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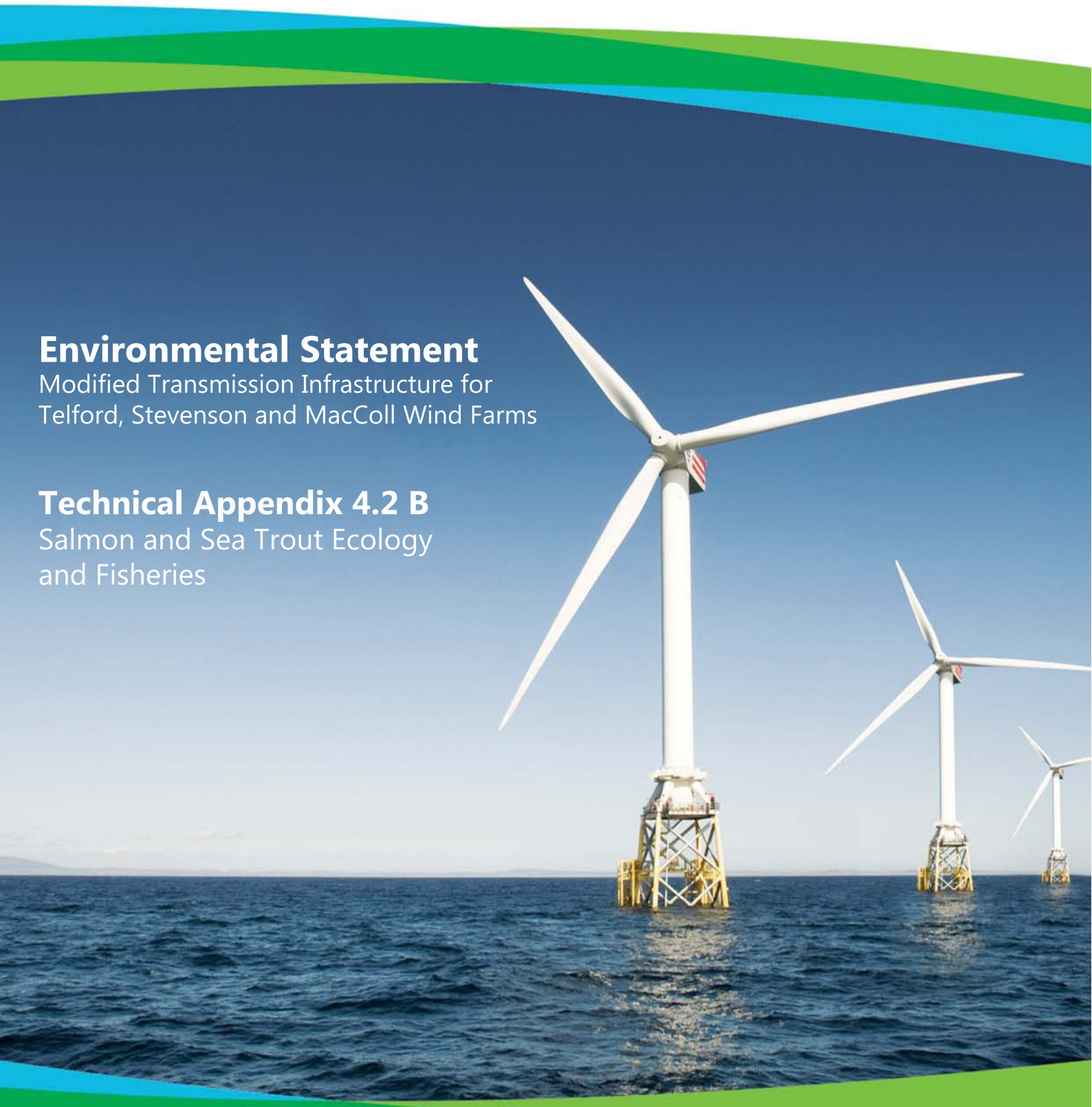
Developing Wind Energy In The Outer Moray Firth



Environmental Statement

Modified Transmission Infrastructure for
Telford, Stevenson and MacColl Wind Farms

Technical Appendix 4.2 B

Salmon and Sea Trout Ecology
and Fisheries

edp renewables

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1 Introduction

This technical report provides site specific information relating to the ecology, distribution and fisheries of salmon (*Salmo salar*) and sea trout (*Salmo trutta*) in areas relevant to the Modified Transmission Infrastructure (Modified TI) of the three consented wind farms (Telford, Stevenson and MacColl Offshore Wind Farms). The focus of the report is on those Salmon Fisheries Districts (SFDs) relevant to the proposed location of the Modified TI.

More detailed information regarding ecology, conservation status and fisheries located within other districts within the Moray Firth salmon fishery region can be found within the report (Appendix 9.3B) submitted as part of the Environmental Statement (ES) detailing the Telford, Stevenson and MacColl offshore wind farms in August 2012 (MORL, 2012).

2 Methodology

In the absence of standard practice or guidance by which to establish salmon and sea trout ecology and fisheries baseline assessments in relation to transmission infrastructure associated with offshore wind farm developments, a number of information and data sources have been used, which are detailed below.

2.1 Data and Information Sources

- Marine Scotland Science (MSS) (Freshwater Laboratory)
- Scottish Natural Heritage (SNH)
- Joint Nature Conservation Committee (JNCC)
- Centre for Environment Fisheries and Aquaculture Science (CEFAS)
- Association of Salmon Fishery Boards (ASFB)
- Rivers and Fisheries Trusts of Scotland (RAFTS)
- District Salmon Fishery Boards (DSFB)
- Salmon Net Fishing Association of Scotland (SNFAS)
- Atlantic Salmon Trust (AST)
- Moray and Pentland Firth Salmon protection group
- Moray Firth Sea Trout Project (MFSTP)
- Scientific papers and other relevant publications

2.2 Data & Information Sensitivities, Limitations and Gaps

2.2.1 MSS Salmon & Sea Trout Fisheries Catch Statistics

Each fishery in Scotland is required to provide the number and total weight of salmon, grilse and sea trout caught and retained in each month of the fishing season. In this context, the term salmon refers to multi-sea-winter salmon (MSW) whilst grilse refers to one-sea-winter salmon (1SW).

The catch data used for the purposes of this assessment are as reported by the fishery. Where there are no records of reported catches, it has been assumed that no fish have been caught. It is recognised that there may be a small degree of error within the catch dataset due to misclassification of fish between the grilse and salmon categories. There may also be errors as a result of misreporting of catches. The data used are as provided by Marine Scotland Science (MSS) in May 2014.

Rod and line fisheries are also required to provide the monthly numbers and total weight of salmon, grilse and sea trout caught and released back into the river ("catch and release"). As a result, MSS catch data for the rod and line fishery is broken down into two categories, "rod and line" (e.g. retained) and "catch and release" (e.g. released). Note that the total catch by the rod and line fishery is in effect the sum of the catches recorded in both categories. Where appropriate, data from both categories have been combined to give an indication of the total rod and line catch. Similarly, the catch by net and coble and fixed engines (bag and stake nets) has been combined in some instances to provide an indication of the total catch by the net fishery.

The analysis of fisheries statistics given below is not an assessment of the abundance or state of the stocks but provides an indication of the underlying population trends and relative importance of the fisheries of salmon and sea trout by region and fishery district in Scotland. The critical time for fisheries does not necessarily represent critical times for salmon and sea trout movement. In addition, catch data is limited in terms of presenting an accurate baseline of fish populations and fish migration outside of the time of fisheries. This is also the case for rod-and-line catches which do not account for the closed season giving no effort value.

The catch data used in this report are Crown copyright, used with the permission of MSS. MSS is not responsible for interpretation of these data by third parties. In addition, please note that the 2013 statistics included within this report are provisional.

2.2.2 Salmon Fishery Regions and Districts

Each Salmon Fishery District (SFD) applies its own voluntary or statutory conservation code, closure times, policies and regulations. Each SFD also has different management and conservation schemes (e.g. hatcheries, fish counters, water quality control and monitoring schemes). In addition, different districts include varying numbers of rivers and tributaries within their jurisdictions and have different catchment areas.

The boundaries of the salmon fishery regions and districts could not be provided by MSS as GIS data layers, this is due to third party copyright ownership of these data. The district and region boundaries shown in the charts provided in this report were produced by geo-referencing a raster image and should therefore be taken as approximate and for illustrative purposes only.

2.2.3 Data Gaps

There is insufficient information available at present to define the migratory routes and patterns of Scottish salmon and sea trout at the spatial resolution ideally required in this assessment. In addition, there is no detailed information regarding the possibility for the area covered by the Modified TI to be used by these species in other ways. This is particularly relevant for sea trout as marine migration is generally more localised and sea trout could potentially use the area of the Modified TI and its vicinity for extended periods of time when feeding.

Furthermore, the available data and information do not allow for the numbers and the origin of the fish potentially migrating through or near the area in which the Modified TI is located to be estimated or otherwise quantified.

2.3 Consultation

Consultation questionnaires were circulated to all the District Salmon Fishery Boards (DSFBs) in Scotland through the Association of Salmon Fishery Boards (ASFB) and to netsmen through the Salmon Net Fishing Association of Scotland (SNFAS) in 2011. In addition to questionnaires, consultation was also undertaken with individual DSFBs and associated organisations. Since submission of the applications for the now consented offshore wind farms, MORL has had regular and ongoing consultation with the ASFB, Moray Firth Sea Trout Project (MFSTP), Moray and Pentland Firths Salmon Protection Group (MPFSPG) and last met with representatives of these groups in May 2014.

A summary of information regarding salmon fisheries in the Spey and Deveron SFDs, within which the Modified TI makes landfall, was provided to DSFB staff at these organisations in June 2014 to check that the information gathered during previous consultation during 2011 was still relevant.

A full list of consultees and a template of the consultation questionnaires used are provided within Appendix 9.3B submitted as part of the previous Environmental Statement (ES) detailing the Telford, Stevenson and MacColl offshore wind farms in August 2012. As described above dialogue has been ongoing since submission of these applications.

MORL also sits on both the steering and the stakeholder groups for MSS's National Research and Monitoring Strategy for Diadromous Fish (NRMSDF). This is a strategy group led by MSS to investigate the potential for interactions between diadromous fish and wind, wave and tidal renewable energy developments through consultation and research. As part of this group, MORL is contributing to helping to develop a research plan to increase knowledge regarding the behaviour of diadromous fish in the Moray Firth region and around the wider Scottish coast.

2.4 Study Area

For the purposes of the assessment two study areas have been defined:

- A regional study area, that focuses on all the Salmon Fisheries Districts in the Moray Firth; and

A local study area that focuses exclusively on the Salmon Fisheries Districts where the landfall of the Modified TI is located: the Spey and Deveron districts

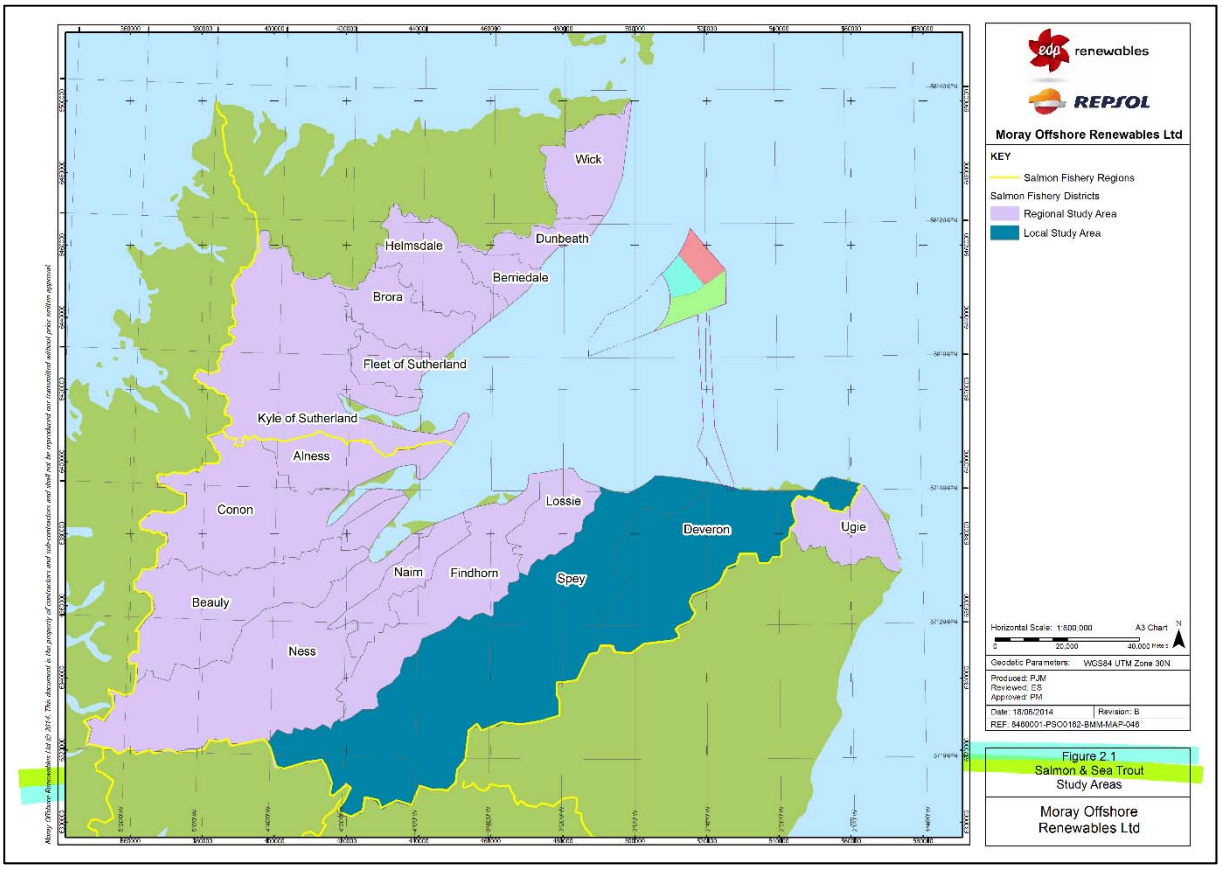


Figure 2.1 Salmon and Sea Trout study area

3 Salmon & Sea Trout Ecology

3.1 Introduction

Atlantic salmon and sea trout are anadromous migratory species of the family Salmonidae. Anadromous species spend a significant proportion of their life history in marine habitats and migrate to freshwater to spawn. Salmon and sea trout fisheries exploit the migratory behaviour of both species by intercepting fish in both rivers and coastal waters.

Atlantic salmon are widely distributed within the northeast Atlantic, occupying diverse biological and physical environments from northern Portugal to Finland (Klemetsen *et al*., 2003). The UK component constitutes a significant proportion of the stock in European Union (EU) waters. Salmon are found in over 300 UK rivers, where the size of the runs often exceeds 1000 individuals per annum (JNCC, 2010).

Sea trout are anadromous brown trout and the migratory and non- migratory forms are recognised as a single species. The mechanisms controlling anadromy in brown trout are not fully understood but involve both genetic and environmental components (Malcolm et al., 2010). The geographical range of brown trout is widespread; from Corsica, Sardinia and Sicily in the south to Iceland, Scandinavia and Russia in the north (Klemetsen et al., 2003).

The anadromous form is frequently found in brown trout populations with free access to the marine environment (Klemetsen et al., 2003). Accordingly, sea trout are found in suitable rivers throughout the geographical range of the species. Atlantic salmon and sea trout share many ecological similarities and frequently co-exist in UK rivers. The life cycles of both species are broadly similar with the exception of differences in the temporal scale of marine feeding migration.

3.2 Life Cycle and Ecology: Overview

Spawning of salmon and sea trout occurs in the upper reaches of rivers during late autumn and winter when females cut nests (known as a 'redds') in gravelly substrates in which the eggs are deposited (NASCO, 2012). Larvae ('alevin') hatch the following spring, feeding on an attached yolk sac before progressing to feeding on invertebrate prey at which point they are known as 'fry'. At the end of their first summer of feeding juveniles are known as 'parr' (Potter & Dare, 2003).

After spending one to five years in freshwater, salmon and sea trout parr undergo 'smolting'; a process of physiological and morphological changes which prepare for ocean entry (McCormick et al., 1998). Through late March to June smolts migrate down river and enter the ocean where they are known as 'post smolts', until the middle of their first winter at sea. A summary of the timing of smolt runs in Moray Firth rivers is provided in Table 3.1.

Salmon grow rapidly in the marine environment and return to their natal rivers as adults after spending between one to five years at sea. The marine diet typically comprises a high proportion of fish such as sandeels (Ammodytidae) and clupeids including herring (*Clupea harengus*) and sprat (*Sprattus Sprattus*) (Fraser, 1987; Reddin, 1985; Hyslop & Webb, 1992; Jacobsen & Hansen, 2001).

Time spent feeding at sea varies within and among salmon populations and different cohorts may return at different times of the year, spawning in different areas of the natal river (Klemetsen et al., 2003; Potter & Dare, 2003).

The majority of grilse tend to enter the river from early summer- autumn. Numbers of MSW fish will also begin upstream migration at this time, although smaller numbers of this stock component may begin to ascend the river as early as the autumn of the year before spawning. These larger, earlier running individuals are particularly prized by anglers who refer to them as 'spring' run fish.

Sea age structure of populations differs between Scottish coasts; in the smaller rivers on the west coast runs tend to be dominated by grilse, whilst higher numbers of MSW are found in populations from rivers on the north and east coasts (Malcolm et al., 2010). In addition, significant changes have been observed in the timings of salmon runs in rivers in Scotland and elsewhere in the UK in recent years.

This is manifest as a shift from spring-summer to summer-autumn runs (Gough et al., 1992; Milner et al., 2000; Aprahamian et al., 2008). In most rivers the change in run timing has also been associated with a decrease in the proportion of MSW fish in the annual run (Aprahamian et al., 2008; Environment Agency & Cefas, 2011). In Scottish (and other UK rivers) these observations have led to a number of conservation measures aimed at protecting the MSW stock component, including blanket catch and release policies, and delays to the start of both recreational and commercial fishing seasons.

The majority of salmon perish after spawning. The small proportion (around 5%) that survive are known as 'kelts' (Thorstad et al., 2008).

The life cycle of sea trout is similar to that of salmon. Sea trout marine migration is however shorter than that of Atlantic salmon, characterised by movements on smaller spatial scales occurring closer to natal rivers. A smaller proportion of individuals may undertake long distance offshore migration during marine feeding (Kallilo- Nyberg et al., 2001). In comparison to salmon, diet may be more varied with a higher occurrence of benthic invertebrates in addition to fish (Fahy, 1987).

Immature smolts that return to freshwater to overwinter after a short spell of feeding at sea and are known regionally known as 'whitling', 'finncok' or 'herling' (Malcolm et al., 2010). A further component of the stock referred to as 'maidens' do not return to freshwater to spawn until at least a year after migration (Gargan et al., 2004).

Sea trout migrate back to the sea in the spring, both as spawned kelts and immature fish that have overwintered without spawning. In contrast to salmon, post spawning survival rates are high in sea trout and repeat, annual spawning is common (Gargan et al., 2004).

Table 3.1 Timing of Smolt Runs as defined by District Salmon Fishery Boards during Consultation (2011, 2014)

District Salmon Fishery Board	Timing of Smolt Run
Spey (Local Study Area)	April-May (sometimes into early June).
Deveron (Local Study Area)	Mid-March to end of May (rarely into June). Migration in upper reaches can start in 2nd week in March. Sea trout broadly similar.
Cromarty Firth (Conon and Alness Districts)	May.
Ness and Beauly	April to June.
Helmsdale	May.
Caithness (Berriedale, Dunbeath and Wick Districts)	Mid April to mid-May with some earlier running smolts and a good number through June also.
Lossie	May, peaking towards the end of the month and finishing in early June.
Kyle of Sutherland	Spring and Autumn.

3.3 Conservation Status

Atlantic salmon is listed in Annexes II and V of the EU Habitats Directive as a species of European importance and Annex III of the Bern Convention. The protection given to salmon through the Habitats Directive however, is restricted to freshwater habitats, as marine and estuarine sites are excluded from selection. Similarly, salmon at sea are not protected under the Bern Convention.

Through the implementation of the Habitats Directive and as a result of the European importance of Scotland's salmon populations, 11 Scottish rivers have been designated as Special Areas of Conservation (SACs), with salmon being a primary reason for the selection of the sites. SAC Rivers within the Moray Firth and wider area for which salmon is a primary or qualifying feature are shown in Figure 3.1. Of these there is one within the Local Study Area, the River Spey, where the salmon population is considered of high quality.

Further to the protection given under the EC Habitats Directive, Atlantic salmon is listed as a UK Biodiversity Action Plan (BAP) priority species and is protected at the international level by the North Atlantic Salmon Conservation Organization (NASCO), an inter-governmental organisation devoted to the conservation, restoration, enhancement and rational management of wild salmon in the North Atlantic (Curd, 2010).

Sea trout is not subject to the same level of protection as salmon in Europe although it is also listed as a UK BAP priority species. In addition, as a result of the definition of the term salmon in the Scottish legislation, sea trout is currently protected at the same level as Atlantic salmon in Scotland. Under the Salmon (Scotland) Act (1986) the terms salmon means: *"all migratory fish of the species Salmo salar and Salmo trutta and commonly known as salmon and sea trout respectively or any part of any such fish".* In addition, the marine phase of the life cycle of both Atlantic salmon and sea trout is included in the draft list of Priority Marine Features (PMF) in Scottish coastal waters compiled by SNH.

The population dynamics of another species of conservation importance, the freshwater pearl mussel (*Margaritifera margaritifera*), is closely linked to the presence of salmonids in the rivers (JNCC, 2011). During the larval stage *M. margaritifera* attaches itself to the gills of salmonids in river in mid to late summer. The following spring it drops off its host to settle in the riverbed gravel where the juvenile grows into an adult. Freshwater pearl mussels are protected under the Wildlife and Countryside Act (1981) of Great Britain and listed as UK BAP Priority Species (UKBAP, 2011) and also listed on Annexes II and V of the EC Habitats Directive and Appendix III of the Bern Convention (Bern Convention, 2011; EC, 2011).

Recent declines in freshwater pearl mussel populations have been caused by factors such as pearl-fishing, pollution, acidification, organic enrichment, siltation, river engineering and declining salmonid stocks (JNCC, 2011). Pearl mussel are the primary reason for selection of four SACs in the Moray Firth: the Evelix, the Oykel, the Moriston and the Spey. In the Spey the population is estimated at several million and is considered of international significance (JNCC, 2011).

The distribution of sea lamprey (*Petromyzon marinus*), also a primary reason for selection of the River Spey SAC, is largely dictated by the distribution of their host (Waldman et al., 2008). At sea, lamprey feed on a variety of marine mammals and fish, including salmon, shad, herring, pollock, cod, haddock, swordfish and basking sharks (Kelly & King, 2001, ter Hofstede et al., 2008). Lamprey is listed as Annex III species in the Bern Convention and Annex II species in the Habitats Directive. Furthermore, the species has been listed as Priority Marine Feature (PMF) in Scottish territorial waters, in the UKBAP priority list and in OSPARs list of threatened and/or declining species and habitats.

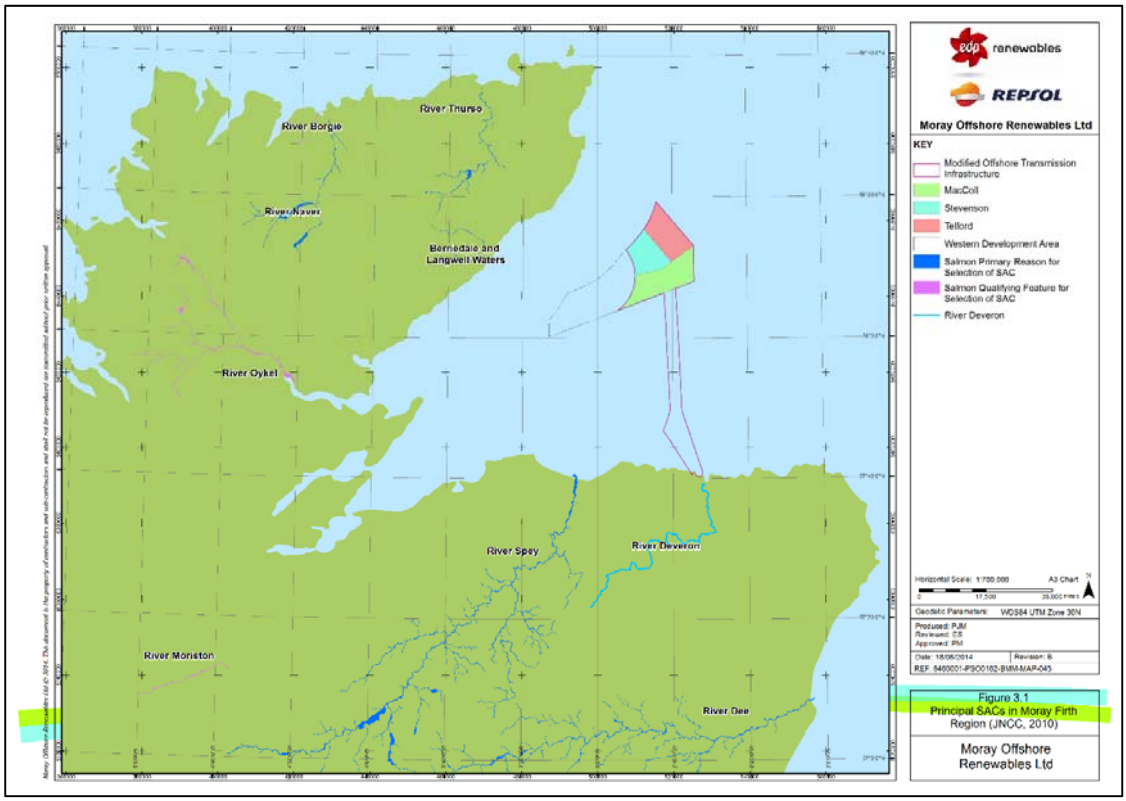


Figure 3.1 Distribution of SACs for Atlantic salmon (Note: River Deveron is also shown but is not a designated SAC)

4 Salmon & Sea Trout Fisheries

4.1 Introduction

Salmon and sea trout are an important part of Scotland's natural and cultural heritage and support commercial and recreational fisheries. These fisheries are of significant of importance to the Scottish economy: research commissioned by the Scottish Executive (Radford et al., 2004) estimated that game and coarse anglers spent a total of £131m in Scotland of which 65% (£73m) corresponded to salmon and sea trout fishing. A similar study undertaken in the Spey (Riddington et al., 2004) calculated that in 2003 the expenditure by salmon anglers generated £11.8 million and supported 367 full-time equivalent jobs in the catchment. Extrapolation of these results to all Moray Firth rivers indicates that angling generated approximately £28.8 million in the area (Butler, 2004). In the Kyle of Sutherland, Radford et al., (2007) estimated that angling related tourism was worth £3.37 million annually to the local economy (KSFT, 2007; Consultation Meeting, 2011b).

Detailed information regarding salmon fishing rights, administration and regulations is provided in the report (Appendix 9.3B) submitted as part of the previous Environmental Statement (ES) detailing the Telford, Stevenson and MacColl offshore wind farms in August 2012.

4.2 Salmon and Sea Trout Fisheries in the Regional Study Area

An indication of the annual reported catch by species and method in the regional study area is given in Table 4.1 and Table 4.2 respectively, expressed as the number of individuals caught by district (average 2004 to 2013).

Salmon and grilse account for the majority of the catch in all districts, with the exception of the Lossie, where sea trout is the principal species caught. Catches from the Spey and Deveron districts contribute the two highest proportions to the total salmon and sea trout catch from all Moray Firth Districts (32.7% and 13.5%, respectively). An overview of the salmon and sea trout fisheries, specific to the Spey and Deveron districts is given in Section 4.3.

Table 4.1 Annual Average Catch by Species and District (2004 to 2013)

District	Grilse	Salmon	Sea Trout	Total	Percentage of total Salmon and Sea Trout Catch (%)
Spey	2,998	5,897	2,152	11,046	32.7%
Deveron	1,548	2,291	720	4,559	13.5%
Kyle of Sutherland	1,902	1,753	507	4,162	12.3%
Findhorn	1,205	1,577	126	2,908	8.6%
Helmsdale	923	1,188	158	2,270	6.7%
Conon	1,119	531	203	1,852	5.5%
Beauly	842	489	175	1,506	4.5%
Ness	667	739	57	1,462	4.3%
Nairn	684	236	103	1,022	3.0%
Brora	189	418	193	800	2.4%
Wick	595	141	16	752	2.2%
Alness	447	165	37	650	1.9%
Lossie	152	45	185	381	1.1%
Berriedale	101	98	6	205	0.6%
Dunbeath	66	74	15	154	0.5%

The principal fishing method in the regional study area is rod-and-line and is the only method used in a number of districts, including the Spey and the Deveron

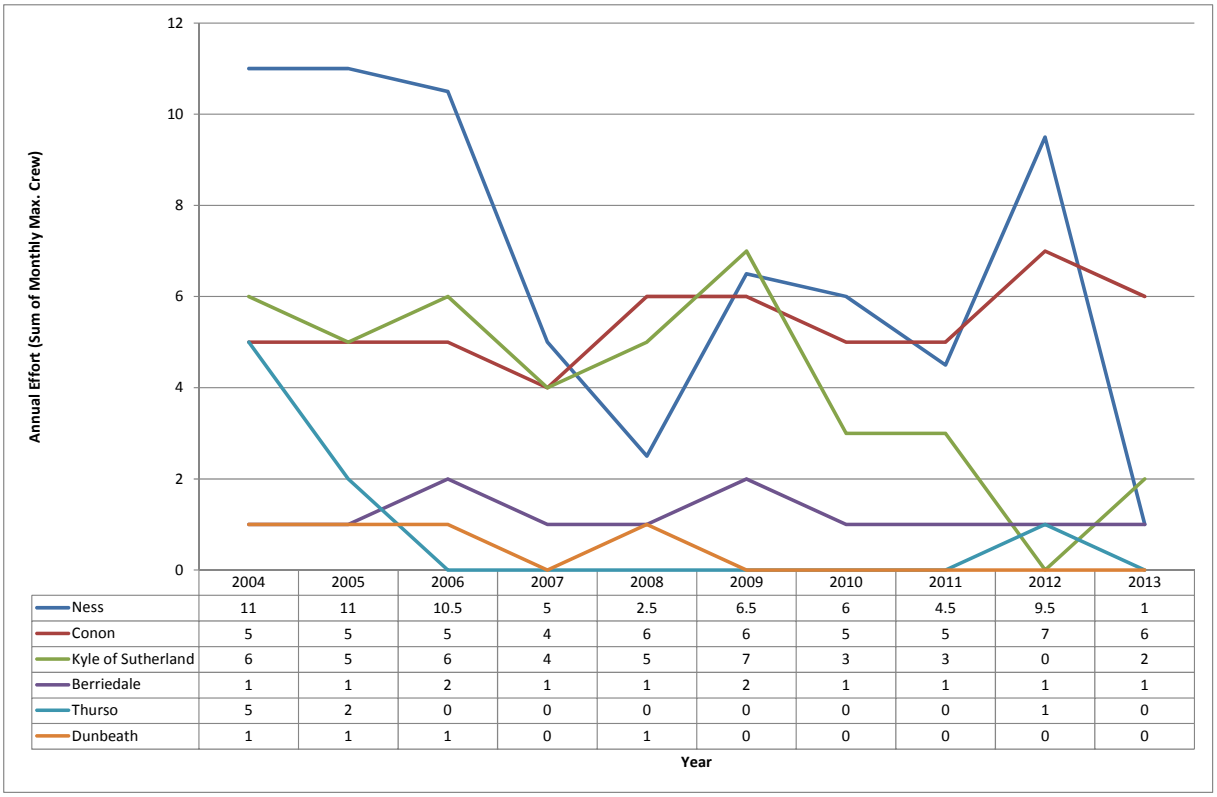
It can be seen that the proportion of fish released exceeds that retained in most Moray Firth districts. Netting by both fixed engines and net-and-coble occurs to a lesser extent and is now only practiced in six of the 15 districts for which data are given. A fixed engine fishery commenced operation on the Deveron in 2012, of which more detail is provided on this fishery in section 4.3. Up until 2012 there had been no fixed engine fishery in this district for a number of years.

Table 4.2 Annual Average Catch by Method and District (2004 to 2013)

District	Rod and Line (Catch & Release)	Rod and Line (Retained)	Fixed Engine	Net and Coble	Total	Percentage of total Salmon and Sea Trout Catch (%)
Spey	7,876	3,170	0	0	11,046	32.7%
Deveron	2,281	1,899	378	0	4,559	13.5%
Kyle of Sutherland	3,031	910	187	35	4,162	12.3%
Findhorn	1,834	1,074	0	0	2,908	8.6%
Helmsdale	1,530	740	0	0	2,270	6.7%
Conon	1,047	519	211	75	1,852	5.5%
Beauly	1,049	457	0	0	1,506	4.5%
Ness	683	553	0	226	1,462	4.3%
Nairn	379	644	0	0	1,022	3.0%
Brora	513	288	0	0	800	2.4%
Wick	205	547	0	0	752	2.2%
Alness	338	312	0	0	650	1.9%
Lossie	153	228	0	0	381	1.1%
Berriedale	91	78	0	36	205	0.6%
Dunbeath	38	90	0	27	154	0.5%

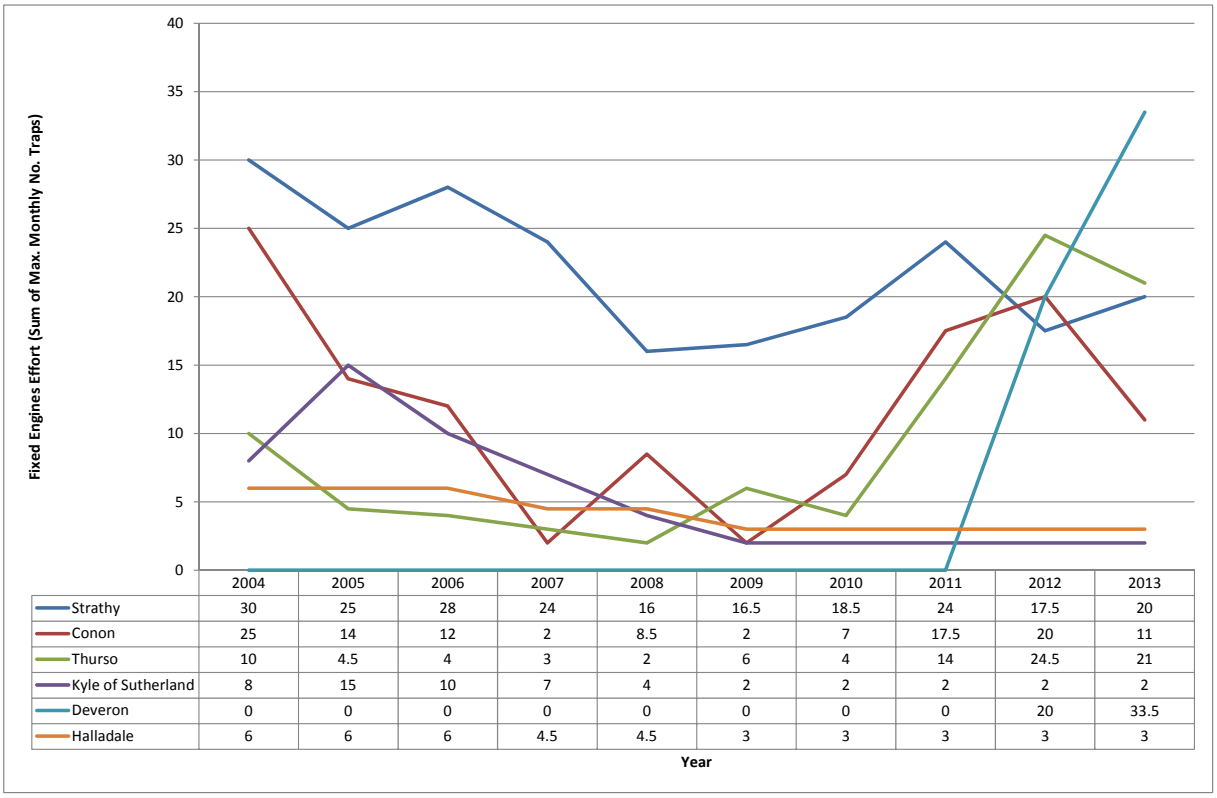
Figure 4.1 and Figure 4.2 provide an indication of the annual variation in fishing effort utilising the net-and-coble fishery and the fixed engine fishery statistics by effort as provided by MSS for the years 2004-2013. In both cases, the data for 2013 is provisional.

As shown in Figure 4.1, net and coble effort has been variable between 2004 and 2013. Effort in the Ness has declined severely from 11 in 2004 to one in 2013 whereas effort in the Conon has remained relatively stable at between four and seven per year. Effort in the Kyle of Sutherland had declined to zero in 2012 but has increased again in 2013. Effort in the Halladale and Kyle of Sutherland have remained stable from 2008 to 2013, whereas effort in the Deveron has changed dramatically increasing from zero in 2004-2011 to 33.5 in 2013. Effort in the Strathy has shown a general decline from 30 in 2004 to 20 in 2013.



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Ness	11	11	10.5	5	2.5	6.5	6	4.5	9.5	1
Conon	5	5	5	4	6	6	5	5	7	6
Kyle of Sutherland	6	5	6	4	5	7	3	3	0	2
Berriedale	1	1	2	1	1	2	1	1	1	1
Thurso	5	2	0	0	0	0	0	0	1	0
Dunbeath	1	1	1	0	1	0	0	0	0	0

Figure 4.1 Annual Net and Coble Effort (Max. crew) by SFD (2004- 2013) (Source: MSS, 2014)



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Strathy	30	25	28	24	16	16.5	18.5	24	17.5	20
Conon	25	14	12	2	8.5	2	7	17.5	20	11
Thurso	10	4.5	4	3	2	6	4	14	24.5	21
Kyle of Sutherland	8	15	10	7	4	2	2	2	2	2
Deveron	0	0	0	0	0	0	0	0	20	33.5
Halladale	6	6	6	4.5	4.5	3	3	3	3	3

Figure 4.2 Annual Fixed Engine Effort (Max. no. pots) by SFD (2004- 2013) (Source: MSS, 2014)

4.3 Salmon and Sea Trout Fisheries in the Local Study Areas

4.3.1 The Spey

Nets used at the mouth of the Spey were bought out by the Board and other conservation organisations in 1993 and as a result, there are no operational coastal netting stations in the district. Rod-and-line is now the only method currently used in the Spey district. There is a voluntary conservation policy in place which has delivered increasing release rates. In 2013, 88% of salmon and 76% of sea trout were released (Consultation, 2014). Figure 4.3 shows the progression of catch and release rates in the Spey (Spey Fisheries Board, 2014).

The seasonality of the fishery is shown in Figure 4.3, based on averaged monthly catches by species (2004-2013). The salmon rod and line fishery runs from 11th February to the 30th September (Consultation Meeting, 2011d). Overall, the highest total catches in the district (all species) are recorded from June to August inclusive followed by May and then September.

Salmon are principally caught from May to September. March and April record relatively high salmon catches reflecting the diversity of salmon stock components in the river. Grilse catches are highest in July and August.

The highest sea trout catches are recorded in June and July with low number in the earlier months of the season (Figure 4.4).

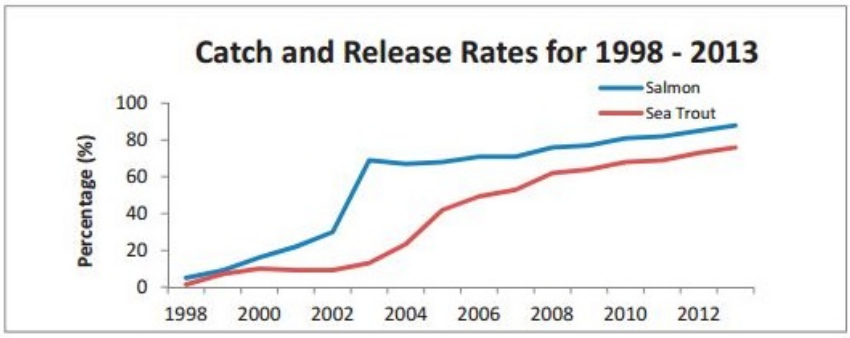
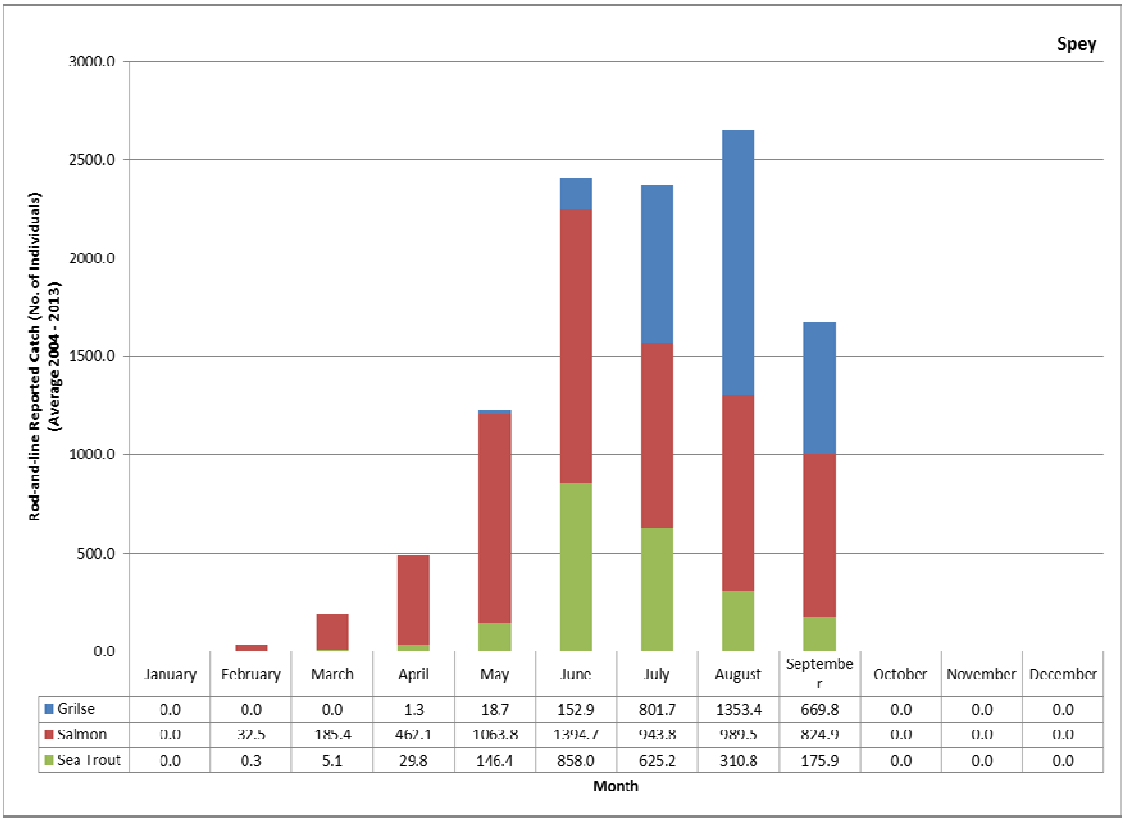


Figure 4.3 Proportion of rod-caught wild salmon and sea trout released on the river Spey (1998-2013) (Spey fisheries board, 2014)



	January	February	March	April	May	June	July	August	September	October	November	December
Grilse	0.0	0.0	0.0	1.3	18.7	152.9	801.7	1353.4	669.8	0.0	0.0	0.0
Salmon	0.0	32.5	185.4	462.1	1063.8	1394.7	943.8	989.5	824.9	0.0	0.0	0.0
Sea Trout	0.0	0.3	5.1	29.8	146.4	858.0	625.2	310.8	175.9	0.0	0.0	0.0

Figure 4.4 Seasonality of Rod and line Reported Catch (average 2004-2013) in the Spey (Source: MSS, 2014)

4.3.2 The Deveron

The Deveron is primarily a salmon river although sea trout are important during the summer months (Consultation, 2011). From 1991 to 2012, rod and line was the only method used in this district. Although the majority of the netting rights were bought out in 1991, two redundant netting stations have recently been purchased by USAN fisheries Ltd and are now active.

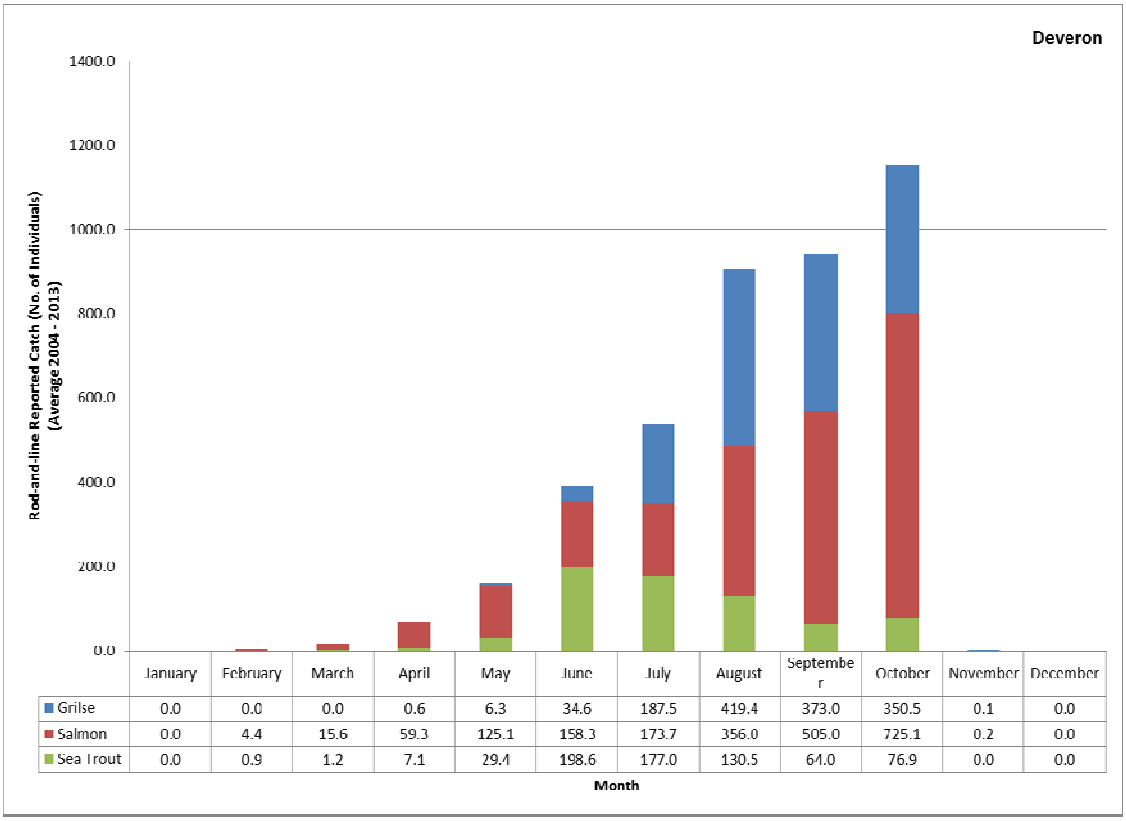
The port of operation for this fishery is Gardenstown and the bag nets are located at More Head in the Moray Firth and further east at Crovie Head (pers. comm, R.Miller Deveron Boga and Isla Rivers Trust, 29.05.2014). There is also a clause in place that allows the netting stations bought and decommissioned in the Deveron district by the Atlantic Salmon Conservation Trust and Deveron District Salmon Fishery Board to be used for scientific purposes (pers. comm. Deveron Salmon Fisheries Board, 2014). Total combined catches (salmon, grilse, and sea trout) from the commercial stations for the past two years were 1233 (in 2012) and 2254 (in 2013). Catches of salmon in this fishery are considerably greater than sea trout.

The seasonality of the rod and line catch by species is given in Figure 4.4 based on monthly reported catches by species (average 2004-2013). The period from August to October records the highest total catches (all species combined). Sea trout are caught in highest numbers in June and July. Grilse catches peak in August, although July, September and October also record relatively high numbers. Salmon are caught throughout the season with higher catches recorded in September and October.

The salmon and sea trout rod and line season is open from 11th February to 31st October (Consultation, 2011). All salmon and grilse must be released up to the end of May whereas after the

1st June one male salmon or grilse under 10lbs can be kept per day with a maximum of two fish per rod per week. In the case of sea trout all must be released throughout the season (pers. comm. Deveron Salmon Fisheries Board, 2014).

Sea trout smolts from the Deveron migrate out of the river at the end of March/April (broadly similar to the time of salmon smolts leave the river) and adults feed in grounds off the coast from March until September. Sea trout return to the rivers throughout this period, although most individuals return later in the year, around August, close to the spawning season (Consultation Meeting, 2011b).



	January	February	March	April	May	June	July	August	September	October	November	December
Grilse	0.0	0.0	0.0	0.6	6.3	34.6	187.5	419.4	373.0	350.5	0.1	0.0
Salmon	0.0	4.4	15.6	59.3	125.1	158.3	173.7	356.0	505.0	725.1	0.2	0.0
Sea Trout	0.0	0.9	1.2	7.1	29.4	198.6	177.0	130.5	64.0	76.9	0.0	0.0

Figure 4.5 Seasonality of Rod and line Reported Catch (average 2004-2013) in the Deveron

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