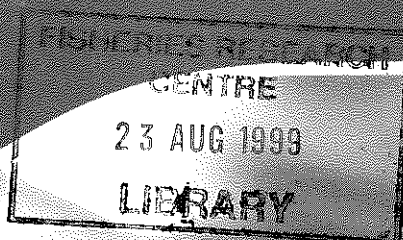
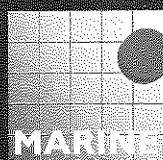


# Report on the Implementation of the Recommendations of the Salmon Task Force



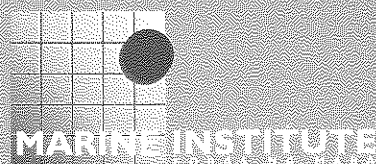
February 1998



**MARINE INSTITUTE**  
FORAS NA MARA

MARINE RESOURCE SERIES

NO. 4 1998



*"to undertake, to co-ordinate, to promote and assist in marine research and development and to provide such services related to marine research and development that, in the opinion of the Institute, will promote economic development and create employment, and protect the marine environment".*

Marine Institute Act, 1991

## Marine Resource Series

The Marine Resource Series was established by the Marine Institute to promote the dissemination of results of on-going research to the wider marine community. It is intended that the Series will stimulate discussion on the contribution of R & D to the development of the marine sector.

The Marine Resource Series will cover all aspects of marine research and development as defined in the Marine Institute Act.

*Note:* Responsibility for information presented and views expressed in the Series rest solely with the author and do not necessarily represent those of the Marine Institute.

*Further copies of this publication, and of others in the various Marine Institute series, may be obtained from:*

### The Marine Institute

80 Harcourt Street  
Dublin 2  
Ireland

Ph: +353 1 4780333  
Fax: +353 1 4784988  
Web-Site: [www.marine.ie](http://www.marine.ie)

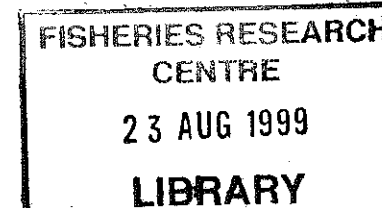
Ireland is >90% undiscovered, undeveloped and underwater.



0011159



## Report on the Implementation of the Recommendations of the Salmon Task Force



February 1998

Marine Institute

*Report*

*on the*

*Implementation*

*of the*

*Recommendations*

*of the*

*Salmon Task Force*

February 1998

# Glossary of Terms used in the Report

*These are descriptions and not necessarily definitions*

<i>Conservation:</i>	Ensuring that the habitat for a species is as suitable as possible and that the species is not exploited beyond its optimum sustainable yield.
<i>Exploitation:</i>	Removal of fish from a stock by man, (includes all mortality, poaching, discards drop outs from nets etc.).
<i>TAC:</i>	Total Allowable Catch – The total number of salmon permitted to be taken by exploitation nationally.
<i>Quota:</i>	That portion of the Total Allowable Catch allocated to each region or each fishing method
<i>Escapement:</i>	Those fish that are not caught by fishing (legal or illegal methods) and therefore constitute the potential reproductive capacity of the species.
<i>Grilse:</i>	Salmon which have spent from 12 to 18 months feeding at sea, referred to in the scientific literature as 1-sea-winter fish.
<i>Multi Sea Winter Salmon</i>	Salmon which have spent more than one winter at sea (Generally two winters for Irish Salmon but sometimes three)
<i>Spring Salmon:</i>	Multi-sea-winter salmon, appearing in rivers mainly from January to May.
<i>Wild Atlantic salmon:</i>	Salmon or grilse which have been born naturally in a river, migrated to sea and return to their natal river.
<i>Index Rivers:</i>	Rivers of differing characteristics selected to be representative and reflective of a number of river systems.
<i>Draft Net:</i>	A net used from the shore for the purpose of encircling fish and hauling them to dry land for capture.
<i>Drift Net:</i>	A meshing net, fished at or near the surface of water, which is totally unfixed to any anchor and therefore floats freely with a tide or current of water.
<i>Traps:</i>	Any fixed box, crib, net or other device, across all or part of the width of any river.

## Implementation of the Salmon Task Force Report

<b>1.0 Introduction.....</b>	<b>1</b>
1.1 Overview .....	1
1.2 The Proposed New Management System.....	2
<b>2.0 MANAGEMENT OF THE STOCKS .....</b>	<b>3</b>
2.1 Spawning requirements.....	3
2.1.1 Determining Optimum Spawning Numbers .....	3
2.1.2 Setting Spawning Escapement Targets .....	3
2.1.3 Spawning Escapement Targets for 2-Sea Winter Salmon .....	4
2.1.4 Data Requirement .....	4
2.2 Determining Compliance with Spawning Escapement Targets.....	4
2.2.1 The Methods .....	4
2.2.2 Non Compliance with Targets .....	5
<b>3.0 MANAGING THE FISHERIES .....</b>	<b>5</b>
3.1 Management Structures .....	5
3.2 Total Allowable Catch/Quotas .....	6
3.2.1 A National Quota in Ireland. ....	6
3.2.2 Setting the National Quota .....	7
3.2.3 Setting the Quota in the Drift Net Fishery.....	7
3.2.4 Setting the Quota in the other Commercial Net Fisheries. ....	8
3.2.5 Angling Quota.....	8
3.2.6 Allocation of the Quota.....	9
3.2.7 Defining Geographical Areas for Quotas.....	9
3.2.8 Setting the Quota on a Scientific Basis .....	9

3.2.9 Implementation.....	10
<b>4.0 Enforcement and Monitoring .....</b>	<b>10</b>
4.1 Carcass Tags for Monitoring .....	10
4.1.1 Introduction.....	10
4.1.2 Rationale for Carcass Tagging.....	11
4.1.3 Implementing A Carcass Tagging Programme .....	11
4.1.4 Tag Specification .....	11
4.1.5 Costs of Tags and Suppliers .....	12
4.1.6 Number of Tags Required and Costs.....	12
4.1.7 Tagging of Farmed Salmon .....	12
4.1.8 Legislation on Farmed Fish .....	13
4.1.9 Differential Tags .....	13
4.1.10 Implementation of the Tagging Scheme.....	13
4.1.11 The Angling Catch.....	14
4.1.12 Salmon in Cold Storage at Present .....	14
4.1.13 All Island Tagging.....	14
4.2 ENFORCEMENT.....	15
4.2.1 Legislation .....	15
4.2.2 Practical Aspects in the Field .....	15
4.3 OTHER REQUIREMENTS FOR ENFORCEMENT .....	16
4.3.1 Log Books for Commercial Nets.....	16
4.3.2 Dealers Licence.....	16
4.3.3 Fishing Licences.....	16
<b>5.0 CATCHMENT MANAGEMENT PLANS .....</b>	<b>17</b>
<b>6.0 COMPUTERISATION AND DATA COLLECTION.....</b>	<b>19</b>
<b>7.0 ANNUAL REPORTS AND ACCOUNTABILITY .....</b>	<b>19</b>
<b>8.0 AREAS OF FINANCING .....</b>	<b>20</b>
<b>9.0 BUY OUT OF QUOTAS.....</b>	<b>20</b>
<b>10.0 IMPROVED QUALITY OF COMMERCIALY CAUGHT SALMON .....</b>	<b>20</b>
<b>11.0 ADMINISTRATIVE PERSONNEL AND COST CONSIDERATIONS .....</b>	<b>20</b>

11.1 Carcass Tags .....	21
11.2 Provision of a Commercial Logbook.....	21
11.3 Provision of an Angling Logbook.....	21
11.4 Provision of a New Licensing System .....	21
11.5 Registered Dealers.....	21
11.6 The IT Requirements to Run the System.....	22
11.7 Personnel Requirements.....	22
11.8 Cost Summary.....	22
<b>12.0 TIME TABLE.....</b>	<b>24</b>
<b>ACKNOWLEDGEMENTS.....</b>	<b>26</b>
<b>REFERENCES.....</b>	<b>27</b>
<b>FIGURES .....</b>	<b>28</b>
<b>TABLES.....</b>	<b>33</b>
<b>Plate 1 EXAMPLES OF COMMERCIALY AVAILABLE CARCASS TAGS</b>	
<b>Appendix 1 LIST OF MEMBERS OF THE SALMON MANAGEMENT TASK FORCE IMPLEMENTATION GROUP.....</b>	<b>36</b>
<b>Appendix 2 IMPLEMENTATION MEETING OF REGIONAL MANAGERS AND CFB PROTECTION OFFICER .....</b>	<b>37</b>
<b>Appendix 3 FISHERMANS LOGBOOK AS PROPOSED BY THE NORTHERN REGIONAL FISHERIES BOARD .....</b>	<b>39</b>
<b>Appendix 4 THE ANGLERS LOGBOOK AS USED BY THE NORTH WEST REGION OF THE ENVIRONMENTAL AGENCY (UK) .....</b>	<b>40</b>

## Technical advice for the implementation of recommendations in the Salmon Management Task Force.

### 1.0 INTRODUCTION

Following the publication of the Report of the Salmon Management Task Force, the Marine Institute was asked to prepare a technical report on all aspects of the recommendations made, in particular those regarding Total Allowable Catch, Quota, Carcass Tagging and predation control measures. A technical implementation group was established by the Marine Institute (Appendix 1) which consulted with the Department of the Marine and Natural Resources, the Central and Regional Fisheries Boards and other interested parties during the drafting stages.

The report provides an overview (1.0) of a new management system and within this system how stocks can be protected (2.0) and fisheries managed (3.0). Section 4.0 details the requirements for enforcement and monitoring. Section 5.0 deals with fishery management plans within the context of overall catchment management plans and peripheral issues are dealt with (6.0-10.0). Section (11.0) makes an attempt to specify the areas in which extra costs will occur and a timetable for implementation is suggested in (12.0) for the period 1998 to 2000. Predation control measures are being dealt with separately in consultation with the Department of the Marine and Natural Resources.

#### 1.1 OVERVIEW

Sustainable exploitation can only take place in a fishery if there is a surplus of fish over spawning requirements. This principle of fishery management was expressed by the SMTF as follows;

*"The total resource is finite; it follows that the harvestable surplus over the spawning escapement is finite, and it is this finite quantity which must be shared between the remaining legitimate interests."*

As spawning escapement will determine the surplus available an inherent constraint on exploitation is that the spawning requirements will be met in order to preserve future generations of fish and protect the interests of all the users of the resource.

Implementation of the measures outlined in the Task Force report provides an opportunity to have a professional, legal and well-organised commercial sector reporting catches and taking part in the maintenance and management of their resource.

The angling sector also have an opportunity to approach the resource in a professional way in the realisation that the resource is finite and that it must be managed and that this can only be achieved with reliable information. Proper management will also lay the basis for the future development of angling for tourism and leisure.

The proposed management system is simple in principle but does require high inputs of reliable data to allow it to function adequately.

One of the critical factors identified by the Task Force which has mitigated against the proper management of salmon stocks, was the lack of reliable data on any sector benefiting from the resource.

Greater benefit can accrue to all sectors, and stocks can be maintained at a higher level, if all the groups exploiting the resource act in unison and take part in the management of the resource for the overall good.

#### 1.2 THE PROPOSED NEW MANAGEMENT SYSTEM.

The SMTF has recommended a rationale for management of salmon stocks based on achieving spawning escapement targets for each specific stock. The current emphasis of management is to allow sufficient fish up to spawn by limiting the time available and the gear permitted for fishing (effort limitation). The proposed new system provides that the number of fish available for capture is the surplus after the spawning requirements are met. This allows a faster response if the stocks are threatened. Given the very poor survival of salmon stocks internationally a flexible system is urgently required to manage Ireland's salmon stocks.

The management system envisages:

1. setting spawning escapement targets for rivers which can be achieved in the short term;
2. determining optimum spawning numbers which could be achieved if all the factors limiting production were removed;
3. determining compliance with these spawning escapement targets by providing spawning estimates (population estimates of the number of spawning salmon);
4. providing a framework to allow the management system to operate;
5. setting quotas to ensure compliance;
6. using fishery management plans (catchment management plans) to move from spawning targets to optimum spawning numbers and to assist in the allocation of the resource by the beneficial users.

The SMTF also recommended new structures to facilitate salmon fishery management. (Section 3.0)

## 2.0 MANAGEMENT OF THE STOCKS

In order to determine the status of salmon stocks we need to have an annual measurement or index. Total catch by all sectors depends on many factors (which vary from year to year), is very weather dependent and is often a poor indicator of the stock size. The proposed management system relies on setting spawning escapement targets and then determining whether these targets are being met. This involves establishing a minimum threshold for each river, below which the population should not fall (i.e. a Minimum Biologically Acceptable Level – MBAL) and a higher target reference level for managing fisheries. These targets, referred to as (stock) reference points, are used to assess the status of the stocks. Ideally, they should be determined from the relationship between returning adult stock and the subsequent recruits from that stock (Stock Recruitment Relationships). If the number of adults does not exceed the threshold level there is a high probability that the number of juveniles (recruitment) will be low. Unfortunately, long time series data are required to establish Stock Recruitment Relationships. They are only available for two rivers in Ireland, but more will be established over the next few years.

*Therefore, there are two reference points which are of immediate importance in the proposed management system for Irish salmon stocks;*

*optimum spawning numbers which could be achieved if all the factors limiting production were removed.*

*spawning escapement targets (for rivers) which can be achieved in the short term.*

### 2.1 SPAWNING REQUIREMENTS

In general, the spawning requirements or the number of adults required to spawn in a river system will not change from one year to the next unless there were major changes in the system reducing juvenile production. The spawning targets, once set, should be quite stable.

#### 2.1.1 Determining Optimum Spawning Numbers

In order to determine Optimum Spawning Numbers, the amount of suitable spawning and nursery habitat area for juvenile salmon must be quantified for each river. Using the average ova deposition per m<sup>2</sup> established from known stock recruitment relationships for other rivers, the number of eggs, which could be produced based on the available spawning area can be assessed. This in turn is converted to the number of adult fish required (the Optimum Spawning Number required) to produce that number of eggs.

#### 2.1.2 Setting Spawning Escapement Targets

Few rivers are capable of achieving optimum spawning numbers at present. Rivers dammed for hydropower or rivers with major environmental problems such as pollution, for instance, will not meet optimum targets in the short term. Rivers will thus have a spawning escapement target, which should be achievable in the short term. Average egg deposition derived from known stock recruitment relationships from other rivers will be applied to useable habitat area, rated by juvenile population numbers and factors such as pollution and water use.

#### 2.1.3 Spawning Escapement Targets for 2-Sea Winter Salmon

It will be sufficient in the early part of the new salmon management programme to set an overall target for 2 SW salmon. This is because a sustained effort is to be made to reduce exploitation on the 2 sea winter component of the stocks. If the overall spawning target is being achieved then this effort should be sufficient to protect the stock of 2 sea winter fish. As 2 SW populations are investigated it will be possible to set separate targets for 1-sea- winter and 2-sea-winter salmon especially in those rivers having counters.

#### 2.1.4 Data Requirement

The quantity of data and the requirement to analyse the data on an ongoing basis as conditions change makes Geographical Information Systems (GIS) a practical tool to manage the data on a national basis.

While data collection in general fishery projects is ongoing, national standards are required to ensure that data being collected will cater not only for the needs of those projects but also fit into a framework suitable for the proposed management system. This applies mainly to survey work, which includes habitat surveys and juvenile population work, but also includes ad hoc surveys for a number of purposes.

There is a great danger that different methodologies and standards will be used in setting spawning targets and in determining compliance with the targets. A National Workshop is required to agree the standards required for the quality and quantity of data necessary. These should be followed by Regional Workshops to identify the data available and identify where gaps exist in the data.

## 2.2 DETERMINING COMPLIANCE WITH SPAWNING ESCAPEMENT TARGETS

Methods of evaluating the status of stocks in each catchment will be devised to assess whether the spawning escapement targets are being met. The most reliable estimates are provided by electronic fish counters but there are a number of other methods which can be used such as effort related catches and juvenile surveys.

#### 2.2.1 The Methods

The current national fish counter installation and improvement programme will provide definitive stock size information for up to 16 rivers strategically placed throughout the seven fishery regions.

This first set of counters will only provide an index of the national stocks. Clearly, emphasis should be placed on establishing counting systems on all major salmon rivers or at least on a significant proportion of rivers to ensure that the counts are representative of the national stock as a whole.

In rivers where counters are not available other measures of compliance will be established. These will include time series of catch data from the various methods (i.e. rod, nets and traps) which can be related to effort. Juvenile surveys can be used to confirm that targets were met in previous years.

### 2.2.2 Non Compliance with Targets

The ability to manage salmon at a local level will provide a high level of flexibility. Not all catchments are similar and stocks are affected in different ways in different areas. The possibility of having partial quotas, which would have to be fulfilled by set dates and the ability to close fisheries when set criteria are met (or not met) will be a major step in real time management of stocks in the proposed new management system.

## 3.0 MANAGING THE FISHERIES

### 3.1 MANAGEMENT STRUCTURES

The Salmon Management Task Force plan envisaged a National Salmon Management Commission (NSMC) which would set National quotas (Figure 1). This would have representation from all sectors and was seen as the key to providing the necessary open forum where all beneficial users could contribute to the management of their own resource.

Because of the mistrust between the various sectors, the NSMC was seen as a key in providing the framework to build the trust necessary to implement Fishery Management Plans (elements of catchment management plans, Section 5.0) at a local level.

To assist the NSMC in its work a Scientific Programme Controller was envisaged who would chair a Standing Scientific Committee to co-ordinate the work of the existing scientific bodies and provide the NSMC with advice.

The Standing Scientific Committee will provide the scientific background to enable the Regional Fishery Boards to provide quota recommendations to the Commission and prepare Fishery Management Plans in conjunction with the local community for approval.

The Regional Boards under the control of the Central Fisheries Board will be responsible for guiding the work of the local Fishery Management Committees and for preparing Fishery Management Plans in conjunction with the local committees. They would also be responsible for preparing quota recommendations for submission to the NSMC.

It is envisaged that considerable training will be available to Regional Board staffs to develop the necessary skills to accomplish these tasks.

The management structure and the responsibilities of the various bodies are shown in Figure 1.

### 3.2 TOTAL ALLOWABLE CATCH/QUOTAS

Quotas have been set for Atlantic salmon in a number of Countries. Quotas are a method of allocating the Total Allowable Catch (TAC). In this context the total allowable catch (TAC) is the number of fish which can be taken from the stock without lowering spawning potential. In general the setting of a TAC and allocating it as quotas on scientific grounds requires good statistics and stock information. The difficulties attached to setting a quota are increased and thus the requirement for precise information increases if the quota is for mixed stock fisheries. A review (Ref. 1) of the quotas currently in use for Atlantic salmon shows that there are four different types:

Negotiated quota in mixed stock fisheries as used in the Faeroes fishery. Historic catch figures are reviewed and the interested parties agree a level of fishing which all can accept. These quotas have no scientific basis but are generally based on advice that overall exploitation on the stocks is too high.

Scientifically based quotas in mixed stock fisheries as used in West Greenland fishery. The stock required for spawning, and the size of the stock prior to the fishery at West Greenland is determined. The surplus over the spawning requirement is distributed with the West Greenlanders currently being allocated 40% of the available stock.

River based quotas based on scientific information or models as achieved in the River Foyle and in Canada and France. The spawning requirements are determined and the stock size returning is predicted. The surplus is given as a quota in the recreational fishery.

Quotas based on historic review of catches as used in Canada. These quotas are based on historical catches and are used to cap the total exploitation. In Canada the idea is to reduce the exploitation on stocks by commercial fisheries and as licences in the fishery become defunct the quota is reduced on a pro-rata basis.

Thus quotas for Atlantic salmon have been set in different ways. In Ireland it will be possible to set quotas based on estimates of stock and spawning escapement targets when the scientific evaluation is completed.

In the interim the SMTF recommended that to initiate the process a quota should be set based on recent catches but accepting some unreported catches in all sectors.

#### 3.2.1 A National Quota in Ireland.

The Task Force recommended that quotas should be set for all methods of capture (Drift nets, Draft nets, Other nets, Traps and Angling). Unfortunately the database in Ireland does not permit the setting of scientifically based quotas at present. The Task Force therefore **recommended setting a quota of 900 tonnes for the 1997 season** with 64% going to drift nets, 18% to draft and other nets and 18% remaining for angling. This is equivalent to 340,000 salmon distributed between the various sectors. The figures assumed some measure of unreporting by each sector but this at least provides a starting point.

### 3.2.2 Setting the National Quota

If 1998 is used as a base year then the quota for 1999 (and future years if a scientific quota cannot be formulated) can be based on average catches over the previous, say, five years raised by the proportion of the actual catch in 1998 to 900t.

Actual Reported Catch 1998/ 900t.

It must be assumed that the 1998 catch reflects the true catch or is close to it. The fishery in 1998 however, will be controlled by a restrictive effort regime and the catch in the drift net fishery may be depressed. The formula suggested above provides a method of determining a quota for 1998 or beyond if quotas based on scientific evaluation of the resource are not available.

It will be possible to move to quotas based on spawning targets if the necessary scientific work and evaluation is carried out. This should be possible by the year 2000 if sufficient effort is committed to it. ( Section 3.2.8)

### 3.2.3 Setting the Quota in the Drift Net Fishery.

The quota should be set in any year as the average of the previous five years raised by the Actual reported Catch 1998/ 900t. The drift net fishery would get 64% of the resultant quota (Salmon Management Task Force 1996).

A difficulty is that if the national quota was distributed between the licence holders the individual quota per district would range from 19 fish per licence to 988.

District	No. Per Licence
Eastern	18
Southern	91
S. Western	326
Shannon	969
Western	79
N. Western	399
Northern	342

The number of salmon per licence is small at least in some Regions and may not encourage commercial operators to fish within the legal system, particularly if they have been used to substantially higher catches.

The drift net quota could be allocated by fishery district based on average catches over the last five years. The trends in catches since 1990 and the resultant quotas in the drift net and draft net fisheries are shown in Figures 2-5. The trends are generally upwards in most districts and the quota is higher than the average catch reported because it is known that there are unreported catches.

### 3.2.4 Setting the Quota in the Other Commercial Net Fisheries.

The national quota can be set as described earlier. Similar difficulties apply to the setting of a quota for instance in the Draft net fishery. If this were divided between the licences based on average catches by Region the following would be the result:

District	No. Per Licence
Eastern	71
Southern	145
S. Western	112
Shannon	34
Western	154
N. Western	420
Northern	77

The SMTF suggested that Draft net and other fisheries should be allocated 18% of the quota, which would be 162 t if the quota were set at 900t.

### 3.2.5 Angling Quota.

It was envisaged that the quota for angling would be self-regulatory, in the sense that angling exploitation has a limit and is determined to some extent by the number of fish entering the rivers. From the point of view of managing the stocks in the most efficient manner, it is the angling quota in each river, which is important, and not the overall 18% of the National Quota. Based on the Spawning Escapement Targets and the assessment of target achievement it will certainly be possible to set angling quotas for at least some rivers. It was considered that if angling was taking 18% of the national quota i.e. 162 t or approximately 65,000 fish it would be a satisfactory angling catch nationally. If exploitation levels in individual rivers rise and a requirement to reduce exploitation by angling is necessary it can be achieved by altering the length of the season or by the various options for bag limits. These are all local options to be discussed by local fishery management committees.

The collection of catch statistics on angling assumes major importance, in this new management system. The return by anglers of catches by river will be critical to future salmon management.

Modification of the angling licence, Section 4.3.3, could assist in this regard but the District and National licence should be retained. The District licence will be particularly helpful in partitioning angling catch to individual rivers.

### 3.2.6 Allocation of the Quota.

Allocation of the quota to individual licence holders should be on the basis of returns made by individual fishermen in 1997 in conjunction with declared catches over the last 5 years.

The allocation of individual quotas should be a function of the Regional Board Manager.

### 3.2.7 Defining Geographical Areas for Quotas

While Spawning Targets can be set for each river it will not be possible to base the quotas for commercial nets on individual river stocks or set overall riverine quotas except for the recreational fishery.

Extensive tagging over the last 17 years has shown however, that while the commercial nets take some salmon from distant rivers the bulk of the exploitation is on stocks entering nearby rivers. Areas can be selected where the catches can be mainly attributed to a number of rivers. These areas in some cases will have to be large depending on the exploitation pattern of the drift net fishery. The area, referred to as the assessment area by the SMTF must have at least one major catchment in the complex of rivers where the returning adults can be counted and thus compliance with the quota can be ascertained.

Although some of these assessment areas may have to be large it should be possible to break down the quota allocation to Fishery Districts for management purposes.

### 3.2.8 Setting the Quota on a Scientific Basis

Each river in the assessment area will have a spawning escapement target. For each assessment area the spawning escapement targets of the component rivers are summed. This provides a basic spawning stock requirement for the area.

Each river in the assessment area will have a spawning escapement target compliance record and this will be used to predict the number of eggs being produced in the system.

A survival model based on Irish data (survival from ova to smolts, marine survival, and catches at sea) will predict the number of adults returning to the coast in the assessment area in each year. From this predicted number is subtracted the spawning requirement for the rivers in the assessment area. The surplus is the assessment area quota.

Assessment Area Quota = Predicted No. Returning – Spawning Requirement
--

The model parameters will be reviewed each year in the light of the compliance with spawning escapement targets and other information from the fisheries.

The National quota will be determined by summing the quotas from the assessment areas.

### 3.2.9 Implementation

The management system proposed requires that spawning targets for significant salmon rivers are set, that methods to determine compliance are established and that a framework to achieve this is put in place.

The amount of work required is immense and a start should be made at once if the system is to be in place in the year 2000.

It is recommended that the Department of Finance and the Department of the Marine and Natural Resources facilitates the Marine Institute in the appointment of the Programme Controller envisaged in the Task Force Report as soon as possible.

## 4.0 ENFORCEMENT AND MONITORING

### 4.1 CARCASS TAGS FOR MONITORING

#### 4.1.1 Introduction

Tagging the carcasses of salmon following capture is already carried out in Canada (and more recently in France) as a method of monitoring catches and reducing underreporting or illegal sale or distribution. A review of the operation of this tagging system in these countries is available (Ref. 2). The basic concept is slightly different for commercial and recreational fisheries. Commercial fishermen can only sell salmon carrying a recognised non-reusable tag and licenced dealers, shops, hotels and the public can only purchase salmon carrying these tags. For rod fisheries the system may be used to enforce bag limits and to monitor or even prevent the sale of rod caught fish.

The Salmon Review Group (1987) recommended the use of these tags for the Irish salmon fisheries and an initial review was carried out by the Department of the Marine to examine the logistics of operating a similar scheme in Ireland. This review highlighted many of the difficulties involved in operating a tagging system and gave some guidelines for implementation. The basic tag types were investigated by the FRC for the review (Ref. 3).

The Salmon Management Task Force (1996) has also recommend the use of carcass tagging as a method of operating an effective TAC and Quota scheme for the national salmon fishery.

This present report examines the previous recommendations on carcass tagging and the logistics of this proposal in the light of current information. Recommendations are made with regard to choice of tag and the implementation methodology.

#### 4.1.2 Rationale for Carcass Tagging

In Canada and France, the tag is used principally as a deterrent to the illegal sale of salmon by facilitating the enforcement of fisheries regulations. The tag is also used as a method of implementing a quota system. The tag information is generally not used to provide statistics for the fisheries or to track the sale or distribution of salmon through different regions or areas.

It would seem pragmatic from an Irish perspective to adopt the same rationale for tagging i.e. *the use of the carcass tag should be to facilitate implementation of quotas and the policing of illegal salmon catches, improve enforcement and encourage greater accountability from licenced fishermen and salmon dealers.*

#### 4.1.3 Implementing A Carcass Tagging Programme

The key elements of carcass tagging have been reviewed in previous salmon management reports;

- 1 The basic reason for tagging must be logical and must solve the problem being addressed, i.e. monitoring of a quota based fishery.
- 2 Administration should be simple and not overly different from the existing structure at least in the initial stages of implementation.
- 3 The cost of implementing the programme should not be excessive relative to the value of the fishery itself or the existing management regime.
- 4 The regulations must appear to be fair, practical and enforceable.

#### 4.1.4 Tag specification

At present, there are a number of tags suitable for marking important commercial fish species.

The three principal tags being used in the salmon industry are (Plate 1):

- 1 **The cinch type** is made in Canada by Mayer. The tag is designed to pass through the mouth and out through the gill cover where it is fastened. The length can be adjusted providing a good tight seal which avoids snagging a loose tag on any protruding objects causing them to break accidentally. It is also more difficult for a fisherman to use them as a "handle" to carry or lift the fish. They are very robust and the data area is highly visible.
- 2 **The clasp type** is pressed through the gill cover and snaps into place like a stud. These tags are of limited use and the data areas are small and possibly easily broken.
- 3 The Canadians use the **duel lock** design which is manufactured in Canada by Mayer Sealing Devices Registered. The French originally used this but now use a home produced variety (produced by Transplis Matalex called the Polylok) which are very similar to the duel lock type.

The tag cannot be opened without breaking the tag. When broken, they cannot be refastened, hence they cannot be used on any other fish. If the gill or mouth is damaged it is possible to fasten these tags through the eye socket although this may not be aesthetically acceptable. Alternatively, a slit can be made in the muscle at the base of the tail and above the spinal column and the strap passed through. Each of the above tags can carry serial number, crests, Logos or a combination of all three. They can also be colour coded.

#### 4.1.5 Costs of Tags and Suppliers

A number of suppliers and manufacturers are being approached at present. The options for producing an Irish tag in the future are also being considered.

In general, the more coding or batches of tags needed (i.e. regional tag differentiation) the more expensive the tag cost will be but at present the basic cost appears to be less than 10p per tag. The price of the Mayer tag ranges from 7 to 10p per tag. The French Polylok costs approximately 6p per tag. Estimates of costs provided in this report are on the basis of 10p per tag.

#### 4.1.6 Number of Tags Required and Costs

Since the purpose of the tagging scheme is to operate the fishery on the basis of a quota, then the number of tags required is the quota expressed in numbers of fish. The national quota proposed by the SMTF was 900 t. This is approximately 340,000 salmon. The associated cost of this number of tags would be £34,000. This figure makes no allowance for replacement of lost or accidentally damaged tag batches etc.

The number of farmed tags required would be approximately 5,000,000 (based on 13,500 t. production of 2.7 kg salmon in 1995) if all of the farmed production is to be tagged. The cost for purchase of these tags will be in the order of £500,000.

If only the production sold in Ireland is tagged (approximately 4,000 t or approximately 1.5 million fish the cost would reduce to around £150,000.

#### 4.1.7 Tagging of Farmed Salmon

The tagging of farmed salmon could be introduced under the following conditions:

- It is part of a national brand identification and quality control scheme.
- It is not prohibitively expensive (bearing in mind the large numbers of fish involved - see above), or preferably costs can be recouped from improved prices associated with "Irish" identification.
- The tags can be applied easily or automatically.

Automatic tagging may be an essential requirement given the number of fish involved.

It is extremely important for inspection purposes to be able to identify wild salmon from farmed salmon, as there may be some inclination to use farmed fish tags on wild fish if they are readily available, thus allowing an illegal trade in wild fish. At the moment discrimination between the two types is by:

- External examination of fins and opercular bones
- Detailed examination of salmon scales
- Chemical analyses of flesh for food additives

The first technique is subjective and depends on the experience of the inspector. The second is time consuming and relies on experienced personnel. The third can identify farmed fish by the pigment in their flesh. This test could be carried out at FRC but would involve increasing resources to carry out extra sampling as the facilities are operated at maximum capacity at present.

Automatic tagging has already been investigated in the past as a pre-requisite to a quality control scheme. A number of prototype tags were experimented with, including 'collar-stud' tags, and 'crocodile' type gill clips.

*The most advanced automated tagging system for farmed salmon is currently produced by the Unisto Company in the UK, which currently supplies tags to the Shetland Salmon Farmers for their quality scheme. The only drawback is that further RTD is needed on the gun to implement a numbering system. A basic gun (a prototype which has been demonstrated) is around £12 - £15,000 sterling.*

#### 4.1.8 Legislation on Farmed Fish

Under the Aquaculture Bill (1997) provision has been made to remove the requirement to record farmed salmon in dealers registers. This provision will be enabled when it is possible to reliably distinguish between farmed and wild salmon. A suitable quality mark on the farmed salmon could meet this requirement.

It would have to be accompanied by regulations, which ensure that the wild and farmed salmon were stored in such a way that it was possible to easily inspect both (Section 4.3.2).

#### 4.1.9 Differential Tags

It is recognised that fishermen should be discouraged from retaining tags at the end of a season to use in future seasons. As a minimum requirement therefore, the tags must be coded by serial numbers. A country code should be incorporated to allow for other countries establishing similar tagging systems. A regional code is also recommended. The ability to identify each fishing method (or farmed fish) from the code would be useful.

A typical tag sequence might be:

I	98	NWR	DR	340,000
Ireland	Year	North West	Drift Net	Fish no.

Colour codes should be used for each year to aid in quick inspections.

#### 4.1.10 Implementation of the Tagging Scheme

Tags would be available from Regional Fisheries Board offices and would only be allocated to licence holders on application for a licence.

Drift net fishermen will be obliged to tag their catch as soon as practicable after capture. Salmon landed onto a quay, pier or bank by a driftnet fisherman must already be tagged.

Draftnet fishermen and anglers will be obliged to tag their catch on the bank or in the boat immediately on capture. It will be illegal to carry the fish beyond the high tide mark without a tag.

There would be no change envisaged in the manner in which the licenced dealers are obliged to keep their records initially. In future it may be a requirement to record the specific batch code numbers or even return used tags to the Regional Boards. In any case, the licence conditions for salmon dealers should be reviewed to facilitate the operation of this scheme.

**Following this review and the introduction of suitable regulations it should be illegal to sell salmon except to a registered dealer.**

Regional fisheries inspectors will be in a stronger position to inspect catches and dealers premises as before and will seize any untagged salmon found. Fishermen found selling untagged salmon would be liable for prosecution, while dealers would be liable if in possession of untagged salmon.

#### 4.1.11 The Angling Catch

The simplest and least expensive regulation can be achieved by a ban on the sale of rod caught fish so that no untagged fish reach the dealers.

If a ban on the sale of rod caught fish was not possible then a commercial angling licence could be envisaged with similar conditions and season as the draft net fishery. The fish would have a specific angling tag, which would have to be purchased from the Regional Board.

Consultations however revealed that a strong body of opinion would favour the tagging of all rod caught fish with a specific distinctive tag. Each licence would be entitled to 3-5 tags with further tags available for purchase from the Regional Boards. If a requirement to sell rod-caught fish were necessary, specific easily identifiable tags would have to be purchased from the Regional Boards.

#### 4.1.12 Salmon in Cold Storage at Present

Consultations with dealers will be needed to decide how to handle quantities of salmon being held in storage prior to the application of a tagging scheme. This will involve giving plenty of advance warning for dealers to declare all fish in cold storage so that they can be easily identifiable by fishery inspectors when the tagging scheme starts. Similarly fish caught within the period of the tagging scheme and held in storage (say until the following season) should also be declared within the season in which they are caught so that they are identifiable.

#### 4.1.13 All Island Tagging

The authorities in Northern Ireland have indicated that they are investigating similar management strategies. Consultations between the two departments will be held to review co-operative procedures during 1998.

## 4.2 ENFORCEMENT

### 4.2.1 Legislation

Legislation will be required in order to enforce a carcass-tagging scheme and old legislation will need to be amended.

### 4.2.2 Practical Aspects in the Field

The responsibility for ensuring that the catch is tagged on board a boat (drift nets) or immediately on the shore or bank (other nets, traps and rods) lies with the fishermen.

The following specific offences were identified in previous reviews of carcass tagging (see also appendix 2):

- *It should be an offence to possess untagged salmon*
- *It should be an offence to tamper with or remove tags from tagged salmon*
- *It should be an offence to sell or to offer to sell untagged salmon*
- *It should be an offence to display for sale untagged salmon*
- *Possession of cut salmon parts should be accompanied by the appropriate tag, which can be inspected and recorded.*
- *It should be an offence to export untagged salmon*
- *It should be an offence to use tags issued in one region for tagging fish taken in another region*
- *It should be an offence to use tags specified for one fishing method to tag salmon caught in by a different method.*
- *Closed tags will be deemed used tags and it should be an offence to reuse or to attempt to reuse these closed tags.*
- *Untagged salmon may be seized and forfeited in accordance with existing legislation.*
- *It should be an offence for a holder of a fish culture licence or an aquaculture licence to sell dead salmon unless they are tagged in a prescribed manner.*
- *It should be an offence to forge tags or to have forged tags in your possession*
- *Log book offences shall be similar to those applicable to sea fisheries log book offences.*

## 4.3 OTHER REQUIREMENTS FOR ENFORCEMENT

### 4.3.1 Log Books for Commercial Nets.

Consultations strongly indicated the need for fishermen's log books with the quota and tag system. The logbook would be a requirement for each fisherman and would have to be stamped by the dealer purchasing the fish. The logbook would hold details of the licence and the tag allocation. The logbook could be envisaged as a record of sales and tag usage, with some complimentary information on effort and size of the fish captured. An example is given in (Appendix 3).

The final version of the logbook would need to be produced in conjunction with the Regional Managers and in consultation with users.

### 4.3.2 Review of Salmon Dealers Licence.

There have been recommendations that the dealers licence could best be a two tiered licence.

a) a full licence, which provides for the purchase of fish from fishermen but with extended obligations (Registered Dealer). It will be illegal to sell salmon except to a Registered Dealer.

b) a sales licence for shops where fish are purchased from dealers for re-sale and where obligations of recording would not be as stringent (Retailer). The licence holder and premises would be open to inspection, regulation and monitoring.

The Central Fisheries Board is investigating the practicalities of this proposal and will provide a short paper on the topic.

### 4.3.3 Review of Fishing Licences

Monitoring and enforcement for all sectors would benefit from a licensing system, which includes a photograph to identify the holder. This implies a licence issued by the Regional Boards with a photograph and linked to a national computerised database.

The angling licence would have a detachable return section and a stay on re-issue if the declaration were not made for the previous season. A logbook could also be considered for anglers. This approach has been adopted by National Rivers Authority (UK), North West Region (now the Environmental Agency) (Appendix 4)

## 5.0 CATCHMENT MANAGEMENT PLANS

Catchment management is a concept that is used to describe how a water catchment may be locally managed for a wide range of objectives including control of water quality, management of fish stock, commercial exploitation, planning and enhancement of infrastructure, tourism and leisure, agriculture, forestry heritage, amenity etc. It is designed to integrate all the conflicting interests in a catchment. It views the catchment as a resource in the widest sense and seeks to provide an overall plan to encompass all requirements for the best common good.

Catchment management as a concept has received Oireachtas approval (Ref. 4) in relation to the management of salmon stocks. As a concept relating to water quality it is the approved strategy of the Department of Environment (Ref. 5). The Minister for the Marine and natural Resources has endorsed Catchment Management Strategies as the way forward.

One of the key obstacles to implementing catchment management (as envisaged by the SMTF Report) is the lack of awareness of the opportunity offered by catchment management to address the problems generated by: unrealistic demand of competing interests; absence of a wider picture/ideal to which diverse interests can aspire and contribute; failure to manage competing interests which has often led to an escalation of conflict; a history of working to competing objectives which have seldom been harmonised; low level resourcing (time and personnel) of existing locally managed initiatives; lack of key skills in the management teams; absence of clearly identified incentives for all stake holders.

Catchment Management involves a management team of users of a local water body/bodies in conjunction with relevant agencies and authorities in the joint planning and implementation of the most appropriate sustainable future for the catchment.

The complex nature of Catchment Management Plans means that they will have to be introduced on a phased basis and can be viewed as long-term goals, which should be started on now. They will provide a major tool in fishery planning.

In the short term Fishery Management Plans can be developed and these will play a vital role in the management of salmon stocks. They will provide the blueprint to enable managers to deal with the current constraints on natural salmon production and move from spawning escapement targets to optimum spawning numbers. They will also allow the users of the resource an input into its allocation and thus have a stake in its management.

Responsibility for specific Fishery Management Plans, which will provide the fishery, input to catchment management plans will rest with the Regional Fisheries Boards. The use of scientific data will remove much of the subjectivity that constitutes present difficulties and will foster greater openness. The working ethos of the management committees will be generated and fostered by a specific approach described as process management. Specific training will be required for the Regional Fishery Boards staff and the fishery management committees.

The Central Fisheries Board and the Marine Institute have organised a seminar on Catchment Management and have subsequently produced a discussion document for the RFB's. Recommendations to the DoMNR will be provided on an ongoing basis as strategies are developed and applied to various rivers.

## 6.0 COMPUTERISATION AND DATA COLLECTION

With the implementation of the tagging system and the logbooks, new information will be available which can be used to manage the salmon fishery. One of the principal shortfalls in reporting and collecting information on the commercial and recreational catches to date has been the lack of a standardised protocol between the regional areas and the absence of a computer based system to input and interrogate these data. This system must be accessible to the RFB's, the DoMNR, the MI and the CFB.

In order to set spawning targets, and quotas, accurate commercial and recreational catch statistics are necessary. At present, the collection of salmon statistics is cumbersome and the way in which the figures are presented is limited. A computer programme for each of the Regional Board offices has been developed which simulates the standard salmon dealers registers for ease of data input and retrieval. Further development work is required to upgrade this programme and provide a full information system on which salmon management can rely. The Marine Institute is undertaking a project to scope and cost a suitable information system which can be used by the Regional Fisheries Boards to monitor catches and fish counts and provide real time information for the management of the fisheries in their regions. This will be a consultative process involving all of the agencies involved in data collection. A provisional costing is given (11.6).

**It is recommended that priority be given to the provision of an information system for the management of the resource.**

## 7.0 ANNUAL REPORTS AND ACCOUNTABILITY

The salmon catches and a report of the season should be published each year to allow all users of the resource a chance to see how the system is operating. This should be given a high priority and will ensure that system is operating correctly. It will also be very important to monitor the changes in catches over the years particularly as the objective is to change the balance for commercial to recreational fishing.

The report should include:

- Annual catches by region, district and method
- Numbers of licences by region, district and method
- Spawning targets for rivers
- An assessment of whether these targets are being met
- A review of the quotas
- An assessment of high seas fisheries and quotas
- A statement on the status of the stocks and recommendations

Incidences of illegal fishing should also be recorded with a view to encouraging the industry to aware of these infringements and to discourage other fishermen and anglers from carrying out illegal activities.

## 8.0 AREAS OF FINANCING

It is envisaged that the management system should not exceed the available resources significantly and should be predominantly self-funding. However, it may be necessary to apply for exchequer or EU funding to establish the programme initially.

## 9.0 BUYOUT OF QUOTAS

There is a strong feeling among anglers that a mechanism should be put in place, which would facilitate voluntary buy-out of licences. This would be similar to the Canadian system where the quota would be reduced pro-rata for each licence removed.

Buyouts might also be considered to allow fishermen to have a worthwhile catch from the quota. In this case the quota would not reduce but would be shared among the remaining participants.

## 10.0 IMPROVED QUALITY OF COMMERCIALY CAUGHT SALMON

This aspect has been identified by the commercial sector as vital to the industry. BIM have a role to play in providing training schemes and grants for improvements in handling and quality.

The MI has outlined a study on the effect of different types of synthetic netting material and methods of mounting nets on the quality of commercially caught salmon.

## 11.0 ADMINISTRATIVE PERSONNEL AND COST CONSIDERATIONS

A comprehensive infrastructure is already in place to manage and monitor salmon stocks. The necessary technical backup is also present in the state and semi-state sectors. The recommendations of the SMTF allow utilisation of the best of the existing structures while modifying other aspects in order to ensure successful implementation of the new requirements.

While the administrative implications and requirements will not be clear until the method of quota allocation and method of carcass tagging is decided, there are a number of areas where administration will increase either in the MI, DoMNR, CFB or the Regional Boards and higher scientific input will be necessary from all organisations involved. There will also be training implications particularly for Regional Board staff and an educational and information programme for the users of the resource.

National and Regional Workshops need to be run to establish standards for data collection, and evaluation of target spawning criteria. The first National Workshop is being organised by the MI in February 1998.

The following elements of the Task Force recommendations will have administrative and cost implications

#### 11.1 CARCASS TAGS

- Purchase of tags £34,000 for the full quota, and an additional £150,000 if farmed fish for home production are tagged with a carcass tag.
- Distribution of tags and computer records.  
This will be covered in part by existing resources and by revenue from purchase of tags and increases in licence fees.
- Printing and distribution of information leaflet on the use of tags and breaches of tagging legislation £1,000, leaflets will have to be produced for all licence holders.
- Policing and recording of tagged fish.  
This will be covered in part by existing resources and by revenue from purchase of tags and increases in licence fees.

#### 11.2 PROVISION OF A COMMERCIAL LOGBOOK

- Printing of logbook.  
Logbooks will have to be provided for all commercial licence holders, £4,000.
- Distribution of logbook and computer records.  
This will be covered in part by existing resources and by revenue from purchase of tags and increases in licence fees.
- Printing and distribution of information on using logbooks and breaches of logbook legislation. This will be incorporated into the logbook.
- Inspections of fishermen's logbooks.
- Data input and analyses of logbook data.
- In-season reports of number fish taken.
- Annual report of catches and analyses.  
This will be covered in part by existing resources and by revenue from purchase of tags and increases in licence fees.

#### 11.3 PROVISION OF AN ANGLING LOGBOOK

- Anglers could be issued with a logbook as part of their licence.

#### 11.4 PROVISION OF A NEW LICENSING SYSTEM

- Drafting of new legislation.
- Advertisement or information relating to new licence system.
- Printing of new licence.
- Photo system.  
£12,000 @ 50p per licence.

#### 11.5 REGISTERED DEALERS

- Increased inspection.
- Definition of criteria for obtaining a licence.

#### 11.6 THE IT REQUIREMENTS TO RUN THE SYSTEM

- Hardware (network of PC's regionally and centrally linked to MI, DOM, CFB).
- Software for recording carcass tags, logbook data, licence information, catch information from existing dealer's registers, counts from index rivers).
- Input of data.

The MI is undertaking a scoping programme to cost and provide a brief for the construction of a suitable information system. Exact costs will be available at that time but initial investigations suggest that a contract to provide the system would cost in excess of £200,000. The lack of an informational system has been identified as a major constraint in developing the sector. (Section 6.0)

- GIS maps for estimating suitable habitat in major rivers systems and calculating spawning targets.
- Software for GIS and catchment evaluation

The maps will be an ongoing cost and will depend on the number of catchments considered sufficiently important or complex to require a GIS application.

#### 11.7 PERSONNEL REQUIREMENTS

Elements in sections (11.1-11.4) would require additional staff and training for staff. This is obviously an element of the programme which would require negotiation with the Dept. of Finance. Initially, allowance would need to be made for 2 assistant Inspectors and 1 person equivalent part time staff per Board for year one at a cost of £364,000. After 1 year this would reduce to 1 Assistant Inspector and 1 person equivalent part time staff per Board at an annual cost of £210,000.

The rationale is that there will be a heavy query and administrative load in setting up the system and it must be seen to work from day one.

Much of the work in protection is outdoor and arduous and consideration should be given to a suitable voluntary benefit package to allow older staff members to retire and encourage new staff. This has not been costed.

The potential revenue from sale of tags, is shown in Table 1, both for a strategy of keeping licence fees at current levels and allowing a reduction to encompass an allocation of tags as part of the licence fee (tags in excess of this would have to be purchased). At maximum, revenue generated from the sale of tags could be in excess of £300,000 annually. This could increase by £100,000 if purchase of tags was compulsory for anglers. Increases could also be envisaged in the licensing of registered dealers, Section 4.3.2.

There will be an initial requirement for 1 scientist to provide the data analysis on habitat and spawning escapement targets and 1 Geographical Information System (GIS) data input specialist probably on contract for 3 years. There will also be costs associated with the provision of a Scientific Programme Co-ordinator. All of these costs will be in excess of £80,000 annually.

#### 11.8 COST SUMMARY

It is difficult to summarise the cost implications until the options presented above are decided. This will be a matter principally for the Department of Finance and

the Department of the Marine and Natural Resources. Initial indications are that the cost of running the commercial fishing monitoring will be approximately £845,000 in the first year, falling to £478,000 in subsequent years. Revenue from tags and licences will depend on the cost to fishermen for each tag.

## 12.0 TIME TABLE

### Year 1997

- New management and conservation legislation brought into force
  - Cap on commercial licences
  - Area of fishing reduced from 12 to 6 nautical miles
  - Drift net season constrained to 1<sup>st</sup> June to 31<sup>st</sup> July
  - Restriction on night time fishing (0400 to 2100 hrs only)
  - Reduction to 4 days fishing per week
  - Reduction of fishing effort on larger multi-sea winter spring fish
- Phase 1 of Fish Counter Installation Programme initiated – Site survey and selection.
- Phase 2 of Fish Counter Installation Programme initiated – Installation of counters
- Setting up of Salmon Task Force Implementation Group to initiate consultation process with other agencies etc -Draft report presented to DoMNR
- Rivers database set up to review available spawning target data

### Year 1998

- Publication of Salmon Task Force Implementation Discussion Document
- National Workshop to establish standards for spawning targets.
- Consultation process
- Phase 2 of Fish Counter Installation Programme continued – Installation of counters
- Phase 3 of Fish Counter Installation Programme initiated – Verification of counters
- Scoping study for salmon management information system
- Review and drafting of regulations and legislation required
- Establishment of National Salmon Commission
- Appointment of Scientific Programme Controller
- Introduction of carcass tags in specific fisheries

### Year 1999

- Introduction of Quotas
- Introduction of Log Books for commercial nets
- Introduction of Carcass tags
- New licensing system operational for all fishing methods
- New regulations for registered dealers
- Regional workshops to assess scientific data
- Phase 2 of Fish Counter Installation Programme completed – Installation of counters
- Phase 3 of Fish Counter Installation Programme continued – Verification of counters

### Year 2000

- Introduction of Salmon Management Information System
- Quotas set on a scientific basis
- Phase 3 of the first Fish Counter Installation Programme completed
- Overall review and report to the Minister for the Marine and Natural Resources

### ACKNOWLEDGEMENTS

The group wishes to thank the many organisations and individuals who contributed to this report. These include:

Professor Noel Wilkins, Chairman of the Salmon Management Task Force

Dr. P. Gargan and B. Sullivan of the Central Fisheries Board

The Managers of the Regional Fisheries Board

The ESB

The input from commercial fishermen, fish processors, fishery owners and anglers is also gratefully acknowledged.

## REFERENCES

- Ref. 1. A review of Quotas for Atlantic salmon. John Browne (Fishery Leaflet Series) Marine Institute (in Press).
- Ref. 2. A review of the use of Carcass Tags. Milton Matthews, Internal Report of Salmon Research Agency.
- Ref. 3. Implementing a Carcass Tagging Programme. Niall Ó Maoiléidigh. Internal Report to the Marine Institute
- Ref. 4. Report of the Select Committee on Enterprise and Economic Strategy on the Report of the Salmon Management Task Force.
- Ref. 5. "A catchment based strategy against eutrophication". Department of Environment

**Figure 1** Structure for future salmon management  
(based on the Salmon Management Task Force Report, 1997).

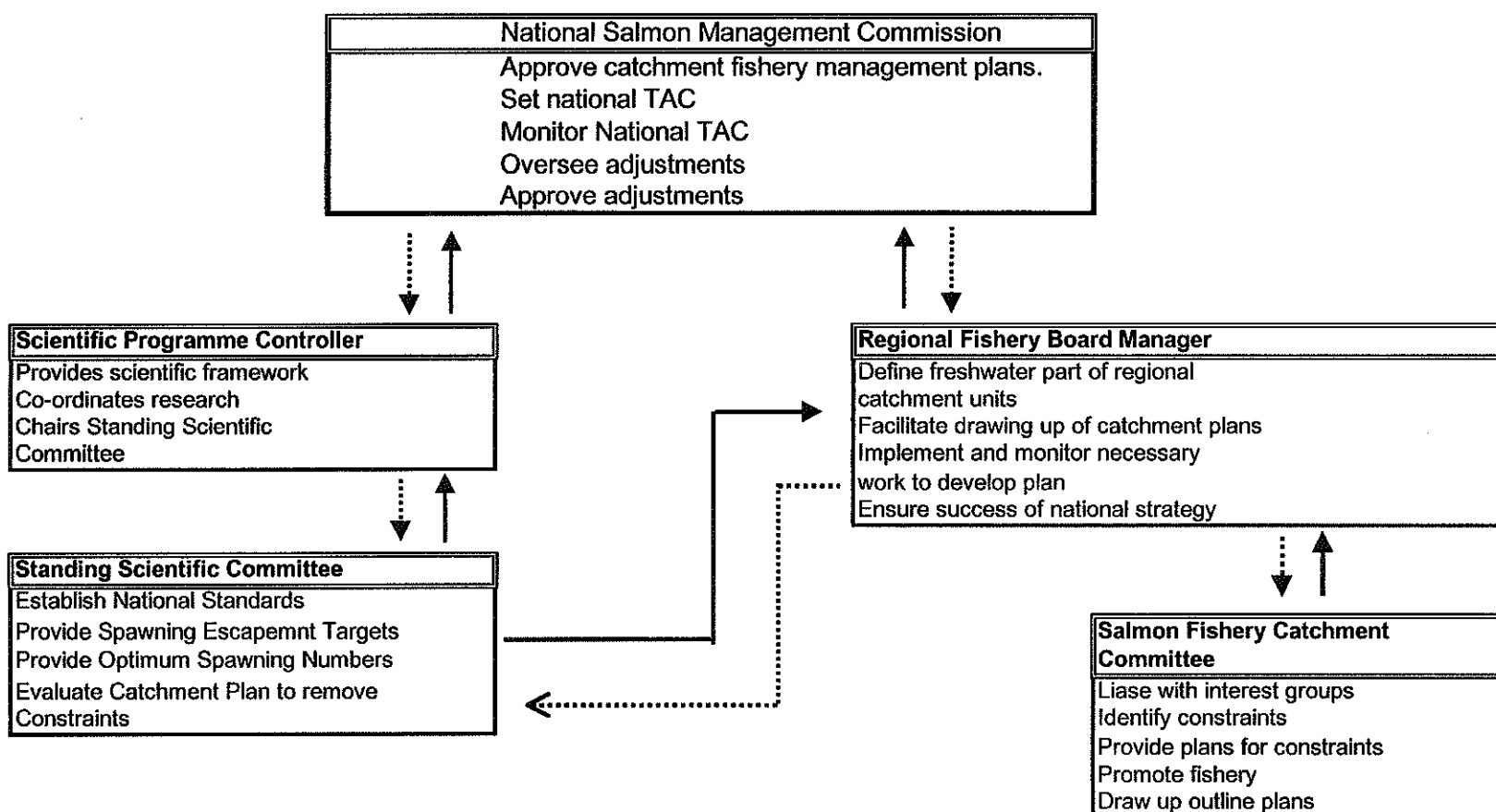


Figure 2 Trends in Regional Drift Net Catches 1990 - 1996

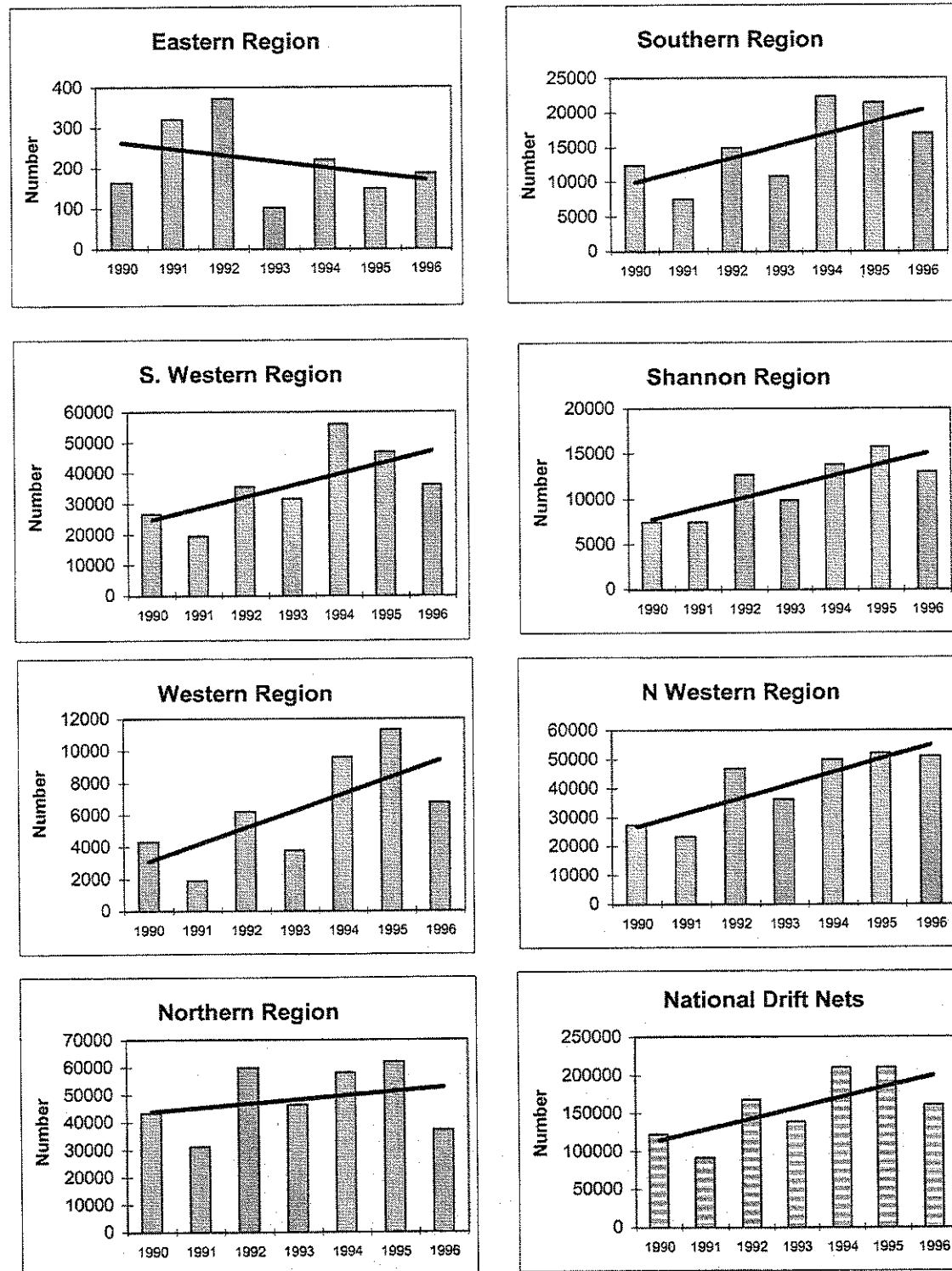


Figure 3 Driftnet Catches, Average Catch and Quota

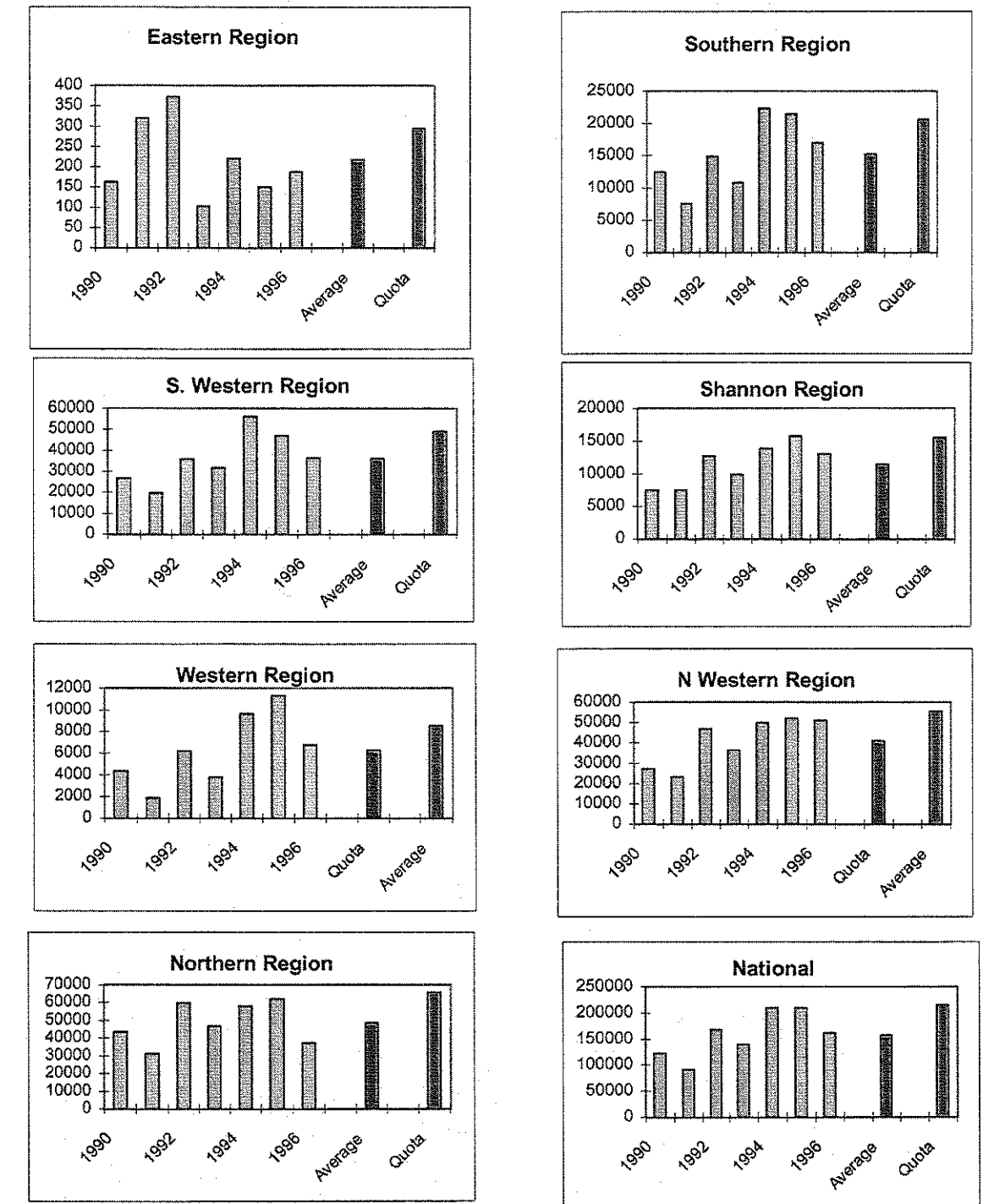


Figure 4 Trends in Regional Draft Net Catches 1990-1996

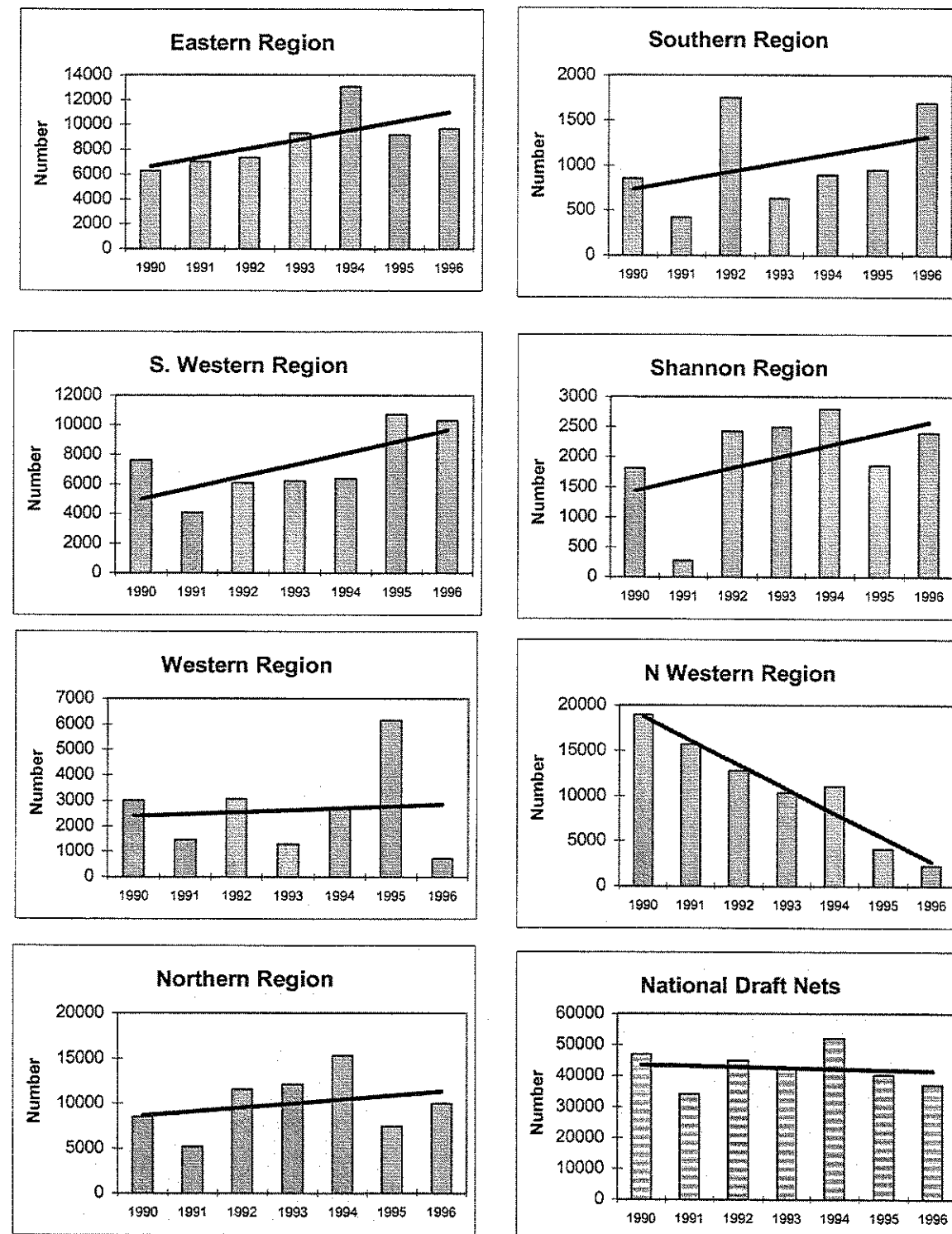


Figure 5 Draftnet Catches, Average Catch and Quota

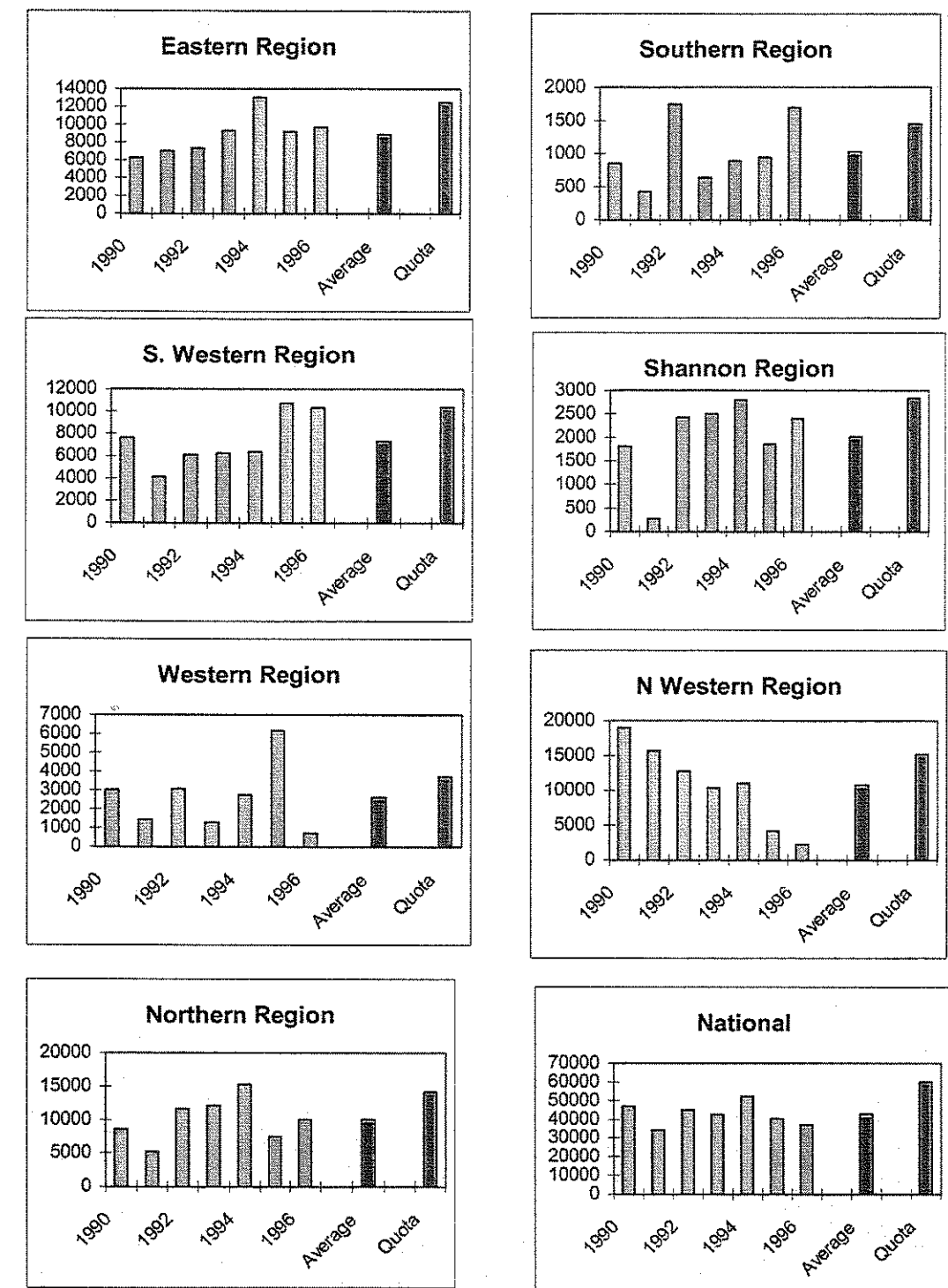


Table 1. Revenue generated by sale of carcass tags

	Drift	Draft
Number of licences	773	720
Present cost	£150	£85
Number of tags	217,597	122,400
Cost per tag	£0.10	£0.10
Cost of tags	£21,760	£12,240

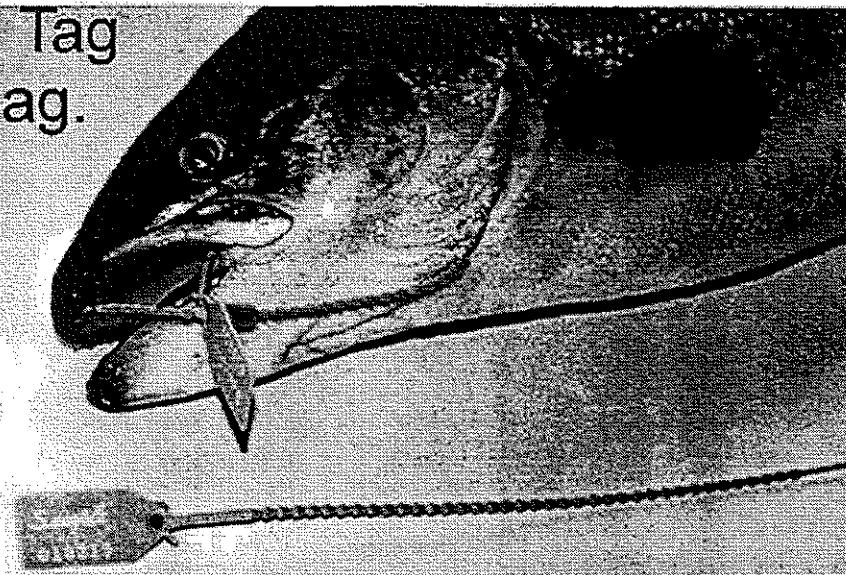
Tag cost	Totals raised		
	Drift Nets	Draft Nets	All Nets
£1.00	£195,837	£110,160	£305,997
£0.90	£174,077	£97,920	£271,997
£0.80	£152,318	£85,680	£237,998
£0.70	£130,558	£73,440	£203,998
£0.60	£108,798	£61,200	£169,998
£0.50	£87,039	£48,960	£135,999
£0.40	£65,279	£36,720	£101,999
£0.30	£43,519	£24,480	£67,999
£0.20	£21,759	£12,240	£33,999
£0.10	£0	£0	£0

Commercial Method	Drift	Draft
Proposed licence reduction	£50	£35
Loss of revenue	£38,650	£25,200

£1.00	£157,187	£84,960	£242,147
£0.90	£135,427	£72,720	£208,147
£0.80	£113,668	£60,480	£174,148
£0.70	£91,908	£48,240	£140,148
£0.60	£70,148	£36,000	£106,148
£0.50	£48,389	£23,760	£72,149
£0.40	£26,629	£11,520	£38,149
£0.30	£4,869	£720	£4,149
£0.20	£16,891	£12,960	£29,851
£0.10	£38,650	£25,200	£63,850

Plate 1 EXAMPLES OF COMMERCIALY AVAILABLE CARCASS TAGS

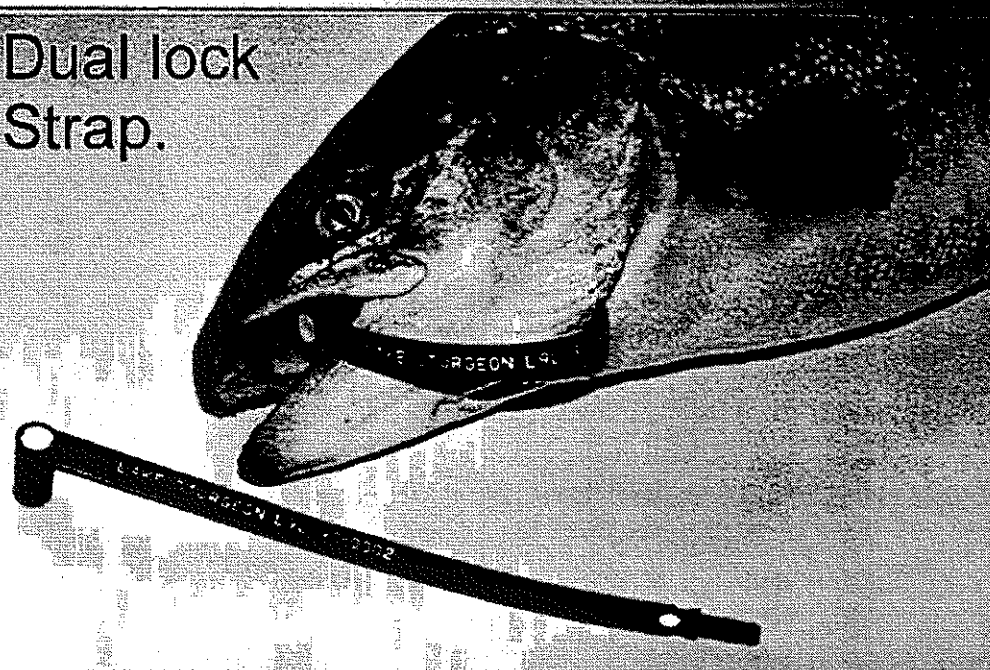
Cinch Tag  
with flag.



Clasp  
with flag.



Dual lock  
Strap.



# APPENDIX 1 LIST OF MEMBERS OF THE SALMON MANAGEMENT TASK FORCE IMPLEMENTATION GROUP

John Browne (Marine Institute, Fisheries Research Centre)  
Niall Ó Maoiléidigh (Marine Institute, Fisheries Research Centre)  
John Joyce (Marine Institute)  
Yvonne Shields (Marine Institute)

## APPENDIX 2 IMPLEMENTATION MEETING OF REGIONAL MANAGERS AND CFB PROTECTION OFFICER

The Managers of the Regional Fisheries Boards met in March 1997 to discuss the implications of the proposed TAC, Quota and Carcass Tagging System. In general, the regional managers were in agreement with the proposals of the Salmon Management Task Force.

The following are summary observations and recommendations from these meetings.

1. Regional quotas should be allocated based on the number of licence holders in the region.
2. Carcass tags were essential for implementing the quota system.
3. All tagged fish should be sold through a main dealer i.e. a wholesale/retail type situation with two separate dealers licences.
4. Comprehensive records would be needed from dealers..
5. New specifications with regard to storage of salmon would need to be introduced to facilitate the inspection of tagged salmon on the dealers premises.
6. It should be an extreme offence to forge or use forged tags or to tamper with tagged fish.
7. All fish should be tagged as soon as practicable after they are removed from the net. For drift nets this means that the should be tagged at sea on board the boat and for draft nets fish should be tagged within the high tide mark or foreshore.
8. Fish retained for home use should be recorded in the logbook.
9. Farmed salmon should be tagged if sold in Ireland.
10. No person except a licenced fisherman can have at sea any untagged salmon.
11. No person can have an untagged salmon outside the 6 mile limit.
12. Consideration should be given to a code on the tags which can be interpreted by fisheries officers to identify forged tags.
13. A heavy emphasis was placed on the introduction of mandatory logbooks.
14. It was felt that the present dealers registers and logbooks should be operated concurrently at least until the logbook scheme was fully operational.
15. The number of fish caught and the serial number of the tags used should be recorded in the logbook prior to landing the catch.
16. Fishermen should fill in a logbook on a daily basis.
17. The logbook should not be considered complete until fish were sold and a dealers stamp recorded.
18. Logbooks should be returned to the Manager of the Region in order to obtain a new Logbook
19. Licences should be reviewed. Non use of a licence for a protracted period should mean that that licence could be withdrawn.
20. Angling quotas should be enforced. Bag limits should be decided at a local level.
21. Recreational and commercial anglers should be obliged to tag their catch.
22. A set number of tags should be allocated to anglers each season.
23. The rod licence should be reviewed and a bus pass type system introduced.
24. The powers vested in the Authorised Officers should be reviewed and strengthened to allow the new system to operate efficiently.
25. Notice should be issued publicly (daily newspapers, regional weeklies) relating to the changes taking place and the timescale for these change as soon as possible.

### APPENDIX 3 FISHERMANS LOGBOOK AS PROPOSED BY THE NORTHERN REGIONAL FISHERIES BOARD

FISHERIES (AMENDMENT) ACT, 1962 – Section 28 (2) (b) (ii) –  
FISHERMAN

I \_\_\_\_\_  
Of \_\_\_\_\_  
Being a Fisherman and  
(the Nominee of \_\_\_\_\_) the holder  
of Fishing Licence No. \_\_\_\_\_ issued by The Northern Regional Fisheries  
Board do hereby state that the \_\_\_\_\_ salmon, and/or \_\_\_\_\_  
trout which I have this day sold to \_\_\_\_\_  
as Agent on behalf of \_\_\_\_\_  
are of my own lawful capture.  
Dated this \_\_\_\_\_ day of \_\_\_\_\_ 19\_\_\_\_

Signed \_\_\_\_\_

(Witness)

### APPENDIX 4 THE ANGLERS LOGBOOK AS USED BY THE NORTH WEST REGION OF THE ENVIRONMENTAL AGENCY (UK)

REMEMBER: ONLY ONE TRIP TO BE RECORDED ON EACH PAGE

RIVER:	LOCATION:
--------	-----------

DATE	Please circle appropriate boxes										
	1	2	3	4	5	6	7	8	9	10	11
	12	13	14	15	16	17	18	19	20		
	21	22	23	24	25	26	27	28	29	30	31
Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	

FISHING EFFORT	HOURS
HOURS FISHING FOR SALMON ONLY	
HOURS FISHING FOR SEA TROUT ONLY	
HOURS FISHING FOR BOTH SPECIES AT THE SAME TIME	

Catch		If nil tick box <input type="checkbox"/>					
Fish No.	Species Tick Box   √		Weight		Method	Returned If yes tick	Tag No.
	Salmon	Sea trout	LBS	OZ			
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

Comments: \_\_\_\_\_

\_\_\_\_\_