

**European Community Directive  
on the Conservation of Natural Habitats  
and of Wild Fauna and Flora  
(92/43/EEC)**

**Fourth Report by the United Kingdom  
under Article 17**

on the implementation of the Directive  
from January 2013 to December 2018

Supporting documentation for the  
conservation status assessment for the species:

**S1106 - Atlantic salmon (*Salmo salar*)**

**NORTHERN IRELAND**

## **IMPORTANT NOTE - PLEASE READ**

- The information in this document is a country-level contribution to the UK Report on the conservation status of this species, submitted to the European Commission as part of the 2019 UK Reporting under Article 17 of the EU Habitats Directive.
- The 2019 Article 17 UK Approach document provides details on how this supporting information was used to produce the UK Report.
- The UK Report on the conservation status of this species is provided in a separate document.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Explanatory notes (where provided) by the country are included at the end. These provide an audit trail of relevant supporting information.
- Some of the reporting fields have been left blank because either: (i) there was insufficient information to complete the field; (ii) completion of the field was not obligatory; (iii) the field was not relevant to this species (section 12 Natura 2000 coverage for Annex II species) and/or (iv) the field was only relevant at UK-level (sections 9 Future prospects and 10 Conclusions).
- For technical reasons, the country-level future trends for Range, Population and Habitat for the species are only available in a separate spreadsheet that contains all the country-level supporting information.
- The country-level reporting information for all habitats and species is also available in spreadsheet format.

Visit the JNCC website, <https://jncc.gov.uk/article17>, for further information on UK Article 17 reporting.

# Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

## NATIONAL LEVEL

### 1. General information

1.1 Member State	UK (Northern Ireland information only)
1.2 Species code	1106
1.3 Species scientific name	Salmo salar
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Atlantic salmon

### 2. Maps

2.1 Sensitive species	No
2.2 Year or period	2007-2017
2.3 Distribution map	Yes
2.4 Distribution map Method used	Complete survey or a statistically robust estimate
2.5 Additional maps	No

### 3. Information related to Annex V Species (Art. 14)

3.1 Is the species taken in the wild/exploited?	Yes	
3.2 Which of the measures in Art. 14 have been taken?	a) regulations regarding access to property	No
	b) temporary or local prohibition of the taking of specimens in the wild and exploitation	Yes
	c) regulation of the periods and/or methods of taking specimens	Yes
	d) application of hunting and fishing rules which take account of the conservation of such populations	Yes
	e) establishment of a system of licences for taking specimens or of quotas	Yes
	f) regulation of the purchase, sale, offering for sale, keeping for sale or transport for sale of specimens	Yes
	g) breeding in captivity of animal species as well as artificial propagation of plant species	No
	h) other measures	No

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## 3.3 Hunting bag or quantity taken in the wild for Mammals and Acipenseridae (Fish)

a) Unit number of adults (adults)

b) Statistics/ quantity taken	Provide statistics/quantity per hunting season or per year (where season is not used) over the reporting period					
	Season/ year 1	Season/ year 2	Season/ year 3	Season/ year 4	Season/ year 5	Season/ year 6
Min. (raw, ie. not rounded)	848	2236	827	1305		
Max. (raw, ie. not rounded)						
Unknown	No	No	No	No	Yes	Yes

## 3.4. Hunting bag or quantity taken in the wild Method used

Based mainly on expert opinion with very limited data

## 3.5. Additional information

Data for 2015 and 2016 only include the rivers within the Loughs Agency jurisdiction, but excluding the River Finn and Carlingford Rivers which along with rivers in the DAERA jurisdiction, have had a catch and release policy since 2014. Commercial net fisheries in the Loughs Agency jurisdiction were closed in 2009; a voluntary ban on net fishing within the DAERA area was agreed by fishermen in 2014.

## BIOGEOGRAPHICAL LEVEL

### 4. Biogeographical and marine regions

#### 4.1 Biogeographical or marine region where the species occurs

#### Atlantic (ATL)

#### 4.2 Sources of information

Calvert J (2018) Digest of Statistics for Salmon and Inland Fisheries in the DAERA Jurisdiction 2018: Department of Agriculture, Environment and Rural Affairs DAERA & Northern Ireland Statistics and Research Agency NISRA. [www.daera-ni.gov.uk](http://www.daera-ni.gov.uk)

Ensing D, Crozier WW, Kennedy R & Boylan P (2012) Summary of Salmon Fisheries and Status of Stocks in Northern Ireland for 2011. ICES Working Group on North Atlantic Salmon, Copenhagen, 2012 Working Paper.

Friedland KD, Chaput G & MacLean JC. (2005). The emerging role of climate in post-smolt growth of Atlantic salmon. ICES Journal of Marine Science, 62: 1338-1349.

Paul Johnston Salmon Summary Report for NIEA et al 2012.

Kennedy GJA (1984) Evaluation of techniques for classifying habitats for juvenile salmon (*Salmo salar* L.). Proceedings of the Atlantic Salmon Trust Workshop on Stock Enhancement.

Kennedy GJA & Crozier WW (2010) Evidence of changing migratory patterns of wild Atlantic salmon *Salmo salar* smolts in the River Bush, Northern Ireland, and possible associations with climate change. Journal of Fish Biology (2010) 76, 1786-1805.

SCO (2007) Focus Area Report on Management of Salmon Fisheries in UK-NI. [http://www.nasco.int/pdf/far\\_fisheries/FisheriesFAR\\_NIreland.pdf](http://www.nasco.int/pdf/far_fisheries/FisheriesFAR_NIreland.pdf)

SCO (2007) Atlantic salmon management strategy for Northern Ireland and the cross

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border Foyle and Carlingford catchments to meet the objectives of NASCO resolutions and agreements 2008-2012  
[http://www.nasco.int/pdf/implementation\\_plans/IP\\_Nireland.pdf](http://www.nasco.int/pdf/implementation_plans/IP_Nireland.pdf) SCO (2009) Focus Area Report on Protection, Restoration and Enhancement of Salmon Habitat [http://www.nasco.int/pdf/far\\_habitat/HabitatFAR\\_NIreland.pdf](http://www.nasco.int/pdf/far_habitat/HabitatFAR_NIreland.pdf) SCO (2012) Atlantic salmon at sea, CNL(12)60. ISBN: 978-0-95-9514129-1-6  
[http://www.nasco.int/pdf/reports\\_other/Salmon\\_at\\_sea.pdf](http://www.nasco.int/pdf/reports_other/Salmon_at_sea.pdf) SCO (2014) NASCO Implementation Plan for the period 2013-18, EU - UK (Northern Ireland), CNL (14)69 [www.nasco.int/pdf/2014\\_papers/CNL\\_14\\_69.pdf](http://www.nasco.int/pdf/2014_papers/CNL_14_69.pdf) SCO (2016) Annual Progress Report on Actions Taken Under the Implementation Report for the Calendar Year 2016, EU - UK (Northern Ireland), CNL(17)34.  
[www.nasco.int/.../CNL\\_17\\_34\\_APR\\_EU\\_UK\\_NorthernIreland.pdf](http://www.nasco.int/.../CNL_17_34_APR_EU_UK_NorthernIreland.pdf) SCO (2017) Annual Progress Report on Actions Taken Under the Implementation Plan for the Calendar Year 2017  
 EU - UK (Northern Ireland). CNL (18)30 SCO (2018) Revised Report of the ICES Advisory Committee, CNL(18)08rev. DoI: 10.17895/ices.pub.3224  
[http://www.nasco.int/pdf/2018\\_papers/CNL\\_18\\_08rev\\_Report\\_of\\_the\\_ICES\\_Advisory\\_Committee\\_\(ACOM\).pdf](http://www.nasco.int/pdf/2018_papers/CNL_18_08rev_Report_of_the_ICES_Advisory_Committee_(ACOM).pdf)  
 Niven A & McCauley (2017) Foyle Area and Tributaries Catchment Status Report 2016. Loughs Agency, Derry/Londonderry Ref LA/CSR/F/17  
 Niven A & Clarkin, E. (2018) Foyle Area and Tributaries Catchment Status Report 2017. Loughs Agency, Derry/Londonderry Ref LA/CSR/F/18  
 Niven A & McCauley (2017) Carlingford Area and Tributaries Catchment Status Report 2016. Loughs Agency, Ref LA/CSR/F/17 <http://www.loughs-agency.gov>  
 Niven A & Clarkin, E. (2018) Carlingford Area and Tributaries Catchment Status Report 2017. Loughs Agency, Derry/Londonderry Ref LA/CSR/C/18  
 Niven A & Donnelly, S. (2018) Loughs Agency Water Framework Directive Fish in Rivers Classification Report 2017. Loughs Agency, Derry/Londonderry Ref LA/WFDFIR/18  
 McGinnity, P., Gargan, P., Roche, W., Mills, P. & McGarrigle, M. (2003). Quantification of the Freshwater Salmon Habitat Asset in Ireland using data interpreted in a GIS platform. Irish Freshwater Fisheries, Ecology and Management Series: Number 3, Central Fisheries Board, Dublin, Ireland.  
 O'Connor, L. And Kennedy, R.J (2002). A comparison of catchment based salmon habitat survey techniques on three rivers in N. Ireland. Fisheries Management and Ecology, 9, 149-161.  
 Rosell RS & MacOscar KC (2002) Restoration of a self-sustaining salmon population to the river Lagan, Belfast, Northern Ireland. Proceedings of the 13th International salmonid habitat enhancement Workshop, Westport, Co Mayo, September 2002. (Invited conference presentation and proceedings paper)

## 5. Range

5.1 Surface area (km<sup>2</sup>)

5.2 Short-term trend Period

5.3 Short-term trend Direction

Stable (0)

5.4 Short-term trend Magnitude

a) Minimum

b) Maximum

5.5 Short-term trend Method used

5.6 Long-term trend Period

5.7 Long-term trend Direction

5.8 Long-term trend Magnitude

a) Minimum

b) Maximum

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5.9 Long-term trend Method used

5.10 Favourable reference range

- a) Area (km<sup>2</sup>)
- b) Operator
- c) Unknown
- d) Method

5.11 Change and reason for change in surface area of range

No change  
The change is mainly due to:

5.12 Additional information

## 6. Population

6.1 Year or period

2007-2018

6.2 Population size (in reporting unit)

- a) Unit number of map 1x1 km grid cells (grids1x1)
- b) Minimum
- c) Maximum
- d) Best single value 791

6.3 Type of estimate

Minimum

6.4 Additional population size (using population unit other than reporting unit)

- a) Unit number of adults (adults)
- b) Minimum
- c) Maximum
- d) Best single value 47516

6.5 Type of estimate

6.6 Population size Method used

Complete survey or a statistically robust estimate

6.7 Short-term trend Period

2007-2018

6.8 Short-term trend Direction

Decreasing (-)

6.9 Short-term trend Magnitude

- a) Minimum
- b) Maximum
- c) Confidence interval

6.10 Short-term trend Method used

Complete survey or a statistically robust estimate

6.11 Long-term trend Period

6.12 Long-term trend Direction

6.13 Long-term trend Magnitude

- a) Minimum
- b) Maximum
- c) Confidence interval

6.14 Long-term trend Method used

6.15 Favourable reference population (using the unit in 6.2 or 6.4)

- a) Population size
- b) Operator
- c) Unknown
- d) Method

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## 6.16 Change and reason for change in population size

Genuine change

The change is mainly due to: Genuine change

## 6.17 Additional information

## 7. Habitat for the species

### 7.1 Sufficiency of area and quality of occupied habitat

a) Are area and quality of occupied habitat sufficient (to maintain the species at FCS)?

Yes

b) Is there a sufficiently large area of occupied AND unoccupied habitat of suitable quality (to maintain the species at FCS)?

### 7.2 Sufficiency of area and quality of occupied habitat Method used

Based mainly on extrapolation from a limited amount of data

### 7.3 Short-term trend Period

2007-2018

### 7.4 Short-term trend Direction

Stable (0)

### 7.5 Short-term trend Method used

Based mainly on extrapolation from a limited amount of data

### 7.6 Long-term trend Period

### 7.7 Long-term trend Direction

### 7.8 Long-term trend Method used

### 7.9 Additional information

## 8. Main pressures and threats

### 8.1 Characterisation of pressures/threats

Pressure	Ranking
Intensive grazing or overgrazing by livestock (A09)	M
Hydropower (dams, weirs, run-off-the-river), including infrastructure (D02)	M
Illegal harvesting, collecting and taking (G11)	M
Invasive alien species of Union concern (I01)	M
Other invasive alien species (other than species of Union concern) (I02)	M
Mixed source pollution to surface and ground waters (limnic and terrestrial) (J01)	H
Modification of hydrological flow (K04)	H
Physical alteration of water bodies (K05)	H
Change of habitat location, size, and / or quality due to climate change (N05)	H
Threats and pressures from outside the EU territory (Xe)	H
Threat	Ranking
Intensive grazing or overgrazing by livestock (A09)	M

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Hydropower (dams, weirs, run-off-the-river), including infrastructure (D02)	M
Illegal harvesting, collecting and taking (G11)	M
Invasive alien species of Union concern (I01)	M
Other invasive alien species (other than species of Union concern) (I02)	M
Mixed source pollution to surface and ground waters (limnic and terrestrial) (J01)	H
Modification of hydrological flow (K04)	H
Physical alteration of water bodies (K05)	H
Change of habitat location, size, and / or quality due to climate change (N05)	H
Threats and pressures from outside the EU territory (Xe)	H

## 8.2 Sources of information

## 8.3 Additional information

# 9. Conservation measures

## 9.1 Status of measures

a) Are measures needed?	Yes
b) Indicate the status of measures	Measures identified and taken

## 9.2 Main purpose of the measures taken

Increase the population size and/or improve population dynamics (improve reproduction success, reduce mortality, improve age/sex structure) (related to 'Population')

## 9.3 Location of the measures taken

Both inside and outside Natura 2000

## 9.4 Response to the measures

Medium-term results (within the next two reporting periods, 2019-2030)

## 9.5 List of main conservation measures

Adapt mowing, grazing and other equivalent agricultural activities (CA05)
Management of professional/commercial fishing (including shellfish and seaweed harvesting) (CG01)
Management of hunting, recreational fishing and recreational or commercial harvesting or collection of plants (CG02)
Control/eradication of illegal killing, fishing and harvesting (CG04)
Early detection and rapid eradication of invasive alien species of Union concern (CI01)
DO NOT USE Management, control or eradication of other alien species (CI04)
Reduce impact of mixed source pollution (CJ01)
Reduce impact of multi-purpose hydrological changes (CJ02)
Implement climate change adaptation measures (CN02)
Improvement of habitat of species from the directives (CS03)

## 9.6 Additional information

# 10. Future prospects



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## 10.1 Future prospects of parameters

- a) Range
- b) Population
- c) Habitat of the species

## 10.2 Additional information

## 11. Conclusions

### 11.1. Range

### 11.2. Population

### 11.3. Habitat for the species

### 11.4. Future prospects

### 11.5 Overall assessment of Conservation Status

### 11.6 Overall trend in Conservation Status

### 11.7 Change and reasons for change in conservation status and conservation status trend

#### a) Overall assessment of conservation status

No change

The change is mainly due to:

#### b) Overall trend in conservation status

No change

The change is mainly due to:

### 11.8 Additional information

## 12. Natura 2000 (pSCIs, SCIs and SACs) coverage for Annex II species

### 12.1 Population size inside the pSCIs, SCIs and SACs network (on the biogeographical/marine level including all sites where the species is present)

- a) Unit                      number of map 1x1 km grid cells (grids1x1)
- b) Minimum
- c) Maximum
- d) Best single value    424

### 12.2 Type of estimate

Minimum

### 12.3 Population size inside the network Method used

Based mainly on extrapolation from a limited amount of data

### 12.4 Short-term trend of population size within the network Direction

Decreasing (-)

### 12.5 Short-term trend of population size within the network Method used

Complete survey or a statistically robust estimate

### 12.6 Additional information

The fish counters on the River Roe and Faughan have annually recorded sufficient returning salmon to ensure that the Management Targets and Conservation limits for these rivers have been achieved during this reporting period. In contrast, the counter on the River Mourne (which is used to measure the returning salmon to the River Foyle) last recorded sufficient numbers passing the Management Targets and Conservation Limits in 2009.

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## 13. Complementary information

13.1 Justification of % thresholds for trends

13.2 Trans-boundary assessment

13.3 Other relevant Information

## Distribution Map

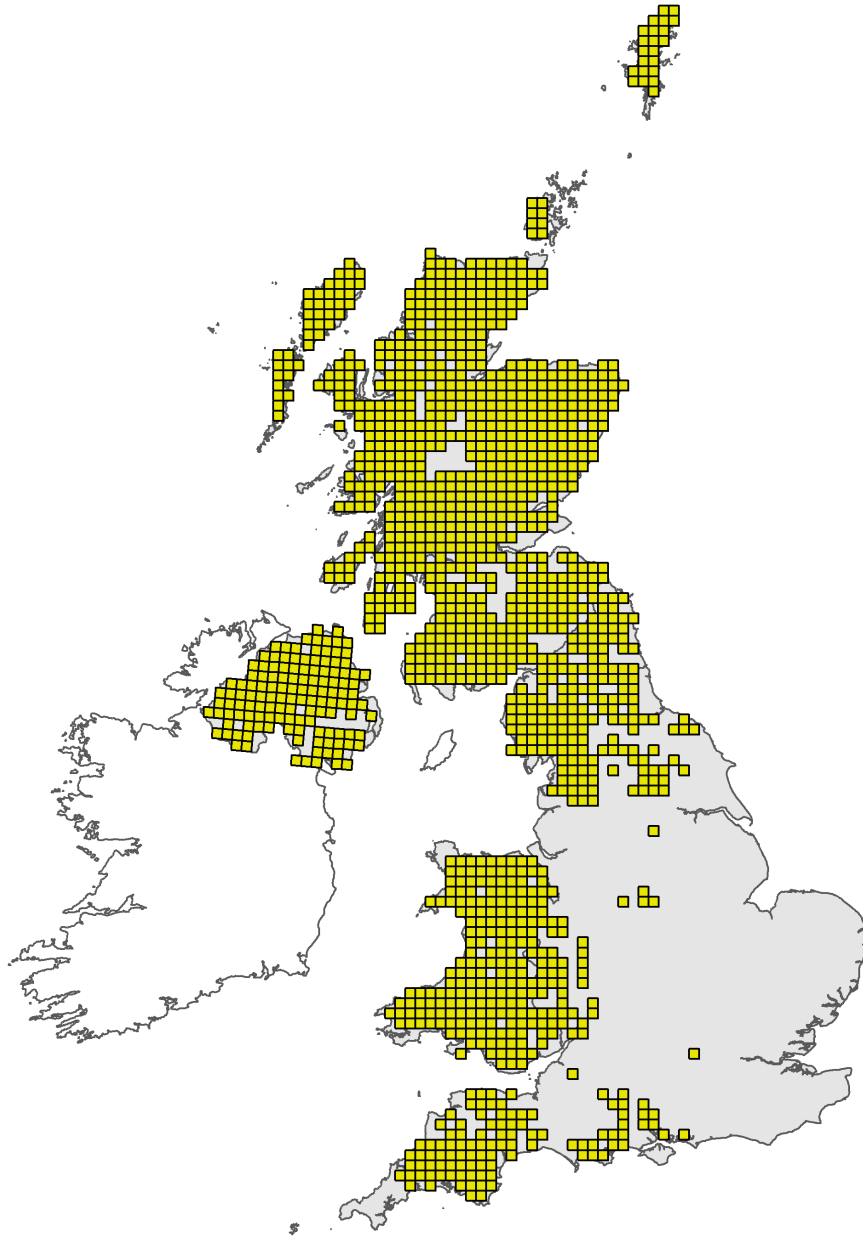


Figure 1: UK distribution map for S1106 - Atlantic salmon (*Salmo salar*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The 10km grid square distribution map is based on available species records within the current reporting period. For further details see the 2019 Article 17 UK Approach document.

## Range Map



Figure 2: UK range map for S1106 - Atlantic salmon (*Salmo salar*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The range map has been produced by applying a bespoke range mapping tool for Article 17 reporting (produced by JNCC) to the 10km grid square distribution map presented in Figure 1. The alpha value for this species was 25km. For further details see the 2019 Article 17 UK Approach document.

# Explanatory Notes

## Species name: *Salmo salar* (1106)

Field label	Note
3.5 Additional information	Data for 2015 and 2016 only include the rivers within the Loughs Agency jurisdiction, but excluding the River Finn and Carlingford Rivers, which along with rivers in the DAERA jurisdiction, have had a catch and release policy since 2014. Commercial net fisheries in the Loughs Agency jurisdiction were closed in 2009; a voluntary ban on net fishing within the DAERA area was agreed by fishermen in 2014.

## Species name: *Salmo salar* (1106) Region code: ATL

Field label	Note
5.3 Short term trend; Direction	The current range is defined by 10km square coverage and is derived from two sources - the Loughs Agency, which covers the Foyle and Carlingford catchments, and DAERA whose jurisdiction covers the rest of Northern Ireland. The 2007-2012 reporting period indicated that the range for this species during this time period covered 92% of the surface area of NI, with the most recent records covering the 2013-2018 period display an almost identical overlap. Therefore the range of this species in Northern Ireland has been assessed as stable.
6.2 Population size	Population figure given as occupied 1x1km squares - 2565.
6.3 Type of estimate	Location and population data is derived from two sources: the Loughs Agency, which covers the Foyle and Carlingford catchments, and DAERA, which covers the rest of Northern Ireland. The Loughs Agency operates a network of electronic fish counters throughout the Foyle and Carlingford areas to monitor the migration of Atlantic salmon into freshwaters. The counters are used to assess the attainment of conservation limits and management targets for key catchments. Detailed data from DAERA is restricted to 7 systems (including the Blackwater, Bush, Clady, Garvary, Glendun, Maine and Shimna Rivers) which have been selected for annual surveys to represent different catchment types and are used as reference sites. Initially, two alternative population estimates based upon occupied 1x1km squares were used. In 6.2d, we have used 1x1 squares that contain records of Atlantic Salmon. This gives a value of 791 occupied squares. An alternative count was also calculated using interpolated data - i.e. the upstream limit at which Salmon were recorded was used to define the extent of the river habitat in use, with all 1x1 km squares below this point counted, down to the tidal limit. Due to the lack of information and uncertainty of the migratory route this species takes through Upper and Lower Lough Erne, Lough Melvin and Lough Neagh, these water bodies were excluded from the calculations. The population estimate from this is considerably larger, with 2565 occupied 1x1km squares.
6.8 Short term trend; Direction	We have assessed the population as decreasing. Note that the figure for returning adults at 6.4 has been taken from the 2013 Report. Since then (although the picture for individual rivers has varied somewhat), there has been a continuing decline in returning adults to NI rivers - see 6.16 below for more detail.

6.16 Change and reason for change in population size	<p>Although it is not possible in this report to use the number of occupied 1x1km squares to assess population change over time, numbers of spawning adults have been monitored over a significant time period on several rivers using fish counters. Of the rivers monitored by Loughs Agency to assess their compliance with Conservation Limits and Management Targets, the Rivers Roe and Faughan met these targets annually between 2013 and 2016. The Mourne and Finn Rivers have not achieved the targets at all during that period. The recent NASCO report (2017) suggests that this situation has remained more or less unchanged in 2017. Of the rivers monitored by DAERA, estimated returns of wild adult Salmon to the River Bush was 2,171 in 2016, which is well above the previous 10 year average (2006-2015) of 1,233. However, the recent NASCO report (2017) states that the 2016 increases in returning adults to the DAERA region were not sustained in 2017 and that salmon numbers returned to the levels observed in previous years. For the other rivers monitored by DAERA, compliance with Conservation Limits and Management Targets is based upon the minimum number of Salmon eggs that must be laid to ensure adequate seeding of available nursery habitat. Between 2013 and 2016, the Clady has achieved the defined target three times; the Bush and Main twice; and the Blackwater and Glendun once. In addition, DAERA has developed a recruitment index derived from annual electro-fishing surveys for a number of rivers within its jurisdiction. Over the ten year period from 2007 to 2016, the target threshold was achieved in at least one year by four (the Bush, Clady, Maine and Blackwater) of the seven monitored rivers. The Garvary, Glendun and Shimna rivers did not achieve the target in any of the nine years from 2007. In summary, population trends and juvenile recruitment display very varied trends over time between rivers and regions. However, looking at data for the period 2002-2017, it appears that, in the longer term, numbers of returning adults have shown a very marked decline, despite the introduction of several management control measures (e.g. ban on net fishing in Foyle 2009; various catch and release schemes). For example, the 5 year average figures for the Mourne and Finn Rivers shows a steep decline from 2006; the River Faughan shows a steep decline from 1996, then a partial recovery before a further decline in 2006. Only in the River Roe have numbers remained at a fairly stable level since 2001. Hence population assessed as decreasing.</p>
7.1 Sufficiency of area and quality of occupied habitat	<p>Salmon habitat has been assessed in almost all key river systems using the Life Cycle Unit System (LCUS) developed on the River Bush (Kennedy, 1984; O'Connor &amp; Kennedy 2002). However the LCUS is a descriptive and mapping method based on habitat classification and quality; it has not been used to produce a generalised assessment of habitat quality for the region, although summaries for Index Rivers are produced in Anon (2012) and NASCO (2009). Overall habitat quality is therefore unknown, but expert opinion would suggest that general quality is moderate to good. This assessment is supported by the Water Framework Directive Fish Population Assessment for 2017 (Niven and Donnelly, 2018). Nine Water Framework Directive fish surveillance monitoring stations were surveyed within the Loughs Agency jurisdiction in 2017. All nine sites were within Northern Ireland. 22% of sites surveyed were classified as high status, 33% as good status and 45% as moderate status.</p>
7.4 Short term trend; Direction	<p>Freshwater systems in Northern Ireland have most likely been stable and possibly improved slightly since the Habitats Directive came into force. Habitat enhancement projects in specific catchments will also have contributed to this improvement. On this basis, trend is reported as stable.</p>

### 8.1 Characterisation of pressures/ threats

Threats and Pressures associated with a wide range of issues. Clearly water quality and hydrology are key factors for the species' survival in rivers. Pollution/eutrophication from both point and diffuse sources is therefore a major factor (e.g. slurry and fertiliser run-off; leakages from septic tanks, sewage and water treatment works; silage effluent spillages; sediment release from quarries and forestry operations; etc.). Changes in hydrology are also critically important and include such factors as dredging, drainage, impacts from reservoirs, weirs, fish farms and small hydro schemes - some of which may also act as barriers to migration. Intensive cattle grazing can cause poaching of riverbanks with damage to riparian zone and silt inputs to river channels. Legal fishing is well regulated, but illegal poaching continues. Non-native invasive species are a particular issue in freshwater systems and can cause a threat to native species through competition, spread of disease, etc. For example, Asian Clam has recently been discovered on the tidal River Foyle. Climate change is currently a pressure and is likely to become even more significant in the future. Earlier migration of salmon smolts has been linked to ambient river temperature patterns and may reduce subsequent marine survival pattern to one sea-winter adult return (Kennedy & Crozier, 2010). Additional climate change factor listed under Xe - Threats and pressures from outside the EU territory. This refers to the survival of the species at sea. Marine survival continues to be of significant concern throughout the southern range of Atlantic salmon in the North East Atlantic. Marine survival rates for One Sea Winter (1SW) grilse pre the mid 1990's was around 30%, in recent years this has fallen as low as 2.4%. A marine survival rate of 3.76% has been calculated for the 2016 cohort returning to the river in 2017. This is a decrease from the 6.66% marine survival rate recorded for the 2015 cohort, and is well below historic highs. These extremely low marine survival rates are possibly the result of altered marine food webs and oceanic prey distribution - all in the context of climate change.

### 8.3 Additional information

Current conditions of Northern Ireland rivers are not optimal for this species due to water quality and physical alterations to river bed or flow while the effect of rise in temperature of their marine habitat resulting from climate change has been shown to have an impact on their survival at sea.

### 9.1 Status of measures

There has been a long history of research and proactive management to protect and enhance this species both in population and range. The most recent of these is documented in the various NASCO reports listed in the data source section. Within NI, the two agencies responsible for the species have taken a very proactive approach to conserving Salmon in NI rivers. The Loughs Agency uses an audit point management system for monitoring the populations of Atlantic salmon within the Foyle and Carlingford areas. Population estimates and indices are derived for various life history stages including adult counts from electronic fish counters situated at key locations, spawning redd counts, juvenile electrofishing indices, rod catch and commercial net catches. Loughs Agency uses this data to control fishing activities as required to ensure the species' survival. For example, net fisheries have not been operated in the Foyle area since 2009 due to the continued failure of the River Finn to meet its conservation limits. Anging is permitted on the River Finn and River Foyle on a catch and return basis only. There are no Salmon net fisheries within the Carlingford area. Within the area managed by DAERA, no Salmon have been caught in commercial nets since 2014, as a result of voluntary action by fishermen in response to a call made by DCAL in 2012 to not fish for Salmon in the DCAL/DAERA jurisdiction.

### 10.1 Future prospects of parameters

The effect of rising sea temperatures resulting from climate change has been shown to have an impact on the species' survival at sea. It is uncertain if the proactive management currently being undertaken in Northern Ireland will be sufficient to protect the region's native salmon stock.

12.1 Population size inside the pSCIs, SCIs and SACs network	Location data is derived from the Loughs Agency which covers the Foyle and Carlingford catchments, where all the SACs for Salmon are located. Where data is limited, the upstream limit at which Salmon were recorded is used to define the extent of the river habitat in use, with all 1x1 km squares below this point counted down as far as the tidal limit of the river.
12.4 Short term trend of the population size within the network; Direction	The fish counters on the River Roe and Faughan have annually recorded sufficient returning salmon to ensure that the Management Targets and Conservation limits for these rivers have been achieved during this reporting period. In contrast, the counter on the River Mourne (which is used to measure the returning salmon to the River Foyle) last recorded sufficient numbers passing the Management Targets and Conservation Limits in 2009. Hence, short term trend in population assessed as decreasing.