on the current population of Irish and non-Irish seal colonies. Successful salmon management will require that this information deficit be addressed by the implementation of research programmes to establish the extent of populations of seals in Irish waters and their effect on salmon stocks. The need to control the seal population will continue to be raised with the relevant authorities.

Proposed Action:

- Highlight the damage to salmon & sea trout stocks caused by seals & make representations to the relevant agencies regarding the need for ongoing research into this problem & need to control the seal population.

  NWRFB, CFB, Marine Institute, Heritage Service

appendix 1

Statutory Responsibilities

The North Western regional Fisheries Board

The Board has overall responsibility for the conservation, protection, development, management, promotion and marketing of fisheries in its region. The functions of the Board are set out in the Fisheries Act, 1980, as amended by the Fisheries (Amendment) Act, 1999, and include the following:

- Protection of fisheries and enforcement of the Fisheries Acts;
- Preparation and submission of fisheries development plans;
- Ensuring that any fishery in the possession or occupation of the Board is managed, conserved, protected, developed and improved;
- Promotion and encouragement of the management, conservation, protection, development and improvement of fisheries which are not in the Board's possession or occupation;
- Development, promotion and marketing of angling;
- Organisation and co-ordination of inland fisheries catchment management plans.

The Environmental Protection Agency

The EPA is an independent public body and its main sponsor is the Department of Environment and Local Government. The functions of the Agency are set out in the Irish Environmental Protection Agency Act, 1992. A summary of the key responsibilities of the EPA, as they relate to this initiative, include the following:

- Licensing, control, auditing and enforcement in connection with IPC licensable activities;
- Monitoring of environmental quality and establishment of databases including publication of reports;
- Preparation and implementation of a national hydrometric and environmental monitoring programme;
- Promotion and co-ordination of environmental research;

The Heritage Service

The Heritage Service of the Department of the Environment, Heritage and Local Government manages the Department's responsibilities under National and European law for the protection, conservation, management and presentation of Irelands natural and built heritage. The Heritage Service has the following objectives:

- To secure the conservation of a representative range of ecosystems and maintain and enhance populations of flora and fauna in Ireland;
- To implement the Wildlife Acts of 1976 and 2000 and the provisions of the EU Habitats Directive and Birds Directive.
- To implement and review, as appropriate, provisions for the designation, control and supervision of Special Areas of Conservation, Special Protection Areas and Natural Heritage Areas, having particular regard to the need to consult with interested parties;
- To secure the implementation of the National Biodiversity Plan;
- To manage, maintain and develop National Parks and Nature Reserves;

The Forest Service

The Forest Service is the regulatory authority for the national forest resource of the Department of Communications, Marine and Natural Resources. Its strategic objectives are

- To foster the efficient and sustainable development of forestry;
- To increase quality planting;
- To promote the planting of diverse species;
- To encourage increased employment in the sector;

The Central Fisheries Board

The principal functions of the Central Fisheries Board are to advise the Minister for Communications, Marine and Natural Resources on policy relating to the conservation, protection, management, development and improvement of inland fisheries. The Board also supports, co-ordinates and provides specialist services to the seven Regional Fisheries Boards and advises the Minister on the performance by Regional Boards of their functions.

Marine Institute

The Institute supports marine research, technology, development and innovation and works to underpin future innovation and growth in the marine sector. The Institute's Salmon Management Services Division provides an integrated service in relation to sustainable salmon management, aquaculture, sea trout, eels and aspects of inshore fisheries as well as commercial fishing and angling. This division of the Institute is largely based at Newport, Co. Mayo, in the Bangor Fisheries District. The Institute has directly supported the Owenmore catchment management initiative and is represented on the catchment committee.

Mayo County Council

Local authorities have a broad role and their functions include planning, architecture, roads, housing, provision of wastewater treatment, drinking water, consideration of fisheries, reservoirs, infrastructure development, surface water drainage, motor taxation, waste charges, rates, enterprise, natural development, harbours, environmental education, arts, library facilities, fire services, civil defence, accident and emergency services, social work and even issuing dog licences. Local authorities are also responsible for the monitoring and protection of coastal waters, bathing waters, surface water and groundwater and dangerous substances under transposed EU legislation. The Council has supported the catchment management process by participating in the work of the catchment committee and by providing a site a small building to house the electronic and other equipment which supports the fish counter on the Muinhin river.

Bord na Mona

Bord na Mona was established under the Turf Development Act of 1946, as the statutory body with primary responsibility for development of Ireland's peat resources. In 1999, Bord na Mona became a public limited company. Bord na Mona Energy Limited (previously a division of Bord na Mona plc) became a limited company in its own right. It is a commercial state sponsored body with responsibility for development of Ireland's peat resources in the national interest and supplies peat to Bord na Mona plc for most of its needs. In 1992, Bord na Mona was a partner in Ireland's first commercial windfarm which was established on one of the company's cutaway peatland areas at Bellacorick. The company also owns fishing rights on the Oweninny river.

appendix 2

Views submitted by non-statutory groups

Private Fishery Owners

An organisation of fishery owners on the Owenmore River was set established in 2001 to represent the views and to outline the position of the three main, private owners of fishing rights in the catchment. The group nominated a representative to sit on the catchment management committee. They made a submission to the committee and their views and recommendations included the following:

- The need for accurate and comprehensive statistics to be compiled including the installation of a fish counter in the river;
- An enhanced role for staff of the Fisheries Board;
- The area to be maintained free from fish farms;
- Coillte to remove encroaching trees in sensitive areas and obtain a derogation from replanting near spawning areas;
- Designation of the Owenmore catchment as an SAC in consultation with riparian landowners;
- Bord na Mona to remove excess silt deposits from angling pools and the riverbed as part of their rehabilitation plan;
- Pledged support for the Glencullin hatchery;
- A review of the habitat including the spawning beds to be carried out including suggestions for their improvement;
- Effective monitoring of key sites to be carried out on a regular basis;

Bangor Angling Club

This local angling club manages substantial waters under an annual licence from a private fishery owner in order to provide fishing for the local community and to boost the local economy in terms of angling tourism. In their submission, the club covered four main areas of concern as follows:

Pollution: The need to determine the cause of enrichment on Carrowmore Lake and the need to prevent further enrichment. They would like to see monitoring of water inflows under differing conditions and, possibly, at a later date, political pressure being brought to curb the excessive use of fertilisers by guilty parties.

Bord na Mona: With Bellacorick operations closing down in the near future, the club would expect BNM to take steps to rehabilitate the Owenmore with fish in mind. They would like a commitment regarding future use of the stripped bog and that this will not in future be used for further forestry plantation which could cause pollution.

Availability of Angling: The club would feel that the angling resources of Erris, at present under the control of private interests, are grossly underutilised. Fishing is one of the few resources in the area and, if properly used and managed, by the local community, it would be of immense benefit to the community in terms of angling tourism.

Conservation and Development: The club and representatives of the local community would appreciate the benefit of the NWRFB's expertise and help in all conservation and development and development of the Owenmore and Carrowmore fisheries. The club will, in turn, co-operate with the Board in every way possible, including financially, with the imprimatur of its committee.

Draft Net Fishermen

A representative of the twenty five draft net fishermen in Tullaghan Bay was nominated to sit on the catchment management committee in order to outline the stance and viewpoint of this sector. A submission from the group dealt with the following issues:

- Their wish for a higher quota allocation to draft net fishermen to include a percentage of the spring salmon run;
- The need for finance to be made available for shoreline facilities including lighting;
- The buy-out of draft net licences was not an option;
- Set-aside could be agreed provided that there was an increase in the quota for each year set aside;
- Stabilisation of salmon prices at a minimum level in order to safeguard fishermen's income;

Drift Net Fishermen

A representative of the twenty-five drift net fishermen in the Bangor District was nominated to sit on the catchment management committee in order to put forward the views of this sector. A submission from the group dealt with the following issues:

Aquaculture in the inner Clew Bay area - the fishermen are very concerned about the over development of this industry and the possible repercussions for wild salmon and sea trout stocks.

Tagging and Logbook Scheme - The drift net men made recommendations in relation to the annual salmon quotas and expressed concern about non-compliance with the scheme by the recreational rod sector. In relation to allocation of commercial salmon quotas, the submission.

- Expresses concern that the recommendations made by the Salmon Management Task Force, for a three year trial of the tagging scheme prior to any introduction of a quota, was not acted on;
- Expresses disappointment at the size of the quota allocated to the Bangor district;
- Considers the unacceptable situation whereby Ballina District boats had captured and landed fish in the Bangor area for a number of years prior to the introduction of the scheme, which resulted in the loss of these fish from Bangor district fishermen.

Set-aside - In relation to possible set aside, the submission expressed the view that:

- Due to economic reasons and a restrictive quota most fishermen would be in favour of a four year set aside;
- After the four-year term that a higher quota, should be in place;
- The angling sector would have to be restricted in order for the set-aside to be in place to ensure that the maximum benefit to natural recruitment is realised;

Predation - The fishermen want seal and cormorant culls to be put carried out;

Pollution - They want to see an end to both farmyard and industrial pollution and efforts made to rehabilitate those areas affected.

references

Much of the information and statistics in this document were compiled using a Geographical Information System (GIS) developed for The North Western Regional Fisheries Board. The accuracy of this information is dependant on the accuracy of the various datasets that make up this Fisheries GIS. These datasets are continually updated and the inherent errors in them are minimized. Therefore, caution should be exercised when applying these statistics for other purposes. The information contained in this document is sufficient for the purposes of this management plan; however, it is not recommended that it be used as a reference for any other purpose without prior consultation with, and the agreement of, the Fisheries Board.

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notes