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# Eel Management plans for the United Kingdom North Western International River Basin District

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# North Western International River Basin District Eel Management Plan

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## Introduction

This chapter has been prepared in accordance with Council Regulation (EC) No. 1100/2007 to describe measures to be carried out within Ireland's North Western International River Basin District (NWIRBD) eel management unit for the recovery of the stock of European eel. The chapter will give an overview of the physical characteristics of the NWIRBD. The state of the current eel stock and the eel fishery will be described and analysed for the NWIRBD. Local stocks and fisheries will be analysed to estimate the current level of escapement at the catchment level. The quality of the eel habitat will be assessed and pressures or risk factors will be identified. Finally, we will describe current and future monitoring and management actions that will ensure that target levels of escapement will be achieved.

The Department of Communications Energy and Natural Resources, Inland Fisheries Division, and the Department of Culture, Arts and Leisure Northern Ireland, inland Waterways and Inland Fisheries, convened a meeting on the 11th March 2008 in Dublin and subsequently exchanged written agreements (13th March and 20th March 2008 (ref: C17/9/161)) on the transboundary EMPs and agreed full co-operation in this regard. Scientists from the Marine Institute, Central Fisheries Board and DCAL – AFBINI have also agreed co-operation. One transboundary eel management plan will be submitted in respect of the NWIRBD and this will be prepared by the Loughs Agency, the Northern Regional Fisheries Board, and the Department of Culture Arts and Leisure, and the Loughs Agency.

The Northern Regional Fisheries Board (NRFB) is a statutory body, established under the Fisheries Act 1980, operating under the aegis of the DCENR. The NRFB is responsible for maintaining and improving environmental quality and developing and protecting the fisheries resource within its region. Eel fishing licences and authorizations are issued on a Regional basis.

The Loughs Agency (LA) is an agency of the Foyle, Carlingford and Irish Lights Commission (FCILC), established under the 1998 Agreement between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of Ireland. The FCILC is legislated for by the North/South Co operation (Implementation Bodies) (Northern Ireland) Order 1999 and the British-Irish Agreement Acts 1999 and 2002. The Board of the FCILC who, in exercising the functions of the Body, are required to act in accordance with any directions given by the North South Ministerial Council, to which it also reports. The FCILC's sponsoring Departments are the Department of Agriculture and Rural Development in the North and the Department of Communications, Energy and Natural Resources in the South. The Agency aims to provide sustainable social, economic and environmental benefits through the effective conservation, management, promotion and development of the fisheries and marine resources of the Foyle and Carlingford Areas.

The Department of Culture, Arts and Leisure (DCAL) is one of 11 Northern Ireland Departments created in 1999 by the Department's (Northern Ireland) Order 1999. In Northern Ireland, it is the Government Department responsible for inland waterways and inland fisheries.

See appendix II for relevant NI legislation.

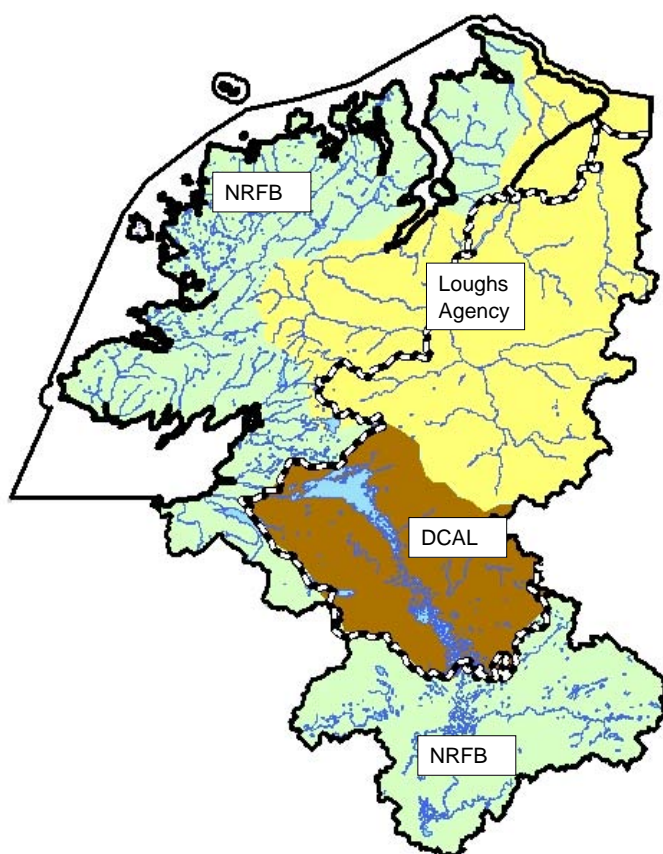
Lead organisations: Northern Regional Fisheries Board (with the Loughs Agency and the Department of Culture and Leisure).

Area Covered: North Western IRBD

## 1. Description of Management Unit

The North Western IRBD (NWIRBD) covers an area of 14,792 km<sup>2</sup> in total and drains into the Atlantic Ocean and adjacent transitional and coastal waters (Fig. 1.1). The coastline extends for some 1,100 km. The main catchments within the NWIRBD include the cross-border Foyle, Erne and Melvin/R. Drowse systems. The Erne comprises Upper and Lower Lough Erne and Lower L. MacNean in Northern Ireland and Loughs Oughter, Gowna, Garadice and Upper MacNean in the RoI. There are two main geology types, carboniferous (calcareous) and siliceous (non-calcareous) which largely determine the productivity of the catchments and the growth and biological characteristics of the eel stocks.

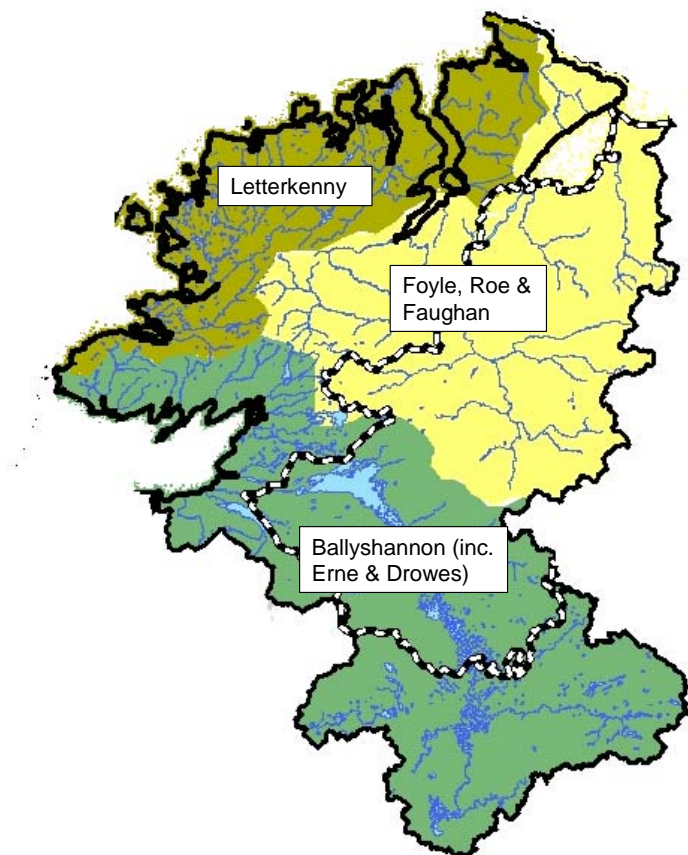
Quantification and classification of the available freshwaters within each RBD were calculated with a GIS based on 1:50,000 Ordnance Survey of Ireland mapping. A statistical model relating river reach characteristics (catchment area upstream and the stream link magnitude) to river width measurements from a large number of sites across Ireland was used to estimate fluvial wetted areas. Finally, the Geological Survey of Ireland related the water chemistry of ground-waters to bedrock type so that the nature of waters could be estimated based on the underlying bedrock. See section 3.2 of the national report for details.



**Figure 1.1.** The North Western River Basin District (green) and the boundaries of fisheries boards jurisdictions. The border between Northern Ireland and the Republic of Ireland is shown in red.

## List of Catchments

The NWIRBD includes the Letterkenny fisheries district (NRFB), the Ballyshannon district (which includes the portion of the Erne system in the Rol and the Drowse/L. Melvin system) (NRFB), Upper and Lower Lough Erne and Lower MacNean in N. Ireland (DCAL), and the cross-border Foyle/Finn system (Loughs Agency) (Fig. 1.2).



**Figure 1.2.** The fisheries districts within the NWIRBD (green). The border between Northern Ireland and the Republic of Ireland is shown in as a broken line.

The Letterkenny district covers a drainage area of 174,600 ha that is drained by 670 ha of rivers and streams and 2,990 ha of lakes. The district contains 41 relatively small catchments, principle among them in terms of fluvial area are the Leannan (124 ha), Owenea (69 ha), Crana (45 ha), Swilly (45 ha) and Lackagh (34 ha) catchments. The district contains almost 3,000 ha of lake area, concentrated within the Leannan (550 ha), Lackagh (532 ha), Clady (391 ha), Dungloe (225 ha) and Owenea (223 ha) catchments.

The catchments of the Drowes, Erne and the numerous small catchments in the District of Ballyshannon (Rol) cover a land area of 575,500 ha. This region is drained by the cross-border Erne catchment, the Drowes catchment, and the smaller Ballyshannon catchments through 1,739 ha of rivers and streams and 28,286 ha of lakes. The district is heavily dominated by the Erne catchment that contains 1,347 ha of rivers and streams and 24,612 ha of lakes. The Drowes/L. Melvin and the Eske catchments contain 2,212 ha and 474 ha of lakes respectively. Other notable catchments in terms of fluvial area include the Eany (63 ha) and Eske (53 ha). There are also between 40 and 50 ha of fluvial area in the Duff, Glen, Drowes and Ballintra catchments.

The Loughs Agency jurisdiction is dominated by the Foyle catchment that contains 1,113 ha of fluvial habitat and 1,544 ha of lake habitat. By comparison the Roe and Faughan catchments are minor, accounting for just 351 ha of wetted area in total. The main tributaries of the Foyle are the Finn, Deelee, Culdaff, Burndennett, Mourne, Derg, Strule, Owenkillew/Glenelly, Camowen, Drumragh, Owenreagh and Fairywater.

## 1.1. Habitat breakdown within Catchments

### *The Letterkenny District*

The Letterkenny District contains relatively little of the eel habitat available within the NWIRBD with its wetted area accounting for just 9% of the total for the RBD (table 1.1, figure 1.3). Furthermore the eel habitat within the Letterkenny district is characterised by its relatively unproductive nature deriving from the almost exclusively siliceous nature of its waters.

### *The Ballyshannon region (including Erne and Drowes)*

Summary habitat details for the Ballyshannon region are presented in table 1.1 and figure 1.3. The region is dominated by the Erne catchment. Straddling the border between Northern Ireland and the Republic of Ireland, the Erne catchment encompasses an area of 527,500 ha, representing the fourth largest catchment in Ireland. The Erne catchment includes a total lacustrine area of 28,286 ha which drain in a north-westerly direction through Loughs Gowna, Oughter, Upper Lough Erne and Lower Lough Erne before entering the sea at Ballyshannon, Co. Donegal.

The Erne system is dominated by Upper and Lower Lough Erne, both situated within Co. Fermanagh in Northern Ireland. The Lower Lough itself is split into the Broad Lough to the north, which reaches a maximum depth of 62 m, and the Narrows to the south which contains some of the richest eel producing grounds within the Lough due to the numerous shallow bays and inlets. The flooded drumlin terrain of the Narrows continues through into Upper Lough Erne (maximum depth 21 m) before radiating out into a multitude of smaller lakes, channels, bays and islands contained in the Cavan-Monaghan area in the upper catchment.

Base rich geology throughout much of the catchment, together with leached acid soils and blanket peats, result in a complex water chemistry that is moderately hard and mildly eutrophic, reflecting geology and agricultural land use, which is predominantly pasture.

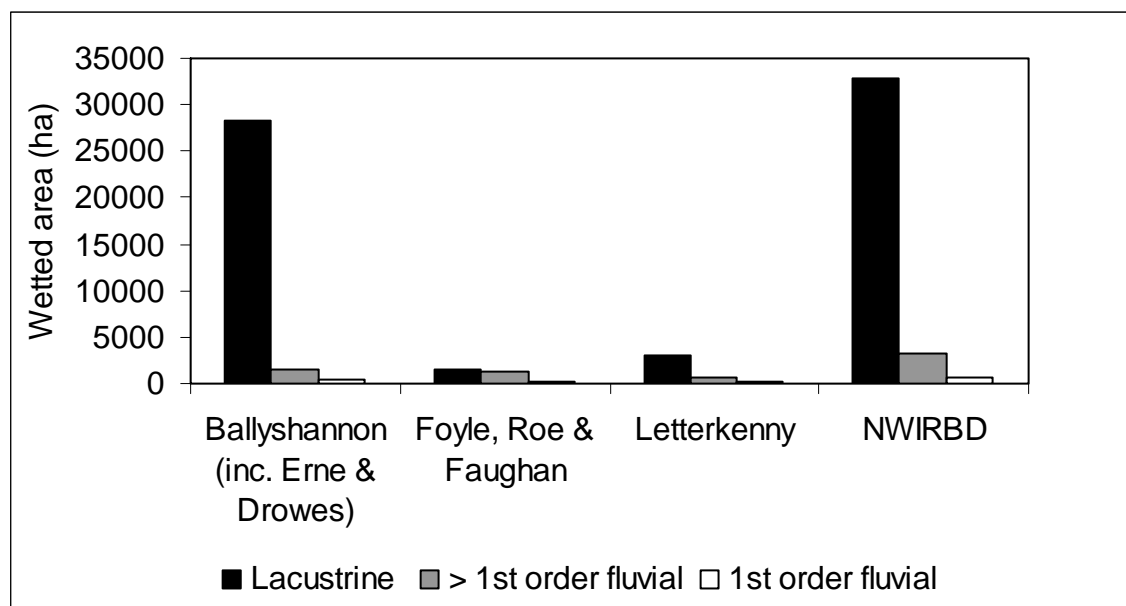
Lough Melvin, on the Drowes system, lies approximately 5 km from the Atlantic Ocean, in the counties of Leitrim and Fermanagh. The lake occupies an area of 2206 ha and is the 10th largest lake in Ireland, draining a catchment area of 22,463 ha. The lake and catchment traverse the border between Northern Ireland and the Republic of Ireland with 47% of the catchment being located in Co. Fermanagh and 53% in Co. Leitrim. Running southeast to northwest, Lough Melvin lies within a glaciated valley and is approximately 12 km long with a maximum width of less than 3 km and an average depth of 10.9m. The deepest part of the lake reaching 45m is found at the centre of a basin near its south-eastern edge (towards Rossinver). A large proportion of the lake (46%) is less than 5m deep with shallow areas being common around the lake's islands and shores (Girvan & Foy, 2003).

### *The Foyle, Roe & Faughan region*

Summary details of the habitat in the Foyle/ Roe/ Faughan region are presented in tables 1.1 and figures 1.3. The Foyle catchment drains approximately 380,700 ha to a sea lough of 20,000 ha. The catchment covers two jurisdictions, the Republic of Ireland and N Ireland (UK). Agriculture is the predominant land use throughout the area. The Foyle system is tidal until it reaches Strabane on the River Mourne and upstream beyond Castlefinn on the River Finn in Co. Donegal.

**Table 1.1.** Summary statistics for the wetted area within the major regions of the NWIRBD.

	Surface-area Catchment (ha)	Non calcareous (%)	Wetted area (ha)		
			Lacustrine	> 1st order fluvial	1st order fluvial
Ballyshannon (including Erne & Drowes)	5275	4	28286	1407	332
Foyle, Roe & Faughan	3807	100	1583	1214	212
Letterkenny	1746	98	2990	544	126
NWIRBD	10828	53	32859	3165	670



**Figure 1.3.** The distribution of the wetted area between the regions and habitats of the NWIRBD.

## 2. Description & Analysis of Present Eel stocks

Data within the RBD as a whole is not sufficient for any firm conclusions regarding the status of the stock to be drawn at this time. The status of the stock is estimated using a national model as outlined in Section 5 of the National Report. The results of this analysis are shown in section 4 of this chapter.

Historical data collection is ongoing in the NDP Project (section 1.1 of National Report) and this may facilitate some assessment of the stock to be made. It is intended to undertake eel specific surveys in the first 3 years of the plan (section 7 of National Report).

### 2.1 – Stock: Glass eel and elvers

#### *The Letterkenny District*

There is no information available on the level of glass eel or elver recruitment to this district.

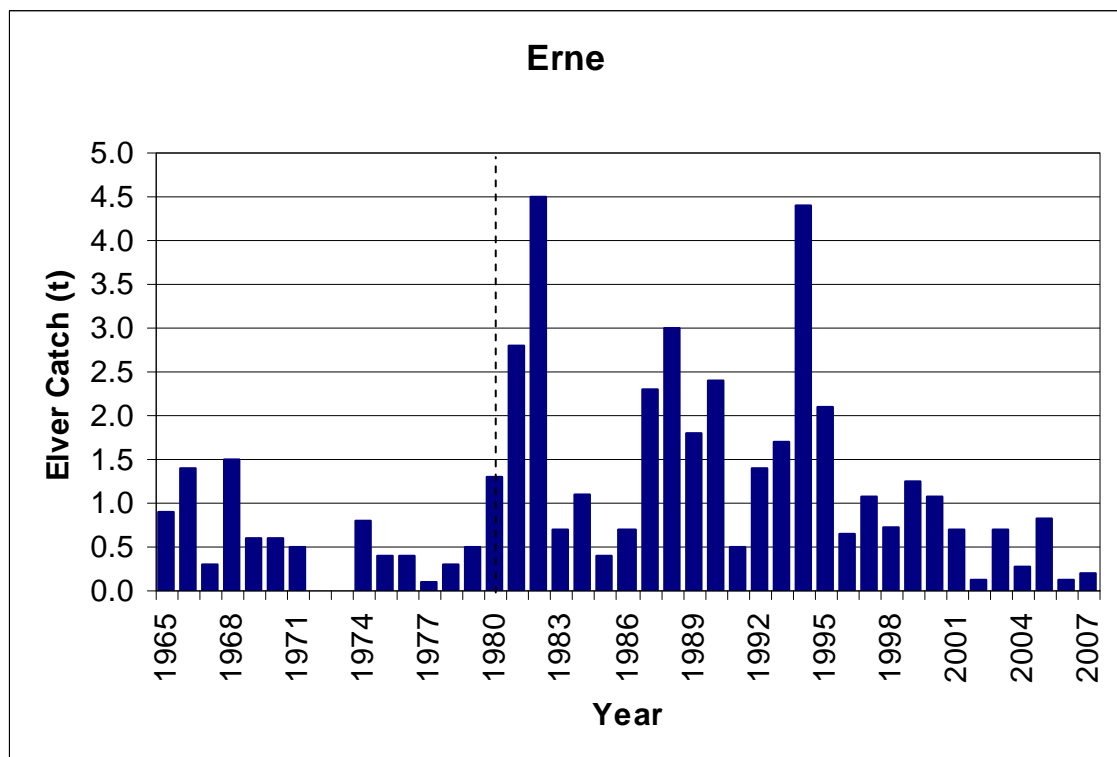
#### *The Ballyshannon region (including Erne & Drowes)*

Before the development of hydroelectric power stations the lower reaches of the River Erne in the 1950's, glass eel and elver were free to climb a series of falls at Ballyshannon and ascend upstream unaided. It is likely, from observations and early descriptions of the falls that they periodically presented a considerable obstacle to migrating glass eel and

elver, probably resulting in a female dominated population upstream in the Erne lakes, despite high densities of glass eel reaching Ballyshannon.

Construction of two hydroelectric stations at Ballyshannon and Belleek in the 1950's necessitated provision of elver ladders at both dams to facilitate upstream elver migration. To improve elver passage the ladders were replaced by a series of elver collection traps at the lower dam in the late 1970's, providing a valuable long term dataset of total annual elver recruitment to the Erne. As both dams span the entire width of the river additional elver recruitment to the Erne is negligible.

It is noteworthy that elver recruitment, proxied by the elver catch returns, to the Erne, while fluctuating, remained relatively high until the mid-1990's and did not follow the general pattern of decline from the 1980's experienced elsewhere in Ireland (e.g. the Shannon, the Bann-Neagh system) and Europe. This recruitment should provide silver eels until 2015 at least. Summary details of the recruitment pattern from 1959 for the Erne are presented in figure 2.1.



**Figure 2.1.** Elver catches on the Erne 1965-2007. Collection of the full elver run occurred from 1980 onwards (dotted line) (see section 6).

*The Foyle, Roe & Faughan region*

There is no information available on the current level of glass eel or elver recruitment to this district. Several investigative surveys had been undertaken by the Foyle Fisheries Commission in the late 1990's to capture glass eels, no significant numbers were caught so it was discontinued. However the Faughan did have an experimental trap in the mid-1980s that yielded approximately 1.5 kg per year.

**2.2 – Stock: Brown eel**

National models are used to estimate the stocks in waters upstream of the tidal interface (see National Report sections 5 and 9) and the results are presented in chapter 4 on silver eel escapement. There is insufficient scientific information available to comment on stocks within transitional waters, where the region's fisheries occur.

There is evidence for local stock depletion within parts of the NWIRBD, particularly the Erne. Within the RoI part of the RBD, catches have been increasing while the number of

licences issued has remained largely static. However, owing to the variability and generally low number of catch returns, it is difficult, at present, to draw any meaningful conclusion from these data. Furthermore there is no information as to the stock density for this area. There does not seem to be a discernible trend in the catch in the NI part of the NWIRBD over recent years. Comparison of historic (Moriarty 1973) and recent (Matthews et al. 2001) CPUE data suggests a dramatic increase stock since the 1970s. However the historic figures are based on small sampling efforts.

**Table 2.1.** Trends in CPUE in the NWIRBD.

	Moriarty 1973	Matthews et al. 2001
	kg/10-nets	kg/10-nets
Upper L. Erne	4	38
Dromore	3	6.8
Killeshandra lakes	2	8.8
Assaroe	19	31.3

#### *The Letterkenny District*

There is little information available on the level of stocks of brown eel in this district as minimal commercial fishing takes place. Anecdotal evidence suggests that eel stocks are limited and slow growing with limited recruitment of elvers particularly over the past 10 to 15 years. Some lakes close to coastal areas or of higher alkalinity hold better stocks and are fished periodically every few years (e.g. L. Fern on R. Leannan system, New L. , L. Meela).

#### *The Ballyshannon region (including Erne & Drowes)*

In recent years catch returns and anecdotal evidence from fishermen suggest that eel catches in the Upper Erne have remained relatively good, which probably reflects the increased elver stocking rate to the ROI lakes during the Erne Eel Enhancement Programme (1997-2001). Conversely, catches from Upper and Lower Lough Erne in N. Ireland have declined over the same period, with the introduction of the swim bladder parasite *Anguillicola crassus*, plus declining elver recruitment, contributing to the decline in stocks.

Evidence for local depletion of eel stocks through commercial fishing was apparent, particularly in parts of Lower L. Erne where CPUE fell progressively from 49 to 24 kg per net per night over the three years of the study (1998-2000).

As part of the Erne Eel Enhancement Programme an extensive fyke net survey of the brown eel stocks of the Erne lakes was carried out from May to September 1998-2000 employing up to six two-man crews stationed throughout the system (Matthews et al. 2003). Catch data from over 56,700 net-nights was compiled and entered into a Geographic Information System (GIS). Weekly samples of 5-10 eel were taken to determine age, growth, feeding patterns and parasitic burden from different sections of the catchment.

Highest catches were obtained from Upper and Lower L. Erne in the lower reaches of the catchment where the greater part of commercial fishing takes place. Catch Per Unit Effort (CPUE) ranged from 30-45 eels weighing 4.5-8.5 kg per 10 nets per night. Mean length ranged from 42-44 cm with growth rates of 2.5-3.5 cm per year. In contrast, numbers from the upper reaches of the catchment were lower (4-15 eels or 1.3-4.2 kg per 10 nets per night) and were characterised by the preponderance of large (mean length 46-64 cm), fast growing female eels (2.5-3.5 cm per year).

The proportion of undersize eel (less than 42 cm) in fyke net catches declined progressively from Lower L. Erne (mean 40%) to less than 10% in the upper reaches of the Erne system. The size composition of catches from some of the Cavan-Monaghan lakes (e.g. Annalee-Dromore and Ballinamore lakes) is heavily biased towards larger individuals. This suggests that there are very few young (small) individuals being naturally recruited to these lakes.

Length-frequency analysis of catches throughout the Erne system indicated measurable differences in eel stocks between the larger lakes which are subject to greatest commercial fishing effort in comparison to smaller, more remote lakes which are more inaccessible.

The age of brown eel captured by fyke net from each zone of the Erne system was determined by 'burning and cracking' of sagittal otoliths taken from weekly samples of 5-10 eel per crew. Eel ages were found to typically range from 5 to 18 years for each zone, with low numbers of female eels in the 20-30 year age range recorded from Lower Erne, Assaroe reservoir and lower reaches of the R. Erne. The lower age limit reflects the size at which eels are large enough to be retained in fyke nets.

The mean ages of eel from Loughs Gowna and Oughter in the upper reaches of the Erne were 2-3 years lower than that recorded in Upper and Lower L. Erne. Age distributions from many of the ROI lakes were found to be bimodal with strong age classes at 5-7 and 12-14 years. The presence of strong 5-7 year age classes in these lakes suggests that overland transportation and stocking of elver to the lakes, which commenced in 1993, were recruiting to the fishery. The low mean age (8-10 years) and rapid growth rates (3.6-4.6 cm per year) of eels recorded from these lakes highlight the potential for enhanced brown eel production as early as 5 years after elver stocking.

#### *The Foyle, Roe and Faughan region*

There is no information currently available on the status of the stock within this district. However there were a number of surveys undertaken on some lakes within the Foyle area from the late 1960's up to the late 1999's. In the 1999 survey the average weight in these lakes was 0.28kg and eels ranged in length from 32-64cm with an average age of 15.7 years. A survey in 1971 found the mean weight was 0.2kg and mean length 48cm. A previous survey in 1969 also recorded low numbers of eels. All of these surveys commented on the low numbers caught and that the commercial viability of exploiting the stock was marginal at best.

Surveys on brown eel in the Foyle had been undertaken by the Foyle Fisheries Commission (FFC) from 1967 to 1969. Following these exploratory trials they were discontinued due to low catches.

### **2.3 – Stock: Silver eel**

#### *The Letterkenny District*

There is little information available on the status of the silver eel stock in this district.

#### *The Ballyshannon region (including Erne and Drowes)*

Historical records, held by the Department of Agriculture for Northern Ireland, of silver eel catches taken on the Erne date back to the late 1800's. Based on these records silver eel production from the Erne has ranged from 10-30 t of silver eel per year with evidence a long term decline to 10-15 t since the 1900s.

As part of the Erne Eel Enhancement Programme monthly monitoring of silver eel catches from commercial fishing nets at the outlet of Lower Lough Erne, Roscorr Bridge and Belleek weir from October to December 1998 and 1999 was carried out during periods of peak migration. A total of 1,114 silver eel were measured for length and weight. 280 eels from the full size range available were sacrificed to determine sex, age and growth rate.

The length frequency of catches was clearly bimodal with male eel ranging from 30-42 cm in length (mean 37 cm) and females from 36-102 cm (mean 66 cm). Very few eel between 40 cm and 55 cm were recorded in the catches. Male eels comprised only 16% of the total catch over the two years, although they are likely to be underestimated in catches due to their small size in relation to the mesh size used by commercial fishermen.

Female and male eels had mean ages of 18.3 years and 10.1 years, respectively. Females ranged in age from 5 to 38 years with the majority migrating between 12 and 20 years. Males ranged in age from 5 to 16 years, with the majority migrating before 14 years. The wide range in age of migration of silver eels from the Erne reflects the size and complexity of the system and the disparity in growth rates recorded for brown eel captured from different zones of the system.

A total of 220 and 203 silver eel captured by fyke net throughout the Erne system in 1998 and 1999 respectively were floy tagged and released to the lake of capture. 18.6% of those eels marked and released in 1998 and 15.8% of those in 1999 were subsequently recaptured as downstream migrant silver eels in commercial nets located downstream of Lower L. Erne.

Results illustrated that silver eel catches were comprised chiefly of female eel migrating from all parts of the catchment. Tagged silver eel originating from the Cavan-Monaghan lakes in the ROI formed 27.3% of the recaptured eel in 1998 and 43.5% of the recaptures in 1999. The results provide an estimate of the efficiency of the silver eel fisheries operating at that time prior to their closure.

#### *The Foyle, Roe & Faughan region*

There is little information available on the status of the silver eel stock in this district. There was a private fishery on the Foyle that yielded several tonnes each year from fixed wing nets.

### **3. The NWIRBD Commercial Eel Fishery**

#### **3.1. Commercial capacity and effort**

##### **3.1.1 – Capacity/Effort: Glass eel and elvers**

There is no commercial fishery for juvenile eel in the NWIRBD. Upstream migrating elver and bootlace eel are collected at the base of Cathleen's Fall hydroelectric dam in Ballyshannon and distributed by the N. Ireland fisheries authorities to Upper and Lower Lough Erne and the Cavan-Monaghan lakes in the ROI.

An experimental glass eel fishery was initiated in the Erne estuary from 1998 to 2000 providing additional glass eel for stocking into the Erne system (see previous).

##### **3.1.2 – Capacity/effort: Brown eel**

A very limited brown eel fishery operates in the Letterkenny district. 1 or 2 long line licences and less than 4 fyke net licences (20 nets per licence) have fished the district annually since 2000. Apparently limited stocks, slow growth and the absence of large productive lakes has resulted in little tradition of commercial eel fishing in this area. Commercial effort is limited to periodic fishing of selected lakes every few years. Most recent returns relate to L. Fern (R. Leannan) and New L. where catches of 340 kg and 140 kg were reported to 20 fyke nets for 20 and 8 days fishing respectively.

Up to the late 1990's the Erne eel fishery supported about 60 longline and 10 fyke net licence holders divided approximately equally between Upper and Lower L. Erne in Northern Ireland and the Cavan-Monaghan lakes in the Republic of Ireland.

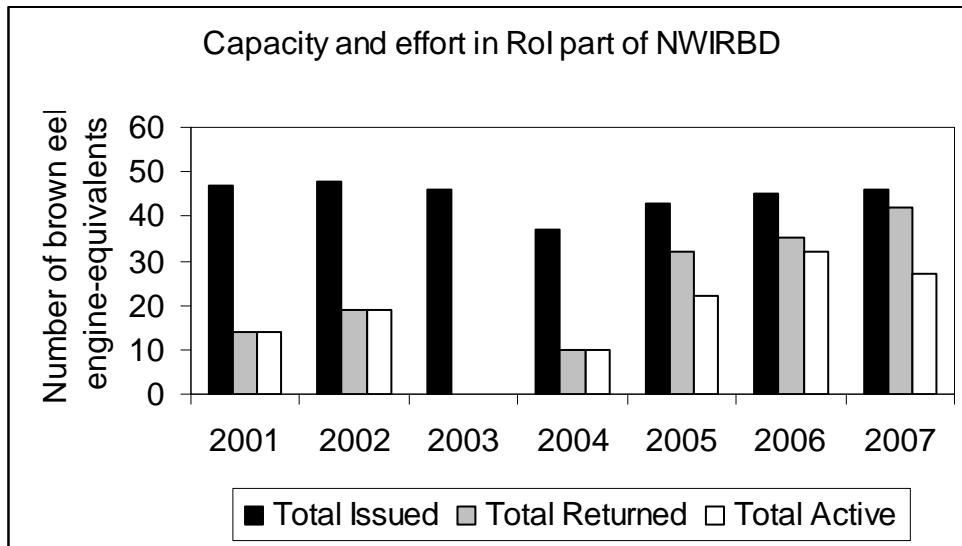
Within the ROI in 1997 the number of longline licences was capped at 32 (Letterkenny district 2; Ballyshannon 30). To date the number of longline licences issued have remained at this level with 27 issued in 2007 (Letterkenny District 1; Ballyshannon District 26). Over the same period the number of fyke licences issued rose to 19 in 2007 (Letterkenny District 2; Ballyshannon District 17). The maximum number of fyke nets allowed per licence is 20, although fishermen may take out more than one licence.

Within N. Ireland longline fishing is carried out most intensively in Upper L. Erne and the Narrows, Lower L. Erne which are characterised by shallow (1-5 m depth), productive bays. Between 15 and 18 longlines were licensed each year from 2000-2007. In

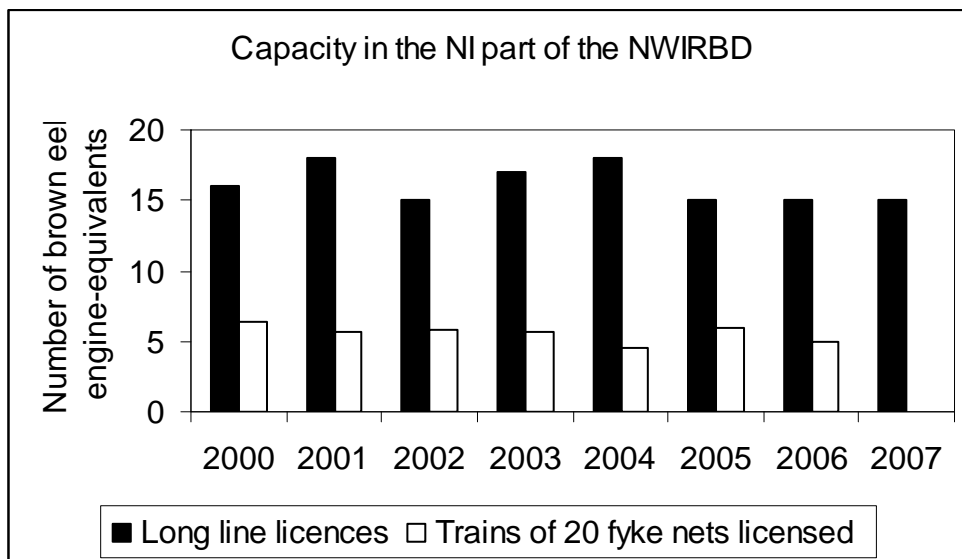
addition, 90-127 individual fyke nets were licensed (equivalent to 4-6 Rol fyke licences). Fishing in the Cavan-Monaghan lakes (Rol) is much less regulated, with the majority of fishermen fishing on a part time basis. The relatively small size of many of the lakes (<100 ha) in conjunction with lower stock densities means that many of the lakes are unable to support intensive long line fishing through the season. As a result many are fished intensively for 2-3 weeks each season and left fallow for the intervening period. Small, remote lakes may not be fished for several seasons.

There is no commercial effort in the Loughs Agency District.

Summary details for the brown eel fisheries capacity in the NWIRBD are presented in figures 3.1 and 3.2).



**Figure 3.1.** Capacity and effort within the Rol portion of the NWIRBD. Licensed longlines and trains of 20 fyke nets each counted as a single licensed engine.



**Figure 3.2.** Capacity in the NI part of NWIRBD. Longlines and trains of 20 fyke nets each counted as a single licensed engine.

### 3.1.3 – Capacity effort: Silver eel

In the late 1950's construction of the hydroelectric stations at Cliff and Cathleen's Fall required extensive excavation to straighten and deepen the river channel to accommodate high freshwater discharge rates. Prior to these changes much of the silver

eel fishery on the Erne was based on a series of weirs located at several natural falls between Ballyshannon and Belleek.

Up to the late 1990's the majority of the silver eel catch was taken by a series of wing-nets on the outlet of Lower Lough Erne, and by coghill nets at Roscorr Bridge, both situated in Northern Ireland, and Belleek weir, which spans the border. All were situated upstream of the ESB power-generation stations at Cliff and Cathaleen's Fall. The season ran from late August/early September and to the first week in January. The main run is concentrated around October-November and is strongly related to lunar cycle, water temperature and weather.

In 2004, on conclusion of the lease, the N. Ireland authorities closed the silver eel fishery at the outlet of Lower L. Erne as a conservation measure.

The silver eel fishery in the Cavan-Monaghan area declined from 11 silver eel weirs fished over the 1970's to just 4 in operation in the late 1990's, with just one operator licensed in 2007. No reliable quantitative information on the fishing effort or catches is available. Although catch records are lacking the decline of fisheries was linked to falling catches and reduced price due to the advent of the eel aquaculture trade in Europe.

## **3.2. Commercial catch**

### **3.2.1 – Catch: Glass eel/ elver**

There is no commercial glass eel or elver fishery in the NWIRBD. An experimental glass eel fishery was initiated in the Erne estuary in 1998. Total annual catches of 46 kg, 441 kg and 188 kg were collected in 1998, 1999 and 2000 respectively using a combination of hand nets, trawls, Portuguese tela nets and Maine glass eel fyke nets. All glass eel were stocked into the Erne system.

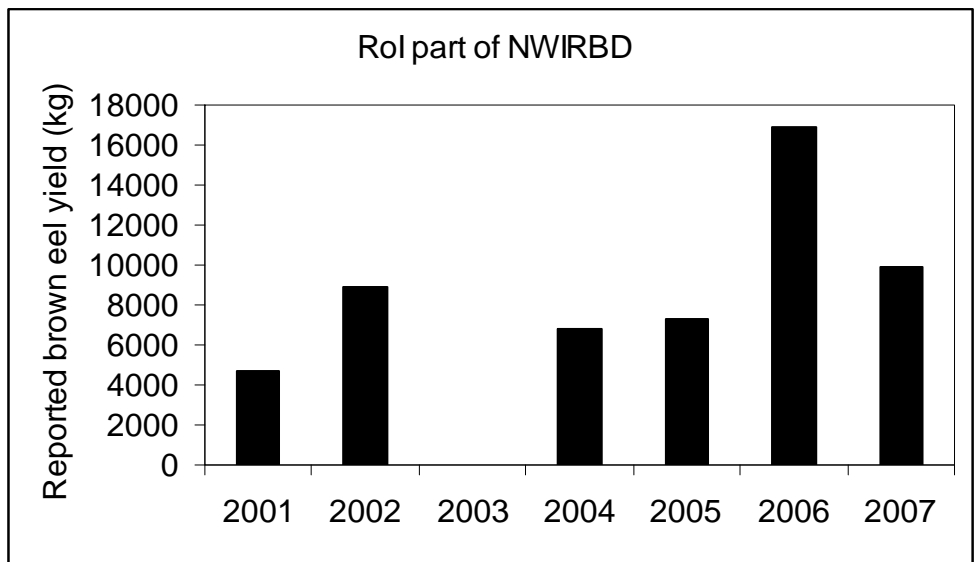
Mean elver catch on the Erne from 1970 to 2000 was 1.3 metric tonnes per annum, with peaks of 4.6 and 4.4 t in 1982 and 1994. Mean catch has declined to 400 kg per annum from 2001 to 2007. The elver catch in 2008 was the worst on record yielding just 38.7 kg.

### **3.2.2 – Catch: Brown eel**

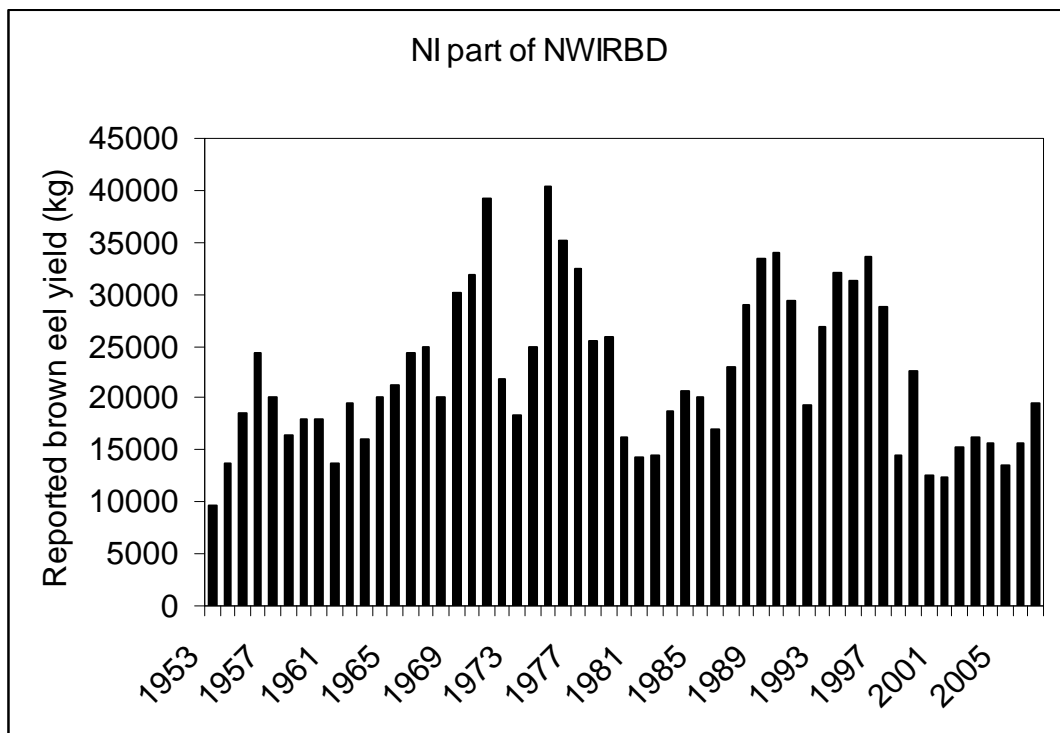
Following the development of the brown eel fishery on the Erne in the 1950's, reported catches from licensed fishermen averaged approximately 30-35 tonnes per annum with over 90% of the catch taken by long line and the remainder by fyke net.

In the ROI, authorisation for commercial fishing of brown eel required submission of annual catch returns to the Department of the Marine and Natural Resources. Prior to 2005, reporting of annual catches was not enforced and this has inhibited any meaningful estimate of eel production from the Cavan-Monaghan lakes in the ROI to be made. Allowing for under reporting of annual returns, illegal fishing and sale of legally caught eel outside the Erne the estimated total production of brown eel from the Erne of 35 tonnes per annum at that time could probably be doubled.

Since 2005, the licence holders have been required to make catch declarations in order to have their licences renewed. Total annual reported catch from the ROI has ranged from 6.6 to 18.1 t shared about equally between fyke net and long line. Between 9% and 21% of the contemporary national eel catch was taken within the ROI part of the NWIRBD from 2001-2007. Summary details for the yield of the brown eel fishery in the NWIRBD are presented in figures 3.3 and 3.4.



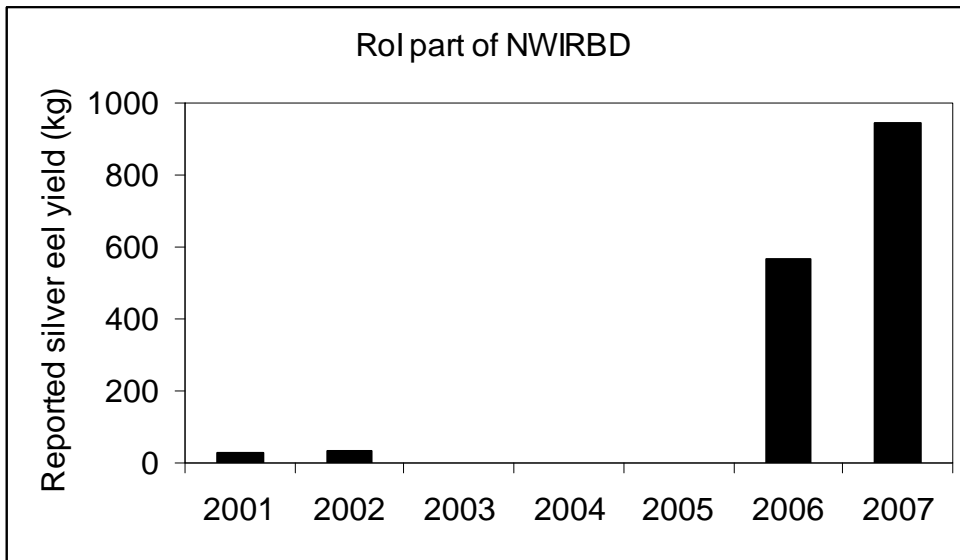
**Figure 3.3.** Reported brown eel catch for the Rol part of NWIRBD



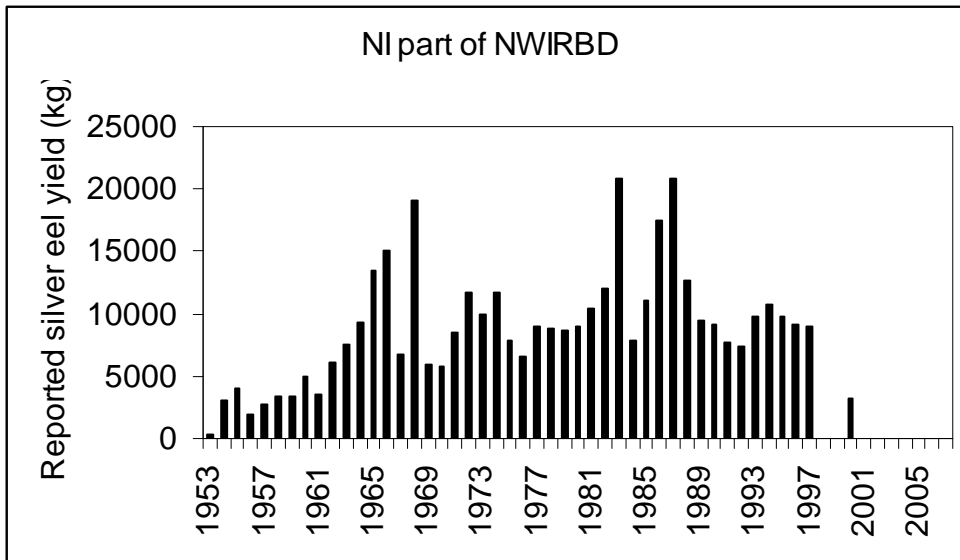
**Figure 3.4.** Reported brown eel catch for the NI part of the NWIRBD

**3.2.3 – Catch: Silver eel**

There are currently few returns for silver eel catch within the NWIRBD and the reported catch is also low (Figs 3.5 and 3.6).



**Figure 3.5.** Reported silver eel catch within Rol part of the NWIRBD



**Figure 3.6.** Reported silver catch within the NI part of the NWIRBD.

### 3.3. Recreational Fishery

There is no targeted recreational fishery for eel in the NWIRBD. Recreational eel fishing is only carried out by a minority of anglers and there is no legal, or voluntary, declaration of catch which is probably small. Some "recreational" fishing using fyke nets takes place and this is authorized and reported under the commercial legislation.

Internal eel angling market	Tourist angling for eels
<ul style="list-style-type: none"> <li>• Limited targeted angling for eels in NRFB</li> <li>• Occasional individual angler</li> <li>• Eels regarded as nuisance species when pleasure fishing for bottom feeding species like bream</li> <li>• Eels are taken in angling matches as a by-catch and will contribute to overall weight of a competition bag but generally not targeted</li> <li>• Species not differentiated in competitions – weighed in by total weight not by species – not possible to assess any decline</li> </ul>	<ul style="list-style-type: none"> <li>• Little information available</li> <li>• One tourism operator with mainly German pike angling clientele (approximately 15 regular customers) who, some years ago, would angle for eels at night after pike angling</li> <li>• Eel angling success has declined dramatically in recent years for this group which has led to some of the party not returning</li> <li>• Pike dead baits were regularly taken by large eels (ca. 1.8 kg) in the past by this operators clients but this rarely occurs now</li> <li>• Operator suspects stock decline</li> <li>• Eels taken in daylight in June compared to other months and this is the best angling month for the species</li> </ul>

#### 4. Escapement - local stock modeling

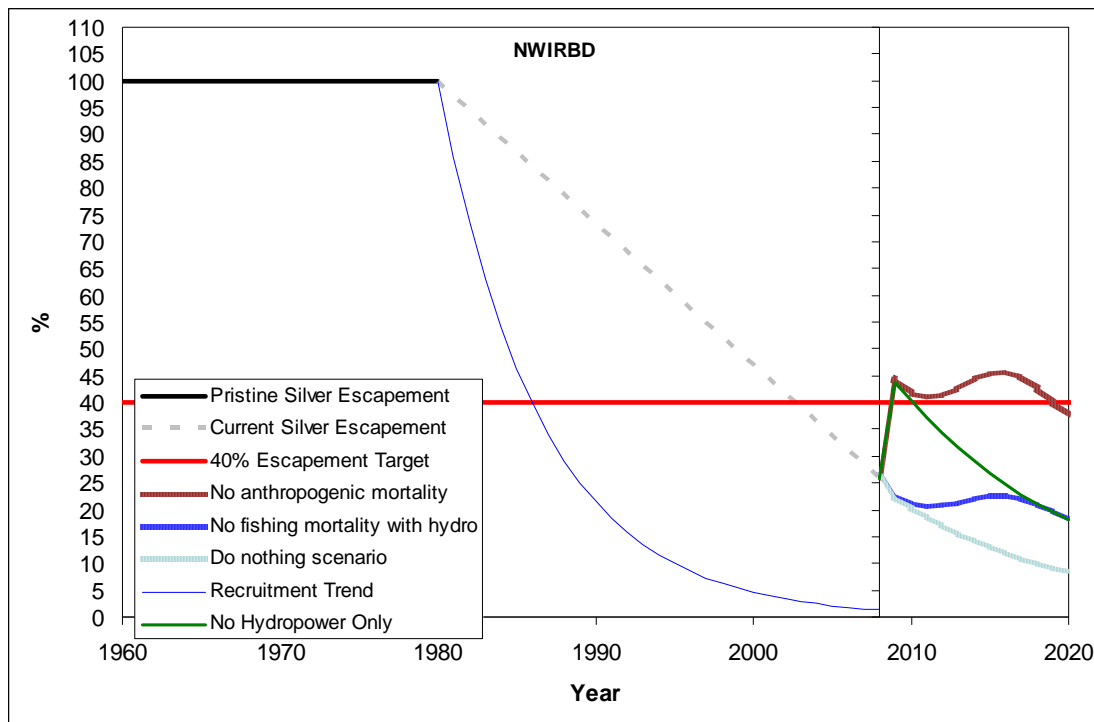
The Eel Regulation requires that each Eel Management Plan reduce anthropogenic mortalities so as to permit with high probability the escapement to the sea of at least 40 % of the silver eel biomass relative to the best estimate of escapement that would have existed if no anthropogenic influences had impacted the stock. Thus, the potential production of silver eels (in biomass terms) for the NWIRBD prior to the decline in recruitment following 1982 was estimated. The biomass of silver eels currently escaping from the RBD was also estimated. Both of these estimates required a habitat based extrapolation of productivity information from index catchments not necessarily within the RBD. RBD specific impacts were then imposed on this potential productivity to derive an approximate estimate of current escapement. See sections 5 and 9 of the National Report for details.

Pristine escapement for the NWIRBD is estimated at 147 tonnes, whereas current escapement is estimated to be approximately 38 tonnes i.e. 26% of pristine (Fig. 4.1). The NWIRBD is not currently achieving the 40% escapement target. If no management action is taken, escapement will fall steadily until 2020, dropping to approximately 10%. A complete closure of the fishery will not achieve the target alone while a complete reduction of hydropower mortality will only briefly achieve target. If both fishing and hydropower mortality are completely avoided the NWIRBD is expected to remain at or above the 40% target until 2020. However, a complete reduction of hydropower mortality is not considered achievable in the short term.

Achievement of the 40% target will require a recovery of recruitment, which in turn requires concerted action across Europe through the implementation of the Eel Regulation. It will not be possible for the NWIRBD to define realistic

management measures that will achieve and maintain 40% escapement in the long term. Instead, interim measures are required, aiming at recovering recruitment sufficiently so that management measures can be defined that achieve 40% escapement. These interim measures involve setting target levels of anthropogenic mortality that would achieve recovery of the stock within a given time frame provided the same low level of pressure was achieved across Europe (see Section 5.3 of the National Report).

The impact of the proposed management measures on anthropogenic mortality and the timeframe for recovery of the recruitment are presented in Chapter 8 (i.e. the Management Measures section).



**Figure 4.1.** The proportion of pristine escapement estimated to leave Irish waters currently and in the future under various management scenarios.

## 5. Environmental quality assessment

Sediment deposition in Upper and Lower Lough Erne has increased six to ten fold between 1900 and 1970, although a dramatic increase was noted from the 1950's onwards (Battarbee, 1976). This increase in sediment deposition is indicative of increase nutrient input from agriculture and sewage (Gibson, 1998).

Intensive pig rearing and livestock rearing in the Cavan-Monaghan area has resulted in eutrophication of many of the lakes in the upper Erne catchment, with Loughs Oughter, Sillan and White lake classified as hypertrophic or seriously polluted due to agricultural enrichment (Lucey et al., 1997). Nevertheless, these lakes plus Loughs Gowna (eutrophic) and Garadice (mesotrophic) and numerous smaller lakes in the area supports an extensive and renowned coarse fishery attracting some 16,000 anglers annually. Historically the Erne catchment had adequate water quality and suitable habitat for self sustaining populations of Atlantic salmon and brown trout. However, the deterioration in water quality assisted a collapse of the migratory salmon and now only small subcatchments can sustain indigenous brown trout. The intensification of agriculture within the system coupled with a strong agri-industrial support base led to high increases of the volumes of wastes that required disposal, usually by land spreading. Cavan and

Monaghan are both renowned for their drumlin characteristics and heavy soils, both of which are far from ideal for the land spreading of organic and inorganic fertilizers. In the 1970's and 1980's, significant fish kills were common due, in the main, to poor farming practice causing both point source and diffuse pollution.

Rather than representing a barrier to eel, it is likely that the levels of eutrophication generally present may benefit eel stocks as evidenced by the rapid growth rates recorded in many of the Cavan-Monaghan lakes in previous surveys. The introduction of the zebra mussel (*Dreissena polymorpha*) to the Erne in 1996 and it's continued spread throughout the system in recent years has provided a further impact resulting in dramatic reductions on phytoplankton abundance and increased water clarity in parts of the system.

Lough Melvin is a mesotrophic (low to medium nutrient status) lake that is characterised by rich and diverse plant and animal communities. It is considered to be in a relatively pristine state and is fringed by emergent swamp and fen habitat.

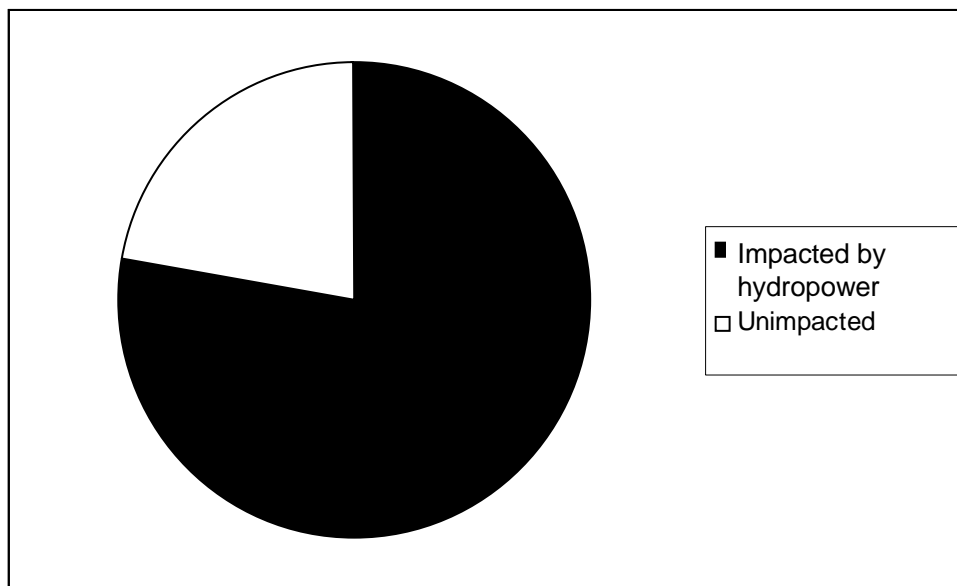
### Parasites

A total of 8 parasitic endohelminth worm species (2 Cestoda, 3 Nematoda and 3 Acanthocephala) were found in the intestines of 1,089 brown eels examined from throughout the Erne system (1998-2000). The diversity of endohelminth worms contained in eels increased progressively from Lough Gowna (4 species) in the upper reaches of the Erne to Assaroe Lake (8 species) just above the Erne estuary at Ballyshannon, Co. Donegal. This distribution pattern reflects both eel feeding behaviour and the availability of intermediate hosts.

Of greatest concern was the discovery of the pathogenic blood-sucking nematode *Anguillicola crassus* in the swim bladder of brown and silver eels from the Erne. Initially detected in the R. Barrow in 1997, the parasite has since spread to the lower reaches of the R. Shannon and was first recorded from brown eels in southern Lower Lough Erne in 1998. By 1999 the parasite was detected as far upstream as L. Garadice with 90% of brown eels from the Narrows, Lower L. Erne found to be infected.

### Hydropower

Two hydroelectric power-stations, one at the hydrological limit of the Erne catchment and another 4 km inland, impact on the silver eel escapement on the Erne catchment. Another hydroelectric power station impacts upon the Clady-Crolla. The wetted area impacted by hydropower represents 78% of the wetted area of the NWIRBD.



**Figure 5.1.** The portion of the NWIRBD impacted by hydroelectric installations.

## **6. Stocking**

### **6.1. Previous Stocking**

Prior to 1993 all elver captured in the collection boxes at Cathaleen's Fall were stocked out above the two dams into the lower reaches of Lower Lough Erne. Therefore, dispersal of elver was entirely due to natural tendencies of elver to move upstream.

In 1993, more distant transfer of elver commenced with the majority (approximately 90%) being released at points around Lower Lough Erne and the northern end of Upper L. Erne, where the greater part of the commercial eel fishery was located. Limited annual stocking of the Cavan-Monaghan lakes in the ROI (92-225 kg) was carried out from 1993 to 1995.

As a basis for the future development and expansion of the eel fishery throughout the Erne, agreement was reached between the fisheries authorities in N. Ireland and the ROI in April 1995 for the equal distribution of elver to Upper and Lower L. Erne, Northern Ireland and the Cavan-Monaghan lakes in the ROI portion of the catchment. Following commencement of the Erne Eel Enhancement Programme in autumn 1997 an extensive programme of elver stocking was carried out throughout the catchment. Since the finish of this programme in 2001 and with significantly reduced elver catch returns, almost all elver captured at Ballyshannon have been stocked into Lower and Upper Lough Erne in NI.

### **6.2. Stocking as Part of the EMP**

Stocking is currently being considered as a potential management option (see Section 7.5 in the National Report). However, this option requires further investigation and feasibility assessment, which will be guided by the Eel Scientific Committee (see chapter 6 National Report).

## **7. Monitoring**

### **7.1. Escapement Monitoring**

The national approach to escapement monitoring has been outlined in chapter 7 of the National Report. There is a particular requirement to quantify the silver eel run on the Erne so that the quantities required for truck and transport can be estimated. Equally, final escapement of silver eel from the Erne requires that site-specific direct mortality estimates of silver eels passing through turbine sets at Cliff and Cathaleen's Fall station are undertaken as a matter of urgency.

### **7.2. Sampling of Catch & Effort, present & future**

Given the proposed closure of the fishery, sampling of catch and effort will not be required.

### **7.3. Catch Sales/Dealers/Export**

This section is dealt with in the National Report under Section 4.3.

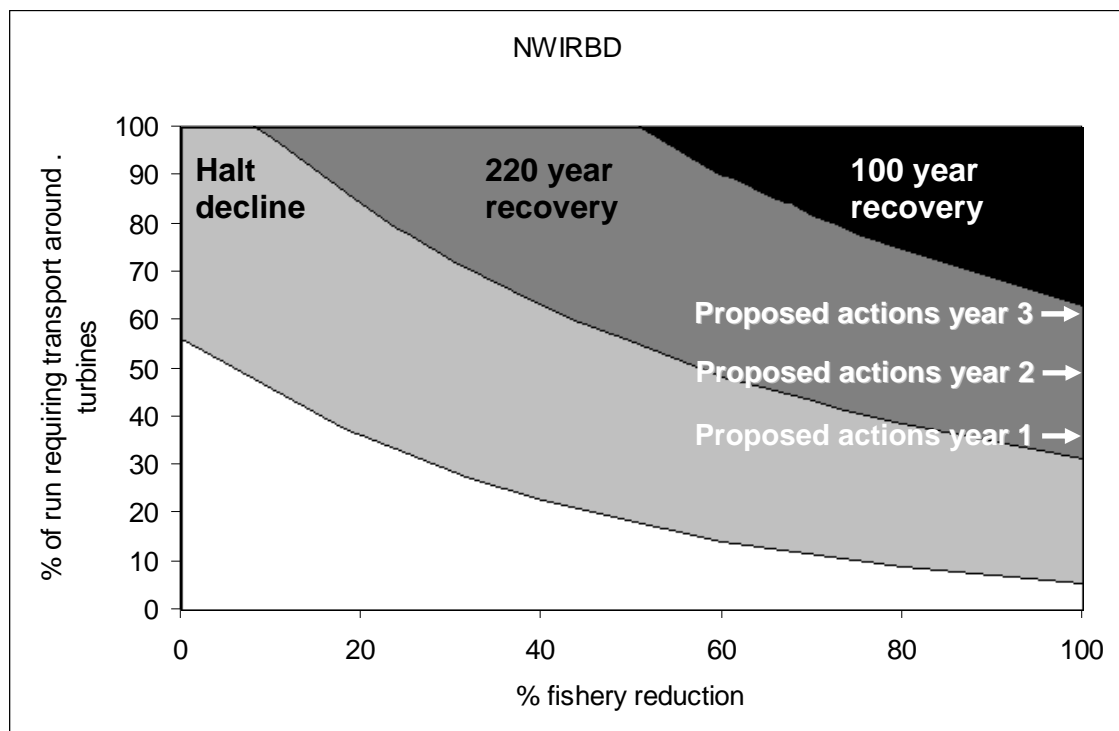
## 8. Management Measures

### 8.1. Management actions

Text in green is a generic management actions text including the specific details for this Eel Management Unit. This generic text has been requested at the last National Eel Working Group Meeting and arises from the discussions/outcome therein. As discussed at that meeting the national monitoring strategy and national management section has selected 4 major actions (a) representing consistent actions across the 6 EMPs and (b) representing actions that can be post-evaluated. The current draft monitoring program has been designed to post-evaluate these actions.

Scientific advice has indicated that the NWIRBD silver eel escapement is currently approximately 26% of pristine production (EU target = 40%) and will decline as a consequence of poor and declining recruitment over the last 18+ years. International stock assessment has related the likelihood and time-frame of recovering recruitment to levels of anthropogenic mortality. It is unlikely that management measures can be defined to keep escapement above the 40% target in the long term (see section 4). Recovering recruitment will allow Ireland to define management measures that ensure 40% escapement. In the interim, recovery of recruitment is an appropriate alternative target that can be directly linked to management actions (see section 5.3 of the National Plan). Anthropogenic (human) mortality must be reduced across Europe by 85%, on average, just to halt the decline in the extremely low level of current recruitment.

Reductions of anthropogenic mortality are required merely to contribute to halting the decline in recruitment. It should be noted that current recruitment is expected to lead to much lower levels of silver eel escapement than currently observed. Merely halting the decline is scientifically unacceptable and management actions must aim above this level. The closer to zero that mortality is reduced; the more assured we are of achieving a recovery and the quicker the recovery will occur (see Fig. 8.1).



**Figure 8.1.** The relationship between time-frame to recovery and the level of anthropogenic mortality for the NWIRBD resulting from combinations of fishery reduction and trap and transport of the Erne silver eels around the hydropower stations. The darker

the shade the faster the recovery and the safer the action. White does not stop the decline in recruitment.

**Management Action No. 1. Reduction of fishery to achieve EU target**

**Action 1a: Cease fishery and close market**

*Timescale: 2009*

*Review: 2012, 2015,*

*Evaluate for reopening: 2019?*

Given the implications of the scientific advice (Fig. 8.1), the absence of detailed recent quantitative data on eel stock densities in the NWIRBD, the insignificant runs of elvers observed in recent years, the uncertainties associated with the data and the modelling, the practicalities of managing a reduced fishery and ensuring no illegal trade and the urgent need to effect a recovery, the precautionary approach will be adopted in the NWIRBD and in line with the proposal from the National eel Working Group the eel fishery will be closed.

**Action 1b: Diversification of fishery**

CFB and eel fishermen will be engaged in investigating possible diversification for the former commercial fishermen. Former eel fishermen and other service providers who meet the tender criteria will be eligible to compete for the "trap and transport" operations which ESB has committed to undertake under the plan.

**Management Action No. 2. Mitigation of hydropower**

**Action 2a: Trap & Transport**

*Timescale: 2009*

*Review: 2012, 2015 and annual review of quantity T&T v escapement estimate*

Table 8.1. Trap and transport target levels for the Erne catchment within the NWIRBD.

	catch target (t)	% of expected silver eel run	Proportion of EU H achieved – fishery closed	Approx. timeframe to recovery (y)
2009	22.5	36	0.092	200
2010	33.75	54	0.075	140
2011	39.0	63	0.05	100

**Action 2b: Quantify Turbine Mortality and morbidity**

*Timescale: 2009-2011 with precision estimate*

*Review: 2012, 2015*

Almost half of the wetted area of Ireland is behind hydropower barriers that are known to impact on eel. The average reported mortality for turbine passage is 28.5% (ICES estimate). Mortality rates are highly variable and there is inevitable size selectivity. Empirical data is currently lacking for Ireland. Such barriers impact significantly on Ireland's ability to meet eel escapement targets and Ireland's ability to produce large female eels needed to support a stock recovery. It is essential that estimates of mortality and morbidity are undertaken for the hydropower facilities at Cliff and Cathaleen's Falls on the Erne.

A standard methodology should be employed to enable reasonably precise estimates of turbine mortality and morbidity to be calculated. This information will allow an estimate of the requirement of truck and transport to be calculated.

**Management Action No. 3. Ensure upstream migration at barriers (including small weirs etc.)**

**Action 3a: Existing barriers**

It is not currently known to what extent existing barriers impede upstream migration of eels in Ireland. This will be dealt with through the monitoring programme described in Chapter 7 of the National Report. Following this evaluation, management measures will be considered as appropriate with a view to improving accessibility and negating any current impact.

**Action 3b: New potential barriers**

Ensure that all new installations should include an evaluation of all direct and indirect impacts on eels and that measures are undertaken so as to minimise these impacts (see section 3.5.2.2 of the National Report).

**Action 3c: Assisted migration**

In the event of a stocking program being shown to be likely to yield a net benefit to the stock, this will be carried out in accordance with Chapter 6 of the National Report.

**Management Action No. 4. Improve water quality**

**Action 4a: Ensure compliance with the Waterframework Directive**

Timescale: 2015

Review: 2012, 2015

**8.2. Projected impact of management actions**

The management actions proposed for the NWIRBD will result in no fishing and increasingly reduced turbine related mortality. According to the stock assessment of Astrom and Dekker (2007), the levels of anthropogenic mortality in 2009, 2010 and 2011 are consistent with a recovery time of 200 years, 140 years and 100 years respectively (assuming equivalent EU wide action).

**Actions taken in 2008**

In May 2008, the Minister for Communications, Energy and Natural Resources introduced a byelaw (Conservation of Eel Fishing (Annual Close Season) Bye-law No. C.S. 297, 2008) restricting the fishing season for both brown and silver eel.

In May 2008, the Minister for Communications, Energy and Natural Resources introduced a byelaw (Conservation of Eel Fishing (Annual Close Season) Bye-law No. C.S. 297, 2008) setting a minimum length.

'Conservation of Eel Fishing (Restriction on Issue of Licences) Bye-Law No. 838, 2008' has imposed a cap on the capacity of the eel fishery in the SERBD effective from the 16th of May 2008 (see table 8.1).

Table 8.1. Capped number of licences within the RoI portion of the NWIRBD under Bye-Law 838-2008.

District	No of long line fishing licences	No of coghill net licences	No of fyke net licences
Ballyshannon	30	1	25
Letterkenny	1	0	3

## **Actions for 2009-2011**

### *Short term*

#### *In relation to the fishery:-*

- Given the gravity of the scientific advice, particularly in relation to the severe decline in elver recruitment (as also evidenced directly on the Erne), the shared desire of both the Irish Government and the Northern Ireland Executive to meet the targets for escapement in the EC Regulation and recovery of eel stocks at the earliest date, and in line with the consensus emerging from the National eel Working Group, the eel fishery and associated dealer market should be closed.
- Consideration to be given to the introduction of a diversification scheme for commercial fishermen who exit the commercial fishery.
- Introduce measures to protect the biosecurity of water bodies to prevent the introduction and spread of exotic species, diseases and parasites.
- Given the current depleted nature of the eel stock, a study should be undertaken to assess the impact of cormorant predation on eel stocks, and recommendations made, based on the results of the study, in relation to future management of cormorant stocks and other predators of eel.
- Commence an eel stock assessment monitoring programme on key fisheries in association with CFB, MI, ESB, AFBI, LA and DCAL.

#### *In relation to barriers:-*

- Undertake an audit of potential natural and man-made barriers to elver and silver eel migration within the NWIRBD. Identify remedial actions to be taken and address where possible.
- Identify additional elver collection index sites to that on the R. Erne to monitor elver recruitment to other key fisheries in NWIRBD (e.g. R. Foyle, L. Melvin/Drowse systems).
- The existing policy for redistribution and stocking out of elver gathered from the elver boxes at Cathaleen's fall, Ballyshannon to upstream catchment of the Erne will continue through the period up to 2011 and will be kept under review.
- No restocking of glass eel or elver from one catchment to another will be undertaken until a full assessment of the catchment's achievement of the biomass target has been completed and suitability of any identified surplus for the purpose has been proven.

#### *In relation to 'trap and transport' operations:-*

- Site specific direct estimates of turbine-related silver eel mortality, overseen by AFBI, MI, CFB, NRFB and ESB, to be conducted at Cliff and Cathaleen's Fall station to quantify current mortality levels and final escapement from the Erne.
- Both Departments are satisfied with the modelling undertaken by the Marine Institute and Central Fisheries Board and with the outputs it produces in terms of the requirement to achieve targets for Trap and Transport.
- Trap and transport operations will be established under special authorisations provided by section 18 of the 1980 Fisheries Act and section 14 of the Fisheries Act (Northern Ireland) 1966 at a number of sites and using gear which will be identified to maximise catch.
- An agreed protocol on trap and transport operations will be drawn up in respect of the Erne catchment to ensure operator Health & Safety and the release of good quality eels for spawning. This may be modified as appropriate in future on foot of the review of its operation.
- The operation will aim to catch specified minimum amounts of silver eels and ensure their release and escapement to sea (calculated on the basis of historical silver eel catch plus incremental increases). These amount to:-
  - 2009 – 22.5 tonne (estimated to be 36.3% of expected silver eel run<sup>1</sup>).
  - 2010 – 33.75 tonne (estimated 48.4% of expected silver eel run).

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<sup>1</sup> expected silver eel run is based on a model output that involves projecting simulated current escapement based on the national Habitat based model.

- 2011 – 39 tonne (estimated 60.5% of expected silver eel run).
- The Trap & Transport operation will be reviewed in context of other measures (technical solutions in medium/ long term such as retrofit of new turbine blades) by ESB.
- Procurement of Trap and Transport operations by ESB will follow appropriate Government guidelines for such contracted services and will be open to tender by all suitably qualified service providers/fishermen. (Note: the details will be agreed with authorities in both jurisdictions).

*Medium*

- Investigation into provision of engineered solution for passage of silver eels at both hydroelectric stations in consultation with NRFB. Comparison with international 'best practice'.
- Conduct trial survival studies; radio-tracking study; cost-benefit analysis.
- Adaptive Management- review effectiveness of short-term measures and amend accordingly.

*Long term*

- Provision of final engineered solution for safe passage of silver eel (also maximising passage of other migratory species such as salmon and sea trout).
- Adaptive Management- review effectiveness of medium-term measures and amend accordingly.

## **9. Post EMP monitoring**

The national approach to post EMP monitoring has been outlined in chapter 7 of the National Report.

## Appendix I – Water bodies in the NWIRBD and their estimated productivity

Catchment surface area (km <sup>2</sup> )	Cat. (km <sup>2</sup> )
Fluvial wetted area (ha)	Fluv. (ha)
Lake wetted area (ha)	Lake (ha)
Non-calcareous geology (%)	N.-calc. (%)
Estimated pristine production (kg)	Prist. Pot. (kg)
Estimated current potential production (kg)	Curr. Pot. (kg)
Estimated current escapement (kg)	Curr. Esc. (kg)

		Cat. (km <sup>2</sup> )	Fluv. (ha)	Lake (ha)	N.-calc. (%)	Prist. Pot. (kg)	Curr. Pot. (kg)	Curr. Esc. (kg)
	Loughs							
(Roe Faughan etc)	Agency	888	312.2	39	100	679	386.425	-
Abbey (River)	Ballyshannon	42	11	165	29	720	466	-
Ballintra (River)	Ballyshannon	84	41	306	63	1061	663	-
Bungosteen (River)	Ballyshannon	37	18	24	100	81	47	-
Drowes (River)	Ballyshannon	117	43	2220	0	11253	7420	-
Duff (River)	Ballyshannon	86	47	4	0	254	168	-
Eany (Water)	Ballyshannon	109	66	28	26	393	254	-
Erne (River)	Ballyshannon	33	1	236	59	753	473	-
Erne (Roi NI)	Ballyshannon	4415	1348	24612	0	<b>116633</b>	85155	-
Eske (River)	Ballyshannon	114	53	474	64	1595	990	-
Glen (River)	Ballyshannon	87	43	69	100	216	124	-
Glenaddragh (River)	Ballyshannon	39	17	4	100	41	23	-
Laghy (Stream)	Ballyshannon	39	18	28	59	146	92	-
Oily (River)	Ballyshannon	47	24	39	83	154	92	-
Owenwee (River)	Ballyshannon	25	9	78	99	171	98	-
Aghaweel (River)	Letterkenny	10	2	0	100	4	2	-
Ballyboe (River)	Letterkenny	9	2	0	100	4	2	-
Big (Burn)	Letterkenny	13	4	14	99	35	21	-
Bracky (River)	Letterkenny	24	13	0	100	25	14	-
Bunlin (River)	Letterkenny	10	3	4	98	14	8	-
Burnfoot	Letterkenny	53	12	0	97	24	14	-
Burnside (River)	Letterkenny	12	3	0	100	6	4	-
Clady (River)	Letterkenny	89	26	391	100	806	461	-
Clonmany (River)	Letterkenny	55	17	0	100	33	18	-
Crana (River)	Letterkenny	99	45	16	98	122	70	-
Culoort (River)	Letterkenny	29	9	0	100	17	10	-
Derryart (River)	Letterkenny	20	7	9	100	31	18	-
Donagh (River)	Letterkenny	34	16	0	96	33	19	-
Drumhallagh (River)	Letterkenny	15	5	0	100	10	6	-
Dunglow (River)	Letterkenny	40	8	225	100	450	257	-
Duntally (River)	Letterkenny	10	3	11	88	32	19	-
Duvoge (River)	Letterkenny	20.595	5.21	125.46	100	253	143.776	-
Faymore (River)	Letterkenny	17	7	3	96	21	11	-
Glen (River)	Letterkenny	17	4	7	100	21	13	-
Glenalla (River)	Letterkenny	20	6	17	100	44	26	-
Glenna (River)	Letterkenny	23	8	21	92	63	37	-
Glennagannon (River)	Letterkenny	29	14	18	99	63	36	-
Glenvar (River)	Letterkenny	13	4	0	100	8	4	-
Gweebarra (River)	Letterkenny	94	34	133	100	323	184	-
Gweedore (River)	Letterkenny	50	14	188	100	390	223	-

		Cat. (km <sup>2</sup> )	Fluv. (ha)	Lake (ha)	N.-calc. (%)	Prist. Pot. (kg)	Curr. Pot. (kg)	Curr. Esc. (kg)
Isle (Burn)	Letterkenny	60	20	0	45	72	47	-
Lackagh (River)	Letterkenny	126	42	532	99	1127	647	-
Leannan (River)	Letterkenny	256	124	550	99	1323	753	-
Loughkeel (Burn)	Letterkenny	6	2	61	100	122	70	-
Mill (River)	Letterkenny	44	15	0	96	31	17	-
Owenawillin	Letterkenny	5	2	33	100	68	38	-
Owencronahulla	Letterkenny	19	6	2	100	15	8	-
Owenea (River)	Letterkenny	126	69	223	100	564	323	-
Owenerk (River)	Letterkenny	21	6	1	100	14	8	-
Owennamarve (River)	Letterkenny	26	8	154	100	313	178	-
Owentocker (River)	Letterkenny	43	23	18	99	80	46	-
Owentully	Letterkenny	9	2	0	98	4	3	-
Ray (River)	Letterkenny	51	19	59	95	163	94	-
Straid (River)	Letterkenny	21	8	0	100	15	9	-
Swilly (River)	Letterkenny	97	45	24	100	133	76	-
Tullaghobegly (River)	Letterkenny	30	10	149	86	375	224	-
Foyle (Roi NI)	Loughs Agency	2919	1114	1544	100	5137	2924	-
NWIRBD		10828	3835	32859	53	146538	103533	60381

Transitional water	Fisheries district	Exploited for				Wetted area
		Brown	Silver	Glass	Elver	
Duff Estuary	Ballyshannon	N	N	N	N	1
Erne Estuary	Ballyshannon	N	N	N	N	257
Eany Water Estuary	Ballyshannon	N	N	N	N	8
Teelin Bay	Ballyshannon	N	N	N	N	113
Meenaclady	Letterkenny	N	N	N	N	6
Gweedore Estuary	Letterkenny	N	N	N	N	445
Lackagh Estuary	Letterkenny	N	N	N	N	122
Owenea Estuary	Letterkenny	N	N	N	N	771
Gweebarra Estuary	Letterkenny	N	N	N	N	826
Crana Estuary	Letterkenny	N	N	N	N	83
Drowes Estuary	Ballyshannon	N	N	N	N	14
Swilly Estuary	Letterkenny	N	N	N	N	5936
Inner Donegal Bay	Ballyshannon	N	N	N	N	812
Foyle and Faughan Estuaries	(N. Ireland)	N	N	N	N	3448
Roe Estuary	(N. Ireland)	N	N	N	N	77
Grans ha	(N. Ireland)	N	N	N	N	8
Blackbrae	(N. Ireland)	N	N	N	N	8
Donnybrewer	(N. Ireland)	N	N	N	N	10
Longfield	(N. Ireland)	N	N	N	N	9
Myroe	(N. Ireland)	N	N	N	N	6
Durnesh Lough	Ballyshannon	N	N	N	N	70
Maghery Lough	Letterkenny	N	N	N	N	17
Carrick Beg Lough (South)	Letterkenny	N	N	N	N	1
Inch Lough	Letterkenny	N	N	N	N	163
Blanket Nook Lough	Letterkenny	N	N	N	N	32
Loch Chionn Caslach (Kincas Lough)	Letterkenny	N	N	N	N	4

Loch O Dheas, Tory Island	Letterkenny	N	N	N	N		4
Moorlagh	Letterkenny	N	N	N	N	N	

## Appendix II

**ROI legislation is in section 4.2.1 of national report and appended here is the relevant NI legislation.**

*DCAL (NI) – POLICY AND LEGISLATIVE PROVISIONS PERTINENT TO EEL MANAGEMENT PLANS*

DRAFT from 2004 Eel Review Group

**Eel Fishing regulations made under the Fisheries Act (NI) 1966, as amended.**

**Section 15 of the Act empowers the Department to make eel fishing regulations as follows:**

**Regulations with respect to eel fishing.**

**15. —**

(1) The Ministry may make such regulations as appear to the Ministry expedient for the management (other than financial), conservation, protection and improvement of the eel fisheries of Northern Ireland, other than the eel fisheries of the Londonderry Area, and, without prejudice to the generality of the foregoing provisions may by such regulations do the following things:—

(a) regulate the establishment and use of eel weirs and the manner of erecting or hanging fishing engines therein;

(b) fix and alter the close seasons for eels;

(c) prescribe—

(i) the amounts of license duties payable to the Fisheries Conservancy Board for Northern Ireland established under Part II in respect of licenses for the use of fishing engines (other than rod and line) for the taking of eels;

(ii) the description and form of any fishing engine to be used for the taking of eels;

(iii) the minimum sizes of the meshes of nets, or the apertures

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in other fishing engines, used for taking eels;

(iv) the minimum sizes or weight of eels which may be taken;

(v) the times and places or the mode at or in which any fishing engine may be used for taking eels;

(d) subject to subsection (2), amend or revoke any byelaw relating in any manner to eels or eel fisheries.

(2) Nothing in this section shall affect the power of the said Board to make byelaws under section 26 with respect to the taking of eels with rod and line.

(3) If any person contravenes a regulation made under this section, he shall be guilty of an offence.

The Eel Fishing Regulations (NI) 1979 consolidated and revised all earlier regulations made under section 15 with the exception of those relating to license duties.

A copy of these regulations is attached at annex 1.

The Eel Fishing (License Duties) Regulations (NI) 2000 are made under sections 15(1) and 19(1) of the Act. They came into operation on 1 January 2001 and remain extant.

➤ [Detail of 'other relevant provisions' of Fisheries Act \(NI\) 1966, as amended. Prohibition of unlicensed fishing.](#)

#### **41. —**

(1) Unless expressly empowered to do so under any provision made by or under this Act or any other enactment for the time being in force, a person shall not fish for, take or kill salmon, eels or any freshwater fish except under the authority of a license issued pursuant to byelaws made under this Act and in accordance with the terms and conditions of that license and of the byelaws relating to it.

(2) Unless expressly empowered as mentioned in subsection (1), a person shall not have in his possession in or near any fishing place any fishing engine for the taking or killing of salmon, eels or freshwater fish which is erected or in fishing order, unless there is in force a fishing license by or by virtue of which he is authorised

to use that fishing engine at that place.

*Taking, etc., spawn or fry of salmon, trout or eels.*

**48. —**

(1) [Subject to subsections (1A) and (2)] if any person—

(a) wilfully takes, sells, purchases, or has in his possession the spawn, ... or fry of salmon, trout or eels; or

(b) wilfully obstructs the passage of the ... fry of salmon, trout or eels; or

(c) injures or disturbs the spawn or fry of salmon, trout or eels; or

(d) injures or disturbs any spawning bed, bank or shallow where the spawn or fry of salmon, trout or eels may be,

he shall be guilty of an offence.

[(1A) It shall not be an offence under subsection (1)(a) for the owner of an eel several fishery to take or have in his possession the fry of eels where he has removed those fry from that several fishery solely for the purpose of returning them to an upstream part of the same several fishery.

(1B) Subsection (1A) applies to a person acting under the direction of the owner of an eel several fishery in the same manner as it applies to such an owner.]

(2) Where a person is charged with the offence of taking or having in his possession any ... fry in contravention of subsection (1)(a), it shall be a good defence for him to prove that he removed the ... fry from a system of waters solely for the purpose of preserving them from some immediate danger (whether actual or reasonably apprehended) and that he returned, or intended to return, them to an adjacent safer part of the same system of waters, without any avoidable injury, as soon as reasonably practicable.

[(3) In this section—

(a) "fry" (except in subsection (1)(d))—

.....

(iii) in relation to eels, includes elver;

## **REGULATION OF FISHING FOR SALMON, EELS AND FRESHWATER FISH**

### **Prohibition of certain methods of fishing**

#### **Penalty for using certain devices for taking fish.**

#### **62. —**

(1) If, for the purpose of taking [ or facilitating the taking of,] any fish, any person uses or has in his possession or control, in or on the bank of or near the waters of any lake, river or estuary, any light or fire or any electrical or acoustical apparatus of any kind, he shall be guilty of an offence.

(2) If, for the purpose of taking any fish, any person uses or has in his possession or control, in or on the bank of or near the waters of any lake, river or estuary, any instrument to which this subsection applies, he shall be guilty of an offence.

(3) If any person throws, releases or discharges any missile or other object into any water for the purpose of taking or killing, or facilitating the taking or killing, of any [salmon, trout or rainbow trout], he shall be guilty of an offence.

(4) In subsection (2) the expression "instrument to which this subsection applies " means any otter, tailer or snare, spear, stroke- haul, gaff or other instrument of a similar kind [or any instrument or device calculated in the course of normal use to foul-hook any fish], but does not include—

(a) a [ . . . ] tailer used or to be used solely as an auxiliary to lawful angling between sunrise and one hour after sunset; or

(b) a [ . . . ] tailer used or to be used by the holder of a fishing license in respect of any box in a fishing weir solely for the purpose of lawfully removing fish therefrom; or

(c) an eel spear used for taking eels.

[(4A) In subsection (4)—

"gaff" means a hooked instrument (with or without a barb) used to penetrate the gills or body of a fish; and

"otter" means an otter lath or jack, and includes any instrument, whether used with a handline, or as an auxiliary to a rod and line, or otherwise for the purpose of running out lures, artificial or otherwise.]

(5) A person who is guilty of an offence under subsection (1) or (2) shall be liable on summary conviction to a fine not exceeding [ £500] or to imprisonment for a term not exceeding six months or to both such fine and such imprisonment.

*Restriction on use of nets in fresh water.*

**71. —**

(1) Save as is permitted by or under subsection (2), it shall not be lawful for any person to use any net in the freshwater portion of any river or in any lake.

(2) Subsection (1) shall not apply to—

(a) the use of a landing net or keep net solely as auxiliary to lawful fishing with rod and line;

(b) the lawful use of a net solely for the purpose of removing fish from traps in a fishing weir;

(c) the lawful use of a fixed engine under section 73;

.....

(f) the lawful use of nets for the taking of eels—

(i) in or in the vicinity of an eel weir; or

(ii) in accordance with regulations made under section 15;

.....

(3) If any person uses a net in contravention of this section he shall be guilty of an offence and shall be liable on summary conviction to a fine not exceeding [£500] or to

imprisonment for a term not exceeding six months or to both such fine and such imprisonment.

.....

*Restriction with respect to fishing weirs or fixed engines in fresh water portion of rivers or lakes.*

**73. —**

(1) It shall not be lawful for any person to erect or to use in the freshwater portion of any river or lake any fishing weir or a fixed engine of any description, unless that fishing weir or a fixed engine of that description was in existence and was lawfully used therein by that person or a predecessor in title of his during the open fishing season of one or more of the five years immediately preceding 1st January 1965.

(2) If any person erects or uses a fishing weir or fixed engine in contravention of this section he shall be guilty of an offence and shall be liable on summary conviction to a fine not exceeding [£1,000] or to imprisonment for a term not exceeding six months or to both such fine and such imprisonment.

(3) The prohibition in subsection (1) shall not apply to—

(a) longlines used solely for the capture of eels; or

(b) any eel weir or any fixed engine for the capture of eels established and used in accordance with regulations made under section 15; or

.....

### **Regulations as to fishing weirs**

*Free gaps in fishing weirs.*

**81. —**

(1) In every fishing weir (other than an eel weir with respect to which a license granted by the Ministry under section 84 is for the time being in force) there shall be a free gap or opening in accordance with .....

(3) Where there is no free gap in a fishing weir or where a free gap has been made in a fishing weir but is not maintained in accordance with subsection (1), then, unless that fishing weir is an eel weir which is for the time being excepted from the application of subsection (1), the owner and the occupier of the fishing weir shall each be guilty of an offence ...

.....

*Operation of eel weir without free gap.*

**84. —**

(1) The Ministry may by license authorise the operation of a specified eel weir without a free gap, subject to such conditions as may be contained in the license.

(2) The Ministry may revoke, or may vary the conditions contained in, a license granted under this section, where the Ministry is satisfied that such revocation or variation is expedient in the interests of the eel fisheries.

(3) When the Ministry proposes to revoke a license, or to vary any conditions, under subsection (2), otherwise than on the application of the holder of the license, the Ministry shall—

(a) give to the holder of the license at least twenty-eight days' prior notice of its intention to do so; and

(b) state in the notice given under paragraph (a) the specific variation, if any, under consideration and the grounds upon which the revocation or variation is proposed to be made,

and shall consider any representations in relation to the revocation or variation made by the holder before the expiration of the notice.

(4) Without prejudice to subsection (2), a license granted under this section may be suspended or revoked in accordance with the provisions of Schedule 1.

## **Eels Annual close season for eels**

**107.** In this Act the expression "the annual close season for eels " means in relation to any locality and for the purposes of the taking of eels by

means of a fishing engine of any description, other than rod and line, the period during which it is declared by a regulation under section 15 for the time being in force and applicable to that locality to be unlawful to fish for or take eels by means of a fishing engine of that description, or if no period is so prescribed,—

(a) in relation to the taking of eels by means of [fishing engines which are erected or hung in fishing weirs or are] fixed engines (other than longlines), the period from 9th January in any year to 31st May in that year; and

(b) in relation to the taking of eels by any means other than a fishing engine to which paragraph ( a ) applies (except by rod and line), the period from 9th January in any year to 30th April in that year.

*Prohibition of taking etc. eels, otherwise than by rod and line, during the annual close season.*

**108. —**

(1) Subject to subsection (2), and without prejudice to section 109, if any person—

(a) during the annual close season for eels taken otherwise than by means of a fishing engine to which section 107( a ) applies, fishes for, takes or wilfully kills eels by any method whatsoever; or

(b) during the annual close season for eels taken by means of such a fishing engine, fishes for, takes or kills eels by means of such a fishing engine; or

(c) has in his possession during such period as may be prescribed by regulations, or, if no period is so prescribed, during the period from 31st March in any year to the then next-following 30th April, any eel other than an eel that he proves was captured elsewhere than in any part of Northern Ireland outside the Londonderry Area;

he shall be guilty of an offence and shall be liable on summary conviction [to a fine not exceeding £500 or to imprisonment for a term not exceeding six months or to both such fine and such imprisonment.]

(2) [Paragraph ( a )] of subsection (1) shall not apply to the fishing for or taking of eels by rod and line, or the killing of

eels so taken, and paragraph ( c ) of that subsection shall not apply to a person who, having any eel in his possession during the period referred to therein, proves that the eel was caught by rod and line at a particular place by [a person who was the holder of a fishing license authorising him to angle for eels or who was exempted by byelaws made under section 37( f ) from the requirement to hold such a license] otherwise than during any period for the time being fixed by byelaws as a close season for angling for eels.

(3) The Ministry may by order made subject to affirmative resolution provide that this section shall have effect as if the words in subsection (1)( c ) from "other " onwards were omitted.

*Placing fishing engines for taking eels in eyes, etc., of fishing weirs during the annual close season for eels or during the daytime.*

**109. —**

(1) If any person places or hangs any fishing engine for taking eels in an eye or gap of any fishing weir during—

(a) the annual close season for eels taken by means of a fishing engine to which section 107( a ) applies; or

(b) the daytime, within any period that is not the annual close season for eels taken by a fishing engine to which section 107( a ) applies,

he shall be guilty of an offence and shall be liable on summary conviction [to a fine not exceeding £500 or to imprisonment for a term not exceeding six months or to both such fine and such imprisonment.]

(2) Where a person is charged with an offence under this section and it is proved that at a particular time a fishing engine for taking eels was placed or was hanging in an eye or gap of a fishing weir, and that that person was at that time the occupier of the fishing weir, then it shall, until the contrary is proved, be presumed that the fishing engine was so placed or hung by him.

*Prohibition of purchase, sale, etc., of salmon, trout, pike and brown eels at certain times.*

**[111. —**

(1) If any person buys, sells, offers or exposes for sale or has in his possession for sale—

.....

(c) any brown eels at any time during the period from 16th January in any year to the date in that year of the commencement of the period mentioned in section 108(1)( c );

he shall be guilty of an offence under this Part.

(2) Subsection (1) shall not apply to any person buying, selling, offering or exposing for sale or having in his possession for sale any fish of a kind mentioned in paragraph ( a ) or, as the case may be, ( b ) or ( c ) of that subsection which he proves was

[(a) reared in a fish farm; or

(b) supplied by the Department.]

(3) For the purposes of this section a person shall be deemed to have a salmon or trout or, as the case may be, a pollen or a brown eel in his possession for sale if it is found at any place, or on or in any vehicle, specified in a dealer's license issued to him under the succeeding provisions of this Part, unless he satisfies the court that it was not his intention to sell it.

(4) The Board may by byelaws substitute for the period mentioned in paragraph ( a ) or ( b ) of subsection (1), and the Ministry may by regulations substitute for the period mentioned in paragraph ( c ) of that subsection such other period as may be specified in the byelaws or, as the case may be, the regulations.

(5) Notwithstanding anything in section 19(2) or 26(4), any byelaws or regulations made under subsection (4), shall be subject to affirmative resolution.]

*Restriction on purchase of salmon, trout and eels.*

**112. —**

(1) Subject to subsection (2), a person who is not the holder, or the agent duly authorised in writing in that behalf of the holder, of a dealer's license issued under the succeeding provisions of this Part and for the time being in force, and who buys salmon, trout or eels, [or being the holder of such a license, or the agent of such a holder, buys

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salmon, trout or eels elsewhere than at the place or vehicle in respect of which the license is in force], shall be guilty of an offence under this Part.

(2) Subsection (1) shall not apply in relation to—

(a) the *bona fide* purchase by or on behalf of a person of salmon, trout or eels for use by the person in his own home; or

(b) the *bona fide* purchase of salmon, trout or eels by or on behalf of any person for use for catering purposes in premises in which he carries on the business of a hotel, restaurant or guest house or of providing board and lodging or meals for reward, if the purchase is made from—

(i) the holder of a dealer's license for the time being in force; or

(ii) a fisherman who is lawfully engaged in taking and killing salmon, trout or eels, and who is the holder of a fishing license which is for the time being in force and is available for use for the taking and killing of salmon or, as the case may be, trout or eels;

and, in the case of a purchase from a fisherman, the purchaser—

(aa) obtains from the fisherman a statement in writing containing his name and address and the number of his fishing license and stating that the salmon or, as the case may be, the trout or eels are of his own lawful capture, and

(bb) retains the statement [and keeps it at the premises in which he carries on the business] and produces it to an authorised officer when requested by the authorised officer to do so.

(3) A person who is buying salmon, trout or eels and purports to be acting as an agent of the holder of a dealer's license shall produce on demand by an authorised officer his authorisation to act as such agent and if he refuses or fails to produce his authorisation or, on the production thereof, refuses or fails to permit the authorised officer to read the authorisation there and then, he shall be guilty of an offence.

(4) A person who when the production of the authorisation referred to in subsection (3) is lawfully demanded of him under this section does not produce the authorisation because he is not the holder of an authorisation shall be deemed to refuse or fail to produce his authorisation within the meaning of this section.

(5) Where, pursuant to subsection (2), a person (in this subsection referred to as the vendor) selling salmon, trout or eels to another person gives to that person a statement in writing which, or any part of which, is, to the knowledge of the vendor, false or misleading, the vendor shall be guilty of an offence under this Part.

(6) In this section authorised officer means

(a) an officer of the Ministry authorised by the Ministry to exercise the powers conferred by this section; or

(b) a member of the Royal Ulster Constabulary; or

[(c) an inspector or fishery conservation officer appointed by the Board.]

### **Licenses for the sale of salmon, trout and eels**

*Prohibition of sale, etc., of salmon, trout and eels without license.*

#### **113. —**

(1) Subject to subsection (3), no person shall sell, or offer or expose for sale, or have in his possession for sale at any place or from or in any vehicle, salmon, trout or eels unless he is the holder of a license for the time being in force (in this Part referred to as a "dealer's license ") authorising him to sell salmon, trout or eels at that place, or, as the case may be, from that vehicle.

(2) Any person who, not being the holder of a dealer's license, sells, offers or exposes for sale, or has in his

possession for sale salmon, trout or eels, or being the holder of such a license sells, offers or exposes for sale, or has in his possession for sale salmon, trout or eels at a place or, as the case may be, from or in a vehicle, other than that specified in the license, shall be guilty of an offence under this Part.

(3) This section shall not apply to—

- (a) the Board; or
- (b) a fisherman selling only fish of his own lawful capture; or
- (c) the holder of a fish culture license under section 11, in relation to fish reared in the fish farm with respect to which the license is in force; or
- (d) a person who has possession of fish for use for catering purposes in premises in which he carries on the business of a hotel, restaurant or guest house or of providing board and lodging or meals for reward, or who sells fish or offers or exposes fish for sale as or as part of a meal in the ordinary course of such a business[ or
- (e) a person selling a fish in pursuance of section 181(2) or of a direction given by the Ministry under section 198(1)].

*Register to be kept by holder of license.*

**120. —**

[(1) Every holder of a dealer's license—

(a) shall keep or cause to be kept at the place or premises to which the license relates or at such other place as may be permitted by the Board a register in such form as may be prescribed by byelaws—

(i) of all salmon, trout or eels acquired, by whatever means and whether in the course of his business as a dealer or otherwise, by him or by any person acting on his behalf, and

(ii) of all salmon, trout or eels disposed of, by whatever means and whether in the course of his business as a dealer or otherwise, by him or any person acting on his behalf; and

(b) shall enter or cause to be entered in the register such particulars relating to such salmon, trout or eels (other than any particulars as to price) as may be so prescribed.]

(2) A separate register shall be kept in respect of each place or set of premises, or, as the case may be, each vehicle, with respect to which a dealer's license is for the time being in force.

(3) Where a dealer's license is issued with respect to a vehicle, the register referred to in subsection (1) shall be kept in that vehicle whenever the vehicle is being operated in the ordinary course of business, and at other times shall be kept at such place as may be prescribed [by byelaws]; and, accordingly, references in this Part to any place or premises where the register is required to be kept shall, as the case requires, be construed as references to that vehicle or the place so prescribed.

(4) The particulars referred to in subsection (1) shall be entered in the register on the same day as that on which the purchases, receipts or sales were made or received.

(5) Subsection (1) shall not apply with respect to any one or more sales by retail made to any one person on any one day where the total weight of the fish sold to that person on that day does not exceed [2.25 kilograms], provided that a statement of the aggregate weight of all the fish which were the subject of such sales to all such persons on that day is entered in the register in such manner as may be prescribed [by byelaws].

(6) Any authorised officer may inspect any register kept in pursuance of this section during such time as the place where the register is required to be kept under this section is open for the carrying on of business or at such other reasonable hours as the Board may prescribe by byelaws; and it shall be the duty of the license-holder and of every person keeping the register, upon the request of an

authorised officer, to produce for inspection by him that register, and also all invoices, consignment notes, receipts and other documents (including copies thereof where the originals are not available) which may be required to verify any entry in or explain any omission from the register, and to allow the authorised officer to take copies of or extracts from the register or any such document.

(7) A demand for the inspection of a register or other document under subsection (6) shall be deemed to have been duly made to the license-holder if the demand is made verbally at the place, premises or vehicle where the register is required to be kept under subsection (1) or (3) to any person in the employment of the license-holder.

(8) A person who holds or has held a dealer's license shall preserve and retain any register kept by him under this section [together with any documents which may be required to verify any entry in or explain any omission from that register] for a period of six months after the expiration of the latest year in which an entry was made in the register.

(9) Any holder of a dealer's license who contravenes any provision of this section shall be guilty of an offence under this Part.

(10) Any person who wilfully or negligently makes or causes to be made in a register kept under this section any entry which is false or misleading in any material particular shall be guilty of an offence under this Part.

(11) In this section "authorised officer " has the same meaning as in section 112(6).

*Marking of packages containing salmon, trout or eels.*

**122. —**

(1) Every package containing salmon, trout or eels in course of transit in Northern Ireland shall be marked conspicuously on the outside with the words "salmon and trout' or the word "salmon', or the word "trout', or the word "eels', as the case may require, and shall have also marked thereon or on a label affixed thereto the name and address of the consignor thereof.

(2) Where any package containing salmon, trout or eels is not marked in the manner required by this section, any person—

(a) sending or consigning the package for transit in Northern Ireland; or

(b) carrying the package in Northern Ireland for reward (except in a case where that person proves that he did not know or could not reasonably have known that the package contained salmon, trout or eels);

shall be guilty of an offence under this Part.