

2019

Standing Scientific Committee - Advice on DAERA Area Salmon Stocks 2019. (Executive Summary)



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1/28/2019

DAERA Standing Scientific Committee (Salmon & Sea Trout)

Following the introduction of new precautionary salmon conservation regulations in 2014, the Department of Culture, Arts & Leisure (DCAL) appointed an independent Standing Scientific Committee on Salmon (SSCS) to review stock status annually and advise on conservation measures. Following restructuring of departments in 2016-7 the Inland Fisheries function of DCAL became part of The Department of Agriculture, Environment and Rural Affairs and the committee now reports to DAERA Environment, Fisheries and Marine group. The committee is comprised of fishery scientists from AFBI (Agri-Food & Biosciences Institute), The Loughs Agency and Inland Fisheries Ireland. The third annual meeting of the committee was held in Belfast on 23th January 2019. Its main recommendations for DAERA in relation to 2019 are set out in this summary.

The committee assessed the status of salmon stocks in Northern Ireland, separating these as far as possible into individual discrete breeding stocks in “primary” and “secondary” salmon rivers, two categories determined by stock size. Stocks were assessed using data available from surveys, counts, and catch returns. Conditions for permitting harvest of salmon from primary rivers (single stock fisheries) and coastal commercial fisheries (mixed stock fisheries), were considered with reference to NASCO (North Atlantic Salmon Conservation Organisation) guidelines for the management of salmon fisheries. Precautionary stock levels permitting harvest (= Management Targets) were developed and applied separately to commercial and recreational fishing, taking into account management advice processes in neighbouring fishery jurisdictions where appropriate.

1. Assessment of DAERA Area Commercial Salmon Fisheries.

Management Objectives for DAERA area Mixed Stock Fisheries.

The DAERA area coastal waters commercial salmon fishery represents a Mixed Stock Fishery (MSF) with a number of contributory stocks. NASCO guidelines indicate that management of homewater MSFs should be based on knowledge of the status of all contributing individual river stocks, and that conservation objectives are best achieved if the fishery targets only stocks at full reproductive capacity. Application of NASCO guidelines to Salmon harvest from the DAERA coastal area MSFs requires that the collective of stocks exploited reaches a threshold level equivalent to the “management target” (MT) of 125% of the “conservation limit” (CL). CL is defined as the maximum sustainable yield as derived from the adult to smolt stock recruitment curve. Importantly, in accordance with NASCO guidelines for commercial MSFs, MT must be attained in all the individual contributing rivers or other stock units potentially exploited. Additionally, this precautionary reference point should be met or exceeded consistently over a number of years before commercial exploitation can be permitted, a stipulation which gives some confidence that targets will continue to be met given unpredictable inter-annual variation in stock levels.

Salmon exploitation by a MSF necessitates a management threshold set at a level above the CL to ensure that there is a high probability of stocks exceeding their CL, in line with NASCO guidelines. A management target of 125% of CL for all the contributing rivers/stock units exploited by the DAERA area MSF has therefore been adopted as a precautionary reference point. Commercial exploitation might thus be considered permissible should all the rivers contributing to the MSF consistently achieve $\geq 125\%$ of CL.

Given the range of stocks contributing to the DAERA area commercial salmon fishery, monitoring of stock levels must be: (1) broad enough to include the diversity of stocks exploited and (2) temporally sufficient to recognise trends in abundance and to ensure stocks are consistently attaining MTs. Eight monitored indicator stocks (with either trap or fish counter datasets) have been selected to reflect the status of stocks contributing to the DAERA area MSF, namely the rivers Finn (W. Foyle), Roe & Faughan (N. Foyle), Mourne (SE Foyle), Lower Bann (L. Bann and tributaries), Bush,

Glendun and Shimna. Before commercial exploitation can be considered *all these indicator stocks* must attain a management objective of $\geq 125\%$ of CL in ≥ 3 years out of the 5 most recent years for which data is available.

The current status of these indicator stocks is outlined in Table 1. The most recent data indicates that 3 of the 8 monitored rivers are currently attaining defined Management Objectives. Consequently, under the precautionary management objectives *the current scientific advice is that no MSF should be prosecuted in the DAERA area in 2019.*

Table 1. Attainment of Management Objective for contributory stocks to the DAERA area commercial Mixed Stock Fishery (MSF).

Indicator Stock/River	Monitoring Type	Time-Series available (No. Yrs)	No. years \geqMT (No. Yrs available)	Attainment of Management Objective
<i>Finn</i>	Counter	2012-17 (5)	0 (5)	No
<i>Roe</i>	Counter	2012-17 (5)	5 (5)	Yes
<i>Mourne</i>	Counter	2017 (1) ¹	1 (1)	N/A
<i>Faughan</i>	Counter	2012-17 (5)	5 (5)	Yes
<i>Lower Bann</i>	Counter	2014-18 (5)	3 (5)	Yes
<i>Bush</i>	Trap	2014-18 (5)	1 (5)	No
<i>Glendun</i>	Counter	2014-18 (4)	0 (4)	No
<i>Shimna</i>	Counter	2014-18 (5)	0 (5)	No

2. Assessment of DAERA Area Recreational Salmon Fisheries.

Management Objectives

The “primary” salmon producing rivers in the DAERA area have been identified, on the basis of population size, as the rivers Bush, Ballycastle, Glendun, Glenarm, Shimna, Agivey, Clady, Lower Bann, Moyola, Ballinderry, Blackwater, Upper Bann, Sixmile, Main, Erne, and the collective group of DAERA area Melvin tributaries .

¹ Loughs Agency currently reviewing stock assessment at this site.

DAERA have stated that some harvest of fish by angling may be permissible on a primary salmon river should it consistently achieve a MT of $\geq 115\%$ of CL., “Consistently” is currently defined as when a river attains the Management Objective of $\geq 115\%$ of CL in ≥ 3 years out of the 5 most recent years for which data is available (Fig. 1). Should a river thus consistently attain MT a precautionary harvestable surplus (managed through carcass tag allocation) can be determined. Note that the MT of 115% of CL for angling fisheries is lower than the 125% of CL set for commercial fishing, recognising the lower exploitation efficiency of angling as compared with commercial fishing.

Under the NASCO definition of the precautionary approach, a lack of scientific data *should not* be used as a reason for failing to undertake conservation measures and *where information is lacking managers should be more cautious*. Therefore a lack of data on any particular river will reduce the scope for angling exploitation to be permitted on that river.

The following table (Table 2) sets out, for the primary salmon rivers of the DAERA area, where and in what quantity a harvest might be permissible for 2019, based on stock level indicators available to the committee. The indicator metric listed for a spawning population is a Management Target (MT) expressed as Millions of salmon ova. Methods used for assessing compliance with this MT are: automated electronic counters (Counter); acoustic telemetry to separate counts to tributary rivers (Tracking); trap data (Trap); extrapolation from rod catch data (Rod Catch); and electric fishing surveys (Electrofishing). Where there is no or Insufficient data, no assessment (N/A) is recorded. Each river is categorised to a recommended “status” of having a harvestable surplus (HS) or fishable with catch and release only (C&R), dependent on whether or not it has attained the management target stock level in three of the past five years.

The SSC recommends that in river recreational salmon fisheries the DAERA area in 2019 should be managed as set out in Table 2 below The SSC reviewed the available data for the Lower Bann river and found it had attained the Management Objective for harvest for the 2019 fishery. The SSC noted that the Lower Bann is a migratory route for salmon ascending into Lough Neagh. Genetic studies conducted under SALSEA were reviewed by the SSC and these data indicated the unique genetic integrity of the Neagh Bann salmon group and the existence of several discrete sub-groups within the

catchment (Fig 1). Consequently the SSC determined that the Lower Bann fishery represents a mixed stock fishery and under NASCO guidelines must therefore be managed according to the weakest stock in the fishery. Since most of the Neagh/Bann feeder streams are currently under CL the precautionary approach to management is recommended. NASCO indicate that management of fisheries should be based upon assessments of the status of individual stocks and that management actions should aim to protect the weakest of the contributing stocks. Consequently it is recommended that catch and release again be considered appropriate for the 2019 fishery.

The Rivers Maine & Upper Bann met management objectives for the 2019 fishery, determination of the available catch option indicated a low tag allocation for 2019, however, this situation will change if recent increases in adult returns continue into the future.

Table 2. Status of salmon stocks in primary salmon rivers of the DAERA area, assessment data available, and recommendations for harvest or catch and release angling for 2019. C&R = Catch & Release, HS = Harvestable Surplus.

River	Managem. Target (M ova)	Assessment Data		Attainment Managem. Objective	Status	Tags
		Adult	Juvenile			
<i>L. Bann</i>	16.76	Counter	Electrofishing	Yes ²	C&R	-
<i>Main</i>	3.13	Tracking	Electrofishing	Yes ³	HS	38
<i>Blackwater</i>	2.47	Tracking	Electrofishing	No	C&R	0
<i>Sixmile</i>	2.0	Tracking	Electrofishing	No	C&R	0
<i>Ballinderry</i>	1.96	Tracking	Electrofishing	No	C&R	0
<i>Moyola</i>	2.92	Tracking	Electrofishing	No	C&R	0
<i>U. Bann</i>	1.98	Tracking	Electrofishing	Yes ⁴	HS	57
<i>Clady</i>	1.43	Counter	Electrofishing	Yes	HS	185
<i>Agivey</i>	2.49	Rod catch	Electrofishing	Yes	HS	175
<i>Bush</i>	2.66	Trap	Electrofishing	No	C&R	0
<i>Ballycastle</i>	1.51	Rod catch	Electrofishing	No	C&R	0
<i>Glendun</i>	0.48	Counter	Electrofishing	No	C&R	0
<i>Glenarm</i>	0.44	Rod catch	Electrofishing	Yes	HS	23
<i>Shinna</i>	0.30	Counter	Electrofishing	No	C&R	0
<i>Melvin</i>	IFI ⁵	Rod catch	Electrofishing	Yes	HS	119

² Subject to DAERA management review; see recommendations.

³ Subject to DAERA management review; see recommendations.

⁴ Subject to DAERA management review; see recommendations.

⁵ Conservation Limit & Adult Stock Assessment produced by IFI. <http://www.fisheriesireland.ie/fisheries-management-1/482-the-status-of-irish-salmon-stocks-in-2014-with-precautionary-catch-advice-for-2019/file>

<i>Erne</i>	IFI ¹	Counter	Electrofishing	No	C&R	0
<i>Secondary Rivers</i>	Harvest of <i>salmon</i> from secondary rivers is not considered advisable under current conditions (See Table 2).					

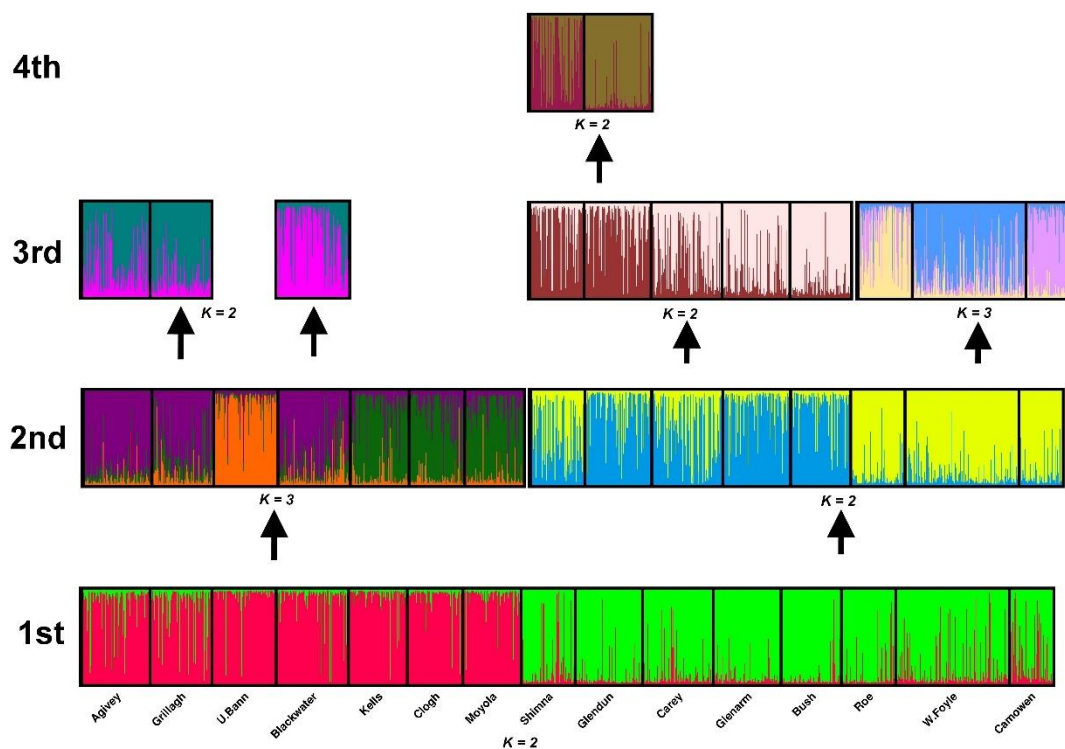


Fig. 1 Genetic structuring of N. Ireland salmon stocks.

Secondary rivers

There are a number of “Secondary” rivers outside the primary list, with smaller salmon stocks and lesser data availability- these are clearly more vulnerable to stock depletion due to potential low population size and the committee considers that these should be subject to more cautious management. It is recommended that these secondary salmon

River	No Survey Sites	Mean No. 0+ salmon 2018	Mean No. 0+ salmon 2017	Mean No. 0+ salmon 2016	STATUS of 0+ salmon	Mean No. 0+ trout 5min⁻¹
Articlave	7	0	0	0	ABSENT	16.6
Inver	14	1.3	0	0	POOR	4.2
Crawfordsburn	7	0	n/a	n/a	ABSENT	20.0
Comber	8	n/a	0	n/a	ABSENT	5.9 (2017)
Dibney	6	n/a	0	n/a	ABSENT	17.5 (2017)
Moneycarragh	13	0.1	0	0.9	POOR	13.8
Annalong	5	0	0	n/a	ABSENT	5.3
Kilkeel	16	n/a	0	n/a	ABSENT	11.1 (2017)

Table 3. SQ electric fishing survey results for 8 secondary rivers in N. Ireland.

rivers are restricted to catch and release angling only (C&R). It had been previously recommended that a sample of secondary rivers should be surveyed via SQ electric fishing to check potential productivity levels. Between 2016-2018 eight secondary rivers were surveyed for 0+ salmon and the results are indicated in Table 3. Salmon fry were absent from 6 of the 8 rivers and were only found periodically and in low numbers in the Inver and Moneycarragh rivers. *These data indicate the need for secondary rivers to maintain mandatory catch and release for Atlantic salmon and for DAERA to consider further monitoring and perhaps stock rebuilding measures on smaller river catchments in N. Ireland.*

The Use of SQ Electric Fishing Recruitment Indices

Semi-quantitative (SQ) electric fishing is undertaken across the main spawning range of Atlantic salmon in all the DAERA area primary salmon rivers. Surveys are conducted using standard methods and in a consistent manner each year (same survey sites, same technique & same operator), generating annually comparable data and derived indices for each river. Previous work (Crozier & Kennedy, 1994⁶) has suggested that broad categories of abundance can be classified from the SQ data, with “poor” recruitment defined as when survey sites have 1 - 4 0+ salmon fry 5 mins⁻¹. SSC has previously recommended that *SQ electric fishing from primary salmon rivers should not be used prescriptively but rather be used as additional information for review at the annual SSC meeting*. In the context of precautionary management it is prudent, whenever available, to consider previous recruitment data from each river. *Particular attention should focus on the recruitment index 3-4 years in advance of the fishery, as this cohort will principally feed 2.1+ & 2.2+ age class salmon returns*. Poor recruitment can correlate with lower subsequent returns and therefore the expert judgement of SSC is that poor recruitment should be taken into account through the subsequent life history of recruiting cohorts when advising on potential harvestable surplus.

3. Sea Trout in the DAERA area.

Salmon and sea trout are grouped together under the NI Fisheries Act (1966) and any restrictions on salmon fisheries also apply to sea trout by default. Unlike for salmon, regular stock assessments with reference to river specific conservation limits are not currently available for sea trout rivers. Recent DAERA commissioned research has focused on the development of biological reference points and stock status assessment

⁶ Crozier, W. W. and G. J. A. Kennedy (1994). Application of semi-quantitative electrofishing to juvenile salmonid stock surveys. *Journal of Fish Biology* **45** (1): 159-164.

methods for a typical DAERA area sea trout stock (Shimna river). This research has recently been published Kennedy *et al.*, 2017)⁷ and indicates that 1 Sea Winter and older sea trout provide >80% of ova deposition and allowing sufficient older sea run mature females to spawn is therefore key to effective stock management.

The SSC reviewed the pilot fishery for sea trout (bag limit of 2 sea trout <40cm per year) on the Shimna river. In 2016 11 fish were killed from a total rod catch >300 and in 2017 2 fish were killed and in 2018 0 fish killed from a rod catch > 200. The exploitation levels resulting from this measure were minimal and it was determined that, if reflective of other rivers, the regulation would have a low impact on stocks generally.

The SSC considered the present evidence, data deficiencies and management challenges and recommended that a limited allocation for consumption of 2 sea trout (< 40cm) per angler per year in freshwater was unlikely to compromise stocks.

The SSC has previously provided advice on the development of suitable monitoring and reporting requirements for a DAERA area wide opening of the sea trout fishery in N. Ireland (2017 SSC report).

Sea Trout Status in the DAERA Area

The SSC reviewed available electric fishing data for a number of sea trout producing rivers in the DAERA area (Fig 2). Trends in 0+ trout recruitment were stable or increasing across all the DAERA areas. In 2018 the highest 0+ trout densities recorded in the time-series were observed on the Glendun, Ballycastle & Shimna rivers, indicative of improving stock status for trout.

⁷ Kennedy, R.J., Crozier, W.W., Rosell, R., Allen, M.M. & Prodöhl, P. (2017). Trout recruitment, production and ova seeding requirements on a small coastal river: A case study from the Shimna River, Northern Ireland. In: Sea Trout: Science & Management. Proceeding of the 2nd International Sea Trout Symposium, October 2015. (Harris, G. ed.). pp. 153-166. Matador.

Fig 2 a Ballycastle River

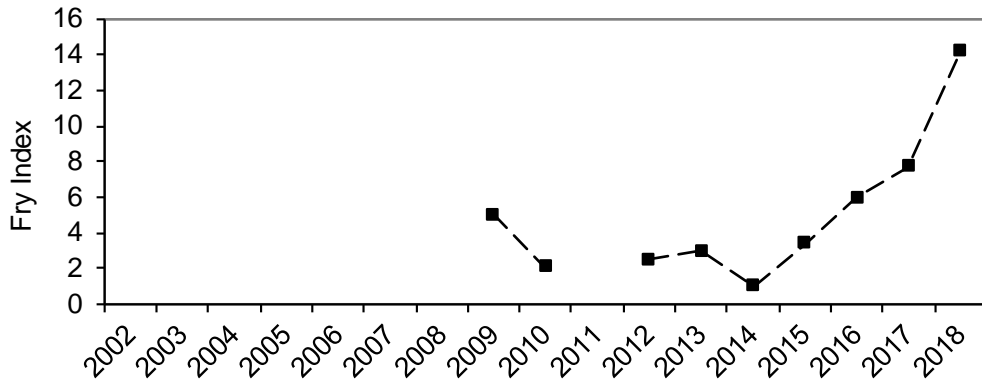


Fig 2b Glendun River

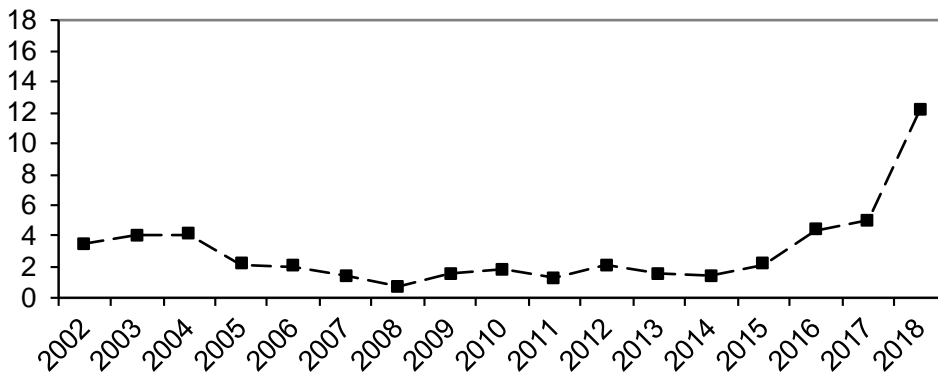
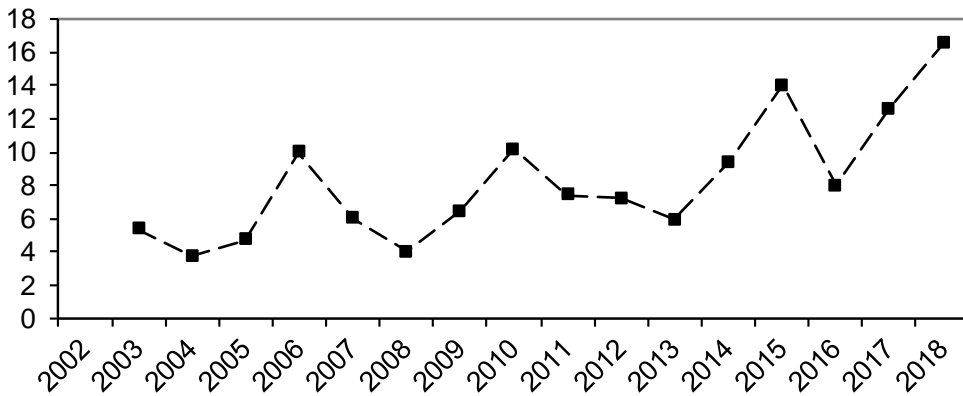


Fig 3c Shimna River



4. Summary of Main Recommendations from the SSC for 2019.

1. *The SSC recommends that no commercial coastal salmon fishery should be operated in the DAERA area in 2019.*
2. *The SSC recommends that catch and release currently remains appropriate on all secondary salmon rivers in N. Ireland and that further SQ electric fishing monitoring should be conducted secondary salmon rivers as resources allow.*
3. *The SSC recommends that in river recreational salmon fisheries the DAERA area in 2019 should be managed as set out in Table 2 above with the below caveats*
 - a. *The SSC noted that the Lower Bann attained management objectives for the 2019 fishery. The SSC also noted that the Lower Bann fishery may potentially exploit fish from various Lough Neagh tributaries which remain below CL & recommends continued C&R for the 2019 fishery.*
 - b. *The SSC noted that the River Maine attained management objective for the 2019 fishery. Accordingly it was assessed for harvestable surplus. Due to the large variability in historical adult returns the assessment process indicated a low tag allocation. This may change in future if adult returns continue to improve.*
 - c. *The SSC specifically considered the available data for the Upper Bann river and determined that the river had met management objectives and had a harvestable surplus of 57 fish. It should also be noted however that 0+ age class recruitment was classed as POOR in 2014 and MODERATE in 2015 & 2018 (see Upper Bann summary data). DAERA are encouraged to consider this evidence prior to opening the fishery for harvest.*
4. *The SSC considered the present evidence, data deficiencies and management challenges and recommended that a limited allocation for consumption of 2 sea trout (< 40cm) per angler per year in freshwater was unlikely to compromise stocks.*

DAERA Area Standing Scientific Committee - Members 2019.

R. Rosell	AFBI (Chairman)
R.J. Kennedy	AFBI (Secretary)
D. Ensing	AFBI
W.W. Crozier	AFBI (<i>until Nov 2015</i>)
P. Gargan	Inland Fisheries Ireland
P. Boylan	Loughs Agency

DAERA Area Primary Salmon Rivers –
Stock Assessments 2014-18 &
Management Recommendations for 2019.

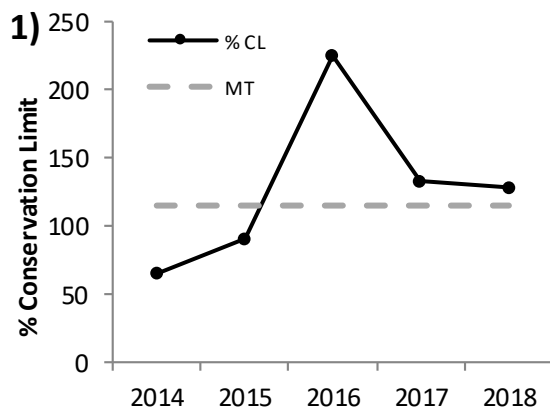


River Lower Bann (Lower Bann/Lough Neagh Area)

River Characteristics	
Habitat Inventory	LCU Survey
Conservation Limit	14.57 ⁸ M ova
Management Target	16.76 M ova
Salmon Monitoring Data	
Adult Escapement	Resistivity Fish Counter
Juvenile Abundance	Semi-Quantitative Electric Fishing
Biological Characteristics	Annual Monitoring
Catch Details	Carcass Tagging 2002-13
Conservation Recommendations	
Recommended Fishery Status 2019	No harvest
Potential Harvestable Surplus	0
Final Harvestable Surplus (tag allocation)	0

Salmon Stock Assessment for 2019 Fishery. Most recent data series 2014-2018.

- 1) Adult Salmon Escapement & Compliance against Conservation Limit and Management Target (115% CL). *Outcome*; 3/5 years >MT. Harvestable Surplus 0. Catch & Release.
- 2) Juvenile Recruitment Index - Refer to individual Lough Neagh & Bann Area feeder rivers.



See Individual Neagh/Bann feeder tributaries

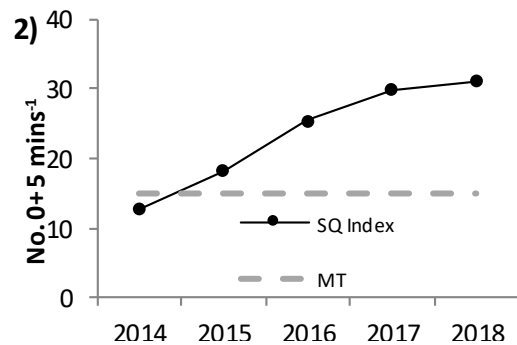
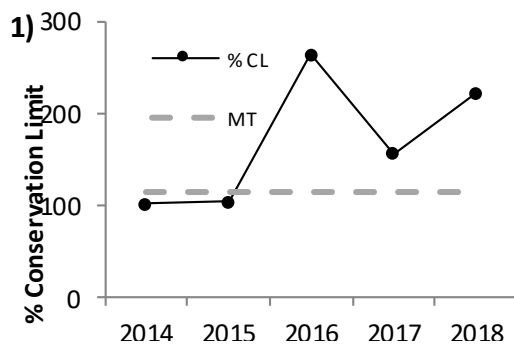
⁸ CL based on habitat above the fish counting station at Portna.

River Main (Lough Neagh Area)

River Characteristics	
Habitat Inventory	LCU Survey
Conservation Limit	2.725 M ova
Management Target	3.13 M ova
Salmon Monitoring Data	
Adult Escapement	Lower Bann Telemetry Programme
Juvenile Abundance	Semi-Quantitative Electric Fishing
Biological Characteristics	Annual Monitoring
Catch Details	Carcass Tagging 2002-13
Conservation Recommendations	
Recommended Fishery Status 2019	Harvestable Surplus
Potential Harvestable Surplus	38
Final Harvestable Surplus (tag allocation)	38

Salmon Stock Assessment for 2019 Fishery. Most recent data series 2014-2018.

- 1) Adult Salmon Escapement & Compliance against Conservation Limit and Management Target (115% CL). *Outcome*; 3/5 years >MT. Harvestable Surplus 38.
- 2) Juvenile Recruitment Index 2013-2017 – Moderate -Excellent.

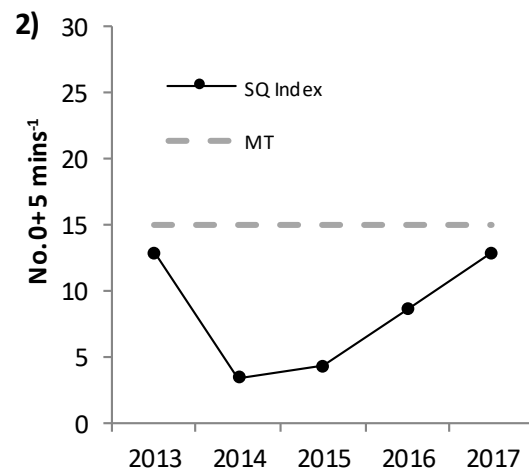
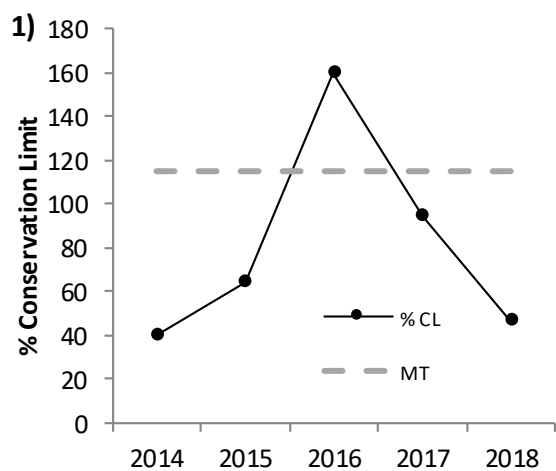


River Blackwater (Lough Neagh Area)

River Characteristics	
Habitat Inventory	LCU Survey
Conservation Limit	2.15 M ova
Management Target	2.47 M ova
Salmon Monitoring Data	
Adult Escapement	Lower Bann Telemetry Programme
Juvenile Abundance	Semi-Quantitative Electric Fishing
Biological Characteristics	Annual Monitoring
Catch Details	Carcass Tagging 2002-13
Conservation Recommendations	
Recommended Fishery Status 2019	Catch & Release
Potential Harvestable Surplus	0
Final Harvestable Surplus (tag allocation)	0

Salmon Stock Assessment for 2019 Fishery. Most recent data series 2014-2018.

- 1) Adult Salmon Escapement & Compliance against Conservation Limit and Management Target (115% CL). *Outcome*; 1/5 years >MT. Harvestable Surplus 0. Catch & Release.
- 2) Juvenile Recruitment Index 2013-2017 – Poor - Moderate.

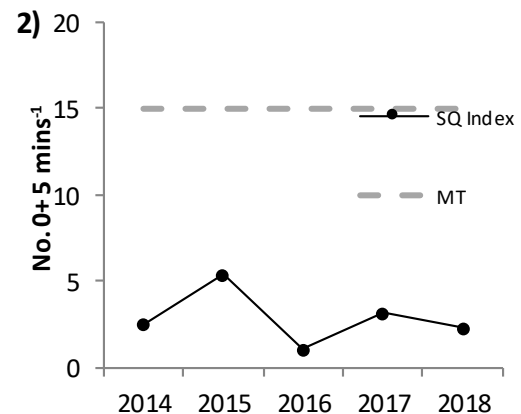
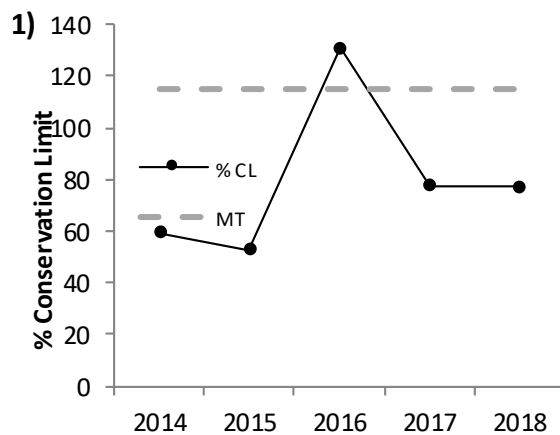


River Sixmile (Lough Neagh Area)

River Characteristics	
Habitat Inventory	LCU Survey
Conservation Limit	1.74 M ova
Management Target	2.0 M ova
Salmon Monitoring Data	
Adult Escapement	Lower Bann Telemetry Programme
Juvenile Abundance	Semi-Quantitative Electric Fishing
Biological Characteristics	Annual Monitoring
Catch Details	Carcass Tagging 2002-13
Conservation Recommendations	
Recommended Fishery Status 2019	Catch & Release
Potential Harvestable Surplus	0
Final Harvestable Surplus (tag allocation)	0

Salmon Stock Assessment for 2019 Fishery. Most recent data series 2014-2018.

- 1) Adult Salmon Escapement & Compliance against Conservation Limit and Management Target (115% CL). *Outcome*; 1/5 years >MT. Harvestable Surplus 0. Catch & Release.
- 2) Juvenile Recruitment Index 2014-2018 – Poor

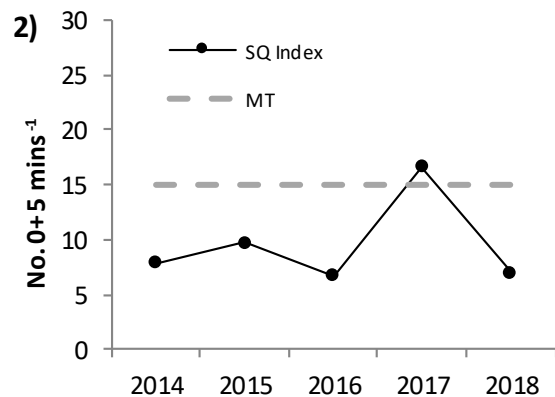
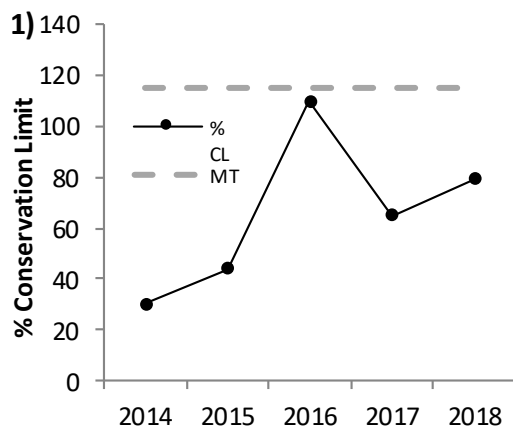


River Ballinderry (Lough Neagh Area)

River Characteristics	
Habitat Inventory	LCU Survey
Conservation Limit	1.70 M ova
Management Target	1.96 M ova
Salmon Monitoring Data	
Adult Escapement	Lower Bann Telemetry Programme
Juvenile Abundance	Semi-Quantitative Electric Fishing
Biological Characteristics	Annual Monitoring
Catch Details	Carcass Tagging 2002-13
Conservation Recommendations	
Recommended Fishery Status 2019	Catch & Release
Potential Harvestable Surplus	0
Final Harvestable Surplus (tag allocation)	0

Salmon Stock Assessment for 2019 Fishery. Most recent data series 2014-2018.

- 1) Adult Salmon Escapement & Compliance against Conservation Limit and Management Target (115% CL). *Outcome*; 0/5 years >MT. Harvestable Surplus 0. Catch & Release.
- 2) Juvenile Recruitment Index – Moderate.

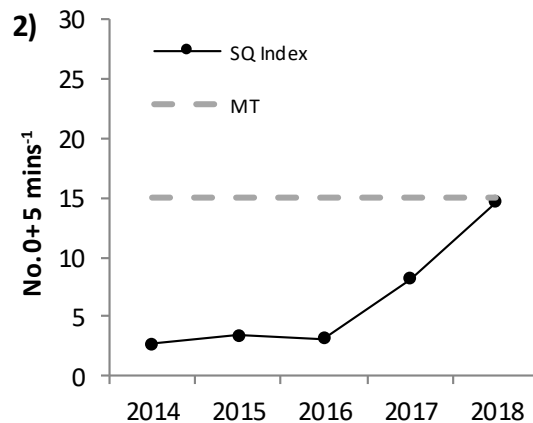
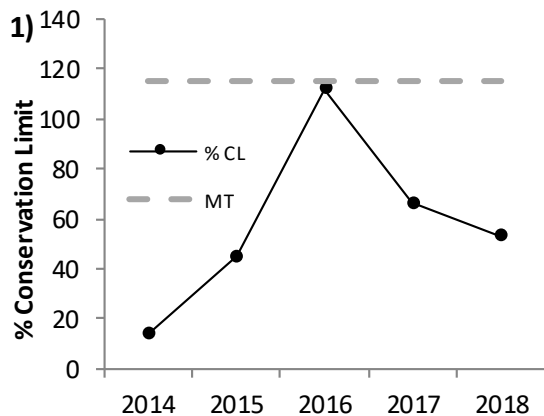


River Moyola (Lough Neagh Area)

River Characteristics	
Habitat Inventory	LCU Survey
Conservation Limit	2.54 M ova
Management Target	2.92 M ova
Salmon Monitoring Data	
Adult Escapement	Lower Bann Telemetry Programme
Juvenile Abundance	Semi-Quantitative Electric Fishing
Biological Characteristics	Annual Monitoring
Catch Details	Carcass Tagging 2002-13
Conservation Recommendations	
Recommended Fishery Status 2019	Catch & Release
Potential Harvestable Surplus	0
Final Harvestable Surplus (tag allocation)	0

Salmon Stock Assessment for 2019 Fishery. Most recent data series 2014-2018.

- 1) Adult Salmon Escapement & Compliance against Conservation Limit and Management Target (115% CL). *Outcome*; 0/5 years >MT. Harvestable Surplus 0. Catch & Release.
- 2) Juvenile Recruitment Index – Poor -Moderate.

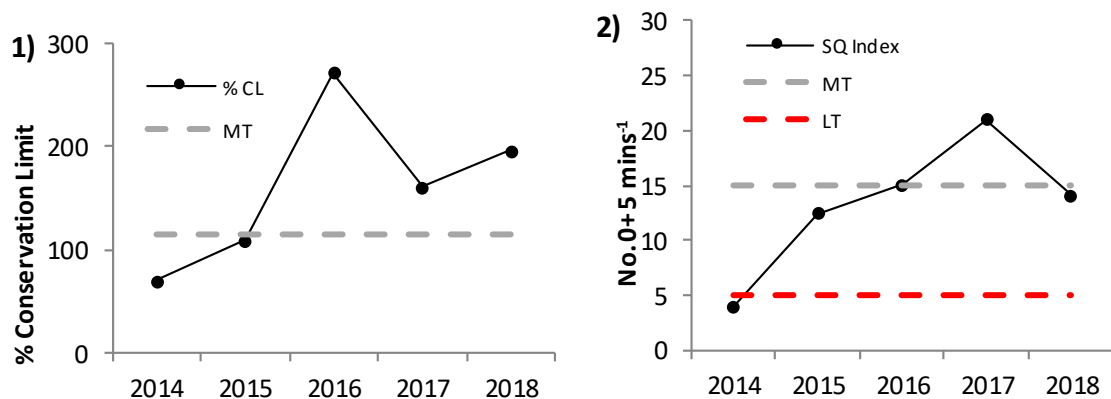


River Upper Bann (Lough Neagh Area)

River Characteristics	
Habitat Inventory	LCU Survey
Conservation Limit	1.72 M ova
Management Target	1.98 M ova
Salmon Monitoring Data	
Adult Escapement	Lower Bann Telemetry Programme
Juvenile Abundance	Semi-Quantitative Electric Fishing
Biological Characteristics	Annual Monitoring
Catch Details	Carcass Tagging 2002-13
Conservation Recommendations	
Recommended Fishery Status 2019	Catch & Release
Potential Harvestable Surplus	57
Final Harvestable Surplus (tag allocation)	0

Salmon Stock Assessment for 2019 Fishery. Most recent data series 2014-2018.

- 1) Adult Salmon Escapement & Compliance against Conservation Limit and Management Target (115% CL). *Outcome*; 3/5 years >MT. Harvestable Surplus 57.
- 2) Juvenile Recruitment Index 2013-2017 – Moderate but *POOR recruitment on 2014*.

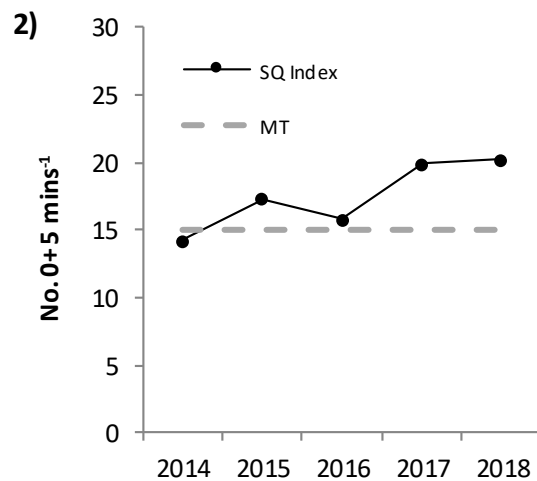
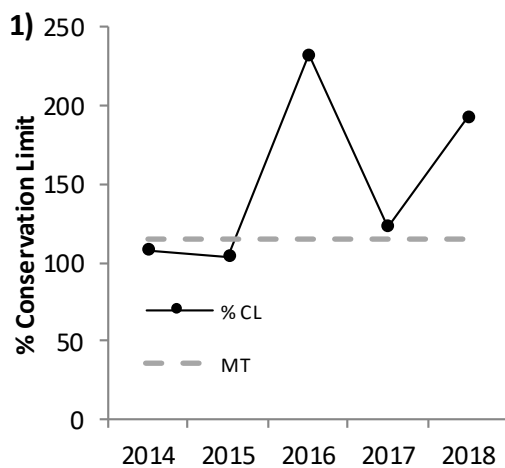


River Clady (Lower Bann Area)

River Characteristics	
Habitat Inventory	LCU Survey
Conservation Limit	1.24 ⁹ M ova
Management Target	1.43 M ova
Salmon Monitoring Data	
Adult Escapement	Resistivity Fish Counter
Juvenile Abundance	Semi-Quantitative Electric Fishing
Biological Characteristics	Annual Monitoring
Catch Details	Carcass Tagging 2002-13
Conservation Recommendations	
Recommended Fishery Status 2019	Harvestable Surplus
Potential Harvestable Surplus	185
Final Harvestable Surplus (tag allocation)	185

Salmon Stock Assessment for 2019 Fishery. Most recent data series 2014-2018.

1. Adult Salmon Escapement & Compliance against Conservation Limit and Management Target (115% CL). *Outcome*; 3/5 years >MT. Harvestable Surplus Available.
2. Juvenile Recruitment Index 2014-2018 – Good.



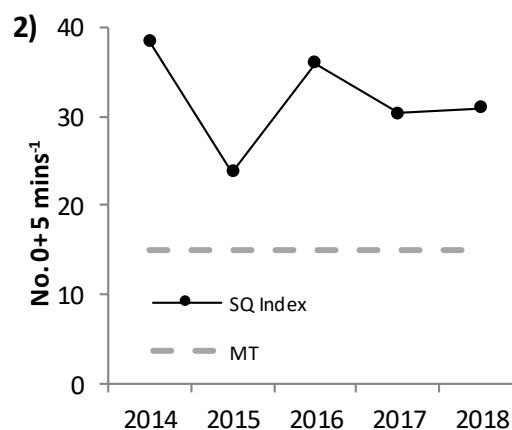
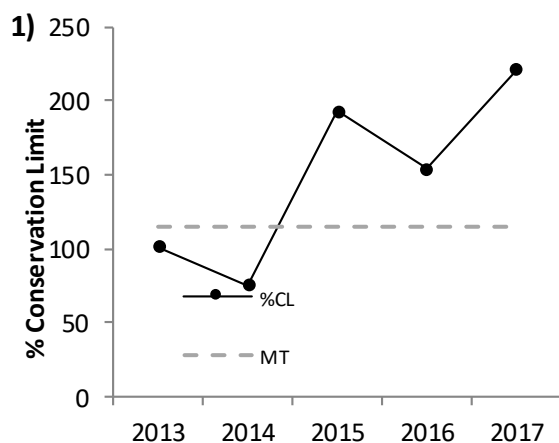
⁹ CL based on habitat above the fish counting station at Inishrush.

River Agivey (Lower Bann Area)

River Characteristics	
Habitat Inventory	LCU Survey
Conservation Limit	2.16 M ova
Management Target	2.48 M ova
Salmon Monitoring Data	
Adult Escapement	Rod Catch (2013-17)
Juvenile Abundance	Semi-Quantitative Electric Fishing
Biological Characteristics	N/A
Catch Details	Carcass Tagging 2002-13
Conservation Recommendations	
Recommended Fishery Status 2019	Harvestable Surplus
Potential Harvestable Surplus	150
Final Harvestable Surplus (tag allocation)	150

Salmon Stock Assessment for 2019 Fishery. Most recent data series 2013-2017.

- 1) Adult Salmon Escapement & Compliance against Conservation Limit and Management Target (115% CL). *Outcome*; 3/5 years > MT. Harvestable Surplus Available.
- 2) Juvenile Recruitment Index 2014-2018 – Good - Excellent.

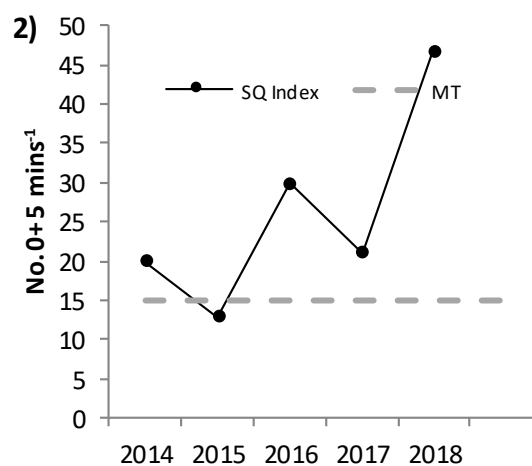
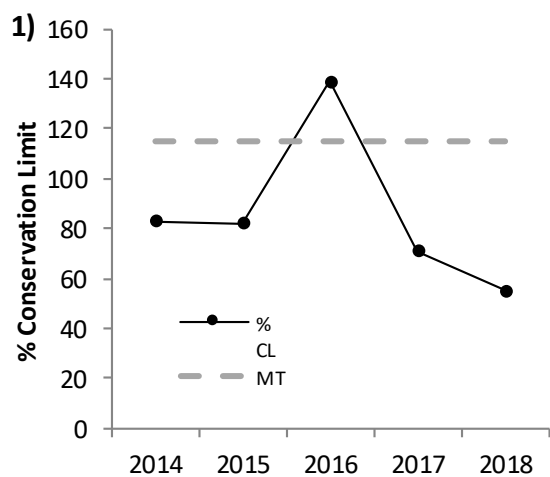


River Bush (Coastal)

River Characteristics	
Habitat Inventory	LCU Survey
Conservation Limit	2.31 M ova
Management Target	2.66 M ova
Salmon Monitoring Data	
Adult Escapement	Trap
Juvenile Abundance	Semi-Quantitative Electric Fishing
Biological Characteristics	Annual Monitoring
Catch Details	Catch returns
Conservation Recommendations	
Recommended Fishery Status 2019	Catch & Release
Potential Harvestable Surplus	0
Final Harvestable Surplus (tag allocation)	0

Salmon Stock Assessment for 2019 Fishery. Most recent data series 2014-2018.

- 1) Adult Salmon Escapement & Compliance against Conservation Limit and Management Target (115% CL). *Outcome*; 1/5 years >MT. Harvestable Surplus 0. Catch & Release.
- 2) Juvenile Recruitment Index 2014-2018 – Moderate -Excellent.

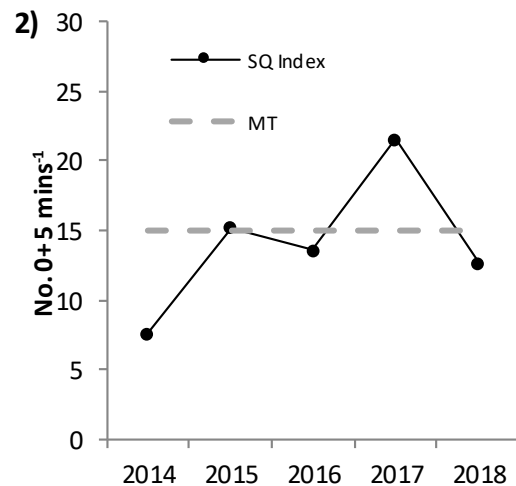
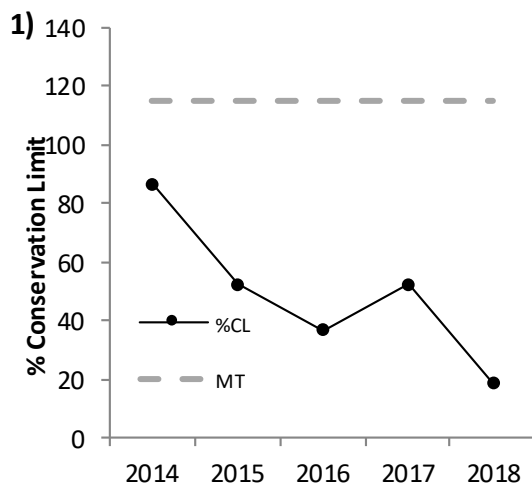


River Margy/Carey (Ballycastle) (Coastal)

River Characteristics	
Habitat Inventory	LCU Survey
Conservation Limit	1.31 M ova
Management Target	1.51 M ova
Salmon Monitoring Data	
Adult Escapement	N/A
Juvenile Abundance	Semi-Quantitative Electric Fishing
Biological Characteristics	Annual Monitoring
Catch Details	Carcass Tagging 2002-13
Conservation Recommendations	
Recommended Fishery Status 2019	Catch & Release
Potential Harvestable Surplus	0
Final Harvestable Surplus (tag allocation)	0

Salmon Stock Assessment for 2019 Fishery. Most recent data series 2014-2018.

- 1) Adult Salmon Escapement & Compliance against Conservation Limit and Management Target (115% CL). *Outcome*; 0/5 years >MT. Harvestable Surplus 0. Catch & Release.
- 2) Juvenile Recruitment Index 2014-2018– Moderate-good.

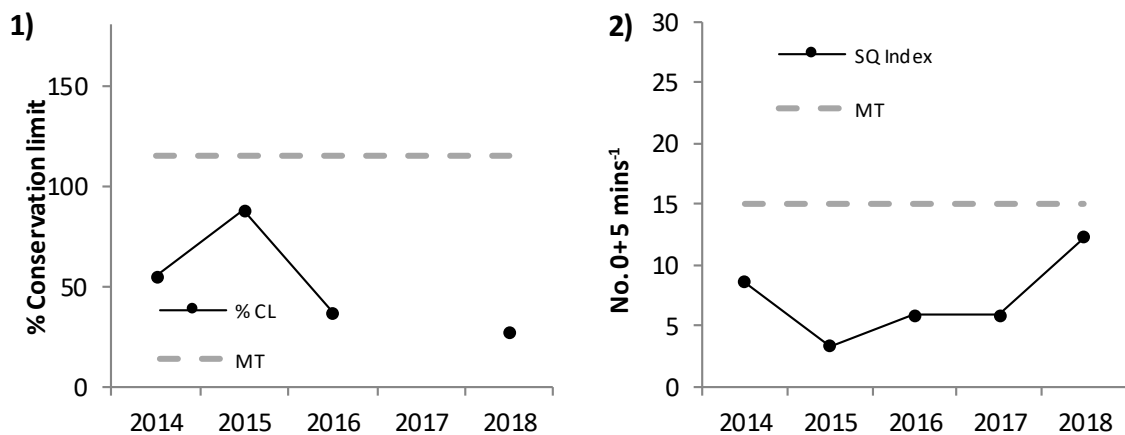


River Glendun (Coastal)

River Characteristics	
Habitat Inventory	LCU Survey
Conservation Limit ¹⁰	0.42 M ova
Management Target	0.48 M ova
Salmon Monitoring Data	
Adult Escapement	Resistivity Fish Counter
Juvenile Abundance	Semi-Quantitative Electric Fishing
Biological Characteristics	Annual Monitoring
Catch Details	Carcass Tagging 2002-13
Conservation Recommendations	
Recommended Fishery Status 2019	Catch & Release
Potential Harvestable Surplus	0
Final Harvestable Surplus (tag allocation)	0

Salmon Stock Assessment for 2019 Fishery. Most recent data series 2014-2018.

- 1) Adult Salmon Escapement & Compliance against Conservation Limit and Management Target (115% CL). *Outcome*; 0/4 years >MT. Harvestable Surplus 0. Catch & Release.
- 2) Juvenile Recruitment Index 2013-2017 – Moderate (poor 2015).



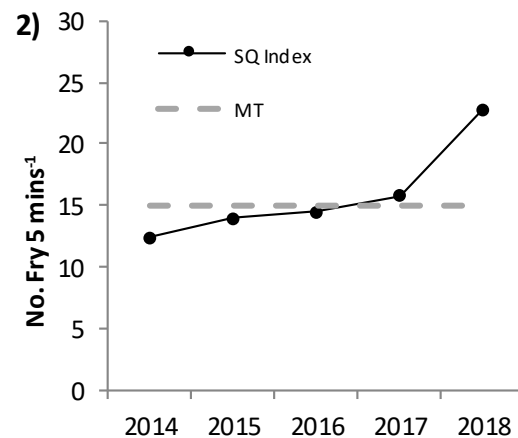
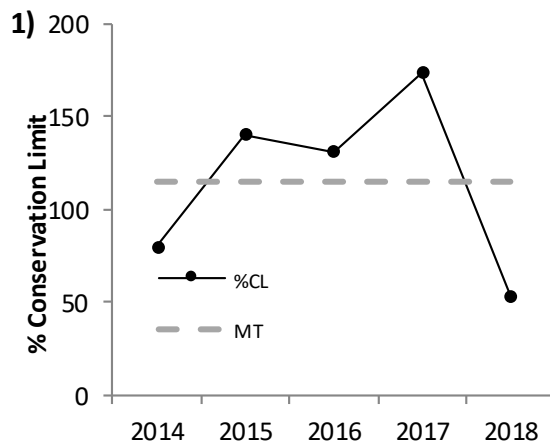
¹⁰ CL based on habitat above the fish counting station at Clady Road.

River Glenarm (Coastal)

River Characteristics	
Habitat Inventory	LCU Survey
Conservation Limit	0.38 M ova
Management Target	0.44 M ova
Salmon Monitoring Data	
Adult Escapement	Rod Catch
Juvenile Abundance	Semi-Quantitative Electric Fishing
Biological Characteristics	Annual Monitoring
Catch Details	Local catch returns
Conservation Recommendations	
Recommended Fishery Status 2019	Harvestable Surplus Available
Potential Harvestable Surplus	24
Final Harvestable Surplus (tag allocation)	24

Salmon Stock Assessment for 2019 Fishery. Most recent data series 2014-2018.

- 1) Adult Salmon Escapement & Compliance against Conservation Limit and Management Target (115% CL). *Outcome*; 3/5 years >MT. Harvestable Surplus Available.
- 2) Juvenile Recruitment Index 2014-2018 – Moderate-Good.

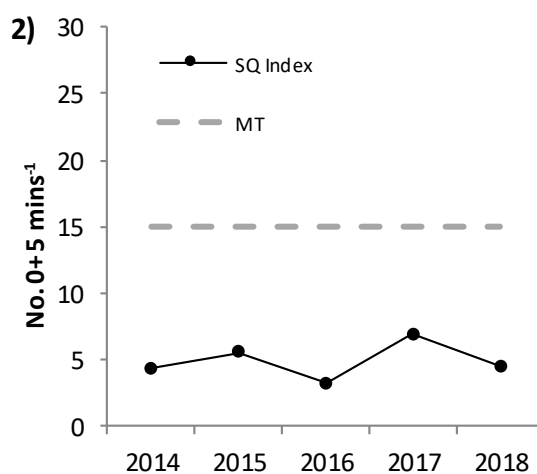
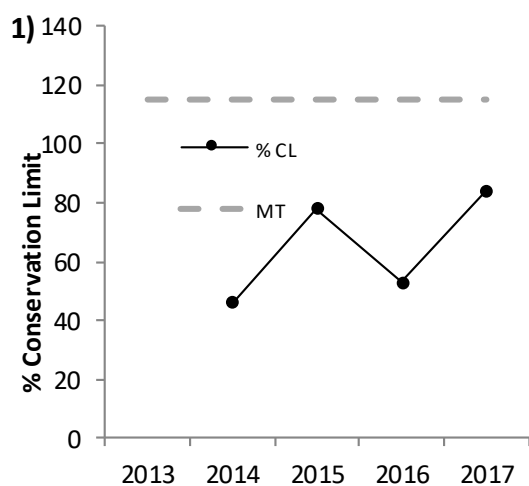


River Shimna (Coastal)

River Characteristics	
Habitat Inventory	LCU Survey
Conservation Limit ¹¹	0.20 M ova
Management Target	0.23 M ova
Salmon Monitoring Data	
Adult Escapement	Resistivity Fish Counter
Juvenile Abundance	Semi-Quantitative Electric Fishing
Biological Characteristics	Annual Monitoring
Catch Details	Local catch returns
Conservation Recommendations	
Recommended Fishery Status 2019	Catch & Release
Potential Harvestable Surplus	0
Final Harvestable Surplus (tag allocation)	0

Salmon Stock Assessment for 2019 Fishery. Most recent data series 2013-2017.

- 1) Adult Salmon Escapement & Compliance against Conservation Limit and Management Target (115% CL). *Outcome*; 0/4 years >MT. Harvestable Surplus 0. Catch & Release.
- 2) Juvenile Recruitment Index 2014-2018 – Poor -Moderate.



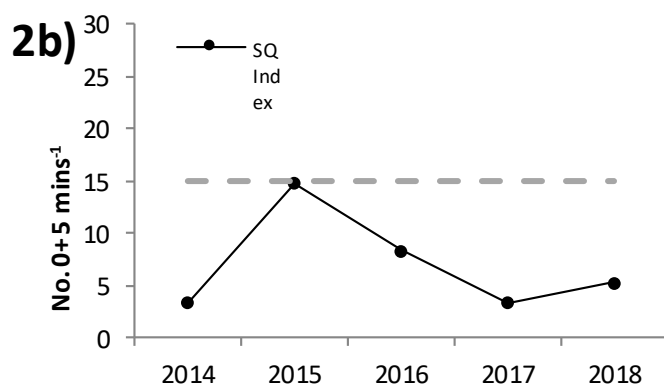
¹¹ CL based on habitat above the fish counting station.

River Erne (Fermanagh)

River Characteristics	
Habitat Inventory	n/a
Conservation Limit	IFI ¹²
Management Target	n/a
Salmon Monitoring Data	
Adult Escapement	Vaki Fish Counter
Juvenile Abundance	SQ Electric Fishing
Biological Characteristics	n/a
Catch Details	Carcass Tagging 2002-13
Conservation Recommendations	
Recommended Fishery Status 2019	Catch & Release
Potential Harvestable Surplus	0
Final Harvestable Surplus (tag allocation)	0

Salmon Stock Assessment for 2019 Fishery. Most recent data series 2014-2018.

- 1) Adult Salmon Escapement & Compliance against Conservation Limit and Management Target (115% CL). *Outcome*; 0/5 years >MT⁹. Harvestable Surplus 0. Catch & Release.
- 2) Juvenile Recruitment Index 2011-2015 – a) [Garvary] Poor; b) [Ballinamallard] Poor-Moderate.



¹² Conservation Limit & Adult Stock Assessment produced by IFI.
<http://www.fisheriesireland.ie/fisheries-management-1/449-the-status-of-irish-salmon-stocks-in-2015-with-precautionary-catch-advice-for-2018/file>

Lough Melvin (Fermanagh)

River Characteristics	
Habitat Inventory	n/a
Conservation Limit	IFI ¹³
Management Target	n/a
Salmon Monitoring Data	
Adult Escapement	Rod Catch
Juvenile Abundance	SQ Electric Fishing
Biological Characteristics	n/a
Catch Details	Carcass Tagging 2002-13
Conservation Recommendations	
Recommended Fishery Status 2019	Harvestable Surplus
Potential Harvestable Surplus	119 (DAERA Area)
Final Harvestable Surplus (tag allocation)	119 (DAERA Area)

Salmon Stock Assessment for 2019 Fishery. Most recent data series 2014-2018.

- 1) Adult Salmon Escapement & Compliance against Conservation Limit and Management Target (115% CL). *Outcome*; 5/5 years >MT¹⁰. Harvestable Surplus Available.
- 2) Juvenile Recruitment Index N/A.

¹³ Conservation Limit & Adult Stock Assessment produced by IFI.
<http://www.fisheriesireland.ie/fisheries-management-1/449-the-status-of-irish-salmon-stocks-in-2015-with-precautionary-catch-advice-for-2018/file>