

**IP(08)04**

***Fisheries Management Focus Area Report***

***European Union -UK (Northern Ireland)***



## **FOCUS AREA REPORT ON MANAGEMENT OF SALMON FISHERIES IN UK-NI**

The purpose of this report is to provide a basis for evaluating the extent to which the fisheries management approach in UK- Northern Ireland (UK-NI) and the cross border Foyle and Carlingford catchments is meeting or will meet the NASCO goals to:

- promote the diversity and abundance of salmon stocks
- maintain all stocks above their conservation limits

by applying the principle agreed in adopting the Precautionary Approach that conservation limits and management targets should be set for each river and combined as appropriate for the management of different stock groupings defined by managers.

The report describes in concise and simple terms:

- the measures already in place that address the NASCO agreements relating to fisheries management
- further actions proposed within the UK-NI Implementation Plan to meet these agreements
- progress with implementing these actions

Interpretation of the terms used above in UK-NI is as follows:

NI stock = salmon spawned in all NI rivers\*

FCB stock = salmon spawned in all rivers discharging to the sea in the Fisheries Conservancy Board (NI) jurisdiction

Loughs Agency stock = salmon spawned in all rivers discharging to Lough Foyle and Carlingford Lough

River Stocks = the discrete salmon population (or populations) spawning in each of NI's salmon rivers

Conservation Limit = annual minimum number of adult salmon needed to spawn in each salmon river to avoid decline of that river stock

Management target = to ensure that in most rivers in most years sufficient adult salmon are spawning to maximise output of smolts from freshwater

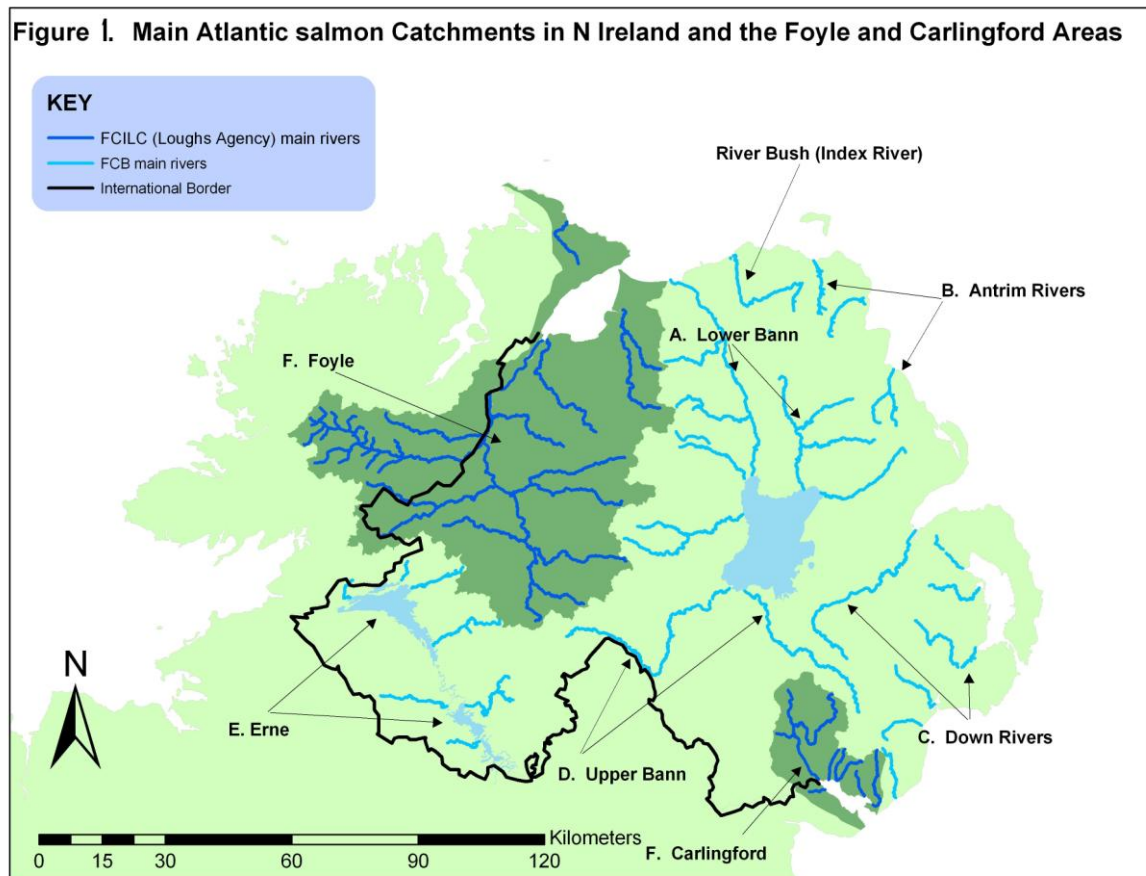
Mixed stock fishery = a fishery exploiting a significant number of salmon from 2 or more river stocks

\* Following NASCO definitions there are 27 salmon rivers in NI. Estimates of stock status at national aggregate level are derived from modelling carried out by ICES.

## DESCRIPTION OF THE FISHERIES

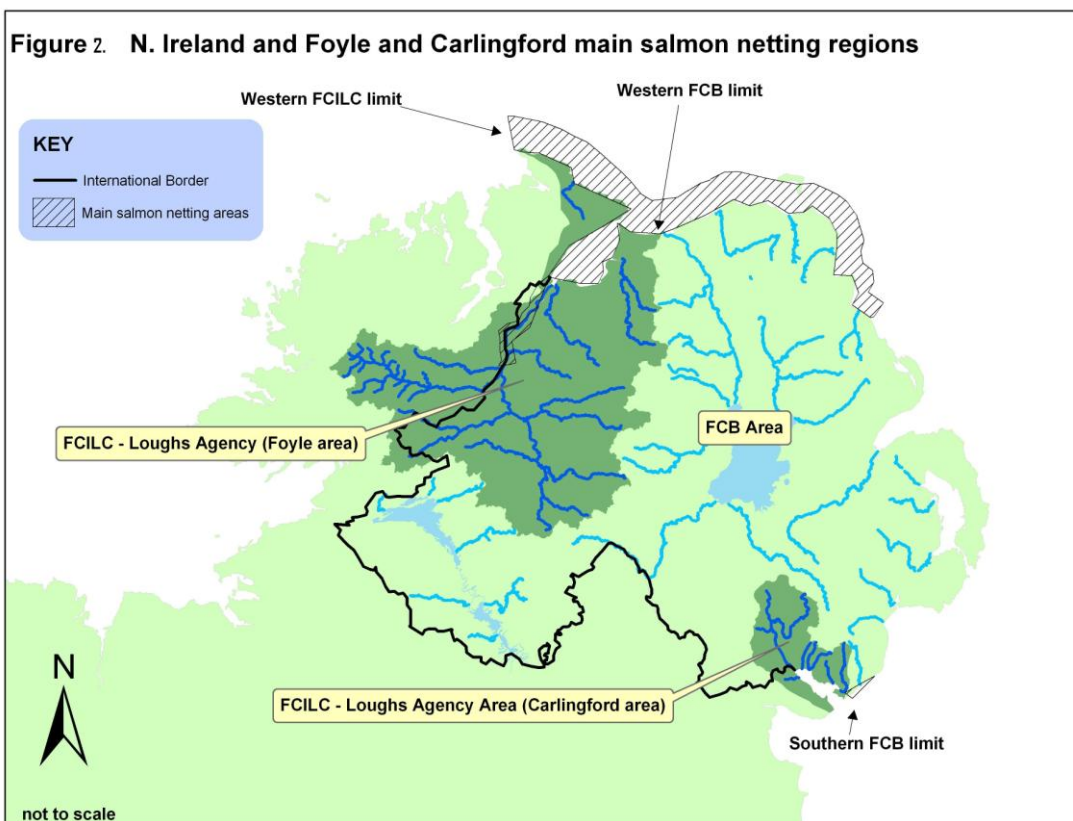
The Fisheries Conservancy Board (FCB) has responsibility for salmon fisheries in Northern Ireland comprising the Lough Neagh catchments; the Erne catchment; the Co. Antrim and Co. Down coastal rivers and coastal waters.

The Loughs Agency has responsibility for salmon fisheries in Northern Ireland and parts of the Republic of Ireland comprising the Foyle and Carlingford catchments, Lough Foyle, Carlingford Lough and coastal waters.



The FCB and Loughs Agency are responsible for licensing, enforcement and the introduction of salmon fishing regulations in their respective jurisdictions.

An overview of the coastal commercial fisheries and rivers where angling takes place is shown in Figure 2 below. **It should be noted that the extent of the commercial fishery (netting) reflects the position in 2006.**



Details of fishing effort and the management regime are tabulated below:

**The Fisheries Conservancy Board area:**

<i>Fishery location:</i>	<i>Fisheries Conservancy Board Area.</i>
<i>Gear types:</i>	<i>2 Drift Nets, 1 Draft Net, 2 Bag Nets in 2007</i>
<i>Magnitude of fishery (e.g. catch or effort):</i>	<p>a) Commercial  2,404 salmon caught in 2003  2,592 salmon caught in 2004  3,239 salmon caught in 2005  2,460 salmon caught in 2006</p> <p>(b) Angling  2,026 salmon caught in 2003  3,283 salmon caught in 2004  1,926 salmon caught in 2005  1,386 salmon caught in 2006</p>
<i>Current management restrictions:</i>	<p><i>FCB Byelaws</i></p> <p><b>Commercial exploitation requirements:-</b>  <i>licencing regime; season 18<sup>th</sup> March – 15<sup>th</sup> Sept; in-season weekend closure 8am Saturday – 8am Monday; Net type and dimension restrictions; restriction of fishing near the mouth of a river.</i></p> <p><b>Angling exploitation requirements:-</b>  <i>Licencing regime; various close seasons within the range 1 February to 31 October. Catch and release to 31 May and two salmon daily bag limit thereafter.</i></p>

	<i>Tagging and logbook system applies to both commercial and angling exploitation</i>
<i>Outline pre-agreed procedures (or provide references)</i>	<i>The salmon management plan has been established to provide biological reference information with which to assess the conservation status of stocks and to direct management in the FCB area. A conservation limit has been derived for the River Bush and provisional conservation limits have been established for five other index rivers based on ground truthed habitat surveys and the application of stock recruitment data from the River Bush project.</i>
<i>Principal river stock(s) exploited:</i>	<i>Lower River Bann and Lough Neagh tributaries, Co. Antrim/Down coastal rivers, Lough Erne Catchment and Northern Area of Lough Melvin.</i>
<i>Other fisheries exploiting stock(s)</i>	<i>Minimal -Donegal Area, Loughs Agency (LA) Area</i>
<i>Other information:</i>	<i>Policy for salmon fisheries in the FCB area of Northern Ireland lies with the Department of Culture, Arts and Leisure.</i>

**The Loughs Agency area:**

<i>Fishery location:</i>	<i>Loughs Agency (cross-border Foyle/Carlingford system)</i>
<i>Gear types:</i>	<i>18 Drift Nets, 10 Draft Nets,</i>
<i>Magnitude of fishery (e.g. catch or effort):</i>	<p>32,732 salmon caught in 2003  22,290 salmon caught in 2004  25,534 salmon caught in 2005  12,176 salmon caught in 2006</p> <p>(b) Angling.  4,921 salmon caught in 2003  4,914 salmon caught in 2004  7,612 salmon caught in 2005  5,254 salmon caught in 2006</p>
<i>Current management restrictions:</i>	<p><i>Lough Agency Byelaws</i>  <b>Commercial Exploitation requirements:-</b>  <i>Six week season for the commercial nets. Drift nets fish for 4 days each week (6am-6pm) Draft nets 5 days (are restricted also by tides); Net mesh and size restrictions.</i>  <b>Angling Exploitation Requirements:-</b>  <i>Various close seasons within the range 1 March to 31 October. One salmon daily bag limit to 31 May and four salmon daily bag limit thereafter.</i>  <i>Tagging and logbook system applies to both commercial and angling exploitation</i></p>
<i>Outline pre-agreed procedures (or provide references)</i>	<i>The Loughs Agency manages the commercial and recreational exploitation of salmon through the application of a real time management regime. If counts (using electronic counters) do not reach defined in-season targets(based on available nursery habitat) then the fisheries may be closed, or extended if the conservation limit is achieved.</i>
<i>Principal river stock(s) exploited:</i>	<i>River Foyle and tributaries. Rivers Faughan and Roe.</i>

<i>Other fisheries exploiting stock(s)</i>	<i>Minimal - Donegal Area, Fisheries Conservancy Board area</i>
<i>Other information:</i>	<i>Policy on salmon fisheries is discussed with the Department of Culture, Arts and Leisure.</i>

### Recent key fishery management measures

#### *FCB Area*

Ninety percent of licensed commercial salmon fishing engines in the FCB area were removed from the fishery in 2003/04 through the introduction of a Department of Culture, Arts and Leisure (DCAL) sponsored voluntary buy-out scheme. This left only 2 commercial drift nets, 2 fixed bag nets and 1 tidal draft net in operation in 2006.

A review of catch and particularly of stock composition of catch by the remaining commercial fisheries in the FCB area was undertaken in 2007 against ongoing concern about the status of stocks intercepted by these nets as shown by monitoring since 2002. A management approach to this review is outlined below.

#### *Loughs Agency Area*

In 2007 the Loughs Agency introduced regulations to prohibit drift net fishing seaward of Lough Foyle. As conservation limits are being met in all the Loughs Agency's catchments a small number of drift nets will be allowed to operate inside Lough Foyle to fish for the surplus. A voluntary scheme was introduced for the draft net fishery. These changes were implemented prior to the commencement of the 2007 commercial season and 18 drift net licences were issued for the Lough with 10 draft nets to fish in the main river.

Measures to restrict the commercial fishery in the Republic of Ireland in 2007 have complemented the above approach in the FCB and Foyle areas and **has provided for a significantly precautionary response to stock status around the island of Ireland.**

### Future Management Priorities

#### *FCB Area*

- Develop proposals in 2008 to further restrict remaining commercial fisheries in the FCB area, particularly those identified as intercepting mixed stocks or stocks from rivers failing to achieve Conservation Limits
- Pursue legislative amendments to ban the sale of rod caught salmon by 2009.

- Introduce angling regulations to include measures such as catch and release, use of barbless hooks, early closures and shortened seasons as necessary based on monitoring of attainment of river level Conservation Limits.

#### *Loughs Agency Area*

- Monitor and review existing commercial fisheries and regulatory controls on an annual basis
- Introduce angling regulations annually as necessary including catch and release, use of barbless hooks, early closures and shortened seasons.

### IDENTIFICATION OF EXPLOITED STOCKS AND REFERENCE POINTS USED TO DEFINE ADEQUATE ABUNDANCE OF THE STOCK

#### Exploited stocks

An overview of the coastal commercial fisheries and rivers where angling takes place is shown in Figure 2 above.

#### Reference points

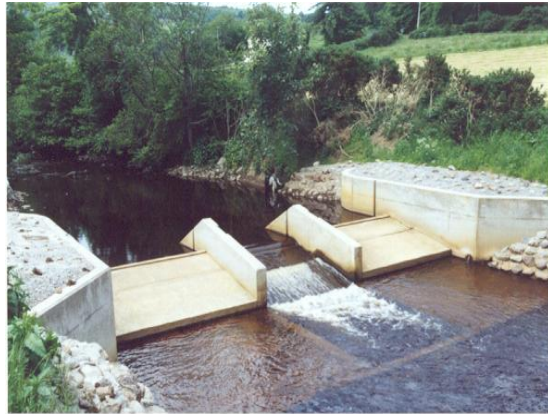
##### *FCB area*

The most comprehensively developed conservation limit for N. Ireland at present is that for the R. Bush, derived from a whole river stock/recruitment relationship, based on estimates of ova deposition and smolt counts.

Conservation limits have now been established for a number of other important index rivers in the FCB area of Northern Ireland. A habitat inventory was compiled for each of the rivers including the Rivers Main, Blackwater, Glendun, Moneycarragh and Shimna. Conservation limits were determined through the transport of optimal productivity metrics measured from the River Bush stock recruitment study to measured habitat parameters from each index river. Counters were installed on these rivers to assess compliance with the CLs and have been operated since 2002. The Shimna River has no fish counter station currently and rod catch has been utilised to assess spawning escapement.

A counter at Portna on the mainstem of the Lower River Bann provides a yearly index, albeit relative, of escapement into the Neagh/Bann catchment. It also provides useful information on run timing indicating the peak migration periods (which can be established from relative data) and helps to indicate the lag time between peak passage in the Lower River Bann and movement throughout the upstream counters on the Rivers Main and Blackwater.





*Glendun Counter*



*Main Counter*

### *Loughs Agency Area*

A spawning target based management system has been operating in the Foyle fishery area for many years, based on a 1975 scientific study of stock and recruitment relationships in the system. This was revised in 1998 and is now based on juvenile salmonid habitat assessments. Associated management targets are operated on the basis that, if, at certain dates during the season, target numbers of fish have not been achieved at Sion Mills Weir (R. Mourne), and at two other rivers (R. Faughan & R. Roe) then specified closures of the angling and/or commercial fisheries take place. Conversely, if the in-season management targets have been met by the normal end of the commercial netting season, an extension is granted.

### STATUS OF THE STOCK RELATIVE TO THE ABUNDANCE CRITERIA SPECIFIED

#### *FCB Area*

In 2006 83% of target egg deposition was achieved from wild spawning on the River Bush which represented an improvement on the previous year when 66% of target egg deposition was achieved from wild spawning (Fig. 3). It also represents an increase compared to the previous 10-year average (60%). The CL on this river has been reached or exceeded only once in the last 10 years.

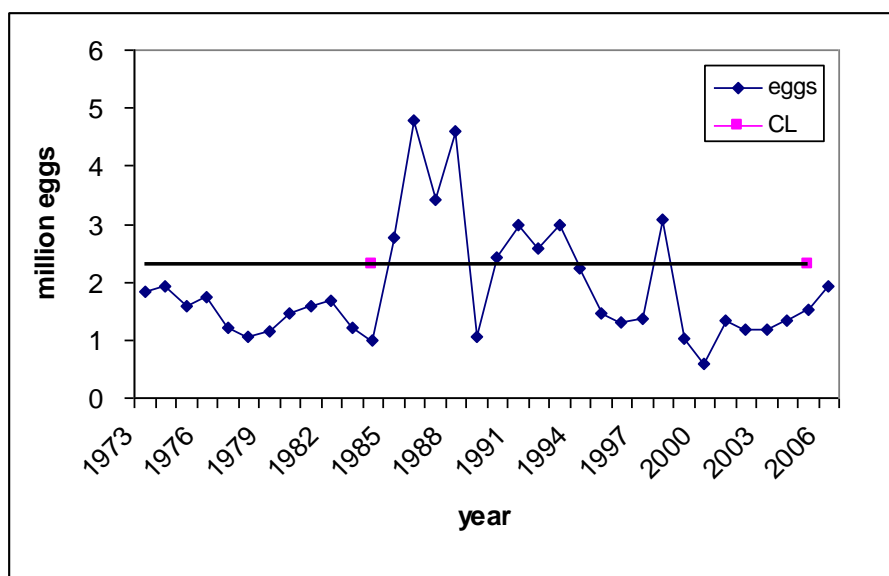


Fig. 3. Wild salmon ova deposition for the River Bush in relation to Conservation Limit.

The mean five year compliance against conservation limit, after angling, in other index catchments has been 42%, 47%, 53%, 46% and 54% for the Blackwater, Main, Glendun, Moneycarragh and Shimna respectively.

Table 3. Percentage compliance 2002-2006 with conservation limits for five monitored rivers in the Fisheries Conservancy Board area of UK (N. Ireland).

River	Fishery Year				
	2002	2003	2004	2005	2006 <sup>1</sup>
Blackwater	54.5	38.9	44.7	37.6	35.0
Main	45.6	40.1	49.5	53.6	45.6
Glendun	56.6	45.3	72.8	42.2	56.6
Moneycarragh	68.1	16.5	56.9	44.8	40.3
Shimna	53.4	15.6	87.4	60.7	n/a

#### *Loughs Agency Area*

The management targets for the 3 Loughs Agency index rivers (with the possible exception of the River Roe (see below) have been met only after the closure of the commercial netting season in 2005, 2006 and 2007 and consequently no extensions or closures were initiated in these years.

<sup>1</sup> 2006 figures remain provisional until 2008.

Table 4. Percentage compliance 2002-2006 with conservation limits for four monitored rivers in the Loughs Agency cross border area.

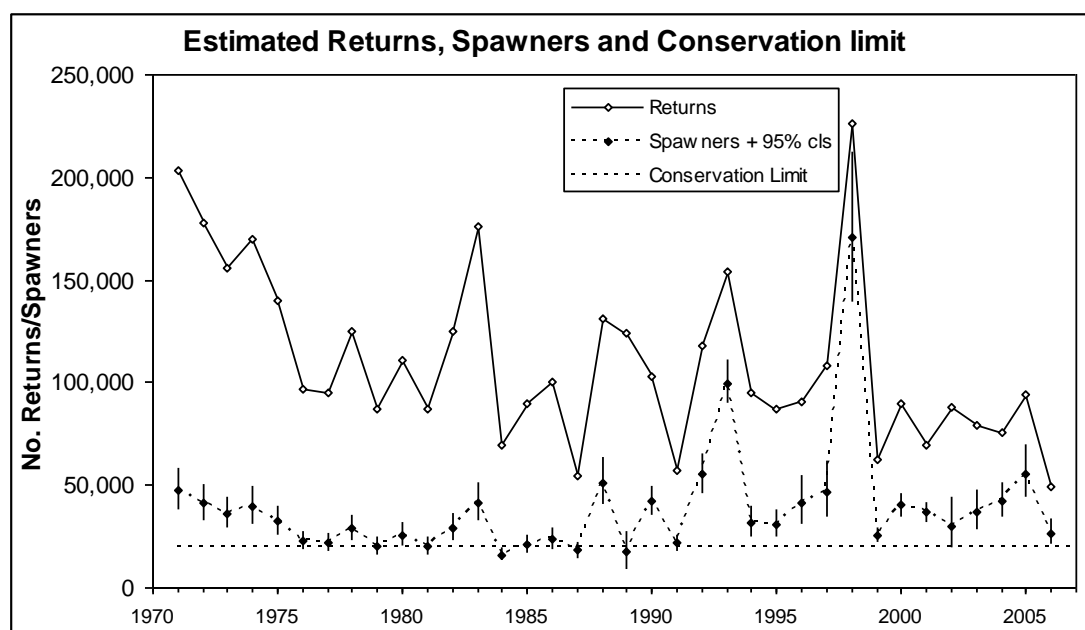
River	Fishery Year				
	2002	2003	2004	2005	2006 <sup>2</sup>
Mourne	162	152	128	117	117
Finn	106	119	70	158	106
Roe	298	223	105	159	81
Faughan	536	387	357	531	453

*Aggregate national level*

Data on catches, exploitation rates and on returns to Northern Ireland’s rivers of wild salmon are used each year to produce estimates of stock status at national aggregate level, derived from run-reconstruction modelling carried out by ICES (Figure 4).

For all years in the time series, returns have exceeded conservation requirements indicating an exploitable surplus of fish in the national stock. After accounting for exploitation, the estimates of spawners indicate that in most years spawners exceeded aggregated conservation requirements. Returns have trended downwards during the time series, whereas spawners have remained relatively stable for most of the time, but have increased somewhat in recent years. This reflects a trend for reductions in exploitation rates in coastal fisheries.

The most recent 5 year average of the estimated spawning stock in Northern Ireland’s rivers in 2006 was 38,315 fish of all sea ages. It is noted that, while the overall national stock status assessment is instructive, it does not illustrate the variation in stock status across areas and individual rivers.



<sup>2</sup> 2006 figures remain provisional until 2008.

***Figure 4. estimated returns of wild salmon to the coast, estimated spawning stock after fisheries and aggregate conservation limit for N. Ireland.***

## OTHER DIVERSITY CRITERIA

### *FCB Area*

Age composition and run timing of returning mature salmon are assessed from catch returns, fish counter data and scale readings. The adult run is dominated by 1 SW grilse with relatively low numbers of larger MSW fish. The commercial fishing effort in the FCB region extends from 18<sup>th</sup> March – 15<sup>th</sup> September. Commercial logbook returns indicate that peak exploitation is concentrated in June and July and focuses mainly on the 1 SW stock component.

The largest salmon producing catchment in the FCB region, the Lower Bann catchment, illustrates peak migration of salmon between June-July, although penetration upstream to the Lough Neagh spawning tributaries often lags into the autumn. Late summer/autumn run salmon are an important component of Glendun River stock (Antrim Rivers) and often constitute the majority of the population. Scale reading indicates these are principally large late running 1 SW fish. A small number of large (MSW) fish are detected by fish counters principally during the spring months on the Main (Lower Bann), Blackwater (Upper Bann) and the Glendun Rivers, however, numbers are limited and constitute less than 5% of the total seasonal migration.

### *Loughs Agency Area*

The River Finn in the Foyle catchment has a spring multi-seawinter run and also a 1 sea winter run usually entering freshwater late May /early June although these timings appear to have become later in recent years. The River Mourne also has a reasonable multi sea winter spring run but the majority of the fish run as 1 sea winter salmon during June and July tailing off substantially in August but with a relatively constant return of fish until December. The River Roe which enters Lough Foyle directly tends to get a 1 sea winter run from July generally peaking in August/September.

## MIXED STOCK FISHERIES

### *FCB Area*

A review of data from recapture of fish tagged as smolts in the small commercial fishery in 2007 has indicated that the 2 drift nets and 2 fixed bag nets operating on the Co. Antrim coast are intercepting salmon from 2 or more rivers. Whilst no microtags have been returned from the draft net operating on the Co. Down coast, this too must be suspected of being a mixed stock fishery in applying the Precautionary Approach.

Accordingly, it is DCAL policy to bring about a cessation of commercial fishing for salmon in the FCB jurisdiction and negotiations are underway to affect a voluntary buy-out of these nets.

### *Loughs Agency Area*

Whereas mixed stock fisheries might be defined as any fisheries operating outside estuary limits, the Loughs Agency introduced regulations in 2007 to prohibit drift net fishing seaward of Lough Foyle.

## MANAGEMENT TOOLS TO CONTROL HARVEST AND ADDRESS ANY FAILURE OR TREND IN ABUNDANCE OR DIVERSITY

Current and planned fishery management measures are described above. These are implemented in accordance with the following tools.

Salmon fisheries in Northern Ireland are regulated by legislative provisions made under 2 key pieces of primary legislation; the Fisheries Act (NI) 1966, and the Foyle Fisheries Act 1952. These provide for the making of regulations and byelaws, annually as required, that specify:

- a licensing regime (including charges for licences)
- close seasons
- bag limits,
- carcass tagging schemes

Further, there are provisions in the primary legislation regarding illegal capture (poaching), the protection of juvenile salmon, eggs and spawning areas and the free passage of migratory fish.

In addition many angling clubs are introducing voluntary regulations. These include catch and release and voluntary bag limits.

### *FCB Area*

Salmon certificates are granted under the 1863 Salmon Act which provides a title (property right) to fish. The title can be bought sold or inherited. Only 3 certificates remain in NI, attached to fixed bag nets, with only 2 owners exercising their right and eligibility for a licence to fish.

The rules governing eligibility for salmon net licences which become available only through death or retirement are set out in the FCB Fisheries Byelaws (NI) 2003 as amended. A licence may be issued to persons who have held a licence in any 1 of the 3 calendar years immediately preceding his application. A licence can be offered to the longest serving crew member of the boat. The licence cannot be passed automatically to a family member or sold.

Detailed provisions regarding affixing a gill tag to every wild salmon or sea trout captured or retained are set out in the Fisheries (Tagging and Logbook) Byelaws (NI) 2001 as amended.



*Figure 5 Rod captured salmon marked with a carcass tag.*

Angling measures including close seasons and bag limits are set out in 2003 Byelaws as amended.

#### *Loughs Agency Area*

Consultation on the draft Foyle and Carlingford Fisheries (NI) Order 2007 ran from 17th November 2006 to 15th January 2007. This Order amends the Foyle Fisheries Act (Northern Ireland) 1952 (the 1952 Act) to, inter alia, update a number of the existing provisions of the 1952 Act relating to the conservation and protection of inland fisheries and makes a number of minor amendments to the Fisheries Act (NI) 1966 and other fisheries legislation in accordance with the requirements of the North/South Co-operation (Implementation Bodies) (Northern Ireland) Order 1999.

Similar provisions to those in FCB byelaws are contained in the following:

- Foyle Area and Carlingford Area (Licensing of Fishing Engines) Regulations 2001, as amended
- Foyle Area (Control of Drift and Draft Net Fishing) Regulations 2004, as amended
- Foyle Area and Carlingford Area (Tagging and Logbook) Regulations 2001, as amended

- Foyle Area (Control of Netting) Regulations 1981, as amended
- Foyle Area and Carlingford Area (Angling) Regulations 2001, as amended
- Foyle Area and Carlingford Area (Close Seasons for Angling) Regulations 2001, as amended

### *Unreported catches*

Levels of unreported catch in the commercial fisheries appear to have stabilised at around 10% from 1996 until the introduction of the carcass tagging scheme in 2001 (introduced part way through the year). The carcass tagging scheme has further reduced the unreported catch to under 5% with some years exhibiting less than 1%. The scheme has placed a legislative onus on fishermen to tag wild salmon, record fishing effort/catch and has represented a deterrent to the capture and sale of untagged wild salmon.

Estimates of unreported catches in rod fisheries had not been available until the introduction of the carcass tagging scheme. Total unreported angling catch (no. salmon) has varied between around 3,000 - 4,000 fish since the introduction of the tagging scheme. The number fluctuates depending on prevailing angling conditions, effort and logbook/tag return rates. The total rod catch figure reported to ICES and NASCO each year *accounts for* the unreported catch and has done since the beginning of the carcass tagging programme in 2002.

## FACTORS CONSIDERED IN THE FISHERY MANAGEMENT DECISION MAKING PROCESS

### Uncertainty in the assessments

Policy in UK-NI is to apply fully the precautionary approach and so to develop **scientifically robust means** to monitor index rivers for salmon numbers and where target levels are not attained, to identify and address the problem using expertise and resources available to do so.

It is considered that the scientific methodologies and approach set out in the Salmon Management Plans for the 2 jurisdictions provide a sound basis for assessment of stock status at river, jurisdiction and national level. Reliable information derived over time from the several important conservation databases on index rivers in different bio-geographical areas is used to inform management measures to achieve the national objectives to conserve, enhance, restore and rationally manage NI salmon stocks. Uncertainty in the quantity or quality of the raw datasets is fully factored in to the data interpretation process by expert scientists in arriving at conclusions on the attainment or otherwise of Conservation Limits and ultimately the management target.

### Abundance and diversity of the stock

Management is based on establishing Conservation Limits and monitoring attainment of them at river/ population level. Exploitation can be regulated to protect age composition correlated to run timing within these populations.

#### Selectivity of the fisheries

It is policy that fisheries taking significant numbers of salmon from 2 or more river stocks or from stocks not achieving Conservation Limit should not be permitted. Strategy to implement this policy is described above.

#### Non fishery factors affecting the national stock

Strategy to implement NASCO agreements on protection and restoration of habitat and aquaculture, introductions and transfers, and transgenics (including diseases and parasites) is being developed and is reported in the UK-NI Implementation Plan. Marine survival is actively monitored in NI. Predation has also been assessed.

#### Other fisheries exploiting the stock

Exploitation rates of the grilse stock in distant water fisheries have been very low, at 1% or less, even when significant fisheries were operating at West Greenland and Faroes. No tag returns from fishing at West Greenland have been noted in recent years and there has been no fishery at Faroes since 2001.

Concerns have been raised about potential for exploitation of southern European salmon post-smolts and older fish in pelagic, mainly mackerel, fisheries operating in the Norwegian Sea and other sea areas including to the north and west of the British Isles. ICES has examined available evidence, and concluded that significant numbers of salmon by-catch in these fisheries was unlikely, due to the nature of the gear and the fishing methods, however this is being further investigated. Estimates of salmon by-catches available so far suggest that these are insufficient to impact pre fishery abundance or returns to home waters.

### THE EXPECTED EXTENT AND TIMESCALE OF EFFECTS OF MANAGEMENT ACTIONS

The national policy covering both jurisdictions is to phase out **all** mixed stock fisheries and to introduce legislation to control **all** other commercial and recreational fisheries where they impact on rivers not achieving Conservation Limits.

Research based on the coded wire tag programme at the River Bush has indicated levels and patterns of exploitation in homewater and other fisheries on Northern Ireland's 1SW stock since the mid 1980's. Average exploitation rate of the Bush stock in coastal fisheries in the period 1988-1997 was 63%. Most of this exploitation took place in Northern Ireland's fisheries, mainly in the FCB area where the River Bush is located however significant exploitation was recorded in some years in other Irish fisheries.



Monitoring of marine survival and achievement of Conservation Limit on the River Bush during this period coupled with knowledge of exploitation rate of the stock led to the decision to reduce this exploitation.

The effect of commercial fisheries on the FCB stocks has been reduced considerably since 2002 due to the **permanent** buy out by DCAL of 90% of the salmon fishery capable of operating in the FCB area. The five year average catch since the net buyout in 2001 was 2,852 fish, which is around 27% of the average catch during the five years prior to the net buyout scheme (10,720).

In 2006 the overall exploitation of wild 1SW R. Bush salmon in the Irish homewater fisheries was 28.1% which represented a decrease on the 2005 rate (31.1%) and was below the previous 10 year average (47.3%).

**The overall salmon catch for UK (N. Ireland) for 2006 was 28.5t (19.3t nets, plus 9.2t rods).**

The regulations introduced in 2007 in the Foyle Area, combined with those introduced in the Republic of Ireland, will lead to much reduced catches around the Island of Ireland. It is anticipated that compliance with Conservation Limits in UK-NI rivers will reflect an improvement in 2007 and thereafter.

## SOCIO-ECONOMIC FACTORS

The FCB commercial fishery, which was mainly around the North Antrim coast had provided significant economic benefits to the fishermen and their crews and a livelihood for many. The fishery was a part of the culture and social fabric of this marginal rural area. Accordingly, the 90% reduction in the fishery was achieved through a voluntary scheme where fishermen received a valuation of their asset(s) and a sum in compensation for these and for lost catch revenue derived from track record of catch. Those few fishermen who chose to remain in the fishery did so.

The Loughs Agency prepared a hardship package in 2007 for those impacted by the requirement to cease fishing in accordance with regulation, and for those who ceased on a voluntary basis.

The potential of salmon angling to deliver social, economic and health and well being benefits to Northern Ireland has been recognised and a study has been commissioned. It is hoped that rational management of all fisheries combined with other measures outlined in the UK-NI Salmon Management Strategy (NASCO Implementation Plan) will yield exploitable surplus upon which to develop Northern Ireland's rod fisheries now and in the future.

## PROGRAMMES USED TO MONITOR THE EFFECT OF MANAGEMENT MEASURES AND IDENTIFY INFORMATION DEFICIENCIES AND TIMEFRAME FOR RESOLUTION

The stated central aim of management is “*to ensure that in most rivers in most years sufficient adult salmon are spawning to maximise output of smolts from freshwater and to monitor the river or catchment for salmon numbers and where levels are not attained to identify and address the problem.*”

The effect of measures, such as those described above to reduce commercial exploitation, is assessed on an ongoing basis in terms of relative compliance with Conservation Limits post measure implementation. Regulatory controls consistent with Decision Structure (SCPA (02) 16) are outlined above. The development of these control and monitoring measures has underpinned the application of the precautionary to date, as follows:

*FCB Area*

The Salmon Management Group[\*], comprising managers and scientists, which manages the Salmon Management Plan, meets regularly to review the Plan and Conservation Limits. The Group reviews existing regulations and where appropriate makes recommendations to the statutory authorities for modification or the introduction of new controls based on the management information. Management information is compiled from habitat analysis, fish counter information, annual electric fishing surveys and a tagging scheme which provides data on exploitation. The information is held on a Geographical Information System (GIS) database which is maintained and expanded on an ongoing basis. The GIS and counter databases provide the mechanism to monitor compliance against Conservation Limits and trigger management actions to address impacts on the stocks.

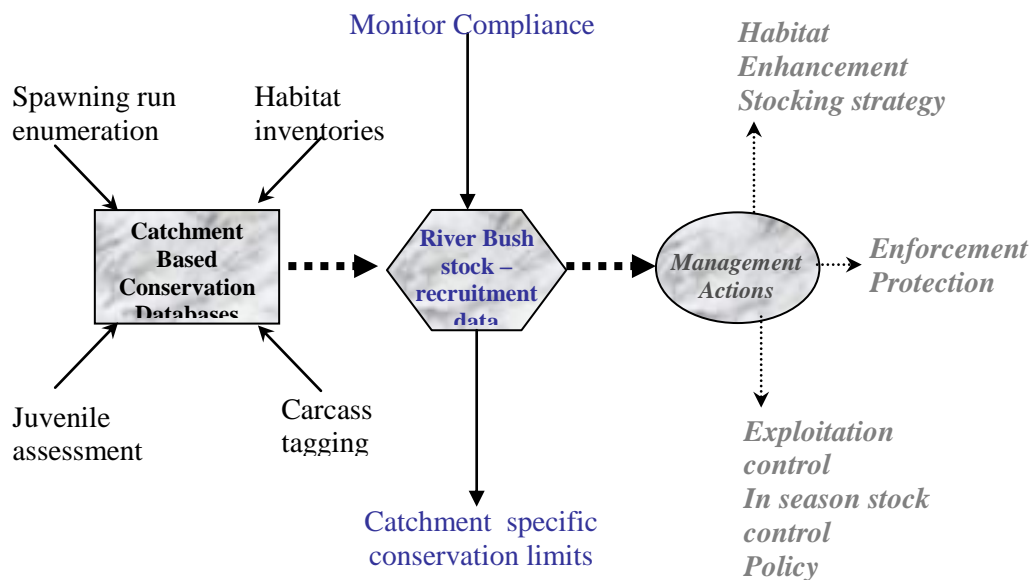


Figure 6 Flow model of the Salmon Management Plan

The River Bush Salmon Project is an ICES index river assisting assessment of salmon stocks at international level, through the ICES, and assists NASCO in determining marine survival levels. Whilst direct involvement in the SALSEA project is

constrained by scale and thus resource, every effort is made to inform the project with work and expertise at the River Bush Salmon Station. Work to contribute to the genetics baseline of Irish salmon populations will flow into this strand of the SALSEA project.

[\*] The Stage 2 Review of Public Administration announcement on 21 March 2006 confirmed that the functions of the Fisheries Conservancy Board NI (FCB) would transfer to the Department of Culture Arts and Leisure.

There are two main facets to the task to be completed by end 2008:

- a) Ensure the existing functions are taken into the Department seamlessly
- b) Bring about an orderly wind down of the FCB.

This very significant reorganisation of fisheries management responsibilities may delay or frustrate work towards Implementation Plan objectives, but it is hoped that integration will prove beneficial in the medium to longer term. The Salmon Management Group has taken steps to ensure continuity of Salmon Management Plan work.

#### *Loughs Agency*

The Loughs Agency spawning target (Conservation Limit) based management system has been the basis to managing the Foyle fisheries for some 30 years. Associated management targets are operated on the basis that, if, at certain dates during the season, target numbers of fish have not been achieved at fish counters on Sion Mills Weir (River Mourne), and at two other rivers (River Faughan & River Roe) then specified closures of the angling and/or commercial fisheries take place. Conversely, if the in-seasonal management targets have been met by the normal end of the commercial netting season, an extension is granted.

Additional information is gathered through habitat surveys, juvenile stock assessment, the monitoring of returning adults through logbook returns from commercial and recreational fishers, fish counters and redd counts. This information is collated and managed on a GIS which can then be queried to identify areas where agency resources may be targeted more effectively, e.g. towards water quality problems or degraded habitat.