# An Economic/Socio-Economic Evaluation of Wild Salmon in Ireland

**Submitted to the Central Fisheries Board**

**by**

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**April 2003**

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# Glossary of Terms

**Marginal Willingness to Pay**. A person's willingness to pay for one more unit of a good or service. From the demand function for a good or service it can be read as the price the person is willing to pay for a given quantity of that good/service.

**Marginal Value**. The maximum amount that an individual is willing to pay for one extra unit of a resource or for the extra outcome(s) resulting from its provision. Differs from the average value, which equates to the mean value of a resource over a number of units.

**Mean**. The mean is the average of the scores in the population. Numerically, it equals the sum of the scores divided by the number of scores. The mean average is, however, subject to greater influence by relatively high or low values ('outliers') in the sample.

**Median**. The median of a population is the point that divides the distribution of scores in half. Numerically, half of the scores in a population will have values that are equal to or larger than the median and half will have values that are equal to or smaller than the median. This statistical measure is less influenced by extreme low or high values in a sample than is the mean average (defined above).

**Multiplier.** The multiplier is concerned with how national income changes as a result of a change in an injection, for example investment. The multiplier was a concept developed by the economist, John Maynard Keynes, which stated that any increase in injections into the economy (investment, government expenditure or exports) would lead to a proportionally bigger increase in National Income. This is because the extra spending would have knock-on effects creating in turn even greater spending. The size of the multiplier would depend on the level of leakages. It can be measured by the formula 1/(1-MPC-MPM) where the MPC is the marginal propensity to consume and the MPM is the marginal propensity to import.

**Net Benefit.** The net overall economic benefit derived from an activity (such as salmon tourism angling). They differ from gross benefits in that they represent the net contribution to Irish economic activity after subtracting expenditure on imported inputs and the opportunity cost of labour and other resources used in supplying such services.

**Opportunity Cost.** The value of the best foregone alternative use for a resource. In the case of the salmon recreational angling sector, the net benefit of the sector to the economy must take account of opportunity cost of labour and other resources used in supplying products and services (e.g. hotels and catering services) purchased by overseas anglers where these resource may be put to use elsewhere in the economy.

**Present Value**. The present value is a mathematical formula used to determine how much money should be invested today to result in a certain sum at a future point in time. It is the discounted value of a future stream of payments or receipts calculated by applying an appropriate discount rate to each future payment of receipt.

**Revenue.** The total value of receipts during a specified period. In the case of salmon fishing, revenue represents the value of sales of salmon landed.

**Skewness**. A measure of the lack of symmetry in a statistical distribution of data points. Data from a positively skewed (skewed to the right) distribution have values that are bunched together below the mean, but have a long tail above the mean. Data from a negatively skewed (skewed to the left) distribution have values that are bunched together above the mean, but have a long tail below the mean.

**Standard deviation**. The standard deviation is a measure of the variability present in a data sample. It represents the squared sum of the difference between the mean and each data point in a sample. A high standard deviation points to a high degree of variance within a sample.

**Value-added.** The value of output minus the value of all intermediate inputs used in production, representing therefore the contribution of, and payments to, primary factors of production. In the case of the wild salmon sector, value added may represent the additional value created in downstream industries such as processing.

# Executive Summary

## Background and Context

This report represents an independent economic/socio-economic evaluation of wild salmon in Ireland. The report has been prepared for the Central Fisheries Board. The evaluation addresses the requirements for the long-term sustainable management of wild salmon stocks, within an economic and socio-economic context, to ensure the viability of this important resource.

The wild Atlantic salmon (*Salmo salar)* fishery in Ireland comprises a commercial and a recreational fishery. The commercial fishery comprises a number of elements, depending on the method of harvesting. The largest, in terms of the proportion of commercial salmon harvested, is the drift net fishery, which extends offshore to 6 miles and accounts for 87% of the total commercial salmon catch. The draft net fishery is confined to the estuaries and tidal stretches of the river systems and accounts for just over 11% of the commercial salmon catch. The recreational fishery is confined to the river systems, of which over one hundred are recognised as salmon and sea trout fisheries. Salmon angling in Ireland attracts a large number of participants, including both local anglers and overseas visitors, and in 2001 close to 33,000 salmon/sea trout licences were sold to anglers.

The Central and Regional Fisheries Boards are the statutory agencies responsible for inland fisheries in Ireland and operate under the aegis of the Department of Communications, Marine and Natural Resources. The principal function of the Central Fisheries Board is to advise the Minister for Communications, Marine and Natural Resources on policy in relation to the conservation, protection, management, development and improvement of inland fisheries, while the regional fisheries boards have responsibility for the implementation of policy across the seven fisheries board regions. In addition, the National Salmon Commission was established in 1999 to assist and advise the Minister on the management of the national salmon resource and, in particular, in relation to the operation of the wild salmon and sea trout tagging and logbook scheme.

## Scope and Terms of Reference

The overall objective of the study is to provide an "economic/socio economic evaluation of wild salmon in Ireland." In line with the terms of reference, this study entails:

- Consideration and quantification of the economic/socio economic value and importance of the commercial wild salmon fishery in Ireland;
- consideration and quantification of the economic/socio economic value and importance of the salmon rod angling fishery in Ireland;
- setting out options/models on how both segments of the industry should be sustainably managed from an economic/socio economic perspective in the future; and,
- while this is a national study, consideration is given to the importance of wild salmon to coastal and rural communities.

## Review of Existing Research on Economic Evaluation of Wild Salmon

The evaluation began by reviewing a number of Irish-based and international studies concerning the economic/socio-economic value of the Atlantic wild salmon resource. In relation to the international research, existing studies in respect of the salmon fisheries in Great Britain, Iceland and Canada have each pointed to a substantial gap between the economic values attributed to commercial and recreational salmon fishing, with recreational activity typically yielding a large multiple of the values estimated for commercial salmon fishing.

In relation to the Irish-based studies, the existing research varies in terms of scope, and while some studies entailed significant survey work and provided estimates for the comparative value of the recreational and commercial fisheries, many of these findings are now outdated or relate to county-level rather than national patterns. Indeed, the last major comprehensive national study was conducted as far back as 1988. The current evaluation aims to address these shortcomings through the employment of extensive new survey research and the estimation of up-to-date economic valuations for the commercial and recreational salmon fishing sectors. The existing studies also highlight the issue of the difference between marginal and average values in relation to each fishery.

## Review of Salmon Management in Ireland

The management of the wild salmon resource in Ireland up to 1997 took place against the background of profound changes in the methods of harvesting and the overall trend in salmon catches. Between the early 1960s and the early 1970s there was a marked increase in the number of drift net commercial licences (from 363 in 1962 to 1,048 in 1974), while the proportion of the overall salmon catch taken by drift nets rose from 19% in 1960 to 49% in 1970 and a peak of 84% by 1986. By contrast, the draft net catch fell from 51% of the total salmon catch in 1960 to 36% of the catch in 1970 and just 9% of the catch by 1985.

The total salmon catch fell from a peak of 2,188 tonnes in 1975 to 764 tonnes in 2001. Of this total, the commercial salmon catch fell from an annual average of 1,172 tonnes between 1960-65 to an average of 1,046 tonnes between 1980-85, with the catch peaking at 2,188 tonnes in 1975 and falling to a low of 404 tonnes in 1991. Within the commercial sector, the evidence, assuming static or declining salmon prices, points to a falling average return or income to commercial fishermen since the mid 1980s, as suggested by the falling ratio of salmon captured relative to the number of commercial licences in operation.

From a level of 182 tonnes in 1965, the rod & line catch fell markedly during the mid- to late-1960s and, apart from very brief interruptions, continued to decline sharply during the 1970s, falling to a low of 35.4 tonnes in 1978. The catch remained below 100 tonnes per annum during the 1980s, typically accounting for only around 5% of the total salmon catch. More reliable estimates of the catch since 1994 point to some recovery since the mid-1990s and the catch reached a recent peak of 110 tonnes in 1996. However, it is important to note that, if measured relative to angling effort (for example, in terms of the growth in the number of salmon licences sold), the rod & line salmon catch per unit of effort decreased substantially between 1980 and 2002.

The report of the Salmon Management Task Force in 1996 recommended a radical new approach to the management of the resource, and following the report a range of conservation measures were implemented by the Minister for the Marine in 1997, including a reduction in the number of commercial drift net and draft net licences, a reduction in the offshore fishing limit from 12 nautical miles to 6 nautical miles, the introduction of a shorter season and an extended weekend close period, the legalisation of monofilament nets and an increase in drift net mesh depth.

In 1999, the National Salmon Commission was established to advise the Minister on any scheme in relation to the management, development and conservation of stocks of wild salmon or sea trout and in particular the tagging of such fish, and on the setting of a national annual total allowable catch and quotas for the taking of salmon. To assist in the provision of scientific advice on these matters, a Standing Scientific Committee was also established under the aegis of the National Salmon Commission.

The wild salmon and sea trout tagging and logbook scheme was established on 1st January 2001. The purpose of the scheme is to provide a verifiable count of the wild salmon and sea trout catch by both the commercial and angling sectors. The regulations for the 2002 season included a provision for the application of a fishery district based quota schedule, which are subject to change on an annual basis. This set a maximum level on the number of wild salmon or sea trout (greater than 40 cms) that could be lawfully taken by commercial fishing engines.

## Economic Impact of Commercial Salmon Fishing

The principal commercial salmon fishing regions in Ireland are the South West Regional Fisheries Board area (28.2% of the total commercial catch), followed by the North West (21.6%), Northern (16.8%), Southern (14%) and Shannon Regional Fisheries Board areas (9%). It is also noticeable, however, that the overall commercial catch has fluctuated substantially on a regional basis in recent years.

The drift net fishery accounts for over 80% of the total commercial salmon catch. It is most important in the North West Regional Fisheries Board area, where it accounts for 95% of the commercial catch, whereas at the other end of the scale, drift netting represented only 1% of the catch in the Eastern Regional Fisheries Board area.

Across the seven fisheries regions, the draft net catch totalled 23,032 salmon in 2002, accounting for over 11% of the total commercial catch. The sector is most important in the Eastern Regional Fisheries Board area, where it accounted for 2,788 salmon or 98.5% of the total commercial salmon catch in 2002. Draft net fishing is also important in Northern, Shannon and South Western Regional Fisheries Board areas.

In 2002, approximately 25% of the licensed commercial drift net fishermen caught just over 70% of the fish, while a little over half (53%) of drift net fishermen caught 100 salmon or less in the 2002 season. Moreover, 7.8% of drift net licence holders were not active, in terms of catching salmon, during the 2002 season.

Approximately 26% of draft net commercial licence holders accounted for just over 69% of the draft net salmon catch in 2002, while around three quarters of draft net licence holders caught 50 salmon or less. 15.8% of draft net licence holders reported a zero salmon catch during the 2002 season.

The average reported quayside price achieved for salmon respondents to the Indecon survey of commercial salmon fishermen during the last season (2002) was equal to €3.9 per lb, at a median of €3.3 per lb. This price estimate is consistent with other sources reviewed as part of this evaluation.

According to the Indecon survey evidence, the average (mean) income per week from salmon sales during the 2002 season was equal to €536, though the median was much lower at €195, indicating that incomes generated were relatively high among a small proportion of fishermen but that the vast majority of fishermen earned very low levels of income from salmon fishing. The income generated by fishermen is also concentrated over a limited period during the calendar year.

We estimate that the total value of revenues generated by commercial salmon fishermen equalled €4.8 million in 2002, of which just over €4 million relates to the drift net sector, while €0.66 million and €0.1 million is generated within the draft net and other commercial sectors respectively.

Adjusting for the level of imported inputs (which do not constitute a benefit to the Irish economy), we estimate a total direct economic value or income from commercial salmon fishing of €4.33 million in 2002, of which €3.64 million is generated by the drift net sector, while the draft net and other commercial sectors are estimated to have an overall economic impact of €0.59 million and €0.09 million respectively. There is a wide variation in the relative economic impact at regional level.

The revenue estimates presented above do not include value added from downstream activities related to the salmon fishing sector, such as fish processing and smoking. We estimate net output in the smoked salmon sector at approximately €14.9 million in 2002, implying a total value added of €10.6 million in the smoked salmon sector alone. Further value-added would be generated in other processing activities and in wholesale and retail activities, all of which would have significant employment impacts.

From a regional perspective, it should be noted that this economic activity is concentrated in areas that generally lack an intensive industry base i.e. very often in rural and small coastal towns and villages. In these areas, the alternative employment and economic activity alternatives are often much more limited than in other more developed areas. In other words, the importance of commercial salmon fishing is likely to vary substantially on a regional basis, though in some of the more peripheral areas of the country, the income generated from commercial fishing may figure more highly in terms of individual livelihoods.

## Economic Impact of Salmon Angling

This evaluation also assesses the current economic impact of salmon angling in Ireland. Specifically, we estimate the value of both overseas angling tourism and domestic salmon angling to the Irish economy, using data from a number of sources, including the Indecon surveys of domestic and overseas salmon anglers.

The key findings from our analysis are as follows:

- In each of the years 1998 to 2000, it is estimated that there were 24,000 overseas salmon angling visits to Ireland.
- Overall, 90.2% of respondents to the Indecon survey of overseas anglers (n=83) indicated that salmon fishing was their primary purpose, while 9.8% indicated that it was not.
- 72% of overseas salmon anglers arrive in the months of May to August, with much lower proportions arriving in the off-season.
- The weighted average duration of stay for overseas salmon anglers is 11.8 nights. This suggests that overseas salmon anglers tend to spend longer in Ireland on average than the typical overseas tourist.
- Adjusting for the import content of expenditure and taking into account the estimated multiplier impact from overseas tourism spending, we estimate that overseas salmon anglers coming to Ireland principally for salmon angling contributed an estimated €19.3 million to the economy in total over the period 1998-2000, or an average of €6.43 million per annum.
- Our estimates suggest that the value of overseas salmon angling in Ireland is greatest in the North West region, where it is estimated to have generated approximately €5.74 million in total over the period 1998-2000. The North West is followed by the Northern and South Western regions, where overseas angling is estimated to have generated €3.4 million and €3.2 million respectively over this period.
- For domestic anglers, the Indecon survey indicates that estimated average daily expenditure was equal to €136.5 per day during the 2002 season, with a median reported expenditure of €100.
- On average, domestic angler survey respondents (n=218) reported an average catch of 5.3 fish at an estimated average weight of 6.1 lbs.
- For domestic anglers, 75.4% of days fished were in local waters, while 24.6% were outside the angler's locality.
- Adjusting for the displacement impact of domestic expenditure and the import content of spending, we estimate the total net benefit of domestic salmon angling to the Irish economy at €4.590 million in 2001.

## Estimation of Socio-economic Value of Wild Salmon

We have developed our estimates for the socio-economic value of the commercial and rod & line salmon fisheries on the basis of a range of scenarios for the salmon management regime in Ireland. While these scenarios are designed to be indicative, they are instructive in terms of considering the impact on the overall value of the wild salmon resource based on differing assumptions regarding the allocation of the salmon catch between the commercial and rod & line sectors.

Under the assumption of a continuation in the present management regime and a constant commercial salmon catch at 2002 levels, the present net socio-economic value of the commercial fishery is estimated at €35.9 million. On the same basis, we would estimate that the overall salmon angling resource would be valued at €91.6 million in present value terms.

## Recommendations re Options for Models of Sustainable Management

*Review of Salmon Management in Other Countries*

In developing recommendations for the management of the salmon resource in Ireland, it is instructive to examine the experiences in other countries and, in particular, the key reforms that have been implemented in the salmon fisheries in these countries with the objective of ensuring the sustainability of the resource. In this evaluation we have reflected on the experiences in Canada, Greenland/Faroe Islands, England, Scotland and Northern Ireland and have also taken account of specific Irish circumstances.

From our analysis and our research on international approaches to salmon management, we have identified a range of reforms that we believe would assist in maximising the overall economic return from, and ensuring the long-term sustainability of the wild salmon resource in Ireland. Our analysis indicates that the balance of advantage on economic/socio economic grounds can best be achieved through a rebalancing of wild salmon exploitation from the commercial fisheries towards tourist angling. To achieve this, urgent progressive reforms both of the commercial and angling sectors are required. Our recommendations are based on the requirement that wild salmon exploitation must occur within the context of meeting stock conservation requirements. Priority must be given to ensuring that sufficient salmon are allowed to escape upriver to spawn. Consideration of how the remainder of the salmon run should be exploited can only take place when spawning requirements are provided for. We summarise our recommendations in the table overleaf.

**Summary of Recommendations re Options for Future Sustainable Management of Wild Salmon Resource in Ireland**

1 - WE DO NOT RECOMMEND THE ENDING OF COMMERCIAL SALMON FISHING BUT BELIEVE THE LEVEL OF CATCH SHOULD BE ALIGNED WITH SUSTAINABLE DEVELOPMENT.

2 - WE RECOMMEND THAT A REBALANCING OF EXPLOITATION BETWEEN COMMERCIAL AND ANGLING SECTORS SHOULD BE ACHIEVED BY ONE OR MORE OF THE FOLLOWING INCENTIVES:

- A. IMPLEMENT APPROPRIATE REDUCTION IN COMMERCIAL SALMON CATCH THROUGH REVISION IN COMMERCIAL QUOTAS AND RESTRICTION OF NEW ENTRANTS.
- B. PROVIDE CONTINUED SUPPORT FOR SET-ASIDE SCHEMES AT LOCAL LEVEL WITHIN THE COMMERCIAL SECTOR.
- C. REDUCE COMMERCIAL SALMON FISHING THROUGH INTRODUCTION OF VOLUNTARY BUY-OUT PROGRAMME.

3 - WE RECOMMEND THAT POLICY CONSIDERATION SHOULD BE GIVEN TO A SINGLE STOCK APPROACH TO EXPLOITATION AS A PRIORITY.

4 - WE RECOMMEND THAT CONSIDERATION SHOULD BE GIVEN TO INTRODUCING INDIVIDUAL QUOTAS ON COMMERCIAL SALMON LICENCES.

5 - WE RECOMMEND THAT APPROPRIATE RIVER MANAGEMENT STRUCTURES RELATING TO TOURIST ANGLING AVAILABILITY AND ACCESS SHOULD BE PUT IN PLACE.

6 - WE RECOMMEND THAT UNCERTAINTIES RELATING TO FISHERIES OWNERSHIP SHOULD BE ADDRESSED.

7 - WE RECOMMEND ON-GOING TARGETED ANGLING MARKETING STRATEGIES TO ENSURE THAT THE ECONOMIC AND SOCIAL BENEFITS OF SALMON RESOURCES ARE REALISED.

8 - WE RECOMMEND THAT DEVELOPMENT AGENCIES SHOULD ACTIVELY ASSIST FISHERMEN IN SECURING OPPORTUNITIES IN RELATED SECTORS.

## Conclusions

The recommendations outlined above are designed to maximise the overall economic return from wild salmon and to ensure the long-term sustainability of this important and valuable resource.

Chapter 1

# Introduction and Background

# 1 Introduction and Background

## Introduction

1.1 This report represents an independent economic/socio-economic evaluation of wild salmon in Ireland. The report has been prepared for the Central Fisheries Board. The evaluation addresses the requirements for the long-term sustainable management of wild salmon stocks, within an economic and socio-economic context, to ensure the viability of this important resource.

1.2 This evaluation takes place against the background of a long-term decline in wild salmon stocks in the recent decades, as evidenced by the continued fall in the annual total salmon catch, particularly since the early 1990s.

## Background and Context to Review

1.3 The Atlantic wild salmon (*Salmo salar)* fishery in Ireland comprises a commercial and a recreational fishery. The recreational fishery is confined to the river systems, of which over one hundred are recognised as salmon and sea trout fisheries. Salmon angling in Ireland attracts a large number of participants, including both local anglers and overseas visitors, and in 2001 close to 33,000 salmon/sea trout licences were sold to anglers.

1.4 The commercial fishery comprises a number of sectors, depending on the method of harvesting. The largest sector, in terms of the proportion of commercial salmon harvested, is the drift net fishery, which extends offshore to 6 miles and accounted for almost 87% of the total commercial salmon catch in 2002. There was a total of 876 drift net commercial licence holders in 2002. The draft net fishery is confined to the estuaries and inland stretches of the river systems and accounted for just over 11% of the commercial salmon catch and 544 draft net licence holders. Other methods employed in the commercial sector include snap nets, loop nets and bag nets, though these methods represented a combined proportion of only 2.3% of the total commercial catch in 2002, while there were 161 licence holders.

1.5 The Central and Regional Fisheries Boards are the statutory agencies responsible for inland fisheries in Ireland and operate under the aegis of the Department of Communications, Marine and Natural Resources. The general functions of the Central Fisheries Board are as to

- Promote, support, facilitate and co-ordinate where necessary the conservation, protection, management, development and improvement of inland fisheries;
- Advise the Minister on policy relating to the conservation, protection, management, development and improvement of inland fisheries; and
- Advise the Minister on the efficient and effective performance by the Regional Boards of their functions.

1.6 The Regional Boards have primary responsibility for conservation, protection, management, development and promotion within the regional fishery board areas.

1.7 In addition to the role of the fisheries boards, the National Salmon Commission was established under the Fisheries (Amendment) Act, 1999. Its function is to assist and advise the Minister on the management of the national salmon resource and, in particular, in relation to the operation of the wild salmon and sea trout tagging and logbook scheme.

## Scope and Terms of Reference of Evaluation

1.8 The overall objective of the study is to provide an "economic/socio economic evaluation of wild salmon in Ireland." In line with the terms of reference, this study entails:

- Consideration and quantification of the economic/socio economic value and importance of the commercial wild salmon fishery in Ireland;
- Consideration and quantification of the economic/socio economic value and importance of the salmon rod angling fishery in Ireland;
- Sets out options/models on how both segments of the industry should be sustainably managed from an economic/socio economic perspective in the future; and,
- While this is a national study, consideration is given to the importance of wild salmon to coastal and rural communities.

1.9 In developing an appropriate economic/socio-economic profile, the following aspects have been considered:

- Existing material/information/studies on the management of wild salmon;
- Current policy on the management of wild salmon in Ireland;
- Historic practices and expectations within the sector;
- Recent international developments in the management of wild salmon;
- The relevant aspects of the Common Fisheries Policy, and of the reform of the Common Fisheries Policy currently underway.

1.10 This review is envisaged to complement a number of specific elements of the Salmon Management agenda, including:

- The review of the tags and quotas scheme (currently underway by the Fisheries Boards and The National Salmon Commission);
- The work of the Standing Scientific Committee of the National Salmon Commission;
- The outcome of the study to quantify the salmon freshwater habitat in Ireland (being advanced by CFB);
- Feasibility Study and scoping exercises on the use of technology to provide an improved customer service to commercial and rod anglers particularly relating to licensing, tagging and quotas (project being advanced by CFB);
- Provision of on–line sale facility for salmon and sea trout licence (projects being advanced by CFB); and,
- The proposals for a buy out/set aside scheme (currently being advanced by the CFB in consultation with RFBs and which will be put before the Minister).

1.11 The over-riding objective of this evaluation is to input, in conjunction with the elements outlined above, into the formulation of advice to the Minister for Communications, Marine and Natural Resources on the long-term sustainable management of wild salmon in Ireland. Within this goal, we also consider issues relating to the optimal allocation of the resource between the commercial and recreational sectors.

## Approach

1.12 In terms of undertaking this evaluation of wild salmon in Ireland, the approach taken entails a number of key aspects including:

- Review of existing and previous research;
- Review of recent developments;
- Interviews/consultations with, or submissions from, key individuals and organisations, including the Regional Fisheries Boards;
- Indecon survey of commercial salmon fishermen;
- Indecon survey of overseas and domestic salmon anglers;
- Indecon survey of tourist interests;
- Analysis of Bord Failte and Central Statistics Office data;
- Geographic analysis of hotels and guesthouses; and,
- Quantification of economic/socio-economic value of wild salmon in Ireland.

1.13 As noted above, our approach included consultations with the Regional Fisheries Boards. This entailed initial written correspondence with each of the Regional Board CEO's in November 2002, outlining the terms of reference for the study and seeking their views on the future development of the wild salmon resource. This was followed up with subsequent discussions with CEOs. Additional supporting material was also submitted to the consultancy team.

1.14 The analysis presented in this report is the product of this extensive new research on the commercial and recreational wild salmon fishery in Ireland.

## Acknowledgements

1.15 The consultancy team would like to acknowledge the invaluable inputs and assistance given to the team by the Central and Regional Fisheries Boards, the Department of Communications, Marine and Natural Resources, the Marine Institute, Bord Iascaigh Mhara, and Bord Fáilte. Particular thanks are also due to commercial fishermen, as well as anglers and tourism interests who provided information and views to the team.

1.16 The views and analysis in this report are however the sole responsibility of Indecon. While every care and attention has been taken by Indecon to ensure the accuracy of this report, we are not responsible for any omissions or errors.

Chapter 2

# Review of Existing Research on Socio-economic Value of Atlantic Salmon

# 2 Review of Existing Research on Socio-Economic Value of Atlantic Salmon

2.1 In this Section we present a review of the existing research undertaken in relation to the evaluation of the economic/socio-economic value of the Atlantic wild salmon resource. This includes existing Irish-based research on the value of the salmon resource and international research on the economic/socio-economic value of the resource. The objective of this review is to provide a context for the current evaluation by describing the key findings from the research previously undertaken and identifying the gaps in the research that require addressing in the current study.

## Irish-based Research

***Estimating the Demand for Salmon Angling in Ireland***[1]

2.2 This paper reports the findings of a modelling exercise, based on the travel costs of anglers, which estimates the demand and economic value of salmon angling in County Donegal, Ireland. The travel cost approach is applied in the estimation of a salmon angling demand function using econometric techniques, where demand at a given location relates the number of fishing days taken by an angler in a given period, the trip price (i.e. travel cost) and angler characteristics.

2.3 The results from the estimations techniques employed reveal that angling quality and the age and nationality of the angler were found to affect angling demand. Furthermore, the research found that the average/mean willingness to pay of the average salmon angler (based on the consumer surplus of anglers and their travel costs) visiting Donegal in 1992 was £206 (€262) per day.[2] Given average travel costs of IR£68 (€86) per day, this would suggest that salmon anglers receive a considerable benefit from angling in excess of their travel/angling costs. The study draws the conclusion that there appears to be a considerable scope facing fishery managers to increase their revenues, given that consumer surplus is such a large proportion (67%) of their total willingness to pay. However, the study also notes that the ability of fishery managers to capture this consumer surplus may be limited to the extent that some anglers who have a large surplus may also be sensitive to price.

[1] John A. Curtis, *Estimating the Demand for Salmon Angling in Ireland*, ESRI, The Social and Economic Review, Vol. 33, No. 3, Winter 2002, pp. 319-332.

[2] The consumer surplus, in this case, equates to the difference between what the angler pays for access to fishing and what he/she is prepared to pay rather than go without the recreation.

### *The Value of the Wild Atlantic Salmon Fisheries*[3]

2.4 This paper, by the same author as above, presents a theoretical argument as to why it is the marginal rather than the total value that is the relevant information for the efficient allocation of the salmon quota. Indecon agrees with this point. The study notes current valuations based on the size of the commercial salmon catch multiplied by a national average price for commercial salmon suggests a valuation of approximately €4 million or as much as €100 million in present value terms.[4]

2.5 In relation to the value of salmon angling, the author notes the findings from the earlier study of angling in Donegal (cited below), which found that salmon anglers' daily expenditure averaged IR£68. Accounting for inflation during the intervening period, IR£68/day in 1992 is equivalent to approximately €118/day in 2002 prices. However, the author notes that a shortcoming with the Donegal study is that it gives no indication of whether the Donegal survey sample is representative of salmon angling expenditures nationally, making it difficult to extrapolate these findings on a national basis.

2.6 The study states that information on the marginal willingness to pay for additional salmon is critical for the efficient management of the combined (recreational and commercial) salmon fisheries. It goes on to note that if the marginal value of salmon caught in the recreational fishery is greater than the marginal value of salmon caught in the commercial fishery, then it is efficient to reduce the size of the commercial fishery and allow more salmon into the recreational fishery. A hypothetical example is included to demonstrate that with the use of some basic information on the commercial and recreational fisheries, one can infer whether re-allocation of existing quotas might increase the total value of the salmon resource.

2.7 According to the research, finding the efficient allocation of quota for the commercial and recreational fisheries does not involve finding a single correct quota allocation but involves continuous management adjustments as new information arises over time.

[3] J. A. Curtis. *The Value of the Wild Atlantic Salmon Fisheries*. ESRI, November 2002.

[4] Based on the assumption of an average price of €9/kg and a discount rate of 4%, discounted over perpetuity. It should be noted, however, that this calculation represents the gross value of the income stream and does not exclude deductions for operating expenses.

### *An Economic Evaluation of Irish Salmon Fishing*[5]

2.8 One of the earliest economic evaluations of Irish salmon fishing was undertaken in 1974 in a study sponsored by the then Department of Agriculture and Fisheries. The objective of the study was to investigate the economics of salmon fishing in Ireland and to assess how valuable the salmon industry was to the Irish economy in 1970. The study attempted to evaluate the economic impact of angling and commercial salmon fishing on a district basis, to determine the capacity of the industry for future development and provide information to assist in the more effective marketing of salmon and sea trout angling.

2.9 The evaluation comprised three elements, the first focusing on foreign or visiting anglers based on a random survey of 430 anglers, while the second element dealt with domestic anglers, based on interviews with a random sample of 586 anglers. The third part concentrated on the commercial sector and entailed 328 personal interviews with commercial salmon fishermen.

2.10 A range of valuations was estimated for the value of the Irish salmon fishing industry, including gross output, net output, total Gross National product impacts and total export earnings. These estimates suggested that the recreational fishing industry was valued in gross output or total expenditure terms at £0.85 million in 1970. The total value of the salmon fishing industry (i.e. including the recreational and commercial sectors) was estimated at between £1.63 million and £3.1 million depending on the measure used, where the latter figure includes a multiplier effect reflecting the secondary impact on GNP of expenditure by overseas anglers and the total value of the commercial catch.

[5] R. O'Connor, B. J. Whelan and A. McCashin, An Economic Evaluation of Irish Salmon Fishing – General Summary of Results, ESRI, 1975.

### *An Illustrative Grilse Survival Model for an Irish Salmon Fishery*[6]

2.11 This study estimates the biological and economic effects of a selection of management options for the Irish salmon fishery. The bulk of Irish salmon are nowadays taken by interceptory drift nets. A model was developed examining salmon survival under a number of differing exploitation scenarios for a typical medium-sized fishery. Depending on the scenarios, the total income generated by the fishery was estimated to rise from £291,000 to between £373,000 and £668,000. The employment level was estimated to rise from 12 to between 16 and 29, according to the study. To achieve these improvements the report suggests this would require strict quota-based management of the estuarine fishery, good management of the rod fishery, clarification of ownership and access issues and improved protection services. The study concludes that implementation of such policies would, according to the report, allow many fisheries to attain their optimum capacity and would create the potential to develop a salmon ranching industry, as well as generating significant income and employment.

### *The Economic Consequences of Phasing Out the Irish Drift Net Salmon Fishery*[7]

2.12 This study focuses on the economic issues pertaining to a scenario involving the phasing out of the Irish commercial drift net salmon fishery. The study deals with the following issues:

- Examination of level and trends in drift net catch.
- Estimation of the likely increase in riverine escapement consequent on the elimination of drift netting and its distribution across river systems.
- Estimation of the likely increase in catch by other nets (draft, traps, etc.) and anglers.
- Estimation of the economic consequences of static or falling relative prices for salmon as a commodity.
- Analysis of the consequences of improvement in riverine escapement.

[6] P.G. Gargan, K. F. Whelan, and B. J. Whelan. *An Illustrative Grilse Survival Model for an Irish Salmon Fishery*, in Recreational Fisheries – Social, Economic and Management Aspects by Phil Hickley (Ed.), 1997, Fishing News Books, Page 106-115.

[7] Fingleton, P. and B. J. Whelan. *The Economic Consequences of Phasing Out the Irish Drift Net Salmon Fishery*. ESRI, November 1993.

- Other opportunities offered by the phase out, including improved possibilities for rivers by river management and potential for ranching.
- Specification of some of the conditions required for maximising the gains from phase out, including improving protection and management, adequacy of anglers facilities and accommodation in the relevant areas etc.
- Assessment of the overall balance in terms of employment, income etc. of losses in the drift net industry against gains in tourism, river management, ranching etc.

2.13 According to the authors, were the drift nets to be removed, their share of the salmon catch would be divided between other nets/traps, rods, natural mortality poaching and spawning escapement. Based on historical patterns of rod exploitation at the Burrishoole Fishery in County Mayo, and adjusting for this fishery's above average exploitation rate, the authors assume a national angling exploitation rate of 20%. The total available stock based on average salmon catches between 1988 and 1992 is then calculated.

2.14 The authors then state that the simplest assumption as to how the stock would be divided in the absence of drift netting is that effort (days fished) by the remaining sectors would stay constant and that their catches, and spawning escapement, would rise in proportion to the increased riverine run. However, the authors are of the view that it is likely that effort in the remaining sectors would actually rise, perhaps substantially because:

- Draft or other netting licences which have been under-utilised or un-used in recent years may come into increasing use;
- Rod angling effort is likely also to increase with raised stock levels;
- Increased riverine stocks are likely to bring about an increased level of illegal fishing.

2.15 According to the study, it is not possible to quantify with any precision how strongly these factors will operate. The authors therefore postulated the following post drift-net scenarios:

(i) where effort remained constant;

(ii) where there is a 25% increase in effort;

(iii) A 50% increase in effort.

2.16 The study then goes on to estimate the economic consequences for the commercial sector of a phasing out of drift net fishing. According to the authors, the effects of such a move would be both negative and positive. The income currently generated by the drift net fishery would be removed. Incomes from all other commercial operations would, however, increase. In recent years, net income arising from drift netting has been falling very sharply due to two factors: (a) declining catches and (b) falling real salmon prices. The main factor responsible for the substantial fall in salmon prices has been the huge increase world wide in the availability of farmed salmon. Previous research stated that such price levels would be likely to persist over the medium term.

2.17 According to the study, it could be argued that domestic anglers' expenditure does not constitute a net injection into the economy and should therefore be disregarded. On the other hand, some of this expenditure does have desirable redistribution effects from a regional point of view. According to the authors, the critical issues in estimating the impact on angling activity of a cessation in drift net fishing is the responsiveness of visitor numbers (Irish or foreign) to prospective or actual improvements in the probability of success. While the level of responsiveness cannot be estimated precisely, the study states that a good deal of evidence exists showing that the demand for salmon angling is strong and growing and that it is a commodity in increasingly scarce supply. In evaluating the effect of the elimination of drift netting on angler numbers, the study assumes a substantial future increase in effort (visitor days) of 25% for domestic anglers and 50% for overseas anglers.

2.18 The study estimates that in 1993 prices, under the assumption of removal of the drift net fishery and 25% increased angling effort, the recreational salmon fishery could be valued (in gross output terms) at IR£6.63 million for overseas visitors and IR£9.6 million for domestic anglers. However, adjusting for the import content would bring these estimates down to IR£1.76 million for visiting anglers and IR£2.51 million for Irish anglers. Under the assumption of a 50% increase in angling effort, these estimates rise to IR£2.12 million for the overseas element and IR£3.06 million in the case of overseas anglers.

***Socio-economic study of recreational fisheries in County Donegal*[8]**

2.19 This investigative report was completed for the Northern Regional Fisheries Board in December 1994 and was entitled, Recreational Sports Fisheries – A Contribution to Socio-economic Improvement in County Donegal.

2.20 This report examines the potential of organised angling tourism to contribute significantly to social and economic improvement in Co. Donegal. The subject is explored through responses to a questionnaire and through interviews with a fishery owner, a fishery manager, a biologist, angling experts, marketing experts, visiting anglers and through the completion of a literature review.

2.21 The report derives a comparative economic evaluation of commercial salmon fishing and angling in Co. Donegal, which supports previous national findings on the greater value of recreational sport fishing. It concludes that commercial netsmen should be encouraged to divert from their current salmonid fishing practices.

2.22 The report calls for a realistic all-embracing policy to placate the interests of commercial salmon netsmen and fish farm operators while leaving the wild salmonid fisheries to draw high levels of angling revenue. The introduction of an 'Angling Co-operative' and 'alternatives' to commercial salmon fishing are viewed as central to the development of angling tourism in the country.

2.23 The report concludes that organised recreational sport fisheries in Co. Donegal have the potential to draw annual revenues of IR£12.4m and to generate a full time employment equivalent of four hundred people.

[8] Kevin O'Connor and Sean O'Maolchallann, *Recreational Sports Fisheries – A Contribution to Socio-economic Improvement in County Donegal*. An investigative report for the Northern Regional Fisheries Board, December 1994.

### *Main Quarry Hypothesis and Salmon Angling*[9]

2.24 This article explores the main quarry hypothesis, which is a variant of the general fishing success hypothesis. It argues that for some recreational fisheries it may be more important that the angler catch has target or main quarry than the quantitative number of fish caught in influencing the number of fishing days and the overall quality of the recreational experience. A theoretical function is specified in the article to explain the length of the fishing trip to Ireland by anglers that have designated salmon as the main quarry.

2.25 The empirical estimation of this function indicates that the length of the fishing trip is positively related to travel costs, but inversely related to on site cost per day. The study finds that, ceteris paribus, the length of salmon trip to Ireland is increased by nearly 23% when the angler gets his main quarry, stressing the importance of the quality of the catch rather than quantitative number of fish caught. According to the study, this finding calls into question the traditional fishing success variables such as catch per day for many recreational fisheries.

### *An Economic Evaluation of Irish Angling*[10]

2.26 The main objective of this study prepared for the Central Fisheries Board was to assess the economic importance of the angling resource so that it might be developed to its maximum potential in terms of income and employment.

2.27 The study examined a range of issues, including:

- How many anglers, both Irish and visitors, fish in Ireland?
- What are their fishing patterns in terms of frequency, desired species, success rates, areas visited?
- What are their views about the current position of angling on Ireland and how it should be developed?
- How much did they spend, on which items and in what areas? What economic benefit is derived from this spending in terms of employment and income generation? What is the return in State investment in protecting and developing sport fisheries?
- Based on these findings, what steps should be taken to develop Irish angling so that it contributes more fully to Irish economic and social development? In particular, what are the future initiatives that should be taken by State and private investment in this area?

[9] Bell, F. W. *Main Quarry Hypothesis and Salmon Angling*, Journal of Marine Resource Economics, 1989, PP. 71-82.

[10] B. J. Whelan and Geraldine March. *An Economic Evaluation of Irish Angling*. ESRI, December 1988.

2.28 Since appropriate data on these topics did not exist, it was necessary to carry out two specially designed surveys, one of anglers resident in Ireland and the other of visiting anglers.

2.29 The authors estimate the total value for the Irish game fishing resource in 1986 prices of IR£28.28 million. The study also estimates that total angling resources (including game, coarse and sea angling) generated some 1,900 full-time equivalent jobs through direct, indirect and induced effects on the economy, while an estimated IR£15 million was yielded in tax revenues.

## International Evaluations on the Economic Value of Salmon

2.30 In this sub-section we review the findings from a number of evaluation studies undertaken in the UK, Iceland, and Canada in relation to the economic value of the wild salmon resource.

### *An Economic Evaluation of Salmon Fisheries in Great Britain*[11]

2.31 This study was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF). The principal aims of the study were (a) to provide estimates of the economic value to Great Britain in 1988 of its commercial and recreational salmon fisheries, and (b) to estimate the magnitude of the expenditure of salmon anglers in that year. In fulfilling these aims a methodology was required that could reasonably be employed by fisheries management authorities to revise or update the estimates derived. Although the study was primarily directed at salmon fisheries, sea trout were considered to the extent that salmon and sea trout fishing constitute a joint enterprise.

2.32 In attempting to define the economic value of a recreational fishery, the study stated that the product of a recreational fishery is the experience of fishing enjoyed by anglers. Catches of fish are not a direct product, although the size of anticipated and realised catches will have an effect on the quality of the fishing experience.

[11] Radford, A. F., Hatcher, A. C., Whitmarsh, D. J. *An Economic Evaluation of Salmon Fisheries in Great Britain (Summary Report)*. Report prepared for the Ministry of Agriculture, Fisheries and Food, July 1991.

2.33 The report also sets out a definition in relation to the economic value of a commercial salmon fishery. According to the authors, the product of a commercial fishery is simply fish. Because the output of a commercial fishery is priced, its net economic value will also comprise consumers' surplus and economic rent. Here consumers' surplus is the aggregate excess that consumers of fish would be willing to pay over and above what they are required to pay in the market place, while economic rent is the income to the fishery in excess of the opportunity costs of the resources used in order to catch fish.

2.34 Based on survey data collected on the commercial fisheries in England and Wales, the overall mean prices per Kg fetched for salmon and sea trout throughout the 1988 season were calculated on a regional basis. Estimates for the gross revenue were then calculated using mean prices and published salmon catch statistics. After subtraction of average costs per licensed commercial fisherman, the authors estimated that the total value added of the salmon and sea trout commercial fisheries in England and Wales to be approximately STG£1.27 million in 1988, or about STG£3.17 per Kg of salmon landed. The authors also estimate the capitalised or present value of the total economic rents accruing from commercial fishermen's labour at between STG£2.98 million and STG£5.47 million in 1988. In relation to the Scottish fishery a total capitalised/present value was estimated of between STG£6.2 million and STG£11.36 million in 1988. In total, across Great Britain, the study estimates a total capitalised economic value for commercial fisheries of between STG£9.1 million and STG£16.8 million in 1988.

2.35 In relation to recreational salmon fisheries, a number of measures were employed by authors in developing estimates for the value of fisheries in Great Britain. One measure looked at the estimated potential market value of fisheries on a beat-by-beat basis across a number of fisheries examined as part of a survey of anglers in England and Wales and a separate survey of rod fishery proprietors and managers in Scotland. The study estimated a total market value for rod & line salmon fisheries in England and Wales of approximately STG£72 million in 1988. As an estimate of the total market value, the authors note that this equates to an estimate of the total capitalised economic rent and hence the total net economic value of the rod & line salmon fishery in England and Wales in 1988.

2.36 The authors go on to estimate the total capitalised economic rent in the recreational fisheries in Scotland, and hence an approximation to their total capitalised net economic value in 1988, at STG£254.8 million.

2.37 In total across Great Britain, it was estimated that the total capitalised economic value associated with recreational salmon fisheries was approximately STG£326.8 million in 1988.

### *The Value of the Atlantic Salmon and its Fisheries in England and Wales*[12]

2.38 In this paper, prepared for NASCO in 2002, the author describes some of the different measures of value and reports on the assessments that have been made in recent years of the economic and social values of salmon in England and Wales. The paper notes that there is no single economic value for salmon and salmon fisheries. Rather, different measures are used to reflect, partially or wholly, the value of fish and fisheries to different groups of people. It also notes that these values may not always be amenable to addition, so that it is not possible to provide a single economic value figure for the salmon resource.

2.39 The study concludes that if the salmon fisheries of England and Wales were lost, this would represent an estimated net economic loss of about STG£250 million to fishery owners and the 30,000 or so salmon fishermen (mostly anglers). Most of this loss, according to the study, would be associated with the loss of the rod & line salmon fisheries, with the commercial net fisheries having a net economic value of about STG£2.5 million to commercial fishermen. Nonetheless, it notes, for the 1,200 or so commercial fishermen individual losses could be substantial.

2.40 The paper notes that while salmon may be most highly valued by fishermen and fishery owners, these values are probably outweighed by the cumulative benefit to the general public simply from the 'existence' of salmon stocks, and perhaps salmon fisheries, particularly given the salmon's importance as a symbol of good environmental quality.

2.41 The study concludes by stating that salmon fisheries are of minor importance to the national economy in England and Wales, but may be significant to the local economies of certain rural communities.

[12] Mawle, Guy W., *The Value of the Atlantic Salmon and its Fisheries in England and Wales.* Prepared for the Technical Workshop on Social and Economic Values of Atlantic Salmon, NASCO, 2002.

### *Social and Economic Values of Atlantic Salmon – Canada*[13]

2.42 In this study of the social and economic values of the wild Atlantic salmon resource in Canada, the author commences by stating that there are many different kinds of value than can be associated with wild Atlantic salmon and its habitat, distinguishing between values derived from the extractive use of salmon (such as recreational or commercial fishing and those values derived from the resource *in situ*, including the value of the existence of the resource. The study notes that not all of these values may be estimated in monetary terms, with non-monetary benefits being equated with social (or cultural) values.

2.43 Based on the findings from the 2000 Survey of Recreational Fishing undertaken by Fisheries and Oceans Canada, the study noted that around 53,000 anglers possessed a salmon licence in Canada in 2000, with over 77% being resident in the province in which they fished, while 8% were from other provinces and 14% were non-Canadians. The study finds that recreational fishing continues to generate a significant amount of economic activity in Atlantic Canada. In terms of total expenditures to participate in recreational salmon angling, a total of over C$83 million (15% of total angling) was attributable to Atlantic salmon angling. In addition, the study noted the survey findings in relation to investment expenditures associated with salmon angling (including fishing gear/tackle, boating equipment, etc.), which found that in 2000 over C$81 million was attributable to salmon fishing activities. Combining all elements of expenditure, the recreational Atlantic salmon fishery was found to generate a direct economic impact of C$165 million in 2000, which (based on the number of salmon caught in 2000), amounted to a direct economic impact of approximately C$852 per salmon in 2000.

2.44 In relation to commercial salmon fishing, the Canadian study notes that at one time the commercial fishery had significant extractive value. With the exceptions of Québec and Newfoundland & Labrador, commercial salmon fishing in Atlantic Canada ended by the mid-1980s. In Newfoundland & Labrador, most salmon fishing ended in 1992, and only a small-scale salmon fishery remained active in Labrador until 1998. In Québec, all commercial fishing ended in 2000. Historically, one of the best years for the commercial fishery was 1980, when 2,400 tonnes of salmon were landed worth (CAD 1980) $9 million, which translates into (CAD 2000) $19.5 million. However, the study suggests that the true economic value of the commercial Atlantic salmon fishery -- producer surplus -- would have been much lower in light of the costs of fishing.

[13] Ruseski, G. (Fisheries and Oceans Canada), *Social and Economic Values of Wild Salmon – Canada*. Prepared for the Technical Workshop on Social and Economic Values of Atlantic Salmon, NASCO, 2002.

### *Economic Value of Icelandic Salmon in Angling and Net Fisheries*[14]

2.45 In this paper the authors attempt to provide best estimates regarding the value of salmon in sports fisheries based on angling information for the last 5 years. The value of commercially netted salmon is also compared to that of angled salmon. No attempt was made to estimate the aesthetic or socio-economic value of salmon, which would have been difficult to estimate in monetary terms.

2.46 Although most of the commercial netting of salmon in Iceland has been eliminated through rental agreements there is still some in-river netting for salmon on Iceland´s south coast. The study also notes that angling for Atlantic salmon in Iceland has been growing steadily for the last 50 years and is now a highly valuable fishery. It has been roughly estimated that direct and indirect revenues from the Icelandic angling catch of approximately 30,000 salmon amount to US$30 million, which corresponds to US$1000 per angled salmon.

2.47 The authors state that the value of salmon differs depending on the user group. Therefore, the value to a river owner, who obtains a direct income from the resource, is different to that of the angler, who appreciates the recreational value but keep the price of licences low. Thus, the authors calculate the value of Atlantic salmon is two ways, firstly, as a direct revenue flow to river owners and secondly as a gross value to the Icelandic economy.

2.48 The study finds that each salmon in the Icelandic recreational fisheries is worth approximately US$599 to the Icelandic economy, when only river related factors such as fishing licences, food and lodging as well as guiding on the rivers are taken into account. To this estimate can be added the revenues from the sale of bait, tackle and angling gear as well are airline fares and the marginal costs associated with a luxury fishing trip. While no information was available to accurately estimate these costs, the study notes that it is probably safe to assume that the most expensive elements have been considered and that these factors add about 20% to the above value of each salmon, bringing the total value to an estimated US$600 per salmon.

2.49 The authors state that while this figure is somewhat lower than the value of $1000 per salmon quoted earlier, it should be noted that reduced catches in a season lead to higher value per salmon, since these are inversely related. Although this seems somewhat paradoxical one can probably assume that high quality fishing in the long run keeps up demand and thus price of licences.

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[14] Arni Isaksson and S. Oskarsson, Directorate of Freshwater Fisheries, *Economic Value of Icelandic Salmon (Salmo salar L.) in Angling and Net Fisheries*. Prepared for the Technical Workshop on Social and Economic Values of Atlantic Salmon, NASCO, 2002.

2.50 In relation to the value of commercial/net caught salmon, the study finds that value of netted salmon would be around $14, which is 1/35th of the value of such a salmon in an angling fishery. This estimate is based on the observation that during the 2001 season about 3000 salmon were caught in set-nets in rivers, which is less than 10 % of the total catch. All of these salmon are marketed within Iceland and since wild salmon are a rare seasonal commodity, they fetch a reasonably high price on the market compared to reared salmon. According to gill-netters on the Ölfusa river the 2002 price was close to US$6.5 per kilogram, which is close to US$16 for an average size grilse. Similar average values for 2-SW salmon would be US$32. Assuming that roughly half of the salmon caught would be grilse the adjusted value for net caught salmon would be US$24. From this figure we need to subtract the cost of netting and marketing, which is likely to be at least US$10 per salmon. The net value of netted salmon would thus be US$14, which is 1/35th of the value of such a salmon in an angling fishery.

# Conclusion

2.51 In this section we reviewed a number of Irish-based and international evaluation studies concerning the economic/socio-economic value of the Atlantic wild salmon resource. In relation to the international research, existing studies in respect of the salmon fisheries in Great Britain, Iceland and Canada have each pointed to a substantial gap between the economic values attributed to commercial and recreational salmon fishing, with recreational activity typically yielding a large multiple of the values estimated for commercial salmon fishing.

2.52 In relation to the Irish-based studies, the existing research varies in terms of scope, and while some studies entailed significant survey work and provided estimates for the comparative value of the recreational and commercial fisheries, many of these findings are now outdated or relate to county-level rather than national patterns. Indeed, the last major comprehensive national study was conducted as far back as 1988.[15] The current evaluation aims to address these shortcomings through the employment of extensive new survey research and the estimation of up-to-date economic valuations for the commercial and recreational salmon fishing sectors. The existing studies also highlight the issue of the difference between marginal and average values.

[15] See B. J. Whelan and Geraldine March. *An Economic Evaluation of Irish Angling (1988),* Op. Cit.

## Chapter 3

# Review of Salmon Management in Ireland

# 3 Review of Salmon Management in Ireland

3.1 In this Section we review the approach and recent changes to the management of the wild salmon resource in Ireland. We also analyse the historical trends in relation to the salmon catch. The objective of this section is to describe the historical picture on the management and development of the salmon fishery since the 1960s and to identify the key shifts that have occurred over this period. Our review will show that significant changes have been introduced in the salmon management regime in recent years with the aim of ensuring the long-term sustainability of the resource. These changes also represent an opportune time to assess the economic/socio-economic value of the resource.

## Developments in Salmon Management Policy

*Historical context since the 1960s*

3.2 From the 1960s up until 1996/1997 the approach to the management of the salmon resource in Ireland remained broadly stable, despite the advent of a number of reviews undertaken by the Inland Fisheries Commission (1975)[16], the Central Fisheries Board (1986)[17] and the Salmon Review Group (1987)[18]. The first two of these reports, *inter alia*, recommended either strict control of or phasing out of drift netting, while advising on the promotion of salmon angling, while the latter report recommended a range of changes including control of the fishing effort and the extent of the offshore drift net fishery, the introduction of quotas, salmon tagging and log books, the operation of angling quotas and the promotion of angling fisheries.

[16] Inland Fisheries Commission, *Report of the Inland Fisheries Commission*, Dublin: Stationery Office, 1975.

[17] Central Fisheries Board, *Inland Fisheries – Strategies for Management and Development*, Dublin: Central Fisheries Board, 1986.

[18] Salmon Review Group, *Report of the Salmon Review Group*, Department of the Marine, Dublin, 1987.

3.3 The management of the resource up to 1997 took place against the background of profound changes in the methods of harvesting and the overall trend in salmon catches, which are documented in greater detail later in this section. In summary, the period between the early 1960s and the early 1970s saw a marked increase in the number of drift net commercial licences (from 363 in 1962 to 1,048 in 1974), while the proportion of the overall commercial catch taken by drift nets (as opposed to draft net and other methods) rose from 19.8% in 1960 to 49.3% in 1970 and 85% by 1985. Meanwhile, the total commercial salmon catch fell from an annual average of 1,172 tonnes between 1960-65 to an average of 1,046 tonnes between 1980-85, with the catch peaking at 2,188 tonnes in 1975 and falling to a low of 404 tonnes in 1991.

*The Salmon Management Task Force Report (1996)*

3.4 The management of the wild salmon resource in Ireland took a new departure following the publication in 1996 of the report of the Salmon Management Task Force[19]. The Task Force recommended a radical new approach to the management of the resource, with its mission statement being to "secure and augment national salmon stocks as a sustainable resource to be managed on a catchment basis for the social and economic benefit of the community with an overall national framework".

3.5 Among the key recommendations to come out of the Task Force report, a number of specific changes were advised in relation to the spring salmon fishery, as follows:

- Drift net season to be delayed until 1st June;
- Draft net fisheries should not commence until the middle of May;
- Evaluation of a catch and release policy for recreational anglers in the spring;
- The application of modern techniques of genetics and husbandry for the enhancement of spring fish in selected fisheries;
- The provision of special environmental protection to the habitat of spring salmon, particularly in respect of spawning areas.

[19] Salmon Management Task Force, *Salmon Management Task Force – Report to the Minister*, Department of the Marine, Dublin, 1996. The Task Force was established by the Minister for the Marine in October 1995.

3.6 In relation to the grilse/summer salmon fishery, the Task Force report recommended the following measures:

- Legalisation of monofilament net;
- Increase in depth of netting to 45 meshes;
- A cap on the number of drift net licences at 1995 levels;
- Confinement of nets to within 6 nautical miles from baselines;
- Netting to be permitted on a 4 day per week basis only;
- Fishing times to be restricted to 4am-9pm;
- Fishing season to run from 1 June to 31st August;
- Draft net fishery to be restricted to defined areas;
- No further extensions to be permitted to commercial or rod & line fisheries;
- A ban on the sale of rod caught salmon.

3.7 In addition, a number of institutional/organisational changes and control and management changes were recommended by the Task Force, including:

- The establishment of a National Salmon Management Commission to monitor strategic implementation of the Salmon Management Plan;
- Establishment of salmon catchment committees;
- Recasting of the regional fisheries boards to make them more representative of the community as a whole.

3.8 In relation to control and management issues, the Task Force report advised on the introduction of a national total allowable catch (TAC) and a salmon carcass tagging programme. The report recommended that a TAC be set at 900 tonnes in the initial year of implementation, so as to take account of the assumed level of undeclared catch.

3.9 An important finding from the Task Force report concerned the allocation of the wild salmon resource, with the report stating that:

> "the balance of advantage on conservation, environmental and economic grounds should lie increasingly with redirecting salmon stocks from interceptory commercial exploitation towards recreational fishing".

*1997 Conservation Measures*

3.10 Following consideration of the Task Force report by the Minister for the Marine, and the Dail Committee on Economic Strategy and Enterprise, it was decided in 1997 to implement the principal measures recommended by Task Force with the objective of providing a first step towards the conservation of the salmon stock. In respect of the drift net fishery the measures brought into force included:

- A reduction in the maximum number of drift net licences that may be issued by the regional fisheries boards from 847 to 773;
- A reduction in the offshore fishing limit from 12 nautical miles to 6 nautical miles from the shore baselines;
- Deferral of the opening date of the fishery to 1st June;
- The weekend close period extended to three days – Friday to Sunday inclusive;
- Introduction of day-only fishing between the hours of 4am and 9pm;
- Legalisation of monofilament nets;
- Increase in net mesh depth from 30 meshes to 45 meshes.

3.11 In relation to draft and other fisheries, the Minister introduced the following conservation measures:

- Reduction in the prescribed maximum number of draft net licences from 604 to 518 and in the maximum number of other licence types from 164 to 152.
- Deferral of the opening date of the fishery to 15th May;
- Weekend close period extended to three days – Saturday to Monday inclusive.

*Establishment of the National Salmon Commission and Standing Scientific Committee*

3.12 The Fisheries (Amendment) Act, 1999, provided for the establishment of the National Salmon Commission. According to the legislation:

> **Section 55A:** The functions of the Commission shall be to assist and advise the Minister in relation to the conservation, management, protection and development of the national salmon resource and, in particular, to make recommendations to the Minister on any scheme in relation to the management, development and conservation of stocks of wild salmon or sea trout (within the meaning of *section 24* of the *Fisheries (Amendment) Act, 1999*) and in particular the tagging of such fish, and on the setting of a national total allowable catch and quotas for the taking of salmon, in consultation with the boards and the Marine Institute and such other bodies as the Minister directs.

3.13 The 1999 legislation also established a Standing Scientific Committee, the function of which is to advise and assist the Commission on all technical and scientific matters in relation to the performance of the Commission's functions. This primarily entails the provision of advice, based on scientific evidence on stock conservation requirements, to the Commission in relation to the setting of the national Total Allowable Catch and quotas on allowable catch on a district basis.

*Wild Salmon and Sea Trout Carcass Tagging and Logbook Scheme and Quotas Programme*

3.14 The wild salmon and sea trout tagging and logbook scheme was established by the Department of Marine and Natural Resources on 1st January 2001 under regulations made by the Minister in August 2000 following consultation with the National Salmon Commission and a public consultation process. The purpose of the scheme is to provide a verifiable count of the wild salmon catch by both the commercial and angling sectors.

3.15 The tagging regulations introduced in January 2001 provide that all salmon fishing licence holders must affix the appropriate colour coded gill tag to all salmon and all sea trout over 40cm that they catch and retain. In addition, details of the fish catch must be recorded in a logbook, which is related to the fishing licence held by the commercial fishermen or angler. These tags and logbooks are available free of charge to salmon licence holders.

3.16 To process the tagging data generated by the scheme, a wild salmon management information system was established, which is the joint responsibility of the fisheries boards. A public information campaign was also introduced by the fisheries boards targeted at anglers, commercial fishermen, the general public and those engaged in catering and retail of fish.

3.17 An important aspect of the tagging scheme is the extent to which quotas, if any, may be applied to the number of wild salmon or sea trout that may be taken in a given season. At the inception of the tagging scheme in 2001, no provisions were made for the application of such quotas. However, following consultations by the Minister, the regulations for the 2002 season included a provision for the application of a fishery district based quota schedule. This set a maximum level on the number of wild salmon or sea trout that may be lawfully taken by commercial fishing engines. The details of the quotas set for each district in relation to the 2002 fishing season are indicated in Table 3.1.

**Table 3.1: Commercial Fishing Quotas Established under Regulation 7 of the Wild Salmon and Sea Trout Tagging Scheme Regulations 2002**

| Fishery District | Maximum Number of Wild Salmon or Sea Trout that May be Taken by Commercial Fishing Engines |
|---|---|
| Dublin | 978 |
| Wexford | 3,508 |
| Waterford | 14,201 |
| Lismore | 13,455 |
| Cork | 29,728 |
| Kerry | 32,970 |
| Limerick | 20,916 |
| Galway | 5,750 |
| Connemara | 4,336 |
| Ballinakill | 9,453 |
| Bangor | 8,211 |
| Ballina | 28,635 |
| Sligo | 7,015 |
| Ballyshannon | 12,938 |
| Letterkenny | 20,850 |
| Dundalk | 1,909 |
| Drogheda | 4,796 |
| **Total** | **219,649** |

Source: Wild Salmon and Sea Trout Tagging Scheme Regulations 2002

3.18 It should be noted, however, that the regulations in relation to commercial quotas are subject to change on a year-to-year basis. The proposed fishery district based quota schedule for 2003 is shown in Table 3.2 below. The new quota regime, which is currently being finalised by the Minister, indicates a reduction in the total permitted commercial catch compared with the 2002 quota of 37,649 fish, or 17.1%.

**Table 3.2: Proposed Commercial Fishing Quotas for 2003**

| Fishery District | Maximum Number of Wild Salmon or Sea Trout over 40 cms that May be Taken by Commercial Fishing Engines | Difference compared with 2002 Regulations | |
|---|---|---|---|
| | | No. of Fish | % Diff. |
| Dublin | 678 | -300 | -30.7 |
| Wexford | 2,416 | -1,092 | -31.1 |
| Waterford | 15,141 | 940 | 6.6 |
| Lismore | 10,003 | -3,452 | -25.7 |
| Cork | 25,197 | -4,531 | -15.2 |
| Kerry | 31,061 | -1,909 | -5.8 |
| Limerick | 14,288 | -6,628 | -31.7 |
| Galway | 4,572 | -1,178 | -20.5 |
| Connemara | 3,094 | -1,242 | -28.6 |
| Ballinakill | 7,232 | -2,221 | -23.5 |
| Bangor | 6,202 | -2,009 | -24.5 |
| Ballina | 23,438 | -5,197 | -18.1 |
| Sligo | 5,840 | -1,175 | -16.7 |
| Ballyshannon | 10,344 | -2,594 | -20.0 |
| Letterkenny | 17,497 | -3,353 | -16.1 |
| Dundalk | 1,503 | -406 | -21.3 |
| Drogheda | 3,494 | -1,302 | -27.1 |
| **Total** | **182.000** | **-37,649** | **-17.1** |

Source: Wild Salmon and Sea Trout Tagging Scheme Regulations 2002

*Calculation of Salmon Conservation Limits on a District Basis*

3.19 Following the Task Force Report in 1996 and the subsequent introduction of conservation measures, in 1997 the Minister recommended a new rationale for management of salmon stocks based on achieving spawning escapement targets for each stock and maintaining stocks above conservation limits. The proposed new system provides that the number of fish available for capture is the surplus after the spawning requirements are met. As stated above, the Standing Scientific Committee of the National Salmon Commission has the role of providing scientific advice on the rational management of salmon in Ireland. The Committee provides catch advice on a District basis to the National Salmon Commission. Fundamental to the provision of precautionary catch advice is the determination of salmon conservation limits for each Fishery District.

3.20 Conservation limits are calculated using long-term District commercial and recreational salmon catch data since 1970 together with estimates of unreported catch and exploitation rates for the commercial fishery. District stock and recruitment relationships have been developed using this catch data to calculate conservation limits for each District. These conservation limits are used in conjunction with estimates of the number of spawning salmon on a District basis to provide precautionary catch advice to the Salmon Commission. Wetted area of productive salmon habitat will be used in future years to provide another estimate of salmon conservation limits on a District basis.

*Recent Salmon Management Initiatives*

3.21 As stated in Section 1, the current evaluation is envisaged to complement a number of specific elements of the Salmon Management agenda, including:

- The annual review of the tags and quotas scheme (currently underway by the Fisheries Boards and The National Salmon Commission);
- The work of the Standing Scientific Committee;
- The outcome of the study to quantify the salmon freshwater habitat in Ireland (being advanced by CFB).
- Feasibility Study and scoping exercises on the use of technology to provide an improved customer service to commercial and rod anglers particularly relating to licensing, tagging and quotas;
- Provision of on–line sale facility for salmon and sea trout licences; and,

- The proposals for a buy out/set aside scheme (currently being advanced by the CFB in consultation with RFBs and which will be put before the Minister).

3.22 It is useful to briefly review the current progress in relation to some of the above initiatives.

*Study to quantify the salmon freshwater habitat in Ireland*

3.23 To-date, the calculation of salmon stock conservation limits for the fisheries districts has been based on historical catch data over a 30-year period. However, for a variety of reasons, this approach on its own is not likely to yield the most accurate conservation limit calculations on a river-by-river basis along the lines of what was envisaged by the Salmon Task Force Report (1996) and by NASCO. The primary objective of the study to quantify the freshwater salmon habitat is to provide a second approach to the calculation of salmon stock conservation limits based on the carrying capacity of a given wetted area of rivers in a fisheries district. It is anticipated that the calculations that derive from this research will enable a cross check on the plausibility of existing conservation limits and therefore provide a sounder basis for the management of the salmon stock.

*Research on use of technology to provide an improved customer service to commercial and rod anglers*

3.24 According to the Central Fisheries Board, a consultancy is being engaged to look at Technological Solutions for the Fisheries Boards in relation to the following areas:

1. Computerisation of Rod Licence Issue
2. Mobile Technology for Fisheries Officers
3. Bar-code readers for gill tags for fish dealers/Logbook scanning equipment.

3.25 This project is expected to be completed shortly and its findings will be circulated to each Fisheries Board. As part of the study the consultants have met with Fisheries Board staff and Rod Licence Distributors. Their brief is to investigate the technology available and which would be most suitable given the needs of the Fisheries Board staff and rod licence distributors. It is important to note that this report will form a set of technical recommendations. Any recommendations will require endorsement from the parties involved before the introduction of any such technology.

# Historical Trends in the Salmon Catch

3.26 In this section we briefly describe the historic trends in the overall salmon catch, and its division between the commercial and angling catch since the 1960s. The objective of the analysis is to provide a context for evolution of the salmon management regime since the 1960s and to provide a baseline position for the calculation of economic values associated with the commercial and recreational resource. In the subsequent sections on the commercial and angling sectors we present a more detailed breakdown of the structure and trends in the salmon catch.

*Long-term historic trends in the total salmon catch*

3.27 In assessing the context for the management of the wild salmon resource in Ireland it is important to examine the long-term historical trend in the stock of salmon. One approach is to consider the historical trend in the size of the salmon catch. In Table 3.3 we provide details of the trend in the overall salmon catch since 1960 and identify the average annual percentage change in the catch on a 5-year basis between 1960 and 2001.

**Table 3.3: Total Wild Salmon Catch – 1960-2001 - Tonnes**

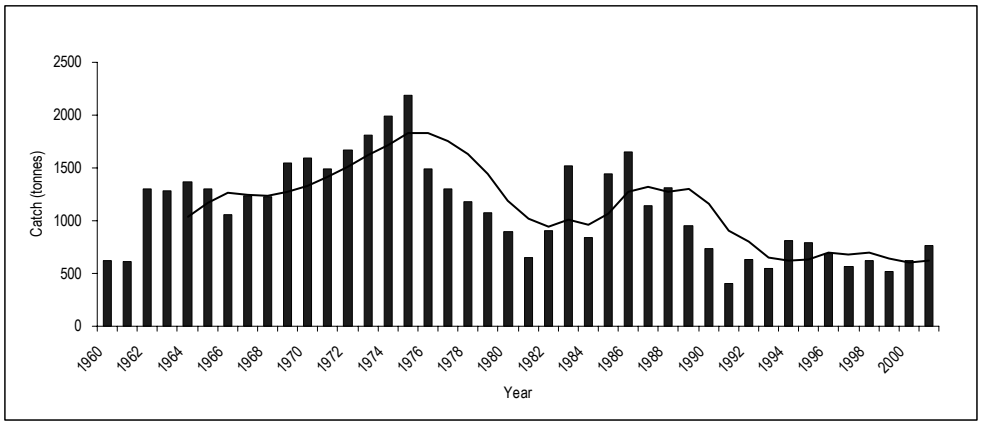
| Year | Total Salmon Catch - Tonnes | *% average annual change* |
|---|---|---|
| 1960 | 619 | - |
| 1965 | 1,301 | *16.0* |
| 1970 | 1,593 | *4.1* |
| 1975 | 2,188 | *6.6* |
| 1980 | 895 | *-16.4* |
| 1985 | 1,439 | *10.0* |
| 1990 | 733 | *-12.6* |
| 1995 | 790 | *1.5* |
| 2001 | 764 | *-0.6* |

Source: Indecon calculations based on Central Fisheries Board data

3.28 In terms of the total weight of the catch, it can be seen that overall salmon catch has fluctuated considerably since the early 1960s, at which time it showed positive annual average growth. However, with the exception of a brief period of expansion during the mid-1980s, after a peak of 2,188 tonnes in 1975, there has since been a noticeable marked downward trend in the salmon catch. Indeed, since 1989, the total catch has remained below 1,000 tonnes on an annual basis, where as between 1960 and 1988, the catch exceeded this level in all but 6 years.

3.29 It is also instructive to look at the historical salmon catch in graphical form and in Figure 3.1 we present a chart showing the historical catch since 1960 along with a trend line showing the 5-year moving average. Despite a brief interruption during the mid-1980s, the chart suggests that a long-term downward trend in the overall salmon catch has been evident since the mid-1970s.

**Figure 3.1: Historical Trend in Irish Salmon Catch – Total Catch – 1960-2001 – Tonnes[20]**




[20] Source: Central Fisheries Board

*Long-term historic trends in the Commercial Catch*

3.30 What are the main components within the overall decline in the salmon catch since the mid-1970s? Table 3.4 describes the historical trend in the total commercial salmon catch and the proportion of the total salmon catch accounted for by the commercial sector over the period 1960-2001. In addition, we indicate the number of commercial salmon licences issued on an annual basis over this period. The commercial salmon catch rose substantially during the 1960s, averaging 16.8% annual growth between 1960-1965 and 6.4% per annum on average between 1965 and 1970. During the early 1970s the commercial catch continued to increase and reached a peak of over 2144 tonnes in 1975. It is notable that at this point the commercial sector accounted for almost the entire salmon catch (or 98%), compared with 83% in 1960.

**Table 3.4: Total Commercial Wild Salmon Catch and Annual Number of Commercial Licences – 1960-2001**

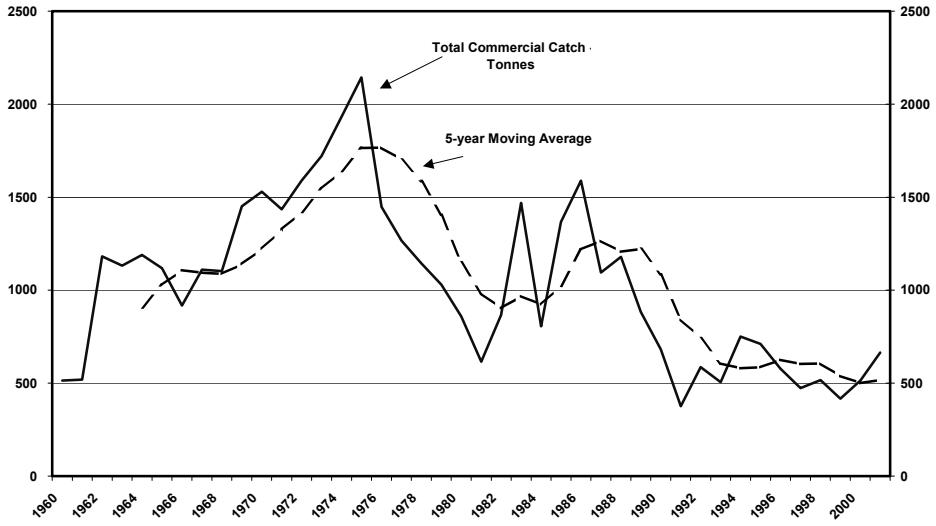
| Year | No. of Commercial Licences Issued | Total Commercial Salmon Catch - Tonnes | % of Total Salmon Catch | *% average annual change* |
|---|---|---|---|---|
| 1960 | 1,170 | 514 | 83 | - |
| 1965 | 1,407 | 1,119 | 86 | *16.8* |
| 1970 | 1,725 | 1,529 | 96 | *6.4* |
| 1975 | 1,930 | 2,144 | 98 | *7.0* |
| 1980 | 1,755 | 859 | 96 | *-16.7* |
| 1985 | 1,543 | 1,367 | 95 | *9.7* |
| 1990 | 1,470 | 682 | 93 | *-13.0* |
| 1995 | 1,412 | 711 | 90 | *0.8* |
| 2001 | 1,522 | 665 | 87 | *-1.1* |

Source: Indecon calculations based on Central Fisheries Board data

3.31 After the mid-1970s, however, the commercial catch fell sharply, to just 616 tonnes in 1981 or 28% of its peak in 1975. While there was some recovery in the catch during the mid-1980s, the long-term decline reasserted itself by the late 1980s and since 1989 the annual commercial catch has remained below 1,000 tonnes. However, the commercial sector still accounts for most of the overall salmon catch (87% in 2001). Comparing the catch to the number of commercial licences issued on an annual basis, it can be seen that the sharp decrease in the catch contrasts with a much slower decline in the number of licences issued. We will examine this feature in more detail later in this section.

3.32 A pictorial representation of the commercial salmon catch since 1960 is shown in Figure 3.2 overleaf. The chart demonstrates the downward trend in the overall commercial wild salmon catch that has been evident since the mid-1970s.

**Figure 3.2: Historical Trend in Irish Commercial Salmon Catch – 1960-2001 – Tonnes[21]**




3.33 Given the importance of the commercial fishing sector in relation to the overall salmon catch, it is important to also consider the long-term historical trends in the components of the commercial catch. In Table 3.5 we describe the size of the drift net salmon catch over the period 1960-2001.

[21] Source: Indecon calculations based on data supplied by Central Fisheries Board

**Table 3.5: Commercial Wild Salmon Catch by Drift Net – 1960-2001 - Tonnes**

| Year | Drift Net Catch – tonnes | *% average annual change* | % of total Salmon Catch |
|---|---|---|---|
| 1960 | 117.6 | - | 19 |
| 1965 | 364.3 | *25.4* | 28 |
| 1970 | 780.6 | *16.5* | 49 |
| 1975 | 1,487.8 | *13.8* | 68 |
| 1980 | 644.4 | *-15.4* | 72 |
| 1985 | 1,194.4 | *13.1* | 83 |
| 1990 | 491.1 | *-16.3* | 67 |
| 1995 | 576.7 | *3.3* | 73 |
| 2001 | 550.1 | *-0.8* | 72 |

Source: Indecon calculations based on Central Fisheries Board data

3.34 The figures indicate that the drift net catch rose substantially during the 1960s and early 1970s from a relatively low level in 1960 (when the drift net catch accounted for 19% of the total salmon catch). By 1975, the drift net catch reached a peak of 1,488 tonnes, or 68% of the total catch. While the weight of the catch began to decrease during the late 1970s, drift net continued to take an increasing proportion of the overall salmon catch, reaching 82% by 1979 and a peak of 84% in 1986. During the 1990s and up until the present, the drift net sector has continued to reap close to 70% of the total salmon catch.

3.35 The historical trend in the draft net salmon catch is indicated in Table 3.6 below. With the exception of a brief interruption during the early 1990s, the draft net catch has seen on a steady long-term decline since the early 1960s and in 2001 the sector accounted for just 99.3 tonnes or 13% of the total salmon catch compared with a previous peak of 26% in 1991 and 57% in 1962 (740 tonnes).

**Table 3.6: Commercial Wild Salmon Catch by Draft Net – 1960-2001 - Tonnes**

| Year | Draft Net Catch – tonnes | *% average annual change* | % of total Salmon Catch |
|---|---|---|---|
| 1960 | 315.7 | - | 51 |
| 1965 | 572.4 | *12.6* | 44 |
| 1970 | 573.5 | *0.0* | 36 |
| 1975 | 525.1 | *-1.7* | 24 |
| 1980 | 170.1 | *-20.2* | 19 |
| 1985 | 129.5 | *-5.3* | 9 |
| 1990 | 175.9 | *6.3* | 24 |
| 1995 | 111.0 | *-8.8* | 14 |
| 2001 | 99.3 | *-1.8* | 13 |

Source: Indecon calculations based on Central Fisheries Board data

3.36 In tandem with the draft net sector, the salmon catch using other (non-drift/draft net) methods has also shown a long-term continued decline since the 1960s (see Table 3.7). In 2001, the catch using other methods (which include snap net, loop net, bag net and other more traditional methods) totalled 15.3 tonnes, or just 2% of the total wild salmon catch. This compares with an historical peak of over 193 tonnes in 1963 (or 15% of the total catch).

**Table 3.7: Commercial Wild Salmon Catch by Other Methods – 1960-2001 - Tonnes**

| Year | Non-drift/draft net Catch – tonnes | *% average annual change* | % of total Salmon Catch |
|---|---|---|---|
| 1960 | 80.5 | - | 13 |
| 1965 | 182.1 | 17.7 | 14 |
| 1970 | 175.2 | -0.8 | 11 |
| 1975 | 131.3 | -5.6 | 6 |
| 1980 | 44.8 | -19.4 | 5 |
| 1985 | 43.2 | -0.7 | 3 |
| 1990 | 14.7 | -19.4 | 2 |
| 1995 | 23.7 | 10.0 | 3 |
| 2001 | 15.3 | -7.0 | 2 |

Source: Indecon calculations based on Central Fisheries Board data

*Number of Commercial Salmon Licensed Fishermen*

3.37 In Table 3.8 we describe the historical trend in the number of commercial fishing licences by type issued on an annual basis over the period 1960-2002. The total number of commercial licences rose substantially during the 1960s and early 1970s, reaching a peak of 2.049 licences issued in 1973, compared with 1,170 in 1960. Thereafter the annual number of commercial licences issued showed a long-term downward trend until the early 1990s, falling to 1,291 licences in 1993, before picking up again towards the late 1990s. In 2002, a total of 1,586 commercial licences were issued.

**Table 3.8: Commercial Wild Salmon Licence Holders – 1960-2002**

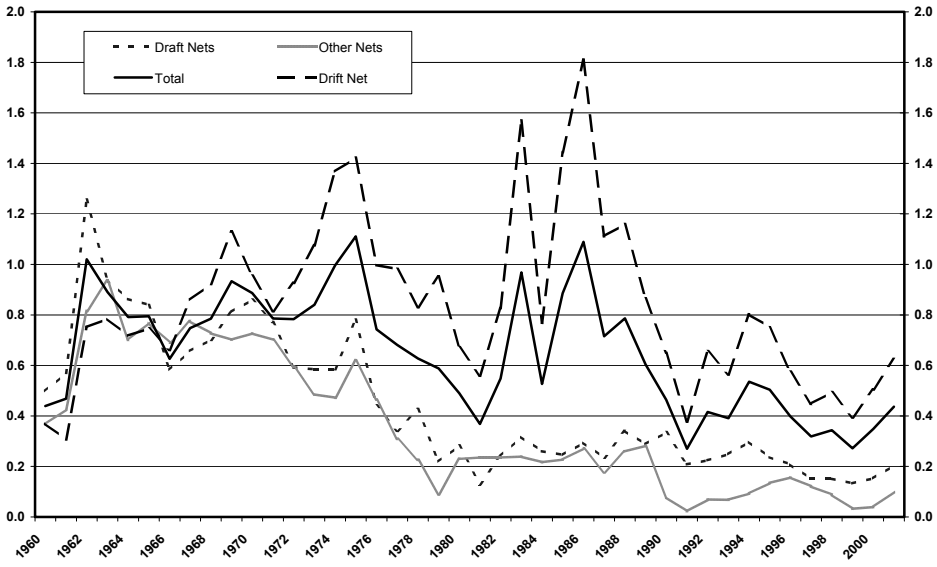
| Year | Total Commercial Licences | Drift Net Licences | | Draft Net Licences | | Other Commercial Licences | |
|---|---|---|---|---|---|---|---|
| | | No. | *% of total* | No. | *% of total* | No. | *% of total* |
| 1960 | 1,170 | 318 | *27.2* | 633 | *54.1* | 219 | *18.7* |
| 1965 | 1,407 | 488 | *34.7* | 682 | *48.5* | 237 | *16.8* |
| 1970 | 1,725 | 817 | *47.4* | 667 | *38.7* | 241 | *14.0* |
| 1975 | 1,930 | 1046 | *54.2* | 672 | *34.8* | 212 | *11.0* |
| 1980 | 1,755 | 959 | *54.6* | 601 | *34.2* | 195 | *11.1* |
| 1985 | 1,543 | 827 | *53.6* | 526 | *34.1* | 190 | *12.3* |
| 1990 | 1,470 | 756 | *51.4* | 525 | *35.7* | 189 | *12.9* |
| 1995 | 1,412 | 768 | *54.4* | 468 | *33.1* | 176 | *12.5* |
| 2002* | 1,581 | 876 | *55.4* | 544 | *34.4* | 161 | *10.2* |

Source: Indecon calculations based on Central Fisheries Board data
* Figures for 2002 are from *Wild Salmon and Sea Trout Tagging Scheme Fisheries Statistics Report, 2001 and 2002.*

3.38 In terms of the type of licences issued, it is notable that the number of drift net licences rose markedly from 318 licences in 1960 to a peak of 1,156 in 1972 before falling below 1,000 per annum from 1979 onwards. In 2002, a total of 876 drift net licences were in operation. By contrast, the number of annual draft net licences in operation is noticeably below the levels that prevailed up until the mid-1960s. In 2002, a total of 544 draft net licences were issued compared with a peak of 792 in 1964. In relation to licences for other methods of commercial capture, a total of 161 licences were in operation in 2002, compared with 189 in 1990 and a peak of 241 licences in 1970.

3.39 As an indication of fishing effort, it is instructive to relate the historical trends in the commercial salmon catch to that of the number of commercial salmon fishing licence holders. In Figure 3.3 we present a chart identifying the ratio of the commercial salmon catch by method of capture to the number of commercial salmon fishing licences issued on an annual basis over the period 1960-2001.

**Figure 3.3: Historical Trend in the Commercial Fishing Effort – Commercial Salmon Catch by Method/Annual Number of Commercial Fishing Licences Issued – 1960-2001[22]**




3.40 The chart points to an interesting feature in that while the average salmon catch per commercial licence has fluctuated considerably over the period under review, since the mid-1980s, with a brief interruption in the early to mid-1990s, there has been a marked decrease in the average annual salmon catch relative to the number of commercial licences issued. Assuming static or falling salmon prices, this finding points to the likelihood of a falling average return or income to commercial fishermen since the mid 1980s.

*Long-term historic trends in the Rod & Line Salmon Catch*

3.41 In Table 3.9 we describe the long-term historic trend in the rod & line salmon catch since 1960. We also compare the catch with the annual number of rod & line salmon licences issued.

[22] Source: Indecon calculations based on data supplied by Central Fisheries Board

**Table 3.9: Rod & Line Salmon Catch and Number of Rod & Line Licences – 1960-2001**

| Year | No. of Rod & Line Salmon Licences | Rod & Line Catch – tonnes | *% average annual change* | % of total Salmon Catch | Fishing Effort - Catch/ No. of Licences Issued |
|---|---|---|---|---|---|
| 1960 | 8,477 | 105.2 | - | 17 | 12.4 |
| 1965 | 12,378 | 182.1 | *11.6* | 14 | 14.7 |
| 1970 | 11,181 | 63.7 | *-18.9* | 4 | 5.7 |
| 1975 | 13,142 | 43.8 | *-7.2* | 2 | 3.3 |
| 1980 | 15,864 | 35.8 | *-4.0* | 4 | 2.3 |
| 1985 | 15,929 | 57.6 | *10.0* | 4 | 3.6 |
| 1990 | 15,395 | 51.3 | *-2.3* | 7 | 3.3 |
| 1995 | 25,124 | 79 | *9.0* | 10 | 3.1 |
| 2001 | 32,725 | 99.3 | *3.9* | 13 | 3.0 |

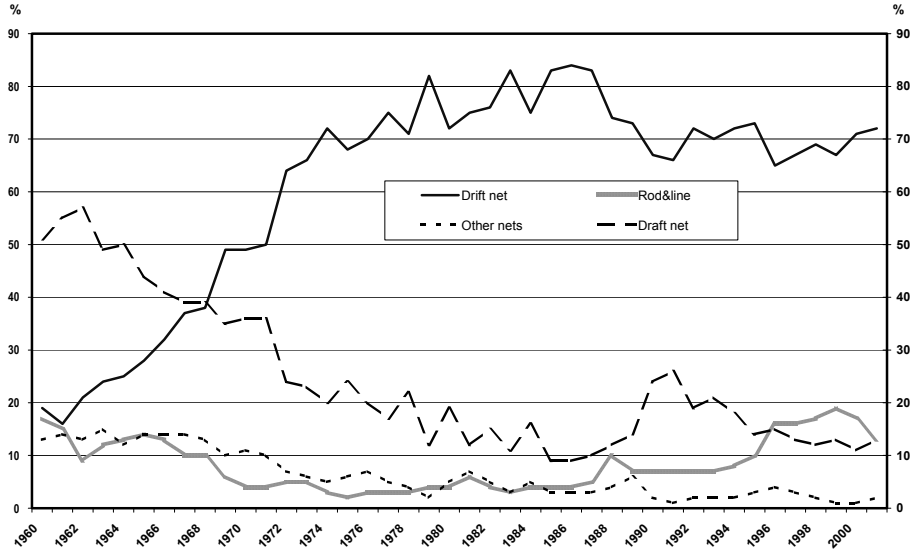
Source: Indecon calculations based on Central Fisheries Board data
* Note reliable estimates for the Rod & Line salmon catch are only available for the period since 1994. Figures previous to 1994 should therefore be treated with caution.

3.42 From a level of 182 tonnes in 1965, the rod & line catch fell markedly during the mid- to late-1960s and, apart from very brief interruptions, continued to decline sharply during the 1970s, falling to a low of 35.4 tonnes in 1978. The catch remained below 100 tonnes per annum during the 1980s, typically accounting for only around 5% of the total salmon catch. More reliable estimates of the catch since 1994 point to some recovery since the mid-1990s and in 1996 the catch reached a recent peak of 110 tonnes. The improved reporting of the rod & line catch indicated an increase in the proportion of the total catch accounted for by the rod & line sector to 19% by 1999. However, when the rod & line catch is compared with the annual number of salmon angling licences issued over this period (the last column in the table), it can be seen that the recent slow recovery in the rod & line catch contrasts with the substantial increase in the annual number of licences issued. This points to a fall in the average number of salmon captured per angler, which has implications for the attractiveness of Ireland as a destination for overseas salmon anglers.

*Overall Breakdown of Salmon Catch*

3.43 In Figure 3.4 we present an illustration of the division in the total salmon catch between the drift net, draft net, other commercial methods and the rod & line sector. The chart highlights the importance of the drift net sector in relation to the overall salmon catch and it is notable that there has been an inverse relationship between the movement in the proportion of the catch reaped by the drift net sector and that of the draft net sector over this period.

**Figure 3.4: Historical Breakdown of Irish Wild Salmon Catch – Commercial and Rod & Line Sectors - 1960-2001 – % of Total Catch[23]**




3.44 One issue concerning the review of salmon management in Ireland, which may have implications for the economic sustainability of salmon, relates to whether salmon fisheries should be managed on a single stock basis. As economic advisers, Indecon are not in a position to develop independent research on this issue. However, a number of consultancy arguments have been made to us in support of this concept, as follows:

- In order to reproduce salmon must spawn in areas of gravel that are discontinuously distributed within fast flowing rivers and streams.
- Salmon home with great accuracy to their natal river and to discrete areas within those rivers from which they themselves originated. It is this homing phenomenon that allows the development and maintenance of genetically and biologically distinct populations that are adapted to their environments. A population being defined as a group of randomly breeding individuals that aggregate in spawning areas of the same river or the same part of a large river.

[23] Source: Indecon calculations based on data supplied by Central Fisheries Board

- Consequently each river in Ireland has a least one discrete salmon population. Many of the larger rivers may have several such distinct populations.
- These populations can differ in an number of quantitative respects that are important in determining the fitness and the long term productivity of the population e.g. run timing, age of maturity, and age of smoltification.
- These populations differ also in a number of important parameters e.g. size of the effective breeding population (50 to 5,000), reproductive rate, productivity or fitness potential and response to the productivity of their environment.
- In order to maintain the long-term sustainability of these populations it is important that the propensity of the species for population structuring is recognised and exploitation is managed to take account of the biological differences of these discrete stocks.
- Salmon reproducing in different river systems are significantly genetically different. Less study has been carried out to identify individual population units within rivers. Therefore in order to reduce the risk of over exploiting individual stocks it has been suggested that salmon should be exploited on a single river catchment basis.
- At present in Ireland salmon are exploited predominately by drift nets. By its nature this means that salmon from many populations are taken irrespective of the size or health of the contributing population.
- The Salmon Management Task Force, set up by the Minister for the Marine and Natural Resources in 1996, recommended that management of salmon stocks in Ireland be based on achieving spawning escapement targets for each specific individual stock and maintaining those stocks above conservation limits. NASCO (The North Atlantic Salmon Conservation Organisation) have also adopted the precautionary approach to fisheries management. This means that for all salmon stocks in the NASCO area (including Ireland) management measures should be aimed at maintaining all individual salmon stocks above a pre-agreed conservation limit.
- It has been suggested to Indecon that it is not possible to ensure that all salmon stocks are maintained above conservation limits under the present fishery regime. For this to be achieved, salmon must be exploited and managed on an individual river catchment basis and this makes the off-shore mixed stock drift net fishery untenable.

- At present escapement targets or conservation requirements and catch advice (TAC) for Irish salmon are determined on the basis of historical catch data. The catch model is a robust and effective management tool. However, it is a measure of the dynamic of the fisheries themselves and is not directly related to the basis of production i.e. the quantity and quality of habitat in an individual river system and to the performance and productivity of a salmon population or populations that utilises that habitat. Therefore it is insensitive of the requirements of an individual river or that stock that uses that river.
- We understand that the fisheries boards and the National Salmon Commission have recently recommended to the Minister for Marine, Communications and Natural Resources that a move be made from the present catch-based model and to determine conservation limits (escapement goals) and TAC on the basis of the quality and quantity of habitat in individual rivers. To this end a programme has been undertaken to determine the quantity and quality of the national freshwater habitat resource. The data emanating from this initiative will be used to inform the determination of the conservation requirements for individual rivers and can be used in addition to information on juvenile production and from fish counters, etc, to estimate the abundance of fish available to the fishery subsequently. This river specific information has positive implications for the merits of managing salmon on an individual river basis.

# Conclusions

3.45 In this section we described the historical picture on the management and development of the salmon fishery in Ireland since the 1960s and identified the key shifts that have occurred in the salmon catch over this period. We have also shown that the management of the wild salmon resource up to 1997 took place against the background of profound changes in the methods of harvesting and the overall trend in salmon catches. Between the early 1960s and the early 1970s there was a marked increase in the number of drift net commercial licences (from 363 in 1962 to 1,048 in 1974), while the proportion of the overall salmon catch taken by drift nets rose from 19% in 1960 to 49% in 1970 and a peak of 84% by 1986.

3.46 The total salmon catch fell from a peak of 2,188 tonnes in 1975 to 764 tonnes in 2001. Of this total, the commercial salmon catch fell from an annual average of 1,172 tonnes between 1960-65 to an average of 1,046 tonnes between 1980-85, with the catch peaking at 2,188 tonnes in 1975 and falling to a low of 404 tonnes in 1991. Within the commercial sector, the evidence, assuming static or declining salmon prices, points to a falling average return or income to commercial fishermen since the mid 1980s, as suggested by the falling ratio of the salmon captured relative to the number of commercial licences in operation.

3.47 From a level of 182 tonnes in 1965, the rod & line catch fell markedly during the mid- to late-1960s and, apart from very brief interruptions, continued to decline sharply during the 1970s, falling to a low of 35.4 tonnes in 1978. The catch remained below 100 tonnes per annum during the 1980s, typically accounting for only around 5% of the total salmon catch. More reliable estimates of the catch since 1994 point to some recovery since the mid-1990s and in 1996 the catch reached a recent peak of 110 tonnes in 1996.

3.48 The management of the wild salmon resource in Ireland took a new departure following the publication in 1996 of the report of the Salmon Management Task Force. The Task Force recommended a radical new approach to the management of the resource, and following the report a range of conservation measures were implemented by the Minister for the Marine in 1997, including a reduction in the number of commercial drift net and draft net licences, a reduction in the offshore fishing limit from 12 nautical miles to 6 nautical miles, the introduction of a shorter season and an extended weekend close period, the legislation of monofilament nets and an increase in drift net mesh depth.

3.49 In 1999, the National Salmon Commission was established to advise the Minister on any scheme in relation to the management, development and conservation of stocks of wild salmon or sea trout and in particular the tagging of such fish, and on the setting of a national total allowable catch and quotas for the taking of salmon. To assist in the provision of scientific advice on these matters, a Standing Scientific Committee was also established.

3.50 The wild salmon and sea trout tagging and logbook scheme was established on 1st January 2001. The purpose of the scheme is to provide a verifiable count of the wild salmon catch by both the commercial and angling sectors. The regulations for the 2002 season included a provision for the application of a fishery district based quota schedule. This set a maximum level on the number of wild salmon or sea trout that may be lawfully taken by commercial fishing engines. The regulations are updated on a regular basis and it is proposed that in 2003 a new regime will entail a reduction of over 17% in the commercial quota.

Chapter 4

# Economic Impact of Commercial Salmon Fishing

# 4 Economic Impact of Commercial Salmon Fishing

4.1 This section assesses the current economic impact of commercial salmon fishing in Ireland. In undertaking this assessment we analyse data from a number of sources, including:

- Indecon survey of commercial salmon fishermen in Ireland;
- Central Fisheries Board;
- Regional Fisheries Boards;
- Bord Iascaigh Mhara; and,
- Central Statistics Office.

4.2 We begin by presenting a detailed analysis of activity in the commercial fishing sector by examining the recent trends in the salmon catch by method and region. We then consider the salmon catch in relation to the number of commercial licences issued and the number of active licences. Following this, we analyse the detailed findings from the Indecon survey of commercial fishermen in Ireland. These analyses provide the basis for our calculations of the total revenue and income accruing to the commercial salmon fishing sector.

## Regional Structure of Commercial Salmon Catch

4.3 A key determinant of the overall economic value of the commercial wild salmon fishing sector at a regional level is size of the salmon catch and the movements in this catch over time. In this sub-section we look at the recent trends in the size and structure of the commercial catch on a regional basis since the early 1990s.

4.4 In Table 4.1 we present a regional analysis of the total commercial wild salmon catch over the period 1996-2002. It can be seen that the salmon catch taken within each of the regional fisheries board areas varies considerably. Based on the 2002 figures from the tagging scheme, the principal commercial salmon fishing regions are the South West (28.2% of the catch), followed by the North West (21.6%), the Northern fisheries region (16.8%), the Southern (14%) and Shannon regions (9%). It is also noticeable, however, that the overall commercial catch has fluctuated substantially on a regional basis in recent years.

**Table 4.1: Total Commercial Wild Salmon Catch by Region - All Methods - 1996-2002* - No. of Salmon**

| Regional Fisheries Board Area | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | *% of Total by Region - 2002* |
|---|---|---|---|---|---|---|---|---|
| Eastern | 9,842 | 4,750 | 12,164 | 8,379 | 4,995 | 4,339 | 2,830 | *1.4* |
| Southern | 22,230 | 17,291 | 13,955 | 18,819 | 22,972 | 31,952 | 28,980 | *14.0* |
| South West | 46,498 | 32,045 | 47,095 | 36,084 | 58,082 | 68,653 | 58,432 | *28.2* |
| Shannon | 15,372 | 6,750 | 9,429 | 10,084 | 11,664 | 27,361 | 18,647 | *9.0* |
| Western | 9,454 | 13,370 | 14,959 | 17,032 | 16,885 | 17,252 | 18,561 | *9.0* |
| North West | 56,835 | 41,478 | 49,515 | 27,800 | 29,577 | 43,721 | 44,696 | *21.6* |
| Northern | 31,891 | 37,400 | 31,211 | 16,202 | 30,018 | 40,123 | 34,753 | *16.8* |
| Foyle(half) | 15,272 | 21,981 | 19,975 | 11,661 | 15,355 | 11,488 | - | - |
| **Total Commercial Catch** | **207,394** | **175,065** | **198,303** | **146,061** | **189,548** | **244,889** | **-** | |
| ***Total excl. Foyle*** | ***192,122*** | ***153,084*** | ***178,328*** | ***134,400*** | ***174,193*** | ***233,401*** | ***206,899*** | ***100*** |

Source: Central Fisheries Board
* 2001 and 2002 data are based on National Carcass Tagging and Logbook Programme
Data for 1996-2000 are based on the reported catches by the regional fisheries boards.

4.5 An analysis of the drift net commercial wild salmon catch by regional fisheries board area over the period 1996-2002 is presented in Table 4.2 below. Based on the returns from the tagging programme, it is estimated that a total of 179,177 salmon were caught using drift nets during the 2002 season (excluding the Foyle). This compares with a total of 197,172 salmon caught during the 2001 season. In the previous years 1996-2000, the drift net catch varied between a low of 120,425 and a maximum of 163,565 salmon on an annual basis.

4.6 The drift net catch also varies substantially on a regional basis. According to the 2002 tagging scheme figures, the South West region accounted for 28.3% of the drift net catch, followed by the North West region (23.8%), the Northern region (15.6%), and the Southern region (13.7%).

**Table 4.2: Total Commercial Drift Net Wild Salmon Catch by Region - 1996-2002 - No. of Salmon**

| Regional Fisheries Board Area | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | % - 2002 |
|---|---|---|---|---|---|---|---|---|
| Eastern | 186 | 50 | 131 | 114 | 21 | 44 | 42 | *0.02* |
| Southern | 16,956 | 14,701 | 12,625 | 14,417 | 21,030 | 26,683 | 24,499 | *13.7* |
| South West | 36,184 | 24,787 | 43,226 | 32,558 | 54,724 | 59,511 | 50,771 | *28.3* |
| Shannon | 12,973 | 4,879 | 8,570 | 9,393 | 10,966 | 20,646 | 15,119 | *8.4* |
| Western | 6,741 | 10,788 | 11,744 | 15,984 | 13,317 | 15,708 | 18,088 | *10.1* |
| North West | 50,947 | 36,108 | 45,517 | 26,890 | 28,767 | 41,543 | 42,618 | *23.8* |
| Northern | 27,214 | 32,800 | 27,751 | 13,355 | 22,658 | 33,037 | 28,040 | *15.6* |
| Foyle(half) | 9,979 | 15,703 | 14,001 | 7,714 | 10,650 | 4,738 | n/a | |
| **Total Drift Net Catch** | **161,180** | **139,816** | **163,565** | **120,425** | **162,133** | **201,910** | **-** | |
| ***Total excl. Foyle*** | ***151,201*** | ***124,113*** | ***149,564*** | ***112,711*** | ***151,483*** | ***197,172*** | ***179,177*** | ***100*** |

Source: Central Fisheries Board
* 2001 data are based on National Carcass Tagging and Logbook Programme
Data for 1996-2000 are based on the reported catches by the regional fisheries boards.

4.7 An indication of the relative importance of the drift net fishery at regional level is provided by the figures presented in Table 4.3 showing the regional drift net catch as a proportion of the total commercial wild salmon catch over the period 1996-2001. At the regional level, the drift net fishery varies considerably in terms of relative importance as a commercial method of fishing. In 2001, the drift net wild salmon catch accounted for the vast majority (95%) of the total commercial catch in the North West region, whereas at the other end of the scale, drift netting represented only 1% of the commercial catch in the Eastern fisheries region.

**Table 4.3: Total Commercial Drift Net Wild Salmon Catch by Region - 1996-2001 - % of Total Commercial Salmon Catch**

| Regional Fisheries Board Area | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|---|
| Eastern | 1.9 | 1.1 | 1.1 | 1.4 | 0.4 | 1.0 |
| Southern | 76.3 | 85.0 | 90.5 | 76.6 | 91.5 | 83.5 |
| South West | 77.8 | 77.4 | 91.8 | 90.2 | 94.2 | 86.7 |
| Shannon | 84.4 | 72.3 | 90.9 | 93.1 | 94.0 | 75.5 |
| Western | 71.3 | 80.7 | 78.5 | 93.8 | 78.9 | 91.1 |
| North West | 89.6 | 87.1 | 91.9 | 96.7 | 97.3 | 95.0 |
| Northern | 85.3 | 87.7 | 88.9 | 82.4 | 75.5 | 82.3 |
| Foyle(half) | 65.3 | 71.4 | 70.1 | 66.2 | 69.4 | 41.2 |
| **Total Drift Net Catch** | **77.7** | **79.9** | **82.5** | **82.4** | **85.5** | **82.4** |

Source: Central Fisheries Board
* 2001 data are based on National Carcass Tagging and Logbook Programme. Data for 1996-2000 are based on the reported catches by the regional fisheries boards.

*Regional Draft Net Commercial Catch*

4.8 A regional breakdown of the draft net commercial salmon catch in 2002 is presented in Table 4.4 below.

**Table 4.4: Total Commercial Draft Net Wild Salmon Catch by Region – 2002**

| Regional Fisheries Board Area | Draft Net Catch – No. | % of total commercial catch |
|---|---|---|
| Eastern | 2,788 | 98.5 |
| Southern | 10 | 0.0 |
| South West | 7,519 | 12.9 |
| Shannon | 3,528 | 18.9 |
| Western | 473 | 2.5 |
| North West | 2,078 | 4.6 |
| Northern | 6,636 | 19.1 |
| Foyle (half) | n/a | - |
| **Total** | **23,032** | **11.1** |

Source: Central Fisheries Board, *Wild Salmon and Sea Trout Tagging Scheme Fisheries Statistics Report, 2001 and 2002.*

4.9 Across the seven fisheries regions, the draft net commercial catch totalled 23,032 salmon in 2002, according to the logbook returns. There is a wide variation in the relative importance of the draft net as a method of fishing across the regions. The draft net method is the most popular in the Eastern region, where it accounted for 2,788 salmon or 98.5% of the total commercial salmon catch in 2002. Draft net fishing is also important in Northern, Shannon and South Western regions, where it accounted for 19.1%, 18.9% and 12.9% respectively of the total commercial catch in 2002.

*Regional Commercial Catch using Other Methods*

4.10 In addition to the drift and draft net segments, commercial salmon fishing also takes place using other more traditional methods, including loop net, snap net and bag net. Based on the 2002 tagging scheme data, it can be seen that these methods account for a very insignificant proportion of the overall commercial catch at national level. However, snap net fishing is important in the Southern fisheries region, where it accounted for 4,471 salmon or 15.4% of the total commercial catch in 2002. In the Northern region loop nets took 77 fish in 2002, while in the South West a total of 142 salmon were taken using bag nets in 2002.

**Table 4.5: Total Commercial Wild Salmon Catch by Region using Other Methods – 2002**

| Regional Fisheries Board Area | Snap | | Loop | | Bag | |
|---|---|---|---|---|---|---|
| | No. | % of total | No. | % of total | No. | % of total |
| Eastern | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| Southern | 4,471 | 15.4 | 0 | 0.0 | 0 | 0.0 |
| South West | 0 | 0.0 | 0 | 0.0 | 142 | 0.2 |
| Shannon | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| Western | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| North West | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| Northern | 0 | 0.0 | 77 | 0.2 | 0 | 0.0 |
| **Total** | **4,471** | **2.2** | **77** | **0.0** | **142** | **0.1** |

Source: Central Fisheries Board, *Wild Salmon and Sea Trout Tagging Scheme Fisheries Statistics Report, 2001 and 2002.*

# Analysis of Commercial Catch by Type of Fishing Licence

4.11 In assessing the level of activity in the commercial salmon fishing sector on a regional and local basis, an important issue concerns the level of effort devoted to fishing on an annual basis. One indication of the extent of the fishing effort can be had by examining the size band of the salmon catch in relation to each commercial licence holder. This may be undertaken by reference to the logbook returns received as part of the tagging scheme. In this section we analyse the commercial catch by licence in the drift net and draft net sectors. In Table 4.6 we present an analysis, on a fisheries district basis, of the number of drift net commercial licence holders by size band of the drift net catch in 2002.

**Table 4.6: Analysis of Salmon Catch by Drift Net Fishing Licence – 2002**

| District | No. of Licence Holders by Size Band of Salmon Catch in 2002 | | | | | | | | | | Total Licence Holders |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 1-10 | 11-20 | 21-50 | 51-100 | 101-250 | 251-500 | 501-1000 | 1001-2000 | 2000+ | |
| Dundalk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Drogheda | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dublin | 8 | 6 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 16 |
| Wexford | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Waterford | 8 | 5 | 5 | 98 | 27 | 18 | 6 | 3 | 0 | 0 | 170 |
| Lismore | 3 | 2 | 1 | 16 | 16 | 23 | 19 | 1 | 0 | 0 | 81 |
| Cork | 7 | 0 | 1 | 16 | 13 | 32 | 27 | 12 | 0 | 0 | 108 |
| Kerry | 0 | 0 | 0 | 2 | 3 | 6 | 9 | 11 | 7 | 1 | 39 |
| Shannon | 9 | 1 | 14 | 12 | 29 | 10 | 1 | 7 | 3 | 0 | 86 |
| Galway | 6 | 1 | 1 | 5 | 8 | 10 | 4 | 2 | 0 | 0 | 37 |
| Connemara | 8 | 0 | 0 | 9 | 0 | 6 | 3 | 3 | 0 | 0 | 29 |
| Ballinakill | 1 | 3 | 1 | 2 | 7 | 12 | 11 | 3 | 0 | 0 | 40 |
| Ballina | 5 | 2 | 0 | 16 | 6 | 13 | 18 | 19 | 6 | 0 | 85 |
| Bangor | 1 | 0 | 0 | 4 | 3 | 7 | 6 | 4 | 0 | 0 | 25 |
| Sligo | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 5 | 2 | 0 | 10 |
| Ballyshannon | 0 | 0 | 1 | 1 | 2 | 12 | 6 | 5 | 1 | 0 | 28 |
| Letterkenny | 4 | 1 | 0 | 36 | 23 | 40 | 12 | 6 | 0 | 0 | 122 |
| **Total** | **62** | **21** | **25** | **218** | **137** | **191** | **123** | **81** | **19** | **1** | **876** |
| *%* | *7.1* | *2.4* | *2.9* | *24.9* | *15.6* | *21.8* | *14.0* | *9.3* | *2.2* | *0.11* | *100* |
| Total Catch per Band | 0 | 111 | 443 | 7,992 | 10,590 | 32,093 | 43,960 | 56,270 | 25,699 | 2,019 | 179,177 |
| *% of Total Catch* | *0.0* | *0.1* | *0.2* | *4.5* | *5.9* | *17.9* | *24.5* | *31.4* | *14.3* | *1.1* | *100* |

Source: Central Fisheries Board, *Wild Salmon and Sea Trout Tagging Scheme Fisheries Statistics Report, 2001 and 2002.*

4.12 Across the State as a whole, it can be seen that there were 883 drift net commercial licence holders in 2002. Based on the Central Fisheries Board tagging scheme data:

- Approximately 25% of the commercial drift net fishermen caught just over 70% of the fish;
- A little over half (53%) of the commercial drift net fishermen caught 100 salmon or less in the 2002 season;
- 7.1% of drift net licences holders were not active, in terms of catching salmon, during the 2002 season. The prevalence of non-active licences varies by district, with 50% of licences in Dublin indicating a zero catch, while the proportion of non-active licences was also high in Connemara (27.6%), Galway (16.2%) and Shannon (10.5%).

4.13 In Table 4.7 we present an analysis of the number of draft net commercial licence holders by size band of the draft net catch in 2002. According to the draft net licences data:

- Approximately 26% of draft net commercial licence holders accounted for just over 69% of the draft net salmon catch in 2002;
- Approximately three quarters of draft net licence holders in 2002 caught 50 salmon or less during the season;
- A total of 15.8% of draft net licence holders did not catch any salmon during 2002. In some districts the proportion of licence holders indicating a zero catch approached 100%.

**Table 4.7: Analysis of Salmon Catch by Draft Net Fishing Licence – 2002**

| District | No. of Licence Holders by Size Band of Salmon Catch in 2002 | | | | | | | Total Draft Net Licence Holders |
|---|---|---|---|---|---|---|---|---|
| | 0 | 1-10 | 11-20 | 21-50 | 51-100 | 101-250 | 251-500 | |
| Dundalk | 7 | 13 | 9 | 13 | 0 | 1 | 0 | 43 |
| Drogheda | 5 | 7 | 24 | 11 | 2 | 2 | 0 | 51 |
| Dublin | 9 | 2 | 0 | 0 | 0 | 0 | 0 | 11 |
| Wexford | 14 | 26 | 29 | 5 | 0 | 0 | 0 | 74 |
| Waterford | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| Lismore | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| Cork | 8 | 0 | 1 | 6 | 7 | 11 | 0 | 33 |
| Kerry | 7 | 2 | 5 | 2 | 10 | 18 | 3 | 47 |
| Shannon | 9 | 12 | 24 | 23 | 27 | 2 | 0 | 97 |
| Galway | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| Connemara | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ballinakill | 2 | 6 | 3 | 3 | 1 | 2 | 0 | 17 |
| Ballina | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 2 |
| Bangor | 1 | 2 | 2 | 9 | 9 | 7 | 0 | 30 |
| Sligo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ballyshannon | 6 | 11 | 13 | 28 | 11 | 17 | 0 | 86 |
| Letterkenny | 6 | 2 | 2 | 21 | 5 | 4 | 0 | 40 |
| **Total** | **86** | **85** | **112** | **123** | **72** | **64** | **3** | **544** |
| % | 15.8 | 15.7 | 20.6 | 22.3 | 13.3 | 11.8 | 0.6 | 100 |
| Total Catch per Band | 0 | 595 | 1,931 | 4,554 | 5,330 | 9,631 | 991 | 23,032 |
| % of Total Catch | 0.0 | 2.6 | 8.4 | 19.8 | 23.1 | 41.8 | 4.3 | 100 |

Source: Central Fisheries Board, *Wild Salmon and Sea Trout Tagging Scheme Fisheries Statistics Report (2001/2002).*

4.14 The analysis of the tagging scheme data indicates that a high proportion of the drift net and draft net commercial salmon catch is taken by a relatively small proportion of licence holders. Furthermore, there would appear to be a significant proportion of non-active commercial fishermen, though this varies on a district basis. Our analysis would suggest that while commercial fishing is likely to be an important source of income for a proportion of fishermen, it is unlikely that it provides a significant and stable source of income for all licence holders.

# Indecon Survey of Commercial Salmon Fishermen

4.15 This sub-section analyses responses to the Indecon survey of commercial salmon fishermen. A total of 135 responses from commercial salmon fishermen were obtained. This represents a higher than expected response to the survey.

4.16 Table 4.8 presents details in relation to the types of licenses held for salmon fishing during the current season among survey respondents. Overall, 47% of respondents held draft net licences, while 47.7% held drift net licenses. The remaining 5.3% of licences consist of loop and snap net licenses.

**Table 4.8: Indecon Survey of Commercial Salmon Fishermen - Types of Licences Held for Salmon Fishing during Current Season**

| Licence Type | % of Respondents |
|---|---|
| Draft Net | 47.0 |
| Drift Net | 47.7 |
| Loop | 1.5 |
| Snap Net | 3.8 |
| **Total** | **100** |

Source: Indecon Survey of Commercial Salmon Fishermen

4.17 Table 4.9 sets out details in relation to fishing vessels, numbers of crew, and ownership shares of survey respondents. For example, the average (mean) length of boat was 22 feet, while the average number of crew per vessel is 2.6. On average, 42.9% of crew were assisting relatives, 35.7% were persons in shared ownership, while 21.4% were other employees.

| **Table 4.9: Indecon Survey of Commercial Salmon Fishermen - Details of Fishing Vessels, Crew Members and Ownership Share Numbers** | | | | | |
|---|---|---|---|---|---|
| | | | **Status of Crew** | | |
| **Statistics** | **Length of Boat - Feet** | **No. of Crew** | **Relatives Assisting - %** | **Persons in Shared Ownership of Boats - %** | **Other Employees - %** |
| Mean | 22 | 2.6 | 42.9% | 35.7% | 21.4% |
| Source: Indecon Survey of Commercial Salmon Fishermen | | | | | |

4.18 Table 4.10 sets out details in relation to the percentage of time spent by commercial fishermen on salmon fishing versus other occupations during the 2002 fishing season. On average, survey respondents suggest that 42% of time was spent on salmon fishing, 12.7% on other fishing, and 7.8% on farm work. Furthermore, 14.6% of time was spent on other employment, and 7.4% in unemployment.

| **Table 4.10: Indecon Survey of Commercial Salmon Fishermen - % of Time Spent by Commercial Fishermen on Salmon Fishing versus Other Occupations during Last Season** | |
|---|---|
| **Activities** | % |
| Salmon fishing | 42.0 |
| Other fishing | 12.7 |
| Farm work | 7.8 |
| Other employment | 14.6 |
| Unemployment | 7.4 |
| Other | 15.6 |
| * Note percentages may not add to 100 as fishermen may state more than one activity | |
| Source: Indecon Survey of Commercial Salmon Fishermen | |

4.19 Table 4.11 presents a breakdown by county of residence of fishermen who responded to the Indecon survey of commercial salmon fishermen. The highest proportions of respondents were from Donegal, at 16.9% of all respondents, followed by Mayo (16.1%), Kerry (10.5%), Cork (8.9%), and Clare (8.1%).

**Table 4.11: Indecon Survey of Commercial Salmon Fishermen - County of Residence of Fishermen**

| County | % of Respondents |
|---|---|
| Donegal | 16.9 |
| Mayo | 16.1 |
| Kerry | 10.5 |
| Cork | 8.9 |
| Clare | 8.1 |
| Wexford | 7.3 |
| Galway | 7.3 |
| Kilkenny | 5.6 |
| Limerick | 4.8 |
| Waterford | 4.0 |
| Sligo | 3.2 |
| Louth | 2.4 |
| Meath | 2.4 |
| Dublin | 0.8 |
| Wicklow | 0.8 |
| Monaghan | 0.8 |
| **Total** | **100** |

Source: Indecon Survey of Commercial Salmon Fishermen

4.20 Table 4.12 presents data in relation to the approximate age group of crew members. Overall, 6.3% of respondents indicated that crew members were on average aged between 15 and 19 years of age, while 7.6% and 16.5% of respondents indicated average age ranges of 20 to 24 years, and 25 to 34 years respectively.

4.21 The highest proportions lie in the 35 to 44 years of age and 45 to 54 years of age groups, at 20.5% and 22.4% respectively. Overall, the weighted average age is equal to 43.9 years, assuming a maximum age of 75.

**Table 4.12: Indecon Survey of Commercial Salmon Fishermen - Approximate Age Group of Crew Members**

| Age Group | % of Crew Members Indicated |
|---|---|
| 15-19 years | 6.3 |
| 20-24 years | 7.6 |
| 25-34 years | 16.5 |
| 35-44 years | 20.5 |
| 45-54 years | 22.4 |
| 55-64 years | 16.2 |
| 65+ | 10.6 |
| **Total** | **100** |

Source: Indecon Survey of Commercial Salmon Fishermen

4.22 Table 4.13 presents details in relation to survey respondents' salmon catch during the last season. A total of 31,289 salmon caught by all respondents, representing an overall weight of 147,015 lbs. This corresponds to an average of 241 salmon per respondent, at an average total weight of 1,246 lbs each. Overall there were 805 salmon caught but not sold.

4.23 The median of this distribution is less than the mean, indicating a positively skewed distribution. This implies that there are some large outlier values. This is also reflected in the standard deviation of 372 fish caught, and the reported range of salmon caught per commercial fisherman, from a minimum of 0 to a maximum of 1,700.

**Table 4.13: Indecon Survey of Commercial Salmon Fishermen - Details on Salmon Catch during Last Season**

| Statistics | No. of Salmon Caught | Total Weight - Llbs | Average Weight - Llbs[24] | No. of Salmon Caught but Not Sold |
|---|---|---|---|---|
| Total | 31,289 | 147,015 | | 805 |
| Mean | 241 | 1,246 | 6.67 | 9 |
| Median | 81 | 485 | 6.61 | 1 |
| Std. Deviation | 372 | 2,040 | 2.62 | 16 |
| Min | 0 | 0 | - | 0 |
| Max | 1,700 | 11,300 | - | 100 |

Source: Indecon Survey of Commercial Salmon Fishermen

4.24 Our survey of commercial fishermen also asked fishermen to state their most productive months for salmon fishing over the past 5 years. Overall, 6% of respondents indicated May to be the most productive month, while 35.7% indicated June, 47.2% indicated July, and 10.1% indicated August. Given that the drift net season operates from the beginning of June and the draft and other commercial sectors from the middle of May, these results confirm the concentration of activity during the summer months.

[24] The average reported weight in Table 4.13 is not equal to the reported total weight divided by the reported number of salmon caught since some survey respondents reported only the number of salmon caught. The average weight is calculated using the sample of survey respondents who reported both the number of salmon caught and the total weight of their catch.

4.25 Table 4.14 presents details in relation to the total sales value of salmon caught and sold during the last season by commercial salmon fishermen. For respondents to the Indecon survey, total sales amounted to an estimated €544,565, at an average of €4,464 per fisherman. The median sales value of salmon caught per fisherman was €1,789, while the standard deviation was equal to €6,311.8. Sales per fisherman ranged from a reported minimum €60 to a maximum of €28,400.

4.26 As with the reported information in relation to the average numbers of salmon caught and the average weight of salmon catches across respondents, there appears, from the descriptive summary statistics, to be considerable variation across respondents in relation to the total sales value from salmon caught and sold in the last season. The basis for this assertion is that the mean sales value in the respondent sample is considerably higher than the median, and the standard deviation is relatively large, as is the range of reported salmon sales values. This is not surprising however, give the findings in relation to numbers of salmon caught and average weight as reported in Table 4.13.

**Table 4.14: Indecon Survey of Commercial Salmon Fishermen - Total Sales Value of Salmon Caught and Sold During Last Season**

| Statistics | Sales Value - € |
|---|---|
| Total sales | 544,565.1 |
| Mean per fisherman | 4,463.6 |
| Median | 1,788.8 |
| Standard Deviation | 6,311.8 |
| Min | 60 |
| Max | 28,400 |

Source: Indecon Survey of Commercial Salmon Fishermen

4.27 It is also useful to consider data in relation to the average price received for wild salmon caught and sold during the last season, and this is presented in Table 4.15. The average reported price among respondents was equal to €3.9 per lb, at a median of €3.3 per lb.

| **Table 4.15: Indecon Survey of Commercial Salmon Fishermen - Average Price Received for Wild Salmon Caught and Sold During Last Season** | |
|---|---|
| **Statistics** | **€ per Llb** |
| Mean of stated prices | 3.9 |
| Median | 3.3 |
| Standard deviation | 2.7 |
| Source: Indecon Survey of Commercial Salmon Fishermen | |

4.28 Overall, these summary statistics suggest little variation in relation to the average price received for wild salmon, and *a priori* we would not have expected much variation in responses. It is nonetheless useful to consider other sources of information in relation to this. One such source is the recent Bord Iascaigh Mhara (BIM) report, "Quality and Marketing – The Key to Maximising the Financial Return for Irish Salmon".[25] According to this report, prices during the 2002 salmon season were a major improvement on those in 2001, particularly in areas where supply contracts had been negotiated.

4.29 In Table 4.16 below we present details of the average prices for all sizes of salmon for scheme fish in both 2001 and 2002, across a number of locations. The prices are given in Euro per kg, as in the BIM report, and are also converted into Euro per lb, for comparison purposes.[26]

4.30 The data suggests that the average wholesale price for scheme wild salmon ranged from €1.81 to €2.50 per lb (or €4.00 to €5.52 per kg) in 2001, and from €2.54 to €4.03 per lb (or €5.59 to €8.88 per kg) in 2002. These estimated 2002 prices compare to the mean estimate of €3.90 per lb and the median estimate of €3.30 per lb from the Indecon survey, as reported in Table 4.15. The average price was equal to €2.28 per lb in 2001, and equal to €3.34 per lb in 2002.

[25] This represents a report on the work carried out by Bord Iascaigh Mhara during the 2002 wild salmon season.

[26] One kilogram is equivalent to 2.2 pounds.

**Table 4.16: Average Wholesale Prices for all Sizes of Fish in 2001 and 2002 - Scheme Fish**

| | 2001 Prices | | 2002 Prices | |
|---|---|---|---|---|
| | Euro/kg | Euro/lb | Euro/kg | Euro/lb |
| North Mayo | 5.52 | 2.50 | 5.59 | 2.54 |
| Dingle | 4.63 | 2.10 | 6.87 | 3.12 |
| Greencastle | 5.00 | 2.27 | 7.06 | 3.20 |
| Burtonport | 4.00 | 1.81 | 7.25 | 3.29 |
| Galway | 5.50 | 2.49 | 8.50 | 3.86 |
| Cleggan | 5.50 | 2.49 | 8.88 | 4.03 |
| Average | 5.03 | 2.28 | 7.36 | 3.34 |
| | | | | |
| Source: Bord Iascaigh Mhara and Indecon calculations. | | | | |

4.31 We have also accessed BIM data in relation to the average price for scheme and non-scheme two to three kg salmon in 2002, and these are presented in Table 4.17 below. These estimates suggest that there appears to be little difference in prices between scheme and non-scheme salmon, though BIM concludes that "prices were marginally better for fish caught by vessels in the quality scheme than for non-scheme fish."

4.32 Overall the data suggests a price range for scheme 2-3 kg fish of between €2.54 and €4.31 per lb, and a price range for non-scheme 2-3 kg fish of between €2.75 and €4.03 per lb. These estimates are consistent with the estimates from the Indecon survey of commercial salmon fishermen.

**Table 4.17: Average Prices for all Scheme and Non-Scheme 2-3 kg Fish in 2002**

| | Non Scheme Prices | | Scheme Prices | |
|---|---|---|---|---|
| | Euro/kg | Euro/lb | Euro/kg | Euro/lb |
| Dingle | - | - | 6.06 | 2.75 |
| Greencastle | - | - | 7.06 | 3.20 |
| Burtonport | 7.21 | 3.27 | 7.25 | 3.29 |
| Galway | 7.75 | 3.52 | 8.50 | 3.86 |
| Cleggan | 9.50 | 4.31 | 8.88 | 4.03 |
| North Mayo | 5.59 | 2.54 | - | - |
| Waterford | 6.00 | 2.72 | - | - |
| | | | | |
| Source: Bord Iascaigh Mhara and Indecon calculations. | | | | |

4.33 The BIM report also reports on prices paid to purchase wild salmon in the hotel and restaurant sector. According to BIM, the price ranged from €6.16 to €16.00 per salmon, and this price range largely reflects the quality and level of processing of the fish, including whole and filleted fish.

4.34 An alternative source for comparison is a recent report from the ESRI.[27] This report assumes an average price of €7.75 per kilogram, which is equivalent to €3.52 per lb. This estimate lies between the Indecon median and mean estimates, though slightly closer to the median estimate of €3.3 per lb.

4.35 Overall then, we conclude that the price estimates from the Indecon survey of commercial salmon fishermen are consistent with other sources. Our research on prices in this section will input to our calculations of overall incomes accruing to commercial fishermen.

4.36 Table 4.18 presents data in relation to the approximate average weekly gross income before tax earned by commercial salmon fishermen from salmon sales during the last season. These figures are based on approximate income earned from sales of salmon caught during the last season excluding expenses and costs, and before tax. According to the survey evidence, the average (mean) income per week from salmon sales was equal to €536, though the median was much lower at €195. In fact there was considerable variation across the sample, reflected by a standard deviation of €778. Reported average weekly gross income before tax from salmon sales during the last season ranged from €0 to €3,000. Again this variation across reported gross income is not surprising given the variation in reported catches and reported salmon values.

**Table 4.18: Indecon Survey of Commercial Salmon Fishermen - Approximate Average Weekly Gross Income Before Tax from Salmon Sales During Last Season***

| Statistics | € per week |
|---|---|
| Mean income/week | 536 |
| Median | 195 |
| Standard deviation | 778 |
| Min | 0 |
| Max | 3,000 |

Source: Indecon Survey of Commercial Salmon Fishermen
* Based on approximate income earned from sales of salmon caught during last season less expenses/costs and before tax.

[27] "The Value of the Wild Atlantic Salmon Fisheries", by Dr. John A. Curtis, ESRI, November, 2002.

4.37 As discussed previously, the median is a more representative measure of the average than the mean for highly skewed distributions, since it is less sensitive to extreme scores or outliers than the mean. From Table 4.18, there appears to be considerable variation in relation to average weekly gross income before tax, and indeed the summary statistics suggest a skewed distribution. Skewness is a measure of the lack of symmetry of a distribution. If the coefficient of skewness is 0, the distribution is symmetric. If the coefficient is positive, the median is usually less than the mean and the distribution is said to be skewed to the right.

4.38 The skewness coefficient in the survey data on weekly gross income before tax is equal to 2.04 indicating a right-skewed distribution, confirming our conclusions above.

4.39 Data in relation to the approximate percentage of total income during the last season derived from salmon fishing is presented in Table 4.19. On average across survey respondents, 42.8% of total income was derived from salmon fishing. The median reported proportion was equal to 35%, and the importance of salmon fishing ranged from 0% to 100% of reported income.

**Table 4.19: Indecon Survey of Commercial Salmon Fishermen - Approximate % of Total Income During Last Season Derived from Salmon Fishing**

| Statistics | Approx. % of Total Income |
|---|---|
| Mean % of income | 42.8 |
| Median | 35.0 |
| Standard deviation | 34.1 |
| Min | 0.0 |
| Max | 100.0 |

Source: Indecon Survey of Commercial Salmon Fishermen

# Estimates of Total Commercial Salmon Revenue

4.40 In order to estimate the total value of revenue to commercial salmon fishermen in Ireland, we utilise data from the Indecon survey of commercial salmon fishermen, the Central Fisheries Board and from other sources.

4.41 In estimating the total revenue accruing to commercial salmon fishermen, Indecon considered a number of alternative methods of estimation in order to ascertain the robustness of our final estimate. It is useful to briefly outline the estimation methods considered before providing the detailed estimates from the 'best estimation method'.

4.42 The methods used for estimating the total value accruing to commercial salmon fishermen included:

1. Total value of revenue accruing to commercial fishermen from salmon equals the total wild salmon catch in 2002 multiplied by the average weight of a salmon (lbs) multiplied by the average price per lb.
2. Total value of revenue accruing to commercial fishermen from salmon equals the number of commercial fishermen multiplied by the average weight of salmon caught per fisherman multiplied by the average price of wild salmon.
3. Total value of revenue accruing to commercial fishermen from salmon equals the number of fishermen multiplied by reported average sales from wild salmon per fisherman.
4. A fourth method for estimating the total value of revenue accruing to commercial salmon fishermen considers the total wild salmon catch of survey respondents in 2002 as a proportion of the overall catch, and calculates the total value of the overall catch using our estimate of the value of the survey respondents catch.

4.43 Estimates from methods 2, 3 and 4 are more reliant on survey data than estimates from method 1, and there is some variability across survey respondents in relation to three key variables, namely: average total weight of salmon caught per salmon fisherman, mean wild salmon sales per fisherman, and total sales. In particular, it is evident from our discussions earlier in this section that there are outlier responses in our sample in relation to these variables. This may result in overestimates of total revenue when using these mean estimates.

4.44 It is our view that estimates from method 1 provide a more robust measure of total revenue accruing to fishermen from wild salmon catches. This is because the values used in the calculation are easily cross-checked with other research, and are indeed consistent with a number of other sources. For these reasons, we believe that method 1 provides our most robust estimate of the total value of income accruing to commercial fishermen from wild salmon in 2002. In fact estimates generated using method 1 are in general consistent with estimates from the other three methods.

4.45 Equation 1 presents a method for estimating the total value of revenue accruing to commercial salmon fishermen by considering the total size of the catch multiplied by the total value of this catch using our estimate of the average price.

**Equation 1: Total value of revenue accruing to commercial salmon fishermen**

*Total value of revenue accruing to commercial salmon fishermen*

=

*Total commercial salmon catch 2002*

x

*Average weight per salmon (lbs)*

x

*Average price per lb*

4.46 The Statistical Report of the Central and Regional Fisheries Boards reports a total commercial salmon catch in 2002 of 218,837, including the Foyle. From Table 4.13, the average reported weight per salmon is equal to 6.67 lbs. Curtis (2002)[28] reports that the estimated average national salmon weight is 2.75kg, which is equivalent to 6.05lbs, and slightly lower than the Indecon estimate. We know from our analysis earlier in this chapter that the average price per lb received by commercial salmon fishermen is approximately €3.30 per lb. Hence, overall this implies that total income from the commercial salmon catch amounts to €4.807 million, as presented in Table 4.20.

**Table 4.20: Estimated Total Value of Revenue Accruing to Commercial Salmon Fishermen in 2002**

| | |
|---|---|
| Estimated total commercial salmon catch 2002 | 218,387 |
| Estimated average weight (lbs) | 6.67 lbs |
| Estimated average price (median) per lb | 3.30 |
| **Estimated total value of revenue accruing to commercial salmon fishermen** | **€4.807 million** |
| | |

Source: Indecon.

4.47 It is also important to consider the value of revenue accruing to commercial salmon fishermen using drift net, draft net and other methods. Table 4.21 presents the estimated total value accruing to commercial drift net salmon fishermen in 2002. The overall estimate amounts to €4.048 million, or 84.2% of the total.

[28] "The Value of the Wild Atlantic Salmon Fisheries", by Dr. John A. Curtis, ESRI, November 2002.

| **Table 4.21: Estimated Total Value of Revenue Accruing to Commercial Salmon Fishermen in 2002 – Drift Net** | |
|---|---|
| | |
| Estimated total commercial salmon catch 2002 – Drift net | 183,915 |
| Estimated average weight (lbs) | 6.67 lbs |
| Estimated average price (median) per lb | 3.30 |
| **Estimated total value of revenue accruing to commercial salmon fishermen** | **€4.048 million** |
| | |
| Source: Indecon. | |

4.48 Estimates of the total value accruing to commercial draft net salmon fishermen in 2002 are presented in Table 4.22. The overall estimate amounts to €0.656 million, or 13.7% of the total value.

| **Table 4.22: Estimated Total Value of Revenue Accruing to Commercial Salmon Fishermen in 2002 – Draft net** | |
|---|---|
| | |
| Estimated total commercial salmon catch 2002 – Draft net | 29,782 |
| Estimated average weight (lbs) | 6.67 lbs |
| Estimated average price (median) per lb | 3.30 |
| **Estimated total value of revenue accruing to commercial salmon fishermen** | **€0.656 million** |
| | |
| Source: Indecon. | |

4.49 Finally, Table 4.23 presents the estimated total value of revenue accruing to commercial salmon fishermen in 2002 using other methods. This amounts to €0.103 million, or 2.14% of the total value.

| **Table 4.23: Estimated Total Value of Revenue Accruing to Commercial Salmon Fishermen in 2002 – Other Methods** | |
|---|---|
| | |
| Estimated total commercial salmon catch 2002 – other methods | 4,690 |
| Estimated average weight (lbs) | 6.67 lbs |
| Estimated average price (median) per lb | 3.30 |
| **Estimated total value of revenue accruing to commercial salmon fishermen** | **€0.103 million** |
| | |
| Source: Indecon. | |

4.50 It is our view that the estimates derived from method 1 provide the most robust measure of total revenue accruing to fishermen from wild salmon. The values presented above have been cross-checked and are consistent with the other methods. Furthermore, the values used in the estimates in method 1 are consistent with other research. For these reasons, we believe that the overall estimate of €4.807 million provides our best estimate of the total value of income accruing to commercial fishermen from wild salmon in 2002.

4.51 From a regional perspective, it should be noted that this economic activity is concentrated in areas that generally lack an intensive industry base i.e. very often in rural and small coastal towns and villages. In these areas, the alternative employment and economic activity alternatives are often much more limited than in other more developed areas. Thus, the value of this income is perhaps greater in such areas than it would be in say Dublin and other large cities. In other words, the economic activity of commercial salmon fishermen is likely to have varying regional impacts.

4.52 It is also possible to estimate the regional breakdown of the value of revenue generated by commercial fishermen from wild salmon. In doing so we use estimates for the total catch in each region, as well as data in relation to average weight, and average price per lb. This data is presented in Table 4.24 for the overall value, and disaggregated by drift net, draft net and other methods subsequently.

4.53 Overall, the estimates suggest considerable variation in overall revenues across regions. For example, the estimated total revenue from commercial salmon fishing in the South West region in 2002 is equal to €1.29 million and equal to €0.98 million in the North West region. On the other hand, the estimated total revenue from commercial salmon fishing in the Eastern region is only equal to €0.06 million in 2002.

**Table 4.24: Total Value of Revenue Accruing to Commercial Salmon Fishermen in 2002 by Region**

| Regional Fisheries Board Area | Estimated 2002 catch | Average weight | Average price per lb | Total Value of Revenue (€ million) |
|---|---|---|---|---|
| Eastern | 2,830 | 6.67 | 3.3 | 0.062 |
| Southern | 28,980 | 6.67 | 3.3 | 0.638 |
| South West | 58,432 | 6.67 | 3.3 | 1.286 |
| Shannon | 18,647 | 6.67 | 3.3 | 0.410 |
| Western | 18,561 | 6.67 | 3.3 | 0.409 |
| North West | 44,696 | 6.67 | 3.3 | 0.984 |
| Northern | 34,753 | 6.67 | 3.3 | 0.765 |
| Foyle (half) | 11,488 | 6.67 | 3.3 | 0.253 |
| **Total** | **218,387** | **6.67** | **3.3** | **4.807** |
| | | | | |

Source: Indecon calculations.

4.54 Table 4.25 presents the total value of revenue accruing to commercial drift net salmon fishermen in 2002 by region. This ranged from a low of €1,000 in the Eastern region to a maximum of €1.12 million in the South West, followed by €0.94 million in the North West region.

**Table 4.25: Total Value of Revenue Accruing to Commercial Salmon Fishermen in 2002 by Region – Drift Net**

| Regional Fisheries Board Area | Estimated 2002 catch | Average weight | Average price per lb | Total Value (€ million) |
|---|---|---|---|---|
| Eastern | 42 | 6.67 | 3.3 | 0.001 |
| Southern | 24,499 | 6.67 | 3.3 | 0.539 |
| South West | 50,771 | 6.67 | 3.3 | 1.118 |
| Shannon | 15,119 | 6.67 | 3.3 | 0.333 |
| Western | 18,088 | 6.67 | 3.3 | 0.398 |
| North West | 42,618 | 6.67 | 3.3 | 0.938 |
| Northern | 28,040 | 6.67 | 3.3 | 0.617 |
| Foyle (half) | 4,738 | 6.67 | 3.3 | 0.104 |
| **Total** | **183,915** | **6.67** | **3.3** | **4.048** |
| | | | | |

Source: Indecon calculations.

4.55 Table 4.26 presents the total value of revenue accruing to commercial draft net salmon fishermen in 2002 by region. Again there is considerable variation across regions, from a minimum of just €220 in the Southern region to a maximum of €166,000 in the South West region.

**Table 4.26: Total Value of Revenue Accruing to Commercial Salmon Fishermen in 2002 by Region – Draft Net**

| Regional Fisheries Board Area | Estimated 2002 catch | Average weight | Average price per lb | Total Value (€ million) |
|---|---|---|---|---|
| Eastern | 2,788 | 6.67 | 3.3 | 0.061 |
| Southern | 10 | 6.67 | 3.3 | 0.000 |
| South West | 7,519 | 6.67 | 3.3 | 0.166 |
| Shannon | 3,528 | 6.67 | 3.3 | 0.078 |
| Western | 473 | 6.67 | 3.3 | 0.010 |
| North West | 2,078 | 6.67 | 3.3 | 0.046 |
| Northern | 6,636 | 6.67 | 3.3 | 0.146 |
| Foyle (half) | 6,750 | 6.67 | 3.3 | 0.149 |
| **Total** | **29,782** | **6.67** | **3.3** | **0.656** |

Source: Indecon calculations.

4.56 Finally, Table 4.27 presents the total value of revenue accruing to commercial salmon fishermen from other methods in 2002 by region. The maximum was in the Southern region at €98,000.

**Table 4.27: Total Value of Revenue Accruing to Commercial Salmon Fishermen in 2002 by Region – Other Methods**

| Region | Estimated 2002 catch | Average weight | Average price per lb | Total Value (€ million) |
|---|---|---|---|---|
| Eastern | 0 | 6.67 | 3.3 | 0.000 |
| Southern | 4,471 | 6.67 | 3.3 | 0.098 |
| South West | 142 | 6.67 | 3.3 | 0.003 |
| Shannon | 0 | 6.67 | 3.3 | 0.000 |
| Western | 0 | 6.67 | 3.3 | 0.000 |
| North West | 0 | 6.67 | 3.3 | 0.000 |
| Northern | 77 | 6.67 | 3.3 | 0.002 |
| Foyle (half) | 0 | 6.67 | 3.3 | 0.000 |
| **Total** | **4,690** | **6.67** | **3.3** | **0.103** |
| | | | | |

Source: Indecon calculations.

*Revenues versus Economic Impact of Commercial Fishing*

4.57 It should be noted that the revenue estimates as presented above represent revenue before operating expenses and taxes. Such items would need to be deducted from revenues in order to calculate the (net/gross) income, or economic return, derived from commercial salmon fishing. We do not, however, have access to reliable data on the level and percentage of operating costs and taxation payments. However, we have assumed that 10% of the direct and indirect costs are based on imported inputs and therefore do not constitute a net benefit to the Irish economy. As such, the estimates presented above need to be adjusted downwards to reflect this factor (see Table 4.28 below). After adjusting for imported inputs, our estimates suggest a total direct economic value for the commercial fishing sector of €4.33 million in 2002, with the South West region capturing the largest proportion (€1.157 million).

**Table 4.28: Estimated Direct Economic Value of Income Accruing to Commercial Salmon Fishermen in 2002 by Region**

| Region | Total Estimated Direct Income/Economic Value* - € million | | | |
|---|---|---|---|---|
| | Drift Net | Draft Net | Other | Total |
| Eastern | 0.001 | 0.055 | 0.000 | 0.056 |
| Southern | 0.485 | 0.000 | 0.089 | 0.574 |
| South West | 1.006 | 0.149 | 0.003 | 1.157 |
| Shannon | 0.300 | 0.070 | 0.000 | 0.369 |
| Western | 0.358 | 0.009 | 0.000 | 0.368 |
| North West | 0.844 | 0.041 | 0.000 | 0.886 |
| Northern | 0.555 | 0.131 | 0.002 | 0.689 |
| Foyle (half) | 0.094 | 0.134 | 0.000 | 0.228 |
| **Total** | **3.643** | **0.590** | **0.093** | **4.326** |

Source: Indecon calculations based on assumption that 10% of direct and indirect costs are imported inputs.

4.58 Of the total, the drift net sector is estimated to have a direct economic impact of €3.64 million in 2002, while the draft net and other commercial sectors are estimated to have an overall economic impact of €0.59 million and €0.09 million respectively. There is a wide variation in the relative economic impact at regional level.

*Value-added from Downstream Activities*

4.59 In estimating the overall economic contribution of the commercial salmon fishing sector, it is also important to note that the revenue estimates presented above do not include added value from downstream activities related to the salmon fishing sector, including fish processing and smoking, and income generated in the smoked salmon or fish-processing sector. This has been a deficiency with some previous estimates.

4.60 According to BIM, the use of first sale value does not give a true picture of the value of the wild salmon catch as at least 50% of the catch goes to the smoking industry. The Board points out that with smoking there is a considerable increase in the value of the fishery, from €7/kg for whole fish to the fisherman, to as much €50/kg for sides of smoked salmon wholesale and increases further to €80 to €100/kg retail.

4.61 To accurately estimate the added value from downstream activities would require details on the precise destination of salmon in the smoking and processing areas, and the mark-ups on quayside prices achieved in the wholesale and retail sectors. This data is not available to the evaluation team. However, as an indicative estimate of the potential value of the wild salmon smokery sector alone, we have assumed that 50% of the commercial catch goes for smoking and that this catch attracts an average price of €23/lb of €50/kg (based on a conservative estimate). Based on this approach, we estimate that the smoked salmon sector generated revenues of approximately €16.6 million in 2002. This estimate does not take account of operating costs and imported inputs. If we assume that the import content of production is 10%, this would suggest a net output after taking account of inputs of approximately €14.9 million, suggesting that the smoked salmon sector generated an additional €10.6 million in net terms for the Irish economy in 2002. Further income would be generated in other processing activities and in wholesale and retail activities, all of which would have significant employment impacts.

4.62 However, it should be noted that interpreting downstream activities as adding to the overall economic value of the commercial fishing sector is likely to be false. This is because these activities are independent of the fishing sector and indeed raw material inputs required by downstream businesses may be imported in the absence of a domestic supply source.

# Summary and Conclusions

4.63 The principal findings from the analysis in this chapter include the following:

- The principal commercial fishing regions are the South West (28.2% of the total commercial catch), followed by the North West (21.6%), the Northern fisheries region (16.8%), the Southern (14%) and Shannon regions (9%). It is also noticeable, however, that the overall commercial catch has fluctuated substantially on a regional basis in recent years.
- The drift net fishery accounted 82.4% of the total commercial catch in 2001. The drift net sector accounted for the vast majority (95%) of the commercial catch in the North West Regional Fishery Board Area, whereas at the other end of the scale, drift netting represented only 1% of the catch in the Eastern fisheries region.
- Across the seven fisheries regions, the draft net catch totalled 23,032 salmon in 2002, accounting for over 11% of the total commercial catch. Within the Eastern Regional Fisheries Board Area, the draft net catch accounted for 2,788 salmon or 98.5% of the total commercial catch in 2002. Draft net fishing is also important in Northern, Shannon and South Western Regional Fisheries Board Areas, where it accounted for 19.1%, 18.9% and 12.9% respectively of the total commercial catch in 2002.

- In 2002, approximately 25% of the commercial drift net fishermen caught just over 70% of the fish, while a little over half (53%) of drift net fishermen caught 100 salmon or less in the 2002 season. Moreover, 7.8% of drift net licences holders were not active, in terms of catching salmon, during the 2002 season.
- Approximately 26% of draft net commercial licence holders accounted for just over 69% of the draft net salmon catch in 2002, while around three quarters of draft net licence holders caught 50 salmon or less. 15.8% of draft net licence holders did not catch any salmon during 2002.
- In total, there was a total of 31,289 salmon caught during the last season by respondents to the Indecon survey of commercial fishermen (n=135), at an overall weight of 147,015 lbs. This corresponds to an average of 241 salmon per respondent, and an average total weight of 1,246 lbs each.;
- Among respondents to our survey, total salmon sales amounted to an estimated €544,565, at an average of €4,464 per fisherman;
- The average reported price among survey respondents was equal to €3.9 per lb, at a median of €3.3 per lb. This price estimate is consistent with other sources;
- According to survey evidence, the average (mean) income per week from salmon sales was equal to €536, though the median was much lower at €195;
- We estimate that the total value of revenues generated by commercial salmon fishermen equalled €4.8 million in 2002, of which just over €4 million relates to the drift net sector, while €0.66 million and €0.1 million is generated within the drift net and other commercial sectors respectively.
- Adjusting for the level of imported inputs (which do not constitute a benefit to the Irish economy), we estimate a total direct economic value or income from commercial salmon fishing of €4.33 million in 2002, of which €3.64 million is generated by the drift net sector, while the draft net and other commercial sectors are estimated to have an overall economic impact of €0.59 million and €0.09 million respectively. There is a wide variation in the relative economic impact at regional level.
- The revenue estimates presented above do not include added value from downstream activities related to the salmon fishing sector, including fish processing and smoking, and income generated in the smoked salmon or fish-processing sector. We estimate that the smoked salmon sector alone generated approximately €10.6 million for the Irish economy in 2002. Further value-added and employment gains are generated in other salmon processing activities and in wholesale and retail activities.
- From a regional perspective, it should be noted that this economic activity is concentrated in areas that generally lack an intensive industry base i.e. very often in rural and small coastal towns and villages. In these areas, the alternative employment and economic activity alternatives are often much more limited than in other more developed areas. In other words, the importance of commercial salmon fishing is likely to vary substantially on a regional basis.

## Chapter 5

# Economic Impact of Salmon Angling

# 5 Economic Impact of Salmon Angling

5.1 This section considers the current economic impact of salmon angling in Ireland. Specifically, we estimate the value of both overseas angling tourism and domestic salmon angling to the Irish economy, using data from a number of sources including:

- Special Bord Fáilte overseas salmon angling data compiled for Indecon;
- Other Bord Fáilte angling and tourism data; and,
- Data from the Central Statistics Office, "Tourism and Travel" publication[29].

5.2 Furthermore, this analysis is augmented by data gathered from the Indecon surveys of overseas and domestic anglers, as well as the Indecon survey of special tourism interests. Finally, we also present an analysis of angling accommodation in Ireland.

## Regional breakdown of Rod & Line Salmon Catch

5.3 A key determinant of the overall economic value of wild salmon angling at a regional level is the size of the salmon catch and the movements in this catch over time. In this sub-section we look at the recent trends in the size and structure of the rod & line salmon catch on a regional basis since the early 1990s.

5.4 A breakdown by region of the total rod & line salmon catch over the period 1996-2001 is presented in Table 5.1 below. The figures shown are based on estimates supplied by the regional fisheries boards up to 2000, while the figures for 2001 are based on adjusted data from angling logbook returns. It should be cautioned that the figures may reflect some degree of under-reporting. According to the estimates, in total 26,074 wild salmon were caught by anglers in 2001. Over the previous years 1996-2000, estimates suggest that the rod & line catch has varied between a low of 33,197 and a high of 41,507 (in 1996).

[29] Central Statistics Office, Tourism and Travel 2000, May 2001.

| Table 5.1: Rod & Line Wild Salmon Catch by Region - 1996-2001* - No. of Salmon | | | | | | |
|---|---|---|---|---|---|---|
| **Rod and Line Salmon Catches** | **1996** | **1997** | **1998** | **1999** | **2000** | **2001*** |
| Eastern | 1,710 | 795 | 2,100 | 1,888 | 1,635 | 1,030 |
| Southern | 7,491 | 5,291 | 10,295 | 7,668 | 8,421 | 3,202 |
| South West | 5,114 | 4,500 | 3,571 | 3,722 | 3,900 | 4,133 |
| Shannon | 3,740 | 2,500 | 3,000 | 4,289 | 3,800 | 670 |
| Western | 2,746 | 3,529 | 3,714 | 2,594 | 3,797 | 2,726 |
| North West | 15,696 | 11,557 | 10,848 | 8,969 | 10,938 | 10,403 |
| Northern | 5,010 | 5,025 | 5,832 | 5,286 | 5,199 | 2,872 |
| Region unknown | - | - | - | - | - | 1,038 |
| **Total Rod & Line Catch** | **41,507** | **33,197** | **39,360** | **34,416** | **37,690** | **26,074** |

Source: Central Fisheries Board * Note that figures up to 2000 are based on estimates calculated by the Regional Fisheries Boards. Figures for 2001 are adjusted catch figures based on angling logbook returns.

5.5 The breakdown of the estimated rod & line salmon catch on a regional basis is shown in Table 5.2. The North West region has continuously accounted for the largest proportion of rod & line caught salmon over the period shown and in 2001 yielded an estimated 10,403 salmon or 39.9% of the national estimated total angling catch. After the North West, the next most important angling areas are the South West, the Southern and the Northern Regional Fisheries Board areas, accounting for an estimated 15.9%, 12.3% and 11% of the total catch respectively in 2001. It is notable that the Eastern and Shannon regions accounted for just 4% and 2.6% of the catch respectively in 2001.

| Table 5.2: Rod & Line Wild Salmon Catch by Region - 1996-2001 - % by Region | | | | | | |
|---|---|---|---|---|---|---|
| **Rod and Line Salmon Catches** | **1996** | **1997** | **1998** | **1999** | **2000** | **2001** |
| Eastern | 4.1 | 2.4 | 5.3 | 5.5 | 4.3 | 4.0 |
| Southern | 18.0 | 15.9 | 26.2 | 22.3 | 22.3 | 12.3 |
| South West | 12.3 | 13.6 | 9.1 | 10.8 | 10.3 | 15.9 |
| Shannon | 9.0 | 7.5 | 7.6 | 12.5 | 10.1 | 2.6 |
| Western | 6.6 | 10.6 | 9.4 | 7.5 | 10.1 | 10.5 |
| North West | 37.8 | 34.8 | 27.6 | 26.1 | 29.0 | 39.9 |
| Northern | 12.1 | 15.1 | 14.8 | 15.4 | 13.8 | 11.0 |
| Region unknown | - | - | - | - | - | 4.0 |
| **Total Rod & Line Catch** | **100** | **100** | **100** | **100** | **100** | **100** |

Source: Central Fisheries Board

# Value of Overseas Salmon Tourism

5.6 This section estimates the total value of overseas salmon tourism to the Irish economy. The estimates are based principally on data from a special data run undertaken by Bord Fáilte for Indecon, specifically for the purposes of this study. In particular, Bord Fáilte has provided Indecon with data on a three-year period from 1998 to 2000, relating to overseas salmon anglers.

5.7 The data collected and analysed relates to a number of important indicators, including:

- Market distribution/country of origin of visitors;
- Main purpose of visit to Ireland
- Route of entry;
- Month of arrival;
- Length of stay;
- Experience of Ireland;
- Social class;
- Party composition of visitors;
- Age profile of angling visitors;
- Usage of car as method of transport;
- Region visited;
- Accommodation used; and,
- Travel arrangements (independent or package).

5.8 This data is informative in a number of respects. Firstly it allows us to build a profile of overseas salmon anglers, and furthermore it allows us to estimate/quantify the total value of overseas salmon angling tourism to the Irish economy. This analysis inputs to our calculations of the socio-economic benefits of the rod and line salmon fishery in Ireland.

5.9 A special data run undertaken by Bord Fáilte for Indecon for this study provides data in relation to a three-year period from 1998 to 2000, on a number of issues. Table 5.3 presents details in relation to the market distribution of overseas salmon angler visits to Ireland, and specifically the annual averages over the period from 1998 to 2000. In each of the years it is estimated that there were 24,000 salmon angler visits to Ireland.[30] Overall over half of these were from Britain, with an average 13,000 angler visits in each of the three years. An estimated total of 8,000 salmon angler visits were from mainland Europe in each year, and 3,000 visits were from North America. The average annual numbers of overseas salmon angler trips from other countries over the three-year period is less than 500.

5.10 While 54.2% of overseas salmon angler visitors to Ireland come from Britain, the corresponding proportion for all tourists was 57.1% between 1998 and 2000, according to Bord Fáilte data.

**Table 5.3: Overseas Salmon Angler Visits - Market Distribution - 000s – Average Per Year Over 1998-2000 Period**

| Market | 000s |
|---|---|
| Britain | 13 |
| Mainland Europe | 8 |
| North America | 3 |
| Other Areas | * |
| Total Salmon Angling Visitors | 24 |

Source: Bord Fáilte Survey of Overseas Travellers
* Indicates less than 500

[30] The total number of overseas visits to Ireland in 2000 was 6.417 million, according to the Central Statistics Office "Tourism and Travel" publication.

*Indecon Survey of Overseas Salmon Anglers*

5.11 In our estimates we will also utilise data collected from the Indecon survey of overseas salmon anglers. This data source augments the Bord Fáilte data, and also presents the views of overseas salmon anglers in relation to a number of issues. In total, 83 overseas salmon anglers responded to our survey and this considerably exceeds our initial expected response rate.

5.12 Table 5.4 presents details in relation to the season in which overseas salmon angler survey respondents last engaged in salmon angling in Ireland. Overall, 24.1% indicated they had last engaged in salmon angling in Ireland in 2001, while 72.3% indicated 2002.

**Table 5.4: Indecon Survey of Overseas Salmon Anglers - Season in Which Anglers Last Engaged in Salmon Angling in Ireland**

| Season/Year | % of Respondents |
|---|---|
| 2001 | 24.1 |
| 2002 | 72.3 |
| Other year | 3.6 |
| Total | 100 |

Source: Indecon Survey of Overseas Salmon Anglers

5.13 Survey respondents were also asked to indicate the number of holiday trips spent in Ireland in the last season during which salmon fishing was undertaken, and their responses are presented in Table 5.5. Overall, the average number of trips among survey respondents in 2001 was 1.8, while it was higher among respondents for 2002 at 2.2 trips. For the sample as a whole the average was equal to 2.1 trips per year.

5.14 It should be noted that the estimated number of salmon angling visits to Ireland, at 24,000 per annum between 1998 and 2000 (described earlier), is consistent with the figures shown above in relation to the average number of trips taken by anglers. This can be seen if one divides the Bord Failte estimate of the number of angling visits by the number of salmon angling licences sold to out-of-State visitors to Ireland (10,064 in 2002, which includes Northern Ireland).

**Table 5.5: Indecon Survey of Overseas Salmon Anglers - No. of Holiday Trips Spent in Ireland in Last Season during which Salmon Fishing was Undertaken**

| Season/year | Average No. of Trips | Total Trips |
|---|---|---|
| 2001 | 1.8 | 36 |
| 2002 | 2.2 | 131 |
| Other Years | - | |
| All Seasons/Years | 2.1 | 169 |

Source: Indecon Survey of Overseas Salmon Anglers

5.15 It is also informative to consider the main reasons as to why salmon anglers visit Ireland, and data from the Bord Fáilte survey of overseas travellers and from the Indecon survey of overseas salmon anglers can be utilised in this regard.

5.16 Firstly, Table 5.6 presents Bord Fáilte data in relation to the main purpose of visit for overseas salmon anglers between 1998 and 2000. Overall, 69% indicated that their visit to Ireland constituted a holiday, while 19% indicated they were visiting friends or relatives. Only 5% were visiting for business or conference purposes. This data indicates that the vast majority of foreign visitors to Ireland who participate in salmon angling are here on holiday. Interestingly, by comparison, a lower proportion of all overseas visitors in 2000 came on holiday (56%).

**Table 5.6: Overseas Salmon Anglers - 1998-2000 - Purpose of Visit (%)**

| Purpose of visit | % |
|---|---|
| Holiday | 69 |
| Visiting friends/relatives | 19 |
| Business/Conference | 5 |
| Other | 7 |
| **Total** | **100** |

Source: Bord Fáilte Survey of Overseas Travellers

5.17 Data is also available in relation to the primary purpose of salmon anglers visits to Ireland, from the Indecon survey of overseas salmon anglers. Overall, 90.2% of respondents indicated that salmon fishing was their primary purpose, while 9.8% indicated that it was not.

**Table 5.7: Indecon Survey of Overseas Salmon Anglers - Was Salmon Fishing the Primary Purpose of Your Trip(s) to Ireland?**

| Primary Purpose | % of Respondents |
|---|---|
| Yes | 90.2 |
| No | 9.8 |
| Total | 100 |

Source: Indecon Survey of Overseas Salmon Anglers

5.18 Indecon also analysed data in relation to the route of entry of overseas salmon anglers between 1998 and 2000, and this data is presented in Table 5.8. Overall, 33% of these visitors came to Ireland by sea from Britain, with a further 10% arriving by sea from mainland Europe. The remaining 57% of total overseas salmon angling visitors to Ireland arrived by air, with 31% arriving from Britain, 19% from mainland Europe, and 7% from across the Atlantic.

**Table 5.8: Overseas Salmon Anglers - 1998-2000 - Route of Entry (%)**

| Route of Entry | % |
|---|---|
| Sea from Britain | 33 |
| Sea from Mainland Europe | 10 |
| Air from Britain | 31 |
| Air from M Europe | 19 |
| Transatlantic Air | 7 |
| **Total** | **100** |

Source: Bord Fáilte Survey of Overseas Travellers

5.19 The Bord Fáilte special data run also provided data in relation to the month of arrival of overseas salmon anglers between 1998 and 2000. Overall, 72% of such overseas visitors arrived in the months of May to August, with much lower proportions arriving in the off-season. This data clearly indicates the very high seasonal nature of the overseas market. In fact this seasonality is much more pronounced than for overall overseas tourism as a whole[31].

**Table 5.9: Overseas Salmon Anglers - 1998-2000 - Month of Arrival (%)**

| **Month of Arrival** | % |
|---|---|
| January-March | 15 |
| April | 8 |
| May | 16 |
| June | 27 |
| July | 13 |
| August | 16 |
| September | 4 |
| October-December | 1 |
| **Total** | **100** |

Source: Bord Fáilte Survey of Overseas Travellers

5.20 Data on the length of stay of overseas visitors is also informative and this is presented in Table 5.10 for overseas salmon anglers. Overall, 8% of visitors stay for a duration of one to three nights, while a further 11% stay for four or five nights. The highest proportion (37%) stay for between 6 and 8 nights, while 25% of overseas salmon anglers stay for between 9 and 14 nights. The remaining 19% of visitors stay for more than 15 nights. The weighted average duration of stay (assuming a maximum stay of 30 nights) is 11.8 nights.

5.21 Interestingly, according to other Bord Fáilte data there were a total of 6.273 million overseas tourists to Ireland in 2000, staying a total of 47.9 million bednights in Ireland. This corresponds to an average of 7.6 bednights on average per overseas visitor. Compared with a weighted average estimate of 11.8 nights for overseas salmon anglers, this indicates that overseas salmon anglers tend to spend longer in Ireland on average than the typical overseas tourist.

[31] This observation is based on Bord Fáilte data on all overseas tourists visiting Ireland, by time of arrival.

5.22 There is a caveat associated with this comparison, however. Our weighted average estimate for overseas salmon anglers is sensitive to the choice of the maximum stay assumption. If we were to choose a lower maximum stay of say 20 nights, the weighted average would fall to 10.9 nights. This is still in excess of the average for all overseas tourists and thus this data indicates that salmon anglers tend to stay longer on average.

**Table 5.10: Overseas Salmon Anglers – 1998-2000 – Length of Stay (%)**

| **Length of Stay** | % |
|---|---|
| 1-3 nights | 8 |
| 4-5 nights | 11 |
| 6-8 nights | 37 |
| 9-14 nights | 25 |
| 15+ nights | 19 |
| **Total** | **100** |

Source: Bord Fáilte Survey of Overseas Travellers

5.23 Table 5.11 presents comparable data from the Indecon survey of overseas salmon anglers in relation to the length of trip by overseas salmon anglers during which salmon fishing was undertaken. According to the survey respondents, the average number of days of per trip was equal to 13 days. The median and standard deviation are also presented in Table 5.11, and together suggest some variation in the durations of both salmon angling and non-salmon angling days across survey respondents.

5.24 These estimates compare with the weighted average duration of stay using the Bord Fáilte data as presented above of 11.8 nights, and further suggest that salmon anglers tend to stay longer on average than other tourists.

| **Table 5.11: Indecon Survey of Overseas Salmon Anglers - Details re Length of Trip by Overseas Salmon Anglers during which Salmon Fishing was Undertaken** | |
|---|---|
| **Statistics** | **Length of trip** |
| Average No. of Days/Trip | 13.0 |
| Median | 9.0 |
| Standard Deviation | 13.5 |
| Source: Indecon Survey of Overseas Salmon Anglers | |

5.25 Table 5.12 presents details in relation to overseas salmon anglers' previous experience of Ireland. Overall, 9% of such visitors were Irish born, 21% were first-time visitors, while 70% were repeat visitors. This makes an interesting comparison to the previous experience of all overseas holidaymakers to Ireland in 2000. For total overseas holidaymakers in 2000, 56% were first-time visitors, 37% were repeat visitors, and 7% were Irish born. [32]

5.26 Importantly, this indicates that a much higher proportion of overseas salmon anglers are repeat visitors to Ireland.

| **Table 5.12: Overseas Salmon Anglers - 1998-2000 - Experience of Ireland (%)** | |
|---|---|
| **Previous experience of Ireland** | % |
| Irish-Born | 9 |
| First Visit | 21 |
| Repeat | 70 |
| **Total** | **100** |
| Source: Bord Fáilte Survey of Overseas Travellers | |

[32] This data is taken from the Bord Fáilte "Tourism Facts 2000" factsheet.

5.27 Table 5.13 presents a disaggregation of overseas salmon anglers according to social class. Overall, 45% of visitors were in the managerial/professional (AB) social class, 38% were white-collar (C1) workers, 13% were skilled workers (C2), while 5% were unskilled workers.

5.28 Again it is useful to contrast this with the distribution across social classes for all overseas holidaymakers to Ireland in 2000. For this group, 33% were in the AB social class, 53% were C1 class, 11% were in the C2 class, while 3% were in the DE social class.

5.29 This data suggests that a higher proportion of overseas salmon anglers was in the managerial/professional class, though a lower proportion were in the white collar class. It is likely that visitors in the AB social class will spend more on average than those in other classes.

**Table 5.13: Overseas Salmon Anglers - 1998-2000 - Social Class (%)**

| **Social Class** | % |
|---|---|
| Managerial/Professional (AB) | 45 |
| White Collar (C1) | 38 |
| Skilled Worker (C2) | 13 |
| Unskilled Worker (DE) | 5 |
| **Total** | **100** |

Source: Bord Fáilte Survey of Overseas Travellers

5.30 Table 5.14 presents information in relation to the composition of visitor parties of overseas salmon anglers between 1998 and 2000. Overall, 34% of overseas visitors travelled alone, with a further 31% visiting as part of a couple. Only 15% of overseas salmon anglers travelled as part of a family, while 20% visited with another adult. The proportion of all overseas holidaymakers travelling alone is much lower at 18% in 2000, which could potentially impact on average spend across tourist groups.

| **Table 5.14: Overseas Salmon Anglers - 1998-2000 - Party Composition (%)** | |
|---|---|
| **Part Composition** | % |
| Alone | 34 |
| Couple | 31 |
| Family | 15 |
| Other Adult Party | 20 |
| **Total** | **100** |
| Source: Bord Fáilte Survey of Overseas Travellers | |

5.31 Survey responses in relation to the average number of persons in each party per angling trip are presented in Table 5.15. On average, according to the Indecon survey evidence, there were 4.1 persons per angling party.

| **Table 5.15: Indecon Survey of Overseas Salmon Anglers - Average No. of Persons in Party on Angling Trips** | | | | |
|---|---|---|---|---|
| **Nature of Party Member** | **Persons in Angling Party** | | | |
| | **Average** | **Median** | **St. Dev** | **% of Total Persons** |
| Total | 4.1 | 3.0 | 5.2 | 100 |
| Source: Indecon Survey of Overseas Salmon Anglers | | | | |

5.32 Table 5.16 presents a breakdown of overseas salmon anglers by age. The data indicates that almost one-half of visitors were aged between 35 and 54 years of age. In fact, overseas salmon anglers tend to be slightly older on average than overseas holidaymakers as a whole.

**Table 5.16: Overseas Salmon Anglers - 1998-2000 - Respondent Age (%)**

| Respondent Age Bracket | % |
|---|---|
| 15-24 years | 13 |
| 25-34 years | 18 |
| 35-44 years | 21 |
| 45-54 years | 25 |
| 55-64 years | 16 |
| 65+ years | 7 |
| **Total** | **100** |

Source: Bord Fáilte Survey of Overseas Travellers

5.33 Data on the use of cars while visiting Ireland is also available and presented in Table 5.17. Between 1998 and 2000, 39% of overseas salmon anglers who visited Ireland brought their own car, while 41% rented a car. 20% of visitors indicated that they did not use a car while salmon angling in Ireland.

5.34 For all overseas visitors, 22% brought their own car, while 23% hired a car, in 2000. This indicates much higher usage of cars amongst overseas salmon anglers.

**Table 5.17: Overseas Salmon Anglers - 1998-2000 - Use of Car (%)**

| Use of Car | % |
|---|---|
| Car Brought | 39 |
| Car Hired | 41 |
| Car Not Used | 20 |
| **Total** | **100** |

Source: Bord Fáilte Survey of Overseas Travellers

5.35 Table 5.18 presents data in relation to the regions visited by overseas salmon anglers, which involved at least one overnight stay. 17% of overseas salmon anglers visited Dublin, while only 8%, 6%, and 12% visited the Midlands/East, North-West[33], and South-East region respectively. On the other hand, 40% of salmon anglers visited the South-West region and 33% visited the West. It should be noted here that the percentages do not sum to 100% as many visitors will have visited more than on region during their stay.

**Table 5.18: Overseas Salmon Anglers - 1998-2000 - Region Visited involving at Least One Overnight Stay (%)**

| Region Visited | % |
|---|---|
| Dublin | 17 |
| Midlands/East | 8 |
| South-East | 12 |
| South-West | 40 |
| Shannon | 18 |
| West | 33 |
| North-West | 6 |

Source: Bord Fáilte Survey of Overseas Travellers
Note: (1) Based on Region where spent an overnight, not necessarily the Region where fished.
(2) Percentages do not add to 100 as more than one region may be visited.

5.36 Table 5.19 presents details on the numbers of days fished by overseas anglers by fishery district. For example, for anglers in the Ballyshannon fishery district, the average number of days fished by overseas anglers was 19 days, while in the Ballinakill district the average was 16 days.

[33] It should be noted that the North-West Tourism region does not include Mayo which attracts more salmon anglers than any other county in Ireland, while Mayo is included in the North West Fisheries Region. For tourism purposes, Mayo is included in the Western Region.

5.37 Also presented in Table 5.19 is the proportion of days fished by survey respondents across fishery district. Overall, 33.5% of total days fished were in the Ballina fishery district, with a further 11.7% in the Galway district.

**Table 5.19: Indecon Survey of Overseas Salmon Anglers - Number of Days Fished by Overseas Anglers by Fishery District**

| Fishery District | Average No. of Days | % of Days Fished |
|---|---|---|
| Drogheda | 10 | 1.3 |
| Wexford | 7 | 0.9 |
| Waterford | 12 | 5.9 |
| Lismore | 9 | 2.2 |
| Cork | 11 | 5.4 |
| Kerry | 6 | 3.9 |
| Limerick (Shannon) | 7 | 3.4 |
| Galway | 5 | 11.7 |
| Connemara | 6 | 7.2 |
| Ballinakill | 16 | 2.1 |
| Bangor | 8 | 6.8 |
| Ballina | 8 | 33.5 |
| Sligo | 11 | 6.8 |
| Ballyshannon | 19 | 7.4 |
| Letterkenny | 6 | 1.4 |
| Total | 7.9 | 100 |

Source: Indecon Survey of Overseas Salmon Anglers

5.38 Data is also available in relation to the types of accommodation used by overseas salmon anglers during their visits to Ireland between 1998 and 2000. This is presented in Table 5.20. Overall, 23% stayed in hotels, 37% in guesthouses/B&Bs, 18% in rented accommodation, and 27% with friends and relatives. In fact, the proportions of overseas salmon anglers staying in hotels and guesthouses/B&Bs are higher than for all overseas visitors as a whole[34].

**Table 5.20: Overseas Salmon Anglers - 1998-2000 - Accommodation Used (%)**

| **Accommodation Used** | % |
|---|---|
| Hotels | 23 |
| Guesthouse/ B&Bs | 37 |
| Caravan/Camping | 1 |
| Rented | 18 |
| Friends/ Relatives | 27 |
| Hostels | 1 |

Source: Bord Fáilte Survey of Overseas Travellers
* Involving at least one over-night stay
Percentages do not add to 100 as more than one type of accommodation may be used

5.39 Respondents to the Indecon survey were also asked to indicate the number of nights spent away from home by type of accommodation. The survey responses are presented in Table 5.21. Once again, the data are consistent with the Bord Fáilte data. Overall, the responses suggest that the majority of nights spent by anglers were in hotels, lodges, guesthouses and other rented accommodation. Furthermore, the data indicates some variation in the average duration of stay across accommodation type.

[34] Again this assertion is based on an analysis of Bord Fáilte data.

**Table 5.21: Indecon Survey of Overseas Salmon Anglers - No. of Nights Spent Away from Home by Type of Accommodation**

| Type of Accommodation | Nights Spent | | | |
|---|---|---|---|---|
| | Average | Median | St. Dev | % of Total Nights Spent |
| Hotel | 6.6 | 7.0 | 3.5 | 13.8 |
| Fishing Lodge | 9.0 | 7.0 | 5.3 | 27.5 |
| Guesthouse/Farmhouse Accommodation | 7.2 | 7.0 | 3.9 | 18.9 |
| Camping/Caravan | 18.6 | 14.0 | 9.9 | 9.8 |
| Rented Home/Chalet | 10.7 | 8.0 | 5.9 | 21.4 |
| Family/Friends | 10.5 | 13.0 | 4.7 | 6.7 |
| Other | 4.5 | 2.5 | 4.4 | 1.9 |

Source: Indecon Survey of Overseas Salmon Anglers

5.40 Finally in relation to the Bord Fáilte special data run for Indecon, Table 5.22 presents data on travel arrangements for overseas salmon anglers. Overall the data suggests that 21% of overseas salmon anglers visited Ireland on package arrangements, while 79% visited independently. This corresponds to 33% and 67% of all holidaymakers to Ireland respectively.

**Table 5.22: Overseas Salmon Anglers - 1998-2000 - Travel Arrangement - Holiday (%)**

| Arrangement | % |
|---|---|
| Package | 21 |
| Independent | 79 |
| **Total** | **100** |

Source: Bord Fáilte Survey of Overseas Travellers

5.41 Table 5.23 presents details from the Indecon survey of overseas salmon anglers on the extent to which visiting anglers have taken holiday trips involving salmon fishing in countries other than Ireland over the past five years. Interestingly there is an even split, with 50.6% indicating that they had, and 49.4% indicating that they had not.

**Table 5.23: Indecon Survey of Overseas Salmon Anglers - Extent to Which Visiting Anglers have Taken Holiday Trips Involving Salmon Fishing in Countries Other than Ireland over Past 5 Years**

| **Respondents** | % |
|---|---|
| Yes | 50.6 |
| No | 49.4 |
| Total | 100 |

Source: Indecon Survey of Overseas Salmon Anglers

5.42 Survey respondents were also asked to indicate details in relation to the number and weight of wild salmon caught during their last season fishing in Ireland. The average across the sample was equal to 3.5 fish caught, at an estimated weight of 17.5 lbs. This data is presented in Table 5.24.

**Table 5.24: Indecon Survey of Overseas Salmon Anglers - Details of Number and Weight of Wild Salmon Caught by Overseas Anglers during Last Season**

| **Statistics** | **No. of Fish Caught** | **Est. Total Weight of Fish - Llbs.** |
|---|---|---|
| Mean | 3.5 | 17.4 |
| Median | 2.0 | 14.0 |
| Standard deviation | 4.4 | 16.8 |
| Min | 0.0 | 0.0 |
| Max | 20.0 | 96.0 |

Source: Indecon Survey of Overseas Salmon Anglers

### *Estimates of Total Overseas Salmon Anglers Expenditure/ Contribution*

5.43 This sub-section estimates the contribution of overseas salmon anglers to the Irish economy over the period from 1998 to 2000, based on the data presented above and additional Bord Fáilte data.

5.44 We begin by considering data on total overseas visitors to Ireland, as well as total tourism revenues by region/country of origin. The source of this data is Bord Fáilte[35]. Using this data it is possible to estimate average tourism expenditure, as per Table 5.25, for all overseas visitors. In particular, average spending for overseas tourists by region from 1997 to 2001, is presented. This data is useful as it can be used in conjunction with the data in Table 5.3, which presents the numbers of overseas salmon anglers by region of origin.

5.45 The average spending estimates presented in Table 5.25 suggest that average spending in 2000 per tourist was equal to €432.7 and equal to €504.2 in 2001. Furthermore, it is evident from the data that average spending per visitor varies across country of origin. For example, visitors from Britain tend to spend less on average than visitors from mainland Europe, while visitors from North America tend to have the highest spending on average. These spending estimates represent the largest sample and therefore the most reliable of the expenditure estimates used in this section of our report.

**Table 5.25: Average Spending per Visitor for Overseas Tourists by Region from 1997 to 2001 (Euro)**

| | 1997 | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|
| Britain | 304.3 | 300.6 | 295.0 | 317.4 | 363.3 |
| Mainland Europe | 497.6 | 472.7 | 477.4 | 505.9 | 610.1 |
| Germany | 510.6 | 503.9 | 528.2 | 540.1 | 692.0 |
| France | 452.8 | 420.7 | 372.0 | 422.7 | 577.7 |
| Other | 509.4 | 479.1 | 495.5 | 521.8 | 591.5 |
| North America | 569.0 | 568.9 | 584.3 | 650.2 | 792.5 |
| Other | 597.2 | 589.2 | 599.6 | 685.2 | 799.2 |
| Total | 402.9 | 392.8 | 394.2 | 432.7 | 504.2 |
| | | | | | |

Source: Indecon calculations using Bord Fáilte data.

[35] See Bord Fáilte "Tourism Facts 2000" factsheet.

5.46 While ideally we would like to have data on average expenditure for overseas salmon anglers by country of origin, this is not currently available. In the absence of this data, the average spending estimates given in Table 5.25 are a very useful proxy, which can be used in calculating estimates of total spending by overseas salmon anglers. There are a number of potential reasons why these estimates may underestimate the average spending for salmon anglers. For example, from the analysis in the preceding sub-section we know that:

- Overseas salmon anglers tend to stay longer on average than other overseas visitors;
- There are a higher proportion of overseas salmon anglers in the managerial/professional (AB) social class;
- Overseas salmon anglers tend to be older on average;
- Overseas salmon anglers tend to use hotels more on average, and tend to stay with friends and relatives less on average than other groups.

5.47 Bord Fáilte's best estimate of the value of (all) angling in 2000 was €60.9 million, implying an average spend of €496.5 per head based on 123,000 overseas anglers. Within this figure an estimated €27.9 million was attributable to Game Angling, equivalent to an average spend of €620.9 per head based on 45,000 overseas game anglers. Bord Fáilte warns however that extreme caution should be exercised in using these estimates due to small sample sizes, particularly in respect of Game Angling. Therefore we are reluctant to use the game angling estimates as they might be perceived as overestimating tourism angling spend.

5.48 The estimates of average spend as presented in Table 5.25 are lower than the Bord Fáilte estimates of average spend of €620.9. This would tend to suggest that the average expenditures used are under-estimates.

5.49 It is also worthwhile considering other estimates of average overseas salmon angler expenditures. The Indecon survey of overseas salmon anglers asked respondents to indicate their approximate average daily expenditure on holiday trips to Ireland that involved salmon fishing. Table 5.26 presents their responses.

5.50 The survey responses suggest that the average (mean) expenditure per day was equal to €203. The median was however considerably lower at €140 per day, pointing to the presence of a number of outlier responses in the sample. The mean average is sensitive to the presence of outliers in a sample, unlike the median, which is more resistant/ robust. We have, however, concerns re the representativeness of these expenditure estimates for all salmon anglers as it includes estimates of daily spend as low as €20 and one other case of expenditure of €3,000.

**Table 5.26: Indecon Survey of Overseas Salmon Anglers - Approximate Average Daily Expenditure on Holidays Trips to Ireland that Involved Salmon Fishing during Last Season***

| Statistics | € per day |
|---|---|
| Average daily expenditure | 203.2 |
| Median | 140.0 |
| Standard deviation | 198.7 |

Source: Indecon Survey of Overseas Salmon Anglers
* Includes expenditure on accommodation, food/beverages, tackle/bait, boat hire, ghillies, permits/licences, gifts/souvenirs, etc.

5.51 Based on the higher figure relating to the mean average daily expenditure and given that the estimated average duration of stay for overseas salmon anglers was 13 days (see Table 5.11), this implies a total expenditure per visit of €2,642, which is considerably higher than the estimates used in the calculations in the previous sub-section. The average number of days will, however, vary by angler and country of origin and with the potential decline in North American visitors the average days may be much lower. For example, the survey average of 13 was based on an average of a very large range and one respondent indicated a stay of only 1 day while one indicated a stay of 55 days. We believe that the estimated average days of 13 is likely to partly reflect the presence of large outlier values in our sample, which push up the mean average figure. The higher estimate may also reflect expenditure by accompanying persons in the estimates, who may not be engaged in salmon angling during their visit. It is also important to note the fact that a greater percentage of anglers come from the UK market, which on average have lower spending figures.

5.52 Given these caveats in relation to the sample data, for the purposes of our estimates, we believe it is prudent to use a lower bound indicative estimate for average spend based on the Bord Fáilte data on average overseas visitor spending as presented in Table 5.25. The BFE estimates over the period show expenditure of between €392 – €504. This suggests an average spend per overseas visit over the period 1998-2000 of €406.6. It is important to note that this represents a lower bound estimate and the accumulation of evidence from the Bord Failte angling spend estimates and the much higher estimates from the Indecon survey would support use of a higher estimate in excess of €600 per angling tourist and possibly even much higher estimates.

5.53 We decided in this report to utilise the most conservative estimate for tourism angling expenditure given the need to ensure that policy changes were not based on an overestimation of the value of tourism angling in an environment where there is great uncertainty re international tourism trends. We accept, however, that this may be an underestimation and believe the evidence could justify somewhat higher estimates.

5.54 Based on the estimated numbers of overseas salmon anglers and the average spending estimate derived above, we can estimate the total expenditure of overseas visitors engaged in salmon angling in Ireland over the period 1998-2000. These estimates are presented in Table 5.27, and assume an average of 24,000 salmon angling visits per annum (as described earlier in this section). The estimates suggest that over the period, overseas salmon angling expenditure was an estimated €29.27 million, or approximately €10 million per annum.

5.55 An important issue relates to the distinction between net and gross benefits, as the amounts here relate to gross benefits. These gross benefits need to be adjusted when one is considering a Cost Benefit framework, or a contribution to GNP. There are two issues that need to be accounted for:

- Percentage of expenditure which is spent directly or indirectly on imports;
- Opportunity cost of the labour and other resources which are used in supplying products and services purchased by overseas visitors.

5.56 A full evaluation of the opportunity costs is outside the scope of the study. However, in order to reflect the import component of the expenditure, we have reduced the estimates by 40%. This implies a total (first round) contribution by overseas salmon anglers to the Irish economy of €17.563 million over the three-year period, or an average of €5.854 per annum.

**Table 5.27: Estimated Direct Expenditure and Contribution by Overseas Salmon Anglers – Total for Period from 1998 to 2000**

| | **Total '98-'00** |
|---|---|
| Number of visitors | 72,000 |
| Average spend | €406.6 |
| Total spend | €29,272,800 |
| Estimated import component (40%) | -€11,709,120 |
| Total contribution (first round) | €17,563,680 |
| Source: Indecon. | |

5.57 Research has suggested that approximately 51 jobs are supported for every million pounds (€1.27 million) of out-of-state tourism expenditure[36]. This implies a contribution of approximately 235 jobs per annum supported from overseas salmon angling. Furthermore, according to Bord Fáilte, "because tourism is characterised by the fact that consumption takes place where the service is available and tourism activity is particularly concentrated in areas which lack an intensive industry base, it is credited with having a significant regional distributive effect." This is particularly the case for the salmon angling sector.

5.58 It is useful to consider the second-round effects of this expenditure. These second-round effects can be estimated using a so-called multiplier. The multiplier tells us by how much overall income/output changes when there is a shift/change in autonomous spending. Defining the marginal propensity to consume (*MPC*) as the proportion of additional income that households consume, and the marginal propensity to import (*MPM*) as the proportion of additional income that households spend on extra imported goods, the formula for the multiplier *k* is given as in Equation 2.

**Equation 2: Multiplier formula**

$$k = \frac{1}{(1 - MPC) + MPM}$$

5.59 If, for example, we assume that the *MPC* equals 0.7, and the *MPM* equals 0.2, then this would imply a multiplier of 2. This means that any change in autonomous spending will result in a 2-times change in the overall equilibrium level of income. For example, a €100 increase in autonomous spending would result in a 100 x 2 = €200 increase in the equilibrium level of income.

5.60 For the purposes of this exercise however, we assume that the value of the multiplier is 1.22, which is consistent with estimates reported in the economic literature for Ireland[37].

[36] Deane and Henry (1995).

[37] For example, see "The Economic Consequences of Phasing Out the Irish Drift Net Salmon Fishery", ESRI, 1993.

5.61 Hence, assuming multiplier effects, the total estimated annual overall contribution of overseas anglers to the Irish economy was equal to €21.4 million in total between 1998 and 2000. In considering these estimates, it should be recalled that, as detailed in Table 5.7, 90.2% of respondents to the Indecon survey of overseas salmon anglers indicated that salmon fishing was the primary purpose of their trip to Ireland. We therefore apply a reduction correction factor of 9.8%. Overall then, the cohort of visitors coming to Ireland principally for salmon angling contributed an estimated €19.3 million in total to the economy between 1998 and 2000.

**Table 5.28: Estimated Direct Expenditure and Contribution by Overseas Salmon Anglers – Total for Period from 1998 to 2000**

| | Total '98-'00 |
|---|---|
| Number of visitors | 72,000 |
| Average spend | €406.6 |
| Total spend | €29,272,800 |
| Estimated import component (40%) | -€11,709,120 |
| Total contribution (first round) | €17,563,680 |
| Multiplier effect | €3,864,010 |
| Overall contribution (all salmon angling visitors) | €21,427,690 |
| Correction factor (9.8%) | € 2,099,914 |
| Overall contribution (principal salmon anglers) | € 19,327,776 |
| | |
| Source: Indecon. | |

5.62 It should be noted that these figures do not include expenditures by non-angling accompanying persons, and will therefore, to this extent, underestimate the value. However, we do not have evidence on whether accompanying persons would have visited Ireland if they did not visit with anglers. It is also important to bear in mind that accompanying persons who are also anglers are of course included in the estimates.

5.63 As discussed previously, overseas salmon angling is likely to have a regional distributive effect. It is therefore informative to consider a regional breakdown of the estimated value of overseas salmon angling.

5.64 In order to derive regional estimates of the value of overseas angling, we assume that the regional breakdown is proportional to the numbers of licences issued across regions. This approach implicitly assumes that the ratio of domestic to overseas anglers is constant across regions. *A priori* we have believed that this ratio is likely to vary across region, but given data constraints it is necessary to make this assumption. The estimates are presented in Table 5.29, and should be considered as indicative.

**Table 5.29: Estimated Value of Overseas Salmon Angling in Ireland by Region in Period from 1998 to 2000**

| Region | Number of licences | Percentage of licences/value | Value of overseas angling (€M) |
|---|---|---|---|
| Eastern | 3,077 | 9.4% | 1.817 |
| Southern | 3,782 | 11.6% | 2.234 |
| South Western | 5,347 | 16.3% | 3.158 |
| Shannon | 2,144 | 6.6% | 1.266 |
| Western | 2,907 | 8.9% | 1.717 |
| North Western | 9,712 | 29.7% | 5.736 |
| Northern | 5,756 | 17.6% | 3.400 |
| Total | 32,725 | 100% | 19.328 |
| | | | |

Source: Indecon estimates.

5.65 According to the regional estimates, the value of overseas salmon angling in Ireland is greatest in the North West region, where it is estimated to have generated approximately €5.74 million in total over the period 1998-2000. The North West is followed by the Northern and South Western regions, where overseas angling is estimated to have generated €3.4 million and €3.2 million respectively over this period.

# Value of Domestic Salmon Angling

5.66 In this section we consider the overall value of domestic salmon angling. In doing so we present an analysis of the findings from the Indecon survey of domestic salmon anglers in Ireland. The total number of responses was 218. This level of responses exceeded our expectations.

5.67 It is useful to initially consider some background information relating to the survey respondents. Table 5.30 presents details on the season in which domestic anglers last engaged in salmon angling. Overall, 86.2% participated in salmon angling in 2002, 11.9% in 2001, and 1.4% in 2000. Thus, the vast majority of domestic salmon anglers replying to our survey engaged in salmon angling in the most recent season.

**Table 5.30: Indecon Survey of Domestic Salmon Anglers - Season in Which Anglers Last Engaged in Salmon Angling**

| Season/Year | % of Respondents |
|---|---|
| 2000 | 1.4 |
| 2001 | 11.9 |
| 2002 | 86.2 |
| Other year | 0.5 |
| **Total** | **100** |

Source: Indecon Survey of Domestic Salmon Anglers

5.68 Table 5.31 presents data in relation to the number of angling trips undertaken during the last season in which salmon angling was undertaken by the survey respondents. Overall respondents to the Indecon survey indicated an average number of 6.42 trips per year. This indicates that those responding to the Indecon survey are regular participants in salmon angling activities.

**Table 5.31: Indecon Survey of Domestic Salmon Anglers - No. of Angling Trips during Last Season in which Salmon Fishing was Undertaken**

| Season/year | Average No. of Trips | Total Trips Reported |
|---|---|---|
| All Seasons/Years | 6.42 | 1,136.5 |

Source: Indecon Survey of Domestic Salmon Anglers

5.69 Table 5.32 presents details in relation to the average length of trip by domestic salmon anglers. The mean value reported by survey respondents was 2.5 days, while the median was equal to 2.0. The standard deviation of the reported number of trips taken is 1.9 indicating some variation in the duration of fishing trips reported across respondents.

**Table 5.32: Indecon Survey of Domestic Salmon Anglers - Details re Length of Trip by Domestic Salmon Anglers during in which Salmon Fishing was Undertaken**

| Statistics | Salmon Angling |
|---|---|
| Average No. of Days/Trip | 2.5 |
| Median | 2.0 |
| Standard Deviation | 1.9 |

Source: Indecon Survey of Domestic Salmon Anglers

5.70 Table 5.33 presents the main time of year in which domestic anglers engage in salmon angling. Overall 79.1% of angling trips are undertaken in the months from May to September, with a further 15.1% of trips undertaken in March and April. This data suggests a high degree of seasonality among domestic angling activities.

**Table 5.33: Indecon Survey of Domestic Salmon Anglers - Main Time/Months of Year in which Anglers Engaged in Salmon Angling**

| Month of Year | % of Respondents |
|---|---|
| January | 1.6 |
| February | 3.6 |
| March | 6.3 |
| April | 8.8 |
| May | 13.1 |
| June | 19.0 |
| July | 18.5 |
| August | 15.7 |
| September | 12.8 |
| October | 0.6 |
| November | 0.0 |
| December | 0.0 |
| Total | 100 |

Source: Indecon Survey of Domestic Salmon Anglers

5.71 Data was also collected in relation to the number of nights spent away from home, by type of accommodation. For those staying in camping/caravan facilities, the average was equal to 15.5 nights, while for those staying in hotels, the corresponding average is 5 nights. Overall, 29.7% of nights away were spent in guesthouse/ farmhouse accommodation, with a further 15.7% spent in rented homes/chalets. Hotels accounted for 14.9% of overnight stays.

**Table 5.34: Indecon Survey of Domestic Salmon Anglers - No. of Nights Spent Away from Home by Type of Accommodation**

| | Nights Spent | | | |
|---|---|---|---|---|
| Type of Accommodation | Average | Median | St. Dev | % of Total Nights Spent |
| Hotel | 5.0 | 3.8 | 4.3 | 14.9 |
| Fishing Lodge | 6.9 | 6 | 5.4 | 10.7 |
| Guesthouse/Farmhouse Accommodation | 8.0 | 5 | 9.1 | 29.7 |
| Camping/Caravan | 15.5 | 10.5 | 14.1 | 13.3 |
| Rented Home/Chalet | 9.2 | 7 | 7.3 | 15.7 |
| Family/Friends | 12.4 | 8 | 10.7 | 4.7 |
| Other | 8.2 | 4 | 10.0 | 10.9 |

Source: Indecon Survey of Domestic Salmon Anglers

5.72 Table 5.35 presents details in relation to the average number of persons in a party on an angling trip. The average across all parties is 5 persons, with a median of 4 persons.

**Table 5.35: Indecon Survey of Domestic Salmon Anglers - Average No. of Persons in Party on Angling Trips**

| | Persons in Angling Party | | |
|---|---|---|---|
| | **Average** | **Median** | **St. Dev** |
| All persons | 5.0 | 4.0 | 3.8 |

Source: Indecon Survey of Domestic Salmon Anglers

5.73 Respondents to the Indecon survey of domestic salmon anglers were also asked to report their average daily expenditure on holiday trips that involved salmon fishing. The responses are presented in Table 5.36. Overall, the average daily expenditure is equal to €136.5 per day, with a median reported expenditure of €100. The standard deviation of reported daily expenditures is equal to €111, and ranges from a minimum expenditure of €0 to a maximum reported daily expenditure of €800 per day. This data is useful in estimating the overall value of domestic salmon angling.

**Table 5.36: Indecon Survey of Domestic Salmon Anglers - Approximate Average Daily Expenditure on Holidays Trips that Involved Salmon Fishing during Last Season***

| **Statistics** | **€ per day** |
|---|---|
| Average daily expenditure | 136 |
| Median | 100 |
| Standard deviation | 111 |
| Min | 0 |
| Max | 800 |

Source: Indecon Survey of Domestic Salmon Anglers
* Includes expenditure on accommodation, food/beverages, tackle/bait, boat hire, ghillies, permits/licences, gifts/souvenirs, etc.

5.74 Table 5.37 presents data on the extent to which Irish anglers have taken holiday trips involving salmon angling in countries other than Ireland over the past five years. Overall, 16.5% of domestic anglers responding to the Indecon survey indicated that they had taken a foreign holiday involving salmon angling, while 83.5% indicated that they had not.

**Table 5.37: Indecon Survey of Domestic Salmon Anglers - Extent to Which Irish Anglers have Taken Holiday Trips Involving Salmon Fishing in Countries Other than Ireland over Past 5 Years**

| Respondents | % of Respondents |
|---|---|
| Yes | 16.5 |
| No | 83.5 |
| **Total** | **100** |

Source: Indecon Survey of Domestic Salmon Anglers

5.75 Survey respondents also provided details in relation to the number and weight of wild salmon caught during the last season. These details are presented in Table 5.38. On average, survey respondents reported an average catch of 5.3 fish at an estimated average weight of 6.1 lbs.

**Table 5.38: Indecon Survey of Domestic Salmon Anglers - Details of Number and Weight of Wild Salmon Caught by Domestic Anglers during Last Season**

| Statistics | No. of Fish Caught | Est. Average Weight of Fish - Llbs. |
|---|---|---|
| Mean | 5.3 | 6.1 |
| Median | 2.5 | 6.0 |
| Standard deviation | 8.4 | 2.3 |
| Min | 0.0 | 0.4 |
| Max | 54.0 | 12.0 |

Source: Indecon Survey of Domestic Salmon Anglers

5.76 Table 5.39 presents data on the number of days fished by domestic anglers, by fishery district. Interestingly, 75.4% of days fished were in local waters, while 24.6% were outside angler's locality.

**Table 5.39: Indecon Survey of Domestic Salmon Anglers - Number of Days Fished by Domestic Anglers by Fishery District**

| | % of Days Fished | | |
|---|---|---|---|
| **Fishery District** | **Local Waters** | **Outside Angler's Locality** | **Total** |
| Dundalk | 89.6 | 10.4 | 100 |
| Drogheda | 98.5 | 1.5 | 100 |
| Dublin | 93.2 | 6.8 | 100 |
| Wexford | 85.3 | 14.7 | 100 |
| Waterford | 75.9 | 24.1 | 100 |
| Lismore | 74.1 | 25.9 | 100 |
| Cork | 93.0 | 7.0 | 100 |
| Kerry | 64.8 | 35.2 | 100 |
| Limerick (Shannon) | 90.7 | 9.3 | 100 |
| Galway | 45.5 | 54.5 | 100 |
| Connemara | 54.4 | 45.6 | 100 |
| Ballinakill | 54.8 | 45.2 | 100 |
| Bangor | 52.8 | 47.2 | 100 |
| Ballina | 64.9 | 35.1 | 100 |
| Sligo | 74.2 | 25.8 | 100 |
| Ballyshannon | 76.4 | 23.6 | 100 |
| Letterkenny | 61.9 | 38.1 | 100 |
| **Total** | **75.4** | **24.6** | **100** |

Source: Indecon Survey of Domestic Salmon Anglers

### *Estimates of Total Domestic Salmon Anglers Expenditure/ Contribution*

5.77 In estimating the total expenditure and contribution of domestic salmon anglers in Ireland, we utilise data from the Indecon survey of domestic salmon anglers. In particular, we calculate the total value of domestic salmon angling expenditure as per Equation 3.

**Equation 3: Total value of domestic salmon angling expenditure**

*Total value of domestic salmon angling expenditure*
=
*Number of domestic anglers*
x
*Average number of trips per year*
x
*Average number of days per trip*
x
*Average daily expenditure*

5.78 We do not have precise estimates on the number of domestic anglers in Ireland, and therefore need to make some assumptions in relation to this. The Central and Regional Fisheries Boards Annual Report 2001, reports a total of 32,725 salmon/sea trout licenses, broken down by region. These are presented in Table 5.40. These figures however include licenses issued to overseas visitors, as well as licenses held by persons who do not currently use them.

5.79 Table 5.40 indicates that 29.7% of all rod-angling licenses were for the North West region, with 17.6% and 16.3% were for the Northern and South Western regions respectively. On the other hand, only 6.6% of total licences were for the Shannon region.

| Table 5.40: Rod Angling Licenses 2001 | | |
|---|---|---|
| **Board** | **Total** | **Percent** |
| Eastern | 3,077 | 9.4% |
| Southern | 3,782 | 11.6% |
| South Western | 5,347 | 16.3% |
| Shannon | 2,144 | 6.6% |
| Western | 2,907 | 8.9% |
| North Western | 9,712 | 29.7% |
| Northern | 5,756 | 17.6% |
| Total | 32,725 | |
| | | |
| Source: The Central and Regional fisheries Boards, Annual Report 2001. | | |

5.80 According to estimates from the Central Fisheries Board, approximately 28.8% of licenses were purchased by persons with addresses overseas. Hence we assume that 71.2% of all anglers who purchased licences during 2001 were domestic anglers (including anglers from Northern Ireland). This implies a total of 24,841 licences issued to domestic anglers. This may however overestimate the number of domestic anglers since some domestic anglers may have purchased more than one licence in a season. Again Central Fisheries Board estimates are available, and suggest that between 5% and 7% of licences purchased in 2002 were repeat purchases. Hence we further reduce the number of licences by 6%, implying a total of 23,351 domestic anglers in Ireland. Furthermore, we assume that our survey respondents are a representative sample of all salmon anglers in Ireland.

5.81 An estimate of the average number of trips per year is taken from Table 5.31, which suggests the average among survey respondents to be 6.4 trips per annum. The average number of days per trip used in the calculation is 2.5, which is the mean value as reported in Table 5.32. Finally, the average daily expenditure per respondent was equal to €136.5. Given these values, we derive an estimate for the total expenditure of domestic salmon anglers in Ireland. This is reported in Table 5.41, and equals €51 million in 2001.

| **Table 5.41: Estimated Overall Expenditure of Domestic Salmon Anglers in Ireland in 2001** | |
|---|---|
| | |
| Number of domestic anglers | 23,351 |
| Average number of trips | 6.4 |
| Average number of days per trip | 2.5 |
| Average daily expenditure | €136.5 |
| **Estimated overall expenditure of domestic salmon anglers in Ireland in 2001** | **€51 million** |
| | |
| Source: Indecon calculations. | |

5.82 An important issue in relation to this estimate concerns the issue of displacement i.e. much of the above expenditure may have been spent on other activities in Ireland, if not made in relation to salmon angling. It is important to bear this in mind in calculating the net impact on the economy.

5.83 We make the assumption that 85% of total domestic angling expenditure would have been spent on other activities in Ireland. Furthermore, in order to reflect the import component of the expenditure, we have reduced the estimates by 40%. Overall, this implies a final estimate for the total net benefit of domestic salmon angling to the Irish economy of €4.59 million, and is set out in Table 5.42.

| **Table 5.42: Estimated Overall Value of Domestic Salmon Angling in Ireland in 2001** | |
|---|---|
| | |
| **Estimated overall value of domestic salmon angling in Ireland in 2001** | **€4.59 million** |
| | |
| Source: Indecon calculations. | |

# Indecon Survey of Tourism Interests

5.84 During the course of this study, Indecon also undertook a survey of tourism interests in relation to the economic/socio-economic importance of wild salmon in Ireland. A total of 23 responses were received. Table 5.43 to Table 5.48 present selected summary results from this survey.

5.85 Table 5.43 presents the types of tourism and angling businesses operated by the survey respondents. In total, 39.1% of the responses were from fishing lodges, 17.4% were from hotels with fishing rights, 26.1% from hotels without fishing rights, and 13% from B&B accommodation. The average number of rod places available for salmon angling was 10 in the fishing lodges, and 13.5 in hotels with fishing rights. Furthermore, the median reported number of available salmon angling days in a season was 241 for fishing lodges, 220 for hotels with fishing rights, and 242 for hotels without fishing rights.

**Table 5.43: Indecon Survey of Tourism Sector re Economic/Social Importance of Wild Salmon - Types of Tourism and Angling Businesses Operated**

| Type of Business | % of Respondents | No. of Rod Places Available for Salmon Angling - Median | No. of Days Salmon Angling Available in Season - Median |
|---|---|---|---|
| Fishing lodge | 39.1 | 10 | 241 |
| Hotel with fishing rights | 17.4 | 13.5 | 220 |
| Hotel without fishing rights | 26.1 | n/a | 242 |
| B&B accommodation | 13.0 | n/a | |
| Other | 4.3 | n/a | |
| Total | 100 | | |

Source: Indecon Survey of Tourism Sector re Economic/Social Importance of Wild Salmon

5.86 Table 5.44 presents details in relation to accommodation and occupancy rates among survey respondents. The average (mean) reported number of rooms available is 28 (the median is equal to 17), with an average guest capacity of 66 persons. The average total bed nights occupied in the last season was equal to 3,754 among survey respondents.

**Table 5.44: Indecon Survey of Tourism Sector re Economic/Social Importance of Wild Salmon - Details and Accommodation and Occupancy Rates**

| Accommodation details | Mean | Median |
|---|---|---|
| No. of Rooms Available | 28 | 17 |
| Total Guest Capacity | 66 | 34 |
| Total Bed Nights Occupied in Last Season | 3,754 | 1,335 |

Source: Indecon Survey of Tourism Sector re Economic/Social Importance of Wild Salmon

5.87 Data was also collected in relation to the county of location of the business. These results are summarised in Table 5.45.

**Table 5.45: Indecon Survey of Tourism Sector re Economic/Social Importance of Wild Salmon - County of Location of Business**

| County | Number | % |
|---|---|---|
| Cork | 1 | 5 |
| Donegal | 1 | 5 |
| Galway | 6 | 30 |
| Kerry | 8 | 40 |
| Limerick | 1 | 5 |
| Mayo | 2 | 10 |
| Sligo | 1 | 5 |
| Total | 20 | 100 |

Source: Indecon Survey of Tourism Sector re Economic/Social Importance of Wild Salmon

5.88 Table 5.46 presents details in relation to the approximate number of full-time equivalent persons employed in the respondent's business. The survey respondents account for a total of 467 staff, at a mean average of 23.4 per response, and a median of 8.5.

**Table 5.46: Indecon Survey of Tourism Sector re Economic/Social Importance of Wild Salmon - Approximate Number of Full-Time Equivalent Persons Employed in Business**

| Details | Full-time Equivalent Staff |
|---|---|
| Total | 467 |
| Mean | 23.4 |
| Median | 8.5 |

Source: Indecon Survey of Tourism Sector re Economic/Social Importance of Wild Salmon

5.89 Table 5.47 presents details in relation to the average proportion of guests who undertook salmon angling during their visit over the last 3 years. Overall, 27.3% indicated this proportion to be between 0 and 5%, while 18.2% and 13.6% indicated it to be between 6% and 15% and between 16% and 25% respectively. Overall, 22.7% of respondents indicated that most guests engaged in salmon angling. The weighted average proportion is equal to 33.2%.

**Table 5.47: Indecon Survey of Tourism Sector re Economic/Social Importance of Wild Salmon - Average Proportion of Guests Who Undertook Salmon Angling During their Visit Over Last 3 Years**

| % of Guests Engaging in Salmon Angling | % of Respondents |
|---|---|
| 0-5 | 27.3 |
| 6-15 | 18.2 |
| 16-25 | 13.6 |
| 26-40 | 4.5 |
| 41-55 | 13.6 |
| 56-70 | 4.5 |
| 71-85 | 0.0 |
| 86-100 | 18.2 |
| Total | 100 |

Source: Indecon Survey of Tourism Sector re Economic/Social Importance of Wild Salmon

5.90 Finally in relation to the Indecon survey of tourism interests, Table 5.48 presents details in relation to the most important months of the years in which businesses benefit from salmon fishing. According to the survey responses, June (23.0%), July (16.2%), May (14.9%) and September (14.9%) are the most important months.

**Table 5.48: Indecon Survey of Tourism Sector re Economic/Social Importance of Wild Salmon - Most Important Months of the Year in Which Businesses Benefit From Salmon Fishing**

| Month | % of Respondents |
|---|---|
| January | 0.0 |
| February | 1.4 |
| March | 9.5 |
| April | 12.2 |
| May | 14.9 |
| June | 23.0 |
| July | 16.2 |
| August | 8.1 |
| September | 14.9 |
| October | 0.0 |
| November | 0.0 |
| December | 0.0 |
| Total | 100 |

Source: Indecon Survey of Tourism Sector re Economic/Social Importance of Wild Salmon

# Analysis of Salmon Angling Accommodation

5.91 This sub-section presents an analysis of salmon angling accommodation in Ireland. In particular, Indecon have analysed the "Irish Hotels Federation, Hotels & Guesthouses Guidebook, 2001", and "The Great Fishing Houses of Ireland" guidebook. The sample size of accommodation premises analysed is 128.

**Table 5.49: Analysis of Salmon Angling Accommodation in Ireland - Number of Beds Available by County in 2001**

| County | No. of Beds | % of Total |
|---|---|---|
| Carlow | 78 | 1.4 |
| Dublin | 14 | 0.3 |
| Kildare | 60 | 1.1 |
| Kilkenny | 162 | 2.9 |
| Laois | 70 | 1.3 |
| Longford | 0 | 0.0 |
| Louth | 0 | 0.0 |
| Meath | 0 | 0.0 |
| Offaly | 91 | 1.6 |
| Westmeath | 73 | 1.3 |
| Wexford | 241 | 4.3 |
| Wicklow | 0 | 0.0 |
| Clare | 238 | 4.3 |
| Cork | 516 | 9.2 |
| Kerry | 1,308 | 23.4 |
| Limerick | 443 | 7.9 |
| Tipperary | 162 | 2.9 |
| Waterford | 314 | 5.6 |
| Galway | 877 | 15.7 |
| Leitrim | 0 | 0.0 |
| Mayo | 654 | 11.7 |
| Roscommon | 16 | 0.3 |
| Sligo | 4 | 0.1 |
| Cavan | 0 | 0.0 |
| Donegal | 262 | 4.7 |
| Monaghan | 0 | 0.0 |
| **Total** | **5,583** | **100** |

Source: Indecon Analysis of Irish Hotels Federation Hotels & Guesthouses Guidebook, 2001, and The Great Fishing Houses of Ireland guidebook.
Sample = 128 premises in Rep. Of Ireland

5.92 Table 5.49 presents details in relation to the numbers of beds available in salmon angling accommodation in Ireland in 2001, by county. The data indicates that the highest proportions of available beds are in: Kerry (23.4%), Galway (15.75), and Mayo (11.7%).

5.93 The periods in which salmon angling accommodation in Ireland is open for business was also assessed, and the results are presented in Table 5.50. In total, 26.6% of accommodation premises analysed are open all year round, while overall, salmon angling accommodation premises close for 32 days on average per annum.

**Table 5.50: Analysis of Salmon Angling Accommodation in Ireland - Periods of Opening/Closure of Accommodation – 2001**

| **Details** | % |
|---|---|
| Open all year - % of premises | 26.6 |
| Average no. of days closed | 32 |

Source: Indecon Analysis of Irish Hotels Federation Hotels & Guesthouses Guidebook, 2001, and The Great Fishing Houses of Ireland guidebook.
Sample = 128 premises in Rep. Of Ireland

5.94 Table 5.51 presents details in relation to the provision of facilities for salmon anglers as of 2001. In total, 83.6% of salmon angling accommodation provided bait and tackle facilities, 78.9% provided boats fro hire, while 68% had drying rooms. Furthermore, 89.1% of salmon angling accommodation premises provided packed lunches, 68.8% provided ghillies, 39.8% had tackle rooms, and 7.75 had freezers.

**Table 5.51: Analysis of Salmon Angling Accommodation in Ireland - Provision of Facilities for Anglers – 2001**

| **Facilities** | **% of Premises** |
|---|---|
| Bait & tackle | 83.6 |
| Boats for hire | 78.9 |
| Drying room | 68.0 |
| Packed lunches | 89.1 |
| Gillie | 68.8 |
| Tackle room | 39.8 |
| Freezer | 79.7 |

Source: Indecon Analysis of Irish Hotels Federation Hotels & Guesthouses Guidebook, 2001, and The Great Fishing Houses of Ireland guidebook.
Sample = 128 premises in Rep. Of Ireland

# Summary and Conclusions

5.95 The principal findings from the analysis in this chapter include the following:

- In each of the years from 1998 to 2000, it is estimated that there were 24,000 overseas salmon angling visits to Ireland;
- Overall, 90.2% of respondents to the Indecon survey of overseas anglers (n=83) indicated that salmon fishing was their primary purpose, while 9.8% indicated that it was not;
- 72% of overseas salmon anglers arrive in the months of May to August, with much lower proportions arriving in the off-season;
- The weighted average duration of stay for overseas salmon anglers is 11.8 nights. This suggests that overseas salmon anglers tend to spend longer in Ireland on average than the typical overseas tourist;
- Data is available on the extent to which visiting anglers have taken holiday trips involving salmon fishing in countries other than Ireland over the past five years. There is an even split, with 50.6% indicating that they had, and 49.4% indicating that they had not;
- After adjusting for the import content of expenditure and the impact of multiplier effects, we estimate that overseas salmon anglers coming to Ireland principally for salmon angling contributed an estimated €19.3 million to the economy in total over the period 1998-2000, or €6.43 million per annum;
- Our estimates suggest that the value of overseas salmon angling in Ireland is greatest in the North West region, where it is estimated to have generated approximately €5.74 million in total over the period 1998-2000. The North West is followed by the Northern and South Western regions, where overseas angling is estimated to have generated €3.4 million and €3.2 million respectively over this period.
- For domestic anglers, the estimated average daily expenditure is equal to €136.5 per day, with a median reported expenditure of €100;
- On average, domestic angler survey respondents (n=218) reported an average catch of 5.3 fish at an estimated average weight of 6.1 lbs;
- For domestic anglers, 75.4% of days fished were in local waters, while 24.6% were outside angler's locality;
- The total net benefit of domestic salmon angling to the Irish economy is estimated to be €4.590 million per annum.
- The combined net economic value of overseas tourism and domestic salmon angling, adjusting to reflect imported inputs, the opportunity cost of labour and other resources and displacement impacts, is estimated at €11 million per annum.

Chapter 6

# Views of Commercial Salmon Fishermen, Tourism and Angling Interests

# 6 Views of Commercial Salmon Fishermen, Tourism and Angling Interests

## Views of Commercial Salmon Fishermen

6.1 During the course of this study Indecon sought the views of a number of individuals and organisations in relation to a number of issues. In this sub-section we set out the views of commercial salmon fishermen. A number of specific issues are considered. Firstly, commercial fishermen were asked to give their opinion in relation to the extent to which fishing waters have changed over the last five years. Furthermore, survey respondents also gave their views in relation to considering and quantifying the economic value and importance of wild salmon in Ireland. Finally, views were also expressed in relation to potential options/recommendations on the future management of wild salmon in Ireland.

6.2 Respondents to the Indecon survey of commercial salmon fishermen were asked to give their views on how fishing waters have changed over the last five years. Overall, 41.4% indicated that they felt that salmon fishing waters had seriously declined, 15% indicated that it had moderately declined, and 25.6% indicated that it was much the same. Overall, 18% of respondents felt that the quality of salmon fishing had improved.

**Table 6.1: Indecon Survey of Commercial Salmon Fishermen - Views of Commercial Fishermen on How Fishing Waters have Changed over the Last 5 Years**

| Change in Waters | % of Respondents |
|---|---|
| Seriously declined | 41.4 |
| Moderately declined | 15.0 |
| Much the same | 25.6 |
| Moderately improved | 12.0 |
| A good deal improved | 6.0 |
| **Total** | **100** |

Source: Indecon Survey of Commercial Salmon Fishermen

6.3 Table 6.2 to Table 6.4 set out a selection of views of commercial salmon fishermen on the consideration and quantification of the economic value and importance of wild salmon in Ireland. Many of these comments relate to salmon stocks and a selection of such comments is presented in Table 6.2. It is apparent that there is some divergence in the expressed opinions across survey respondents in relation to this issue.

**Table 6.2: Views of Commercial Salmon Fishermen on Consideration and Quantification of the Economic Value and Importance of Wild Salmon in Ireland – Salmon Stocks**

| No. | Comment |
|---|---|
| 1. | "Should be a drastic reduction in the number of salmon entering estuary and rivers." |
| 2. | "Rivers should be restocked with small salmon." |
| 3. | "I believe fishing for wild salmon should be stopped immediately for at least 10 years to allow stocks to improve." |
| 4. | "The salmon season should run on in the month of August." |
| 5. | "I would like to see the wild salmon given a chance to survive again. This can be done by putting a set aside in operation for a few years." |
| 6. | "The stock is declining." |
| 7. | "The salmon fishing is finished, we would get more fish with a rod." |
| 8. | "I have no doubt that 90% of the salmon is being caught out at sea, and cannot reach the river to travel up stream." |
| 9. | "Every year getting worse." |
| 10. | "Salmon fishing in estuaries has been carried out for generations with little impact on salmon stocks." |
| 11. | "I believe that this decline has had a serious impact on the economic value and importance of wild salmon." |
| | |

Source: Indecon survey of commercial salmon fishermen.

6.4 Table 6.3 presents the views of commercial salmon fishermen in relation to the length of season and the importance of salmon fishing on their livelihoods. The views tend to support a move towards a longer fishing period, as well as stating the importance of commercial salmon fishing to local communities.

**Table 6.3: Views of Commercial Salmon Fishermen on Consideration and Quantification of the Economic Value and Importance of Wild Salmon in Ireland – Season and Livelihood**

| No. | Comment |
|---|---|
| 1. | "The salmon season should run on in the month of August." |
| 2. | "As there is no other type of employment in the area (rural) I could not live without salmon fishing." |
| 3. | "Let there be draft fishing until 15th Aug." |
| 4. | "Should be different season for onshore net fishing." |
| 5. | "The wild salmon are very important to Ireland not just for anglers who come to fish - more important to local lives. Salmon fishing is a way of life to many men. Stop the Spanish and bigger boats who are stopping salmon from getting in the rivers." |
| 6. | "Salmon fishing is a big part on my heritage as all my family fished, as far back as we all know about." |
| 7. | "In my own view it has never been profitable except that it has been a tradition means of employment." |
| 8. | "Salmon season should be extended to the end of August." |
| 9. | "There are very few salmon being caught and its getting worse each year." |
| | |

Source: Indecon survey of commercial salmon fishermen.

6.5 Table 6.4 presents a selection of comments in relation to control and pollution. A number of comments express concern regarding the level of pollution.

**Table 6.4: Views of Commercial Salmon Fishermen on Consideration and Quantification of the Economic Value and Importance of Wild Salmon in Ireland – Control and Pollution**

| No. | Comment |
|---|---|
| 1. | "Water sampling should be taken at least 10 times during salmon run and spring season. Should be a tighter watch on the anglers and rivers." |
| 2. | "Tags should be evenly distributed amongst all licence holders so that it is economically viable to fish in estuaries in 2002. Most estuary fishermen receive only 30 tags while deep-sea fishermen get hundreds or even thousands. What's the point in limiting estuary catches while plundering stocks at sea. Strict limit on rod catches (tags) as fish are caught in spawning grounds." |
| 3. | "The reason that salmon declined was very bad pollution over the summer months when the river is low and also rampant poaching during weekends and closed season by non licence holders." |
| 4. | "There is a need for hatchery on rivers so that spring fish can be saved from extinction. Also a need for volunteers on all major rivers and look at buying out licences." |
| | |

Source: Indecon survey of commercial salmon fishermen.

6.6 Survey respondents were also asked to give their views on options and recommendations on the future management of wild salmon in Ireland, and there are set out in Table 6.5 to Table 6.7. Firstly, Table 6.5 presents a selection of comments in relation to set asides, buyouts, and compensation.

**Table 6.5: Views of Commercial Salmon Fishermen on Options/Recommendations on Future Management of Wild Salmon in Ireland – Set Asides, Buyouts, and Compensation**

| No. | Comment |
|---|---|
| 1. | "Should be a buy out of commercial fishery." |
| 2. | "There should be a set aside for a few years until the salmon stocks increase." |
| 3. | "My family fished for Salmon for at least for 120 years. I personally think its time to give our waters a rest." |
| 4. | "Fishing should stop for 5 years." |
| 5. | "Reduce the number and length of draft nets, give us proper compensation to suit fishermen." |
| 6. | "Proper compensation to be set aside for commercial fishermen." |
| 7. | "I'm quite certain that the majority of fishermen fishing on the river Slaney would consider a full buy out of their licences if it were to be offered to them and this would greatly help in conservation of our beautiful wild salmon and thus help tourism." |
| 8. | "A set aside would help small boats to invest time and money in other types of fishing such as shrimp pots or lobster pots." |
| 9. | "Buy out licence holders or set aside for 5 years." |
| 10. | "I would ban drift netting of salmon and compensate the fishermen" |
| | |

Source: Indecon survey of commercial salmon fishermen.

6.7 Table 6.6 presents a selection of additional comments made by commercial salmon fishermen in relation to the length of the fishing season.

**Table 6.6: Views of Commercial Salmon Fishermen on Options/Recommendations on Future Management of Wild Salmon in Ireland - Season**

| No. | Comment |
|---|---|
| 1. | "We feel stocks have increased and that this should be reflected by increased length of net and extra days in August. Quota should be raised, remove non-used licence's. At this time there are 4-6 redundant licences in Dingle. These should be removed & re-assigned - preferably removed from circulation. If 6 licences were removed other licence holders could increase net length. Several boats from the West carry excess gear and are not checked." |
| 2. | "Snap net operators should have at least 4 weeks fishing after the boats finish in the harbour and coasts." |
| 3. | "Rod season open too long." |
| 4. | "I believe that salmon fishing is not to blame for the decline of salmon stocks. Pollution, poaching and seals are more to blame. I know that one poacher in our area got more salmon on one night than I got all season out of my net in any one season. The salmon don't run in our area until after the season ends. This means our catch record is not a true reflection on the current salmon stocks." |
| 5. | "Season should be changed from May until July for start date. Season should be 5 days per week, length of nets should be increased." |
| 6. | "The whole tagging system needs to be re-considered. Anglers should not be allowed to catch more salmon than the seasonal fisherman does. The salmon season time scale needs to be changed as it opens to soon." |
| 7. | "Its not fair to have rod men fishing from 1st March to 1st Oct and drift & draft only fish from 15th May." |
| | |

Source: Indecon survey of commercial salmon fishermen.

6.8 Finally, Table 6.7 presents a selection of other comments made by commercial salmon fishermen in relation to options and recommendations on the future management of wild salmon in Ireland. A number of survey respondents were in favour of banning all drift net salmon fishing.

**Table 6.7: Views of Commercial Salmon Fishermen on Options/Recommendations on Future Management of Wild Salmon in Ireland – Other Comments**

| No. | Comment |
|---|---|
| 1. | "Rivers should be restocked with small salmon." |
| 2. | "I'd like to see more co-operation between anglers and netsmen. I don't think tagging is a success as there are too many loopholes. I think that every fisherman should get equal tags." |
| 3. | "Drift netting shouldn't be allowed in the future." |
| 4. | "If the bigger boats are stopped local men who depend on salmon fishing are not going to stop fish going up river. Angling has to be carefully watched. A true fisherman will not stop fish spawning." |
| 5. | "No drifting, close fish farms." |
| 6. | "I think that the wild spring salmon are being killed by rod anglers and should operate a catch and release scheme." |
| 7. | "Pollution and commercial farming have played a large part in the decline of salmon stocks. Angling clubs should have control of their waters." |
| 8. | "Ban all net fishing like everybody else. 5 years from now there will be no fish." |
| 9. | "Ban completely drift netting." |
| 10. | "Needs to be a constant watch on all rivers." |
| 11. | "All fisheries boards will have to listen to fishermen about seal damage. Also fishermen know most about salmon stocks, but nobody will believe them." |
| 12. | "All salmon will have to be tagged including farmed salmon. More salmon licences be bought out and bigger quotas for fishermen who want to remain fishing." |
| | |

Source: Indecon survey of commercial salmon fishermen.

# Views of Tourism and Angling Interests

6.9 This sub-section sets out the views of tourism and angling interests. We begin by considering the views of overseas salmon anglers, followed by the views of domestic anglers, and finally tourism interests.

6.10 Once again, a number of specific issues are considered. Firstly, the views of these groups are presented in relation to "catch and release", as well as their opinions in relation to the extent to which fishing waters have changed over the last five years. Furthermore, survey respondents also gave their views in relation to considering and quantifying the economic value and importance of wild salmon in Ireland. Finally, views were also expressed in relation to potential options/recommendations on the future management of wild salmon in Ireland.

*Views of Overseas Salmon Anglers*

6.11 Table 6.8 presents the responses of overseas salmon anglers on the extent to which they practice "catch and release" on a voluntary basis. Overall, 71.1% indicated that they practice "catch and release" voluntarily, while, 19.3% of respondents indicated that they believed that "catch and release" should be compulsory for salmon.

**Table 6.8: Indecon Survey of Overseas Salmon Anglers - Extent of Practice of 'Catch & Release' on Voluntary Basis by Overseas Salmon Anglers**

| Catch & Release | % of Respondents |
|---|---|
| Practice 'Catch & Release' voluntarily | 71.1 |
| Consider that 'Catch & Release' should be compulsory for salmon | 19.3 |

Source: Indecon Survey of Overseas Salmon Anglers

6.12 Survey respondents were also asked to give their views on the important matter of whether the quality of salmon fishing in waters fished had changed much over the last five years. Overall, 18.7% indicated that they felt that salmon fishing had seriously declined, 36% indicated that it had moderately declined, and 38.7% indicated that it was much the same. Only a small proportion of respondents (6.7%) felt that the quality of salmon fishing had moderately improved, while no respondents indicated a good deal of improvement.

**Table 6.9: Indecon Survey of Overseas Salmon Anglers - Views of Overseas Salmon Anglers on whether Quality of Salmon Fishing in Waters Fished has Changed Much over Last 5 Years**

| Quality of Salmon Fishing | % of Respondents |
|---|---|
| Seriously declined | 18.7 |
| Moderately declined | 36.0 |
| Much the same | 38.7 |
| Moderately improved | 6.7 |
| A good deal improved | 0.0 |
| Total | 100 |

Source: Indecon Survey of Overseas Salmon Anglers

6.13 Table 6.10 to Table 6.12 presents selections of views of overseas salmon anglers on considering and quantifying the economic value and importance of wild salmon in Ireland. These views relate to the value of wild salmon to Ireland, the decline in the quality of salmon angling in Ireland, and other issues relating to wild salmon. Table 6.10 presents a selection of survey respondent's views in relation to the value of wild salmon in Ireland.

| **Table 6.10: Views of Overseas Salmon Anglers on Consideration and Quantification of the Economic Value and Importance of Wild Salmon in Ireland - Value** | |
|---|---|
| **No.** | **Comment** |
| 1. | "Clearly a salmon caught by an angler is a hugely more valuable resource than one caught by commercial fishing." |
| 2. | "1. Promotes tourism and all of the economic benefits derived from tourism industry and benefits to the fishery industry. 2. Creates employment opportunities. 3. Promotes preservation of natural environment and habitat. 4. Promotes an exchange of cultural ideas." |
| 3. | "Very important to the local economy." |
| 4. | "Fishing is the main reason for visiting Ireland and I would probably only visit say once every 5 years." |
| 5. | "I have a week's timeshare in April/May when I bring a party of about 10 people, only 3 or 4 fishermen. My own expenditure is about €1500 for the week. My wife and friends all hire cars and go shopping, eat in pubs + restaurants locally, we self cater and spend cash on food (unless there is a salmon to eat!)." |
| 6. | "No Salmon – No Holiday." |
| 7. | "It is clear from the number of visitors we see whilst in Ballina that salmon fishing is vital to local economy. "Locals" are finding the new regulations hard to live with as "poaching" salmon "out of hours" on quality stretches of the river Moy has until recently been an accepted tradition - and has provided an income to many of those involved, and salmon for hotels, guest houses and smoke houses!" |
| 8. | "Obviously a wild salmon to a rod fisher is worth several multiples to the Irish Economy of the value of a net caught one. On top of which the rod caught one may well be released to live on and spawn. The salmon off the West coast are often net marked and very small (3 Lbs.) as nets kill all the bigger Grilse / Salmon." |
| 9. | "If it were not for the fishing – I doubt I would go to Ireland. I also fish for sea trout and brown trout whilst there." |
| | |
| Source: Indecon survey of overseas salmon anglers. | |

6.14 Table 6.13 presents views of overseas salmon anglers in relation to the decline in the quality of salmon angling in Ireland. A number of survey respondents indicated this decline to be potentially serious for salmon angling in Ireland.

**Table 6.11: Views of Overseas Salmon Anglers on Consideration and Quantification of the Economic Value and Importance of Wild Salmon in Ireland - Decline**

| No. | Comment |
|---|---|
| 1. | "Over the past 15 years I have found it more difficult to get into waters due to hotels, guest houses etc, buying up day tickets in bulk." |
| 2. | "The 2002 season in Ireland was particularly poor. In view of this I am considering travelling further afield and may in the future fish in Canada instead of Ireland." |
| 3. | "It seems to me that Ireland must decide whether it wishes to retain a visible salmon fishery for anglers. The party I accompanied has just three salmon for the week and around a dozen sea trout. 60% of our catch showed evidence of net damage, and I have never seen smaller Atlantic salmon (smaller then the grilse I catch in England and Scotland). Put very simply, the quality of salmon fishing I encountered on the Kylemore system does not stand comparison with that available in England and Scotland." |
| 4. | "You will notice I have indicated a "moderate decline" in question 12. This is however, not from a personal experience but from gatherings taken from more experienced anglers making more trips to Ireland than myself. I did find my trip thoroughly enjoyable and hope to return very soon having only caught two salmon myself. I did see a good number of fish in the rivers visited (Ballina) which is always heartening for any angler." |
| | |

Source: Indecon survey of overseas salmon anglers.

6.15 Finally, Table 6.12 presents some additional comments made by survey respondents in relation to the consideration and quantification of the economic value and importance of wild salmon in Ireland.

| **Table 6.12: Views of Overseas Salmon Anglers on Consideration and Quantification of the Economic Value and Importance of Wild Salmon in Ireland - Salmon** | |
|---|---|
| **No.** | **Comment** |
| 1. | "Salmon is like Ireland - it must keep wild." |
| 2. | "I am of the opinion that greater care must be taken to avoid cross breeding between farm salmon escaping and wild salmon." |
| 3. | "I strongly suggest that the success achieved in Iceland in saving their wild salmon stocks should be studied carefully." |
| 4. | "Until deep-sea murder of salmon is stopped, salmon could become a memory." |
| 5. | "Most anglers want to keep some salmon but there is no reason why this should not be limited to say 1-2 per day or week." |
| | |
| Source: Indecon survey of overseas salmon anglers. | |

6.16 Table 6.13 to Table 6.14 present a selection of views of overseas salmon anglers in relation to options and recommendations on the future management of wild salmon in Ireland. Firstly, Table 6.13 presents a selection of survey respondent's views in relation to commercial salmon fishing. A number of comments relate to limiting/stopping the use of nets.

| **Table 6.13: Views of Overseas Salmon Anglers on Options/Recommendations on Future Management of Wild Salmon in Ireland – Commercial Salmon Fishing** | |
|---|---|
| **No.** | **Comment** |
| 1. | Catches by commercial fishermen should be more strictly controlled as with poaches and limits set for rod anglers. |
| 2. | Restrict sea netting. Restrict estuary netting. Farming away from wild salmon rivers/locks. Increase salmon stocking. |
| 3. | Ban commercial netting, impost more catch & release; regulate numbers of salmon killed by local anglers. |
| 4. | Stop netting. |
| 5. | Commercial wild salmon fishing should be abolished altogether as salmon can be produced relatively cheaply in salmon farms. Rod caught salmon are worth far more to the economies. The amount of net caught salmon caught around Ireland today is disgraceful. |
| 6. | Commercial (netting in estuary's) should be stopped and salmon farming reduced and stopped over a period of time. |
| 7. | I am a member of the Delphy Syndicate and think that is a very successful model for fishery management now that we have stopped mixing the gene pool. This year's grilse run was badly affected by the offshore netsmen. Sea trout fishing could be as valuable to the economy as salmon - I would certainly come back in time late Autumn if there were fish to be caught. Salmon farming seems to have put a stop to that though. |
| 8. | I was pleased to see the introduction of bag limits on Ridge Pool to Galway Weir. Please, please limit or STOP drift nets. |
| 9. | If the salmon rod anglers are to be sustained then farming and netting activities need to be controlled. |
| 10. | You must stop the commercial wild salmon fishing in Ireland's seas. |
| 11. | The Irish need to be actively seen to put their 'house in order' by reducing the amount of fish taken by nets and also the amount taken by poachers. Not only this but far greater restraints needs to be shown by rod and line anglers, anglers still catch and kill 20+ fish per week in the Ballina area which is not sustainable. One day soon the Irish fisheries will disintegrate as has happened to so many cases in England, Wales and Scotland. |
| Source: Indecon survey of overseas salmon anglers. | |

6.17 Table 6.14 overleaf presents a selection of other comments made by overseas salmon anglers in relation to options and recommendations on the future management of wild salmon in Ireland.

| Table 6.14: Views of Overseas Salmon Anglers on Options/Recommendations on Future Management of Wild Salmon in Ireland – Other Comments | |
|---|---|
| **No.** | **Comment** |
| 1. | Catch limits per day/ per week are the most acceptable force of conservation to most anglers. |
| 2. | Tag and release to be tried. If proved to be working for the salmon, make compulsory. |
| 3. | I am told there are so many grilse returning to the river Moy each year that reeds are uncovered and disturbed by successful breeding females. If this is untrue, "catch and release" is still a poor conservation option, as, many fish die and others are prone to disease. This is evident from my U.K experience with trout – and don't doubt it would also apply to salmon. As to commercial fishing – estuary netting should be purchased and stopped entirely – and seals killed to allow more salmon to reach the rivers. |
| 4. | Stop using prawns. |
| 5. | I found that the use of gill tags is a very good idea, which I think should be continued as this can only help the eradication of poaching. |
| 6. | More catch and returned should be practised by anglers. Some boatsmen kill every fish without considering the possibility of returning a fish that is undamaged. |
| Source: Indecon survey of overseas salmon anglers. | |

### *Views of Domestic Salmon Anglers*

6.18 Table 6.15 presents the views of respondents to the Indecon survey of domestic salmon anglers in relation to "catch and release". Overall, 51.8% of respondents practice catch and release voluntarily, while 19.3% indicated that catch and release should be compulsory for salmon.

| Table 6.15: Indecon Survey of Domestic Salmon Anglers - Extent of Practice of 'Catch & Release' on Voluntary Basis by Domestic Salmon Anglers | |
|---|---|
| **Catch & Release** | **% of Respondents** |
| Practice 'Catch & Release' voluntarily | 51.8 |
| Consider that 'Catch & Release' should be compulsory for salmon | 19.3 |
| Source: Indecon Survey of Domestic Salmon Anglers | |

6.19 Respondents to the Indecon survey of domestic salmon anglers also gave their views on whether the quality of salmon fishing in waters fished had changed much over the last five years. Overall, 48.1% indicated that they felt that salmon fishing had seriously declined, 31% indicated that it had moderately declined, and 15.3% indicated that it was much the same. Only a small proportion of respondents (5.6%) felt that the quality of salmon fishing had improved. These responses contrast to those from overseas salmon anglers, and indicate a much worse assessment of the change in salmon fishing quality over the past five years. This is important, particularly within the context of the findings in relation to Table 5.31, which found that those responding to the Indecon survey of domestic salmon anglers are regular participants in salmon angling activities in Ireland.

**Table 6.16: Indecon Survey of Domestic Salmon Anglers - Views of Domestic Salmon Anglers on whether Quality of Salmon Fishing in Waters Fished has Changed Much over Last 5 Years**

| Quality of Salmon Fishing | % of Respondents |
|---|---|
| Seriously declined | 48.1 |
| Moderately declined | 31.0 |
| Much the same | 15.3 |
| Moderately improved | 4.2 |
| A good deal improved | 1.4 |
| **Total** | **100** |

Source: Indecon Survey of Domestic Salmon Anglers

6.20 Table 6.17 to Table 6.19 presents a selection of views of domestic salmon anglers on considering and quantifying the economic value and importance of wild salmon in Ireland. Table 6.17 begins by presenting a selection of comments in relation to the value of salmon angling.

**Table 6.17: Views of Domestic Salmon Anglers on Consideration and Quantification of the Economic Value and Importance of Wild Salmon in Ireland - Value**

| No. | Comment |
|---|---|
| 1. | "I think wild salmon should be let travel up rivers freely and not netted out at sea as they are worth very little. The money generated by increased tourism – increased licences - could be used to partly compensate netsmen with EU government funding." |
| 2. | "I don't go on holidays to fish. A lot of people do however. I would like to see a lot more done about poaching and netting illegally in our rivers. Too many spend money on a holiday and to catch nothing is not good for business." |
| 3. | "Rod caught fish are far more contributative to the economy, versus commercial netting of wild salmon. Currently rod caught salmon equals less than 1% of the total catch." |
| 4. | "Both sides of the community from NI fish for wild salmon and make lasting friendships at our rivers. Tourists visit the area to fish and spend large sums of money in these areas." |
| 5. | "I believe that the wild salmon is a resource that is of maximum value to the economy of Ireland when it is used as a sporting resource for both local resources." |
| 6. | "From an anglers point of view much of the West, South, and North West of Ireland would have a lot to lose if our salmon are not looked after, without salmon fishing many local towns and villages would experience a big economic downfall." |
| 7. | "Wild salmon fresh water fishing is the backbone of tourism in many areas and certainly needs to be sustained and encouraged." |
| 8. | "Salmon fishing very important to economy e.g. tourism and visiting anglers." |
| 9. | "Very important for tourism and the economy and should be looked after before the salmon are wiped out completely." |
| 10. | "Ireland Salmon fishing is world famous and an important part of life in Ireland and a big tourist attraction. People's livelihoods depend on it and soon there will be none." |
| 11. | "On a recent trip to Iceland my group paid between €400-2000 per day to fish salmon because they have salmon. You would need to net a lot of salmon to get this kind of value added. This does not include accommodation, food etc. The Kola River in Russia attracts similar prices and is always fully booked." |
| | |

Source: Indecon survey of domestic salmon anglers.

6.21 Table 6.18 presents a selection of comments from domestic salmon anglers in relation to their views on commercial salmon fishing.

**Table 6.18: Views of Domestic Salmon Anglers on Consideration and Quantification of the Economic Value and Importance of Wild Salmon in Ireland – Commercial Fishing**

| No. | Comment |
|---|---|
| 1. | "More guests would come to Ireland if salmon were let into the rivers. STOP THE BIG NETS for one or two years. More Salmon would get up the brooks to spawn." |
| 2. | "Major effect on the Tourist Industry in Ireland with regard to anglers coming to fish here. Government should abolish drift netting in the high seas. Not enough being done to tackle the problem of fish farming in this country and the affects its having on wild salmon." |
| 3. | "I feel that commercial netting for salmon should cease forthwith. With appropriate compensation to netsmen. In Iceland salmon are for rod anglers only to my knowledge and the sport makes a significant contribution to the Icelandic economy." |
| 4. | "Reduce netting of wild salmon as much as possible." |
| 5. | "The impact of drift net fishing has decimated runs of salmon. My local rivers have so few salmon returning that stocks can not be self sustaining." |
| 6. | "Drift netting licences should be bought out – catch limits maintained for rod anglers." |
| 7. | "Ireland could be a prime salmon fishing location, devastation of stocks by nets and increase in fish farming is detrimental." |
| 8. | "I firmly believe that commercial nets should be bought out and that salmon farming expansion should be curbed and existing farms should be subjected to more rigorous compliance with environmental safe guards." |
| 9. | "I'm a keen rod angler and hope my kids will follow suit. But if something isn't done about the drift nets there wont be any fish left for them. The money spent on fishing every year is worth a lot more to the economy than the fish caught by nets!" |
| | |

Source: Indecon survey of domestic salmon anglers.

6.22 Finally, Table 6.19 presents a selection of other comments in relation to the views of domestic salmon anglers on consideration and quantification of the economic value and importance of wild salmon in Ireland.

**Table 6.19: Views of Domestic Salmon Anglers on Consideration and Quantification of the Economic Value and Importance of Wild Salmon in Ireland – Other Comments**

| No. | Comment |
|---|---|
| 1. | "I'm a retired man and get a lot if enjoyment spending time on the river. In my view 'lack of stocking' of our rivers is a problem." |
| 2. | "More promotion and marketing of rod angling holidays. Better managed fisheries." |
| 3. | "I think that the Tourist Board should promote our fishing more as I see there is huge potential here." |
| 4. | "A number of foreign fishermen I used to meet are no longer coming for spring fishing - it has got so bad." |
| 5. | "Bag limit on each district." |
| 6. | "In the 70/80s when Salmon were plentiful in the River Shannon, you would see many visiting fishermen (rod) both Irish, French/German. You seldom see them now. If the salmon runs returned, I have no doubt that these visitors would return." |
| 7. | "There is no will by government to sort out fishing. Rod fishing must be looked after by fishermen." |
| | |

Source: Indecon survey of domestic salmon anglers.

6.23 Table 6.20 and Table 6.21 present a selection of views of domestic salmon anglers on options/recommendations on the future management of wild salmon in Ireland. Firstly, Table 6.20 presents s selection of comments made in relation to commercial/net salmon fishing. Overall, domestic angler survey respondents appear to be in favour of reducing/banning net fishing, with compensation payments.

**Table 6.20: Views of Domestic Salmon Anglers on Options/Recommendations on Future Management of Wild Salmon in Ireland – Commercial/Net Fishing**

| No. | Comment |
|---|---|
| 1. | "Reduce netting of wild salmon as much as possible." |
| 2. | "Commercial salmon fishing must be stopped. Bag limits to be enforced on rod angling." |
| 3. | "Drift netting licences should be bought out – catch limits maintained for rod anglers." |
| 4. | "Buy out commercial salmon fishing licences. More rigorous patrolling coupled with greater penalties for those caught poaching." |
| 5. | "Fishing at sea and netting at the river mouths to ease. I realise netting stations and boats will have to be compensated but feel costs would be justified." |
| 6. | "Reduce commercial fishing quotas now!!!!!" |
| 7. | "The netting has to stop - with compensation paid to netsmen. I would certainly agree to catch & release for a few years until stocks are recovered. " |
| 8. | "Remove all drift and draught nets." |
| 9. | "Ban all drift nets." |
| 10. | "Stop netting of the coast." |
| 11. | "Netting in our seas and river estuaries should be completely banned for about 10 years" |
| 12. | "1) Buy out all the drift net fisheries. 2) Get the salmon farming industry in order. 3) Bring our rivers back to the clean and healthy state they should be in. 4) Have proper deterrents for people involved in illegal fishing." |
| 13. | "Total ban on commercial fishing." |
| 14. | "The only way that it will work is if there is a total buy out of the nets." |
| 15. | "In my opinion drift netting is spelling the death knell for wild salmon stocks. Protection is also a major problem with tainted waters discouraging salmon runs to fresh water." |
| 16. | "Buy out all netting rights now not over a period of time. Use compulsory orders to buy out. Do it now. Stop netting and wasting money." |
| 17. | "My opinion is that rod anglers will never be any danger to salmon stock - one drift net would so more harm in one night than all the rods on the river Moy." |
| 18. | "Buy out all the drift nets, ban all nets on rivers and estuaries." |
| 19. | "Due to commercial netting, rod anglers have no chance. Rod anglers won't do damage to wild salmon stock." |
| 20. | "Drift nets should be completely banned and compensation paid, bag limits should be put in place for rod anglers, e.g. 2 fish per rod per day." |
| 21. | "Buy out the nets for a fair price. The amount of tourist revenue will increase to pay the government board." |
| | |

Source: Indecon survey of domestic salmon anglers.

6.24 Table 6.21 presents a selection of other comments from domestic anglers on options recommendations on the future management of wild salmon in Ireland.

**Table 6.21: Views of Domestic Salmon Anglers on Options/Recommendations on Future Management of Wild Salmon in Ireland – Other Comments**

| No. | Comment |
|---|---|
| 1. | "Immediately we need shorter fishing seasons and to restore and maintain spawning reeds. Poachers have a free hand to rape the rivers of fish/spawning fish as fishery patrol staff are too small in numbers to tackle the problem. There is a need to inspect hotel/guest houses, fridge/cold rooms on a regular basis. A serious need to improve water quality." |
| 2. | "I think close monitoring of salmon clubs, ensuring availability of day tickets for the fishing public and for tourists." |
| 3. | "More work should be done to make sure that more people should comply with the new tagging system and prevent poaching on spawning streams and pollution also needs to be dealt with." |
| 4. | "I believe that spring salmon is not a viable commercial resource. Angling for spring salmon should be carefully managed to maintain stocks. The grilse and summer salmon have some commercial value but are better used for the great angling resources that they are. Salmon is widely available from the farmed salmon producers so why are we still netting wild Salmon?" |
| 5. | "Scrap shrimp fishing, fly fishing only in September, reed fish to be released – compulsory, bag limit all season." |
| 6. | "Net fishermen should be taken out of estuaries and salmon allowed to spawn in rivers to strengthen stock." |
| 7. | "Development of estuary fishing." |
| 8. | "Catch and release only, big fines for pollution." |
| | |
| Source: Indecon survey of domestic salmon anglers. | |

### *Views of Tourism Interests*

6.25 Table 6.22 presents a selection of views of tourism interests on considering and quantifying the economic value and importance of wild salmon in Ireland.

**Table 6.22: Views of Tourism Interests on Consideration and Quantification of the Economic Value and Importance of Wild Salmon in Ireland**

| No. | Comment |
|---|---|
| 1. | "Salmon, sea trout, trout and coarse fishing makes a massive economic value on this country. The fishing on the whole is on the decline due to fish farming and the decline of returning salmon and sea trout. Waterways are becoming more and more polluted with farming techniques becoming more intensified." |
| 2. | "The importance of wild salmon fishing is a must to the economy in Ireland." |
| 3. | "Salmon fishing is very important to Ireland. It is a major factor when visitors are choosing a country. The majority of visitors do not come here to fish full time, but like to spend a day or two." |
| 4. | "All netting of salmon should be stopped. It should also be illegal for any restaurant or hotel to serve wild salmon." |
| 5. | "One salmon caught by rod brings revenue of €3,000 to €4,000 to Ireland. A salmon caught by commercial fishing drift nets is sold to market for €30-€50!!! What a disgrace and bad economics." |
| 6. | "Salmon angling guests are mostly repeat guests. They hire a car and spend well, both in the hotel and locally." |
| 8. | "As we all know this is the 1st year that salmon seems to be on the way back. Decline due to lack of fish. More action to target poachers at mouths of rivers. Not an easy task but necessary." |
| 9. | "It is well known that the value of a salmon caught on the rod greatly overweighs one caught in a net." |
| 10. | "From a guide point of view I have approx 130 days of fishing each year. This has fallen from over 200. Each person spends up to €200 per day so my business was worth €40,000 to local economy. The commercial fisherman would have to catch over 2,000 salmon to achieve this figure. This is not sustainable." |
| 11. | "The importance of fishing to tourism of wild salmon cannot be over stated. Sadly the importance of fresh rivers and lakes has seriously declined due to depletion of stocks and pollution with consequent drop in numbers of anglers from abroad. The state of fish stocks in Ireland is now well known in Europe where there is a drastic drop in enquiries from fishermen. In recent years fishing has become less important to my business. The harm is already done, through lack of will to curb draft nets, drift nets which are the real danger to stock |
| 12. | I believe tourism revenue could be greatly enhanced if a complete ban on commercial salmon fishing was introduced. An education system should be introduced in our schools to explain the life cycle of wild salmon to our young people and how valuable a natural resource these fish could be to our economy through huge benefits to our tourism sector through proper management structure." |
| Source: Indecon survey of tourism interests. | |

6.26 Finally, Table 6.23 presents a selection of views of tourism interests on options and recommendations on the future management of wild salmon in Ireland.

**Table 6.23: Views of Tourism Interests on Options/Recommendations on Future Management of Wild Salmon in Ireland**

| No. | Comment |
|---|---|
| 1. | "I think that all waters should be managed privately." |
| 2. | "Commercial salmon fishing is no help to the economy in Ireland, rod angling fishing for salmon is a very important asset to the economy." |
| 3. | "All anglers should be allowed one salmon each day. During the month of September, all fish close to spawning should be returned to the rivers." |
| 4. | "It should be government policy to restore the salmon stocks." |
| 5. | "Ireland is the last European country to allow drift nets to catch wild salmon – EU or Ireland need to stop that as soon as possible to re-build the stock!" |
| 6. | "Stop the inter capture of shore drift net fishing. If commercial salmon fishing must continue let it be only draft net fishing, controlled in the economy. Put a quota of 5 salmon per season on rod anglers." |
| 7. | "In the past, netting had to be done in order to keep your licence. This practice should be stopped if netting is not crucial to your business." |
| 8. | "The commercial fishing cannot be sustained nor can the angling tourist business. They cannot work together one has to be side lined and this must be the commercial industry. The angling industry will provide finance. See any compensation schemes. The anglers will have to adhere to strict conservation quotas. No point in allowing commercial angling in rivers or lakes. If the commercial fishery is set aside the government must enforce a strict policy or 'No sale of Wild Salmon'." |
| 9. | "Make it known to the public that the government is at last serious about conserving the wild salmon – even at this very late stage. Restrict the number of net licences issued to fishermen, foreign fishermen. Fisherman have forecasted this dramatic decline in fish game angling as we have paid lip service only to methods of conserving stock throughout the years." |
| 10. | "After a ban on commercial fishing for 5 or 6 years it could be re-introduced on a limited way. I would like to see salmon farming coming to an end also as I see this as being environmentally very damaging and the little value to rural communities as far as employment is concerned." |

Source: Indecon survey of tourism interests.

Chapter 7

# Estimation of Socio-Economic Value of Wild Salmon

# 7 Estimation of Socio-Economic Value of Wild Salmon

7.1 In this section we develop a range of scenarios for the overall socio-economic economic value of the wild salmon resource based on alternative assumptions regarding the future management regime and the salmon catch. Our analysis is based on the following key elements:

- Development of scenarios for the regional commercial and rod & line salmon catch, based on assumptions regarding continuation of the present management regime versus implementation of new approaches;
- Calculation of present value of commercial salmon catch under above scenarios;
- Calculation of present value of domestic and overseas salmon angling resource, utilising scenarios for rod & line catch;
- Comparison of average value of commercial versus recreational salmon;
- Consideration of issue of protection and surveillance expenditures;
- Identification of net overall economic value of wild salmon resource and socio-economic implications of alternative allocations of the resource.

## Scenarios for Management of Commercial Fishery

7.2 An important step in estimating the overall socio-economic value on a regional basis of the commercial wild salmon resource is to consider a range of scenarios for the commercial salmon catch. Our approach to this evaluation is to specify a set of scenarios for the commercial catch based on a range of assumptions regarding the future salmon management regime, as follows:

- Scenario 1 – assumes continuation of present management regime, where the commercial catch, and its components, is assumed to remain constant at 2002 level;
- Scenario 2 – assumes implementation of a revised quotas regime, set to achieve a phased reduction in the drift net catch by 50% across all regions by 2005. Catch using draft and other methods remains constant at 2002 level.

7.3 Alternative scenarios for different assumptions for commercial catch would influence the estimates as well as the assumptions regarding how angling or other revenues would or would not change. The objective of the above scenarios is to provide a set of estimates for the present value of revenues generated from the commercial sector under stated explicit assumptions in relation to the size of the largest component of the fishery, namely the drift net sector. It is important to note, however, that the scenarios presented are indicative only, and the actual movements in the salmon catch within the commercial sector may differ depending on a range of factors.

7.4 It should also be noted that under each scenario, we assume that the regional distribution of the total catch remains constant at the proportions recorded in 2002.

7.5 Our scenarios for the socio-economic value of the wild salmon resource are calculated over a ten-year period to 2012. Our projection for the breakdown of the commercial catch over this period under Scenario 1, which assumes continuation of the present management regime, is shown in Table 7.1 below. It is assumed that the regional breakdown of the catch also remains constant and the detailed regional breakdowns of the commercial catch under Scenario 1 are presented in the annexes to this report.

**Table 7.1: Scenario 1 for the Commercial Wild Salmon Catch - 2002-2012 – Annual No. of Salmon**

| Scenario 1 | 2002 - Actual | 2004 | 2006 | 2008 | 2010 | 2012 |
|---|---|---|---|---|---|---|
| Drift Net | 183,915 | 183,915 | 183,915 | 183,915 | 183,915 | 183,915 |
| Draft Net | 29,782 | 29,782 | 29,782 | 29,782 | 29,782 | 29,782 |
| Other nets | 4,690 | 4,690 | 4,690 | 4,690 | 4,690 | 4,690 |
| **Total Catch*** | **218,387** | **218,387** | **218,387** | **218,387** | **218,387** | **218,387** |

Source: Indecon
* Includes half of the Foyle catch based on assumption of continuation of 2001 catch.

7.6 In Table 7.2 we present details of the projected commercial salmon catch under Scenario 2, which assumes a 50% reduction in the drift net catch by 2005 compared with the 2002 level. This Scenario assumes the operation of a substantially reduced drift net fishery, based on a combination of reduced drift net licence issues and a reduction in the fishing quotas, bringing about a fall in the drift net catch to just under 92,000 fish by 2005 and remaining stable thereafter. It is also assumed under this scenario that the draft and other methods sectors do not capture part of the reduction in the commercial catch, which is assumed to be partially distributed to the rod & line sector (described later in this section). In addition, the regional breakdown of the catch also remains constant and the detailed regional breakdowns of the commercial catch under Scenario 2 are presented in the annexes to this report.

**Table 7.2: Scenario 2 for the Commercial Wild Salmon Catch - 2002-2012 – Annual No. of Salmon**

| Scenario 1 | 2002 - Actual | 2004 | 2006 | 2008 | 2010 | 2012 |
|---|---|---|---|---|---|---|
| Drift Net | 183,915 | 115,859 | 91,958 | 91,958 | 91,958 | 91,958 |
| Draft Net | 29,782 | 29,782 | 29,782 | 29,782 | 29,782 | 29,782 |
| Other nets | 4,690 | 4,690 | 4,690 | 4,690 | 4,690 | 4,690 |
| **Total Catch*** | **218,387** | **150,331** | **126,430** | **126,430** | **126,430** | **126,430** |

Source: Indecon
* Includes half of the Foyle catch based on assumption of continuation of 2001 catch.

# Scenarios for Commercial Salmon Fishing Revenue

7.7 In Section 5 we described a number of approaches to estimating the economic contribution of commercial wild salmon landings on a regional basis. For the purposes of developing our scenarios for the socio-economic contribution of the commercial sector, we consider that the most sensible approach is to apply the following measure, (previously described in Section 5) presented overleaf.

**Total value of revenue accruing to commercial salmon fishermen – Estimate III**

***Total value of revenue accruing to commercial salmon fishermen***
=
*Total commercial salmon catch 2002*
x
*Average weight (lbs)*
x
*Average price per lb*

*Assumptions re Salmon Price*

7.8 There is a range of forces influencing the wild salmon price, which has been trending downwards over the last decade. The main factor adversely affecting wild salmon prices has been the exponential growth in the production of farmed fish on world markets in recent years. Offsetting this impact, however, is the likelihood that wild salmon, through increasing scarcity, will attract a premium price. Given the difficulty in accurately quantifying the overall impact on prices of these opposing factors, in calculating our scenarios for the value of the commercial resource, we have assumed that the average price of salmon landed remains constant at €3.3 per lb over the projection period.

*Assumptions re Salmon Weight*

7.9 It is also necessary to make an assumption regarding the average weight of salmon landed by the commercial sector going forward. For the purposes of our scenarios, we have assumed that the average weight remains constant at 6.67 lbs per fish landed. In relation to the average weight of fish landed and the average price achieved, we also assume that these assumptions apply similarly across each of the fisheries regions.

7.10 Applying the scenarios for the regional commercial salmon catch to our assumptions regarding the average weight of fish landed and the average price achieved yields an estimated total revenue generated by the commercial sector in each region in each year over the projection period 2002-2012. The projections for the total revenue generated on a regional basis under a range of scenarios for the total commercial catch are shown in the annexes to this report. In Table 7.3 we summarise the estimated total annual revenue generated at national level in each of the commercial fishing sectors under Scenario 1.

**Table 7.3: Scenario 1 - Projected Revenue Generated from Commercial Wild Salmon Fishing - 2002-2012 - Euro per year**

| Scenario | 2002 | 2004 | 2006 | 2008 | 2010 | 2012 |
|---|---|---|---|---|---|---|
| Drift net fishery | 4,048,153 | 4,048,153 | 4,048,153 | 4,048,153 | 4,048,153 | 4,048,153 |
| Draft net fishery | 655,532 | 655,532 | 655,532 | 655,532 | 655,532 | 655,532 |
| Other methods | 103,232 | 103,232 | 103,232 | 103,232 | 103,232 | 103,232 |
| **Total Commercial Fishery** | **4,806,916** | **4,806,916** | **4,806,916** | **4,806,916** | **4,806,916** | **4,806,916** |

Source: Indecon scenarios

7.11 The projections for the total revenue generated in the commercial sector based on the base case scenario indicate a total annual revenue of €4.8 million, which, based on our assumptions of a constant average price and constant average weight per fish landed, remains constant over the projection period. Of this total, the drift net fishery is estimated to generate just over €4 million per annum, while the draft net and other commercial fisheries are estimated to produce revenues totalling €0.66 million per annum and €0.1 million respectively.

7.12 In Table 7.4 we present a summary of the projected revenue stream from the commercial salmon fishing sector based on Scenario 2. Under the assumption of a 50% reduction in the drift net catch by 2005, total annual revenue in the commercial sector falls to €2.78 million per annum by 2005 and is assumed to remain constant at this level thereafter. This is brought about by a decline in revenues generated in the drift net sector to €2.02 million per annum by 2005, compared with €4.05 million in 2002. Given the assumption of a constant draft net and other sectors' catch, revenues in these sub-sectors remain constant at 2002 levels.

**Table 7.4: Scenario 2 - Projected Revenue Generated from Commercial Wild Salmon Fishing - 2002-2012 - Euro per year**

| Scenario | 2002 | 2004 | 2006 | 2008 | 2010 | 2012 |
|---|---|---|---|---|---|---|
| Drift net fishery | 4,048,153 | 2,550,177 | 2,024,077 | 2,024,077 | 2,024,077 | 2,024,077 |
| Draft net fishery | 655,532 | 655,532 | 655,532 | 655,532 | 655,532 | 655,532 |
| Other methods | 103,232 | 103,232 | 103,232 | 103,232 | 103,232 | 103,232 |
| **Total Commercial Fishery** | **4,806,916** | **3,308,940** | **2,782,840** | **2,782,840** | **2,782,840** | **2,782,840** |

Source: Indecon scenarios

*Present Value under Alternative Management Options*

7.13 In estimating the total economic value of a self-sustaining resource such as that of the wild salmon, it is important to consider the economic returns to the resource over a number of years. Our approach to estimating the value of economic returns over a number of years is to calculate the present value of the expected stream of benefits over a given time period.

7.14 To calculate the present value of the revenue generated in the commercial salmon fishing sector based on each of the scenarios for the salmon management regime described above, we have applied a 5% discount rate[38]. In line with standard international practice in this area, we apply this discount rate over a 10-year period 2002-2012.

[38] The discount rate of 5% used in our calculations reflects the current standard used by the Department of Finance and the European Commission.

7.15 The present value of each stream of revenue, discounted over the period 2002-2012 under our base case scenario described above is indicated in Table 7.5.

**Table 7.5: Scenario 1 - Present Value of Revenues from Commercial Wild Salmon Fishing Sector - €**

| Scenario | Present Value in 2002 at 5% - € |
|---|---|
| Drift net fishery | 33,625,636 |
| Draft net fishery | 5,445,117 |
| Other methods fishery | 857,484 |
| **Total Commercial Fishery** | **39,928,238** |

Source: Indecon calculations

7.16 Our estimates suggest a present value of revenues from the commercial wild salmon fishing sector under the base case scenario of close to €40 million. Of this total, €33.6 million of revenues derive from the drift net fishery, while €5.4 million and €0.86 million respectively are generated from the draft and other methods fisheries. A regional breakdown of the present value of the commercial fishery under Scenario 1 is contained in the annexes to this report.

7.17 In Table 7.6 we indicate the present value of revenues from the commercial wild salmon fishing sector based on Scenario 2. Under this scenario, which assumes a 50% reduction in the commercial drift net catch by 2005, the present value of revenues from the commercial fishing sector as a whole would amount to an estimated €26.6 million. The present value of revenues from the drift net sector falls under this scenario to €20.3 million, compared with €33.6 million under Scenario 1. The present value of revenues from the draft net and other commercial fisheries, however, remains constant. A regional breakdown of the present value of the commercial fishery under Scenario 2 is contained in the annexes to this report.

| **Table 7.6: Scenario 2 - Present Value of Revenues from Commercial Wild Salmon Fishing Sector - €** | |
|---|---|
| **Scenario** | **Present Value in 2002 at 5% Discount Rate - €** |
| Drift net fishery | 20,273,383 |
| Draft net fishery | 5,445,117 |
| Other methods fishery | 857,484 |
| **Total Commercial Fishery** | **26,575,984** |
| Source: Indecon calculations | |

### *Socio-economic contribution of revenues from commercial salmon fishing sector*

7.18 In estimating the overall socio-economic contribution of the commercial salmon fishing sector, we have assumed that the total sales revenue generated corresponds with the size and average weight of the salmon catch and the price achieved for salmon sales. We have not accounted for any unsold fish in our calculations. This revenue therefore represents the total *potential* sales value of salmon landed and sold by commercial fishermen.

7.19 It is also important to note that the estimates presented above reflect the direct revenues generated by fishermen and do not take account of any downstream revenues generated through activities requiring salmon as an input, for example, revenues from the processing and smoking of fish, the hotel/restaurant trade and other economic activities.

7.20 The estimates for revenue do not represent the *net* income received by commercial operators, which should exclude operating costs such as fuel, depreciation, wages, etc. We do not, however, have access to reliable data on the level and percentage of operating costs and taxation payments. However, we have assumed that 10% of the direct and indirect costs are based on imported inputs and therefore do not constitute a net benefit to the Irish economy. Adjusting the estimates presented above under each scenario to reflect the cost of imported inputs yields our estimates of the direct socio-economic value of income accruing to fishermen or the direct economic value associated with the commercial salmon fishing sector. The adjusted estimates under each scenario are presented in Table 7.7 below. These estimates suggest that the present value of the net economic benefits accruing from the commercial salmon fishing could vary between €23.9 million and €35.9 million depending on the scenario considered.

**Table 7.7: Adjusted Present Value Estimates of Income/Socio-Economic Value from Commercial Wild Salmon Fishing Sector - €**

| Fishery | Present Value in 2002 at 5% Discount Rate - € | |
|---|---|---|
| | **Scenario 1** | **Scenario 2** |
| Drift net fishery | 30,263,072 | 18,246,045 |
| Draft net fishery | 4,900,605 | 4,900,605 |
| Other methods fishery | 771,736 | 771,736 |
| **Total Commercial Fishery** | **35,935,414** | **23,918,386** |

Source: Indecon calculations

*Regional breakdown of socio-economic value of commercial sector*

7.21 It is also instructive to describe the socio-economic value of the commercial salmon fishing sector on a regional basis. In Table 7.8 we present our estimates for the present socio-economic value of the commercial resource based on each of Scenarios 1-2 for the commercial salmon catch and adjusting for the cost of imported inputs.

**Table 7.8: Scenarios for Socio-economic Value of Commercial Wild Salmon Sector - Regional Breakdown for Scenario 1 - € Million**

| Regional Fisheries Board Area | Present Value over period 2002-2012 at 5% discount rate - € Million | |
|---|---|---|
| | **Scenario 1** | **Scenario 2** |
| Eastern | 465,674 | 462,930 |
| Southern | 4,768,637 | 3,167,869 |
| South West | 9,614,941 | 6,297,558 |
| Shannon | 3,068,350 | 2,080,472 |
| Western | 3,054,198 | 1,872,326 |
| North West | 7,354,693 | 4,570,027 |
| Northern | 5,718,580 | 3,886,443 |
| Foyle (half) | 1,890,342 | 1,580,760 |
| **Total** | **35,935,414** | **23,918,386** |

Source: Indecon calculations based on Scenario 1 for the commercial salmon catch, adjusted to reflect imported inputs.

7.22 According to the estimates, under Scenario 1 for the salmon management regime, the present socio-economic value of the commercial salmon fishing sector could range between €0.47 million in Eastern fisheries region and €9.6 million in the case of the South West region. Alternatively, under the assumption of a 50% reduction in the drift net commercial salmon catch by 2005, the present socio-economic value of the commercial fishery is estimated to range between €0.46 million in the Eastern region and €6.3 million in the South West region.

***Value added from Downstream Activities***

7.23 The above estimates of the economic impact of revenues generated in the commercial salmon fishing sector include only the impacts stemming from the direct incomes generated from the sale of fish at the point of landing by commercial fishermen. It should be noted, however, that additional value added is likely to accrue from the activities of downstream sectors, including fish processing and smoking. Accurate measures of actual and potential value added stemming from activities in these areas are not available to the consultancy team, and the extent of potential value added from downstream activities will also depend on the distribution of sales and disposals of salmon landed by commercial fishermen. On the latter, analysis of tagging scheme data for the drift net sector reveals that in 2002 72% of the salmon catch was sold to licensed salmon dealers (including fishmongers), while almost 15% of landed fish were sold privately[39]. Evidence from Bord Iascaigh Mhara (see paragraph 4.29, Section 4) suggests that significant value may be added to the sale price of salmon following smoking, processing and other activities.

7.24 However, it should be noted that interpreting downstream activities as adding to the overall economic value of the commercial fishing sector is likely to be false. This is because these activities are independent of the fishing sector and indeed raw material inputs required by downstream businesses may be imported in the absence of a domestic supply source.

[39] Source: Central Fisheries Board, *Wild Salmon and Sea Trout Tagging Scheme Fisheries Statistics Report for 2001 and 2002*.

***Socio-economic costs and expenditure on protection and surveillance***

7.25 The net socio-economic contribution of the commercial salmon fishing sector should also be adjusted to take account of the costs of protection and surveillance. Expenditure on protection and surveillance can be regarded as a socio-economic cost of preserving the wild salmon resource and should therefore be subtracted from the benefits yielded from this resource. However, expenditure by the fisheries boards on protection and surveillance activities is not targeted exclusively at the commercial fishing area and includes activities directed at protecting the inland stretches of salmon rivers, including the rod & line sector.

7.26 In the absence of a breakdown of expenditure devoted to the commercial fishing versus other areas, we have not, therefore, subtracted protection & surveillance expenditures from the value of the commercial salmon revenues. However, from our research with the fisheries boards, we are not of the view that the level of expenditure on this area would fall significantly under a scenario of a reduced commercial catch, since significant protection and surveillance resources would have to be redirected to the inland sector.

## Scenarios for the Salmon Angling Sector

7.27 Our estimates of the socio-economic value of the salmon angling resource also utilise a range of scenarios for the rod & line wild salmon catch. These scenarios are based on the following assumptions:

- Scenario 1 - Regional rod & line catch remains constant at estimated 2002 level;
- Scenario 2 – Equal to catch under Scenario 1 above *plus* 20% of difference between Scenario 2 and Scenario 1 commercial drift net catch re-allocated to rod & line;
- In each scenario it is assumed that the regional breakdown of the rod & line catch is divided in the same proportion as the 2001 catch. Alternative assumptions can be used for the percentage of difference would apply and the above analysis should be seen as illustrative.

7.28 The basis of our scenarios for the rod & line catch is that a proportion of the reductions in the commercial catch described under each of our commercial catch scenarios earlier in this Section is re-distributed to the rod & line catch. This assumption stems from previous research on the responsiveness of the angling sector to increased stocks of fish, which has shown that anglers will only take a proportion of increased stock availability[40]. The previous research has shown that the long-term average historical rod exploitation rate varies in the range 15-20%. In developing our scenarios for the rod & line salmon catch we have used an assumption of a 20% rod exploitation rate and have applied this rate in re-distributing to the rod & line sector a portion of the reduction in the drift net commercial catch described earlier. It is assumed that the remainder of the reduction in the commercial catch goes to spawning escapement and natural mortality of the stock, and that the existing draft net and other commercial catch remains constant.

7.29 The approach taken above reflects the scientific advice in relation to the requirement to reduce the total salmon catch in order to meet the conservation limits on spawning escapement required in each of the river systems. However, it is important to note that the scenarios presented in this evaluation are indicative only. Alternative options regarding the future management of the wild salmon resource may include differing approaches in relation to both the size of the reduction in the commercial catch and the redistribution of this reduction to other sectors, including the rod & line sector.

7.30 A summary of the projected rod & line salmon catch based on the above two scenarios is shown in Table 7.9 below. A regional breakdown of each of these scenarios is presented in the annexes to this report. Under the assumption of a continuation of the current management regime, the rod & line catch is assumed to remain constant at around 26,000 salmon per annum. Under Scenario 2, 20% of the 50% reduction in the drift net commercial catch is redistributed to the rod & line sector, bringing about an increase in the angling catch to 43,992 fish per annum from 2005.

[40] For example see Whelan, K. F., B. J. Whelan and G. Rogan, *Catch as a Predictor of Salmon Stock in the Burrishoole Fishery, Co. Mayo, Western Ireland*, and Gargan, P., J. Stafford and N. O Maoileidigh, *The Relationship between Salmon Rod Catch, Stock Size, Rod Exploitation and Rod Effort on the Erriff Fishery, Western Ireland*, both in *The Interpretation of Rod and Net Catch Data*, Atlantic Salmon Trust, November 2001.

**Table 7.9: Scenarios for the Total Rod & Line Wild Salmon Catch - 2002-2012 – Annual No. of Salmon**

| Scenario | 2002 | 2004 | 2006 | 2008 | 2010 | 2012 |
|---|---|---|---|---|---|---|
| Scenario 1 | 26,074 | 26,074 | 26,074 | 26,074 | 26,074 | 26,074 |
| Scenario 2 | 26,074 | 39,335 | 43,992 | 43,992 | 43,992 | 43,992 |

Source: Indecon scenarios

# Present Socio-Economic Value of Salmon Angling

7.31 In calculating the present socio-economic value of the salmon angling resource we have utilised the following elements described in Section 6:

- Estimated total value of domestic salmon angling, based on average expenditure per angler per day, average no of days per trip, average no. of trips per year and the estimated number of active domestic anglers.
- Above estimated on a regional basis but based on the regional breakdown of the number of salmon licences issued.
- Estimated total value of overseas angling market based on number of out-of-State visits and the average spend per visit. This is then estimated on a regional basis using the same approach as in the case of domestic anglers.
- Projections for total domestic and overseas expenditure adjusted in line with projected consumer price inflation.
- Application of multiplier to spending by out-of-State angling visitors.
- Adjustment to reflect displacement impact of domestic angling activity.

*Projecting the value of domestic angling resource*

7.32 Our approach to projecting the value of the domestic salmon angling resource is to assume that the estimated net socio-economic value of expenditure by domestic anglers (estimated in section 6) grows in line with the projected rod & line catch at regional level over the period 2002-2012. It should be noted that the net socio-economic estimates reflect a downward adjustment to take account of the displacement impact of expenditure, in that much of the above expenditure may have been spent on other activities in Ireland, if not made in relation to salmon angling. This adjustment is described in Section 6 (paragraph 6.80).

*Projecting the value of overseas salmon angling tourism*

7.33 We apply a similar approach to the projection of the annual value of overseas salmon angling tourism to Ireland. This assumes that the value of the overseas salmon angling sector (estimated in Section 6) grows in line with the projected rod & line catch at regional level over the period 2002-20012.

*Scenarios for present socio-economic value of overall salmon angling resource*

7.34 Our estimates for the present socio-economic value of the salmon angling resource over the period 2002-2012 based on each of the scenarios described above, showing the value of the domestic and overseas sectors, are summarised in Table 7.10 below. It should be stressed that this is based on the assumption that an increase in the number of catch by the angling sector is reflected in a proportional increase in economic value of salmon angling. This is likely to represent an upper case estimate and some discounting of these values may be appropriate. We implicitly take account of this in our consideration of policy options.

| Table 7.10: Scenarios for Present Socio-economic Value of Salmon Angling Resource over period 2002-2012 - € Million | | | |
|---|---|---|---|
| | Present Socio-economic Value over period 2002-2012 @ 5% discount rate - € Million | | |
| **Scenario** | **Total** | **Domestic Angling** | **Overseas Visitors** |
| Scenario 1 | 91.6 | 38.1 | 53.5 |
| Scenario 2 | 146.8 | 61.1 | 85.7 |
| Source: Indecon calculations | | | |

*Regional breakdown of scenarios for socio-economic value of salmon angling*

7.35 It is also instructive to consider a regional breakdown of our scenarios for the value of domestic and overseas salmon angling. In Table 7.11 we present a regional breakdown of our estimates for the present value of domestic and overseas salmon angling based on Scenario 1 for the rod & line salmon catch. As described previously, this scenario assumes a continuation of the present management regime in respect of the commercial fishery and assumes a constant rod & line angling catch over the projection period.

| Table 7.11: Regional Breakdown under Scenario 1 for Present Socio-economic Value of Salmon Angling Resource over period 2002-2012 - € Million | | | |
|---|---|---|---|
| | Scenario 1 - Present Value over period 2002-2012 @ 5% discount rate - € Million | | |
| **Region** | **Total** | **Domestic Angling** | **Overseas Visitors** |
| Eastern | 8.6 | 3.6 | 5.0 |
| Southern | 10.6 | 4.4 | 6.2 |
| South West | 15.0 | 6.2 | 8.7 |
| Shannon | 6.0 | 2.5 | 3.5 |
| Western | 8.1 | 3.4 | 4.8 |
| North West | 27.2 | 11.3 | 15.9 |
| Northern | 16.1 | 6.7 | 9.4 |
| **Total** | **91.6** | **38.1** | **53.5** |
| Source: Indecon calculations | | | |

7.36 Table 7.12 presents a regional breakdown of the estimated net socio-economic value (in present value terms) of the domestic and overseas salmon angling expenditure over the period 2002-2012 based on Scenario 2 for the rod & line salmon catch. This scenario assumes that the angling sector will capture 20% of the reduction in the drift net commercial catch of 50% by 2005, described earlier.

**Table 7.12: Regional Breakdown under Scenario 2 for Present Socio-economic Value of Salmon Angling Resource over period 2002-2012 - € Million**

| | Scenario 2 - Present Value over period 2002-2012 @ 5% Discount Rate - € Million | | |
|---|---|---|---|
| **Region** | **Total** | **Domestic Angling** | **Overseas Visitors** |
| Eastern | 8.6 | 3.6 | 5.0 |
| Southern | 16.8 | 7.0 | 9.8 |
| South West | 29.0 | 12.1 | 16.9 |
| Shannon | 16.3 | 6.8 | 9.5 |
| Western | 12.3 | 5.1 | 7.2 |
| North West | 35.7 | 14.8 | 20.8 |
| Northern | 28.1 | 11.7 | 16.4 |
| **Total** | **146.8** | **61.1** | **85.7** |

Source: Indecon calculations

# Value of Commercial versus Rod & Line Salmon

7.37 An alternative perspective on the relative socio-economic value of the commercial and angling sectors can be examined on the basis of the average socio-economic value per fish caught in each of the sectors. In Table 7.13 we indicate the average net socio-economic value per salmon landed in the commercial sector based on our base case scenario for the commercial catch and our estimates of the overall net socio-economic value of this catch. Our calculations suggest an average net socio-economic value for commercial salmon of €22 in 2002, which remains at this level throughout the projection period 2002-2012. Given our assumption of a constant average price per salmon landed under each of our scenarios, it should be noted that the average socio-economic value of €22 per fish landed does not alter under the scenarios.

**Table 7.13: Scenarios for Socio-economic Value of Commercial Salmon Sector – Estimated Current Average Value per Fish Caught - €**

| Scenario | 2002 |
|---|---|
| Scenario 1 | 22 |
| Scenario 2 | 22 |

Source: Indecon calculations based on base case scenario for the commercial catch and value of catch.

7.38 In Table 7.14 we indicate the average net socio-economic value per salmon landed in the angling sector under each of our scenarios for the rod & line catch. Our estimates under Scenario 1 suggest that the average socio-economic value for fish remains constant at €423 throughout the projection period. This reflects our assumption of a constant annual catch under the base case scenario.

**Table 7.14: Scenarios for Annual Socio-economic Value of Salmon Angling Sector - Average Value per Fish Caught - €**

| Scenario | 2002 | 2004 | 2006 | 2008 | 2010 | 2012 |
|---|---|---|---|---|---|---|
| Scenario 1 | 423.1 | 423.1 | 423.1 | 423.1 | 423.1 | 423.1 |
| Scenario 2 | 423.1 | 437.9 | 440.9 | 440.9 | 440.9 | 440.9 |

Source: Indecon calculations based on scenarios for the rod & line catch and net socio-economic value of salmon angling

7.39 The average socio-economic value per salmon landed in the angling sector under scenario 2 for the rod & line catch are also shown in Table 7.14. Under scenario 2, the average socio-economic value increases from €423.1 in 2002 to €441 by 2006.

# Conclusions

7.40 In this section we developed our estimates for the socio-economic value of the commercial and rod & line salmon fisheries based on a range of scenarios for the salmon management regime in Ireland. While these scenarios are designed to be indicative, they are instructive in terms of considering the impact on the value of the wild salmon resource based on differing assumptions regarding the allocation of the salmon catch. A number of key observations can be made in relation to the estimates we have derived in this section, as follows:

- Under the assumption of a continuation in the present management regime and a constant commercial salmon catch at 2002 levels, the present net socio-economic value of the commercial fishery is estimated at €35.9 million. On the same basis, we would estimate that the overall salmon angling resource would be valued at €91.6 million in present value terms;
- Under the assumption that changes are implemented in the management regime to bring about a 50% reduction in the commercial drift net salmon catch by 2005, we estimate that the present net socio-economic value of the commercial fishery would fall to €23.9 million. However, assuming that 20% of the reduction in the drift net catch is captured by the angling sector and that there is a proportional increase in revenue, the net socio-economic value of the latter sector would rise to €146.8 million in present value terms.

Chapter 8

# Recommendations re Options/Models for Sustainable Management

# 8 Recommendations re Options/Models for Sustainable Management

8.1 In this section we set out our recommendations in relation to the options available for the future sustainable management of the wild salmon resource in Ireland. We begin by presenting an overview of recent changes in the management of the wild salmon resource in other countries, focussing on the experiences in Canada, Greenland and the Faroes, the Britain and Northern Ireland.

## Review of Salmon Management in Other Countries

8.2 In developing our recommendations for the management of the salmon resource in Ireland, it is instructive to examine the experiences in other countries and, in particular, the key reforms that have been implemented in the salmon fisheries in these countries with the objective of ensuring the sustainability of the resource. We begin by considering the changes introduced in Canada.

*Reforms in the Salmon Management Regime in Canada*

8.3 Following a range of reforms implemented by successive Canadian governments since the 1970s, there are no longer any commercial Atlantic salmon fisheries in operation along Canada's east coast. While commercial salmon fishing had been discontinued in the other three Atlantic provinces since 1984, in 1992 a number of changes in the commercial and rod & line salmon fisheries in Newfoundland and Labrador were announced, including:

- A minimum five-year moratorium/set-aside on commercial Atlantic salmon fishing off Newfoundland;
- Introduction of a voluntary retirement offer, including compensation, to commercial fishermen in Newfoundland and Labrador;
- Reduction in fishing quotas in the Labrador fishery upon retirement of commercial licences from the fishery;
- Application of strict quotas on angling, including a catch & release policy across many rivers.

8.4 It is instructive to examine in more detail the nature of the Canadian voluntary retirement offer to commercial fishermen in Newfoundland and Labrador. In 1992 it was recognised that the commercial salmon catch was declining substantially both in terms of size and economic importance. At the time, preliminary indications were that the value of salmon landings in 1991 was less than a third of their level in 1980. It was within this context that the governments of both Newfoundland and Labrador proposed a *voluntary* commercial licence retirement programme. The essence of this programme was that fishermen would be encouraged to turn in their gear and retire licences issued in their names in return for ex-gratia payments of between C$8,000 and C$50,000, depending on the level of the retiree's salmon landings in the best year our of the last three. Coincident with the offer, a minimum five-year close of the insular Newfoundland salmon fishery was announced.

8.5 In the case of Labrador, it was recognised that the province had a high dependence on salmon and limited prospects for fisheries diversification. With this in mind, no moratorium was announced in the province. However, a *voluntary* licence retirement programme was offered under essentially similar terms as in the case of Newfoundland. However, those fishermen who chose to retain licences would not be free to take up the catch foregone by those who accepted retirement. Thus, the total allowable salmon catch in Labrador would diminish in the same proportion as licenses were retired.

8.6 A number of detailed aspects of the retirement offer in Canada are notable, as follows:

- The offer remained in force from the date of announcement until October 31, 1992, while Labrador fishermen whose claims were not settled by the opening of the commercial fishing season in early June 1992 did not have their claims processed until October 1992;
- Licences were retired permanently;
- As a condition of compensation, licence retirees would turn in their salmon nets at a time and place to be indicated by the Department of Fisheries and Oceans (DFO);
- Retirees were offered either:
    (i) As a minimum, an ex-gratia payment of C$8,000, if they chose not to, or do not have documents acceptable to the DFO establishing the value of their salmon landings;

(ii) An ex-gratia payment equal to eight times the value of the retiree's salmon landings in the best year out of the past three years, up to a maximum of C$50,000 per retiree. This must be documented by purchase slips or other verificable receipts.

- Payments would be made at the time the licence is retired, the gear turned in and the fishermen have accepted the compensation offered;
- Those who chose to retain and renew commercial salmon licences would not be compensated for any fishery closure. If it is decided to re-open the fishery at a later date, subject to policies in effect at that time, those who retained and renewed their licences would be able to fish again. There is no guarantee this fishery would ever re-open, however;
- Those who voluntarily retire their licences may be considered for re-entry if the fishery re-opens and new licences are issued, subject to the policies in effect at that time.

8.7 In relation to the recreational fishery, the 1992 Canadian reforms required that anglers make a reduction in effort consistent with the overall conservation and sustainable development objectives of the Recreational Fisheries Development Cooperation Agreement. Specific measures were implemented in respect of the recreational fishery on a river-by-river basis. These included river-specific quotas on the salmon catch by rod & line; changes in opening and closing dates for angling seasons; imposition of bag limits, "grilse only" retention and catch and release fishing (particularly for multi-sea winter salmon); or combinations of these measures, following consultation with angling representative bodies.

8.8 The Canadian reforms have been based in the application of the Precautionary Approach to conservation, management and exploitation of the salmon resource. This approach means that, in the absence of reliable and sufficient scientific and other information on the status of the resource, conservation measures should not be postponed.

*Reforms in the Salmon Management Regime in Greenland and the Faroe Islands*

8.9 Another instance in which wide-ranging reforms were implemented in relation to the salmon management regime was in respect of the salmon fishery in Greenland and the Faroe Islands. Since the late 1980s a number of reductions were implemented in respect of commercial fishing quotas in the west Greenland fishery, bringing the quota from a level of 900 tons in 1989 to a low of 77 tonnes in 1995, based on scientific research indicating seriously low levels of salmon stocks.

8.10 In the case of the Faroe Islands, between 1991 and 1998 the Faroese commercial salmon fishermen agreed to suspend fishing for the salmon quota set by North Atlantic Salmon Conservation Organisation (NASCO)), in exchange for compensation payments.

8.11 In the case of the 1991 agreement reached with the Faroese fishermen, compensation was provided in return for not fishing their quotas (which were set by NASCO) for a period of three years. Under this buy-out programme, the NASCO quotas of 550 tons was purchased by the North Atlantic Salmon Fund (NASF) while a compensation package was calculated on the basis 27% of the landed value of the quota. However, it is notable the cost of this buy-out was to be bourn by a number of countries identified as likely to benefit from the cessation of fishing. One of these countries – Norway – paid for its share through the addition of a levy on all salmon angling licences. A further agreement with the Faroese fishermen was reached in 1994, ensuring a moratorium on fishing for another three years until 1997.

*Reforms in the Salmon Management Regime in the United Kingdom*

8.12 A number of set-aside and buy-out programmes in the commercial salmon fishery have been introduced or are planned in Britain. In England and Wales, commercial fishermen have received compensation to cease fishing for all or part of the season on many rivers. In addition, a number of mixed stock fisheries continue to be phased out. In the largest of these mixed stock fisheries, the North East coast fishery, the number of commercial drift net licences has fallen to 70 in 2001, a 51% reduction since the phase-out commenced in 1992.

8.13 In England, the government announced in 2000 that it would provide up to STG£750,000, subject to matching funds from interested parties, to launch compensation arrangements designed to speed up the phasing out of mixed stock salmon fisheries on a voluntary basis. In this respect, discussions are ongoing between fishermen on the North East coast fishery and funding bodies, though negotiations have yet to be finalised. Up until the negotiation of the current voluntary compensation agreement, the previous phase-out programme was based on the extinguishing of licences following the retirement of fishermen, but this approach had proved ineffective in arresting the decline in salmon stocks.

8.14 In Scotland, drift netting has been prohibited since 1962. The voluntary practice of catch and release in the salmon angling fishery continues to increase, rising from 32% in 2000 to 39% in 2001, according to NASCO. In addition, a voluntary programme entailing the deferment of the start date of the commercial fishing season by 6 weeks to conserve early-running salmon has been implemented with some success.

8.15 In Northern Ireland, a number of reforms have been introduced in the salmon management regime in recent years. These have included the imposition of restrictions on the length of the commercial netting season, and the introduction of a voluntary buy-out of commercial net fisheries, based on 75% government funding and 25% private funding. In the Foyle fishery, the number of drift and draft net licences has been capped.

# Recommendations re Models for Management of Wild Salmon Resource in Ireland

8.16 From our analysis in the previous sections and our research on international approaches to salmon management, we have identified a range of reforms that we believe would assist in maximising the overall economic return from, and ensuring the long-term sustainability of the wild salmon resource in Ireland. Our analysis indicates that the balance of advantage on economic/socio economic grounds can best be achieved through a rebalancing of wild salmon exploitation from the commercial fisheries towards tourist angling. To achieve this, urgent progressive reforms both of the commercial and angling sectors are required. Our recommendations are based on the requirement that wild salmon exploitation must occur within the context of meeting stock conservation requirements. Priority must be given to ensuring that sufficient salmon are allowed to escape upriver to spawn. Consideration of how the remainder of the salmon run should be exploited can only take place when spawning requirements are provided for. We summarise our recommendations in Table 8.1 below and discuss each element further in the subsequent paragraphs.

**Table 8.1: Summary of Recommendations re Options for Future Sustainable Management of Wild Salmon Resource in Ireland**

1 - WE DO NOT RECOMMEND THE ENDING OF COMMERCIAL SALMON FISHING BUT BELIEVE THE LEVEL OF CATCH SHOULD BE ALIGNED WITH SUSTAINABLE DEVELOPMENT.

2 - WE RECOMMEND THAT A REBALANCING OF EXPLOITATION BETWEEN COMMERCIAL AND ANGLING SECTORS SHOULD BE ACHIEVED BY ONE OR MORE OF THE FOLLOWING INCENTIVES:

- A. IMPLEMENT APPROPRIATE REDUCTION IN COMMERCIAL SALMON CATCH THROUGH REVISION IN COMMERCIAL QUOTAS AND RESTRICTION OF NEW ENTRANTS.
- B. PROVIDE CONTINUED SUPPORT FOR SET-ASIDE SCHEMES AT LOCAL LEVEL WITHIN THE COMMERCIAL SECTOR.
- C. REDUCE COMMERCIAL SALMON FISHING THROUGH INTRODUCTION OF VOLUNTARY BUY-OUT PROGRAMME.

3 - WE RECOMMEND THAT POLICY CONSIDERATION SHOULD BE GIVEN TO A SINGLE STOCK APPROACH TO EXPLOITATION AS A PRIORITY.

4 - WE RECOMMEND THAT CONSIDERATION SHOULD BE GIVEN TO INTRODUCING INDIVIDUAL QUOTAS ON COMMERCIAL SALMON LICENCES.

5 - WE RECOMMEND THAT APPROPRIATE RIVER MANAGEMENT STRUCTURES RELATING TO TOURIST ANGLING AVAILABILITY AND ACCESS SHOULD BE PUT IN PLACE.

6 - WE RECOMMEND THAT UNCERTAINTIES RELATING TO FISHERIES OWNERSHIP SHOULD BE ADDRESSED.

7 - WE RECOMMEND ON-GOING TARGETED ANGLING MARKETING STRATEGIES TO ENSURE THAT THE ECONOMIC AND SOCIAL BENEFITS OF SALMON RESOURCES ARE REALISED.

8 - WE RECOMMEND THAT DEVELOPMENT AGENCIES SHOULD ACTIVELY ASSIST FISHERMEN IN SECURING OPPORTUNITIES IN RELATED SECTORS.

**1. We do not recommend the ending of commercial salmon fishing but believe the level of catch should be aligned with sustainable development.**

8.17 Our economic analysis showed a very marked difference in the average national economic return per salmon between the commercial fishing sector and the angling sector. It would, however, be a mistake to assume that average returns equate to marginal returns and we have not seen convincing evidence to support a cessation of commercial salmon fishing at this stage. Our research has shown that there may be certain circumstances where the balance of advantage for a community may lie in the continuance of a commercial fishery. Examples of this are where the potential for the development of tourism angling is either limited or is not present in the river or where the increased numbers of salmon that will escape up river following the cessation of the commercial fishery would exceed the optimum required for angling and spawning. However, the dramatic differences in the levels of economic return between the sectors clearly demonstrates the economic and social merits of reducing the level of catch by salmon fishermen to levels consistent with sustainable development and with the marginal economic and social values of alternative uses. Our proposals, if implemented, would envisage that all sectors utilising the resource (namely commercial salmon fishermen, tourist anglers, local anglers and recreational users of the countryside) would continue to do so but that policy should be driven by the economic and social returns and by the scientific advice concerning sustainability.

**2. We recommend that a rebalancing of exploitation between commercial and angling sectors should be achieved by one or more of the initiatives outlined below:**

8.18 This re-balancing should be undertaken in a planed manner that ensures the overall identified economic/socio-economic return is achieved. Advance consultation with all the relevant stakeholders should take place. It is critical that the State's strategy is well set out and its implementation continually monitored. Re-balancing must be approached in a sensitive manner that acknowledges the historical exploitation patterns and regimes around the country and the importance that income from the commercial fishery has in supplementing the incomes of some fishermen in peripheral areas along the coast.

**2 (A) – IMPLEMENT APPROPRIATE REDUCTION IN COMMERCIAL SALMON CATCH THROUGH REVISION IN COMMERCIAL QUOTAS AND RESTRICTION OF NEW ENTRANTS**

8.19 In transition to a more optimal management of the wild salmon of resource in Ireland over the medium term, we would recommend that consideration be given to implementing an appropriate reduction in the extent of commercial salmon fishing, while restricting new entrants to the fishery. This approach would require a revision of the current quota regime and would entail the following specific requirements:

- Revised quotas should take account of scientific evidence in relation to conservation requirements to ensure sustainability of salmon stocks;
- Extinguish existing licences upon retirement of fishermen;
- The requirement to ensure that appropriate levels of stock are available to secure the economic benefits of tourism angling;
- Facilitate extension of effective local management through, for example, adjustments to seasons or enabling closure of fisheries, or parts of fisheries, during low salmon runs or emergency conditions (e.g. droughts). This may require legislative change to give the regional fisheries boards more powers in this area.

**2 (B)– INTRODUCE VOLUNTARY SET-ASIDE SCHEMES AT LOCAL LEVEL WITHIN THE COMMERCIAL FISHING SECTOR**

8.20 A second option to achieve our recommendations for addressing the sustainable future management of the salmon resource in Ireland would be to introduce set-aside schemes that facilitate a temporary cessation of commercial fishing. The objective of such a measure would be to assist stock replenishment through restrictions on fishing for a specified period of time (typically five years). A number of issues would have to be considered within the context of designing a successful set-aside programme, including:

- Set-aside should be voluntary in nature and negotiated at local level within national guidelines, be co-ordinated nationally and should involve commercial fishermen and other stakeholders who would stand to benefit from increased escapements of fish;
- An appropriate level of compensation would have to be negotiated with fishermen. This should reflect licence holders' salmon catches over a specific number of years. We believe, however, that in the interests of equity, consideration should be given to the provision of a minimum level of compensation to all licence holders, while those declaring a verifiable catch over the relevant time period may receive additional compensation dependent on the catch level. A maximum level of compensation should, however, be set for all licence holders.

**2 (C) - REDUCE COMMERCIAL SALMON FISHERY THROUGH INTRODUCTION OF VOLUNTARY BUY-OUT PROGRAMME.**

8.21 From our analysis of the state of salmon stocks and, in particular, the long-term downward trend in salmon catches, we believe that strong consideration should be given to the potential long-term economic and social benefits of substantially curtailing the commercial salmon fishery and managing the rod & line fishery within safe conservation limits. We believe that this objective may be achieved through a reduction in fishing through the application of a voluntary buy-out scheme. The objective of such a scheme would be to reduce the number of licences through a mechanism that compensates these licence holders on the basis of projected loss of income from salmon fishing as a result of the termination of fishing rights. Buy-out schemes have previously been successfully implemented in a number of other countries, including Canada and Iceland.

8.22 Within the Irish context, if this approach was pursued, we believe there are a number of important issues that would need to be considered within the context of the design of a buy-out programme, including:

- Buy-outs to be voluntary and negotiated at local level, and should involve commercial fishermen and other stakeholders who would stand to benefit from increased escapements of fish. Any agreements should however be in the context of clearly defined national parameters and be co-ordinated nationally;
- Licence holders opting to retire their licences would do so on a permanent basis;
- An appropriate level of compensation should be set, which reflects drift net licence holders' salmon catches over a specific number of years. It is, however, important to ensure that significant payments are not made for licence holders who only catch a small number of fish. Linking payment to the reported number of salmon caught, of say €50 - €100, may merit consideration.
- A maximum level of compensation should be set for all licence holders.
- We would recommend that funding of compensation for a buy-out programme should be on the basis that remaining sectors standing to benefit from elimination of the commercial fishery contribute to a fund. We believe that an equitable approach in this regard could involve remaining commercial licence holders, anglers, fishery owners and a minority co-financing by the exchequer. International funding may also be available;

- If any exchequer funds were provided to contribute to a voluntary buy-out scheme, commercial quotas for remaining licence holders should be reduced by 20% of any quota purchased until the level of commercial catch equated to the levels recommended by independent scientific advice.

**3. We recommend that policy consideration should be given to single stock approach to exploitation.**

8.23 In order to maximise the socio-economic return, we recommend that policy consideration should be given to introduction of a single stock approach to exploitation. It has been suggested to Indecon by the Central Fisheries Board and others that it is not possible to ensure that all salmon stocks are maintained at above conservation limits under the present fisheries regime. For this to be achieved it has been suggested to us that salmon must be exploited and managed on an individual river catchment basis and that this requirement makes the mixed stock fishery untenable. The Salmon Management Task Force (1996) and NASCO have recommended that wild salmon should be managed on a single stock basis.

8.24 Salmon home with great accuracy to their natural river and to discrete areas within those rivers from which they themselves originated. It is this homing phenomenon that allows the development and maintenance of genetically and biologically distinct populations that are adapted to their environments. Each river in Ireland has at least one discrete salmon population. Many of the larger rivers may have several such distinct populations.

8.25 These populations can differ in a number of respects that are important in determining the fitness and the long term productivity of the population e.g. run timing, age of maturity and age of smoltification. These populations differ also in a number of important parameters e.g. size of the effective breeding population (50 to 5,000) reproductive rate etc. In order to maintain the long term sustainability of these populations it is important that exploitation is managed to take account of the biological differences of these discrete stocks.

8.26 Salmon reproducing in different river systems are significantly genetically different. Therefore in order to reduce the risk of over exploiting individual stocks it has been suggested that salmon should be exploited on a single river catchment basis.

8.27 At present in Ireland salmon are exploited predominately by drift nets in a mixed salmon stock environment. By its nature this means that salmon from many populations are taken irrespective of the size or health of the contributing population.

**4. We recommend that consideration should be given to introducing individual quotas on commercial salmon licences.**

8.28 We believe there is a case for introducing maximum individual quotas on commercial salmon licences related to previous reported levels. This, combined with overall quotas, would assist in the overall reduction in catch to more sustainable and economically justified levels but would ensure that no existing licence holder was worse off due to this specific recommendation. This would be particularly important if the exchequer was to contribute to any voluntary buy out scheme as, in the absence of this, one could find a scenario where the exchequer part funded purchasing licences while some existing licence holders increased their catch. The individual quotas could be based on a maximum of 120% of the highest level of catch reported by the licence holder in the period 2000–2002. This would facilitate small-scale traditional fishermen to continue in operation.

**5. We recommend that appropriate management structures relating to tourist angling availability and access should be put in place.**

8.29 To secure increased economic benefit it is not sufficient just to allow additional salmon up river. It is critical that the management structures in the rivers are such that they facilitate and encourage increased tourist angling. Proper and unchallenged access and information (including on where to fish and related matters, local and national regulations and on available accommodation) must be provided.

**6. We recommend that uncertainties relating to fisheries ownership should be addressed.**

8.30 The historical ownership and management structures in many of our rivers should be reviewed to ensure they are conducive to maximising economic and social benefits. We understand that ownership of many stretches of salmon water in Ireland is unclear. This applies particularly to what were traditionally called the "Land Commission Fisheries" and which are now in the ownership of the Central Fisheries Board. Allowing significant increased escapement up river in these areas where ownership is not well established will not necessarily result in the increased economic return identified in this report. These ownership/management issues should be addressed as a priority.

**7. We recommend on-going targeted angling marketing strategies to ensure that the economic and social benefits of salmon resources are realised.**

8.31 To ensure that the economic and social benefits of Ireland salmon resources are realised, targeted angling marketing strategies are essential and these should be continually monitored. Monitoring should encompass a robust monitoring system for angling tourism numbers and expenditure.

8.32 It is important that all stakeholders within the sector take responsibility for the implementation of this marketing strategy.

**8. We recommend that development agencies should actively assist fishermen in securing opportunities in related sectors.**

8.33 If the salmon angling tourism sector is developed it will be important from both socio-economic and equity perspectives to ensure that this provides opportunities for fishermen in local regions to share in the economic returns that would be realised. We therefore recommend that the development agencies should actively assist fishermen to develop businesses in related sectors and to develop the skills required.

# Conclusions

8.34 The recommendations outlined above are designed to maximise the overall economic return from wild salmon and to ensure the long-term sustainability of this important and valuable resource.

## Annex 1

# Summary of Main Submissions Made to Consultancy Team

# Annex 1 Summary of Main Submissions Made to Consultancy Team

In this annex we present the key points noted in a range of the main submissions made to the consultancy team by the fisheries boards and other fisheries organisations during the course of this study. A range of views in relation to the current evaluation were submitted to the consultancy team. It is instructive to re-state the main observations made.

### *Bord Iascaigh Mhara*

According to Bord Iascaigh Mhara (BIM), research carried out in 2002 indicated that assuming an average first sale value of wild salmon of €5/kg, the total value of the 2000 catch is €3 million. Furthermore, BIM point out that the success of the wild salmon quality initiative led to considerably improved prices in 2002, at an average of €7/kg (€3.18 per lb). This increased BIM's estimate of the value of the fishery to €4.2 million representing some 11% of the total value of landings by the sector.

According to BIM however, the use of first sale value does not give a true picture of the value of the wild salmon catch as at least 50% of the catch goes to the smoking industry. The Board points out that with smoking there is a considerable increase in the value of the fishery, from €7/kg for whole fish to the fisherman, to €50/kg for sides of smoked salmon wholesale and increases further to €80 to €100/kg retail. Furthermore, "if one assumes a yield of 50% from whole salmon and that 50% of the drift net catch goes for smoking the value of this sector alone is €5.6 million at wholesale prices, in addition to €2.6 million for the fresh product, a total of €8.2 million. Due to the premium nature of wild salmon, this figure will only increase in the future. The expansion of the salmon quality initiatives and the general improvement in quality standards that may be anticipated as a result will only accelerate this process."

Bord Iascaigh Mhara conclude that "the wild salmon fisheries represents a vital and significant income source for the Irish inshore fishery sector, not only in monetary terms but also in reducing the pressure on other traditional inshore stocks, thus contributing to their long-term sustainability. There are a limited number of alternative income sources for the sector and BIM is actively seeking to identify viable new opportunities. However none identified to date are likely to match the salmon fishery in terms of value, geographical spread and accessibility."

### *North Western Regional Fisheries Board*

In this submission to the evaluation, the CEO of North Western Regional Fisheries Board described a number of aspects of salmon management in the region. It also offered a number of observations on the future of the resource and of salmon management. According to this submission, "any objective analysis of the salmon fishing industry in Ireland would clearly reveal the following.

- All of the scientific evidence clearly points to the need for a substantial reduction in the overall salmon catch;
- All of the available evidence indicated that salmon based tourism angling would result in the salmon resources making a much greater contribution in the economy;
- A substantial reduction in the commercial catch will result in increased runs of salmon to rivers thus making them much more attractive for anglers but a stringent management regime would be an absolute requirement if the increased numbers of salmon were not simply exploited by relatively small numbers of greedy anglers;
- The majority of commercial fishermen now find salmon fishing uneconomical and are anxious to get out of the industry but will continue to take out their licences and to fish unless, and until, some form of incentive is provided to enable them to surrender their licences;
- A small number of dedicated fishermen are anxious to continue fishing and, as it would not be feasible to provide the level of compensation necessary to encourage them to surrender their licences voluntarily, some commercial salmon fishing is likely to continue for the foreseeable future."

A second submission, which reflects the views of the North Western Regional Fisheries Board, indicated that "a reduction in commercial salmon fishing activity is likely to result in increased pressure on stocks of lobster and other inshore species which are fished for by the same fishermen who engage in salmon fishing during the summer months."

### *Friends of the Feale*

Friends of the Feale are a group of anglers and individuals living in the Rockchapel, Mt. Collins and Brosna areas who indicated that they are committed to protecting wild Atlantic salmon and sea trout stocks. The group are currently planning to implement a sustainable and strategic management plan for the fishery. According to the Group, the plan is now imperative as salmon and sea trout stocks are at a critical level. The Group states that there are social and economic benefits to such a development programme which include, youth development, angling, tourism, baseline data, web site etc.

The Group states that there is a multitude of problems, misunderstandings, and misconceptions associated with salmon management. Because salmon and sea trout have invariably managed to survive, and have continued to produce a relatively healthy crop to satisfy human desire, the group suggests there has been very little appreciation of the fact that the resources need to be protected and positively managed. The Group argue that far too much energy has been invested in the study of adult fish when what is required is an understanding of the restrictions within the fresh water environment that affects the Juvenile fish population, which after all are precursors of the adult runs.

According to the Group, all of our rivers have a biological holding or carrying capacity for juvenile Salmon and Sea Trout, which ultimately determine the number of smolt produced. They suggest that the larger the number of descending smolts, the larger the potential run of returning adults. Each river has its own carrying capacity because as the young Salmon and Sea trout develop they become aggressive and territorial. There are only a number of territories available in each river, and this number is determined by a multitude of physical and chemical factors, the main ones being, food supply, water supply of adequate quality and quantity, and sufficient instream and bankside cover.

The Group states that the spawning grounds of the River Feale and its tributaries are of scientific value and must be duly recognised as such by planning authorities conservation bodies and government departments. Most, if not all, land uses impinge on water courses and thus potentially on fisheries. The whole forestry cycle of planting sitks spruce alters both physically and chemically on the water quantity and quality primarily in the headwaters of streams, which are used as spawning and nursery areas. The Group argue that overuse of phosphorus and nitrogen is seriously polluting freshwater habitat and the farming community must show responsibility in this method of farming.

### *Western Gamefishing Association*

The Western Gamefishing Association is an association for the development of gamefishing in the West of Ireland. The Association represents hotels and fishery operators, and also guest houses, ghillies, tackle shops, boat builders, fishing clubs etc in the Western Region of Ireland.

It is the view of the Association that the terms of reference for this evaluation are flawed in that at present and for the foreseeable future a healthy recreational fishery is incompatible with any commercial exploitation of salmon until such a time as the stocks have recovered sufficiently to be above safe biological limits and there is a commercial surplus to harvest.

According to the Association, it does not envisage that a commercial fishery can ever be justified on economic grounds, as the cost to the exchequer of protection and management will always greatly exceed the value of the catch. In 2002 a commercial netsman with one crew would need to kill 600 salmon before break-even, and there are over 800 drift net licenses, according to the Association. The age profile of existing license holders indicates that the practice of 'nominees' to the license will increase further reducing any incentive to protect the resource.

The Association states that even a drastic reduction in the commercial fishery will not necessarily compute into reduced management costs and any increase in price reflecting scarcity value would exacerbate the illegal fishery. Resources currently invested in protection would be better invested in habitat restoration and water quality improvement.

The Association observes that a number of countries have successfully converted from commercial to exclusively recreational salmon fisheries with economic benefit. It particularly recommends consideration of the Canadian and Icelandic models.

The Association states that there are numerous evaluations of the comparable revenue from rod caught and net caught salmon; in their area they estimate the difference in favour of rod caught fish in the community is in the order of €800 per fish.

With regard to the retirement and possible compensation of commercial operators, the Association sees the State as having a principal role as the biggest stakeholder, investor and potential beneficiary. The State and its agencies control 80% of salmon fisheries in Ireland and has availed in recent years of a proportionate amount of funding under the TAM (Tourism Angling Measures). As a National Resource and in view of the fact that a commercial license is discretionary and does not confer a property right on the holder, they are unclear as to the rationale for compensation.

The Association also states that it does not see merit in compensating a sector that has not and does not contribute to the maintenance or enhancement of salmon stocks. In the event that compensation is deemed appropriate it sees the EU fund for early retirement of fisherman as a possible source. The Association believes that the private sector is willing and able to contribute to any compensation on a pro rata basis bearing in mind that a substantial increase in revenue from a viable recreational fishery would result in a commensurate return to the exchequer through employment and services.

*Waterville Fisheries Development Group*

The Waterville Fisheries Development Group was formed in August 2001 with the aim of developing and protecting the Waterville Fishery Catchment. In its submission, the Group states that in Waterville there are approximately 25 ghillies who are dependent on salmon tourist angling for 75% of their livelihood. The salmon season lasts for approximately 9 months and the months of March through September are considered to be the most productive.

According to the Waterville Group, the accommodation providers in the region depend on Golfers and Anglers for most of their business. Anglers are in evidence from January through until October so it is a long accommodation season for providers. A diverse mixture of nationalities visit the region, including anglers from all over Europe and a sizable North American market. British anglers visit Waterville in large numbers and with improved access will travel a number of times each season. The Group states that the domestic market is very dependent in stock. Waterville has a very big reputation as an angling destination but has suffered greatly in the past ten years with a drastic downturn on Salmon stocks. Up to 1991 the average catch on the Waterville system was in the region of one thousand Salmon, but the last two seasons have seen the Salmon catch plummet to under two hundred. The Group has introduced bag limits for Salmon on the entree system. With the collapse of the Salmon runs the Group's angling business has shown a very serious reduction.

The Group estimates that the value of salmon angling to the local economy is in the region of €1.5 million per season, which would improve considerably if more salmon were available to anglers. The Group's figures are based on the following:

| **Waterville Fisheries Development Group – Estimated Spend by Tourist Anglers per Day** | |
|---|---|
| Ghillie with boat and engine | €100 |
| Bed and Breakfast | €35 |
| Lunch | €8 |
| Dinner | €30 |
| Beverages | €20 |
| Travel/ car hire | €40 (assuming 7 day hire) |
| Petrol | €10 (€70 per week) |
| Misc | €10 |
| Fishing tackle | €10 |
| Salmon licence | €3 |
| **TOTAL per day** | **€266** |

According to the Waterville fishery, on the basis that out-of-State anglers stay in the locality for 7 days on average, these figures would suggest a total spend of close to €2000/week. They suggest that some costs are shared but still the average spend per day will be in the region of €200 on average.

Costs are higher if hotel accommodation is taken or if guests wish to fish private waters. The Group estimates that currently there is in the region of 2,000 boat days accompanied by ghillies, which gives an average of up to €700,000 in the local economy.

The Group suggests that boat hire without a ghillie accounts for a very large number of anglers who are generally Irish and who may spend slightly less than their foreign counterparts but would account for approximately a spend of up to €300,000 per season. In addition to these anglers they estimate that there are approximately 100 private boat owners from around the country who visit for extended holidays throughout the season, and while spend is hard to determine it is estimated by the Group to be in the region of €150,000 per year. They also suggest that it is necessary to consider the families of these anglers who travel to Waterville and contribute to the local economy.

### *Delphi Lodge Fishery*

The Delphi Lodge is a private fishery, located in Leenane, County Galway. In its submission to the study, the Fishery has stated that "Delphi may be an important model for several reasons, but most notably because its artificial ranching programme means that salmon rod catchers are broadly similar to what might naturally be expected if there were no commercial salmon net fishery. In this respect, it is almost unique among private-sector tourist fisheries".

In the view of the Fishery, "economic, employment, social and conservation considerations all demand an early shift away from the mixed-stock interceptory drift net fishery toward greater emphasis on spawning runs and tourist angling. Not only is the drift net "industry" not sustainable (due to declining returns) but, with it in operation at current "quota" levels, salmon stocks themselves are not sustainable".

According to Delphi Lodge, "this shift should preferably be accomplished by agreement and that netsmen should be properly compensated for ceasing to fish, the backdrop to all dialogue should be new netting quotas based solely on the best scientific evidence available regarding stock conservation requirements. All indicators from both home and abroad signal a steep and potentially terminal decline in salmon stocks, which cannot be in anybody's long term interests and which can most readily and effectively be reversed by dealing with the netting issue".

The Delphi Lodge does not see any merit in having the point of slaughter of salmon "merely relocated from the high seas into the rivers". It is "fully in favour of restraint being exercised by anglers, perhaps backed by some legal restrictions, but is opposed to mandatory, blanket catch & release requirements, which, based on its commercial experience, would seriously damage the Irish tourist angling industry. The Lodge considers that limited killing is still necessary within an Irish context.

According to Delpi management, "based solely on Delphi's financial and employment data, it is a fact that if only 30 Delphi's existed on Ireland's 70 or so salmon angling rivers, they alone would generate substantial annual revenue of over €20 million per annum and fill-time equivalent employment over 500 people. And these lodges would still be just one component of a mixed salmon angling industry and an eco-compatible general tourism industry. If the Icelandic model were to be followed and scaled up fully to the Irish context, it is far from unrealistic to envisage revenues and employment of four or five times these amounts. This would make the salmon angling industry much more important, for example, that the entire salmon farming and white fish trawling industries combined".

The Delpi Lodge states in its submission that "Ireland could and should be the Mecca for international salmon angling, with very considerable and widely-spread economic and social benefits. These potential benefits have been ignored for far too long for reasons of ignorance or out-dated prejudice".

## Annex 2

# Copies of Survey Questionnaires

# Annex 2 Copies of Survey Questionnaires

- INDECON SURVEY OF COMMERCIAL SALMON FISHERMEN.
- INDECON SURVEY OF OVERSEAS AND DOMESTIC SALMON ANGLERS.
- INDECON SURVEY OF TOURIST INTERESTS.

# ECONOMIC SURVEY OF COMMERCIAL SALMON FISHERMEN

**We would be grateful if you could complete this survey and enclose your response (including any additional supporting pages) in the pre-paid business reply envelope provided. We would like to stress that your response will be treated as Strictly Confidential and will be aggregated with the responses of other commercial salmon fishermen.**

1. Please state the last season in which you operated a commercial salmon fishing operation _____ year.

2. What kind of licence do you hold for commercial Salmon fishing for the current season: Please ✓ as appropriate:

Draft Net ❑ Drift Net ❑ Loop ❑ Snap-Net ❑ Other – please specify _____

3. Please indicate details of current boat(s) owned or part-owned, crew members and ownership share numbers.

| **Type of Boat(s)** | **No. of Persons in crew including yourself** | **Status of Crew** | | | **Non-Fishing Share/ownership Members** |
|---|---|---|---|---|---|
| **Length and other relevant details** | **No.** | **Relatives Assisting – No.** | **Persons in Shared Ownership of Boats – No.** | **Other Employees – No.** | **Number of non-fishing members of shared ownership schemes** |
| | | | | | |

4. Please indicate the approximate average number of days in total during the last fishing season in which each member of the crew was employed on salmon fishing. Average number of days of employment of each crew member during last season _____.

5. Please indicate the approximate % of time you spent at each occupation you were engaged in during the last season.

| | **% of Time** |
|---|---|
| Salmon Fishing | |
| Other Fishing | |
| Farm Work | |
| Other Employment | |
| Unemployment | |
| Other – Please State | |

6. Please indicate the county/county borough in which you usually reside _____.

7. Please indicate the approximate age group of all crew members in the table below.

| **Crew Member** | **Age Group** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **15-19** | **20-24** | **25-34** | **35-44** | **45-54** | **55-64** | **65 years and over** |
| 1st | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| 2nd | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| 3rd | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| 4th | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| 5th | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| 6th | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| Other – please state | | | | | | | |

8. Please indicate the number and total weight of wild salmon caught by you and your crew during the last season
No._____ Approximate total weight of wild salmon catch _____ Llbs or _____ Kgs.

9. Over the last 5 years, what months of the season have been the most productive for you in terms of the total salmon catch?
_____ months.

10. Please indicate total sales value that you received for sale of all the wild salmon caught during the last fishing season.
€_____ or IR£ _____.

11. Please indicate the number of fish caught that were not successfully sold during the last season. _____ non-sold fish.

12. Please indicate the average price you received for wild salmon caught and sold during the last season. €_____ per Llb of Kg, or IR£ _____ per Llb or Kg.

13. Please indicate the approximate average total weekly gross income before tax in total earned by you and your crew during the period you were engaged in salmon fishing during the last season from the sale of salmon and other species. (i.e. average revenue per week from sales less all expenses / costs). € per week average _____ or IR£ per week average _____.

14. What percentage of this revenue during the last fishing season was due to sales of salmon versus other species.

| % From Sale of Salmon | % From Sale of Other Species | % Total |
|---|---|---|
| | | 100 |

15. Please state the approximate percentage of your total annual income during the last fishing season that came from salmon fishing. ____ %.

16. Has salmon fishing changed much in the waters that you have fished in Ireland over the past 5 years.

| Seriously Declined | Moderately Declined | Much the Same | Moderately Improved | A Good Deal Improved |
|---|---|---|---|---|
| ❑ | ❑ | ❑ | ❑ | ❑ |

**Views on Economic / Social Impact of Wild Salmon in Ireland**

17. Please indicate any views/information relevant to the consideration and quantification of the economic/ social value and importance of wild salmon in Ireland. (Please use additional pages as required.)

_____
_____
_____
_____
_____
_____

18. Please also indicate any views you may have on the options or recommendations on how both the commercial wild salmon fishing sector and the salmon rod angling fishing sector should be managed on a sustainable basis in the future. (Please use additional pages as required.)

_____
_____
_____
_____
_____
_____

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# CONFIDENTIAL ECONOMIC SURVEY OF OVERSEAS SALMON ANGLERS

**We would be grateful if you could complete this survey and enclose your response (including any additional supporting pages) in the pre-paid business reply envelope provided. We would like to stress that your response will be treated as Strictly Confidential and will be aggregated with the responses of other anglers.**

1. In what angling season did you last engage in salmon angling in Ireland? Please state last season/year _____.

2. Please indicate how many holiday trips/visits (including short holidays / overnight trips/ weekends etc) you spent in Ireland in the above angling season/year during which you undertook some salmon fishing. No. of holidays/trips:_____.

3. Please indicate the average number of days you spent on angling and non-angling visits to Ireland over the last three years.

(a) Average length of stay engaged in salmon angling _____ nights per trip to Ireland

(b) Average length of stay engaged in non-angling activities _____ nights per trip to Ireland.

4. Was salmon fishing the primary purpose of your trip(s) to Ireland? (Please ✓ as appropriate) Yes ❑ No ❑

5. Please indicate the main time/months of the year when you engage in salmon angling. _____

6. During these trips how many nights in total did you spend away from home in each of the following types of accommodation.

| Type of Accommodation | Numbers of nights during last season |
|---|---|
| Hotel | |
| Fishing Lodge | |
| Guesthouse / Farmhouse Accommodation | |
| Camping / Caravan | |
| Rented Home / Chalet | |
| Other | |

7. If you make such angling trips with others please indicate the average number of persons in your party including yourself by type of group.

| Average Number of Party Members on Domestic Holiday Trips Involving Some Salmon Fishing | |
|---|---|
| | Number of Persons in Party |
| Family Members | |
| Party of Fishermen | |
| Accompanying Friends/Relatives | |
| Other – please specify | |

8. Please indicate your best estimate of your approximate average daily expenditure on holiday trips to Ireland that involved some salmon fishing during the last salmon season. Please include all elements of expenditure including accommodation, food, beverages, tackle, bait/ boat hire, permits, licences, ghillies, gifts, souvenirs, fishing rental etc. €_____ average per trip during last season when you visited Ireland.

9. Please indicate whether you have gone on any holiday trips involving salmon fishing in countries other than Ireland over the past 5 years: (Please ✓ as appropriate) Yes ❑ No ❑. Please state country or countries visited

_____

10. Please indicate the number and weight of wild salmon that you caught in Ireland in 2001: No._____ and Approximate total weight of wild salmon catch in Lbs or Kgs _____.

11. (a) Do you practice 'catch and release' on a voluntary basis? (Please ✓ as appropriate) Yes ❑ No ❑

(b) Do you think that 'catch and release' should be compulsory for salmon? Yes ❑ No ❑

12. Has salmon fishing changed much in the waters that you have fished in Ireland over the past 5 years?

| Seriously Declined | Moderately Declined | Much the Same | Moderately Improved | A Good Deal Improved |
|---|---|---|---|---|
| ❑ | ❑ | ❑ | ❑ | ❑ |

13. Please indicate the number of days that you would fish in an average year in the following fisheries districts in Ireland (see map of fisheries districts attached for your convenience).

| Fisheries Districts | Average No. of days Salmon Angling |
|---|---|
| Dundalk | |
| Drogheda | |
| Dublin | |
| Wexford | |
| Waterford | |
| Lismore | |
| Cork | |
| Kerry | |
| Limerick (Shannon) | |
| Galway | |
| Connemara | |
| Ballinakill | |
| Bangor | |
| Ballina | |
| Sligo | |
| Ballyshannon | |
| Letterkenny | |
| Other – please state | |

**Views on Economic / Social Impact of Wild Salmon in Ireland**

14. Please indicate any views/information you may have that are relevant to the consideration and quantification of the economic/social value and importance of wild salmon in Ireland. (Please use additional pages as required.)

_____
_____
_____
_____
_____
_____
_____

15. Please also indicate any views you may have on the options or recommendations on how both the commercial wild salmon fishing sector and the salmon rod angling fishing sector in Ireland should be managed on a sustainable basis in the future. (Please use additional pages as required.)

_____
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_____
_____
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_____

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# CONFIDENTIAL ECONOMIC SURVEY OF DOMESTIC SALMON ANGLERS

**We would be grateful if you could complete this survey and enclose your response (including any additional supporting pages) in the pre-paid business reply envelope provided. We would like to stress that your response will be treated as <u>Strictly Confidential</u> and will be aggregated with the responses of other anglers.**

1. In what angling season did you last engage in salmon angling in Ireland? Please state last season/year _____.

2. Please indicate how many holiday trips/visits (including short holidays / overnight trips/ weekends etc) you spent in Ireland in the above angling season/year during which you undertook some salmon fishing. No. of holidays/trips which included some salmon fishing:_____.

3. Please indicate the average number of days you spent on each such holiday/ trip during the last angling season_____ days.

4. Please indicate the main time/months of the year when you have engaged in salmon angling. _____

5. During these trips how many nights in total did you spend away from home in each of the following type of accommodation.

| Type of Accommodation | Numbers of nights during last season |
|---|---|
| Hotel | |
| Fishing Lodge | |
| Guesthouse / Farmhouse Accommodation | |
| Camping / Caravan | |
| Rented Home / Chalet | |
| Other | |

6. If you make such trips with others please indicate the average number in your party including yourself by type of group.

| Average Number of Party Members on Domestic Holiday Trips Involving Some Salmon Fishing | |
|---|---|
| | **Average Number of Persons in Party** |
| Family Members | |
| Party of Fishermen | |
| Accompanying Friends/Relatives | |
| Other – please specify | |

7. Please indicate your estimate of your approximate average daily expenditure on domestic holiday trips that involved some salmon fishing during the last salmon season. Please include all elements of expenditure including accommodation, food, beverages, tackle, bait/ boat hire, permits, licences, ghillies, gifts, souvenirs, fishing rental etc. €_____ average during last season you engaged in salmon angling.

8. Please indicate whether you have gone on any holiday visits involving salmon fishing outside of Ireland over the past 5 years: (Please ✓ as appropriate) Yes ❑ No ❑. Please state country or countries visited

_____

9. Please indicate the number and weight of wild salmon that you caught in Ireland during the last salmon season: No of wild salmon _____ Approximate total weight of wild salmon catch in Ibs _____.

10. (a) Do you practice 'catch and release' on a voluntary basis? (Please ✓ as appropriate) Yes ❑ No ❑
(b) Do you think that 'catch and release' should be compulsory for salmon? Yes ❑ No ❑

11. Has salmon fishing changed much in the waters that you have fished in Ireland over the past 5 years?

| Seriously Declined | Moderately Declined | Much the Same | Moderately Improved | A Good Deal Improved |
|---|---|---|---|---|
| ❑ | ❑ | ❑ | ❑ | ❑ |

12. Please indicate the number of days that you would fish in an average year in the following fisheries districts broken down by local fishing and non-local/holiday trips.

| Fisheries Districts | No. of Days Fished in Local Waters | No. of Days Fished outside Your Locality | Total |
|---|---|---|---|
| Dundalk | | | |
| Drogheda | | | |
| Dublin | | | |
| Wexford | | | |
| Waterford | | | |
| Lismore | | | |
| Cork | | | |
| Kerry | | | |
| Limerick (Shannon) | | | |
| Galway | | | |
| Connemara | | | |
| Ballinakill | | | |
| Bangor | | | |
| Ballina | | | |
| Sligo | | | |
| Ballyshannon | | | |
| Letterkenny | | | |
| Other – please state | | | |

**Views on Economic / Social Impact of Wild Salmon in Ireland**

13. Please indicate any views/information relevant to the consideration and quantification of the economic/ social value and importance of wild salmon in Ireland. (Please use additional pages as required.)

_____
_____
_____
_____
_____
_____
_____

14. Please also indicate any views you may have on the options or recommendations on how both the commercial wild salmon fishing sector and the salmon rod angling fishing sector should be managed on a sustainable basis in the future. (Please use additional pages as required.)

_____
_____
_____
_____
_____
_____
_____
_____

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# CONFIDENTIAL SURVEY OF TOURISM SECTOR RE ECONOMIC / SOCIAL IMPORTANCE OF WILD SALMON

**We would be grateful if you could complete this survey and enclose your response (including any additional supporting pages) in the pre-paid business reply envelope provided. We would like to stress that your response will be treated as Strictly Confidential and will be aggregated with the responses of other tourism sector interests.**

1. Please state the type of business you operate, the number of rod places available and the length of the fishing season (if you operate a fishing lodge or own fishing rights). Please ✓ as appropriate.

| Type of Tourism and Angling Businesses Operated | | | |
|---|---|---|---|
| **Type of Business** | **Please tick as appropriate** | **No. of Rod Places Available for Salmon Fishing** | **No. of Days in Salmon Angling Season** |
| Fishing Lodge | ❑ | | |
| Hotel with fishing rights | ❑ | | |
| Hotel without fishing rights | ❑ | | |
| Bed & Breakfast accommodation | ❑ | | |
| Other – please state | ❑ | | |

2. Please indicate the total number of rooms available in your premises: _____ rooms.

3. Please state the total number of guests that can be accommodated on your premises _____ guests.

4. Please state the total number of bed nights that were occupied at your premises during the last season (2002) _____ bed nights occupied.

5. Please indicate the county / county borough of your premises: _____.

6. Please indicate the approximate number of full time equivalent individuals employed in your business: _____.

7. Please indicate your best estimate of what percentage of your guests/visitors on average over the last three years undertook some salmon fishing during their holiday / visit.

| % | % | % | % | % | % | % | % |
|---|---|---|---|---|---|---|---|
| 0-5 | 6-15 | 16-25 | 26-40 | 41-55 | 56-70 | 71-85 | 86-100 |
| ❑ | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |

8. Please state the most important months of the year in which your business benefits from salmon angling activities.

_____

9. Of those guests/visitors who undertook some salmon fishing, please indicate below the average number of persons in their parties by type of group.

| Average Number of Visitors Involved in Some Salmon Fishing | |
|---|---|
| | **Number of Persons in Party** |
| Family Members | |
| Party of Fishermen | |
| Accompanying Friends/Relatives | |
| Other – please specify | |

10. Of guests/ visitors who undertook some salmon fishing who stayed with you in the season just past (2002) please indicate the approximate % who were Irish residents compared to overseas visitors

Irish Residents %_____; Overseas Visitors %_____ Total 100%

11. Please indicate the average length of stay (nights) of guests/visitors who were engaged in salmon fishing compared to all other visitors.

Average Length of stay of guests/visitors engaged in salmon fishing _____ nights.
Average Length of stay of other guests/visitors _____ nights.

12. In your view how important was salmon angling in influencing overseas guests/visitors' decision to come to Ireland.

| Very Important | Important | Neither Important or Not Important | Not Important |
|---|---|---|---|
| ❑ | ❑ | ❑ | ❑ |

13. Have you noticed a change in the number of guests/visitors engaged in salmon angling over the past 5 years?

| Seriously Declined | Moderately Declined | Much the Same | Moderately Improved | A Good Deal Improved |
|---|---|---|---|---|
| ❑ | ❑ | ❑ | ❑ | ❑ |

14. (a) In some fisheries a policy of 'catch and release' is operated where fish must be returned to their habitats after being caught by anglers. Do you think that a 'catch and release' policy would adversely affect your business in relation to salmon angling visitors? (Please ✓ as appropriate) Yes ❑ No ❑

(b) Do you think a 'catch and release' policy should be practised in the case of salmon?
(Please ✓ as appropriate) Yes ❑ No ❑

## Views on Economic / Social Impact of Wild Salmon in Ireland

15. Please indicate any views/information you may have that are relevant to the consideration and quantification of the economic/social value and importance of wild salmon in Ireland. (Please use additional pages as required.)

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16. Please also indicate any views you may have on the options or recommendations on how both the commercial wild salmon fishing sector and the salmon rod angling fishing sector in Ireland should be managed on a sustainable basis in the future. (Please use additional pages as required.)

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**Thank you very much for your valuable contribution to this important study. Please complete and return this confidential survey in the envelope provided to William Holmes-Batt, Senior Consultant, Indecon International Consultants, Indecon House, 25 Wellington Quay, Dublin 2. Any queries re this survey should be addressed in the first instance to John Cullinan, at Indecon (jcullinan@indecon.ie, Tel. 01-6777144), or to Philip McGinnity at the Central Fisheries Board (Tel 01-8842600).**