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Glossary

Catch and release	The catching of a fish and subsequent return alive to the water course.
Coarse anglers	Anglers who target cyprinids.
Coble	A type of boat.
Estuary	A partially closed coastal water body with one or more rivers flowing into it.
Fishing effort	A measure of the amount of fishing.
Fixed Engine	A static coastal net used to catch salmon and sea trout.
Game anglers	Anglers who target salmonids.
Grilse	One sea winter salmon.
Heritable rights	A right vested by the Crown as a heritable title.
Multi sea winter fish	A salmon spending more than one winter at sea.
Net and coble	A net set from a boat (coble) to catch salmon and sea trout.
Recreational fishing	Fishing undertaken for recreational purposes with no financial gain.
Retained fish	Fish killed after capture.
Rod and line	A method of fishing using a rod and line.
Sea trout	A sea going brown trout.
Smolt	A juvenile salmon migrating to the sea.
Special Area of Conservation	Designated site at a European level.
Spring salmon	An adult salmon which enters a river in spring.
The Crown Estate	An independent commercial business created by an Act of Parliament.
Tidal limit	The furthest point the tide reaches within a river system.
Tributary	A stream or river that flows into a larger stream or river.
Warps	Ropes

Abbreviations and Acronyms

DSFB	District Salmon Fishery Board
ERFT	Esk Rivers and Fisheries Trust
FMS	Fishery Management Scotland
MS	Marine Scotland
OfTW	Offshore Transmission Works
RTC	River Tweed Commission
SAC	Special Area of Conservation
SNFA	Salmon Net Fishing Association
SNH	Scottish Natural Heritage

14B Salmon and Sea Trout Fisheries Baseline

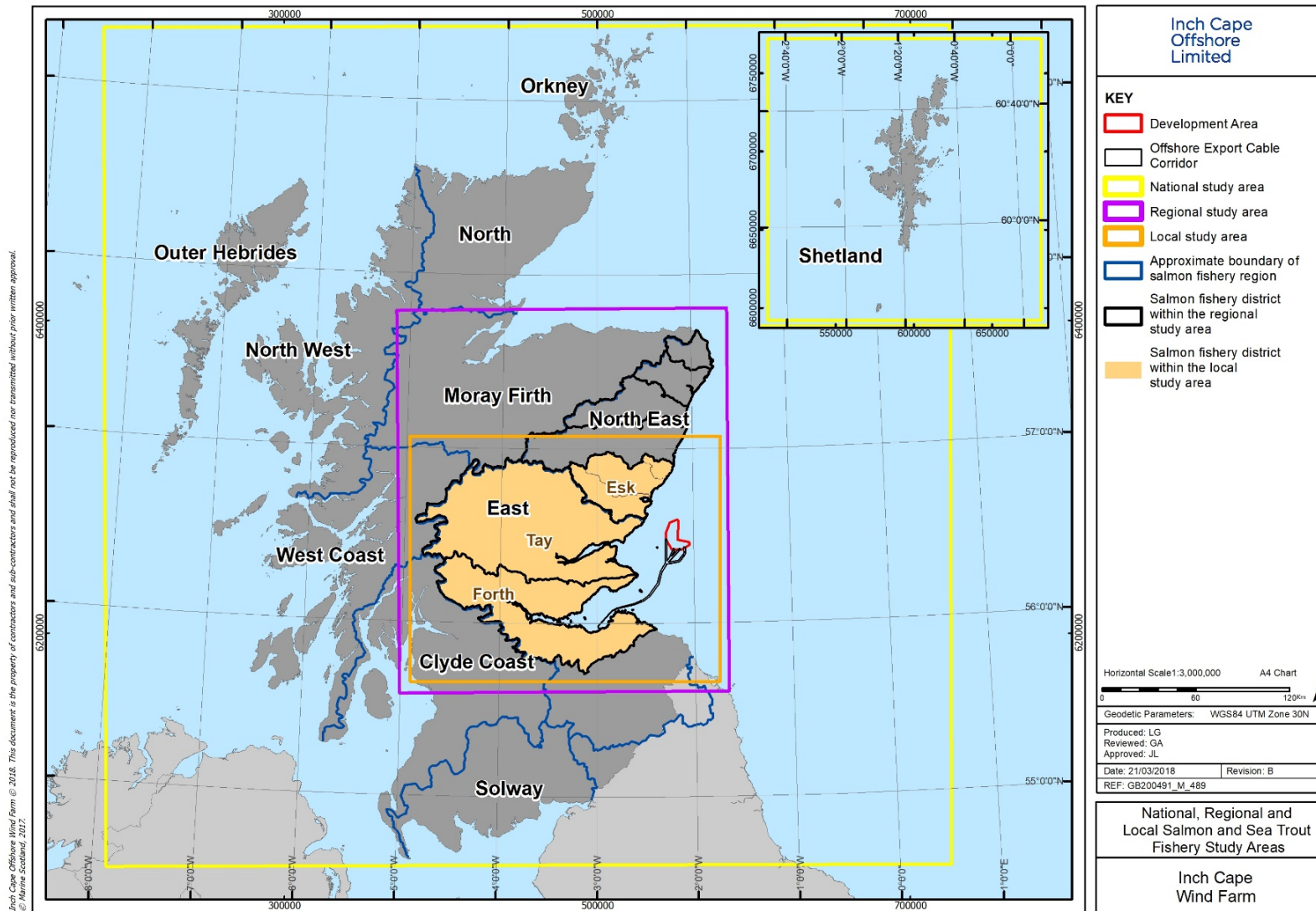
14B.1 Introduction

- 1 This document identifies a baseline for salmon (*Salmo salar*) and sea trout (*Salmo trutta*) in Scotland at a national, regional and local level and has been prepared as part of the Commercial Fisheries Environmental Impact Assessment (EIA) Report for the Inch Cape Wind Farm and Offshore Transmission Works ((OfTW). The commercial fisheries assessment can be found in *Chapter 14: Commercial Fisheries* of the main EIA Report.
- 2 This report documents the socio-economic significance of salmon and sea trout associated with the areas relevant to the Inch Cape Wind Farm and OfTW ascertained.
- 3 Salmon and sea trout are of significant conservation importance in Scotland. This, in part, is due to the socio-economic importance of wild salmon and sea trout fisheries. Scotland is home to both a commercial salmon net fishery and also an extensive, nation-wide, river based rod and line fishery. Scottish rivers are a European stronghold for salmon with many designated as Special Areas of Conservation (SAC's).
- 4 The socio-economic importance of the salmon and sea trout fisheries in Scotland is well documented and for the purposes of this report the fishery catch statistics available from Marine Scotland (MS) (Marine Scotland, 2017a) has been used. The data has been analysed in order to provide information on certain aspects of the fishery which are:
 - Trends in salmon, grilse and sea trout catches by method over the entire MS data set (1952 to 2016) at a national level;
 - Relative importance of each Scottish salmon fishery region by species and method at a national, regional and local level based on annual average catches (2007 to 2016);
 - Seasonality and variation of salmon, grilse and sea trout catches by method based on annual average catches (2007 to 2016) at a regional level; and
 - Seasonality and variation of salmon, grilse and sea trout catches by method based on annual average catches (2007 to 2016) at a local level.
- 5 The MS data does not give exact migration times or stock assessment of salmon, grilse and sea trout but an indication of numbers caught over a specific period (average annual and monthly catches 2007 to 2016). This period is defined by fishery closure dates so a complete annual picture by fishery is not possible. The limitations to the MS fishery data is discussed further in *Section 14B.3.5*.
- 6 In addition to the above, information was gathered through consultation with District Salmon Fishery Board's (DSFB) and representatives of the net fishery to inform this document.

14B.2 Study Area

- 7 The study area has been defined using three scales; national, regional and local (Figure 14B.1).
- 8 The National Study Area focuses on Scotland as a whole and uses catch statistics based on a regional level as defined by Marine Scotland. There are 11 regions across Scotland which include Shetland and Orkney (Marine Scotland, 2015).
- 9 The Regional Study Area concentrates on those regions which are located in the vicinity of the Inch Cape Wind Farm and OfTW and the districts which they encompass. For the purposes of this assessment they are the East and the North East regions.
- 10 The Local Study Area identifies those salmon fishery districts which are closest to the Inch Cape Wind Farm and OfTW and includes the Forth, the Tay and the Esk. The Esk is managed by the Esk DSFB and includes the North Esk, South Esk and the Bervie. For the purposes of this assessment the individual river catchments of the Esk will be used.

Figure 14B.1: National, Regional and Local Salmon and Sea Trout fishery Study Areas



14B.3 Methodology

14B.3.1 Data and Information Sources

11 There is no standard methodology for the establishment of salmon and sea trout fisheries baselines in relation to offshore wind farm developments. A range of different data and information sources have therefore been used to inform this assessment. These are as follows:

- MS;
- Relevant DSFB's;
- Fisheries Management Scotland (FMS);
- Salmon Net Fishing Association of Scotland (SNFAS);
- Other interested stakeholders; and
- Scientific papers and other relevant publications.

12 The principle datasets used to inform the salmon and sea trout fisheries baseline are:

- MS salmon and sea trout catch data by year (1952 to 2016);
- MS salmon and sea trout catch data by region (2007 to 2016); and
- MS salmon and sea trout catch data by district (2007 to 2016).

14B.3.2 Consultation

13 Consultation has been undertaken with representatives of relevant DSFB's and with representatives of the net fishery. These were as follows:

- Ugie DSFB;
- Ythan DSFB;
- Don DSFB;
- Dee DSFB;
- Esk DSFB;
- Tay DSFB;
- Forth DSFB;
- Tweed Commission; and
- Scottish Net Fishing Association (SNFA).

14 In addition to a consultation meeting on 7 November 2017, questionnaires were distributed to the DSFB's listed above. This process was intended to gather salmon and sea trout fisheries information specific to these districts which cannot be ascertained from the MS catch data.

- 15 Of the eight DSFB's that were invited to the Salmon and Sea Trout Consultation meeting six Boards attended which included the Don, Dee, Forth, Tweed, Tay and Esk (the Don and Dee were singularly represented). Five questionnaires were completed and returned. No representative from the SNFA or any nets men attended the meeting.

14B.3.3 Salmon Fisheries in Scotland

- 16 All rights of salmon fishing in Scotland, whether in fresh water or in the sea, are held as private, heritable titles. Originally all the rights were owned by The Crown, over time these rights have been conveyed to individuals by written Crown grants which can be bought, sold and leased. The Crown do not let or operate coastal netting rights and haven't done so since the early 1990's (Crown Estate Scotland, 2017).
- 17 The right to catch fish in Scottish freshwaters is a private one and access to fisheries is largely controlled by the proprietors who include The Crown Estate, private individuals, companies, local authorities and angling clubs. Salmon fishing rights in Scotland are not always bound to the land where the fishing is located and although a riverbank may be privately owned the salmon and sea trout fishing rights may lie with the Crown (Crown Estate Scotland, 2017). It is a criminal offence to fish for or take salmon (which includes sea trout) without the legal right or without written permission from the owner of the right (Marine Scotland, 2014). This includes any waters, including any part of the sea within 1.5km of mean high water springs (Marine Scotland, 2008).

14B.3.4 Regions and Districts

- 18 In Scotland salmon fishing, both rod and line and commercial netting, is legally regulated and managed by DSFB's. There are 41 DSFB's (Fishery Management Scotland [FMS], 2017) across Scotland (Figure 14B.2). Each of the districts applies its own voluntary or statutory conservation code, closure times, policies and regulations and has in place different management and conservation schemes. The district boards finance their work by levying a rate on the salmon fishery owners in the district. Scottish Ministers can also regulate salmon fisheries through the provision of legislative controls (Scottish Natural Heritage (SNH) 2016).
- 19 The areas and names of some districts have changed over time and may now preside over a number of rivers and tributaries within their jurisdiction. One example of this is the Esk DSFB which manages the South Esk, North Esk and the Bervie (also the Lunan Water). For the purposes of this assessment the individual rivers will be used in line with the MSS catch statistics.
- 20 The Tweed does not have a DSFB but is managed by the River Tweed Commission (RTC) which is made up of 81 commissioners who are empowered under the Scotland Act 2008 (River Tweed) Order 2006 with the management of salmon, sea trout, trout and other freshwater fish in the River Tweed and its tributaries. Its area of jurisdiction extends five miles out to sea and includes the coastline between Cockburnspath and Holy Island (RTC, 2006).

- 21 The DSFB's are represented by Fishery Management Scotland (FMS) (formally Association of Salmon Fisheries Boards) who maintains a regular dialogue with Government and Agencies to ensure the interests of the DSFB's and Scotland's wild freshwater fisheries are represented.

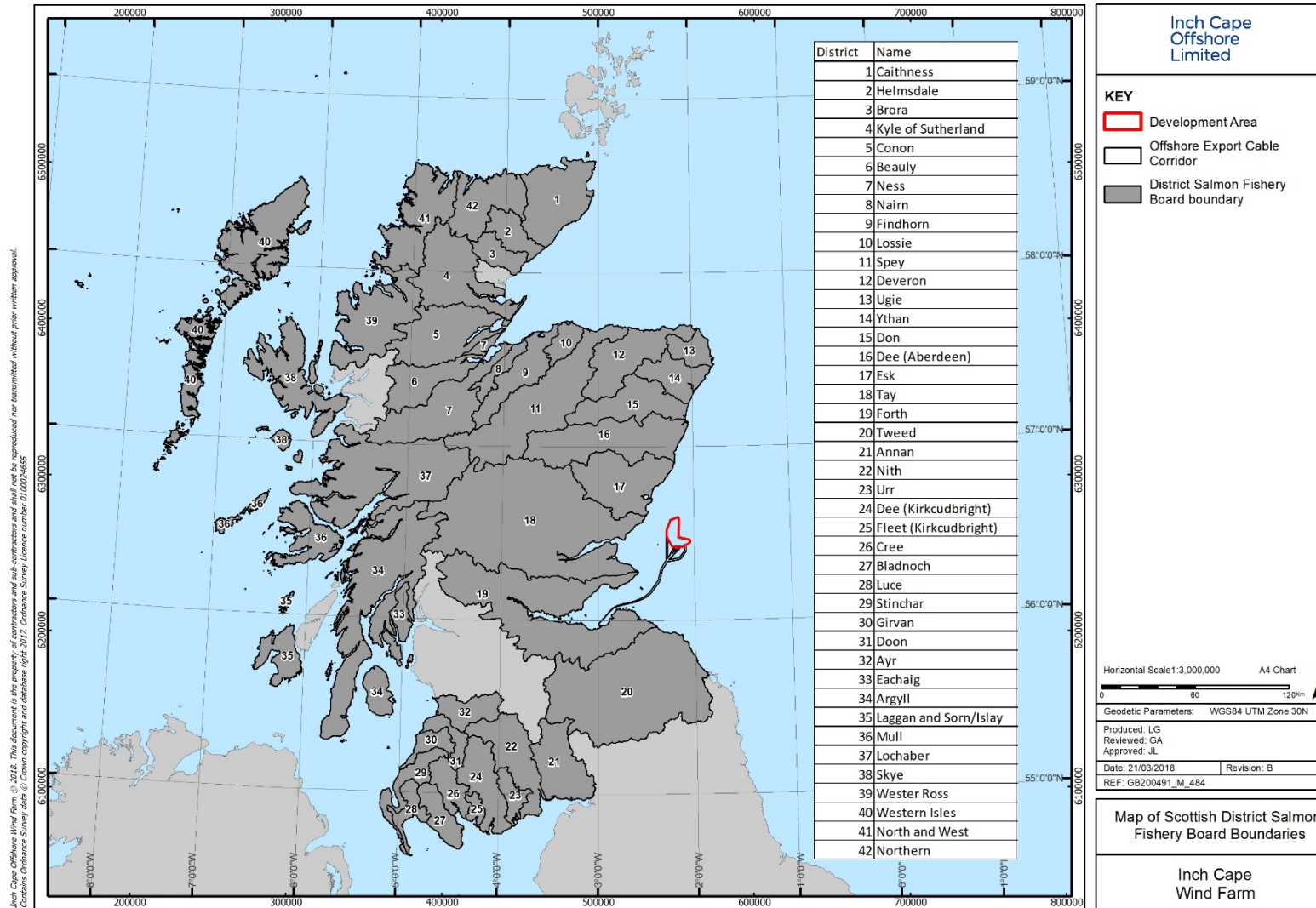


Figure 14B.2: Map of Scottish DSFB boundaries

14B.3.5 Data Gaps, Limitations and Sensitivities**Marine Scotland Fishery Statistics**

- 22 Scottish fishery statistics for salmon and sea trout are publicly available from MS. Data is available for salmon and sea trout catches by rod and line (retained and catch and release) and also by nets (fixed engine and net and coble). The fishery statistics divide salmon into 'salmon' and 'grilse' with salmon relating to multi sea winter fish and grilse relating to one sea winter fish. To ensure consistency with the catch statistics this assessment will class salmon as both salmon and grilse.
- 23 For the Scottish rod and line fishery the number and total weight of salmon, grilse and sea trout is provided by each fishery in each month of the fishing season. The data for both catch and release and retained salmon, grilse and sea trout is required. The MS data is therefore broken down into two categories 'rod catch - retained' and 'rod catch - released'. The total catch by the rod and line fishery is the sum of these two categories. Neither of these two data sets have a comprehensive time series of fishing effort information.
- 24 The catch data will be used in this assessment as reported by MS and it is assumed that where no catch is reported that no fish have been caught. It is recognised that there may be limitations to this data such as misreporting of catches and / or misclassification of fish. There are also periods during closed seasons where no fish are reported so populations and migrations during this time are difficult to predict.
- 25 As both the rod and line and the net fisheries target adult fish, juveniles are not represented in the MSS catch data. Therefore an indication of riverine and coastal smolt runs cannot be ascertained from the time series.
- 26 The time series for the fixed engine, net and coble and the retained rod catch returns run from 1952. Information on the numbers of fish released by the rod fishery have been reported since 1994. The fishery catch statistics for a given season are published in the following April. At the time of writing only data up to 2016 was available.

Maps

- 27 The maps that are used in this report highlight the regions and fishery districts in Scotland, the borders are approximate and should be used for illustration purposes only.

Data Gaps

- 28 Although recent studies on adult salmon migration and smolt escapement in Scotland have been undertaken (Godfrey *et al.*, 2014 and 2015; Lothian *et al.*, 2017, Malcolm *et al.*) the distribution patterns, migration routes and behaviour of salmon and sea trout in the marine environment are not completely understood. It is therefore difficult to predict the numbers, age structure or migration period of salmon and sea trout potentially using the Development Area and Offshore Export Cable Corridor. It is generally accepted that there are still uncertainties in salmon distribution patterns and research continues to be carried

out including that for example from survey work for smolts carried out by MSS in May 2018, in relation to salmon migration. At the time of writing the output of this work was not available and therefore could not be considered in the baseline information.

14B.4 Salmon and Sea Trout Fisheries

14B.4.1 Introduction

- 29 The definition of salmon under the Salmon Act 1886 includes both Atlantic salmon and sea trout which form an important part of Scotland's natural heritage. The existence of both recreational and commercial salmon and sea trout fisheries are of importance to the Scottish economy. In 2004 game and coarse anglers contributed £113 million to the Scottish economy. Atlantic salmon anglers contributed 65% of this figure (SNH, 2016).

14B.4.2 Fisheries Laws

- 30 There are many different acts and regulations which regulate fishing in Scotland. *The Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003* is a consolidation of certain historic enactments and underpins the rules and regulations regarding salmon and freshwater fisheries. The Act, amongst other provisions, highlights the allowable methods of fishing, the offences, closure times, sale of fish (Conservation of Salmon (Prohibition of Sale) (Scotland)), conservation measures, and also duties of district salmon fishing boards. It is provisions under this act that requires proprietors or occupiers of salmon and sea trout fisheries to provide monthly catch data to Marine Scotland.
- 31 *The Conservation of Salmon (Annual Close Time and Catch and Release) (Scotland) Regulations 2014* came into force on 9th January 2015 and cite the annual closure times by district, permitted periods of fishing for rod and line and the prohibition on the retention of salmon.
- 32 More recently Scottish Ministers introduced the *Conservation of Salmon (Scotland) Regulations 2016* which presents conservation measures to control the killing of wild salmon in specified areas of Scotland. The regulations came into force on the 31st March 2016 and effectively prohibit the retention of salmon caught in coastal waters, and also in rivers where salmon stocks have fallen below a defined conservation limit (Category 3 status). Salmon are still permitted to be killed in Inland waters where stocks are above a defined conservation limit (Category 1) or where exploitation needs to be reviewed on an annual basis (Category 2) (Marine Scotland, 2017b). Commercial salmon netting stations can no longer operate in coastal waters with the sole purpose of targeting salmon. The regulations do not prohibit the catching and killing of sea trout in commercial netting operations however all salmon must be returned alive. The Scottish Government has carried out an updated assessment of the conservation status of salmon and is now consulting on proposals for the 2018 fishing season (Marine Scotland, 2017b).

14B.4.3 Fisheries Regulations

- 33 All Scottish salmon fisheries are subject to both weekly and annual closure periods. *The Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act (2003)* stipulates that the fishing for salmon by any method is prohibited on a Sunday. This is extended for netting practices from 6pm on a Friday to 6am on a Monday morning. The annual closure times for a salmon fishery is a continuous period of not less than 168 days. This relates to any method of salmon fishing. However the fishing for salmon by rod and line is permitted within this closure period provided a byelaw is in place within that specific district. The annual closure periods for rod and line fisheries differ between districts and are listed in *The Conservation of Salmon (Annual Close Time and Catch and Release) (Scotland) Regulations 2014*. Generally the rod and line fishery closure times are between October and February. Closure times for coastal netting fisheries are generally late August to Mid-February.
- 34 The Tweed enforces a continuous period of not less than 153 days from mid-September until mid-February in the following year. The rod and line fishery is permitted to extend until 30th November and opens again on the 1st February (RTC 2016).
- 35 Salmon fisheries are saleable and nets men or companies may acquire fishing rights over relatively large areas. Other interested parties may also purchase rights. In recent years conservation measures by The Atlantic Salmon Trust have included the purchase and subsequent closure of coastal salmon netting sites. Recreational fishing interests may also buy up river netting rights with the view to closing them.
- 36 The taking of juvenile salmon is prohibited and a maximum mesh size of 90 mm is required for commercial nets to allow juvenile salmon to escape.

14B.5 Fishing Methods

14B.5.1 Introduction

- 37 There are three allowable fishing methods in Scotland which are identified within the *Salmon and Freshwater Fisheries Act*. They are fixed engines, net and coble and rod and line.

14B.5.2 Fixed Engines

- 38 Fixed engine is a term commonly used for nets that are temporary fixed or anchored to the sea bed. They are used coastally and are not permitted within estuary limits. The two most common types of fixed engines used in Scottish coastal waters are bag and stake nets.
- 39 Both bag and stake nets are similar in design and operation except stake nets are set on sandy beaches and bags nets on rocky coasts. The entire net is not permitted to extend more than 1,300 m from the mean low water mark excluding, moorings warps and anchors (Galbraith and Rice, 2004).

14B.5.3 Net-and-coble

- 40 Net-and-coble fishing is the setting of a net from the shore using a boat or coble. The shore party holds the net whilst it is paid out from the stern of the boat. Once set the net is hauled in by the shore party.
- 41 The net must not be stationary or allowed to drift at any time and must be swept. No objects or may be used to aid fishing and adjacent netting operations must be at least 50 m apart (Galbraith and Rice, 2004). This type of fishing method is generally operated in estuaries and lower reaches of rivers, although small numbers are also used in coastal waters (Potter and Ó Maoiléidigh, 2006).

14B.5.4 Rod and Line

- 42 Fishing by rod and line is the most common fishing method in Scotland. The *Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003* defines “rod and line” as a single rod and line (used otherwise than as a set line or by way of pointing, or by striking or dragging for fish) with such bait or lure as is not prohibited. Rod and line fishing for salmon and sea trout is a recreational activity and generally undertaken in riverine environments and above tidal limits.

14B.6 National Study Area**14B.6.1 Introduction**

- 43 The National Study Area is defined as Scotland in its entirety, which is divided into 11 geographical regions. These regions correspond to the MS fishery catch data on which this assessment is partially based.
- 44 The introduction of the *Conservation of Salmon (Scotland) Regulations 2016* on 31st March 2016 (as discussed in *Section 14B.4.2*) will have affected the numbers of salmon reported by the coastal net fishery.

14B.6.2 National Trends

- 45 The catch by region across Scotland is highlighted in Figure 14B.3 and Figure 14B.4 based on the annual average from 2007-2016 and gives an indication of the importance of each fishery.
- 46 Most notably zero catches were reported in the Clyde Coast and Shetland regions for both fixed engines and net and coble. In contrast the North East and East regions record the highest catches for the net and coble fishery and the North East and North regions for fixed engine practices which highlights the importance of commercial salmon fishing on the East coast of Scotland. The net fisheries that reported catches between 2011 and 2016 are illustrated in Figure 14B.5.

- 47 In terms of species, salmon make up the largest proportion of the catch in the East, Moray Firth, and North East regions, conversely in the Outer Hebrides sea trout are the main catch. At a national scale salmon and grilse make up the majority of the catch.
- 48 The rod and line fishery consistently produces the highest number of fish with the East coast region producing the greatest number by this method (both retained and catch and release).
- 49 In general the national picture for salmon and sea trout fisheries in Scotland is one of significantly decreasing catches by commercial netting practices. Conversely, the rod and line fishery shows reasonably constant catches of salmon and grilse but a steady decline in sea trout numbers.

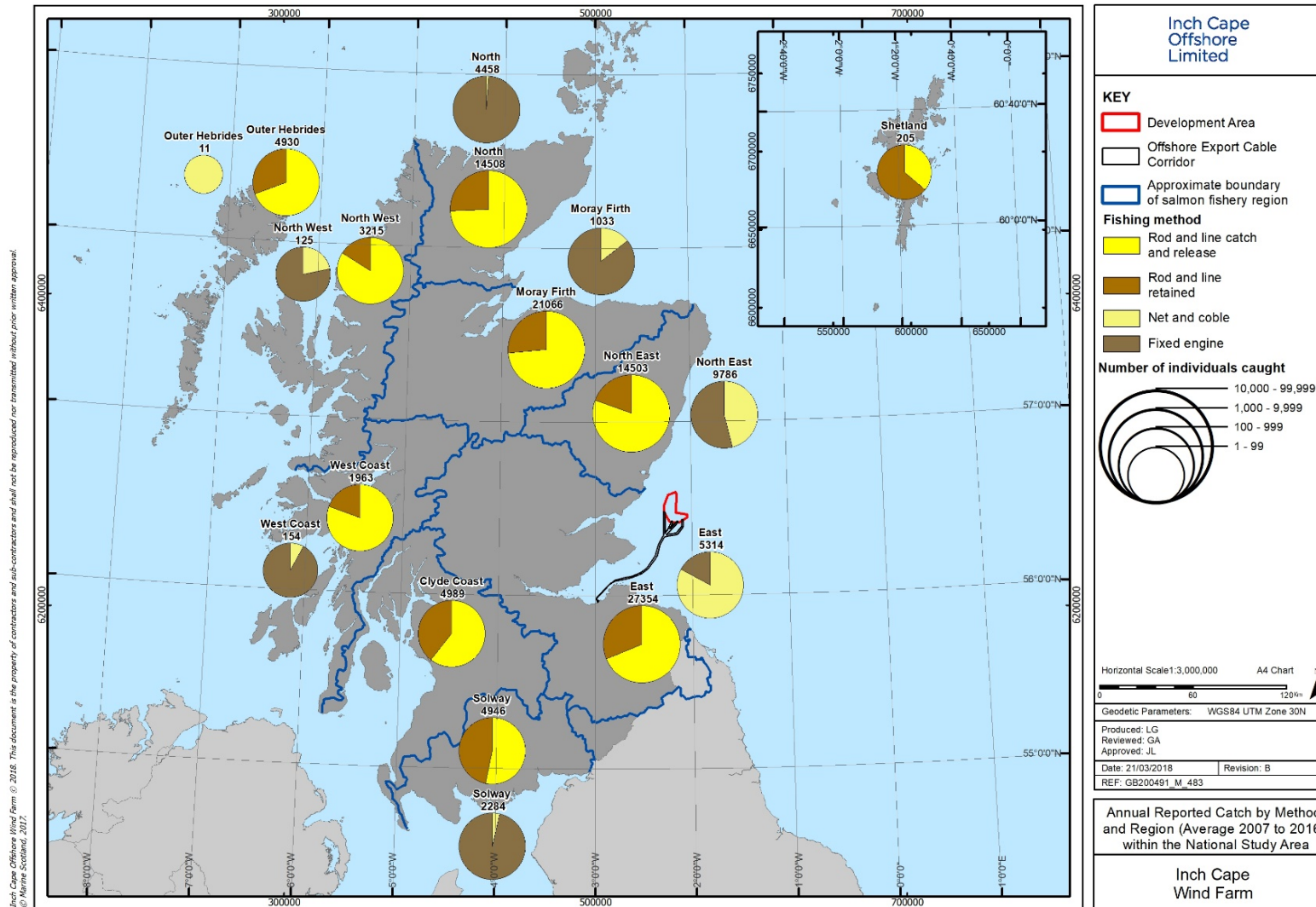


Figure 14B.3: Annual reported catch of Salmon and Sea Trout by method and region within the National Study Area (average 2007-2016)

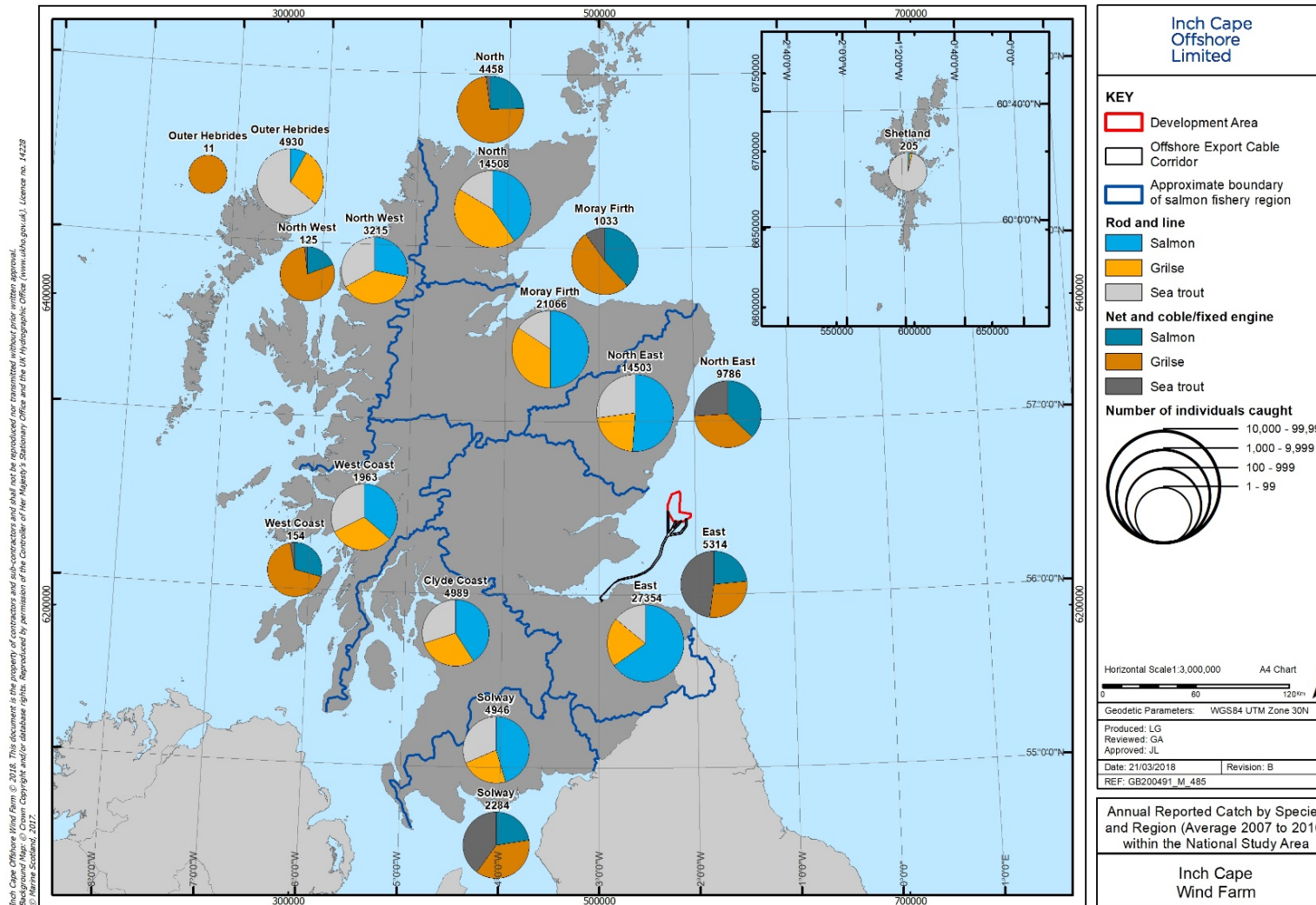


Figure 14B.4: Annual reported catch by species and region within the National Study Area (average 2007-2016)

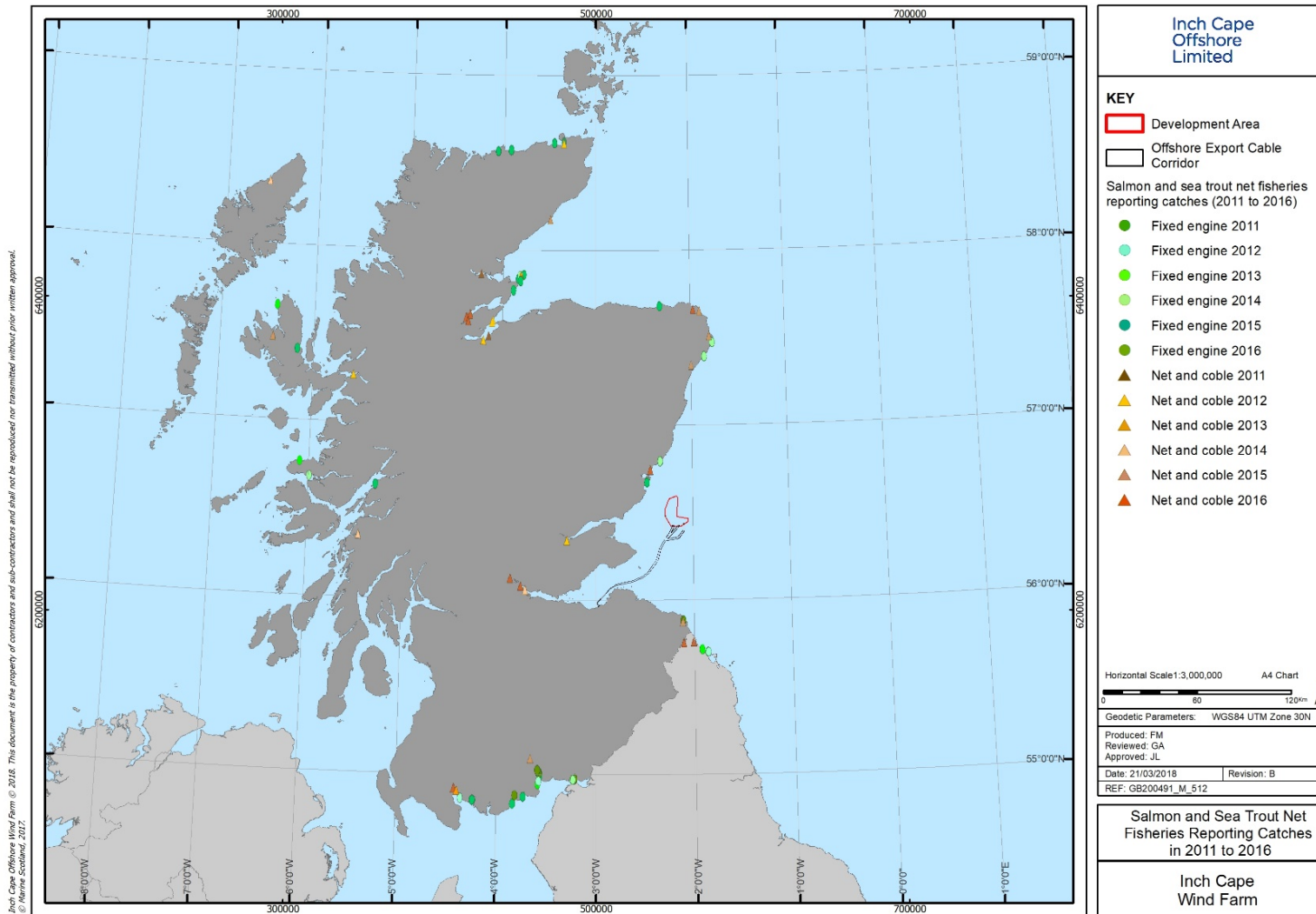
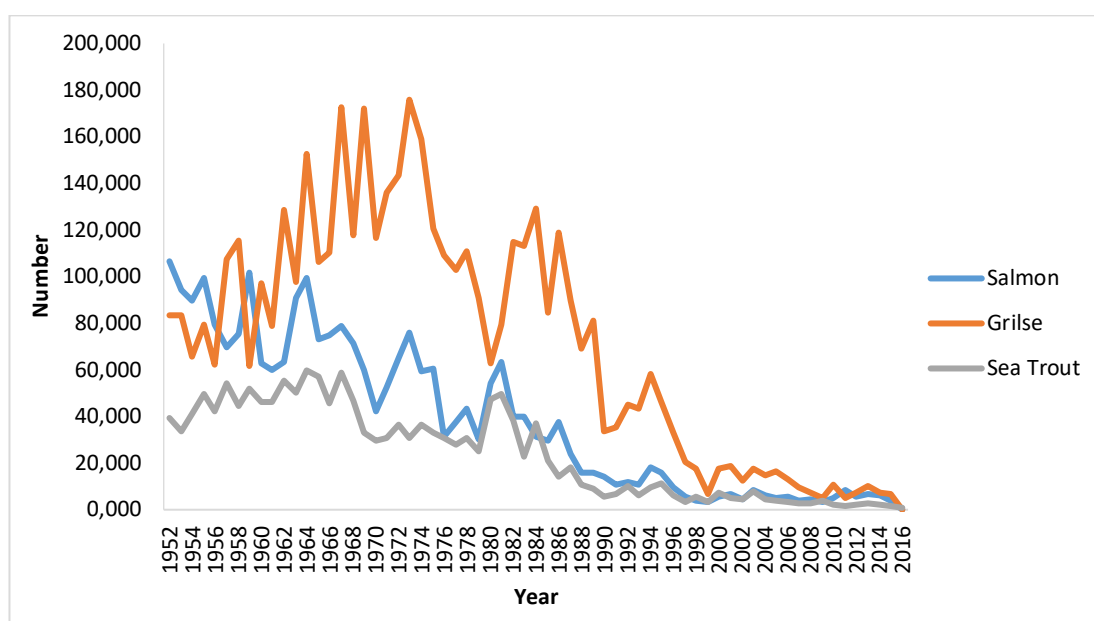


Figure 14B.5: Salmon and Sea Trout net fisheries reporting catches in 2011 to 2016

14B.6.3 Fixed Engines

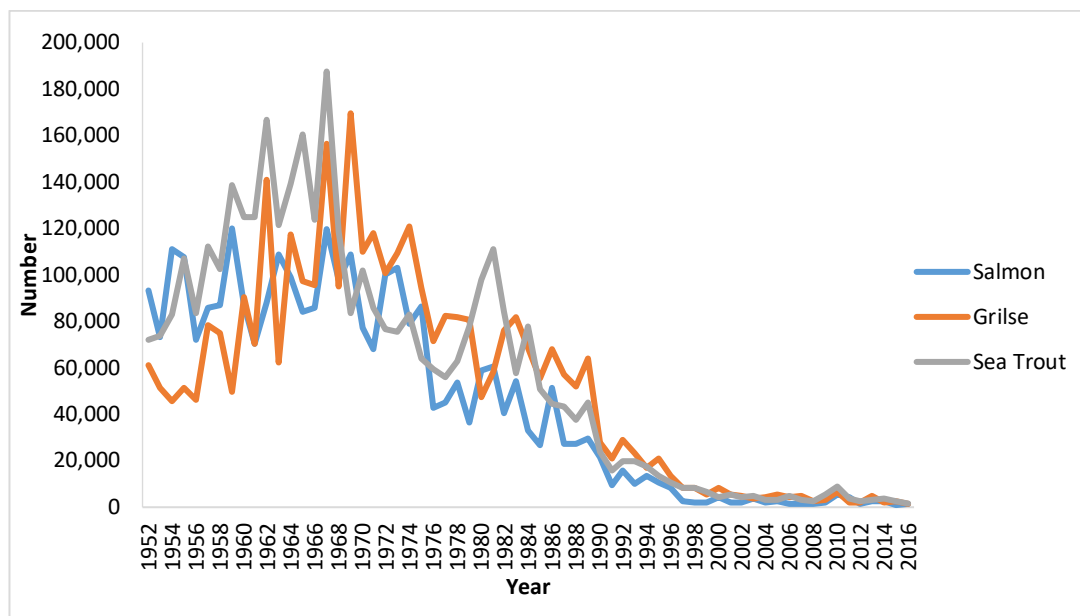
- 50 The MS data for fixed engines dates back to 1952 and indicates clearly the marked decline in salmon and sea trout caught by this method. This decline highlights the decrease in fishing effort over the years which can be attributed, in part, to the reduced number of fixed engines operating in Scotland as a result of buy outs and subsequent closures. The mass production of farmed salmon may also be a contributing factor to the reduction in fishing effort over the time series.
- 51 The data shows a clear bias towards the capture of grilse in this fishery and highlights the historic importance of one sea winter salmon at a national level with the greatest recorded catches between 1964 and 1974.

Figure 14B.6: Fixed Engine Fishery reported catches (1952-2016)

- 52 It should be noted that data for the both Orkney and Outer Hebrides ended in 1985 and only the Solway (salmon and sea trout) and East region (sea trout only) reporting catches up until 2016. As the reporting of catches is a legal requirement under the *Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act* these historic dates are likely to reflect the cessation of the fishery or that nil returns have been recorded in those regions.

14B.6.4 Net-and-coble

- 53 The MS catch statistics for the net and coble fishing also dates back to 1952 and as with the fixed engine fishery shows a marked decline in fishing effort up until 2016. The greatest national catches of all species are recorded between 1962 and 1972. This decline can be attributed to the reduced number of net and coble fisheries operating in Scotland as a result of buy outs and subsequent closures.

Figure 14B.7: Net and Coble Fishery reported catches (1952-2016)

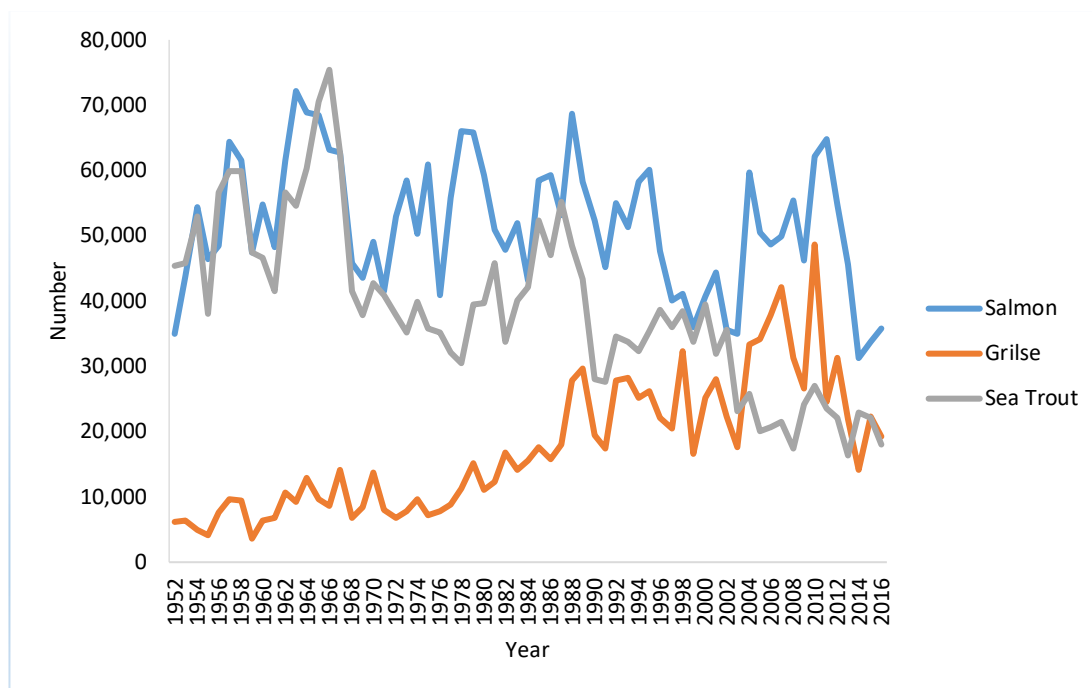
54 The data shows no significant bias towards salmon, sea trout or grilse thus highlighting the unselective nature of this fishery.

55 It should be noted that catch data for this fishery is only available for 9 of the 11 regions, excluding Orkney and Shetlands. This is likely to be because there is not a net and coble fishery in these regions. The data for the remaining regions is recorded up to 2016 with the exception of Clyde (2012), Outer Hebrides (2014), North West (2015) and the West Coast (2015). This may reflect the cessation of these fisheries or simply that nil returns have been submitted.

14B.6.5 Rod and Line

56 The MS catch statistics for rod and line retained fish dates back to 1952 and statistics for rod and line released fish dates back to 1994. For the purposes of this assessment they will be combined to show the total rod and line catch.

57 The data highlights a steady increase in the number of grilse caught over the second half of the time series with peak catches shown in 2009 and 2010 with a steady decrease in numbers since this peak. Both sea trout and salmon catches peaked between 1962 and 1966 and although salmon numbers have remained reasonably constant sea trout numbers continue to decline across the time series.

Figure 14B.8: Rod and Line Fishery (including catch and release) reported catches (1952-2016)

58 The data set is only represented by 10 of the 11 districts with no returns being recorded in Orkney for either retained or released data sets.

59 It should be noted that fishing effort is not accounted for in the rod and line fishery statistics and does not therefore reflect the number of anglers that have contributed to this data. It is considered that the popularity of angling may have contributed to the relatively consistent salmon numbers although the introduction of conservation measures (*Conservation of Salmon (Scotland) Regulations 2016*) may have negatively affected angler numbers (Tay Consultation 2017). The decrease in sea trout catches may highlight a reduction in anglers targeting this species or a national reduction in wild stocks. The increase in grilse numbers up until 2010 may reflect the reduction in coastal netting activities.

14B.7 Regional Study Area

14B.7.1 Introduction

60 This section provides an overview of the salmon and sea trout fishery in the districts within the Regional Study Area.

61 The Regional Study Area is defined as the two regions closest to the Development Area. These are the East and North East regions. In order to assess the baseline at this scale these regions have been further divided into the salmon fishery districts. The districts within the the Regional Study Area are the Ugie, Ythan, Don, Dee, Esk, Tay, Forth and

Tweed. It should be noted that the Esk District is broken down by the former districts of North Esk, South Esk and Bervie to reflect the MS catch data (Figure 14B.9 shows these districts).

- 62 The annual reported catch (average 2007 to 2016) for each salmon fishery district within the Regional Study Area is shown in Figure 14B.9 and Figure 14B.10 both by species and method. These figures are based on MS catch data.

14B.7.2 Regional Trends

- 63 The regional picture shows that the Tweed is the principle district within the study area with a total 10 year average (2007 to 2016) catch of 26,626 fish across all fishing methods. Second to the Tweed is the Tay (12,993 fish) and then the Dee (12,485 fish). Salmon is the principle species caught within these three districts as well as the Don and Forth. Both grilse and sea trout catches are similar for these districts apart from the Tay where grilse numbers are more than double that of sea trout.
- 64 The greatest sea trout catches occur in the Tweed, Dee, North Esk, Tay and South Esk although the Ythan produces more sea trout than both salmon and grilse combined within this district.
- 65 The rod and line fishery (retained and released) accounts for the majority of the catch across all districts apart from North and South Esk where the greatest proportion of the catch comes from net and coble (North Esk) and Fixed Engine (South Esk).
- 66 Salmon are the most caught species across all fishing methods in the Regional Study Area.

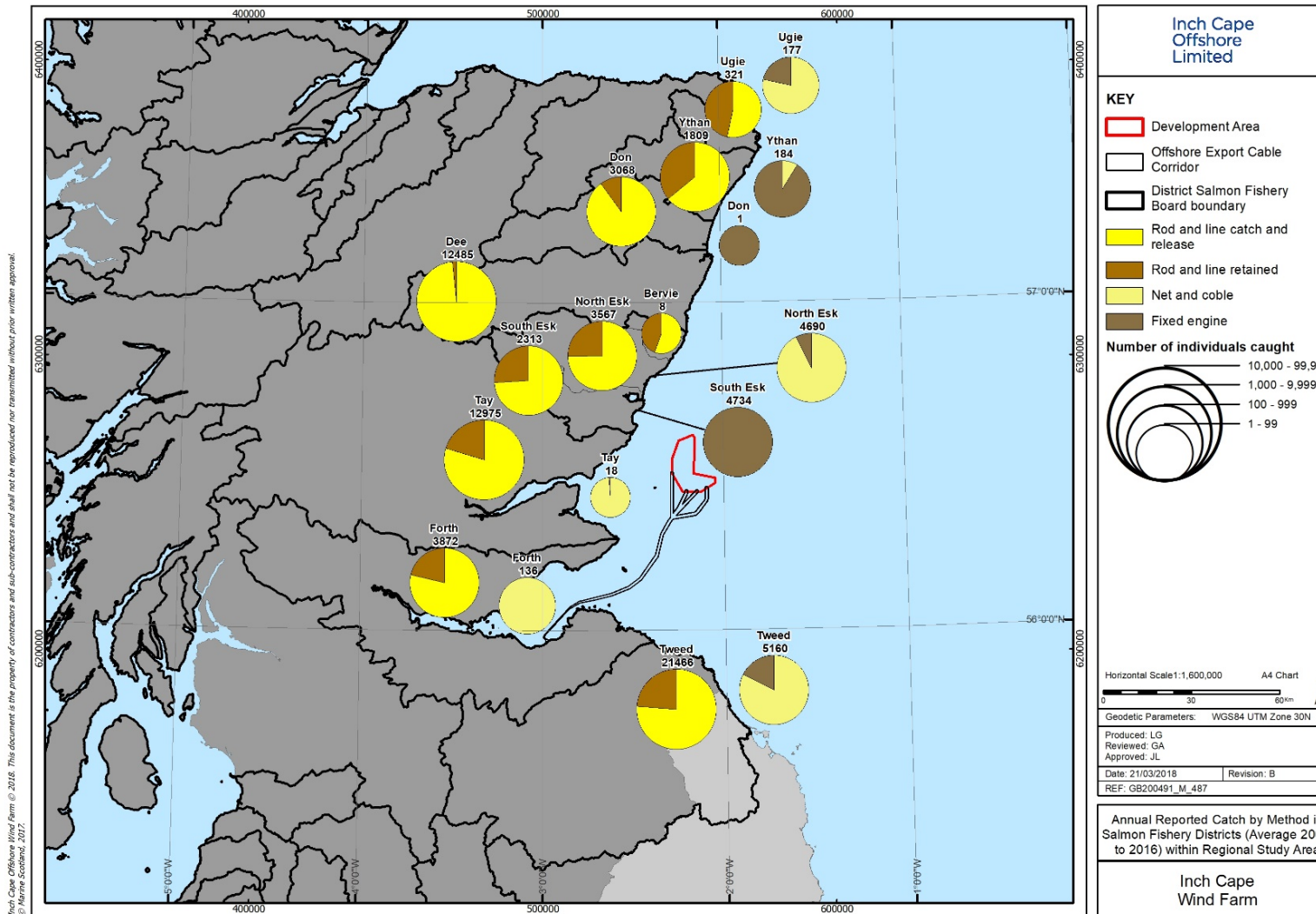


Figure 14B.9: Annual reported catch by method in the Salmon fishery districts within the Regional Study Area (average 2007 to 2016)

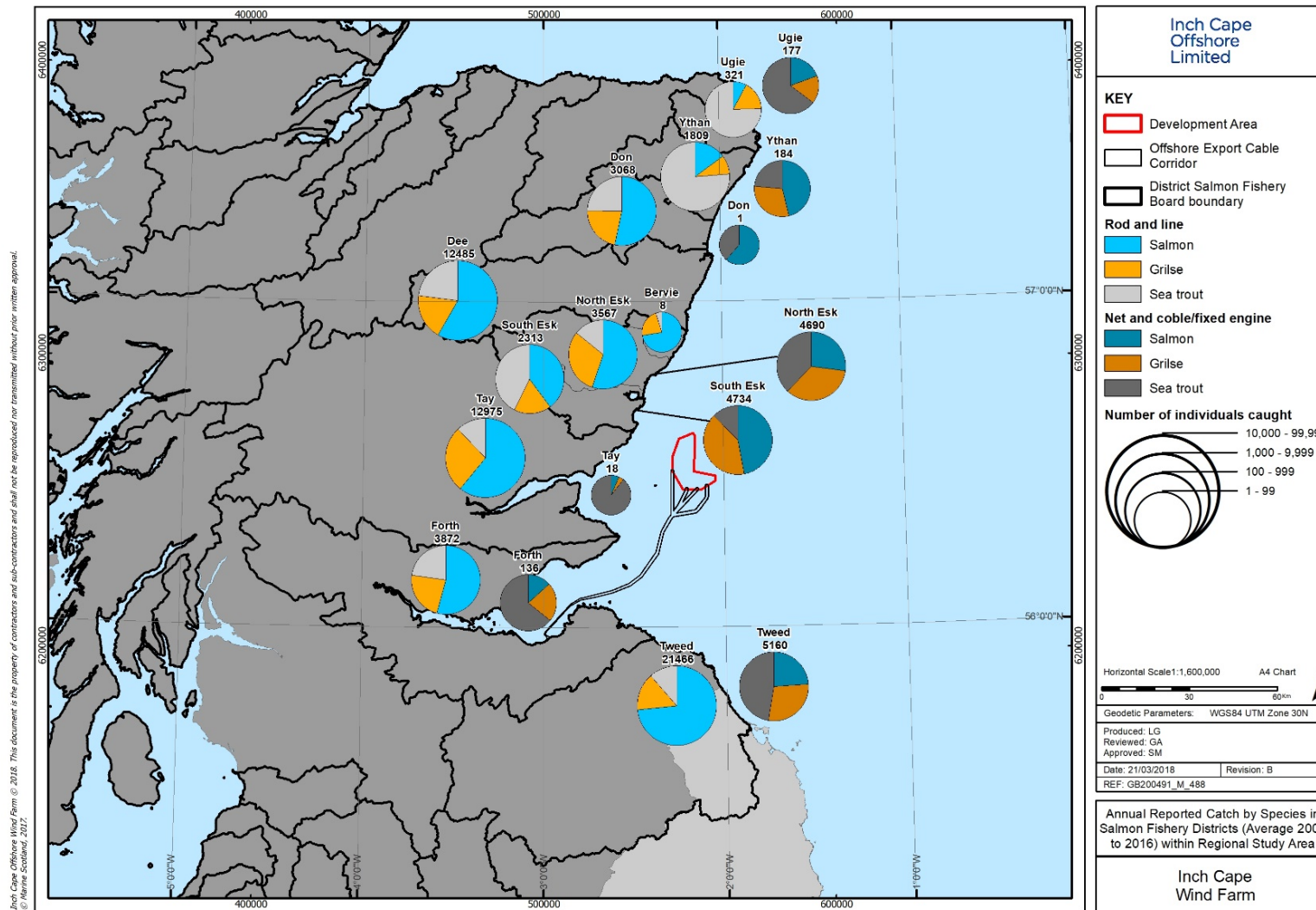


Figure 14B.10: Annual reported catch by species in the Salmon fishery districts within the Regional Study Area (average 2007 to 2016)

14B.7.3 Net Fishery by Region

- 67 As highlighted in *Section 14B.6.3 and 14B.6.4* the national trend for both the fixed engine and net and coble fishery is one of significant decline. Of the ten districts identified in the Regional Study Area only two (Tweed and North Esk) have an active net fishery (both net and coble and fixed engine). The North Esk reports the largest catches for the net and coble fishery (10 year average of 4346) and the South Esk reports the largest catches for the fixed engine fishery (10 year average of 4733)
- 68 The Dee and the Bervie report zero catches for both net and coble and fixed engines over the 2007 to 2016 period. This is in line with District specific information detailed on the questionnaire which highlights that all netting stations have been bought out on the Dee (Dee Consultation 2017). The Don and the South Esk report zero catches for the net and coble fishery but both have an active fixed engine fishery. It should be noted however that the fixed engine 10 year average for the Don is very low (1.3 per year) and in contrast the South Esk reports the highest numbers of fish within the Regional Study Area by this method.
- 69 There has been zero catch reported for the Forth district over the entire 2007 to 2016 period (10 year average) for the fixed engine fishery and very low catches reported on the Tay (less than 1 a year) by this method. These very low catches on the Tay reflect that there are no operating coastal nets in this district (Tay Consultation 2017).

14B.7.4 Rod and Line Fishery by Region

- 70 The rod and line fishery (both retained and released fish) accounts for the highest catches across all districts in the the Regional Study Area apart from both North and South Esk. The greatest numbers of fish within the rod and line fishery are caught and subsequently released. This is likely to reflect regional bye laws by DSFB's, the introduction of the *Conservation of Salmon (Scotland) Regulations 2016 (Section 14B.4.2)* in March 31st 2016 and also a change in rod and line fishing practices by anglers.
- 71 The species caught in the Regional Study Area by rod and line differ between districts with the Ugie and Ythan reporting catches of predominantly sea trout. In comparison the Tweed, Forth, Tay, North Esk, Dee and Don predominantly report catches of salmon. The Tay, Dee and Tweed report the highest catches of grilse within the Regional Study Area.

14B.8 Regional Seasonality**14B.8.1 Introduction**

- 72 An indication of seasonality within the rod and line (retained and returned), fixed engine and net and coble fishery is illustrated in Figures 14B.11 to 14B.16. The figures present the MS fishery catch data by species and district based on average monthly catches for the period 2007 to 2016.

- 73 The seasonality of salmon caught across all methods is governed by close seasons. During this period (which differs between methods and districts) no fish are recorded. This is not an indication that no fish are present during these periods. The data set is for the most recent 10 year period (2007 to 2016) and is intended to give an indication of numbers of fish, species caught and recent changes in the fishery rather than an assessment of stock.

14B.8.2 Fixed Engines

- 74 Figures 14B.11 to 14B.16 show the seasonality of the fixed engine fishery in the Regional Study Area by district and species.
- 75 These figures clearly highlight the importance of the South Esk fixed engine fishery for salmon, grilse and sea trout. However, due to the introduction of the *Conservation of Salmon (Scotland) Regulations 2016* the number of salmon and grilse after 31 March 2016 will be zero. The Tweed sea trout catches are also of significance but are lower than that of the South Esk.

Seasonality

- 76 In terms of seasonality, catches of salmon over the 2007 to 2016 period (average) are during the months of May, June, July and August for the South Esk which highlights the fishing season for this fishery in the Esk district (1 May to 31 August) (Esk Consultation 2017). This is also true for the other districts although numbers are significantly less. Catches of grilse peak in July and August with the South Esk producing considerably more grilse than all the other districts combined. Although catches in the other districts are lower than the South Esk a July and August peak in grilse numbers is also evident. Catches of sea trout are greatest in the South Esk followed by the Tweed with catches peaking in May and June. The Tweed reports catches of sea trout into September unlike the other districts.

Annual Variation

- 77 The annual variation over the period 2007 to 2016 shows that the greatest catches of salmon were caught by the South Esk fishery in 2011 with a sharp decline to zero in 2016 for all districts in the the Regional Study Area. Grilse catches peaked in the South Esk fishery in 2010 then again in 2013. As with salmon all catches of grilse across all districts reduced to zero in 2016. Catches of sea trout peaked in 2009 for both the Tweed and the South Esk. Both of these fisheries then show a steady reduction in catches with the tweed reporting zero in 2015 and South Esk reporting zero in 2016. The North Esk reported a peak in 2012 followed by a steady decline to zero catches in 2015. The Don and Tay report catches in one year only which were 2007 and 2009 respectfully. The Bervie, Dee, and Forth report zero catches across the entire 10 year period for all species. The reduction in catches from the North and South Esk by the fixed engine fishery reflects the buy outs of nets operating in St. Cyprus Bay, Montrose Bay, Lunan Bay and also all of the Angus coast (Esk Consultation 2017).

Figure 14B.11: Seasonality of the Salmon catches (average 2007 to 2016) by Fixed Engine Fishery

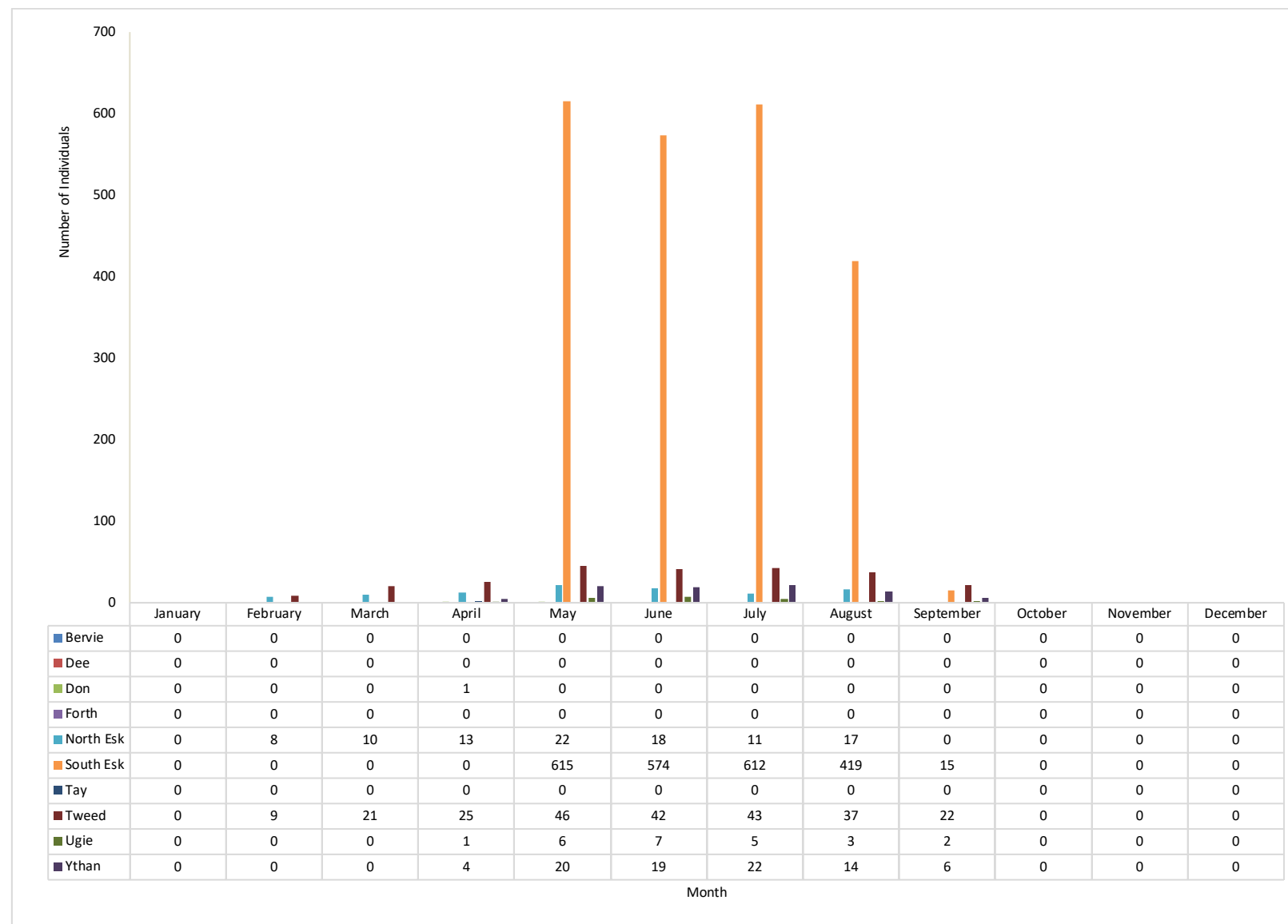


Figure 14B.12: Seasonality of the Grilse catches (average 2007 to 2016) by Fixed Engine Fishery

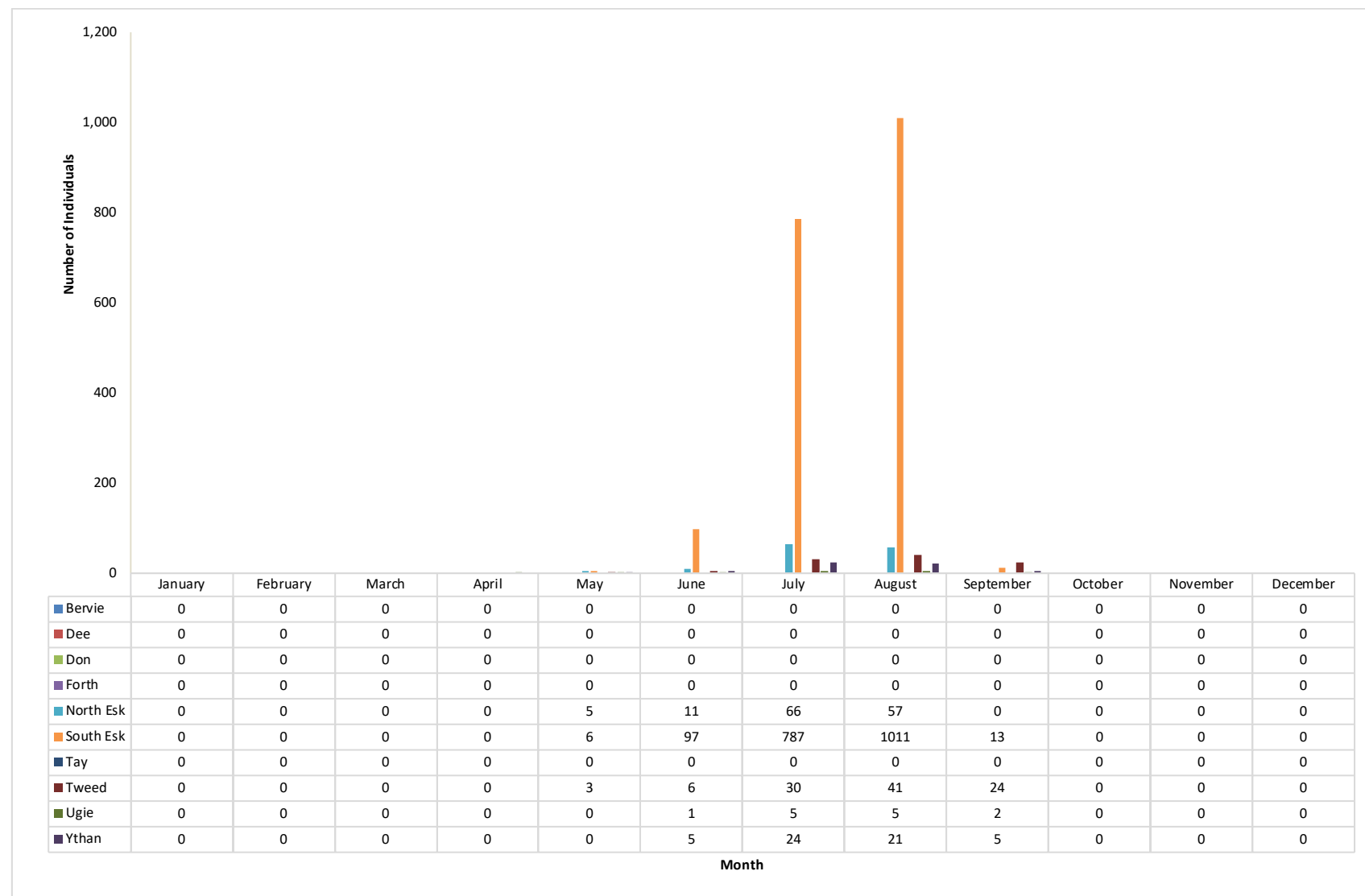


Figure 14B.13: Seasonality of the Sea Trout catches (average 2007 to 2016) by Fixed Engine Fishery

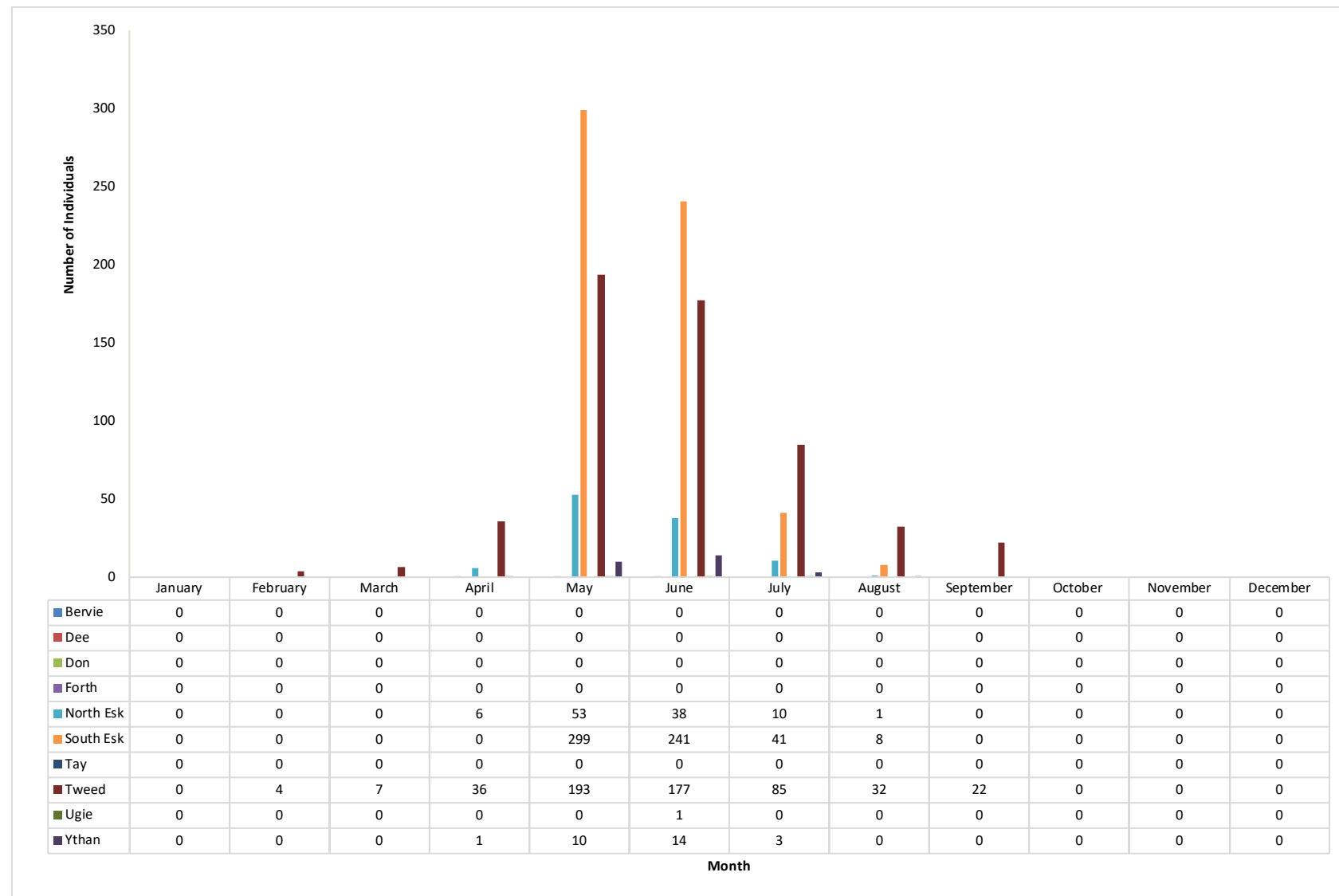


Figure 14B.14: Annual variation in Salmon catches by the Fixed Engine Fishery by district

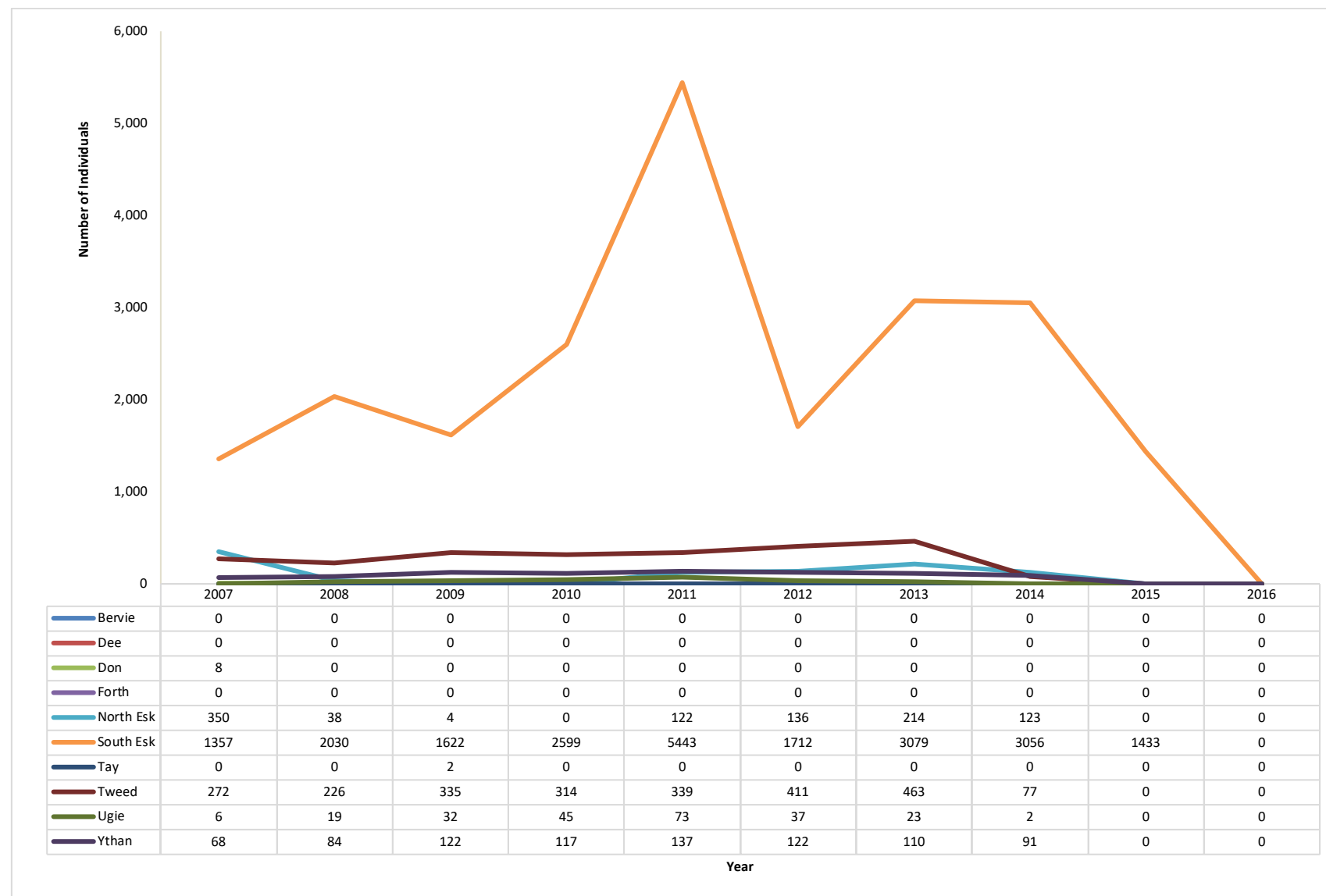


Figure 14B.15: Annual variation in Grilse catches by the Fixed Engine Fishery by district

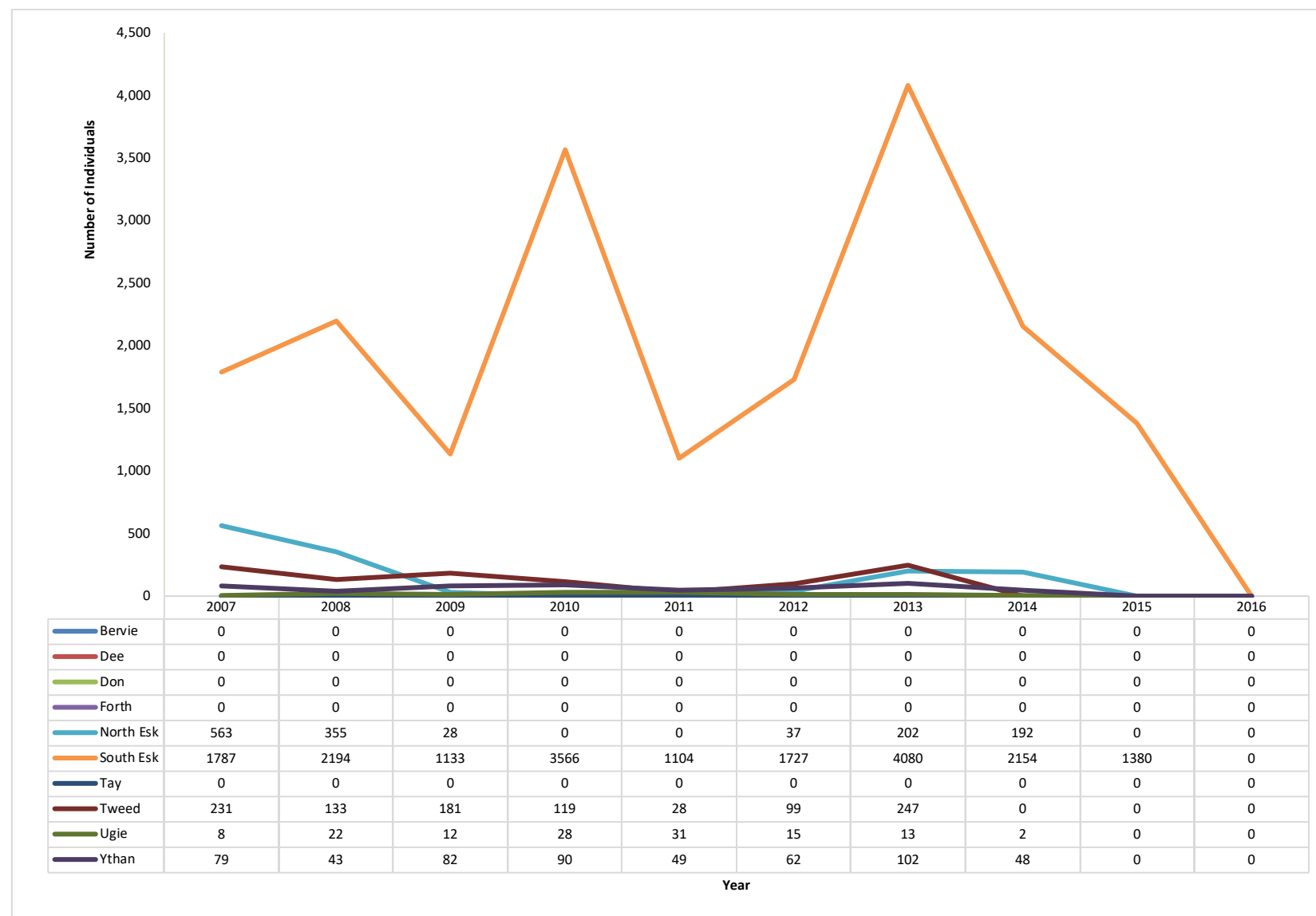
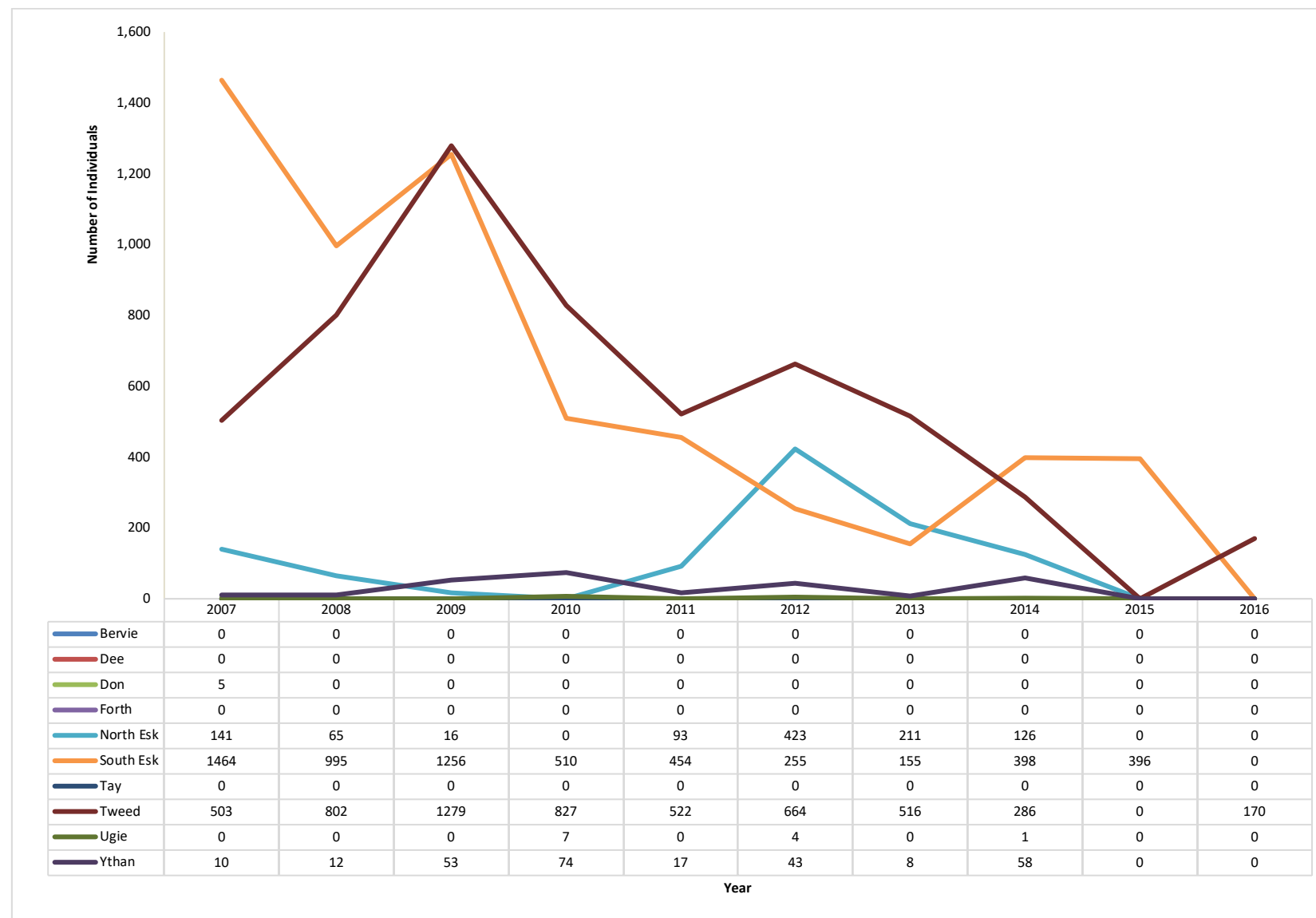


Figure 14B.16: Annual variation in Sea Trout catches by the Fixed Engine Fishery by district



14B.8.3 Net-and-coble

78 Figures 14B.17 to 14B.22 show the seasonality of the net and coble fishery in the Regional Study Area by district and species.

79 These figures clearly highlight the importance of this fishery for both the North Esk and the Tweed is clear with the highest catches of all species caught in these two districts.

Seasonality

80 Peak catches of salmon differ between the Tweed and North Esk. Numbers remain relatively constant in May, June, July and August in the North Esk. Conversely the greatest numbers in the Tweed are caught in August and September. With six of the remaining districts reporting zero catches of salmon across the 10 year study period. Peak catches of grilse are in July and August for the North Esk and August and September for the Tweed. With six of the remaining districts reporting zero catches of grilse across the 10 year study period. For sea trout peak catches in the North Esk are in May and June; and June and July for the Tweed. Four of the districts reported zero catch for the 10 year study period (Bervie, Dee, Don and South Esk).

Annual Variation

81 The annual variation of the net and coble fishery within the Regional Study Area highlights the dominance of both the Tweed and North Esk fishery. The catches of salmon on the Tweed peaked in 2010 with a steady decline to 2012. The lowest numbers were recorded in 2015. The North Esk salmon numbers peaked in 2011 with the lowest numbers recorded in 2007. Both the Tweed and North Esk show a slight upward trend in salmon catches from 2015 to 2016. Grilse catches in the Tweed peaked in 2007 with two lesser peaks in 2010 and 2013. From 2013 there is a steady decline to the lowest numbers which were recorded in 2016. The lowest catches of grilse on the North Esk were recorded in 2011 with peak catches in 2010. Catches on the North Esk also highlight a downward trend from 2015 to 2016. Sea trout catches for both the Tweed and North Esk peaked in 2010 with both fisheries then declining until 2012 and 2011 respectively. Both fisheries report declining numbers from 2015 to 2016.

Figure 14B.17: Seasonality of the Salmon catches (average 2007 to 2016) by the Net and Coble Fishery

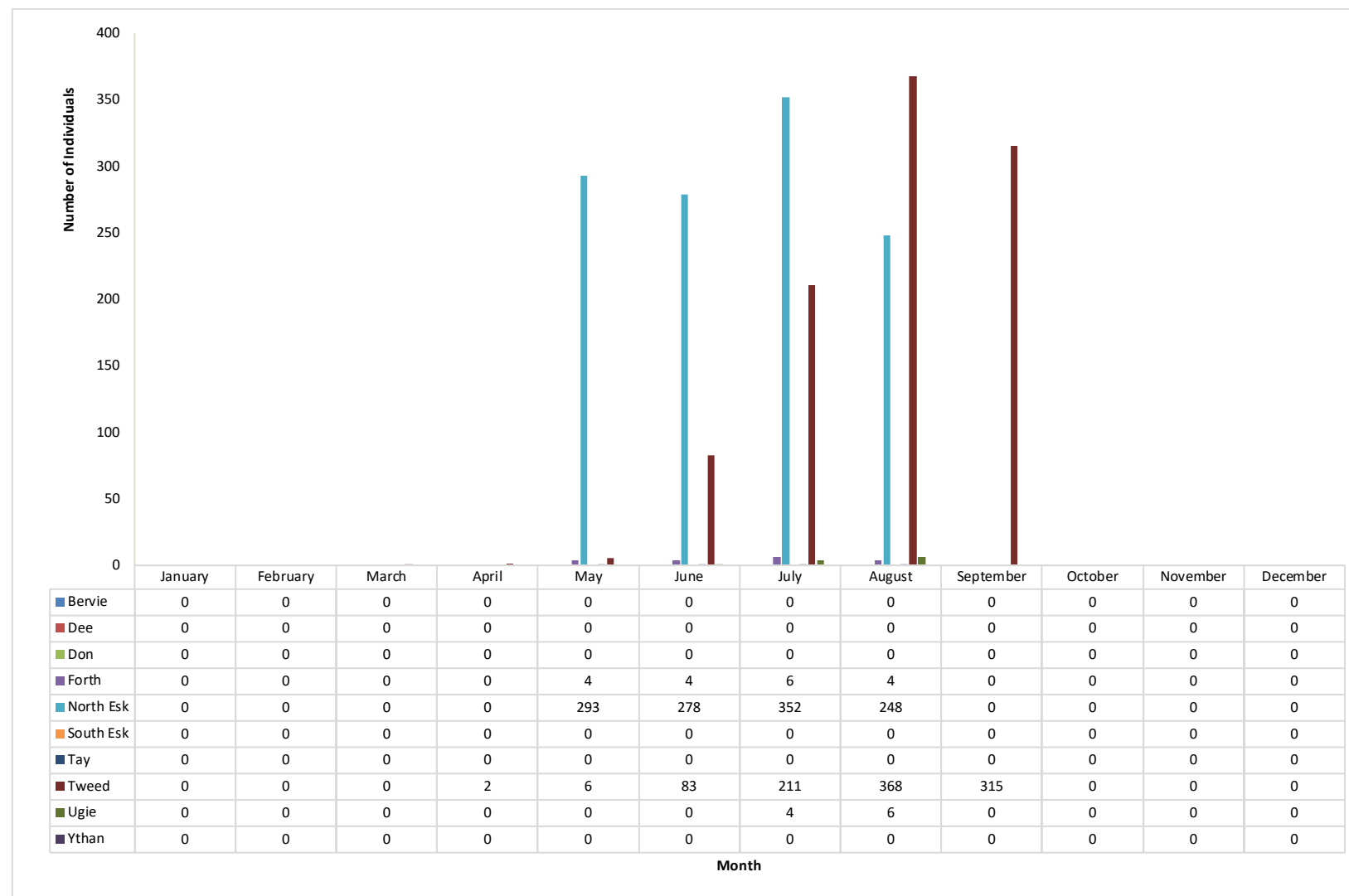


Figure 14B.18: Seasonality of the Grilse catches (average 2007 to 2016) by the Net and Coble Fishery

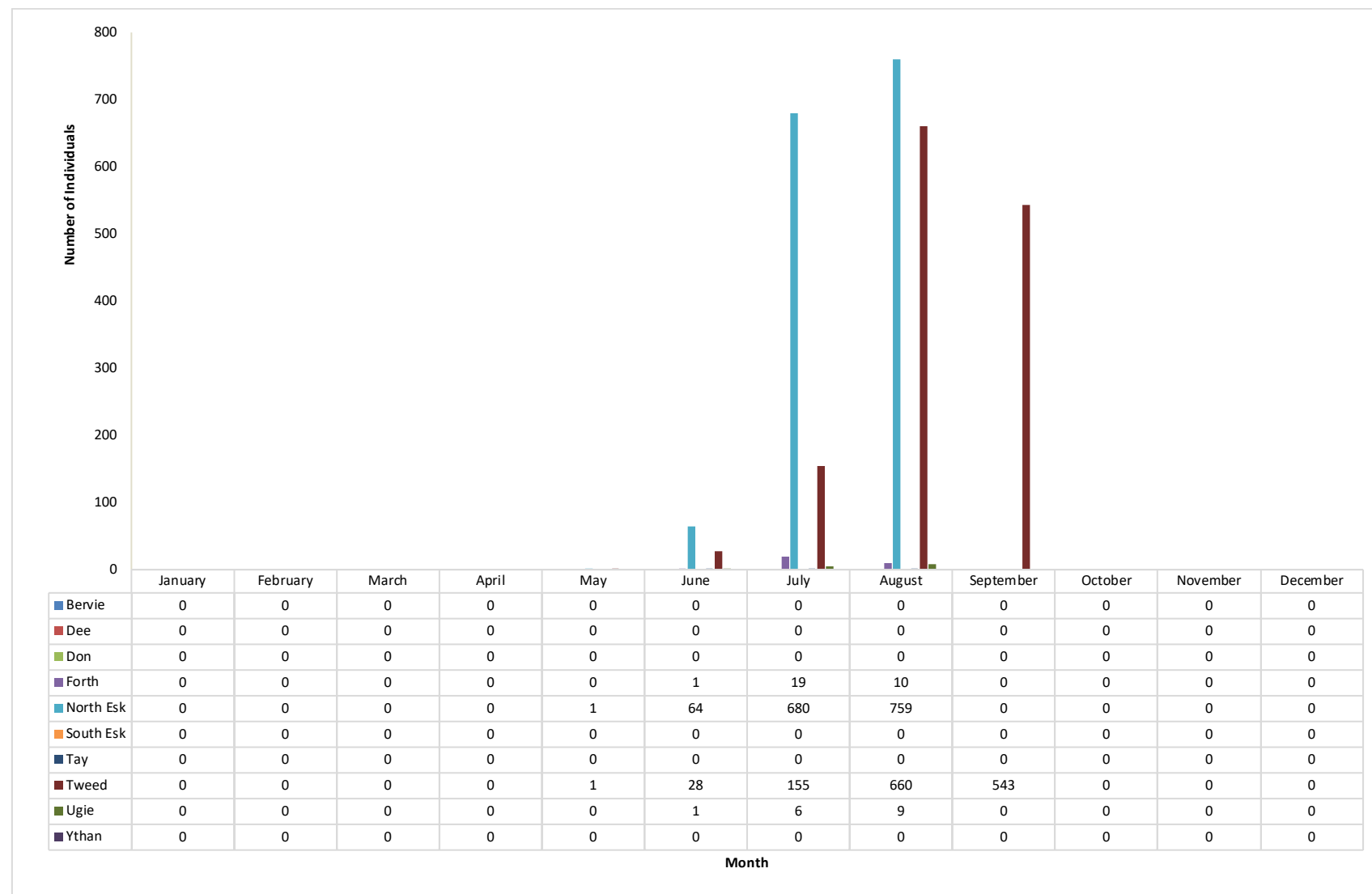


Figure 14B.19: Seasonality of the Sea Trout catches (average 2007 to 2016) by the Net and Coble Fishery

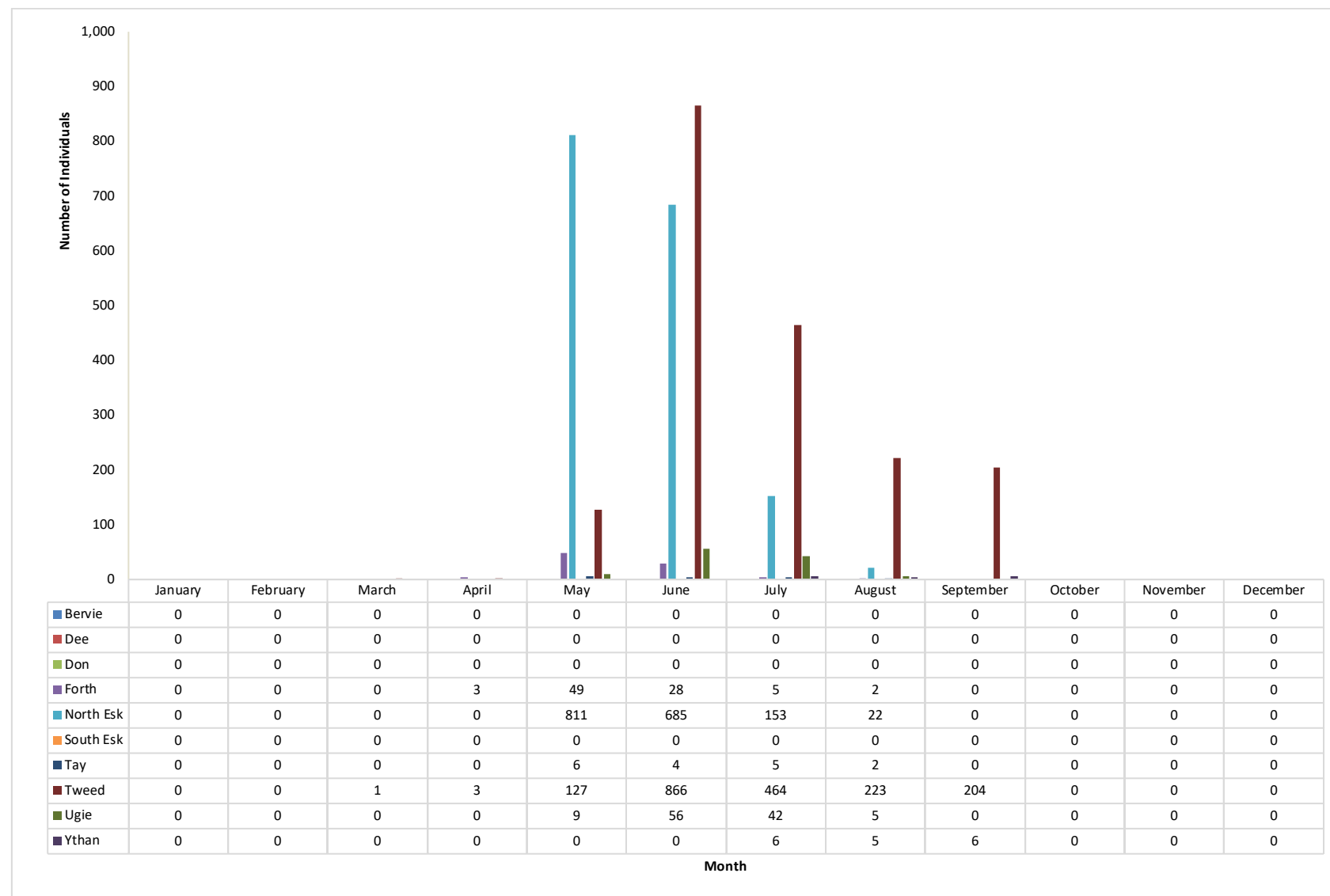


Figure 14B.20: Annual variation in Salmon catches by Net and Coble Fishery by district

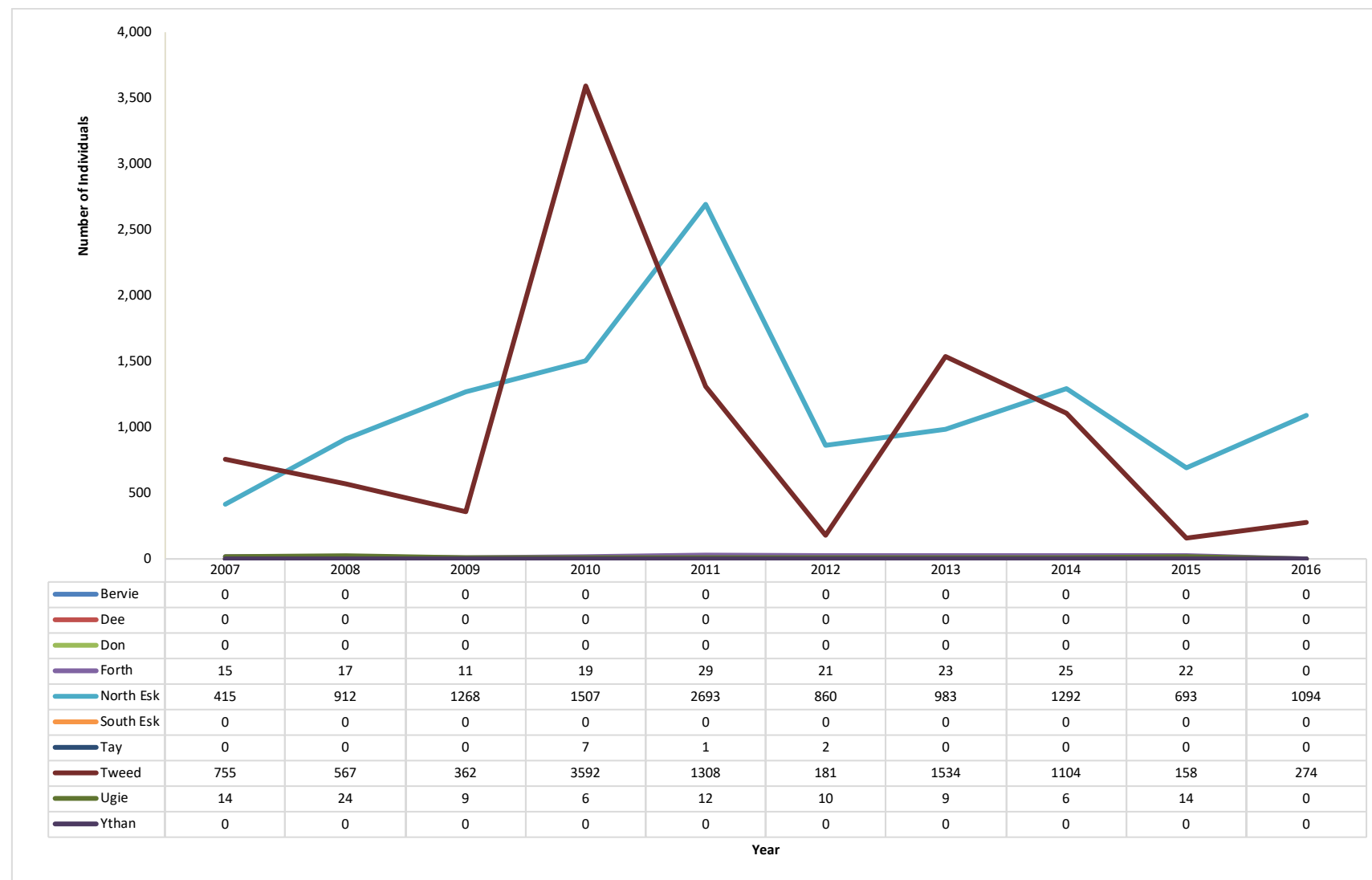


Figure 14B.21: Annual variation in Grilse catches by Net and Coble Fishery by district

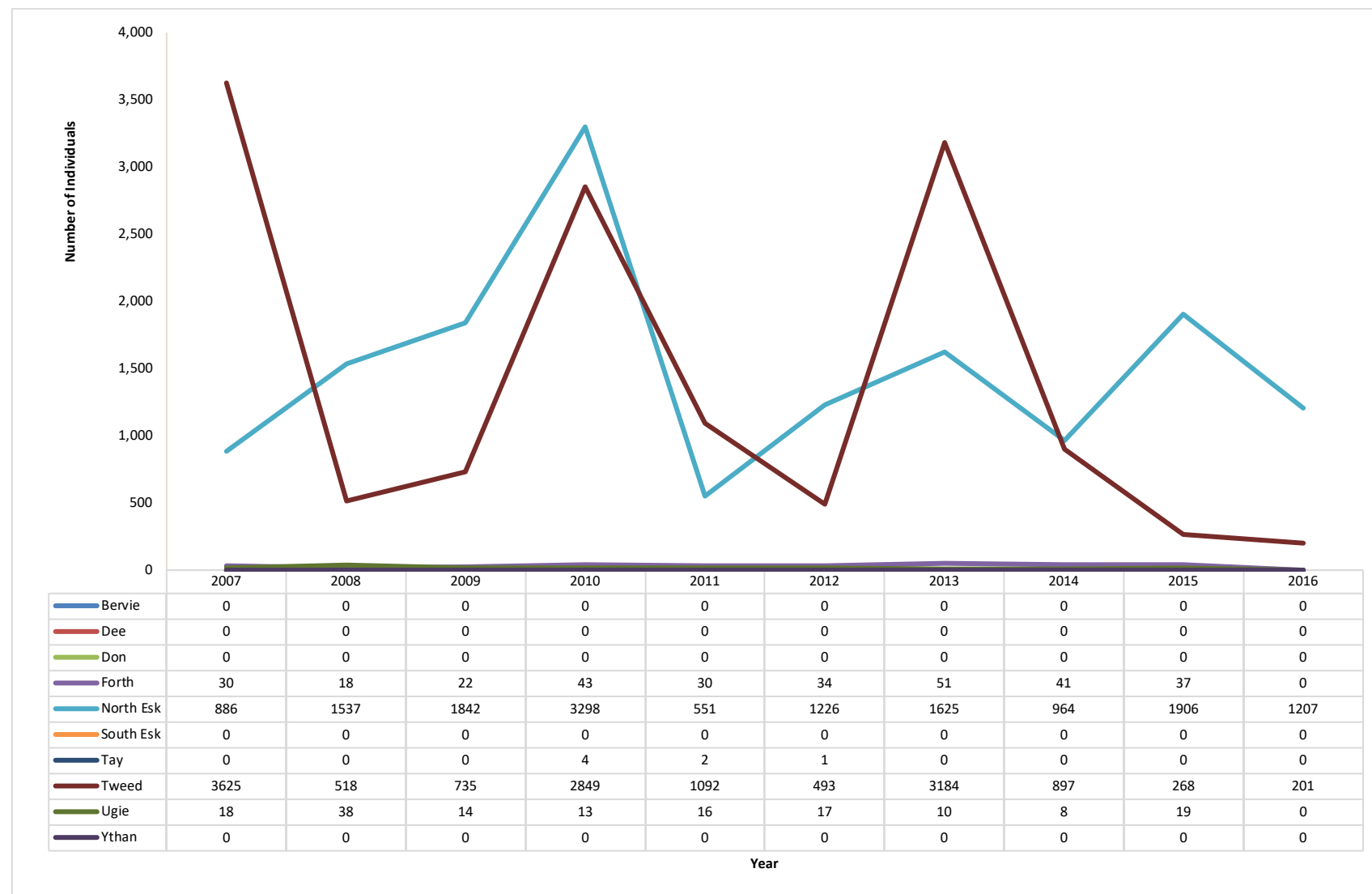
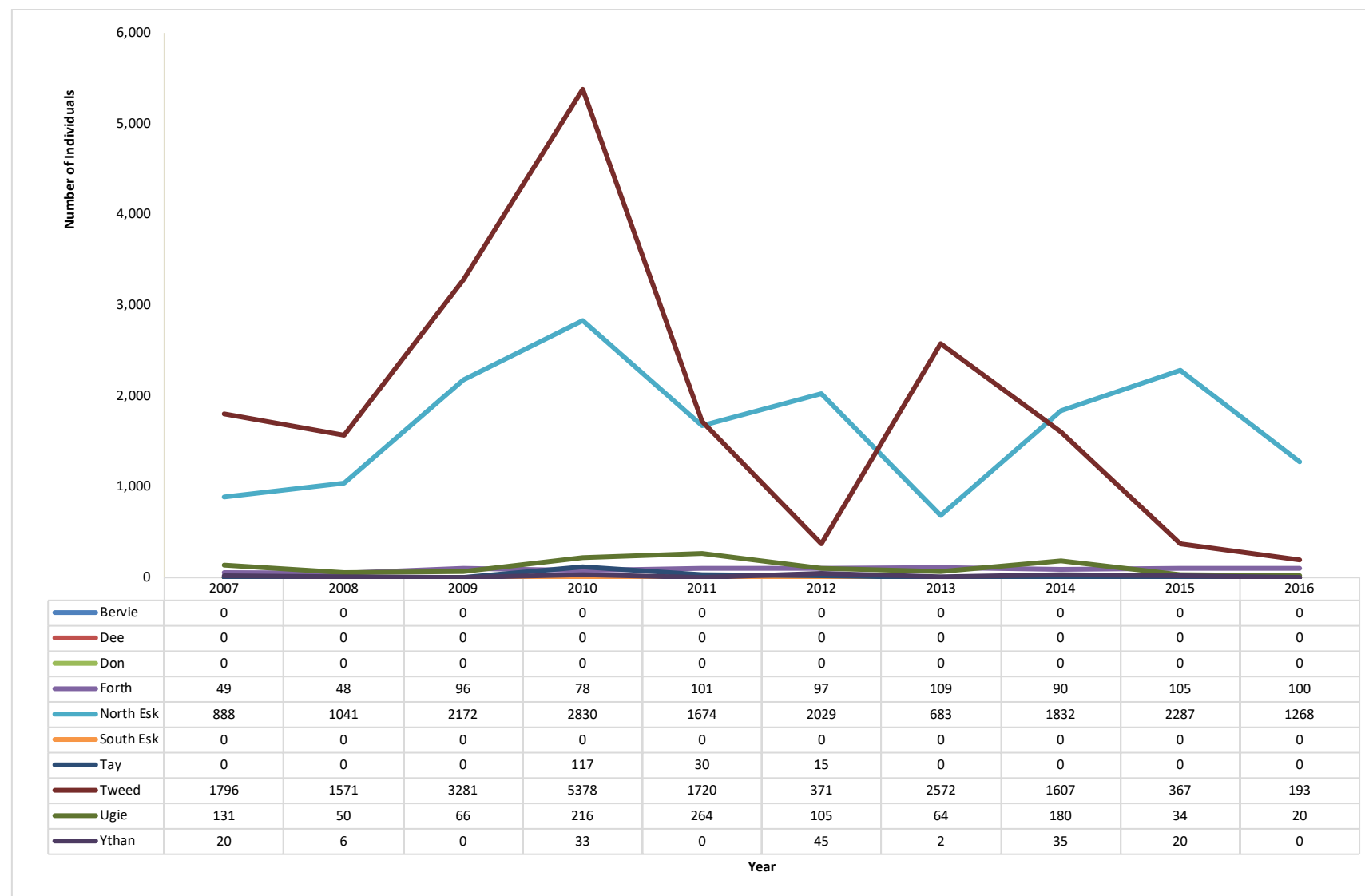


Figure 14B.22: Annual variation in Sea Trout catches by Net and Coble Fishery by district



14B.8.4 Rod and Line

82 Figures 14B.23 to 14B.28 show the seasonality of the rod and line fishery in the Regional Study Area by district and species. The data for the rod and line fishery comprises both the retained and released numbers combined.

83 All fishery districts within the Regional Study Area report catches of salmon, grilse and sea trout except the Bervie which produced very low numbers of salmon and grilse with no sea trout recorded over the study period (2007-2016).

Seasonality

84 Rod and line salmon catches peak in September and October in most districts with the Tweed also reporting high catches in November which reflect the extended fishing season in this district (1 February to 30 November) (Tweed Consultation 2017). Although considerably smaller a peak in numbers of salmon is also evident in May for the Dee, Tay and Tweed specifically, which may indicate a spring run of fish. It is known that multi sea winter fish enter the Tay all year round (Tay Consultation 2017). A reduction in catches during the month of July for four of the districts in the study area is also evident. Catches of salmon on the Bervie, although small, were reported in September and October only.

85 Grilse are principally caught from July to October with peak catches for all districts identified within this period. The two districts with the highest catches are the Tweed and the Tay both of which show a peak in September. Relatively high catches of grilse are also reported in November in the Tweed again reflecting the extended fishing season.

86 The catches of sea trout are caught mainly during the months of May to October. Peak catches differ between districts with the Dee recording highest catches in June and the Tweed in July. The Tweed also records sea trout catches in November. The Bervie records zero catches of sea trout over the study period.

Annual Variation

87 The annual variation of the salmon fishery over the 10 year data series highlights the dominance of the Tweed within the study area with peak catches in 2010 followed by a decline in numbers. Both the Tay and Dee record a steady increase in numbers peaking in 2011. The Dee then exhibits a steady decline until 2015. The Tay goes on to peak in 2013 followed by a decline in the following year. Although the Tweed, Tay and Dee report the highest catches in the study area they also exhibit the greatest fluctuations between years. The Don, Forth, South Esk, Ugie and Ythan also report peak catches in 2010.

88 The annual variation in grilse highlights numbers peaked in 2010 for each district apart from the Ugie and Ythan. The largest catches were reported in the Tweed followed by the Tay and then the Dee. All districts exhibit a degree of fluctuation between years with six of the districts reporting a decline in grilse between 2015 and 2016.

- 89 The variation of sea trout catches within the time series shows that the Dee has the highest recorded peak in numbers in 2010 which is also echoed by the Tweed and the Ythan. All three of these districts then highlight a decline in catches most significantly in the Dee. Between 2015 and 2016 all the districts apart from the Ythan (and Bervie which recorded zero) reported a decrease in catches. The Bervie has reported zero catches of sea trout from 2012 to 2016.

Figure 14B.23: Seasonality of the Salmon catches (average 2007 to 2016) by the Rod and Line Fishery

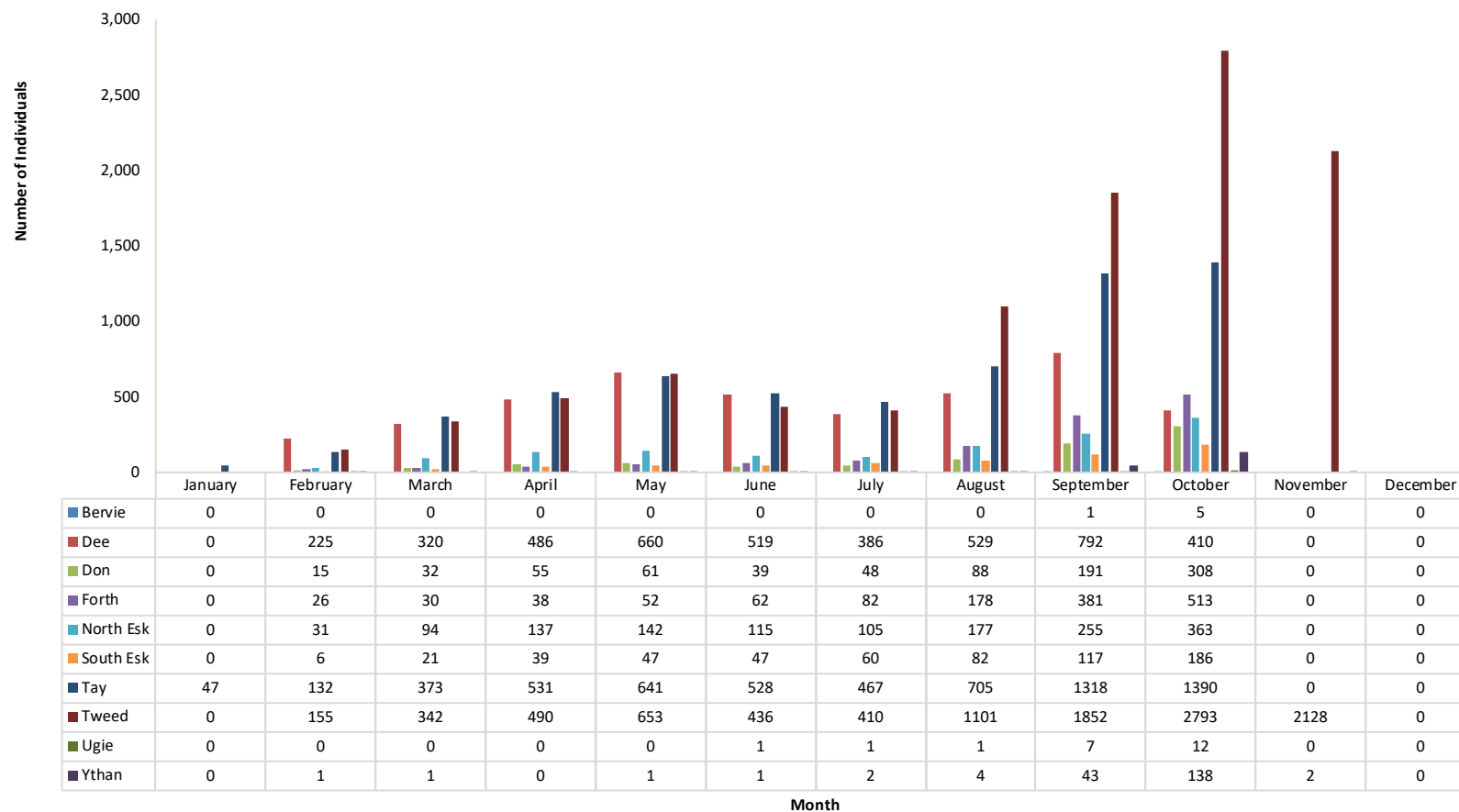


Figure 14B.24: Seasonality of the Grilse catches (average 2007 to 2016) by the Rod and Line Fishery

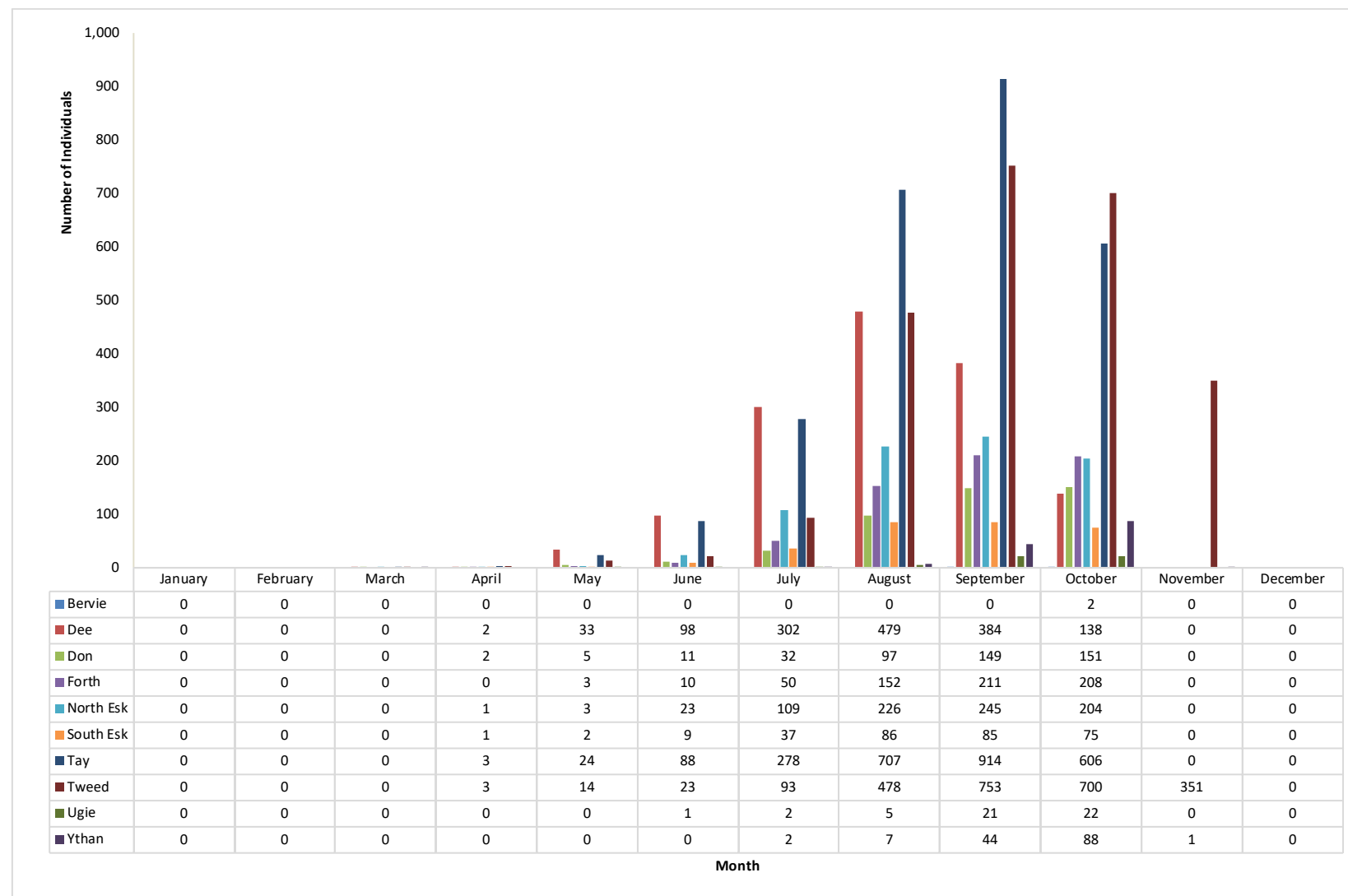


Figure 14B.25: Seasonality of the Sea Trout catches (average 2007 to 2016) by the Rod and Line Fishery

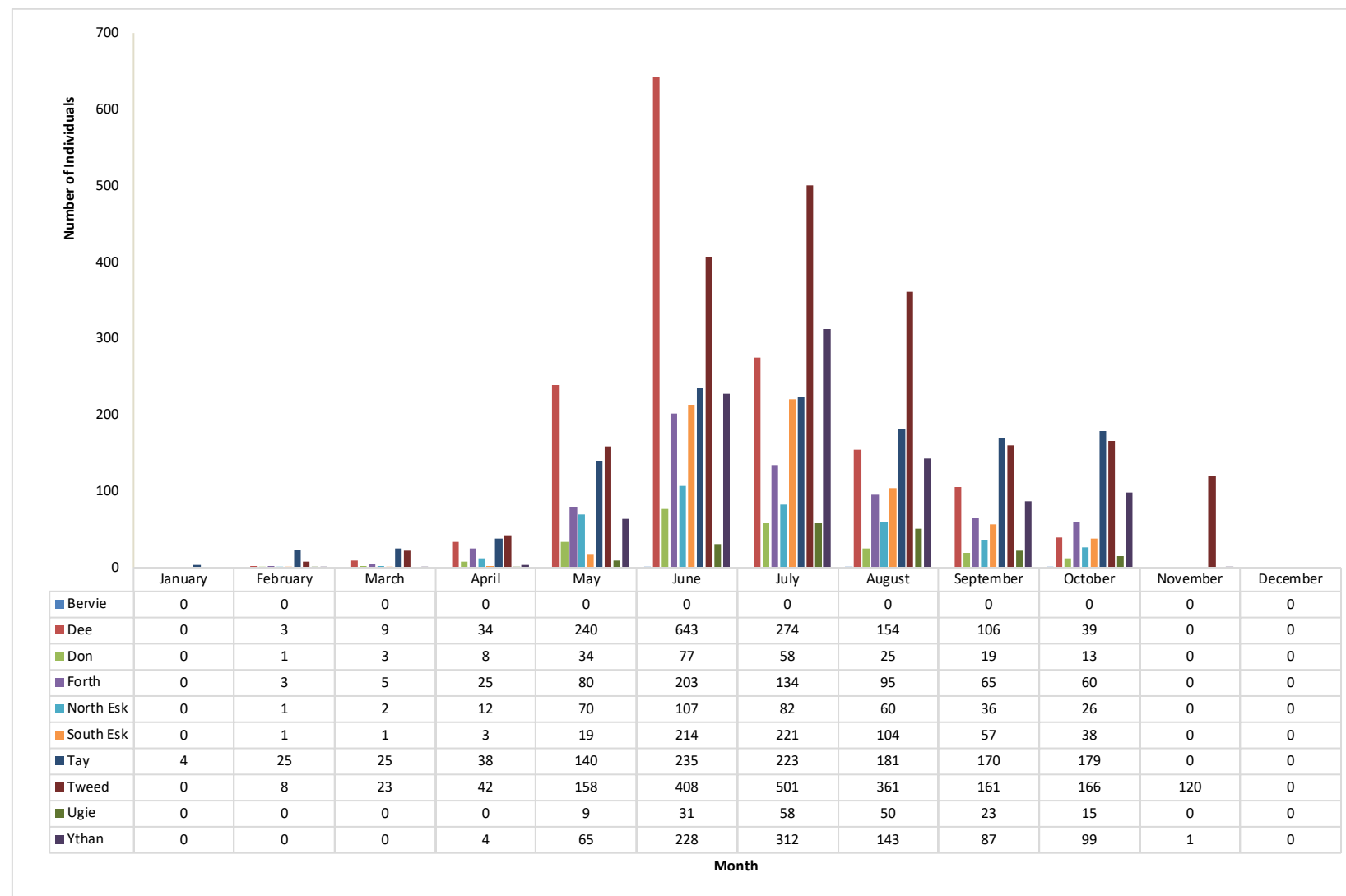


Figure 14B.26: Annual variation in Salmon catches by Rod and Line Fishery by district

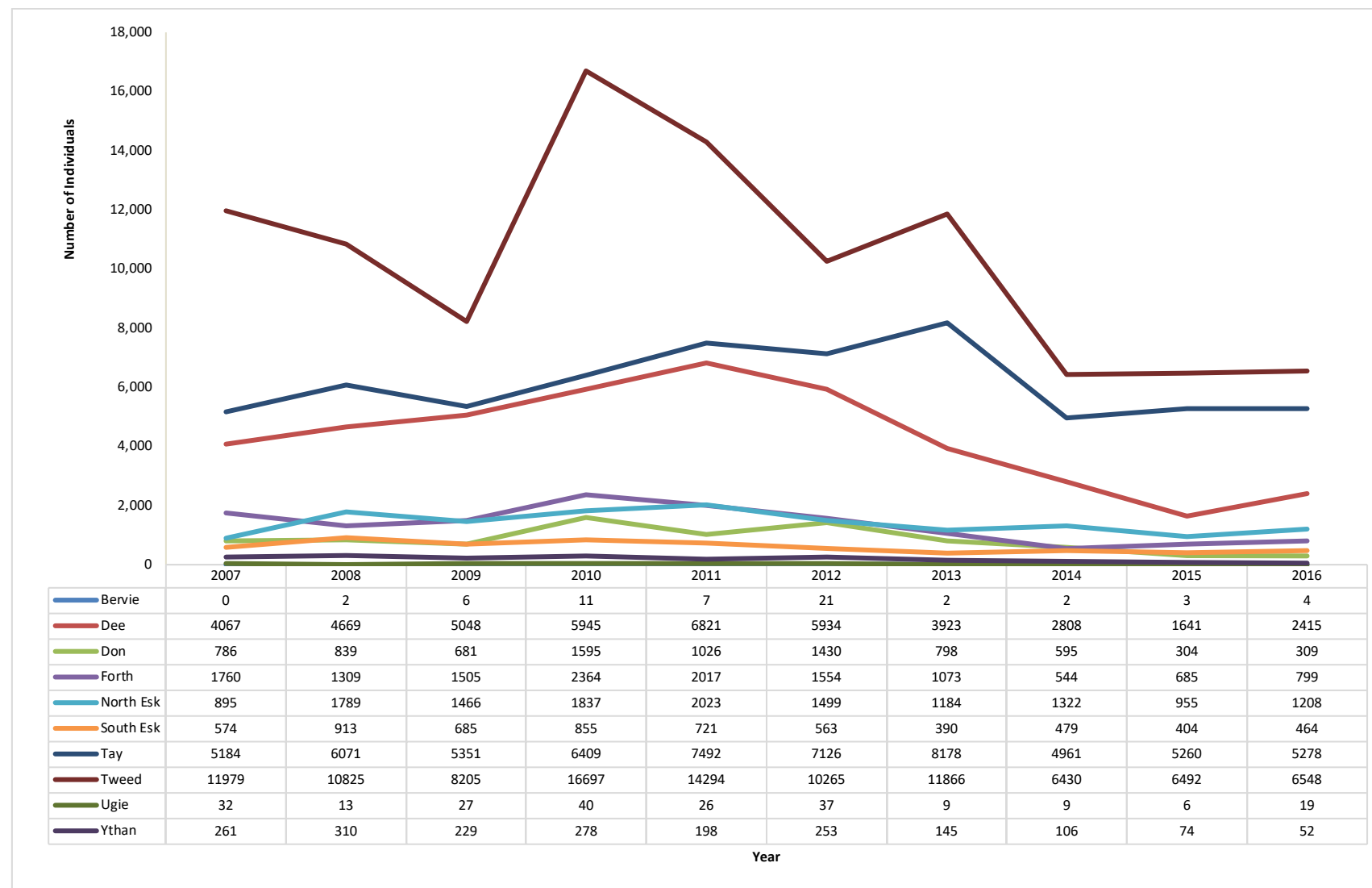


Figure 14B.27: Annual variation in Grilse catches by Rod and Line Fishery by district

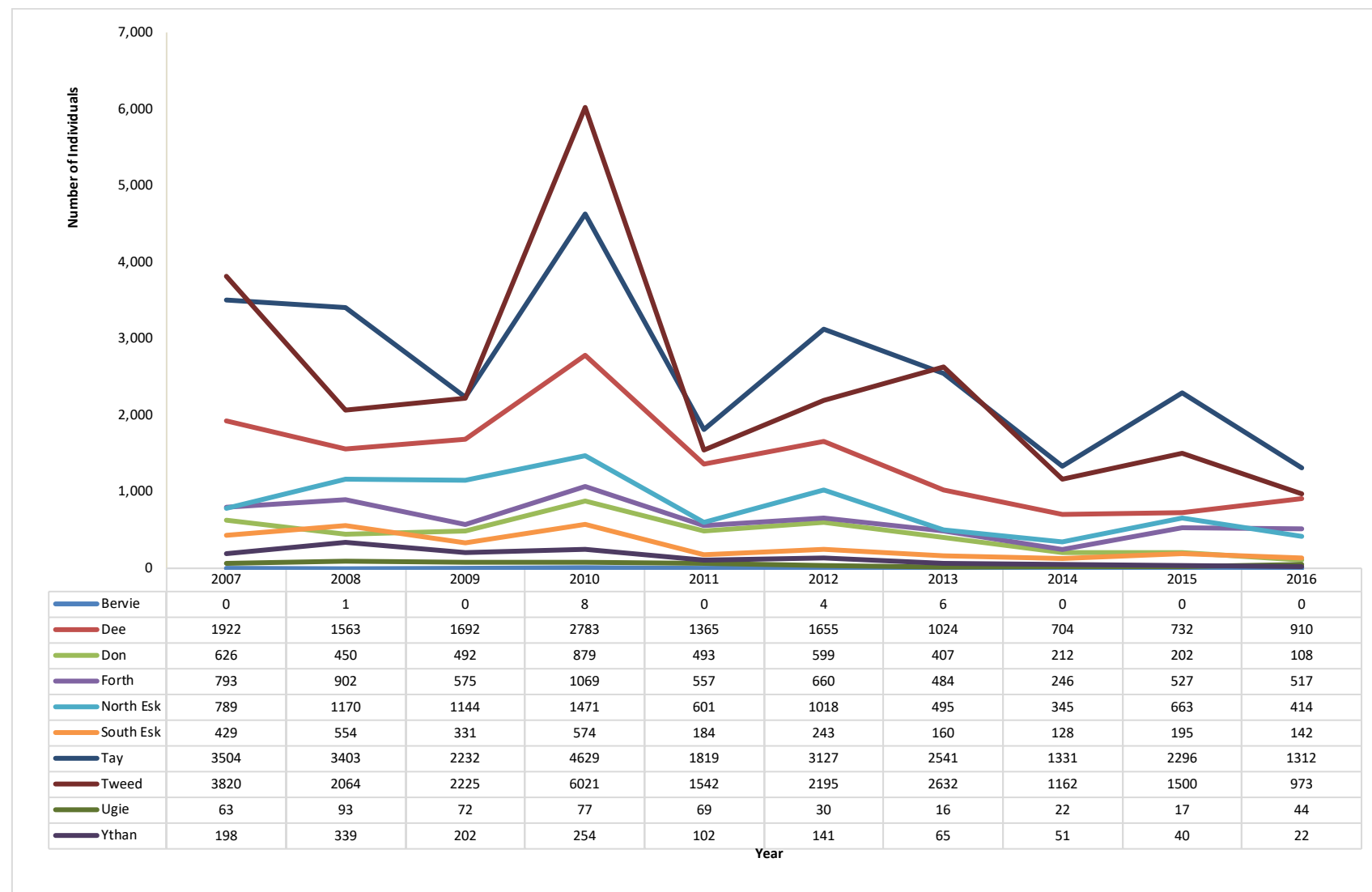
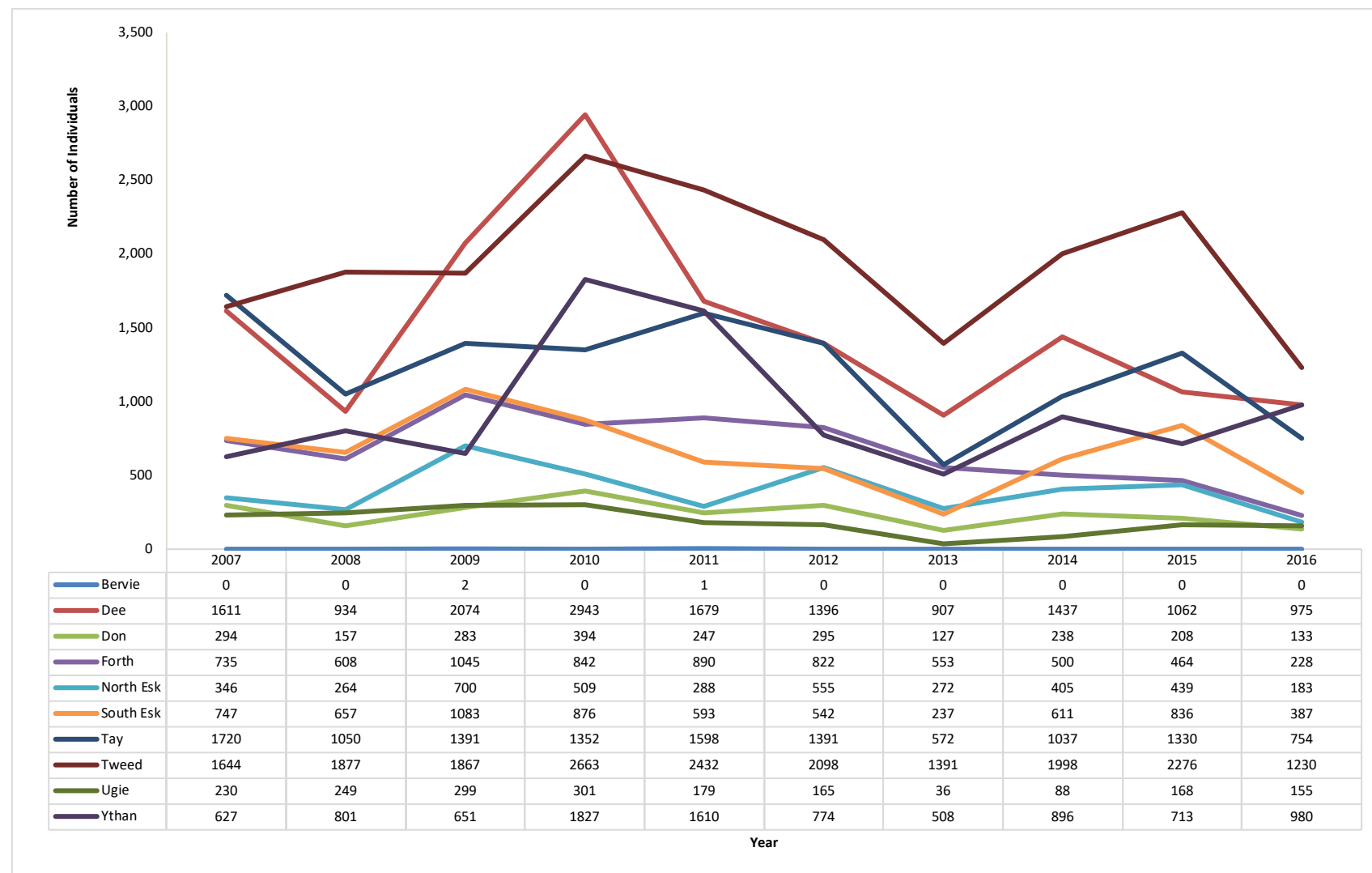


Figure 14B.28: Annual variation in Sea Trout catches by Rod and Line Fishery by district

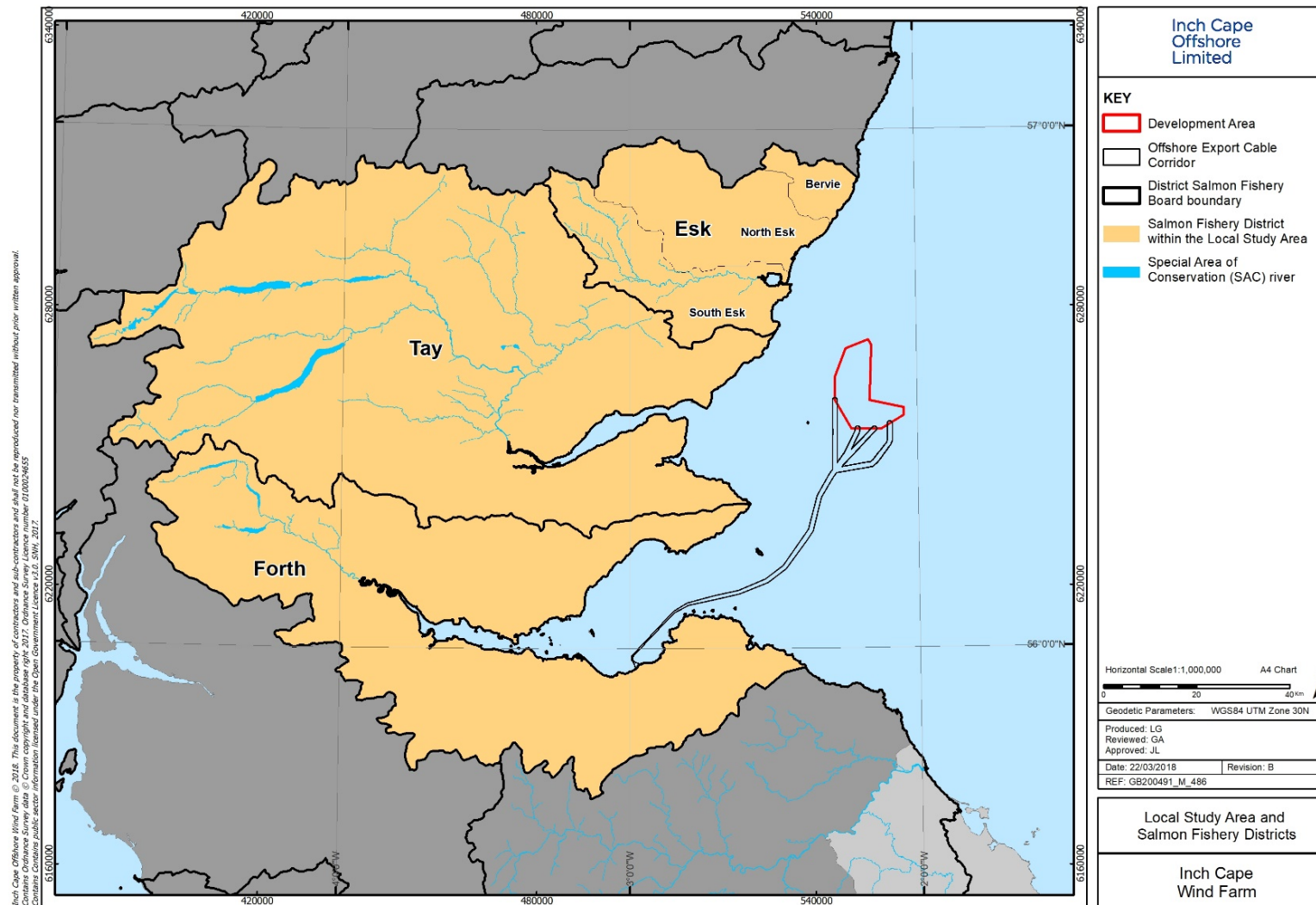


14B.9 Local Study Area

14B.9.1 Introduction

- 90 The Local Study Area includes all the salmon fishery districts which are located in the immediate vicinity of the Inch Cape Wind Farm and OfTW (Figure 14B.29). The cable landfall will be made within the Forth district.
- 91 The Local Study Area encapsulates many rivers and their tributaries. To highlight the significance of salmon in this area there are three rivers which are designated as an SAC for which salmon are cited as an interest feature. These SAC's are the River Tay, River Teith and the River South Esk. With both the Tay and South Esk citing salmon as the primary reason for site selection.
- 92 Although sea trout are not listed as an interest feature for any European sites in the Local Study Area they are an important species in their own right. The introduction of the *Conservation of Salmon (Scotland) Regulations 2016* on 31st March 2016 has essentially made sea trout the principle species targeted by the coastal net fishery.
- 93 The following sections highlight the principle methods used in each of the districts within Local Study Area. These districts are the Forth, Tay and Esk (South Esk, North Esk and Bervie). Each of these fisheries are defined by fishing seasons with catches only recorded during the period when the fishery is open.

Figure 14B.29: Districts in the Local Study Area



14B.9.2 The Forth District

- 94 The Forth DSFB is responsible for the protection, enhancement and conservation of salmon and sea trout stocks and fisheries within the district. This includes an area of more than 3,600 km² of water including the Forth and its tributaries, the estuary and the coast.
- 95 The River Forth has a Board and also a Trust (River Forth Fisheries Trust) which is linked in partnership to Stirling Council who manage a large part of the river. Angling management groups are set up on each sub river and have produced management plans. The Board works in partnership with these groups to implement projects (Forth DSFB, 2017).
- 96 The Forth is predominantly a salmon river although other rivers in the district such as the River Tyne are important for sea trout. The Forth Fishery opens on the 1st February and closes on the 31st October.

14B.9.3 Fisheries in the Forth District

- 97 The principle fishing method for salmon and sea trout in this district is by rod and line. The River Forth has been classed as Category 2 river under the Conservation of Salmon (Scotland) Regulations 2016 (*Section 14B.4.2*). The Forth DSFB and Trust promote a policy of total catch and release.
- 98 In 2011 there was a total of over 60 netting stations in the district of which six are operational although only two of them were active. These two stations operate net and coble. There are no operational coastal netting stations in the district so no fish are caught by fixed engine (Forth Consultation 2011).

14B.9.4 Seasonality and Annual Variation**Net and Coble Fishery**

- 99 During the period 2007-2016 salmon numbers caught by the net and coble fishery are generally low but appear to peak in July. Catches of salmon are made between May and August. Grilse catches are reported between June and August and peak in July. Sea trout make up the greatest proportion of the catch in the net and coble fishery across the months of April to August. Sea trout catches peak in May. This may highlight the differing migration times between species.
- 100 The annual variation of the net and coble fishery reflects the importance of sea trout catches over the 10 year study period (2007 to 2016). Sea trout consistently make up the greatest proportion of the catch with an upward trend in reported numbers over the time series. Catches of sea trout peaked in 2013 but have remained relatively consistent since 2011. Salmon numbers have remained relatively consistent over the time series with a peak in 2011 and a significant decline to zero catches in 2016. Grilse catches show an upward trend with a peak in 2013 followed by a sharp decline to zero in 2016.

Figure 14B.30: Seasonality of Salmon, Grilse and Sea Trout caught in the Net and Coble Fishery in the Forth District (average 2007 to 2016)

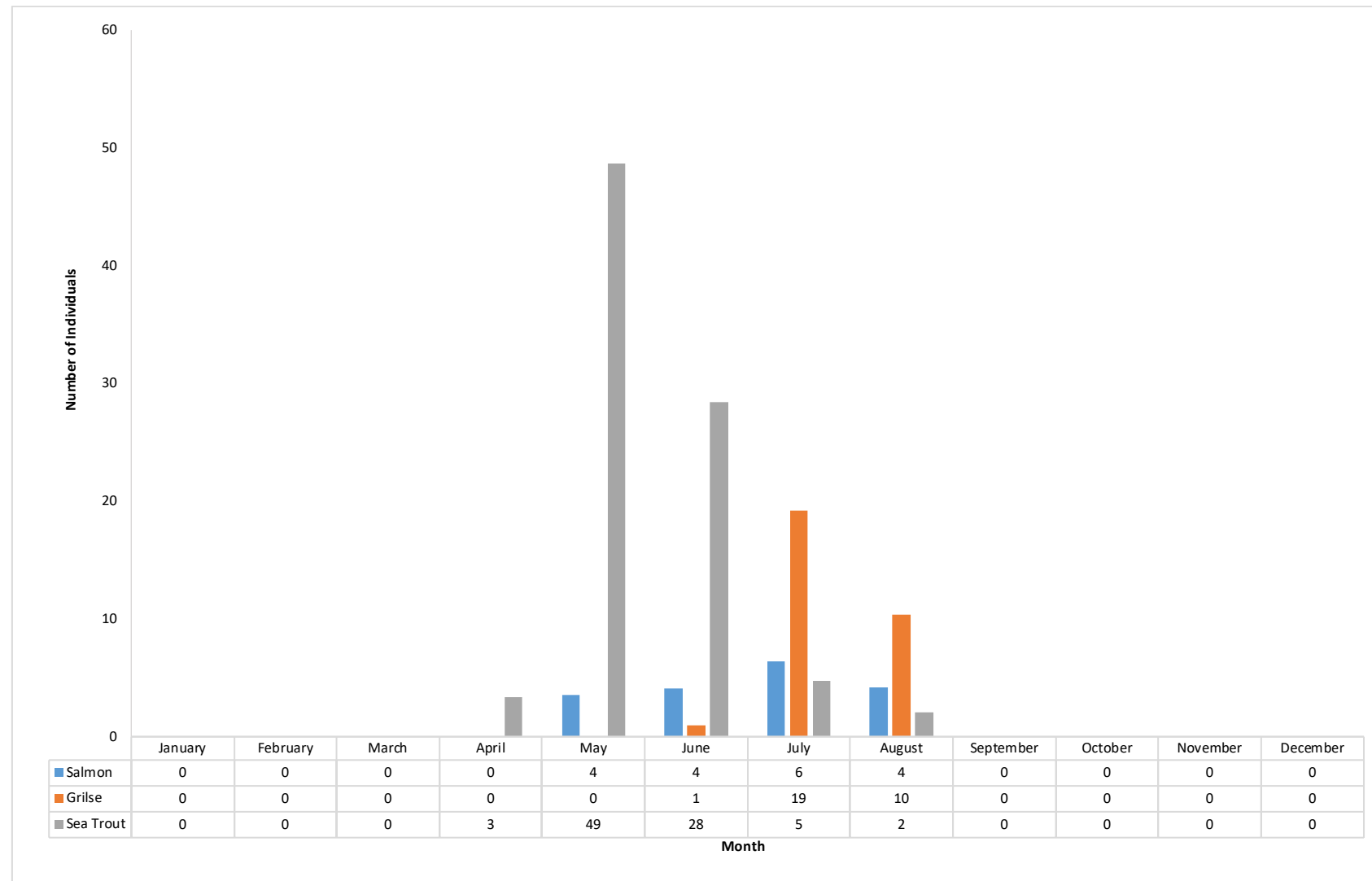
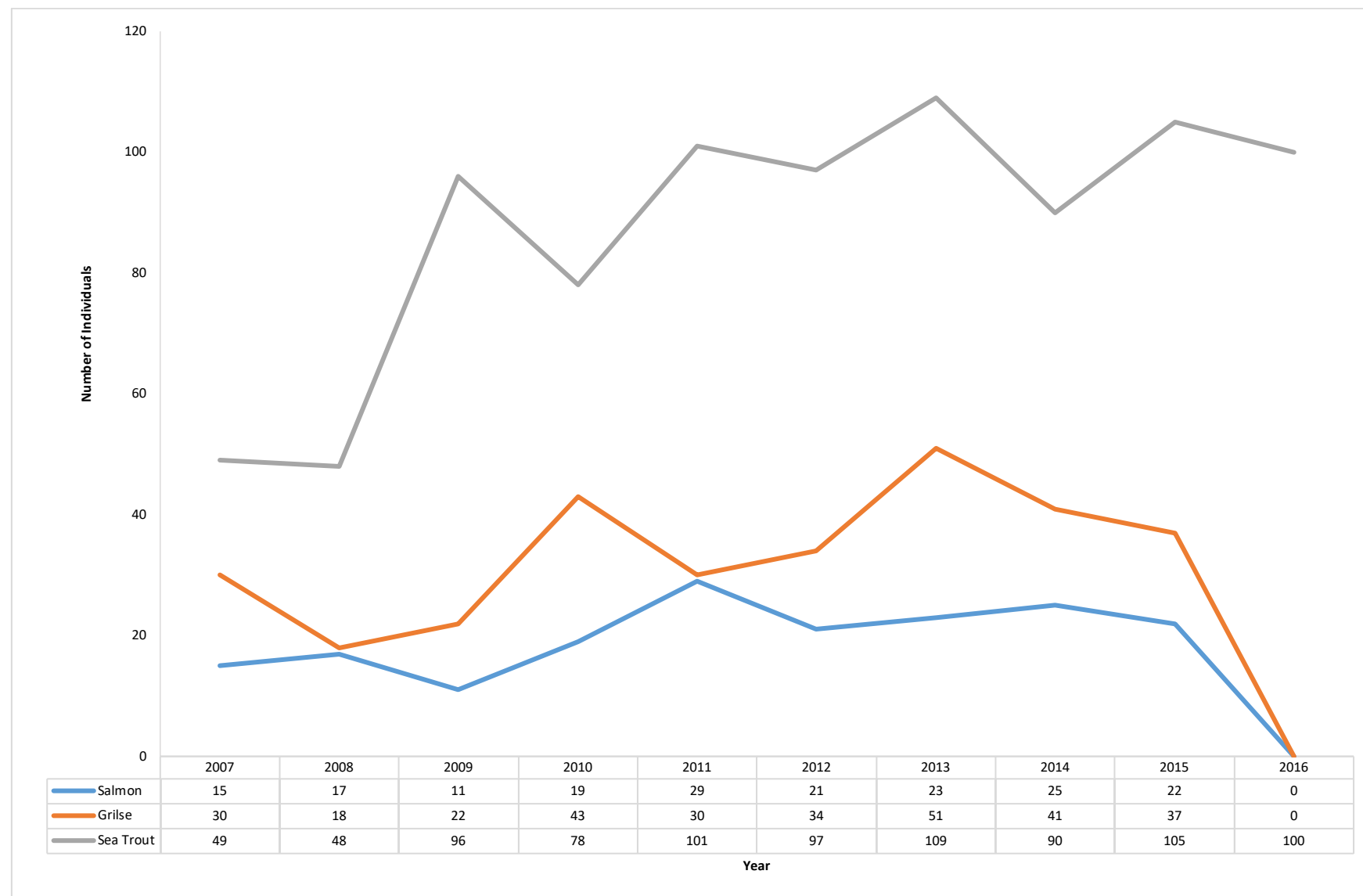


Figure 14B.31: Annual variation in catches of Salmon, Grilse and Sea Trout by the Net and Coble Fishery in the Forth District (no. of individuals)



Rod and Line Fishery

- 101 Salmon are the predominant species caught in the rod and line fishery. Numbers are caught from February to October with peak numbers in September and October. Grilse catches are also reported from June to October with peak numbers in September and October. Sea trout are caught from March to October with peak numbers in June. These peak numbers may give an indication of preferred run times. No fish were reported in January, November and December which reflects the closure times of the rod and line fishery.
- 102 The annual variation over the time series highlights the importance of salmon catches within this fishery. Salmon numbers peaked in 2010 followed by a steep decline until 2014. Reported catches then increased from 2014 to 2016. Grilse numbers peaked in 2010 followed by a decline to 2014. Numbers remained relatively constant between 2015 and 2016. Sea trout numbers peaked in 2009 and then declined until 2016 when the lowest catches across the data series were recorded.

Figure 14B.32: Seasonality of Salmon, Grilse and Sea Trout caught in the Rod and Line Fishery in the Forth District (average 2007 to 2016)

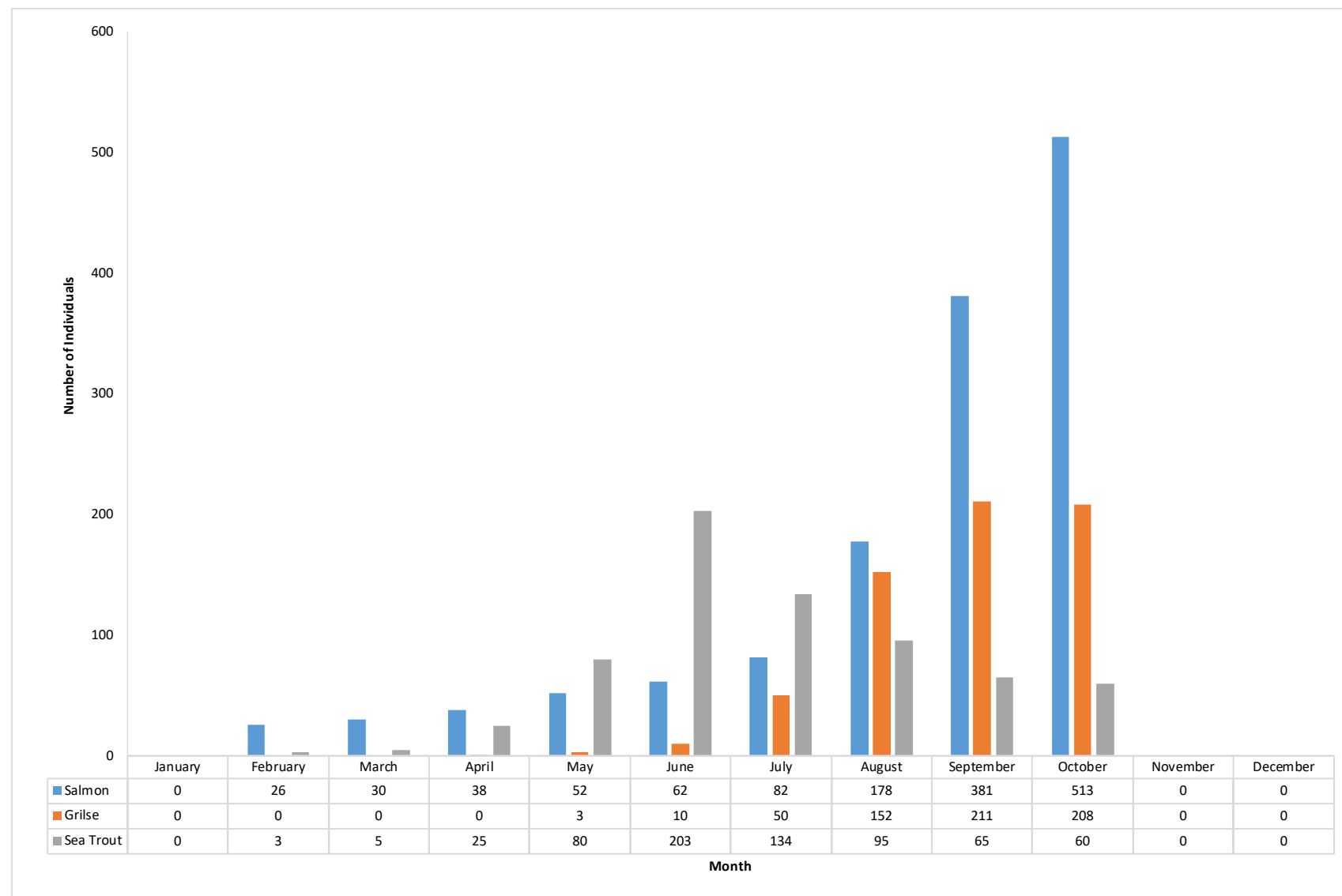
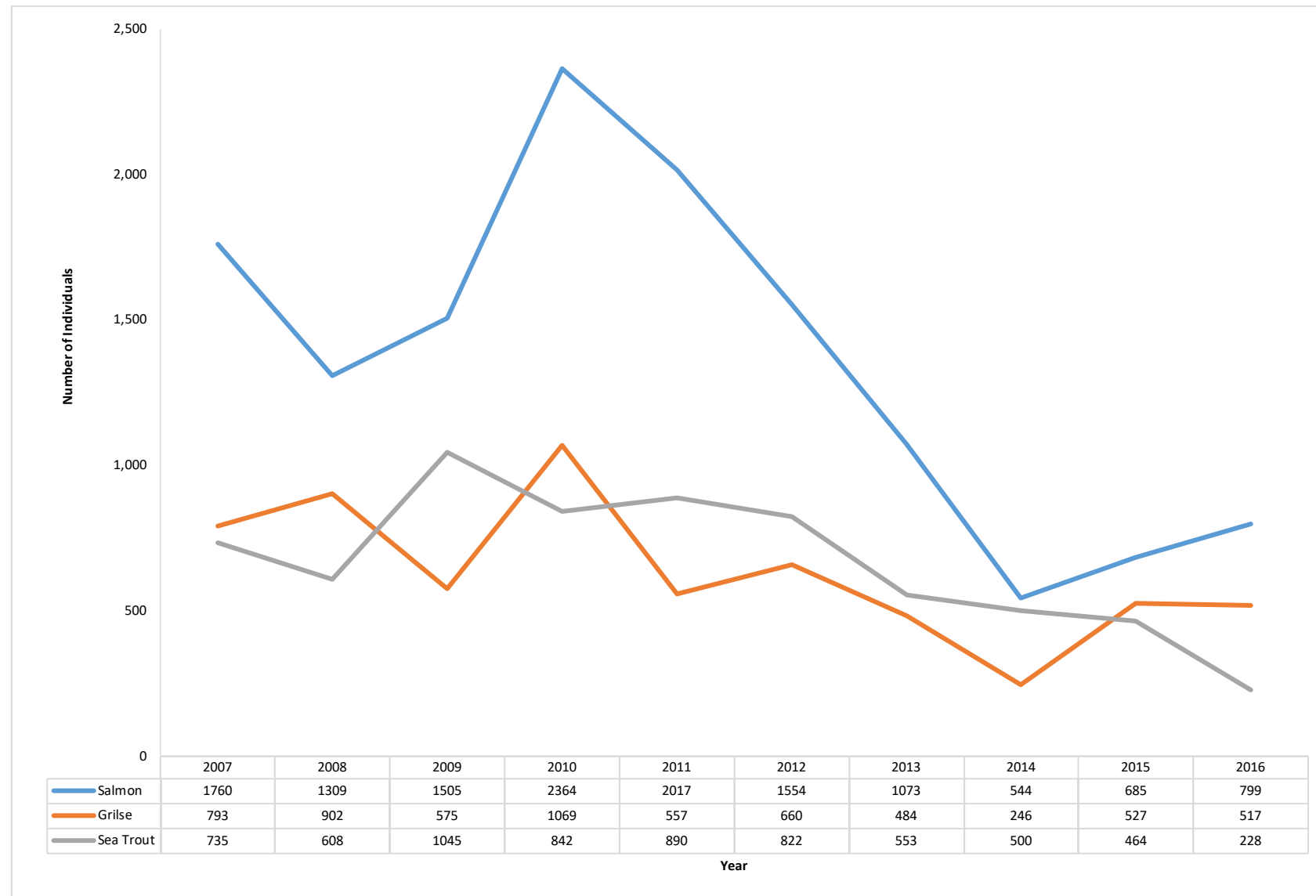


Figure 14B.33: Annual variation in catches of Salmon, Grilse and Sea Trout by the Rod and Line Fishery in the Forth District (no. of individuals)



14B.9.5 The Tay District

- 103 The Tay is primarily a salmon river and is regarded as the largest salmon river in Scotland. It also has a significant sea trout run particularly in the River Earn (Tay Consultation, 2011).
- 104 The Tay DSFB is the statutory body empowered to protect and improve the salmon fisheries in the Tay district and the River Tay as a whole. The Board comprises salmon fishery owners who represent the upper and lower parts of the catchment and coopted members who represent the interests of anglers and the Tay Ghillies Association. In total the Board manages over 5,000 miles of rivers, burns and lochs (Tay DSFB, 2016). The main rivers under the Board's jurisdiction are the Tay, Earn and Eden (Tay Consultation 2017).
- 105 The Tay DSFB is advised by the Tay Foundation on matters concerned with the fishery resource. The Foundation is a charitable trust to further research, education and conservation of salmon and all fish species within the Tay district (Tay Foundation, 2017).
- 106 The district recommends total catch and release to 31st May and after this date no more than one grilse retained per day. There is also a statutory catch and release on all fish caught before 31st March (Tay Consultation, 2017).
- 107 Salmon and sea trout spawning times within this district are between late October and February (Tay Consultation 2017).
- 108 The estimated smolt migration period in this district is between March and June but concentrated between late April and May but this is temperature dependent (Tay Consultation 2017).

14B.9.6 Fisheries in the Tay District

- 109 Salmon and sea trout fishing in the Tay District is principally undertaken by rod and line. The rod and line fishing season is from 15th January to 15th October (Tay) and 1st February to 31st October (Earn and Eden) (Tay Consultation 2017).
- 110 In 2016 the Tay was classed as a Category 1 river which means exploitation of salmon is sustainable and no additional management action is required. This does not take into account local recommendations which are discussed in *Section 14B.9.5*. Conversely both the Earn and the Eden are classed as Category 3 rivers which means exploitation is unsustainable and all salmon must be returned (*Section 14B.4.2*) (Marine Scotland 2017b).
- 111 There are several hobby net and coble fishermen in the district which occasionally operate at the mouth of the River Earn and at Balmerino. There are no operating coastal nets in this district. The season for the net fishery is 10th February to 20th August (Tay Consultation 2017).
- 112 The Tay DSFB owns most netting rights on the Fife coast from the River Eden to Fifeness and fishing North of Abroath. Most other net fishing in the district on the coast and in the river is leased for conservation reasons by the Tay Foundation. Most of the coastal frontage in the Tay district is either owned or leased by either the Tay DSFB or Tay

Foundation. This is also true for the Firth of Tay between Perth and Dundee, with some exceptions (Tay Consultation, 2017).

14B.9.7 Seasonality and Annual Variation

Net and Coble Fishery

- 113 Over the time series the net and coble fishery reported low catches of salmon, grilse and sea trout. Despite the low numbers, salmon were caught between May and August with the largest proportion caught in June and July. Grilse catches peak in July with lesser catches in June and August. Sea trout make up the greatest proportion of the catch with fish reported from May to August with the greatest catches in May.
- 114 Annual variation across the time series highlights a peak in 2010 for all species. Sea trout catches were significantly larger than both salmon and grilse combined. All three fish then exhibit a decline up until 2013 with zero catches then being recorded until the end of the time series in 2016.

Figure 14B.34: Seasonality of Salmon, Grilse and Sea Trout caught in the Net and Coble Fishery in the Tay District (average 2007 to 2016)

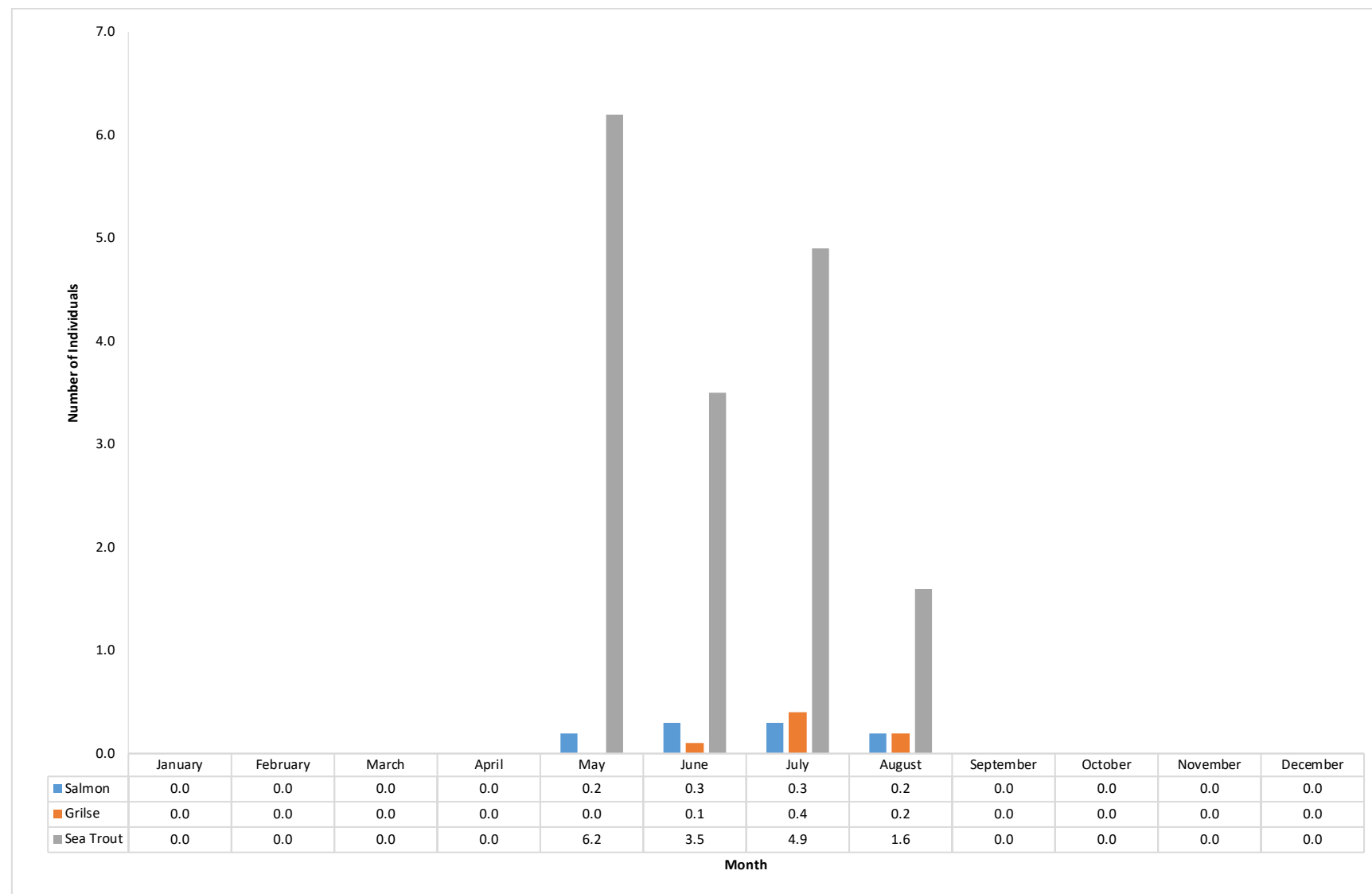
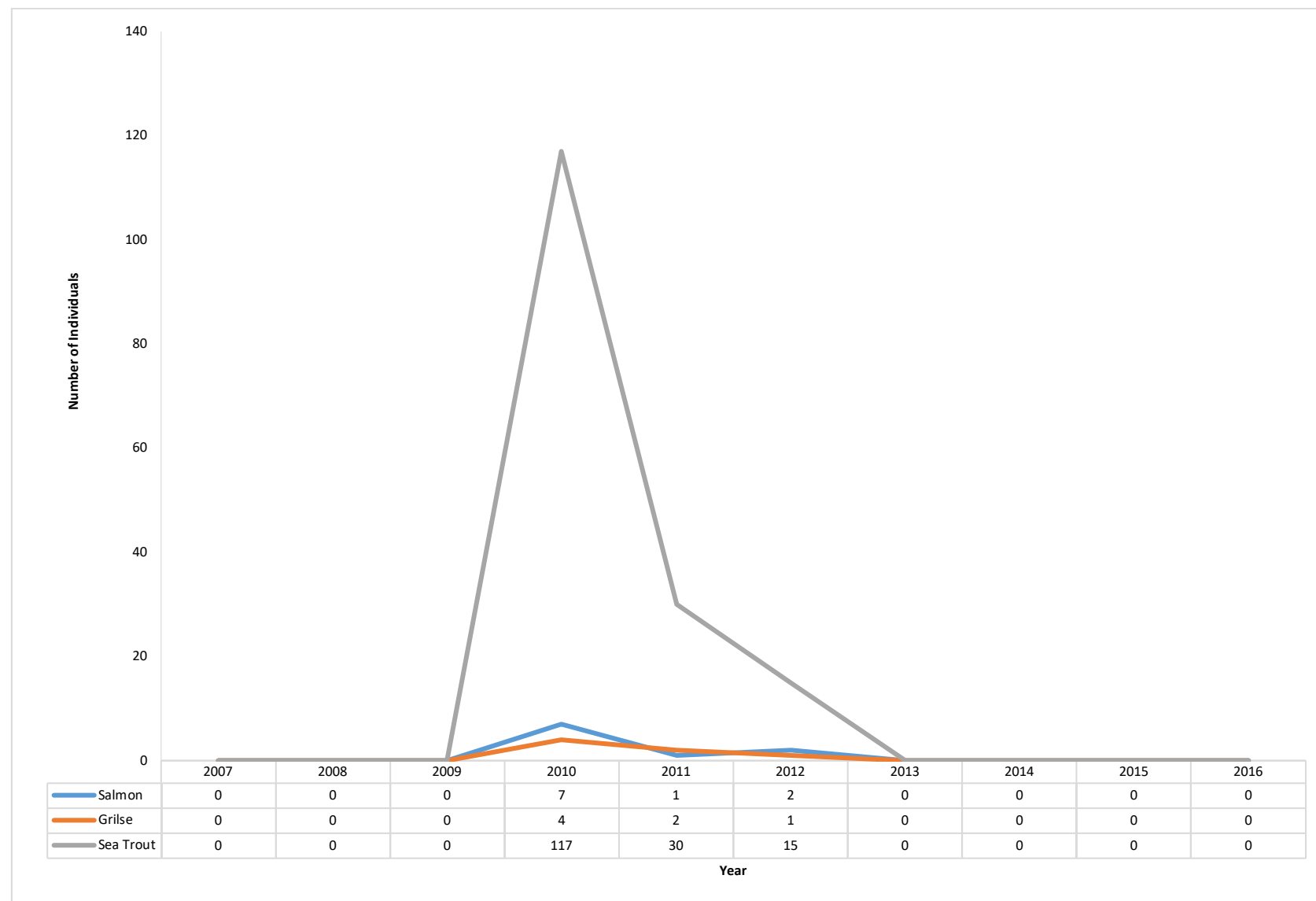


Figure 14B.35: Annual variation in catches of Salmon, Grilse and Sea Trout by the Net and Coble Fishery in the Tay District (no. of individuals)



Rod and Line Fishery

- 115 The seasonality of salmon, grilse and sea trout in this district over the time series show that salmon are caught from January to October with several peak catches in May and October. The peak in May could indicate a run of spring salmon. This is also highlighted in consultation with the Tay DSFB who suggest that the most important time for salmon is from March to October (With multi sea winter salmon entering the river all year round). Numbers of grilse are reported from May to October with a peak in September. Sea trout are caught from February to October with a slight peak in catches in June. The seasonality of both grilse and sea trout is also confirmed by the Tay DSFB who identify important times for these species as June to October and May and June respectfully (Tay Consultation, 2017).
- 116 The annual variation of the rod and line fishery shows that salmon have consistently made up the greatest proportion of the catch over the 10 year time series. Catches peaked in 2013 but saw a sharp decline in 2014, numbers then stabilised up until 2016. Grilse numbers show a downward trend following a peak in 2010. Numbers of grilse reported in 2016 are almost half that of 2007. Sea trout numbers have remained relatively constant across the time series apart from a decline in 2013. The number of sea trout have nearly halved between 2015 and 2016. The introduction of conservation measures may have contributed to this decline as fewer anglers may be targeting these species (Tay Consultation, 2017).

Figure 14B.36: Seasonality of Salmon, Grilse and Sea Trout caught in the Rod and Line Fishery in the Tay District (average 2007 to 2016)

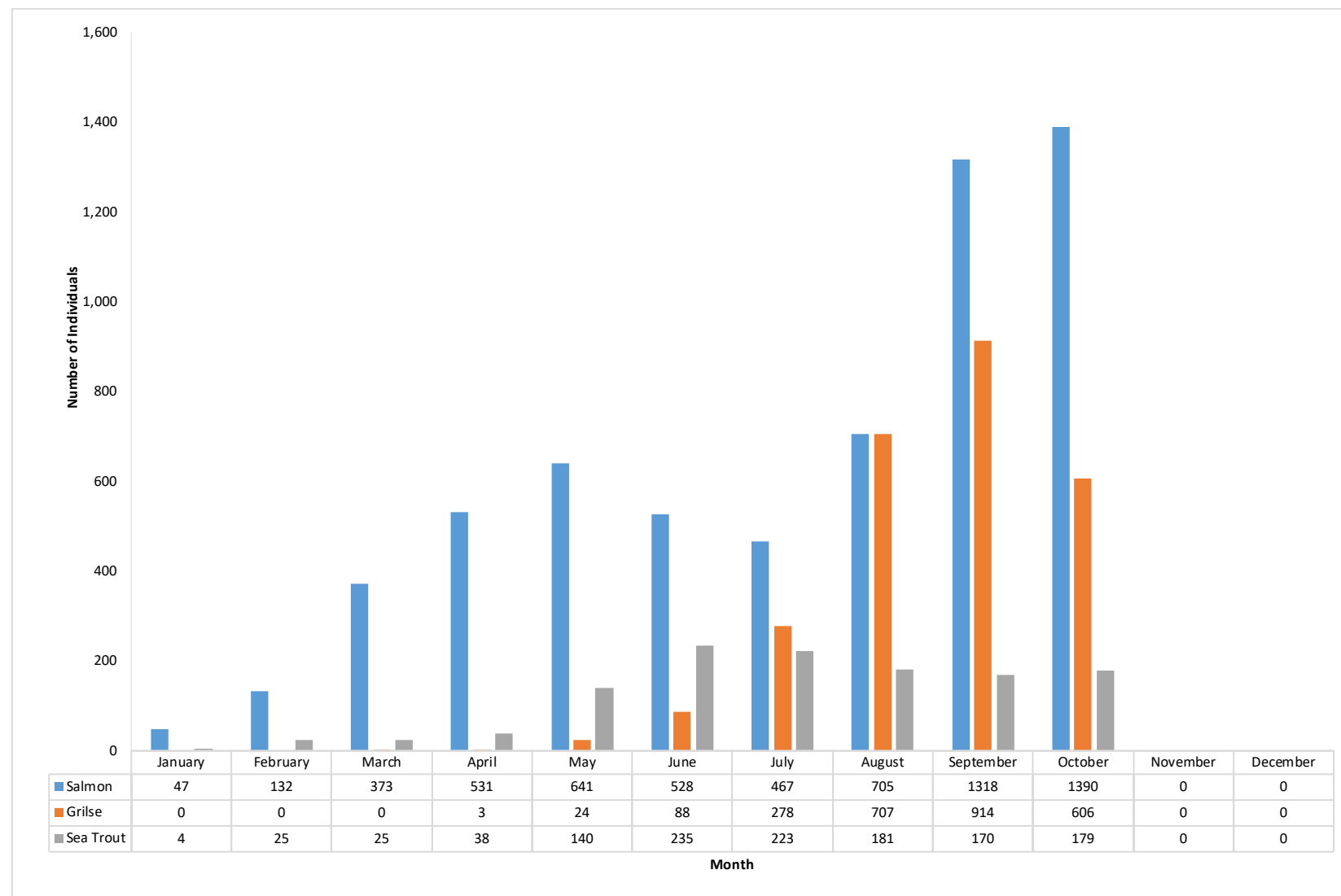
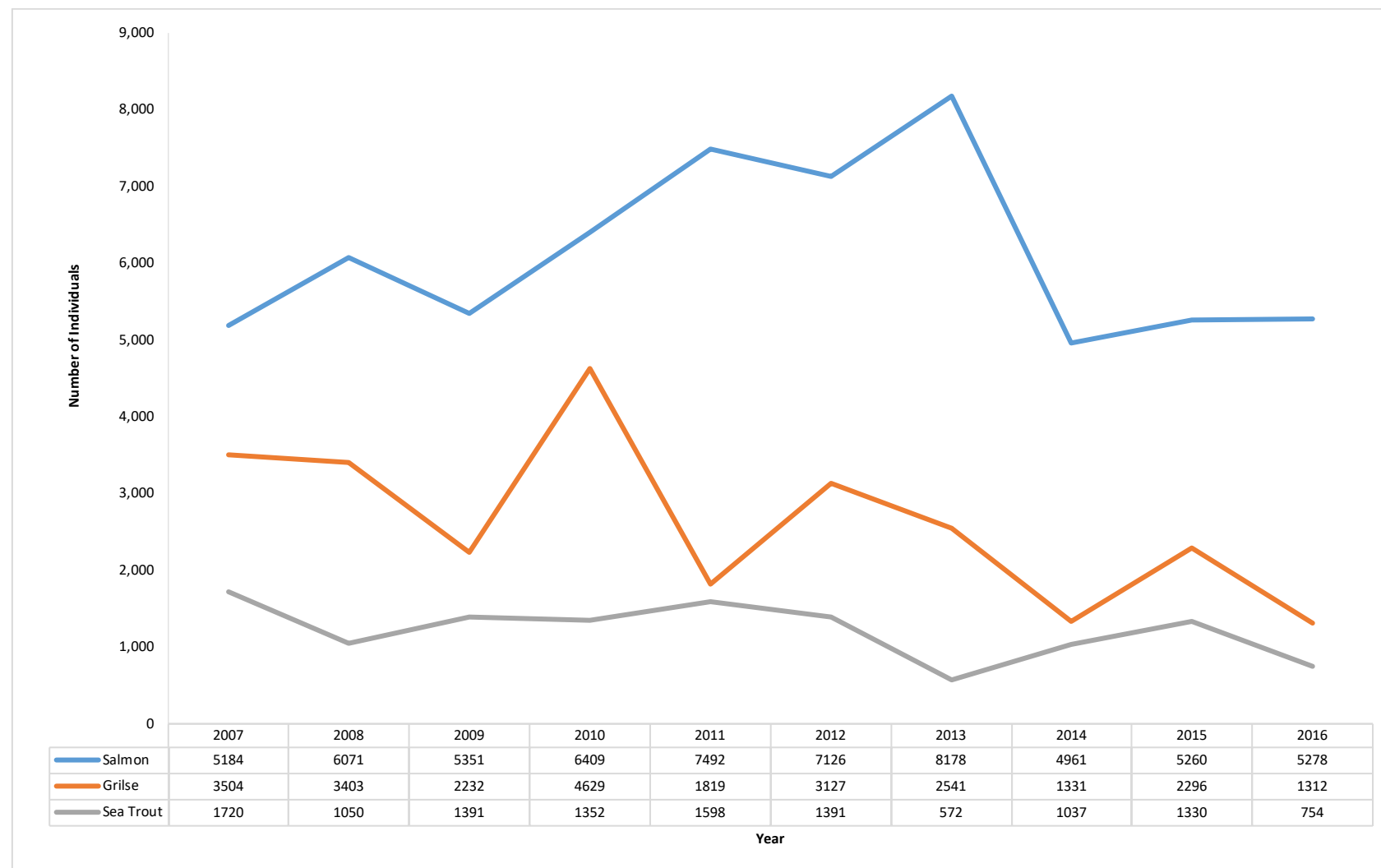


Figure 14B.37: Annual variation in catches of Salmon, Grilse and Sea Trout by the Rod and Line Fishery in the Tay District (no. of individuals)



14B.9.8 The Esk District

- 117 The Esk DSFB is the statutory body responsible for the management of salmon and sea trout stocks on the River North Esk and South Esk. The duties of the Esk DSFB include the protection or improvement of the fisheries within the district, the stocking of waters with salmon and increasing salmon numbers in the district (ERFT and Esk DSFB, 2013).
- 118 The Esk DSFB works with the Esk Rivers and Fisheries Trust (ERFT) which aims to advance the environmental protection and improvement of all species of freshwater fish and their environment in inland and coastal waters of the rivers and tributaries in the district (ERFT and Esk DSFB, 2013). The rivers Bervie and Lunnan Water also fall under the remit of the ERFT which undertakes conservation and habitat improvement work on these rivers.
- 119 It is estimated that the spawning period for salmon and sea trout in this district is November to December and October to November respectfully (Esk Consultation 2017)
- 120 The estimated smolt migration period in this district is between April and June (Esk Consultation 2017).

14B.9.9 Fisheries in the Esk District

- 121 Historically the principle fishery in the Esk District was the net fishery with fixed engines on the South Esk and net and coble on the North Esk. However the fixed engine fishery in St Cyrus Bay, Montrose Bay, Lunan Bay and the Angus coast have been bought out and no longer operate. There are no active net fisheries on the Bervie with the principle fishery being by rod and line.
- 122 The net and coble fishery still operates on the North Esk by R & S Fisheries. The season for this fishery is 1 May to 31 August
- 123 The rod and line fishery is still important within this district with the season running from 12 February to 31 October (Esk Consultation 2017). The South Esk was classed as a Category 2 river in 2016 whereas the North Esk as a Category 1 and the Bervie as a Category 3 river.
- 124 At a National scale the North East region is an important area for the net fishery with the majority of catches coming from the Esk District. The MS data (average 2007 to 2016) shows the South Esk produces more fish from fixed engines with fewer catches by net and coble whilst catches on the North Esk are by net and coble alone.

14B.9.10 Seasonality and Annual Variation

Net and Coble Fishery

- 125 The seasonality of the net and coble fishery highlights that all three fish species are caught during the months of May to August. Salmon catches are consistent across all months with the greatest numbers caught in July. Grilse are caught in June, July and August with a peak in catches in August. Sea trout are caught from May to August with the largest numbers caught in May and June. Grilse catches start in June, peaking in August. Catches of all species are restricted by fishery close season.
- 126 The seasonality of the net and coble fishery is one of fluctuation for all species. Salmon, grilse and sea trout show an upward trend in catches from the start of the time series with both grilse and sea trout peaking in 2010. Salmon numbers peak in 2011. Both Grilse and sea trout show a decline in numbers from 2015 to 2016 with salmon catches increase during the same period.

Figure 14B.38: Seasonality of Salmon, Grilse and Sea Trout caught in the Net and Coble Fishery in the North Esk (average 2007 to 2016)

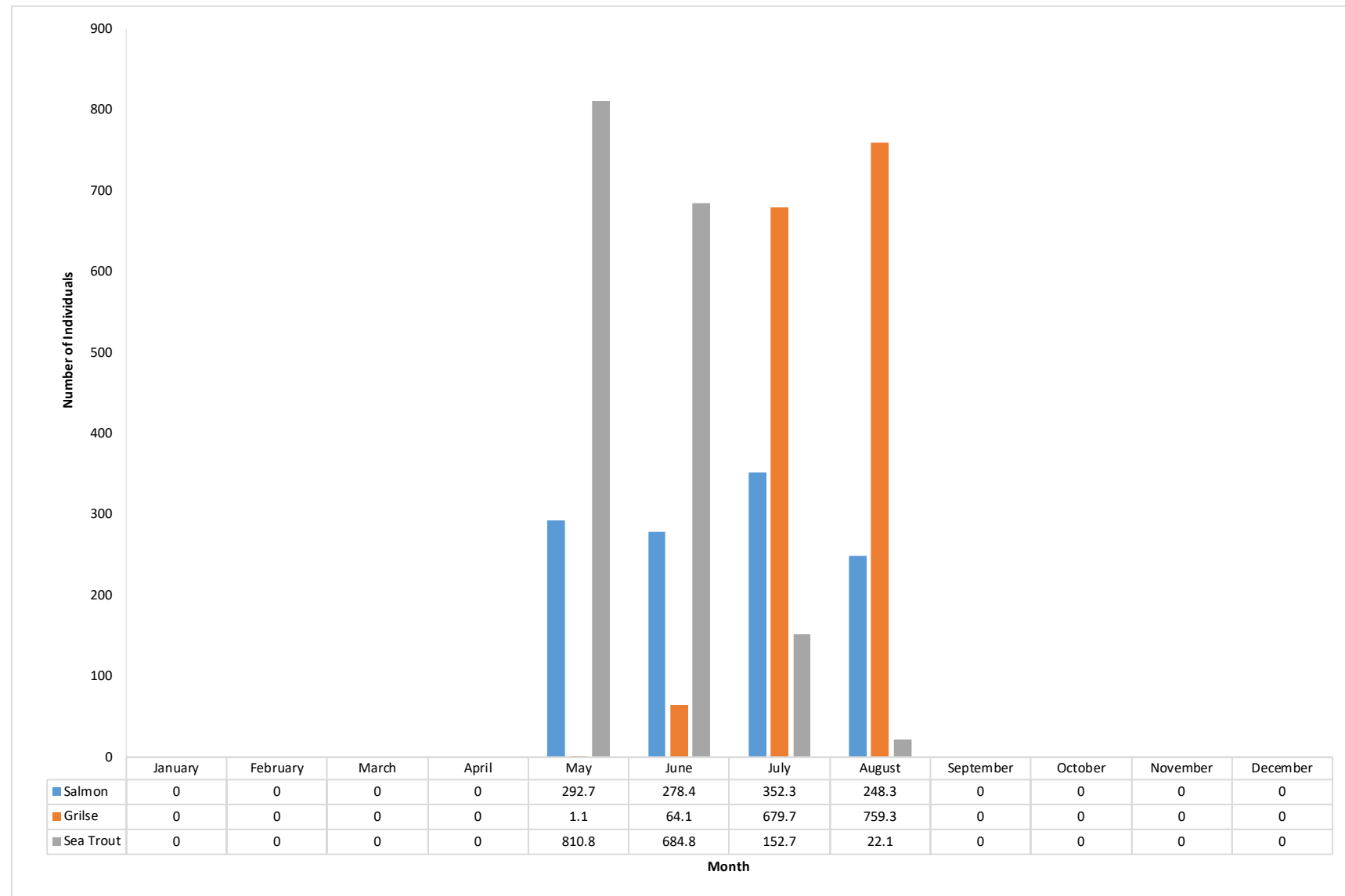
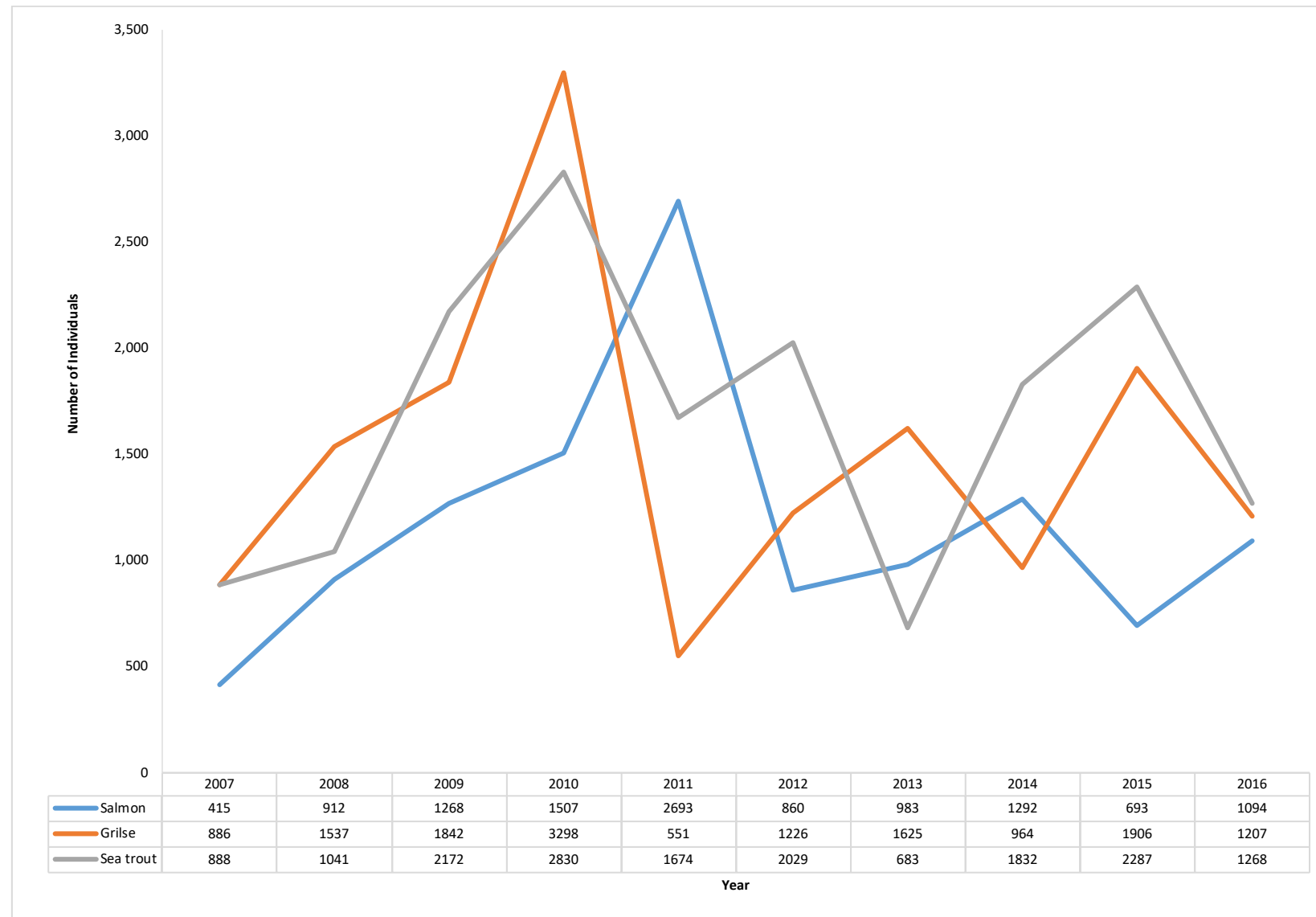


Figure 14B.39: Annual variation in catches of Salmon, Grilse and Sea Trout by the Net and Coble Fishery in the North Esk (no. of individuals)



Fixed Engine Fishery

- 127 The seasonality of the fixed engine fishery over the time series on the North Esk reports catches from February to August. Salmon numbers are consistent throughout this period with a peak in May. Grilse are caught from May to August with a peak in July and August. Sea trout are caught from April to August with a peak in numbers in May and June.
- 128 The annual variation of the fixed engine fishery on the North Esk shows the greatest number of both salmon and grilse were caught in 2007. This was followed by a steep decline until 2010 when zero catches were reported. Sea trout numbers exhibit a similar decline from 2007 and also report zero catches in 2010. Numbers of salmon, grilse and sea trout then show an upward trend with sea trout peaking in 2012 and salmon and grilse numbers peaking in 2013. All three fish then decline in numbers until 2015 when zero catches were reported. No fish were reported in 2016.

Figure 14B.40: Seasonality of Salmon, Grilse and Sea Trout caught in the Fixed Engine Fishery in the North Esk (average 2007 to 2016)

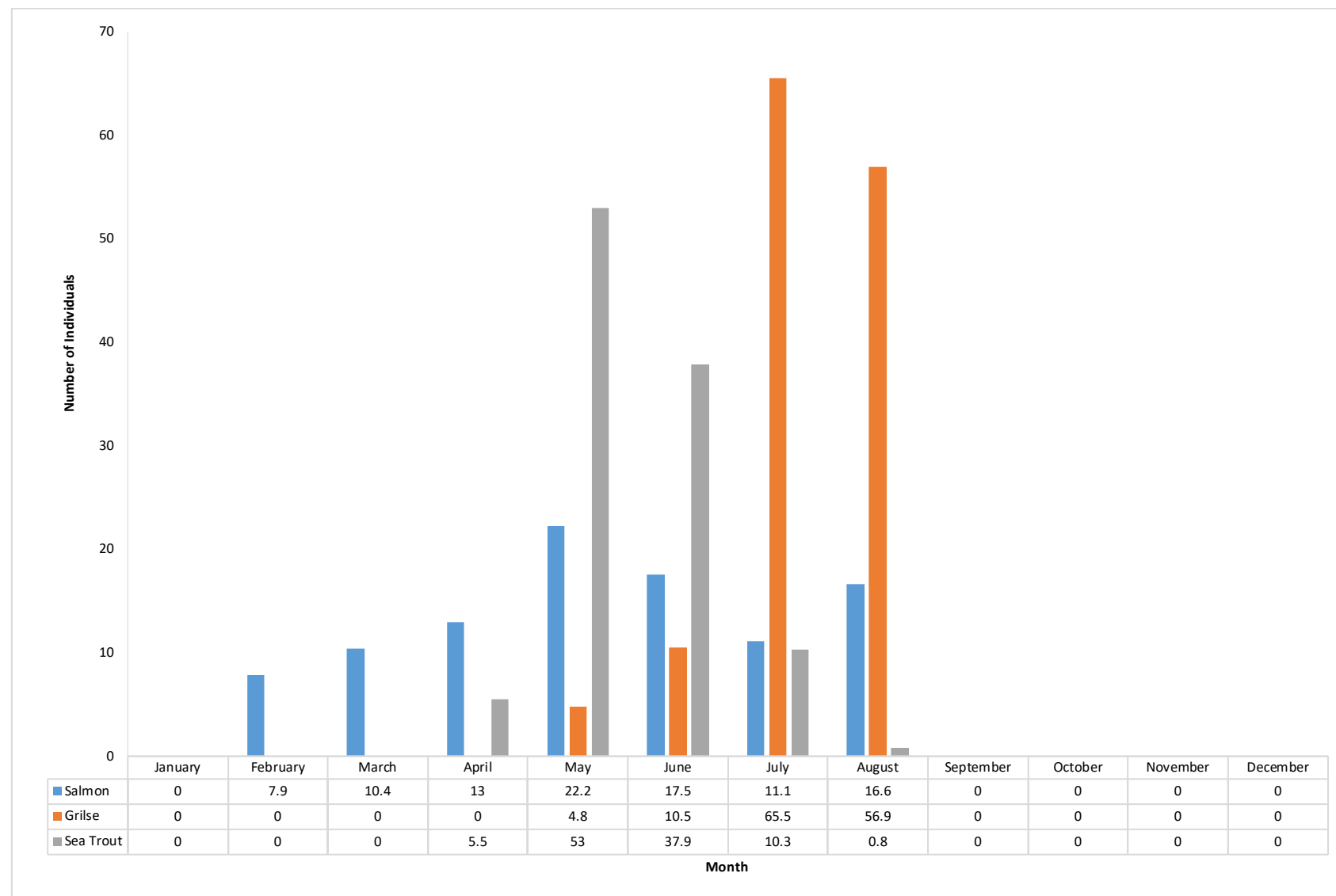
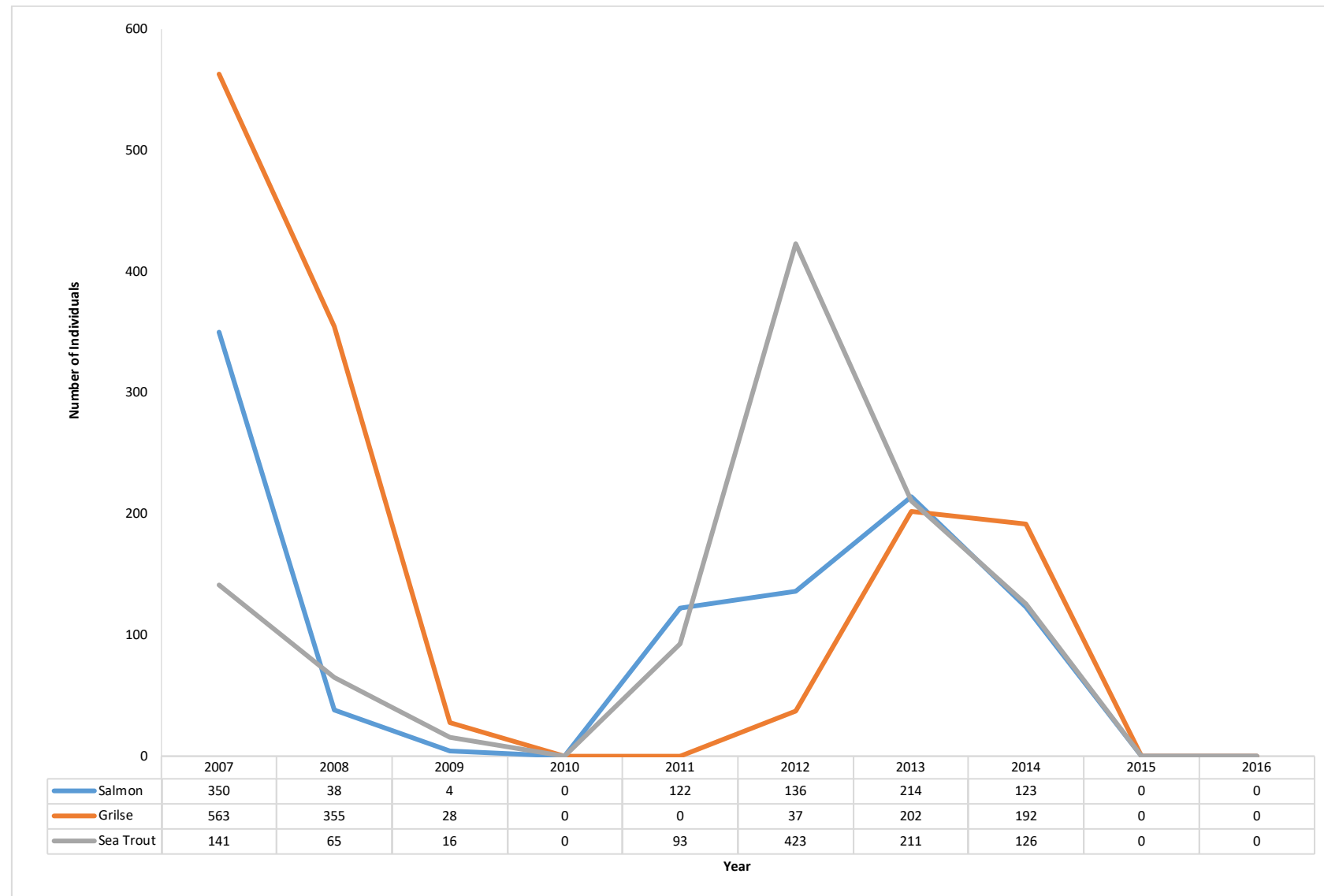


Figure 14B.41: Annual variation in catches of Salmon, Grilse and Sea Trout by the Fixed Engine Fishery in the North Esk (no. of individuals)



- 129 Seasonality of the fixed engine fishery on South Esk shows catches from May to September. During this period catches of salmon are consistent from May to August with a slight peak in May and a small number caught in September. Numbers of grilse are reported from June to September with numbers peaking in July and August. Only a small number of grilse were caught in September. Sea trout numbers were caught from May to August with a peak in May. No sea trout were caught in September.
- 130 The annual variation of the South Esk fixed engine fishery shows a degree of fluctuation in both salmon and grilse numbers across the data series. Salmon numbers are greatest in 2011 followed by sharp decline in 2012. Numbers then recover but decrease sharply to zero catch reported in 2016. Grilse numbers fluctuate across the time series with a peak in 2013 followed by a sharp decline to zero catches reported in 2016. Sea trout numbers show a general downward trend from the start of the time series with some fluctuations. Zero catches of sea trout were reported in 2016.

Figure 14B.42: Seasonality of Salmon, Grilse and Sea Trout caught in the Fixed Engine Fishery in the South Esk (average 2007 to 2016)

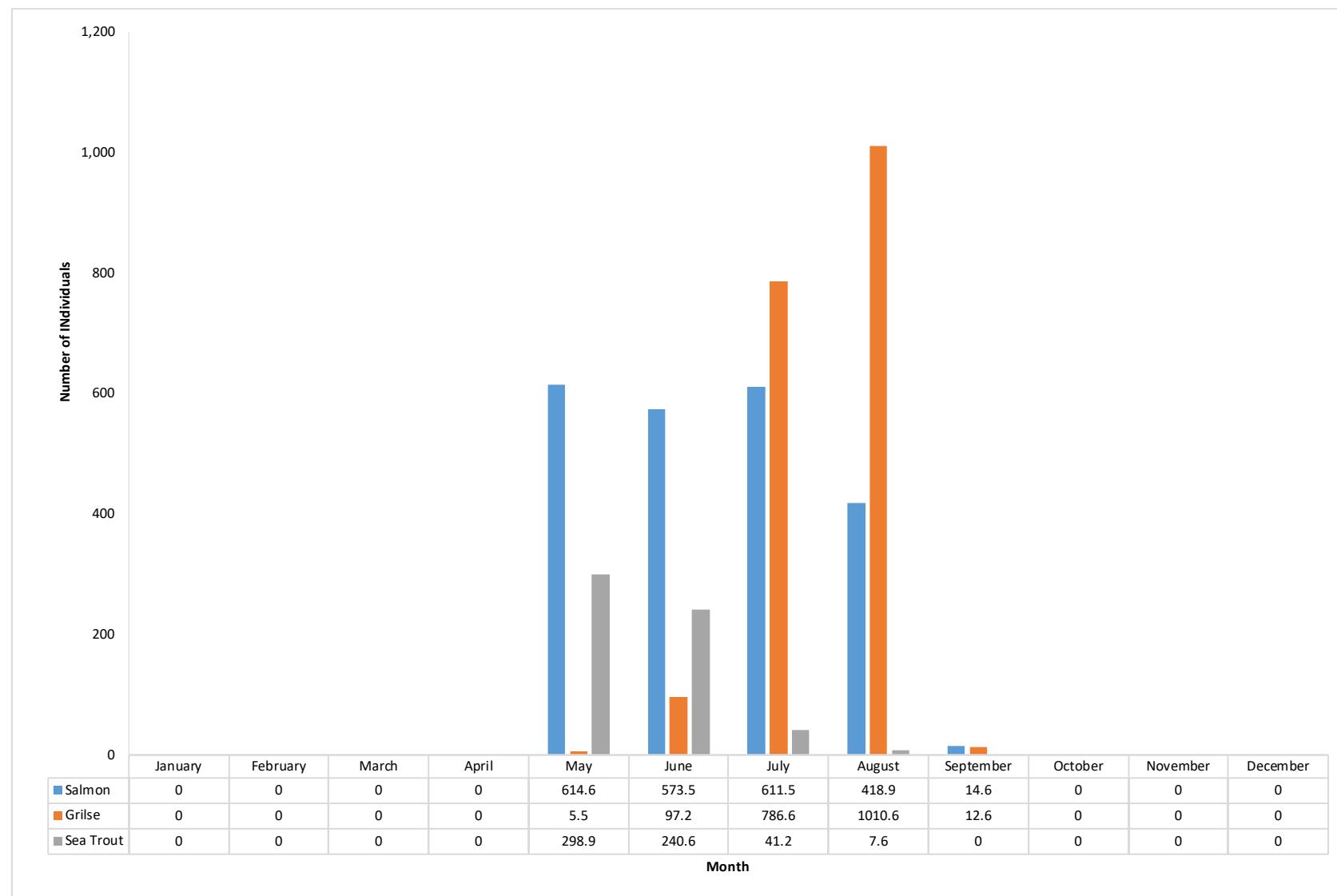
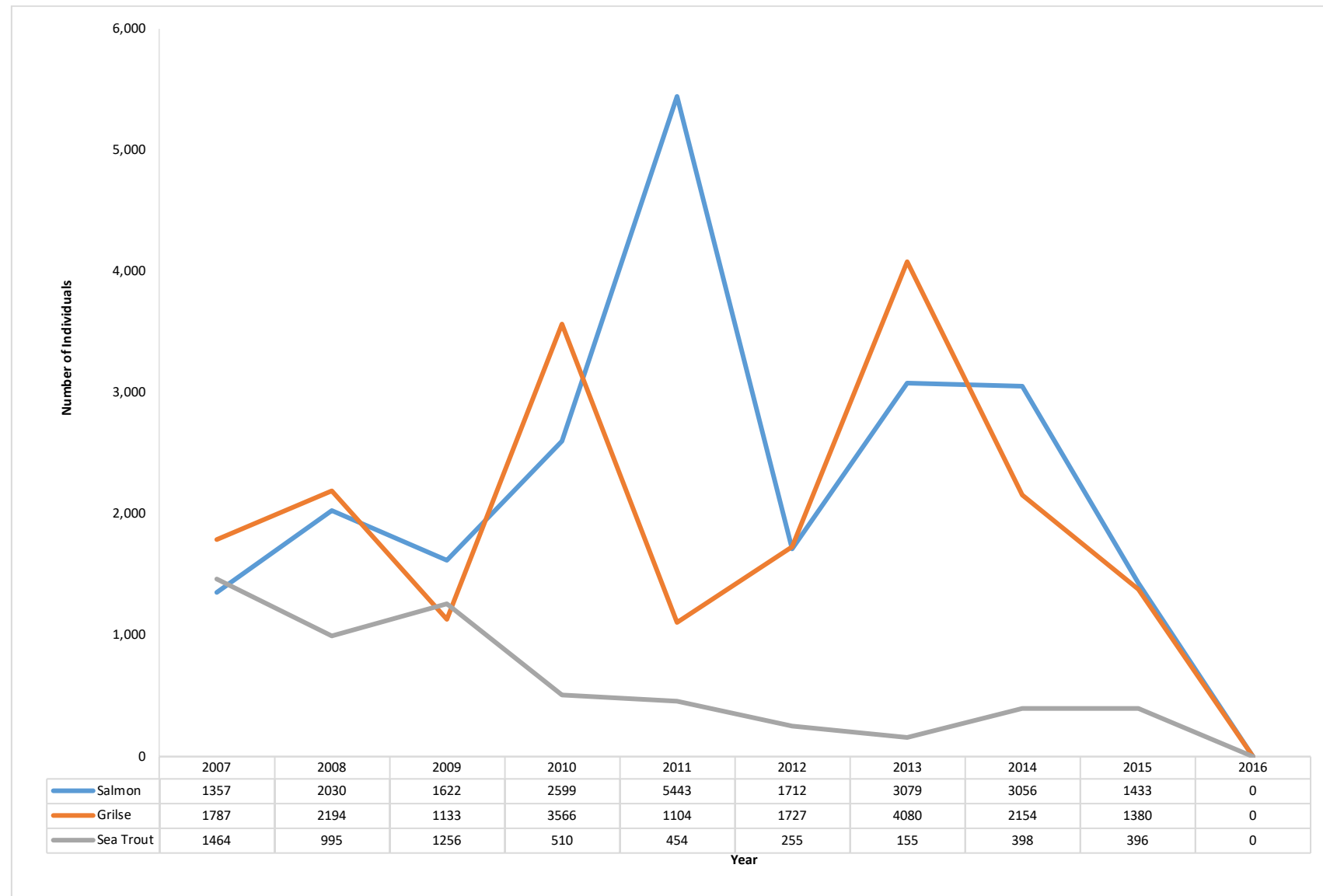


Figure 14B.43: Annual variation in catches of Salmon, Grilse and Sea Trout by the Fixed Engine Fishery in the South Esk (no. of individuals)



Rod and Line Fishery

- 131 The Bervie is the smallest fishery in the Local Study Area and this is reflected in the numbers of fish recorded. Salmon, grilse and sea trout are recorded from June to October. Salmon are the most caught species and are recorded in September with a peak in October. This is the same for grilse although the 10 year average is lower than for salmon. Only low numbers of sea trout are caught in the fishery in the months of June, August and October.
- 132 The annual variation highlights that salmon make up the greatest proportion of the catch with a peak in 2012 followed by steep decline in numbers in 2013. Numbers of salmon have increased steadily to 2016. Grilse numbers have fluctuated over the time series with zero catch being recorded in six of the ten years. Sea trout numbers are consistently low with a peak in 2009. Over the times series (average 2007 to 2016) sea trout catches were only recorded in two years.
- 133 Catches in the Bervie are low in comparison with the North and South Esk which reflects the different sizes of fishery and difference in fishing effort. As the numbers of fish recorded is low, a small reduction in fishing effort will significantly affect the number of fish caught.

Figure 14B.44: Seasonality of Salmon, Grilse and Sea Trout caught in the Rod and Line Fishery in the Bervie (average 2007 to 2016)

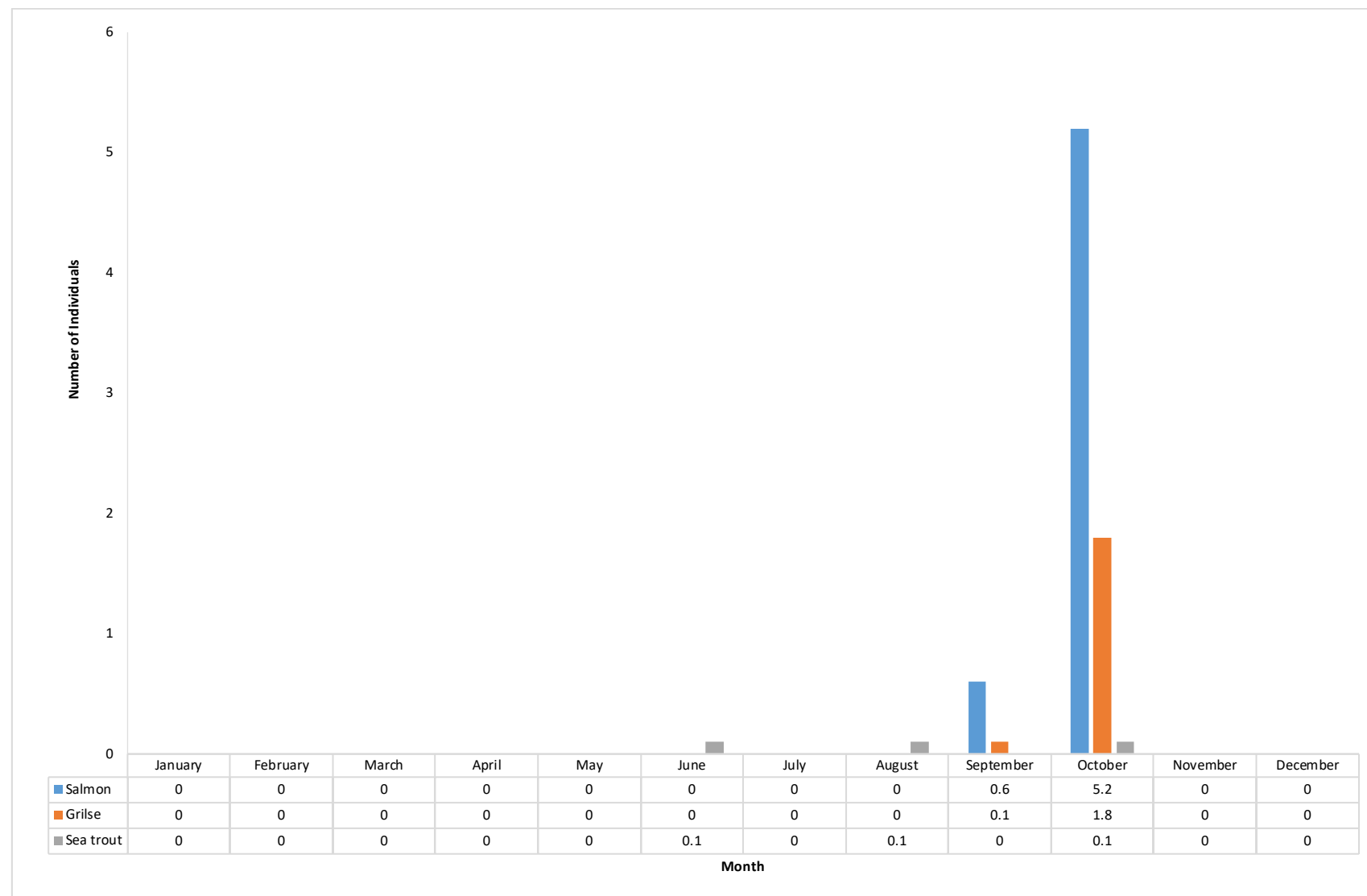
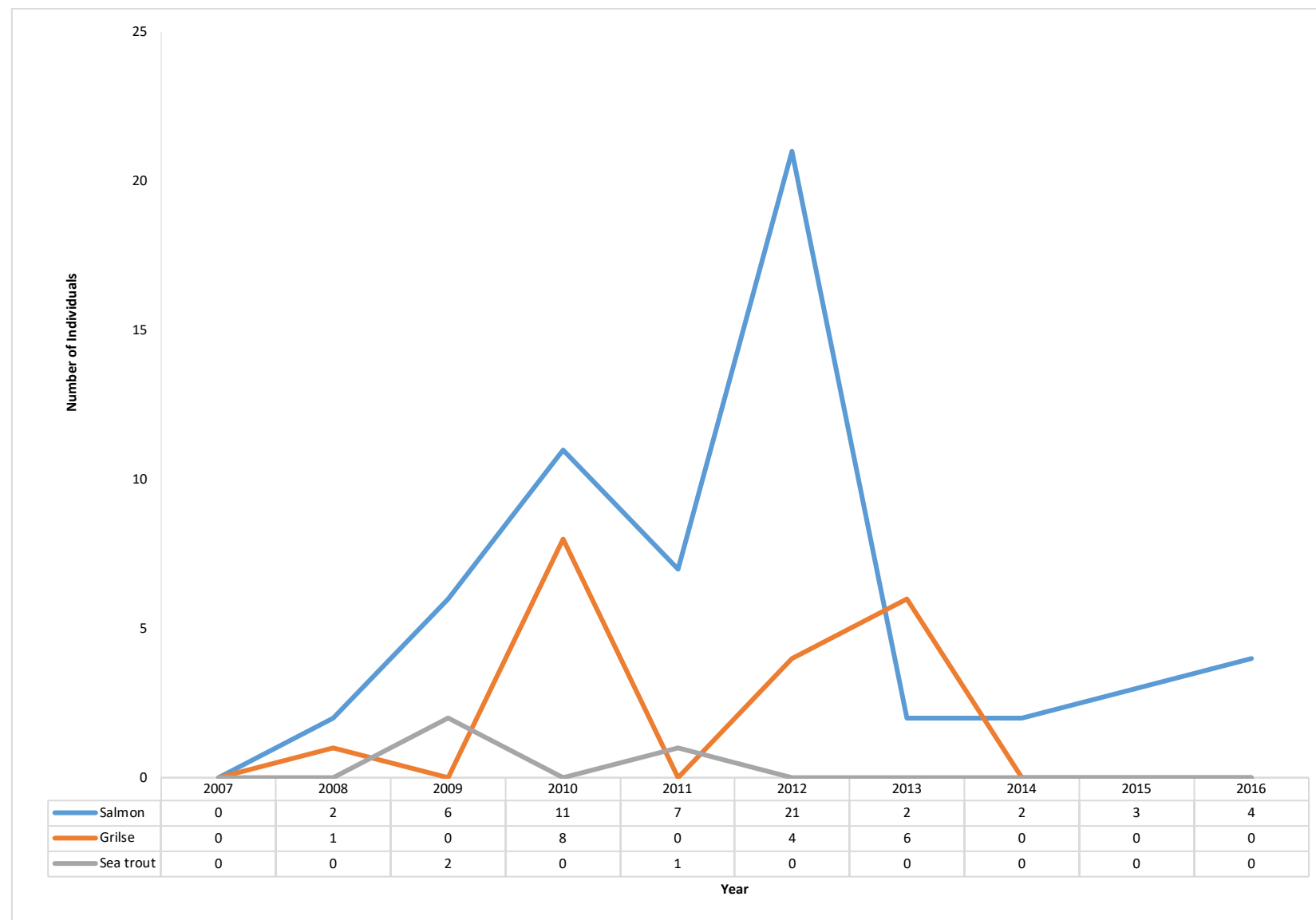


Figure 14B.45: Annual variation in catches of Salmon, Grilse and Sea Trout by the Rod and Line Fishery in the Bervie (no. of individuals)



- 134 The seasonality of the rod and line fishery on the North Esk highlights that fish are caught from February to October. Salmon make up the greatest proportion of the catch and are caught throughout this period with numbers peaking in May and then another larger peak in October. This may highlight two distinct runs of fish; a spring and an autumn run. Grilse are caught from June to October with highest numbers in August, September and October with peak numbers in September. Sea trout make up the smallest proportion of the catch with numbers caught from April to October, peaking in June.
- 135 The annual variation of the fishery highlights that salmon have consistently produced the greatest numbers over the 10 year time series highlighting the importance of salmon to this fishery. Numbers peaked in 2011 and show a downward trend until 2015 when numbers started to increase up to 2016. Grilse show some fluctuation but with an overall reduction in numbers following the peak in 2010. Numbers were at their lowest in 2014, increasing in 2015 but show a decline in 2016. Sea trout numbers peak in 2009 followed by a decline with some fluctuations. In 2016 recorded numbers were the lowest across the 10 year time series.

Figure 14B.46: Seasonality of Salmon, Grilse and Sea Trout caught in the Rod and Line Fishery in the North Esk (average 2007 to 2016)

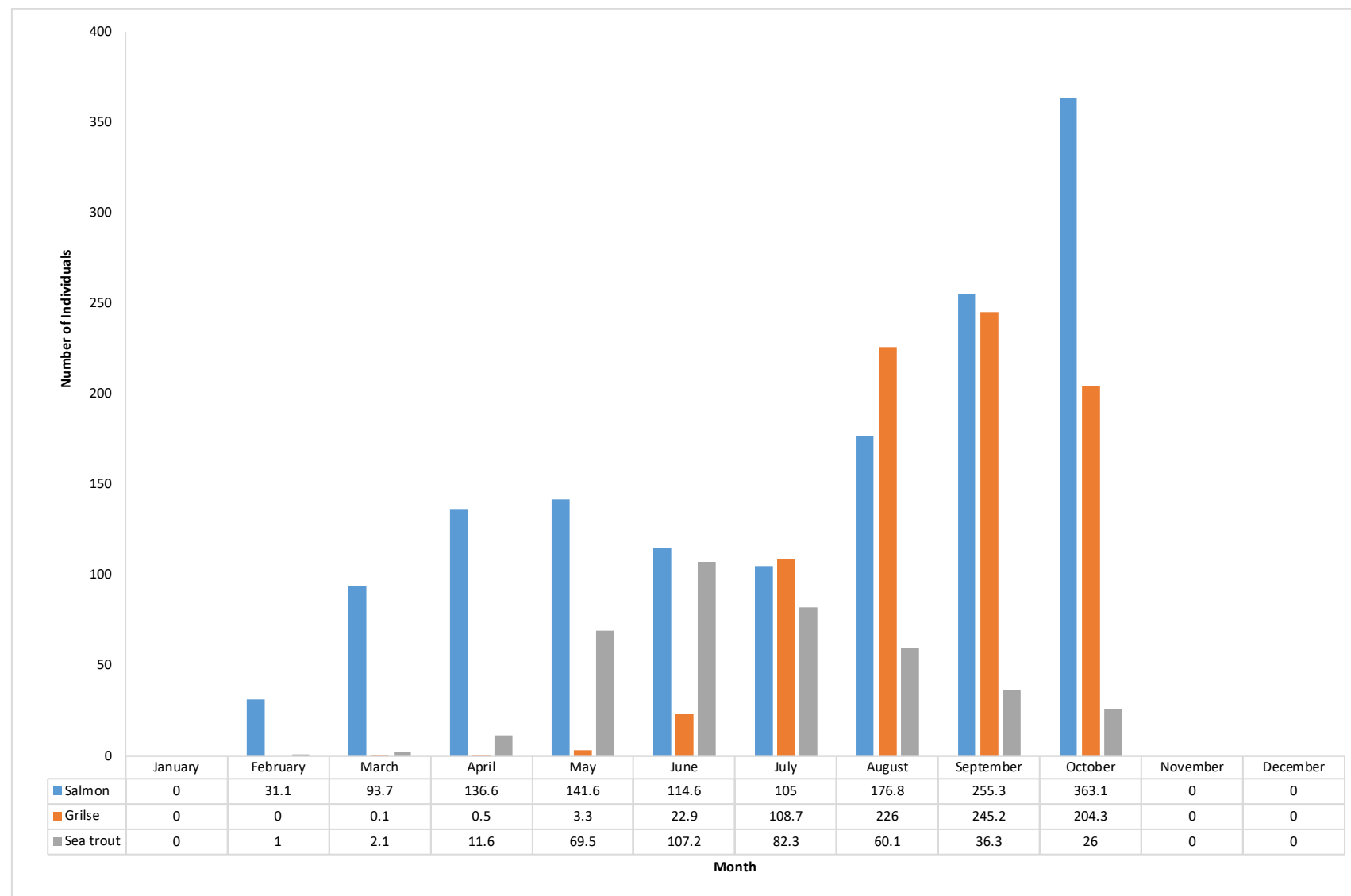
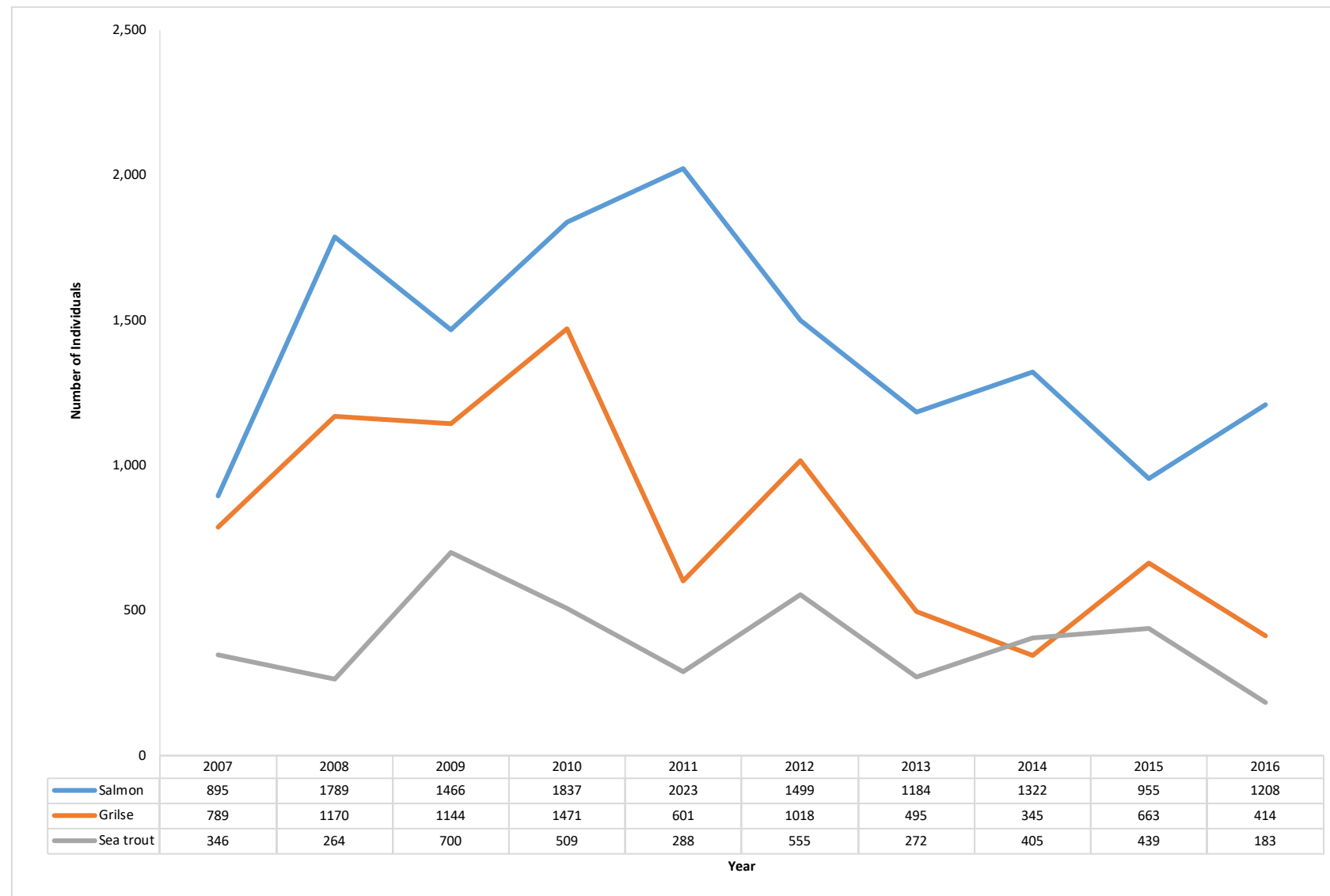


Figure 14B.47: Annual variation in catches of Salmon, Grilse and Sea Trout by the Rod and Line Fishery in the North Esk (no. of individuals)



- 136 The seasonality of the rod and line fishery on the South Esk shows that fish are caught from February to October. Salmon are caught throughout this period with a slight peak in May followed by the largest peak in October. This may highlight a spring and autumn run of salmon. Grilse are caught from May to October with numbers peaking in August and September. Sea trout make up the largest proportion of the catch and are recorded from April to October. The greatest number of sea trout are caught in June and July decreasing until October.
- 137 The annual variation of the rod and line fishery on the South Esk shows a general downward trend in numbers of salmon until 2015 following a peak in 2008. A slight increase in catches is highlighted between 2015 and 2016. Grilse have consistently made up the smallest proportion of the catch across the 10 year time series. Numbers of grilse peaked in 2010 followed by a decline in 2011, numbers then became more stable but the lowest numbers across the time series were recorded in 2016.

Figure 14B.48: Seasonality of Salmon, Grilse and Sea Trout caught in the Rod and Line Fishery in the South Esk (average 2007 to 2016)

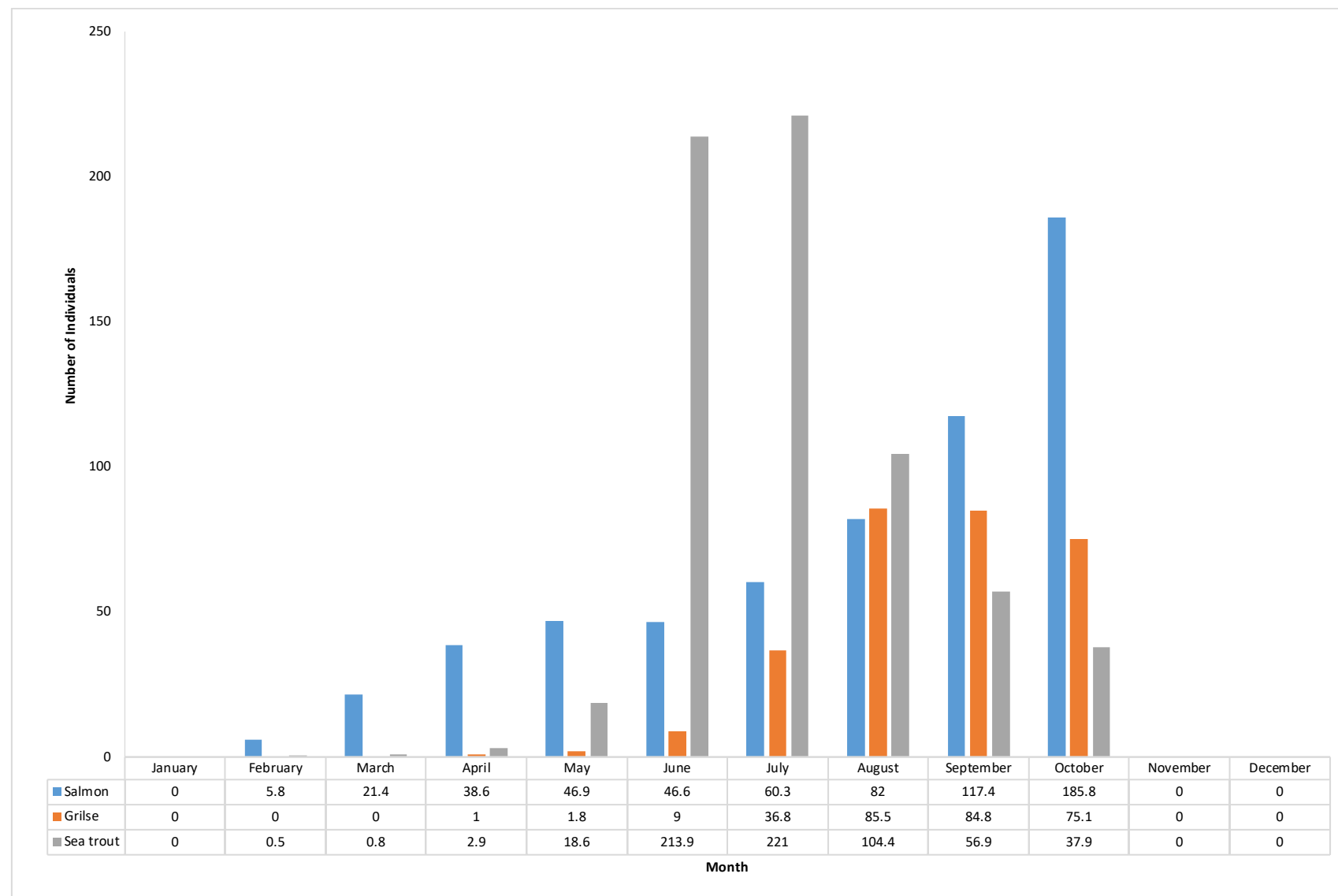


Figure 14B.49: Annual variation in catches of Salmon, Grilse and Sea Trout by the Rod and Line Fishery in the South Esk (no. of individuals)



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