

**Outdoor and
Environmental
Education**



An Assessment of the Economic Impact of Water-Related Recreation and Tourism in the Spey Catchment in 2003

Summary Report

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PROJECT PART-FI
BY THE EUROPEA
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COMMISSIONED REPORT

Summary

AN ASSESSMENT OF THE ECONOMIC IMPACT OF WATER BASED RECREATION IN THE SPEY CATCHMENT IN 2003

BACKGROUND

The River Spey Catchment Management Plan identified a need for an up to date objective assessment of the volume and economic impact of water related tourism to the local area and employment, either directly or indirectly.

MAIN FINDINGS

In 2003

- The number of **angling** activity days was estimated to be **54,746** with a total expenditure by participants of **£11.8m**. Salmon angling by visitors was the most popular sub-sector with 40,543 days (81.4%) and total expenditure of £10.7m (94.5%).
- After allowing for substitution of activity within the study area the direct impact of angling was found to be £7.2m. Indirect and Induced effects were estimated to give a total local (MBSE) annual output of **£10.9m**, an annual income to households in the MBSE of **£6m** and **367 jobs**.
- The number of **water-sports** activity days was estimated to be **38,190** with a total expenditure by participants of **£1.7m**. Placid water activity on Lochs Morlich and Insh by visitors was the most popular sub-sector with 31,246 days (82%) and total expenditure of £1.46m (87%). The main stem of the Spey had 5607 days of paddler (kayaker and canoeists) activity.
- After allowing for substitution of activity within the study area the direct impact of water-sports was found to be £1.1m. Indirect and Induced effects were estimated to give a total local (MBSE) annual output of **£1.7m**, household income of **£0.8m** and **48 jobs**. The direct impact of these activities upon the environment is very small.
- Commercial development should be concentrated on adding value or exploiting under-utilised areas. "Quality" down river descents, wildlife canoe tours and promotion of non-salmon angling are suggested.
- Co-ordinated marketing and management for the whole catchment are required. The partners should determine how this could best be achieved.

SECTION 1 INTRODUCTION

1.1 Aims and Objectives

The River Spey flows northeast from the Cairngorm mountains to the Moray Firth and is a central feature of the landscape of North-East Scotland. Strathspey has a national and international reputation for scenic quality, salmon fishing, whisky distilling and wildlife. In recent years, the special natural heritage qualities of the river and its catchment has been recognised through a number of national and international designations; most recently under European legislation as a Special Area of Conservation.

The river and lochs are increasingly important as outdoor activities such as canoeing, kayaking, sailing, rafting, and walking (on the Speyside Way), grow in popularity. The recently established Cairngorms National Park covers two thirds of the catchment, which in turn makes up 50% of the national park.

The Catchment Management Plan developed by the partners in the Spey Catchment Steering Group (SCSG) attempts to ensure harmonious and sustainable development. It highlighted the need for up-to-date information on the volume and value to the local economy of water-related recreation. This study was therefore commissioned by the SCSG to inform strategic planning and decision-making in the area.

The project specification identifies five objectives. The first two seek to measure the level and economic impact on the local economy of water-related tourism activities. Discussion of other less directly related activities such as bird-watching, river side picnicking, hiking and swimming provide a context for the study. The most appropriate local economic area was determined as that covered by Moray, Badenoch and Strathspey Enterprise. Figure 1 shows the boundaries of the MBSE study area alongside the boundaries of the catchment. For information the National Park and Local Authority boundaries are also shown, together with the key water features.

The third objective seeks to identify the environmental impact of these activities. This involves a qualitative assessment of the impact on both the visual environment and on the ecology of the river.

The fourth objective examines the interaction between anglers and paddlers through identification of both the numbers involved and the nature of the interactions.

The final objective is to identify some possibilities for expanding water related leisure and recreation. The project aims to identify appropriate criteria for selection and also identifies a number of areas where monitoring and further research would be useful.

1.2 Output

Output from the project consists of two reports; this Summary Report and a full Research Report. The full report provides more information on other research (including bird watching), full details of research methods and their success (or otherwise) and details on participants and their interactions with other users. Importantly the full report explains in detail the economic analysis underlying the results featured in this report.

It should be noted that all statistics relate to 2003 and are in 2003 prices unless otherwise stated.

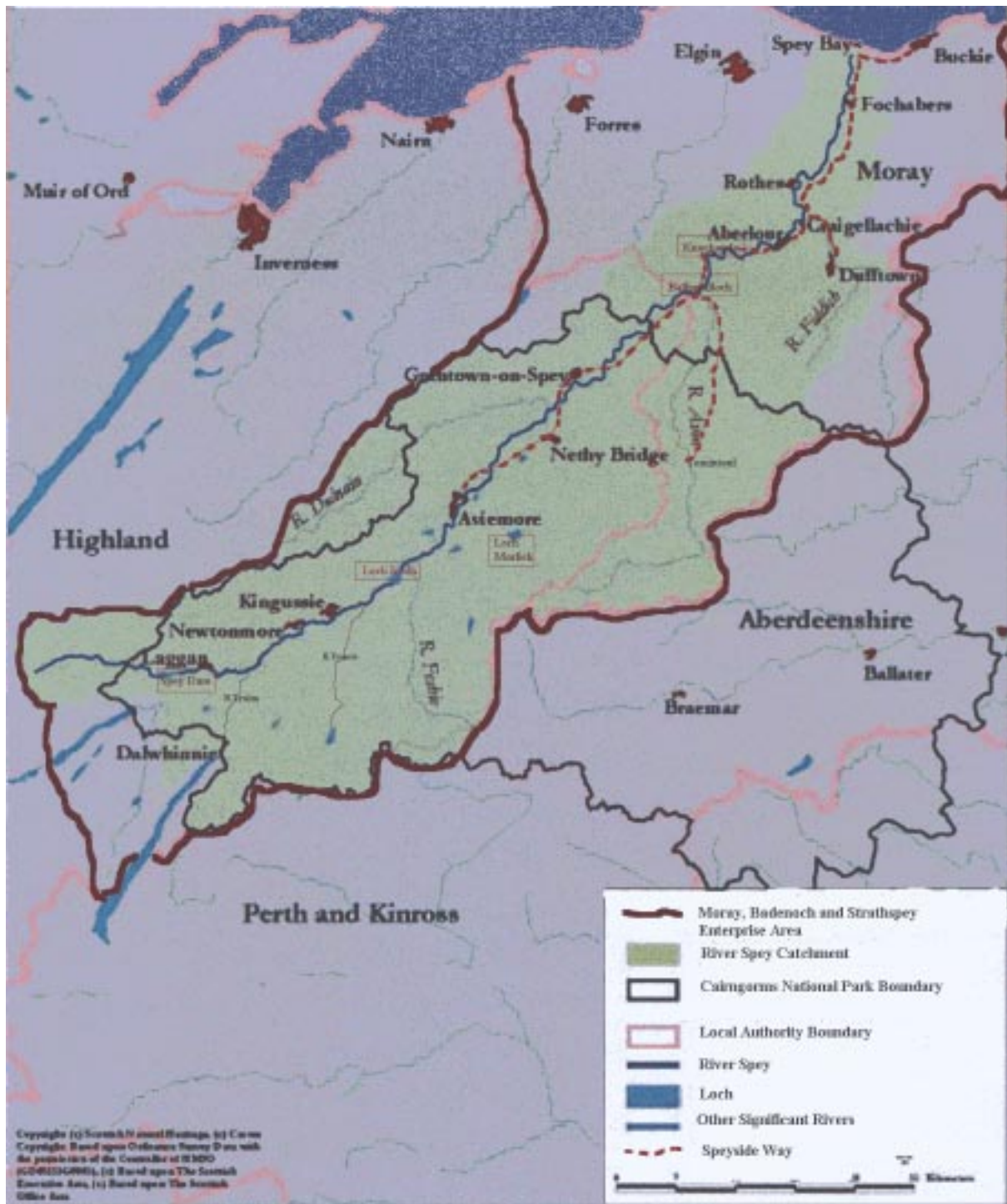


Figure 1: The Boundaries of the Spey Catchment, MBSE Area, National Park and Local Authorities

1.3 Structure of the Report

The remainder of this section provides a brief overview of the some general issues, as well as key issues associated with the conduct and use of economic impact assessment. Thereafter, the report is structured as follows.

- Section 2: A short review of the existing body of theory and knowledge relevant to angling, paddle-sports and other water-related recreation in the Spey catchment.
- Sections 3 and 4: Estimation of activity levels and the associated economic impacts of angling and paddle-sports.
- Sections 5 and 6: Estimation of activity levels and the associated economic impacts of paddle-sports.
- Section 7: Analysis of the nature and frequency of interactions between competing users
- Section 8: Analysis of the environmental impact of recreational activity on the main stem
- Section 9: A review of development opportunities and recommendations on actions to be taken, research and monitoring

1.4 General Issues in the Economic Analysis

1.4.1 Economic Impact Analysis

The process of economic impact analysis involves the use of a number of concepts that need to be defined and understood at the outset.

The key measure is the 'activity day'. If an individual participates in an activity for any part of a day then this is counted as one activity day.

Estimated total activity days by participants are multiplied by the mean expenditure of participants in the activity to give a measure of total expenditure. It is important to recognise that for paddling this applies to 2003 only and for angling a "typical" single year based on an average from 1998 to 2003.

The total expenditure is not however the economic impact, which requires analysis of the proportion of expenditure that is spent on local products (absorption) and would remain in the area if the activity ceased (the substitution effect) and the knock-on (multiplier) effects in the local economy.

1.4.2 Substitution

Substitution refers to the extent that expenditure on the activity being undertaken simply "displaces" expenditure from other activities in the area. In our case we seek to identify how much expenditure on other activities in the area will expand if water-based activities ceased, so that this displaced expenditure can be removed from the analysis. The effect of allowing

for substitution is also important in remedying any over-estimation arising from the use of an 'activity day'. A casual user who hires a canoe for 2 hours would be recorded as one activity day and the whole of his daily expenditure initially included in the estimate of total expenditure. Substitution analysis results in counting only the expenditure of those are serious enough to leave the area to pursue the activity, and discounts those who would stay in the area and pursue some alternative.

1.4.3 Direct Effects

The Direct Effect is the initial increase in local incomes (principally wages) and any increase in locally sourced inputs (i.e. additional local output).

1.4.4 Indirect Effects

The local effect of producing more local inputs creates further rounds of successively smaller Indirect Effects.

1.4.5 Induced Effects

Both the direct effect and every round of indirect effects increases household incomes (principally wages and income from self employment) and in each spending round a proportion of these are spent on locally produced goods, creating further local income and local output. This is the Induced Effect.

1.4.6 Employment

Once the local incomes or output impacts are calculated, local employment can be estimated through known relationships between output and employment or total wages and employment.

1.4.7 Modelling the Local Economy

In this study, the local area is defined as the Moray, Badenoch and Strathspey Enterprise Area (MBSE). The study utilised two approaches to model the local economy. The first, which applied to the local (MBSE) economy only, involved a telephone survey of firms in the area. This enabled the tracking of rounds of expenditures and their impacts on local output, income and employment as they worked through the MBSE economy. The second used an approach developed by CogentSI and utilises specific models for angling and water sports in MBSE. We report the results from the CogentSI model later in this report.

1.4.8 Use of Results

This impact study records the position as sampled in 2003 and the results presented need to be used sensitively in analysing the effect of changes in the current position. Thus, whilst it is interesting to quote that a rod caught salmon currently generates on average £x in local income, the causal chain between salmon stocks and output, income and employment is complicated and is not linear. Whilst the relationship between activity days and impact is less complicated than that between say salmon stocks and economic impact, one still cannot assume linear relationships.

1.5 Summary of Methods Used

Table 1 summarises the various survey methods. A full explanation on methods and coverage is available in the full Research Report.

Table 1 Survey methods used in the Study

Data Requirement	Source	Method	Coverage and Response
Angler Days	Owners	Questionnaire	Salmon : 31 responses from 41 ; 76% of survey, 86% of catch Other: 34 of 50 fisheries: 68%
Angler Expenditure & Interaction	Anglers	Questionnaire	372 responses representing 14.9% of angler days
Angler Expenditure & Interaction	Anglers	On Site Survey	
Water Sports Days 1	Centres	Survey	100% (9) gave returns
Water Sports Days 2	Ghillies/ Proprietor	Count	Lochs: Close to 100% of 30,000 activity days River: 2860 observed from 5997 estimated (48%)
Water Sports Days 3	Paddlers	Self Completion Cards	180 cards representing 1440 paddlers from an estimated 3888 (37%)
Water Sports Spend 1 & Interaction	Paddlers	Questionnaire (SCA members)	372 from 1560 (24%)
Water Sports Spend 2 & Interaction	Paddlers Sailors	On Site Survey	71 responses
Gorge Walking	Centres	Interview	3 of 4 centres involved
Owner Spend	Owners	Interview	5 fisheries
Centre Spend	Managers	Interview	5 of the 9 centres
Opportunities	Elite	Interview	Over 40 interviewees

SECTION 2 CURRENT KNOWLEDGE

2.1 Angling

The Spey catchment offers a wide range of angling opportunities ranging from internationally recognised salmon angling to more recently established put and take rainbow trout fisheries. The most important type of angling within the catchment is salmon and sea trout angling in the main river. The study estimated the number of salmon and sea trout rods to be 220-250 between Loch Insh and Spey Bay. Salmon and sea trout angling is also available on the major tributaries, Feshie, Fiddich, Avon, Dulnain and Truim.

There are very many waters within the Spey catchment for brown trout fishing. However, in terms of visitor numbers, the brown trout fishing within the catchment is very limited. Rainbow trout fisheries are a popular type of fishery in terms of activity days, with 5 operating in the study area. Within the catchment, coarse angling is available at Loch Insh, Loch Einich, Loch Alvie, Loch Pityoulish with notable pike fishing on Loch Gynack, Loch Insh and Loch Morlich.

There have been four relevant studies reviewing the impact of angling in Scotland:

- *Tourism and Recreation Research Unit* (TRRU 1982) on salmon and sea trout angling in Scotland
- *Mackay Consultants* (1989) on salmon angling in Scotland
- *Deloitte and Touche* (1996) on freshwater fishing in the Tweed catchment
- *Fisheries Resource Management* (2000) on freshwater fisheries in the Western Isles

In these studies, TRRU estimated there were 62,230 salmon and sea trout angler days on the River Spey. The average daily expenditure was estimated to be £267. It is re-assuring that Mackay estimated a similar 62,100 angler days on the Spey; however angler expenditure per day was significantly lower at £141. The 60,000 salmon and sea trout angler days on the Spey seems high relative to others rivers. For example, TRRU estimated 15,504 salmon and sea trout angler days in the Borders, and Mackay Consultants estimated 19,400 days on the Tweed. The more detailed study by Deloitte and Touche estimated over 40,000 salmon and sea trout angler days on the Tweed. With respect to daily expenditure, Deloitte and Touche estimated £187 for visitors and £81 for day trips on the Tweed. Both these estimates are substantially larger than the £34 daily expenditure by Tweed salmon and sea trout anglers estimated by Mackay Consultants. In general there are problems in reconciling some aspects of previous studies of the economic impact of angling on the Spey or in Scotland generally.

2.2 Water Sports

Information on paddler numbers let alone economic impact of inland water-sports is noticeably poor. The STB visitor survey of 1989 found a total spend of £210m for water-sport based recreation by visitors but this is almost certainly an over-estimate. Possibly the best source is The UK Visitor Survey which identifies the origin, destination and activities undertaken by UK visitors. In 2001, UK residents who took part in water-sports holidays (where water-sports were the main reason for the holiday trips) spent £48m, undertook 200,000 trips and stayed 0.6 million nights. In addition a further 800,000 undertook water-sports whilst on holiday (as opposed to a water-sports based holiday). The impact of water-sports on the Spey Valley and the Scottish Economy is unknown.

SECTION 3 ANGLING ACTIVITY LEVELS

3.1 Research Method

At the tendering stage, the contractors were also engaged in the initial stages of a study on freshwater angling for Scottish Executive Environment and Rural Affairs Department (SEERAD study), and it was anticipated that these two studies would have significant common elements that would facilitate the two-way sharing of primary data. In the event, whilst a common research strategy was appropriate, this study required more extensive data collection.

The following data had to be obtained to realise the project aims:

- Mean expenditure estimates for each type of angling in the Spey catchment (e.g. expenditure per angler or per angler day or per fishing trip).
- A scaling factor (e.g. total number of anglers or angler days or angler trips for each type of angling in the Spey catchment) that is consistent with the preferred mean expenditure estimate.
- A breakdown of angler expenditure by angler origin (e.g. proportion of expenditure originating from within MBSE, from within Highlands, from within Scotland, from outside Scotland).
- The substitution possibilities available to visitor and local anglers.
- Interactions between recreational activities in the catchment.

3.2 Data Collection

Two main surveys were employed.

A Survey of Owners provided data on:

- Estimates of **angler days** for each type of angling within the catchment.
- Estimates for each type of angling of the **proportion of angler days** that are respectively from MBSE, from Highlands, from within Scotland and non-Scottish visitors.
- The owners' perspective on the **interaction** with other recreational activity

The Spey Fishery Board (SFB) disseminated questionnaires to the appropriate contacts for every salmon and sea trout fishery in the catchment, as well as owners of other fisheries known to SFB. Efforts were made to contact every proprietor/ estate manager / club secretary collect data on non migratory species fisheries.

A Survey of Anglers used two survey instruments: 2,000 self completion questionnaires distributed among fishery proprietors and, in addition, questionnaires were administered on a face-to-face basis at various positions along the riverbank.

The Anglers' Survey sought to establish:

- The average expenditure per angler day for the various categories of anglers.
- The alternatives available to anglers if their 'first choice' form of angling were not available in their preferred region.

- Anglers perception of the interaction with other recreational water users

There were 372 responses from the 2000 distributed representing just under 15% of angler days across all fishery types. Responses in terms of angler home and species fished were in proportion to the information provided by the owners.

3.3 Angler Days

Table 3.3.1 gives details of the angler days by species and origin from the surveys of owners, clubs, managers and other respondents.

Table 3.3.1 Angler Days by Species and Angler Origin

	Scotland	North of England	Ireland	Rest UK	Europe	US	Total
Salmon & Sea Trout	14,190 (36%)	10,136 (25%)	811 (2%)	12,163 (31%)	2,433 (6%)	811 (2%)	40,543 (100%)
Brown Trout	3,473 (72%)	430 (9%)	33 (1%)	591 (12%)	186 (4%)	103 (2%)	4,815 (100%)
Rainbow Trout	5,144 (63%)	216 (3%)	83 (1%)	2,130 (26%)	330 (4%)	282 (3%)	8,186 (100%)
Pike	903 (75%)	150 (13%)	12 (1%)	84 (7%)	23 (2%)	30 (2%)	1,202 (100%)

For salmon Scottish anglers fish only about a third of angler days. Some 8% come from outside Britain with the balance coming chiefly from England. The majority of these salmon and sea trout angler days were in the middle Spey from Grantown to Craigellachie as shown in table 3.3.2

Table 3.3.2 Distribution of Salmon Angler Days on the Spey

Stretch	Days	% Days
Spey Dam to Grantown-on-Spey	2,973	7%
Grantown-on-Spey to Craigellachie	19,033	47%
Craigellachie to Spey Bay	15,644	39%
River Avon	2,894	7%
Total	40,544	100%

In contrast to salmon and sea trout angling the majority of other types of fishing is conducted by anglers resident in Scotland many in the MBSE or immediate areas.

In summary the largest activity, in terms of angler days, is salmon angling, which accounts for 75% of all Spey fishery related activity. Rainbow trout fishing produce the second largest activity levels (over 8000 angler days) and brown trout angling produces nearly 5000 activity days. Coarse angling takes place on a few lochs within the catchment and on the Spey itself, producing over 1000 angler days per season.

SECTION 4 ECONOMIC IMPACT OF ANGLING

4.1 Expenditure per Angler Day

All the angler expenditure data comes from the angler surveys. As one would expect, the highest expenditure per day is by 'visiting' salmon and sea trout anglers.

Table 4.1.1 Average Daily Spend in the Spey Catchment

Home Region	Salmon & Sea Trout	Brown Trout	Rainbow Trout	Coarse Fish	All
MBSE	£122.51	£34.84	£26.33	£37.44	£97.32
Rest of Highlands	£113.89	£73.57	£40.92	NR	£89.45
Rest of Scotland	£307.74	£82.23	£49.17	NR	£235.17
Outside Scotland	£304.10	£126.91	£156.28	£39.17	£285.16

The following table identifies expenditure in principal categories.

Table 4.1.2 Average Daily Spend by Category in the Spey Catchment

Category	Salmon & Sea Trout	Brown Trout	Rainbow Trout	Coarse Fish	All Species
Accom.	£54.51	£13.39	£8.50	£11.53	£45.44
Meals	£22.07	£13.03	£4.07	£0.34	£19.20
Food	£10.88	£7.67	£5.06	£4.98	£9.95
Transport	£4.57	£1.36	£0.25	£0.00	£3.78
Fuel	£10.32	£10.04	£10.89	£4.10	£10.18
Rents	£91.64	£11.29	£15.46	£0.62	£74.78
Club Fees	£2.84	£4.84	£0.00	£0.00	£2.78
Clothes	£6.05	£2.30	£1.72	£2.42	£5.22
Hire	£1.73	£0.70	£0.13	£0.00	£1.46
Gifts	£4.62	£3.86	£2.68	£0.68	£4.30
Ghillie	£11.66	£0.94	£0.69	£0.79	£9.38
Tackle	£5.23	£1.89	£1.79	£9.40	£4.69
Bait	£1.09	£0.46	£0.38	£2.38	£1.00
Other	£1.24	£0.05	£0.18	£0.56	£1.01
ALL	£228.44	£71.82	£51.80	£37.79	£193.17

4.2 Total Angler Expenditure

Total expenditure was obtained by simply combining the expenditure per angler day and the number of angler days estimated in Section 3 for each species and origin

Table 4.2.1 Total Angler Expenditure by Fishing Type and Origin

Home Region	Salmon & Sea Trout	Brown Trout	Rainbow Trout	Coarse Fish	All
MBSE	£782,290	£66,559	£49,263	£11,219	£909,332
Rest of Highlands	£264,072	£39,681	£66,004	£9,552	£379,309
Rest of Scotland	£1,688,223	£84,129	£81,622	£13,237	£1,867,211
Outside Scotland	£8,013,932	£170,361	£475,404	£11,724	£8,671,421
ALL	£10,748,517	£360,731	£672,293	£45,732	£11,827,273

As expected expenditure by salmon and sea trout anglers greatly exceeds expenditure on other forms of angling. Not only are there more salmon angler days, on average more is spent on them and a greater proportion of expenditure originates from outside Scotland.

4.3 Direct Employment in Angling

The questionnaires distributed by SFB requested owners indicated full-time and part-time workers employed specifically in providing angling services and estate support for angling services. After factoring for non-response, this produces a total of **72 FTE's** in salmon and sea trout fishing provision.

4.4 Angler Expenditure and Substitution

Angling is currently responsible for an injection of **£11.8m** (£10.8m of which is salmon and sea trout) into the MBSE economy although a proportion of this immediately leaves the economy in the form of VAT or imported goods for retail. In addition some of the expenditure would have occurred in any case (the substitution effect).

On the basis of the analysis of substitution the tentative conclusion is that angling generates between **£10.9 and £11.8m** in visitor spending to MBSE. Because so much of angler expenditure originates outside Scotland, angling on Spey makes almost as much a contribution to the Scottish economy as it does to the MBSE or Highland economy.

The expenditure generates output from local industry both directly and indirectly which in turn generates income and employment for local people. These calculations are complex and involve analysis of

1. The source of retailed products
2. The pattern of total expenditure by fishing type and origin of angler
3. The increases in output and incomes in the local area
4. The pattern of expenditure of the local industries and the volumes sourced locally (Indirect Effects)
5. The pattern of expenditure of the local populace and the volumes sourced locally (Induced Effects)

Details of this process are given in the full Research Report .

As a result of this analysis it is estimated that in the MBSE area **£10.9m** of output is dependant upon angling, production of which generates **£6.0m** of income to households and supports **367** jobs.

On average each salmon angler day by a visitor from outside Scotland generates £159 of income to MBSE households. In contrast, on average the local angler who fishes for brown trout or rainbow trout, only generates £11 of local income per angler day.

SECTION 5 WATER SPORTS ACTIVITY

5.1 Paddler Counts

The approach taken in assessing numbers was based upon 3 observers at Loch Morlich, Knockando and Spey Bay and on interviews with all key suppliers. Loch Insh Water-Sports provided estimates of numbers on Loch Insh and the number of paddlers on trips organised by the centre.

The ghillies at Knockando and on the final stretch at Gordon Castle were also willing to record numbers when on duty. As there were occasions when ghillies were not operating a factoring up of the ghillie counts was used. The derived factor was based on ratios obtained from a short self-completion survey at the exit points at Knockando and Spey Bay.

5.2 Participant surveys

To establish the economic impact required information from the individual water sports participant on the levels and pattern of their spending. However as part of the remit the surveys also sought to establish perceptions of the relationships between other users.

Three broadly similar survey methods were used:

1. On-site questionnaires administered at key entry and egress points used by paddlers. 71 responses were obtained.
2. Internet. This was aimed at paddlers from outside Scotland, and was publicised through the canoeing press. The response was disappointing, however, with only 11 returns being received.
3. A self completion paper questionnaire distributed by the Scottish Canoe Association along with the quarterly journal Scottish Paddler. Some 291 responses were received, 132 of whom specified that they had paddled on the Spey.

5.3 Total Water Activity Days

Table 5.3.1 summarises the estimates of the number of days undertaken by water-sports participants in the Spey Catchment Area in 2003 derived from the sources described above.

Table 5.3.1 Number of Activity Days in Spey Catchment Area

		Descent	Centres	Other Day	Total
Loch Morlich	Sail		3,049 ^(b)	1,139 ^(b)	4,188 ^(b)
	Paddle		8,630 ^(b)	1,534 ^(b)	10,164 ^(b)
Loch Insh	Sail		6,980 ^(c)	100 ^(h)	7,080
	Paddle		8,816 ^(c)	100 ^(h)	8,916
Upper Spey	to Aviemore	390 ^(g)	700 ^(c)	300 ^(h)	1,390
Middle Spey	to Ballindalloch	430 ^(g)	1,396 ^(e)	1,404 ^(e)	3,230 ^(a)
Middle Spey	To Craigellachie	430 ^(g)	40 ^(h)	250 ^(h)	720
Lower Spey	to Spey Bay	394 ^(f)	40 ^(f)	223 ^(f)	657 ^(d)
Rivers Avon & Feshie			32 ^(c)	250 ⁽ⁱ⁾	282
Total		1,644	29,683	5,300	36,627
Main Stem (Spey)		1,644	2,176	2,177	5,997

The sources for these figures are noted in the table and are as follows:

- (a) Ghillie Count, Knockando, with adjustment using cards
- (b) Count at Loch Morlich with adjustment. Confirmed by Rothiemurchus Study
- (c) Centre return
- (d) Ghillie Count, Spey Bay, with adjustment using cards
- (e) Cards, Knockando
- (f) Cards, Spey Bay
- (g) Flow Adjustment using expert opinion
- (h) Expert Opinion
- (i) Expert Opinion confirmed by SCA questionnaire

What is clear from this table is the importance of placid water activity on Loch Morlich and Loch Insh. Together these represent over three quarters of all the water-sports days. Given that the centres also provide indoor accommodation (with a centre actually on the Loch at Loch Insh) , whilst many of the other users are either camping or on day trips, the economic importance of this sector is likely to be high.

5.4 Gorge Walking

Gorge walking, also known in Europe and the USA as canyoning, involves following a river or burn along the bed down or up water made gorges. Four centres declare gorge walking as an activity. The activity is limited by water flow and participants tend to be confined to older school age groups and adults. The estimated numbers are based on a ratio of 1:4 gorge to water sport ratio in the centres concerned. This gives a total figure of **1563**.

5.5 Summary and Conclusions

Identifying the number of participants spread over a large area with a large number of entry and exit points offered a major challenge. The method devised involved a number of observers backed up with card returns when they were not on station. The card seemed to work well and provided additional information on the paddlers enabling triangulation.

It is estimated that the number of activity days is close to 36,000.

SECTION 6 ECONOMIC IMPACT OF WATER-SPORTS

6.1 Introduction

Expenditure is derived from the estimated numbers coupled with the estimated spend per person. The expenditure per person estimate was obtained from the surveys of participants in water sports. To estimate the total impact it was necessary to establish the spending pattern of outdoor providers and the extent of local sourcing. This was covered in the survey of outdoor centres. The results are given in tables 6.1.1

Table 6.1.1 Distribution of Costs –Outdoor Centres

	Cost	Local Proportion
Professional Staff	36.9%	100.0%
Hotel Services	23.7%	100.0%
Food & Drink	10.6%	20.0%
Property & Supply	13.3%	80.0%
Vehicles	4.2%	20.0%
Power	4.8%	10.0%
Phones	0.7%	0.0%
Other	5.9%	50.0%

These tables provide the link between the estimated spending and the local direct expenditure/output or “direct impact”.

6.2 Expenditure

Table 6.2.2 Estimated Expenditure by Category and Water-Sports type

	Centres	Descent	Day	Total
Accommodation	£194,426	£11,659	£0	£206,085
Meals	£220,281	£11,303	£21,455	£253,040
Drinks	£154,109	£10,230	£17,623	£181,962
Food and Drink (Retail)	£133,951	£11,288	£20,384	£165,623
Equipment & Guides	£344,299	£2,019	£1,831	£348,149
Petrol & Fuel	£90,567	£21,004	£67,394	£178,964
Trip Fees	£323,118	£8,105	£12,186	£343,409
Total	£1,460,751	£75,608	£140,874	£1,677,232

6.3 Gorge Walking

The value of gorge walking was estimated using the figures derived for paddlers from centres as given in Table 6.2.2. Using the estimated number from section 5.4 of 1563 activity days yields a total expenditure of £72,800. This has then entered the impact calculations as additional expenditure on water sports.

6.4 Economic Impact

To assess the economic impact the procedure identified in section 4.4 was utilised i.e. substitution was identified, local production of retailed goods established; direct effects on local businesses and people identified, expenditure and local sourcing for local businesses

and individuals established and indirect and induced effects calculated. Full details of each stage of this complex process are given in section 6 of the full report. As a result of applying the model, it was estimated that some **£1.7** million of local output, **£0.8m** of local income and **48** jobs are dependent upon water sports in the MBSE economy.

SECTION 7 INTERACTION BETWEEN PADDLERS AND ANGLERS

7.1 Introduction

The Angler and Paddler Surveys sought information on the frequency and characteristics of the interaction between paddlers, anglers and walkers and on the impact of increases in numbers of paddlers, walkers and anglers on the enjoyment of anglers and paddlers. Unfortunately the questionnaires did not seek to identify the location of the respondent.

The estimated number of paddler days on the river is 5607, however these are heavily concentrated in the middle section of the river between Grantown on Spey and Craigellachie, with around 70% of the paddler days on around one third of the river. Since the great majority of anglers are found in the middle and lower Spey, capacity and associated interaction problems are unlikely to be found on the upper Spey south of Grantown and they are marginal below Knockando.

Big groups of paddlers appear to be quite rare on the river. The mean number seen by anglers in a typical day is 1.3 groups averaging 6.7 paddlers. 30% of the time no paddlers are seen, as against 13.2% of the time when more than 10 are seen.

Anglers' experiences of interactions with paddlers are not dissimilar to those for paddlers themselves. The most usual response is an exchange of pleasantries although a substantial minority apparently prefer to ignore the existence of the other. Personal conflict appears to be rarer for anglers than canoeists, which possibly reflects the relative numbers.

Movement by the angler, given the difficulty of movement in a fast flowing river, is quite rare. It is generally far easier for the canoeist to avoid the angler unless the angler is standing in the only deep-water channel available.

Respondents were questioned on the effect on them of expansion in numbers of anglers, paddlers and walkers. Generally increases in access (to include walking horse riding and cycling) along the riverbank have a minor or no effect on the enjoyment of either paddling or angling.

Figure 2 shows the responses to questions on the impact of increased numbers of paddlers and anglers. As might be expected there is a consistent belief amongst anglers/owners, not shared by paddlers, that increases in paddlers are very undesirable. However what was also noticeable is that current salmon anglers are even more unhappy with any suggestion of increases in angler numbers than the paddlers (recognising that no suggestion of expansion has ever been broached by the owners).

Figure 2: Perceived Effect of Increase in Numbers



Although paddler and angler numbers over the whole catchment would not suggest any problems in expansion there are concerns about the middle river where there are significant numbers of paddlers and anglers. A policy of encouraging expansion of paddler numbers there would be met with hostility by the angling community and little support amongst existing paddlers. If numbers were to be expanded on the middle and to a lesser extent lower Spey then very clear benefits for the community as a whole would need to be present. Paddlers who fully utilise local accommodation and restaurants on a Spey descent might offer enough benefits to the local economy to compensate for any consequential reduction in angler expenditure.

SECTION 8 THE IMPACT OF WATER BASED RECREATION ON THE ENVIRONMENT

The full report examines, in detail, all the evidence on the ecology of the salmon, pearl mussel and lamprey and attempts to relate this ecology to the possible changes in the habitat as a result of recreational water activity. These three species are significant as they are those for which the river is designated as a Special Area of Conservation. Hereafter in this report these are referred to as the 'SAC species'. Table 8.1 summarises the outcomes of this analysis.

Table 8.1. Assessment of Potentially Damaging Activities on River Spey Aquatic 'SAC Species'

	Temporary Disturbance	Temporary/Minor Damage	Permanent Damage
Access and egress (on foot or by boats)	Salmon (juvenile & adult)*	Mussel beds* Lamprey*	Mussel beds* Lamprey*
Weed cutting	Salmon (juvenile & adult)* Mussel beds (siltation)*	Although resulting in loss of cover for young salmon and a reduction in invertebrate productivity, on balance the medium term effects on both juvenile salmon and mussels seem positive.	
Removal of bank vegetation	Salmon (juvenile & adult)*	Salmon (juvenile)*	Salmon (juvenile)* Mussel beds (localised)***
Existing groynes			Mussel beds (localised)*** Lamprey* (in the longer term may be positive due to siltation)
Building new groynes / repair of existing groynes	Salmon (juvenile)* Salmon (adult)* (if carried out during the winter)	Salmon (Redds)*** (if carried out in Oct to May) Salmon (juvenile)* Mussel beds*** Lamprey***	Mussel beds *** Lamprey*** (in the longer term may be positive due to siltation)
Notes: 1. Unless noted otherwise all effects will be localised and therefore have only minor effects on the whole river populations of these species. 2. The assessment of 'degree of risk' (low, medium or high) is indicated by a scale of * to ***. Any likely positive effects are noted.			

The following recommendations may help in the long-term protection of the 'SAC species' and have a beneficial effect on the aquatic and riparian ecosystem:

³ The term 'groyne' is used here as it is more widely used in the literature than 'croy' or 'deflector'.

⁴ It should be noted however that despite the decline in adult stocks (which appears to be the result of depressed marine survival of smolts), juvenile surveys indicate that enough adults are spawning to saturate available nursery habitat, thereby maintaining the optimal smolt run from the river (Butler, 2002).

- SNH produce useful and attractive leaflets about ‘SAC species’ and there may be further benefit in developing similar materials about the management of river banks, to cover their relationship to the ecology of the river, and methods to maintain a diverse flora.
- Notices explaining the status of the ‘SAC species’ and associated conservation issues could be provided for all fishery managers and local outdoor activity providers with permanent notices located at the main access and egress points for canoeists and at Speyside campsites. In the longer term other conservation initiatives should be co-ordinated to develop an integrated education and interpretation plan for the river, which should include publishing short articles in popular canoeing and fishing magazines explaining the ecology of Scottish rivers and the biology of the SAC and other species.
- The developing strategy by SNH to promote the Scottish Outdoor Access Code should cover not only the “rights and responsibilities” of those engaged in recreation or management (of land or water) but could beneficially incorporate information on minimising the negative impact of such access on the environment

The full Research Report contains a fulsome description of the biology of the SAC species, the rationale for the assessment of the potential damaging activities and further detailed recommendations

SECTION 9 DEVELOPING WATER BASED RECREATION

9.1 Introduction

A range of potential development opportunities associated with the river were collected through a series of elite interviews with current providers such as angling proprietors and outdoor centre managers, and with other informed bodies such as Moray District Council, Grampian Tourist Board, MBSE, HIE and Forestry Commission. This section largely reproduces these ideas within the context of a SWOT analysis of the local tourist and recreational economy and then suggests some actions that might be considered in the light of

- 1) The relative economic size and importance of the different parts that constitute water based recreation and tourism
- 2) The impact on relationships between users
- 3) The environmental impact of these developments
- 4) The feasibility and likelihood of success

9.2 SWOT Analysis

Analysis using the SWOT (Strengths, Weaknesses, Opportunities and Threats) process identified the following issues.

<p>Strengths</p> <ul style="list-style-type: none"> • Reputation and tradition of salmon angling • Predominantly unpolluted environment • Environmental Status as identified by cSAC , RAMSAR and SSSI classifications • Quiet • Ideal for canoeing • Wildlife • Speyside Way 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Floods and infrastructure • Public transport • Weather unpredictability • Angler/paddler conflicts • Fragmented information on recreational opportunities • Complex administrative framework of the catchment
<p>Opportunities</p> <ul style="list-style-type: none"> • The Cairngorms National Park • Demographic trends • International transport • Legal enshrinement of the tradition of responsible customary access • Emerging extreme sports • Underutilised Brown Trout and Pike stocks 	<p>Threats</p> <ul style="list-style-type: none"> • Decrease in salmon stocks • New alternative destinations for high spending visiting anglers. • Inappropriate river bank development • Engineering works • Contracting Council funding • International transport developments • Pollution and outfalls • Decreasing school outdoor activity

9.3 Possible Developments

Building on the SWOT analysis, potential future developments considered in the study included;

- Salmon Angling
- Trout and Pike Opportunities
- Placid Water Loch Canoeing
- Upper River Trips
- Spey Descents
- Rambling alongside the River
- Other Waterside Activities – general activity
- Green Tourism
- Institutional Development
- Gorge Walking

9.4 Recommendations

In order to **Promote Sustainable Activity** it is recommended that the partners seek to identify strategies to ensure that: .

- There exists comprehensive easy access to information that is currently available both in text and on the worldwide web
- More information is provided for both anglers and paddlers on the sensitive species in the river and their ecology
- Security rings at a number of key egress points are provided, to allow canoes to be safely left overnight on the river bank when utilising local accommodation
- Provision for organised down river trips is better organised and publicised
- Opportunities for combining wildlife tours and canoeing, particularly on the upper Spey are identified. Organisation and promotion are required.
- Opportunities for combining mountain loch angling and hill walking are identified.
- There is better promotion of brown trout and pike fishing on the upper Spey and valley lochs. Again organisation and promotion are required.
- There is harmonious development of walking and rambling holidays on the riverside, along paths previously the preserve of anglers. Sensitive work with riparian owners is needed

In order to **Maintain and Enhance the Natural Resource** it is recommended that the partners seek to identify strategies to ensure that

- Work at the canoe access points at Aviemore and Knockando is undertaken to prevent further bank erosion, and work at Ballindalloch is recommended before problems occur.

- There is discussion with managers over any tree clearance operations
- In the longer term the effects of each groyne are evaluated and the impact of removal (or introduction) assessed.
- Although primarily cosmetic, an annual spring check of the upper river to remove non-natural debris is undertaken and work undertaken to minimise the disfigurement caused by the bridge works at Newtonmore and the outfall opposite Aberlour.
- Outdoor Centres and SNH enter discussions on how to minimise the negative environmental impact of gorge walking.

In order to **Reduce Conflict** it is recommended that the partners seek to identify strategies to ensure that

- The valuable work of the Spey Users group is continued.
- The implications of the Land Reform (Scotland) Act are explained fully to owners, anglers, ghillies and, if possible, paddlers. In particular the rights of responsible access and wild camping should be carefully outlined.
- Information on the relevant parts of the Scottish Outdoor Access Code are distributed widely to ensure there is a clear understanding of the responsibilities of all participants.

It is recommended that the partners carry out **Monitoring and Research** as follows:

- Establish a more formalised and transparent angling data collection process with some results being recognised as commercially sensitive and therefore confidential.
- Retain the services of the observers at Loch Morlich, Knockando and Spey Bay (Gordon Castle) and implement a more robust card survey at Knockando and Spey Bay.
- Purchase and install a 24-hour automatic counter on the river if only on a trial basis. It is important, however, for calibration purposes, to maintain the ghillie/card system for next year along with the automatic teller.
- Accurately assess the total numbers, including independents, participating in gorge walking and identify other sites that either need protection or can be promoted with limited 'environmental cost'.
- Before promoting fishing in the mountain lochs assess stock levels and estimate the level of sustainable angling.