ICES WGRECORDS REPORT 2016

Interim Report of the Working Group on the Science Requirements to Support Conservation, Restoration and Management of Diadromous Species (WGRECORDS)

23 September 2016

Riga, Latvia

ICES CIEM

International Council for the Exploration of the Sea

Conseil International pour l'Exploration de la Mer

International Council for the Exploration of the Sea
Conseil International pour l'Exploration de la Mer

Recommended format for purposes of citation:

Contents

Executive summary

WGRECORDS was established to provide a forum for the co-ordination of work on diadromous species following the disbanding of the Diadromous Fish Committee. The role of the Group is to co-ordinate work on diadromous species, organise Expert Groups, Theme Sessions and Symposia, and help to deliver the ICES Science Plan. The annual meeting of WGRECORDS was held 23 September 2016 during the ICES Annual Science Conference in Riga, Latvia and chaired by Russell Poole (Ireland) and Johan Dannewitz (Sweden).

The Annual Meeting received reports from ICES Expert Groups and workshops working on diadromous species, and considered their progress and future requirements. During the meeting, the following areas were discussed in more detail:

- Research needs and co-ordination of research on data poor diadromous fish stocks, with particular focus on methods for monitoring and status assessments;

- The need for a host for the DBERAAS database, a product of WGERAAS;

- Review of progress and ongoing methods and future needs to improve assessments and provide scientific advice for sea trout with a proposal for a SCICOM EG to be established for sea trout;

- The ongoing need for a scientific review of the stock assessment methods used by individual countries in their national eel management plans, for co-ordination at the international level and a need for ICES to provide advice in support of the EU Regulation and implementation of the recovery plan;

- Support for WGEEL proposed Resolutions on data and cross-compliance/quality control of assessments;

- International Year of the Salmon progress and engagement by ICES;

- Information from Portugal and the UK on fish passage and actions issues relevant to diadromous fish;

- A diadromous fish theme session in the 2017 ASC; a resolution from WGDAM.

The Group noted the completion of the work of two expert groups in 2016, the joint workshop of the Working Group on Eel and the Working Group on Biological Effects of Contaminants (WKBECEEL) and the Workshop on eel Stocking (WKSTOCKEEL). The ongoing work of the Working Group on the Effectiveness of Recovery Actions for Atlantic Salmon (WGERAAS) was noted and discussed.

The need to develop assessment methodologies for sea trout was discussed, as was the need to focus more on data poor diadromous fish species in general. In this regard, a resolution for a Working Group on Sea Trout in 2017–2019 was finalised during the meeting.

Better coordination between Diadromous fish scientists, particularly regarding data poor species that have previously not received so much attention, was identified and WGRECORDS could have an important role as a forum for coordination and a source of information on these species for national and international management. On this topic, a proposal for a diadromous related theme session was submitted to the ASC Committee for 2017.

# 1	Administrative details

Working Group name
Working Group on the Science Requirements to Support Conservation, Restoration and Management of Diadromous Species (WGRECORDS)
Year of Appointment within the current cycle
2015
Reporting year within current cycle (1, 2 or 3)
2
Chair(s)
Johan Dannewitz, Sweden
Russell Poole, Ireland
Meeting venue
Riga, Latvia (ASC 2016)
Meeting dates
23 September 2016

# 2	Terms of Reference and Summary of Work plan

ToR	DESCRIPTION
a	Stimulate international scientific co-operation in the study of diadromous fish species and provide a mechanism through which issues relating to these species, including in estuarine and fresh waters, can be addressed and coordinated within the ICES science plan;
b	Propose activities, including experts groups, theme sessions and symposia, to support the Science Plan and the work of ACOM Experts Groups on diadromous species and review their outputs;
c	Assist SSGEPD to integrate these activities with those of other Expert Groups reporting to SSGEPD. WGRECORDS will report annually by 31 December (via SSGEPD) for the attention of SSGEPD and SCICOM.

Summary of Work plan

Year 1	Coordinate scientific activities (theme sessions, symposia, EGs, CRRs and report to SSGEPD)
Year 2	Coordinate scientific activities (theme sessions, symposia, EGs, CRRs and report to SSGEPD)
Year 3	Coordinate scientific activities (theme sessions, symposia, EGs, CRRs and report to SSGEPD)

3 List of Outcomes and Achievements of the WG in this delivery period

3.1 Meetings held in 2016

The Working Group on the Science Requirements to Support Conservation, Restoration and Management of Diadromous Species (WGRECORDS) was established to provide a scientific forum in ICES for the co-ordination of work on diadromous species. The role of the Group is to co-ordinate work on diadromous species, organise Expert Groups, Theme Sessions and Symposia, and help to deliver the ICES Science Plan.

The annual meeting of WGRECORDS was held over two days i.e. Thursday, 22 September (short planning session for the Chairs and the ICES Secretariat) and Friday, 23 September 09:00–17:00 (Lambda Meeting Room) during the ICES 2016 Annual Science Conference in Riga, Latvia, and chaired by Johan Dannewitz (Sweden) and Russell Poole (Ireland). There were 7 participants in total from 5 countries (Annex 1) including the chair of the Theme Session D. Presentations were given by the WGRECORDS chairs on the other EGs.

3.2 Opening of annual meeting and adoption of the agenda

The agenda (Annex 2) for the annual meeting was adopted.

3.3 Summary Outcomes of the Meeting

Outcomes from meetings and activities during the last year include:

- Compilation and discussion of work carried out by EG's under the WGRECORDS umbrella, and consideration of their progress and future requirements;
- A short discussion was held reviewing the Annual Science Conference 2016 Theme Session D; Ecosystem changes and impacts on diadromous and marine species productivity;
- Coordination of a proposal for a new working group focused on developing assessment models and biological reference points for sea trout (WKTRUT-TA2), to be held from 2017;
- Coordination of proposals for theme sessions at ICES ASC in 2017;
- An update on the Year of the Salmon;
- Updates from the UK and Portugal on some significant actions relating to diadromous fish in the Severn (UK) and Mondego (PT) Rivers.

4   Reviews of Expert Groups on Diadromous Species

During 2016, WGRECORDS has co-ordinated the activities of five Expert Groups and three Workshops related to diadromous species, including three ACOM EGs, two SCICOM EGs, and three SCCOM Workshops, which are listed below, and the details of their work are summarised separately in the following sections. Below each summary, notes from the post-presentation discussions have been added for the record.

- Joint EIFAC/ICES/GFCM Working Group on Eel – WGEEL (ACOM) – Report available

- Working Group on Baltic Salmon and Trout – WGBAST (ACOM) – Report available

- Working Group on North Atlantic Salmon – WGNAS (ACOM) – Report available

- Working Group on the Effectiveness of Recovery Actions for Atlantic Salmon – WGERAAS (SCICOM) – No new report, due 2017

- Working Group on Data Limited Diadromous Fish WGDAM (SCICOM) – First Report due 2016

- Joint Workshop of the Working Group on Eel and the Working Group on Biological Effects of Contaminants WKBECEEL (SCICOM) – Report available

- Workshop on Sea Trout WKTRUTTA2 (SCICOM) – Report available

- Workshop on Eel Stocking WKSTOCKEEL (SCICOM) – Report available

4.1   WGEEL – Joint EIFAC/ICES Working Group on Eel

The Joint EIFAAC/ICES/GFCM Working Group on Eel (WGEEL), chaired by Alan Walker, UK, met at the University of Cordoba, Spain, from 15 to 22 September 2016 to address the terms of reference (ToR) set by ICES, EIFAAC and GFCM in response to the request for Advice from the EU (through the MoU between the EU and ICES), EIFAAC and GFCM. Thirty-three experts attended the meeting, representing 18 countries, along with three experts invited by the chair and representatives of the EU Commission DG MARE and the General Fisheries Commission of the Mediterranean (GFCM).

In 2016, the WGEEL glass eel recruitment indices remain low at 2.7% of the 1960–1979 reference level in the 'North Sea' series, and 10.7% in the 'Elsewhere' series. The 'recruiting yellow eel' index was 21% of the level during the reference period.

The Eel Management Plan silver eel biomass and mortality rate estimates (reported in 2015) indicate the stock in the EU-assessed area is not within the biomass limits of the Eel Regulation and in most management units, anthropogenic mortality exceeds a level that can be expected to lead to recovery.

FAO reports the total landings from Commercial fisheries in 2014 were about 3321 t of eel. Six countries account for 73% of the FAO landings: France, Egypt, UK, Nether-lands, Sweden and Denmark. Five EU Member States have a glass eel fishery (France, UK, Spain, Portugal and Italy): some non-EU countries (e.g. Morocco) also have glass eel fisheries but data from these were not available for analysis. The best estimates of the total EU catch of glass eel in 2015 and 2016 were 51.6 and 59.2t, respectively.

About 10.6 million glass eels and 9.2 million yellow eels were stocked in 2015. Stocking is a component of many Eel Management Plans (EMPs) and in some cases the commitment could not be achieved in 2016 due to timing, market and other glass eel availability issues. Aquaculture production was about 4000–6500t in 2015/2016 (data from FAO, FEAP and WGEEL Country Reports).

WGEEL attempts to cross-check glass eel catch with records of their fate (consumption, restocking and aquaculture) reveal major discrepancies between reporting systems. About 32% of the catch for 2015 has no recorded fate (about 36% for 2016). EuroStat trade data show France and UK declared exports of glass eel to Hong Kong in 2015/2016 despite these being 'banned' by the EU application of CITES.

The EU Eel Regulation effectively implements a Distributed Control System, in which common objectives (protection and recovery, minimal spawner production of 40% relative to the notional pristine production) are achieved by collective action (national management plans, reducing mortalities). Effective governance across the whole stock requires other areas to adopt the same approach of distributed control. Most non-EU areas have only recently joined this process, and further development - of reference points, assessment procedures, and feedback mechanisms - might be required, to cope with unforeseen complications and/or to familiarise local experts, and involve them in future standardisation processes. Additionally, reference points, assessment procedures and feedback mechanisms will need to be agreed for the whole distribution area.

A mechanism needs to found between the EU and the ICES rules to facilitate feedback on the status of the implementation of the EMPs, as in the Eel Management Plan Evaluation workshop (WKEPEMP) in 2013 (ICES, 2013). This lack leaves a void between the formal Precautionary Advice and scientific support for the recovery plan on eel.

Knowledge gaps and research needs were identified regarding impacts of pollutants and hydropower, habitat preferences, and monitoring across environments. A recent review shows that evidence on net benefits of eel stocking is inconclusive. Emerging threats include climate change, pollution and post-release mortalities from recreational fisheries. New opportunities include research on migratory triggers and habitat use, survey methods in large waterbodies, protection for eel passing hydropower facilities, and coordinating eel management and data collection in the Mediterranean.

Notes from WGRECORDS: The main issue that arose in discussion was in relation to the progress in the eel recovery plan under the EU Regulation. There was concern raised over the apparent lack of international co-ordination and ambition to achieve a successful recovery of the stock.

Linked to this, a need was identified for ICES to provide more pertinent advice on the progress of the implementation of the eel management plans and the status of the stock related to the reported stock indicators. This issue would be brought forward to the ADGEEL and WGCHAIRS in 2017 for discussion.

4.2   WGBAST – Working Group on Baltic Salmon and Trout Working Group

Baltic Salmon and Trout Assessment Working Group (WGBAST), chaired by Tapani Pakarinen, Finland, met in Klaipeda, Lithuania, 30 March – 6 April 2016. 21 persons from all Baltic Sea countries attended the meeting. The group did not run an analytical assess-

ment this year to assess the status of salmon in Gulf of Bothnia and Main Basin (Subdivisions 22–31) and Gulf of Finland (Subdivision 32) and sea trout in Subdivision 22–32. Consequently the group did not propose management advice for salmon fisheries in 2017. The development in stock status was, however, evaluated from updated fisheries and river monitoring data. The special EU request on the Gulf of Finland salmon management was responded to in Section 1.4 of the WGBAST report.

Section 2 of the WGBAST report covers catches and other data on salmon in the sea and also summarizes information affecting the fisheries and the management of salmon. Section 3 reviews data from salmon rivers and also stocking statistics. Status of salmon stocks in the Baltic Sea is evaluated in Section 4. The same section also deals with sampling protocols and data needs. Section 5 presents the status of sea trout stocks.

- Total salmon catch in 2015 was the lowest in the time-series since 1970 being, however, about the same level as the previous two years. Also efforts in various commercial fisheries decreased to their lowest recorded level. The share of recreational catches taken in the sea and rivers continues to increase.

- The natural smolt production of salmon populations has gradually increased in the last few years in the Gulf of Bothnia and in 2015 also in other areas. The increase is predicted to continue in 2016–2017, mainly as a result of the good spawning runs in 2012–2015. The current total production in all Baltic Sea rivers is around 3 million wild smolts, which corresponds to about 65% of the overall natural potential smolt production capacity for salmon stocks. About 4.2 million reared salmon smolts were released into the Baltic Sea in 2015.

- The smolt runs in 2014/2015 in most AU 1–4 rivers have not reached 75% of PSPC with high certainty. At current fishing pressure and natural mortalities, however, the last year's assessment predicts a remarkable increase in smolt runs for most of the stocks and corresponding probabilities to reach 75% of PSPC in the next few years. In AU 5–6 notable increases in smolt production occurred in 2015 and overall smolt production in relation to PSPC was near 50%. Based on parr density data, the smolt production is expected to increase further in 2016. Wild salmon stocks in Gulf of Finland also show signs of recovery. Smolt production in relation to PSPC in the three wild Estonian rivers in 2015 and 2016 was around or above 75%.

- M74-mortality is predicted to increase in spring 2016, but it is not possible to fully quantify how much M74-mortality will increase or if this increase will persist beyond 2016.

- The exploitation rate in the sea fisheries has been reduced to such a low level that most of the stocks are predicted to recover. Weak stocks need longer term stock-specific rebuilding measures including fisheries restrictions in estuaries and rivers, habitat restoration and removal of potential migration obstacles.

- Sea trout populations are in a poor state in most of the Baltic Sea area. In the Gulf of Bothnia there are some signs of improvement, but stocks are still considered to be threatened and particularly vulnerable. The stock status is good only in western Baltic Sea and in southern part of the Gulf of Finland.

In general, exploitation rates in most of the fisheries that catch sea trout in the Baltic Sea area should be reduced. This includes also fisheries for other species where sea trout is

caught as bycatch. In the areas where stock status is good the existing fishing restrictions should be maintained in order to retain the present status.

Notes from WGRECORDS: An upcoming benchmark for Baltic Salmon in autumn 2016/winter 2017 was noted (WKBaltSalmon). During this benchmark, which is divided into two separate workshops, both fisheries and biological data will be evaluated (workshop 1), and parts of the assessment model will be evaluated and updated (workshop 2).

Also discussed were some modelling difficulties using WINBUGS. The assessment model will likely be transferred to an alternative software environment in the near future. It was also mentioned that WGNAS had migrated their assessment models into "r".

4.3 WGNAS – Working Group on North Atlantic Salmon

Working Group on North Atlantic Salmon (WGNAS), held at ICES HQ, Copenhagen, Denmark, 30 March – 8 April 2016, and chaired by Jonathan White (Ireland).

Number of meeting participants: 23 representing ten countries from North America (NAC) and the Northeast Atlantic (NEAC): Canada, USA, Iceland, Norway, Finland, Ireland, UK (England & Wales), UK (Scotland), UK (Northern Ireland), Russia and France. Information was also provided by correspondence or by WebEx link from Greenland, Sweden, Faroes, Denmark and Spain for use by the Working Group.

WGNAS met to consider questions posed to ICES by the North Atlantic Salmon Conservation Organisation (NASCO) and also generic questions for regional and species Working Groups posed by ICES.

The terms of reference were addressed by reviewing working documents prepared prior to the meeting as well as development of analyses, documents and text during the meeting.

The report is presented in five sections, structured to the terms of reference. Sections include:

1) Introduction;
2) Catches, farming and significant developments, threats and opportunities;
3) The status of stocks in the Northeast Atlantic Commission area;
4) The status of stocks in the North American commission area; and
5) The status of stocks in the Atlantic salmon in the Greenland commission area.

The need to develop catch advice in 2016 was dependent on the outcome of applying two indicator frameworks prior to the meeting.

- The Framework of Indicators (FWI) for West Greenland was updated during the Working Group in 2015, with the advice that there were no mixed-stock fishery options: 2015 to 2017 in either NAC or WGC that would be consistent with a 75% chance or greater of simultaneously meeting the seven (for West Greenland) and six (for NAC) management objectives for 2SW salmon. The West Greenland FWI was applied in January 2015. It did not indicate the need to update catch options, hence no new management advice for this fishery was requested by NASCO for 2016.

- The Faroes FWI for multi-annual catch options for NEAC stocks was also up-dated in 2015 and applied in January 2016. This did indicate a need to update the assessment of catch options and new management advice. These were re-quested by NASCO for 2016 to 2018. An updated Framework of Indicators for the Faroes fishery was also requested, to identify significant changes over the years 2017 to 2018 in the provided multi-annual management advice.

- In summary of the findings of the Working group on North Atlantic Salmon:

- In the North Atlantic, exploitation rates on Atlantic salmon continue to be among the lowest in the time-series.

- Nominal catch in 2015 was 1285 t. This is up on the previous two years (1134 t in 2014 and 1270 t in 2013) though the third lowest in the time-series.

- The Working Group reported on a range of new findings regarding salmon as-sessment and management, including tracking of Icelandic salmon, changes in the trophic structure in the Northwest Atlantic, evidence of disease and para-sites, development of national assessment methods and review of stocking measures, opportunities for sampling salmon at sea and a review of achieve-ment of river level conservation limits.

- Exploitation rates on NEAC stocks continues to be among the lowest recorded, while the practice of catch-and-release in rod fisheries continues to increase.

- On average, 1SW fish comprise a higher percentage of the catch in Iceland and Russia than in the other Northern NEAC countries while the percentage of 1SW salmon in the Southern NEAC area has remained reasonably consistent. Pooling data from all countries showed an overall decline in the proportion of 1SW fish in the catch over the period 2001–2015.

- Northern NEAC stock complexes, prior to the commencement of distant-water fisheries in the latest available Pre-fishery Abundance (PFA) year (2015) were considered to be at full reproductive capacity. The southern NEAC maturing 1SW stock complex however, was considered to be at risk of suffering reduced reproductive capacity and the non-maturing 1SW stock complex to be suffer-ing reduced reproductive capacity. The country level PFA of one maturing 1SW southern NEAC stock was considered at risk of suffering reduced repro-ductive capacity and three to be suffering reduced reproductive capacity while two non-maturing 1SW stocks were suffering reduced reproductive capacity. Of the country level northern NEAC stocks, one was considered at risk of suf-fering reduced reproductive capacity.

- Sources of uncertainties and possible biases in the assessment of catch options for the Faroes fishery were investigated in a sensitivity analysis. Ten potential sources of uncertainty were investigated. Results indicated that Faroese catch advice would not be affected by any of these except potentially the stock com-position, derived from samples collected between 1993 and 1995. Historic tag-ging studies and genetic stock identification have shown that salmon from the full range of NEAC countries have been exploited in the fishery in the past, and this may be expected to be the case in future. Obtaining new data on stock composition could be achieved through further genetic analysis of scale sam-ples taken from salmon caught in the Faroes fishery area. More up-to-date es-timates than those currently used could be obtained by conducting a research

fishery, however, to provide reliable data this would need to cover the extent of any expected fishery in both space and time, and data would need collecting over a number of years. It would not be worth conducting such surveys to improve the precision of parameter values as simulations indicated that this has negligible effects on assessment results. Recommended initial steps are made in the report to improve current parameters.

- Forecasts of the PFA for NEAC countries were made, applied in assessing Faroese catch options and in compiled a new framework of indicators. Southern NEAC stock complex show an initial increase into 2015 before declining from 2016 to 2019, with the median dropping below the spawner escapement reserve (SER) for the first time in 2017. The non-maturing PFA stock component fell below the SER for the first time in 2013, is forecast to rise slightly into 2015 before declining below SER from 2016 to 2019. Northern NEAC stock PFA for both maturing and non-maturing fish are forecast to have a high probability of being above the SER.

- Catch options for the 2016/2017–2018/2019 fishing seasons were developed with an assessment of risks relative to the objective of exceeding stock conservation limits. A risk framework was applied to the four NEAC management units (maturing and non-maturing 1SW recruits for northern and southern NEAC) and for the two age groups in ten NEAC countries. This estimates the probability that PFAs will meet or exceed their respective SERs at different catch levels. Catch option indicated that the northern NEAC maturing and non-maturing 1SW stock complexes have a high probability (≥95%) of achieving their SERs for TACs at Faroes of ≤ 60 t in the 2016/2017 season and ≤40 t in the 2017/2018 season. However, the southern NEAC stock complexes both have less than 95% probability of achieving their SERs with any TAC option in any of the forecast seasons. Therefore, there are no catch options that ensure a greater than 95% probability of each stock complex achieving its SER.

- The probabilities the maturing 1SW national management units achieving their SERs in 2016/2017 vary between 20% and 99% for the different countries with no TAC at Faroes, while non-maturing 1SW national management units achieving their SERs in 2016/2017 vary between 16% (Ireland) and 100% (Norway) with no TAC allocated for the Faroes fishery.

- The Faroese Indicator Framework (FWI) previously developed by the Working Group to check on the status of NEAC stocks in the interim years of a multi-annual catch advice cycle was updated and is available for use in any new multiyear agreements. An alternative FWI was also developed and is recommended, owing to a potential for the current structure to be triggered by a stock complex already known to be above its SER.

- Advice provided in 2015 indicated there were no mixed-stock fishery catch options on 1SW non-maturing salmon for the 2015 to 2017 PFA years. The NASCO Framework of Indicators for the West Greenland Commission did not indicate the need for a revised analysis and therefore no new management advice for 2016 is provided. This year's assessment of the contributing stock complexes confirms that advice.

- The majority of harvest fisheries on NAC stocks were directed toward small salmon, while mandatory catch and release of small salmon was implemented in the 2015 recreational fishery for the Gulf region and mandatory release of large salmon continued.

- The total estimate of small salmon returns to North America in 2015 was the highest on record (641 110), representing a 27% increase on 2014 (504 350). Small salmon returns increased in 2015 from the previous year in five of the six geographical regions, with returns to Labrador and Newfoundland together represent 87% of the 2015 total small salmon returns.

- The total estimate of large salmon returns to North America in 2015 (200 200) was 52% higher than for 2014, with returns increased from the previous year in five of the six regions. Returns to Labrador and Newfoundland together represent 64% of the total large salmon returns.

- Total estimate of 2SW salmon returns to North America in 2015 (116 000) was 50% higher than the 2014 estimate. 2SW salmon returns increased from the previous year in five of six regions. In 2015 2SW returns were the highest on record for Labrador (57 880) and the tenth highest for Newfoundland (5170), whereas they were the lowest on record for Scotia-Fundy and to the USA (761), the sixth lowest on record. 2SW salmon returns from Labrador, Québec and Gulf regions combined represent 94% of 2SW salmon returns to North America.

- Spatially, there is a divergence of salmon returns to NAC; returns in the more northern regions were generally at greater abundance in 2015 than in previous years. However, returns to more southerly regions were generally among the lowest in their time-series. This spatial trend of increasing abundance in northern regions against decreasing abundance in southern regions generally applies across the time-series. Regional return estimates in 2015 are reflected in the overall 2015 NAC return estimates, with Labrador and Newfoundland collectively comprise 87% of small salmon returns and 64% of the large salmon and Labrador, Québec, and Gulf collectively comprising 94% of the 2SW salmon returns.

- The estimated PFA of 1SW non-maturing salmon ranked 25th (descending) of the 44-year time-series and estimated PFA of 1SW maturing salmon ranked 10th (45-year time-series). The continued low abundance of salmon stocks across North America, despite significant fishery reductions, and generally sustained smolt production strengthens the conclusions that factors acting on survival in the first and second years at sea are constraining abundance of Atlantic salmon.

- A sampling programme for Labrador Aboriginal fisheries continued in 2015 with a total of 880 samples (5.8% of harvest) collected. Based on scale samples 77% were 1SW, 19% 2SW, one sample was a 3SW salmon (<1%), and 4% had previously spawned. The majority were river ages 3 to 5. There were no river age 1 and few river age 2 (0.5%) salmon, suggesting, as in previous years (2006 to 2014), that very few salmon from the most southern stocks of North America were exploited in these fisheries. Genetic analyses of tissue samples are planned and will be reported accordingly to ICES when completed.

- In 2015 109 tissue and 106 scale samples were obtained from the Saint Pierre & Miquelon fishery. They were predominantly river age 2 (32%) and 3 (52%) with the majority 1SW (73%). Genetic analyses of tissue samples are planned and will be reported accordingly to ICES.

- In Greenland a total catch of 56.8 t of salmon was reported in 2015 compared to 57.9 t in 2014. A harvest of 1 t was reported from East Greenland (1.6% of reported catch; this is not included in assessments owing to a lack of information on stock composition). From West Greenland 33.8 t was reported as commercial, 19.2 t for private consumption and 3.8 t as factory landings.

- Five out of the seven stock complexes exploited at West Greenland are below CLs.

- Greenland Authorities issued 310 licences and received 938 reports from 189 fishers in 2015 (669 reports from 114 fishers out of 321 licences in 2014).

- A phone survey conducted in 2015 estimated 5001 kg of non-reported harvest. A similar survey in 2014 identified 12.2 t. These catch figures were added to reported landings for use in future stock assessments. The Working Group acknowledges the valuable information gained on catch in this fishery through the post-season telephone surveys.

- Estimates of exploitation rates of Atlantic stock complexes at West Greenland were made: NAC (9.4%) was lower than in 2013 although higher than the proceeding five year mean, and the second highest since 2001; southern NEAC (2.0%) increased on the previous year, although remains among the lowest in the time-series, while changes in southern NEAC exploitation rates compared to previous estimates were noted.

- The international sampling programme for the fishery at West Greenland agreed by the parties at NASCO continued in 2015 with a total of 1964 salmon observed by sampling teams. Of these, 1708 were sampled for biological characteristics, 163 checked for an adipose clip, and 93 documented but not sampled or examined further. Approximately 1708 fork lengths and weights, 1704 scale samples for age determination, and 1674 useable tissue samples for DNA analysis and continent of origin assignment were collected.

- The Working group compared contemporary indices of abundance of salmon in the West Greenland fishery to historical estimates and found recent cpue values to be low compared to historic estimates, and in support of previous conclusions of ICES (2015) that stock abundance at West Greenland is low. Anecdotal reports of high abundances may be the result of localized concentrations, localized catch success, or shifting baselines of perception. There is scope to explore alternative fishery-independent methods to estimate stock abundance such as: hydroacoustic surveys, standardised gillnet surveys or test fishing, or open trawl surveys.

- Possible effects of modifying the timing of the West Greenland fishery on harvest and exploitation of contributing stocks were found through simulations. Results indicated that based on characteristics of the fish in the fishery, estimated changes in weights over the period and natural mortality, there would be some small gains in escapement (2.5% for NAC). These could be realized by delaying the opening of the fishing season to mid-September, and the num-

ber of fish killed may be reduced by almost 15% from the base scenario, result-
ing in a lower exploitation rate on the stock overall, and could favour protec-
tion of weaker stocks assuming equal availability to the fishery.

- Investigations and recent literature gives no clear evidence that temporal or
spatial changes in fishery patterns at Greenland would provide increased pro-
tection for weaker stocks. It is noted that samples sizes may not be optimal,
but the best available information suggests that the contributing North Ameri-
can and European stocks sufficiently mix along the coast of West Greenland
and across the fishing season.

Notes from WGRECORDS: It was noted in discussion that NASCO is the main client for ICES
salmon advice. ICES advice on salmon is provided every three years and a framework of
indicators is used on an annual basis.

4.4 WGERAAS – Study Group on Effectiveness of Recovery Actions for Atlantic Salmon

The Working Group on Effectiveness of Recovery Actions for Atlantic Salmon (WGER-
AAS) was established in 2012 in response to a question to ICES Working Group on North
Atlantic Salmon (WGNAS) by the North Atlantic Salmon Conservation Organisation
(NASCO). The NASCO question resulted in a new ToR for WGNAS: "provide a review
of examples of successes and failures in wild salmon restoration and rehabilitation and
develop a classification of activities which could be recommended under various condi-
tions or threats to the persistence of populations". WGERAAS was established to answer
this WGNAS ToR.

After the first three meetings of the WGERAAS in 2013–2015 (Belfast, Northern Ireland,
Swansea, Wales, and Copenhagen, Denmark) WGERAAS met again at ICES Headquar-
ters in Copenhagen, Denmark, in November 2015.

At the 2013 meetings the Working Group decided that the development of a 'classifica-
tion system' for rebuilding and recovery actions for Atlantic salmon (ToR a) would be
best achieved by the development of a river-specific database; 'Database on Effectiveness
of Recovery Actions for Atlantic Salmon' (DBERAAS). This database lists all salmon riv-
ers in the North Atlantic and contains information on conservation status, population
stressors, and undertaken recovery actions. An analysis of the completed database, which
fully completed would comprise of 2690 rivers, allows for a North Atlantic wide assess-
ment of conservation status and an overview and detailed analysis of population stress-
ors, recovery and rebuilding actions, and the effects of recovery and rebuilding actions
across varying spatial scales.

To further highlight the results from the database detailed case studies are compiled and
presented on a number of rivers, providing 'on-the-ground' examples of the effects of
stressors and the results of recovery and rebuilding actions.

At the 2015 WGERAAS meeting information on 568 individual rivers was available in the
DBERAAS. The information in this database was analysed and summarised for the final
report to give a range-wide overview of conservation status, programme goals, popula-
tion stressors and the effects of recovery actions (if taken). An analysis of the case studies,
supported by the DBERAAS analysis, provided information on which recovery and res-

toration actions are most likely to be successful, and under which circumstances. On the basis of this information recommendations on how to increase the rate of success of recovery and restoration action for Atlantic salmon will be provided.

Preliminary results suggest that successful recovery/restoration projects were characterised by:

- Limited number of stressors acting on population
- Actions taken successfully addressed all stressors acting on the population
- The project conducted in an area of high average levels of marine survival
- Good project evaluation (pre-, mid-, post project)

WGERAAS presented preliminary findings to the ICES Working Group Atlantic Salmon (WGNAS) in April 2016, and will present final report in the spring of 2017.

Notes from WGRECORDS: The near completion of WGERAAS was noted and the need for a caretaker for the DBERAAS database after the WG is dissolved was highlighted. The database contains information on 568 rivers but only 14 case studies. The lack of post-evaluation of recovery actions was remarkable.

It was also recommended that if any continuation of the WGERAAS work takes place, stronger links should be established with the EU Habitats Directive.

4.5   WGDAM – Working Group on Data Limited Diadromous Fish

The Working Group on Data Limited Diadromous Stocks WGDAM is chaired by Karen Wilson (US) and Lari Veneranta (Finland) and started work in autumn 2015. The main task of WGDAM is to update the status & distribution knowledge of poorly understood diadromous fish species for ICES. Diadromous fish are species that have separate feeding and reproduction areas in saline and fresh water and migrate between them.

In 2005 the ICES Diadromous Fish Committee (SGSDFS) published a report on diadromous fish species (ICES CM 2005/I:02 Ref. ACFM, ACE, G) to report on the status and distribution of recognized poorly understood species. Since the 2005 report, there have been increasing legal drivers to protect and restore these species mainly for biodiversity reasons. This has further highlighted knowledge gaps in the biology of these species, but has also been restrained by social barriers in explaining the biological function and importance of these species in the wider ecosystem. Meanwhile, pressure from development in freshwater, transitional and marine zones continues to threaten the life cycle of these species. More scientific information is required for the appropriate management and conservation of these data poor diadromous species.

To update the work of SGSDFS, WGDAM started work with three online meetings and by correspondence. The group has now 46 participants from 12 countries and work has been organized under subgroups for each species. The first report updating the previous work of SGSDFS (Study Group on the Status of Diadromous Fish Species) in 2005 has been prepared during 2016 by correspondence and will be finalized in September. The report will indicate specific cases where changes to the status of diadromous species are occurring and which are directly related to human impact and ecosystem changes, and reviews the current status of selected species by existing national and international criteria. All data poor diadromous species are not covered in this report, and it should be

used as initial guidance for future work to cover possible data and management gaps. This report focuses mainly on species in the European area. In 2017 the group will extend its work to North American species (USA and Canada).

The WGDAM group has submitted a theme session proposal for ICES ASC meeting in 2017. The session raises the need for more information on the status of current threats and restoration possibilities for data poor species to support viable fisheries.

Notes from WGRECORDS: Progress was noted and it was recommended that the WG should not get side tracked by species that are not "true diadromous species", such as coarse fish in the Baltic.

A discussion was held on a Theme Session proposal from WGDAM, and this was converted and submitted as a Resolution for the 2017 ASC.

4.6 WKBECEEL – Joint Workshop of the Working Group on Eel and the Working Group on Biological Effects of Contaminants

WGBECEEL met in Os, Norway on 25–27 January 2016 during its first workshop under the subject "Are contaminants in eels contributing to their decline?", chaired by Caroline Durif (Norway) and Bjørn Einar Grøsvik (Norway). There were 19 participants representing 10 countries.

The European eel population has been declining since the 1980's. The Working Group on Eel (WGEEL) has been documenting the decline for at least three decades. The causes for the collapse are multiple: overfishing, habitat reduction, pollution, parasites and diseases, and climate change. The role of contaminants is poorly documented because the final migration and reproductive phase of the eel's life cycle remain unknown. It was therefore recommended to use knowledge from other fish species to evaluate whether it could apply to eels.

The objective of WKBECEEL was to describe: 1) the trends in contaminants in eel, 2) the potential impact of contaminants on lipid metabolism and migration in eel and other species, 3) the impact of contaminants on reproduction in eel and other species, 4) review the impact of contaminants on the genetics of the European eel, and 5) suggest methods to quantify eel quality with regards to contaminants and what could be learned from other species.

Temporal trends of contaminants in eel are still very high, sometimes rendering eels unfit for human consumption. Contaminants clearly remain a health threat for eels now and will remain so for many years because of their long life-cycle and the persistence of legacy contaminants in the environment. Analyses of historical samples (pre-1980s) would help in understanding the dynamics of these contaminants and give us a better grasp on the potential effects of emerging contaminants.

Eels in some areas accumulate high concentrations of lipophilic contaminants, all of which may affect their health and fitness. The concentration is likely to increase at the end of their life cycle, as they fast during their transatlantic migration. Thus, contaminants, as they are released into the blood can cause damage to reproductive organs, affect embryogenesis and larval fitness and survival.

Clear dose-effect relationships for specific contaminants are missing. In other species, contaminants reduce fecundity, lower hatching success and reduce egg quality, induce larval malformation and/or disrupts the endocrine system. Effects on eels are limited to a model which predicts that, depending on eel sensitivity, maternally transferred dioxin-like contaminants (at realistic levels) could cause up to 50% larval mortality.

The limited evidence in other species indicates that there is cause for concern when it comes to the possible effects of contaminants on eel navigation. However, direct research (such as experiments in swim tunnels) is lacking on the effect of contaminants on migration.

Synergistic effects between contaminants and disease agents are very likely. The impact of contaminants at the genomic and transcriptomic level is promising for the development of tools to evaluate biological effects. Ways to incorporate the effects of contaminants into quantitative assessments were described. Two eel research proposals are described in the last chapters, a) to standardize fat level measurements in eels and b) to quantify the effect of contaminants on the reproductive success.

Notes from WGRECORDS: The completion of WKBECEEL and its report was noted.

4.7   WKTRUTTA2 – Workshop on Sea Trout

The second Workshop on Sea Trout (WKTRUTTA2) met at the at ICES HQ, Copenhagen, Denmark, 2–5 February 2016 under that chairmanship of Ted Potter, UK, and Johan Höjesjö, Sweden. The meeting was attended by 22 participants from seven countries.

The principal aims of the workshop were to review different approaches for modelling sea trout (anadromous *Salmo trutta*) populations and assessing the status of sea trout stocks. The group was also asked to provide a review of currently used monitoring methods, an initiation of the work to develop Biological Reference Points (BRPs) or alternative methods to assess the status of sea trout populations, and recommendations for how this work could be taken forward.

The Workshop considered the management requirements for modelling sea trout populations and the application of BRPs. These fell into two groups, the first relating to assessing stock abundance and diversity against reference levels and the second to investigating the impacts of natural and anthropogenic factors, including fisheries, on stocks.

The countries represented at the Workshop provided details of their current monitoring programmes for sea trout. Sea trout frequently coexist with salmon and are caught in the same fisheries in coastal waters, estuaries and rivers, but they have often taken second place in management, and in some countries little attention has been paid to the monitoring and assessment of sea trout stocks and fisheries. As a result, the quality of catch and fishing effort statistics is very variable. Juvenile monitoring is conducted in all countries, in many cases related to the EU Water Framework Directive, although sampling programmes are not always well structured, systematic or consistent over time.

Some countries have developed extensive networks of counters, usually targeted at monitoring salmon, and in some cases these also provide good data on runs of sea trout. There are very few sea trout stocks that have been monitored in detail over extensive

periods by means of upstream and downstream traps. The aims of these monitoring programme and the lengths of the time series vary considerably, but they are generally the best data sets available on sea trout populations. The Workshop therefore compiled a summary spreadsheet of monitored/index stocks.

The Workshop also began work to assemble a table of sea trout rivers to support an eventual map. In the absence of widespread data, an expert opinion approach was suggested that graded rivers on a five point scale, informed where possible by data on sea trout and salmon rod catches and / or samples of adult taken by trapping or electrofishing.

The Workshop considered the question of anadromy versus residency in trout and whether models of sea trout populations need to take account of the contribution of resident fish. Considering that up to half of the variability in migratory life-history tactic may be related to environmental conditions, it is difficult to rule out the possibility that the contribution of resident fish to recruitment could change through time. In general, it was therefore concluded that models for sea-trout should ideally attempt to include the resident population where facultative anadromy occurs. Nevertheless, this may be difficult due to lack of data, and the fact that resident fish make only a small contribution to egg deposition in some rivers suggests that for these stocks it is probably reasonable to develop population models of sea trout on their own.

The Workshop considered a number of approaches for modelling sea trout populations and developing BRPs. SR relationships were examined for stocks that have been monitored in detail for extended periods, but there are relatively few such systems and it is not clear that they provide a sufficient basis for transferring BRPs to other systems because of the great variability in trout life history strategies. SR relationships have also been developed based on catch records.

The Workshop concluded that the assessment methods that currently showed greatest promise for widespread application were the Trout Habitat Score and the catch based pseudo-stock-recruitment relationships and the group recommended that a Working Group should be established to take forward work on these topics.

Notes from WGRECORDS: The completion of WKTRUTTA2 and its report was noted.

The Group considered a proposal for a Working Group to complete the task of evaluating and designing assessment methods and biological reference points for sea trout, and this was proposed and accepted as a Resolution under SCICOM.

4.8   WKSTOCKEEL – Workshop on Stocking Eel

The ICES Workshop on Eel Stocking (WKSTOCKEEL), chaired by: Derek Evans, UK, met in Toomebridge, N. Ireland, 20–24 June 2016. This workshop was convened to update knowledge on the net benefit of stocking (the practice of adding eels to a waterbody (*recipient*) from another source (*donor*)), to the recovery of the eel stock, and to make proposals for research to fill any crucial knowledge gaps that prevent a definitive advice on stocking as a stock conservation measure. The definition of net benefit of stocking was taken as "where the stocking results in a higher silver eel escapement biomass than would have occurred if the glass eel seed had not been removed from its natural (donor) habitat in the first place". Nineteen EU experts participated in the meeting, representing 6 countries. ICES has repeatedly reviewed the issues surrounding capture, transfer and

stocking of European eel, almost as a standing item on its annual agenda. The most re-cent (2015) advice reiterates many previous conclusions. It includes evidence that trans-located and stocked eel can contribute to yellow and silver eel production in recipient waters, (but that evidence of contribution to actual spawning is limited by the lack of knowledge of the spawning of any eel) and that Internationally coordinated research is required to determine the net benefit of stocking on the overall population, (including carrying capacity estimates of glass eel donor estuaries as well as detailed mortality esti-mates at each step of the stocking process).

The use of stocking is listed in the EU Eel Regulation 1100/2007 as one of a range of man-agement measures that could feature in an Eel Management Plan, and as such be eligible for grant support from the European Fisheries Fund. By 2013 stocking of glass eel was undertaken in 16 Member States. Whilst stocking is a measure featuring in many EMPs, only six achieved their EMP stocking target.

The conclusions from WKSTOCKEEL echo many of those from the most recent reviews and the latest advice and recommendations from ICES (2015) given that many of their concerns remain unaddressed. Studies were found to lack controls and/or a simultaneous assessment of the life history of those glass eel left *in situ*. This in effect means that, whilst a local benefit may be apparent, an assessment of net benefit to the wider eel stock is unquantifiable. For the (lifetime) natural mortality, there is little information available, and no reporting obligations. The contribution of stocking derived silver eel to the spawning stock is still not quantifiable and is limited by the lack of knowledge on the spawning of *any* eel.

As a consequence of the above conclusions, the knowledge base for the assessment of the net-benefit of stocking is extremely weak. Until such research needs to address the knowledge gaps have been undertaken, there is no basis for the evaluation of individual stocking cases. Such research needs identified included carrying capacity estimates of glass eel donor systems, lifetime mortality estimates, mortality estimates within commer-cial stocked eel trade channels and the observation and origin assessment of silver eel spawning in their natural environment.

Notes from WGRECORDS: The completion of WKSTOCKEEL and its report was noted.

5 New Expert Groups

WGRECORDS discussed the proposed Terms of References and meeting arrangements for existing and new EGs. The following proposal for a new EG was sent forward for formal resolution by SSGEPD and SCICOM.

5.1 Proposed for 2017

Compared with Atlantic salmon, relatively few sea trout stocks have been studied for sufficient time to allow the development of population models. Following the very suc-cessful WKTRUTTA2, it was decided that a more prolonged period of work was required to achieve the aims of: setting stock assessment models and developing Biological Refer-ence Points (BRPs) or alternative methods to assess the status of sea trout populations for management purposes.

WGRECORDS therefore considered the following draft resolution to establish a three year working group on sea trout: The **Working Group with the Aim to Develop Assessment Models and Establish Biological Reference Points for Sea Trout (Anadromous *Salmo trutta*) Populations (WGTRUTTA)**, chaired by Johan Höjesjö, Sweden, and Alan Walker, UK (the full proposal is included in Annex 3).

5.2   Eel

Three resolutions were drafted during the WGEEL meeting in September but these were not sufficiently completed for consideration during the WGRECORDS meeting. Subsequently, a Resolution was submitted for a workshop on eel data requirements: A **Workshop on Designing an Eel Data Call** (WKEELDATA), chaired by Caroline Durif (Norway), will meet in Rennes, France, 28 February – 2 March 2017 (see Annex 3).

A further two workshops or working groups are in development on proposals for auditing the quality of the data and the methods used in local assessments. These are to provide confidence in the stock indicator data being reported under the EU Regulation in order for it to be incorporated into the advisory process on eel. Completed draft Resolutions were not available to WGRECORDS at the time of completing this report.

5.3   Other relevant expert groups

An ACOM workshop on Potential Impacts of Climate Change on Atlantic Salmon Stock Dynamics (WKCCISAL) will meet on 27–28 March 2017 at ICES HQ in Copenhagen, Denmark. WKCCISAL will address the NASCO request for advice on the potential climate change impacts on Atlantic salmon stock dynamics. The workshop will review predicted climatic changes over the range of wild Atlantic salmon, literature and research on biological and environmental drivers affecting stock dynamics and describe potential impacts on:

- Biological characteristics (growth, condition, maturity, fecundity, time at sea, survival, etc.) that may affect the productivity of stocks;
- Riverine, estuarine and marine habitat and potential consequences for salmon;
- Interactions with other species (parasites, predators, preys and competing species including invasive species);
- Migration routes used by salmon, the timing of migration and implications of such changes;
- Inter-population genetic diversity.

6   Theme Session 2017

The proposal on data poor diadromous species ("From freshwater to marine and back again - population status, life histories and ecology of least known migratory fishes" submitted in 2015 by Conveners: Karen Wilson (USA) and Lari Veneranta (Finland)) was resubmitted for inclusion in the 2017 ASC programme. This was considered in detail by WGRECORDS and recommendations for its inclusion were made to the ICES ASC Committee (the full proposal is included in Annex 5).

7 Proposals for Symposia

7.1 Symposia

There were no specific proposals for symposia.

7.2 International Year of the Salmon

Niall Ó Maoiléidigh updated the Group on the International Year of the Salmon (IYS). The IYS is an international framework for collaborative outreach and research, and is conceived as an intensive burst of internationally coordinated, interdisciplinary, stimulating scientific research focused on salmon and their relation to people. New technologies, new observations, and new analytical methods, some developed exclusively during the IYS, will be focused on knowledge gaps that prevent a clear understanding of the future of salmon in a rapidly changing world.

The IYS focal year will be 2019, with projects and activities starting in 2018 and continuing into 2020. It will organize a Global Salmon Symposium (Autumn 2018) and develop political and public awareness and cooperation legacy. ICES is now on the IYS partner list and is looking into co-sponsoring the Global Salmon Symposium. ICES has been asked to provide assistance with defining research priorities, providing science results and possibly outreach activities and its training programme. Niall Ó Maoiléidigh (SCICOM and WGRECORDS member) had been asked to represent ICES on IYS Steering Committees with Head of Science Support (HOSS) being secretariat contact. So far an IYS outline concept has been proposed, a governance structure has been set up with two sub steering committees for IYS in Pacific and Atlantic. A joint symposium has been proposed for 2018 to showcase current stock status and forecasts for salmon in the Pacific and Atlantic, identify gaps, bring the Pacific and Atlantic scientists together on common issues, inform on what research needs to be carried out and what funds are required through a well-advertised fund raising campaign. Then a research programme will be initiated over a three to four year period with research deliverables and outreach and education products to be made available.

The IYS will have a direct implication for WGRECORDS. WGRECORDS was asked to provide a proposal for an action plan/a list of science research priorities. In this regard note that NPAFC is involved so all Pacific salmon are included as well as anadromous steelhead trout. The second WGRECORDS involvement is that WGRECORDS is sponsoring a broad diadromous theme session at the ICES ASC in North America next year (2017) and there may be scope to include a link to IYS and provide a direct and early input to the IYS.

Since the WGRECORDS meeting in September 2016, Wojciech Wawrzynski (Head of Science Support) and Niall Ó Maoiléidigh (SCICOM Member) are now the ICES representatives to IYS and will be feeding information back to WGRECORDS and other WGS as becomes available.

8 Proposals for Publications

There were no new proposals for publications.

The CRR "Marine Recoveries of Tags from Atlantic Salmon – from 1960's to present" edited by Niall Ó Maoiléidigh (Ireland), Lars Peter Hansen (Norway), Jan Arge Jacobsen (Faroes Islands), Ted Potter (UK), Dave Reddin (Canada) and Jonathan White (Ireland) is now in the final editing stage with ICES PUBCOM and due to be published shortly (CRR No. 282).

EGs should consider this route of CRR (Co-operative Research Reports) for publishing Working Group materials. The CRR come under the Publishing Committee, documents are peer-reviewed, open access, can provide a topical commentary and also be used as guides or handbooks. Publications can be from 30-200 pages but are more typically 80-100 pages. CRRs are catalogued and held in the ICES library.

9   Future coordination of Science on Diadromous Species

9.1   Participation in open sessions during the ASC

The chairs of WGRECORDS participated in the open session "How is your science being used in assessment and advice". The discussion was mainly driven by the following questions: How can we 1) make best use of the expertise available in ICES Expert Groups, 2) ensure that advice is based on best available science, 3) ensure that we can address the advice requests of tomorrow, and 4) improve the links between ICES Expert Groups and the Benchmark processes? Among the addressed questions, several are relevant for expert groups connected to WGRECORDS, especially those reporting to ACOM.

9.2   Participation in EG CHAIRS meeting during the ASC

The Chairs of WGRECORDS attended the EG Chairs meeting during the ASC. Participants were invited to share their experiences and raise issues they consider important to ICES work. Discussions were held in smaller breakout groups with shorter presentations in plenum, and focused mainly on how to improve communication between EGs and their steering groups. The current support to chairs and possible needs for additional support was also in focus during discussions. Meetings including both ACOM and SCICOM chairs and EGs are important to improve communication between the two committees and their EGs, and are of particular importance for WGRECORDS that coordinates activities of both ACOM and SCICOM EGs.

10   Any other business and Close

Two excellent presentations were given by Catarina Mateus (Portugal) and Randolph Velterop (UK) on actions relating to diadromous fish and fish passes in the Rio Mondego in Portugal and the Severn in the UK, respectively.

There was a strong support for maintaining the work of the WGRECORDS.

The meeting was closed at 17.00.

11 Next meetings

The Working Group will continue to hold its annual meeting during the ASC in September and, if possible, an informal sub-meeting in the margins of the NASCO annual meetings in June each year.

Next meeting will take place during the 2017 ASC, 18–21 September 2017, Fort Lauderdale, Florida, US. Exact date of the meeting to be confirmed.

Annex 1: List of participants

Name	Address	Email
Johan Dannewitz	SLU-Aqua, Sweden	johan.dannewitz@slu.se
Russell Poole	Marine Institute, Ireland	russell.poole@marine.ie
Johan Höjesjö	University of Gothen-burg, Sweden	johan.hojesjo@bioenv.gu.se
Niall O'Maoileidigh	Marine Institute, Ireland	niall.omaoileidigh@marine.ie
Catarina Mateus	MARE, FCUL, Portugal	csmateus@fc.ul.pt
Kathy Mills	GMRI, USA	kmills@gmri.org
Randolph Velterop	Natural England, UK	Randolph.Velterop@naturalengland.org.uk
Maria Lifentseva	ICES, Denmark	For planning session

Annex 2: Agenda

Working Group on the Science Requirements to Support Conservation, Restoration and Management of Diadromous Species [WGRECORDS]

Chair: Johan Dannewitz (Sweden), Russell Poole (Ireland)

Agenda: Friday 23rd September 09.00–18.00 (Lambda Meeting room)

Welcome and Introductions

Adoption of the Agenda and Appointment of a Rapporteur

Intersessional Activities, past and future

Review of current Expert Groups/Workshops on diadromous species

- **WGEEL** – EIFAAC/ICES/GFCM Joint Working Group on Eel (Chair: Alan Walker UK)
- **WGBAST** – Working Group on Baltic Salmon and Trout (Chair: Tapani Pakarinen, Finland)
- **WGNAS** – Working Group on North Atlantic Salmon (Chair: Jonathan White, IE)
- **WGERAAS** – Working Group on Effectiveness of Recovery Actions for Atlantic Salmon (Chair: Denis Ensing, UK)
- **WKBECEEL** – Joint Workshop of the Working Group on Eel and the Working Group on Biological Effects of Contaminants (Chairs: Caroline Durif, Norway and Bjorn Grosvik, Norway)
- **WGDAM** – Working Group on Data Poor Diadromous Fish (Chairs: Lari Veneranta, Finland and Karen Wilson US)
- **WKTRUTTA2** - Workshop on Sea Trout 2 (Chairs: Ted Potter, UK and Johan Höjesjö Sweden)
- **WKSTOCKEEL** – Workshop on Eel Stocking (Chair: Derek Evans, UK)

Break for Lunch

Proposals for New (SCICOM?) Expert Groups

- **WKTRUTTA - WGTRUTTA**

Theme Sessions 2016 & 2017

- Proposal carried forward from 2015: (Diadromous Fish - Population status, Life histories, Ecology, Assessment, and Management of Poorly Understood Diadromous Fishes. Conveners Karen Wilson (USA) Lari Veneranta (Finland))

Proposals for Symposia

- **Update on the International Year of the Salmon (Niall?)**

The Way Forward

- General Discussion

Any Other Business

- Request to review a fish passage project in Wadden Sea – Outcome?

Close Meeting

Annex 3: Proposals for new Expert Groups

Working Group with the Aim to Develop Assessment Models and Establish Biological Reference Points for Sea Trout (Anadromous *Salmo trutta*) Populations (WGTRUTTA)

2016/MA2/SSGEPD06 The **Working Group with the Aim to Develop Assessment Models and Establish Biological Reference Points for Sea Trout (Anadromous *Salmo trutta*) Populations (WGTRUTTA)**, chaired by Johan Höjesjö*, Sweden, and Alan Walker*, UK, will work on ToRs and generate deliverables as listed in the Table below.

	MEETING DATES	VENUE	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2017	24–26 April	Gothenburg, Sweden	Interim report by 1 November to SSGEPD	The interim reports in 2017 and 2018 will be delivered late in the year in relation to the meeting dates since they will also report on intersessional work by several sub-groups, compiling databases and developing and fine-tuning population models.
Year 2018	DATE February DATE September	COPENHAGEN, DENMARK Lisbon, Portugal	Interim report by1 November to SSGEPD	
Year 2019	DATE April	UK	Final report by 1 December to SCICOM	

ToR descriptors

	DESCRIPTION ToR	BACKGROUND	SCIENCE PLAN TOPICS ADDRESSED	DURATION	EXPECTED DELIVERABLES
a	Compile information from a selection of suitable rivers across Europe with long-term data on parameters such as juvenile densities, habitat characteristics and, if available, abundances of ascending spawners and out-migrating smolts.	To facilitate the development of population dynamic models, an important first step is to compile available information/data. The outcomes from WKTRUTTA2 in combination with data from research collaborations on sea trout will be an important starting point for this work. The compiled data will provide basic information on population dynamics and life history variation of sea trout in different areas and stream types and will be used as a basis for the development of population models under ToR b. This exercise will also facilitate identification of	4, 25, 31	Year 1	A database on juvenile densities, habitat characteristics and other important information along a south/north and coastal/inland gradient across Europe.

		geographical areas with data deficiencies (e.g. absence of stock-recruitment data) that hampers the development of assessment methods and which should therefore be prioritized in future monitoring and research programmes.			
b	Develop new, and validate and fine tune existing population models for sea trout.	There are different approaches available for modelling fish populations. By using abundance data from different life stages, information on habitat quality and fisheries data etc, the group will develop and evaluate different ways to model sea trout populations. This work will, to a large extent, be based on already existing data, such as stock-recruitment relationships derived from monitoring data on abundance and/or fisheries data (catch and CPUE-data) from a number of rivers across Europe. Models with different levels of complexity (taking into account e.g. habitat variation within rivers and between catchments, occurrence of lakes, migration obstacles and resident trout etc), as well as the representativeness of index rivers for larger areas with sparse information will be evaluated.	4, 9, 15, 25, 27, 31	Year 1-3	Evaluation of approaches / methods for modelling sea trout populations, with respect to assessment needs, availability of data, geographical coverage, complexity etc. Presentation of new models and a summary at the ASC meeting in 2019. In addition a peer-reviewed article on population modelling in Sea Trout will be produced.
c	Establish and evaluate different approaches for estimating Biological Reference Points (BRPs) across regions with different characteristics and conditions for sea trout.	There is a growing need to develop assessment methods for sea trout populations. Establishment of BRPs is a prerequisite to be able to assess status of populations. Different ways of estimating BRPs from population models developed under ToR b, based on e.g. stock-recruitment relationships or estimated pristine abundance levels, will be evaluated. This in turn enables assessment of status in relation to BRPs across	4, 9, 10, 15, 25, 27, 31	Year 2-3	Establishment of Biological Reference Points by using different approaches depending on e.g. data availability and type of population model used.

Europe (on area or individual
stock level).

Summary of the Work Plan

The working group will address key questions relating to the assessment of sea trout stocks in the North Atlantic and Baltic. The overall plan is to establish the working group in 2017 with sub-groups across Europe. Over the 3-year period, there will be 4 meetings in total; Sweden (Gothenburg), Denmark (Copenhagen), Portugal (Lisbon) and UK (place to be decided). Subgroups will work on the ToRs between these meetings with regular contact through email and/or webinars. Most of the work regarding deliverables for the different ToRs will be planned and performed in parallel. The main goal of WGTRUTTA is to take on the work initiated during WKTRUTTA2, i.e. develop and evaluate different methods for modelling sea trout populations, and define BRPs and a protocol that can be used to assess status of sea trout populations in different regions.

Year 1	In year 1, the working group will be established and divide tasks among group members and prioritize among available data sources. The group will start to create a database in a gradient across European rivers to be able to develop new and existing population models. The database will be finalized in November 2017 and one of the outcomes of this work will be a recommendation on suitable index rivers in different areas, and identification of gaps and weaknesses in current monitoring programs. In parallel, the group will start to develop population models based on the available data. The starting point for the work during year 1 will be the output from WKTRUTTA2.
Year 2	In year 2, the group will continue to work on the database and potentially add new data and stream systems. Development of population models will continue. The group will also start to evaluate different approaches for estimating Biological Reference Points (BRPs), based on the population modelling work.
Year 3	During year 3, the focus will be to continue the development and validation of different population models, and the work to establish BRPs in different regions across Europe. At the completion of the year, WGTRUTTA should be able to recommend suitable population models and approaches to estimate BRPs, which could be used to assess status of sea trout populations across Europe.

Supporting information

Priority	The inclusion of sea trout and other diadromous fish in EU policy areas including the CFP and Marine Strategy Framework Directive means that it is important to improve the methods currently available to managers to assess the status of stocks and investigate the effects of management actions. The final report and recommendations will guide both individual countries in making progress on sea trout assessment and management and will steer ICES on the best next steps for sea trout science, assessment and advice.
Resource requirements	The research programmes which provide the main input to this group are already underway, and resources are already committed. The additional resources required to undertake additional activities in the framework of this group are negligible.
Participants	The Group will be attended by some 15-20 members and invited guests.
Secretariat facilities	Requires coordinating activities from ICES secretariat for the 4 meetings.
Financial	No financial implications.

Linkages to ACOM and groups under ACOM	Links to ACOM and WGBAST who provide advice on Baltic sea trout and SSGEPD and WGRECORDS regarding diadromous fish stocks, life histories, threats and sustainable use of the resource.
Linkages to other committees or groups	Relevant to SSGEPI and SSGIEOM. The activities of this group will take forward the scene-setting work of WKTRUTTA which met in 2012 and WKTRUTTA2 that met in 2016.
Linkages to other organizations	FAO

Workshop on Designing Eel Data Call (WKEELDATA)

2016/2/SSGIEOM14   A **Workshop on Designing an Eel Data Call** (WKEELDATA), chaired by Caroline Durif (Norway), will meet in Rennes, France, from 28 February to 2 March 2017 to design a data call to all countries having natural production of European eel. To achieve this aim, the WK will:

a) Review WGEEL data requirements and define data quality standards

b) Modify WGEEL data spreadsheets to make them most efficient for data entry and analysis

c) Plan work to create a future database suitable for WGEEL data, with ICES Datacentre

d) Draft proposal for eel data call working with ICES (ACOM), EIFAAC and GFCM. The data call to be announced with a submission deadline suitable for the 2017 meeting of the WGEEL, and future meetings.

WKEELDATA will report by 31 March 2017 for the attention of WGEEL, WGRECORDS, ACOM, SCICOM, EIFAAC, GFCM.

Supporting information

Priority	This topic is a high priority for ICES and the countries/institutions supporting the work of the WGEEL because the present data collection procedures of WGEEL are complex and require a large resource in staff time before and during the WGEEL meetings. The refinement of data provision will save time and money, and it will facilitate the future benchmarking of the stock assessment process to support the ICES Advice.
Scientific justification	The WGEEL annually collates data on recruitment, catches and landings from commercial and recreational fisheries, restocking, aquaculture production, rates of other human-induced mortalities on eel, biological characteristics of eel, etc. These data are provided by countries attending the WGEEL in a large number of complex spreadsheets. Reporting is far from complete at present, and the reasons for failing to report data are diverse. A refinement and standardisation of the data reporting process is urgently required, and a data call hosted by ICES, EIFAAC and GFCM is considered an effective mechanism to significantly improve the situation.
Resource requirements	The host institution will resource the meeting itself. Attendees will be self-funding.
Participants	National representatives of eel data collection and provision to WGEEL; experts in developing, implementing and maintaining regional databases.

Secretariat facilities	The standard support for arranging the meeting, providing access to sharepoint, and for formatting the report.
Financial	No financial implications.
Linkages to advisory committees	Links to ACOM as eel stocking is a significant management measure of some national eel management plans and is to be taken account of in the international stock assessment of European eel and the associated stock status advice from ICES to the European Commission.
Linkages to other committees or groups	The findings will be of direct benefit to the WGEEL, and wider to WGRECORDS.
Linkages to other organizations	The findings will be of direct interest to DG MARE of the European Commission, in relation to the EU MAP, and to GFCM in relation to planned eel Data Collection Framework Reference.

Annex 4: Resolutions for Expert Groups Associated with WGRECORDS

WGEEL – Joint EIFAAC/ICES/GFCM Working Group on Eels

The **Joint EIFAAC/ICES/GFCM Working Group on Eels** (WGEEL), chaired by Alan Walker, (UK), will meet in Kavala, Greece, 3–10 October 2017 to:

a) Report on developments in the state of the European eel (*Anguilla anguilla*) stock, the fisheries on it and other anthropogenic impacts
b) Produce the first draft of the ICES annual eel advice, and other advisory documents as requested
c) Report on updates to the scientific basis of the advice, including any new or emerging threats or opportunities
d) Address the generic EG ToRs from ICES, and any requests from EIFAAC or GFCM.

WGEEL will report by 17 October 2017 for the attention of ACOM, WGRECORDS, SSGEF and FAO, EIFAAC and GFCM.

Supporting Information

Priority	1. The status of the European eel stock remains outside safe biological limits and continuing and further management actions are required to recover the stock.
	2. The present stock status assessment is based on recruitment time series, which have no predictive power and therefore cannot be used to identify the most effective way to recover to stock nor the time scale over which recovery might be achieved. Therefore, the development and application of further status assessment methods are urgently required.
	3. The EU Regulation (EC 1100/2007) obliges EU Member States to report national stock indicators, to take management measures and to report progress. Non-EU countries have no such legal obligation, but the same aspirations are necessary to provide a whole-stock assessment and management. The Working Group continues to provide EIFAAC, ICES and the GFCM countries with support in implementing and improving such actions.
	4. The EU has requested annually recurring scientific advice on the European eel because the EU "has adopted or may adopt rules for the protection of anadromous and catadromous species (such as eels or salmon), including for the non-marine part of their life cycle", as described in the 2016 MoU between the EU and ICES. Specifically for eel, the advice is sought in support of the Eel Regulation (EC 1100/2007).
Scientific justification	European eel life history is complex and atypical among aquatic species. The stock is genetically panmictic and data indicate random arrival of adults in the spawning area. The continental eel stock is widely distributed and there are strong local and regional differences in population dynamics and local stock structures. Fisheries on all continental life stages take place throughout the distribution area. Local impacts by fisheries vary from

	almost nil to heavy overexploitation. Other forms of anthropogenic mortality (e.g. hydropower, pumping stations) also impact on eel and vary in distribution and local relevance.
	Most but not all EU Member States reported quantitative estimates of the required stock indicators to the EU in 2012, and 2015. The reliability and accuracy of these data have not yet been fully evaluated. Furthermore, the stock indicators of some non-European countries within the natural range of the European eel are lacking.
Resource requirements	Sharepoint
Participants	EIFAAC, ICES and GFCM Working Group Participants, Invited Country Administrations, EU representative, Invited specialists
Secretariat facilities	Support to organize the logistics of the meeting.
Financial	At countries expense
Linkages to advisory committees	ACOM
Linkages to other committees or groups	WGRECORDS, SCICOM, SSGEF
Linkages to other organizations	FAO EIFAAC, GFCM, EU DG-MARE, EU DG-ENV

WGBAST – Baltic Salmon and Trout Assessment Working Group

2016/2/ACOM10 The **Baltic Salmon and Trout Assessment Working Group** (WGBAST), chaired by Stefan Palm*, Sweden, will meet in Gdansk, Poland, 27 March–4 April 2017 to:

a) Address relevant points in the Generic ToRs for Regional and Species Working Groups;

Material and data relevant for the meeting must be available to the group no later than six weeks prior to the meeting.

WGBAST will report by 12 April 2017 for the attention of ACOM.

WGNAS – Working Group on North Atlantic Salmon

2015/2/ACOM21 The **Working Group on North Atlantic Salmon** (WGNAS), chaired by Gerald Chaput, Canada will meet at ICES HQ, 29 March–7 April 2017 to:

a) Address relevant points in the Generic ToRs for Regional and Species Working Groups for each salmon stock complex;

b) Address questions posed by NASCO:

1. With respect to Atlantic salmon in the North Atlantic area:

1.1 provide an overview of salmon catches and landings by country, including unreported catches and catch and release, and production of farmed and

ranched Atlantic salmon in 2016

1.2　report on significant new or emerging threats to, or opportunities for, salmon conservation and management;

1.3　provide a review of examples of successes and failures in wild salmon restoration and rehabilitation and develop a classification of activities which could be recommended under various conditions or threats to the persistence of populations;

1.4　provide a summary of the available diet data for marine life stages of Atlantic salmon and identify key prey species at different life stages (e.g. herring at postsmolt stages, capelin in West Greenland waters and the Barents Sea)

1.5　quantify possible future impacts of climate change on salmon stock dynamics [ToR tbc]

1.6　provide a compilation of tag releases by country in 2016; and

1.7　identify relevant data deficiencies, monitoring needs and research requirements.

2.　With respect to Atlantic salmon in the North-East Atlantic Commission area:

2.1　describe the key events of the 2016 fisheries;

2.2　review and report on the development of age-specific stock conservation limits including updating the time series of the number of river stocks with established CL's by jurisdiction;

2.3　describe the status of the stocks including updating the time series of trends in the number of river stocks meeting CL's by jurisdiction;

2.4　provide information on the size, distribution and timing of the blue whiting fishery in the North East Atlantic area and any official observer information relating to bycatch which may indicate possible impact of this fishery on wild salmon.

3.　With respect to Atlantic salmon in the North American Commission area:

3.1.　describe the key events of the 2016 fisheries (including the fishery at St Pierre and Miquelon)[5];

3.2.　update age-specific stock conservation limits based on new information as available including updating the time series of the number of river stocks with established CL's by jurisdiction

3.3.　describe the status of the stocks including updating the time series of trends in the number of river stocks meeting CL's by jurisdiction

4.　With respect to Atlantic salmon in the West Greenland Commission area:

4.1.　describe the key events of the 2016 fisheries;

4.2.　describe the status of the stocks;

WGNAS will report by 12 April 2016 for the attention of ACOM.

Working Group on Data Poor Diadromous Fish (WGDAM)

2014/MA2/SSGEPD06 A **Working Group on Data Poor Diadromous Fish** (WGDAM), chaired by Karen Wilson, United States, and Lari Veneranta, Finland, will be established and will work on ToRs and generate deliverables as listed in the Table below.

	MEETING DATES	VENUE	REPORTING DETAILS	COMMENTS (CHANGE IN CHAIR, ETC.)
Year 2015	By correspondence		Interim report by 1 May 2016 to WGRECORDS and SSGEPD	
Year 2016	By correspondence		Interim report by DATE to WGRECORDS	
Year 2017	TBC	TBC	Final report by DATE to WGRECORDS, SCICOM	

ToR descriptors

ToR	DESCRIPTION	BACKGROUND	SCIENCE PLAN TOPICS ADDRESSED	DURATION	EXPECTED DELIVERABLES
a	Update the status & distribution of poorly understood diadromous fish species	a) Science Requirements More scientific information required		1 year	Review paper/report Map of change since 2005
b	Identify biological knowledge gaps and their importance for key diadromous species.	a) Science Requirements More scientific information required b) Advisory Requirements Better informed advice required		1 year	Review paper/report Map of change since 2005 with emphasis on most vulnerable/data poor.
c	Recommend species and approaches for systematic monitoring of key diadromous species	a) Science Requirements More scientific information required b) Advisory Requirements Better informed advice required		2 years	Identification of current monioring activities. Recommendations for monitoring and evaluation, including periodicity and species
d	Identify key stressors on diadromous species & recommend restoration strategies	b) Advisory Requirements Better informed advice required c) Requirements from other EGs Impacts from climate and antrophogenic		2 years	Produce a database of common and significant threats by species (or link to and update existing DIADFISH

		sources poorly understood		database), describe current mitigation actions and recommend subsequent actions
e	Develop stock assessment Methodologies for key species of interest for which assessments are currently no available or difficult	b) advisory requirements	3 yrs	Provide guidance on appropriate assessments and example of possible assessments for diadromous fish other than salmon and eel
f	Synthesise an Ecosystem Approach for Diadromous fish consistent with ICES Strategy	c) science and advisory requirements relating to enbvironmental drivers	3 yrs	Produce a Working paper to bring issues relating to diadromous fish under a common umbrella relating to the EAM and IEAs.

Summary of the Work Plan

Year 1	Report of status of Diadromous fish (update from 2005) with exchange of knowledge with North American investigators. Template of ststus of individual species relating to most recent investigations. Update database of information on diadromous fish based on DIADFISH initiative.
Year 2	Provide an overview of monitoring for diadromous fish species and recommendatiosn for monitoring in future years. Produce a template of threats and efective mitigation measures.
Year 3	Progress assessments methods and approaches for diadromous fish other than eel and salmon Progress incorporation of diadromous into the Ecosystem Approach to be sonsistent with ICES Strategy

Supporting information

Priority	In 2005 the ICES Diadromous Fish Committee (SGSDFS) published a report on diadromous fish species (ICES CM 2005/I:02 Ref. ACFM, ACE, G) to report on the status and distribution of these poorly understood species. Since the 2005 report, there have been increasing legal drivers to protect and restore these species mainly for biodiversity reasons. This has further highlighted knowledge gaps in the biology of these species, but has also been restrained by social barriers in explaining the biological function and importance of these species in the wider ecosystem. Meanwhile, pressure from development in freshwater, transitional and marine zones continues to threaten the life cycle of these species. A Workshop on Shads and Lampreys proposed by WGRECORDS met in November 2014 to provide information rrelating to shads and lampreys. The outputs from this workshop will be used by the WGDAM to progress their ToRs.
Resource requirements	The research programmes which provide the main input to this group are already underway, and resources are already committed. The additional resource required to undertake additional activities in the framework of this group is negligible.
Participants	Experts on diadromous fish from North America, Europe (including Scandinavia and Russian Federation).
Secretariat facilities	Support for meetings and report writing. WGRECORDS sharepoint can be used for communications.
Financial	None
Linkages to ACOM and groups under ACOM	Links to ACOM. Although species in question not subject to fisheries per se, there may be some bycatch issues in existing commercial fissheries.
Linkages to other committees or groups	Proposed by WGRECORDS, links to WGAQUA, Workshop on Shads and Lampreys.
Linkages to other organizations	IUCN

Annex 5: Proposals for Theme Session 2017

Proposal for 2017

Title: Diadromous Fish - Population status, Life histories, Ecology, Assessment, and Management of Poorly Understood Diadromous Fishes

Proposer's Name: Karen Wilson
Proposer's Institute (and contact details): Dept. of Environmental Science and Policy, University of Southern Maine, 37 College Ave, Gorham, Maine 04038, USA
Proposer's Email: karen.wilson@maine.edu
Proposer's Telephone: 1-207-780-5395
Name and email of theme session convener 1: Karen Wilson, karen.wilson@maine.edu
Name and email of theme session convener 2: Lari Veneranta, lari.veneranta@luke.fi
Name and email of theme session convener 3:

Description:
Diadromous species use freshwater environment for reproduction and marine as a feeding area or vice versa, or live their entire life cycle in a transition zone between the fresh and saline environments. While some diadromous fish species (e.g. salmonids, eel) are well studied and highly valued, others attract far less attention from policy makers, scientists or stakeholders but are likely to make crucial contributions to complex marine, transitional and freshwater ecosystems. As migratory fish, these species face environmental and human pressures in a variety of habitats that are often regulated and managed by overlapping local, regional and even international agencies with legislation that differs in scale and purpose.

Many of these diadromous species are protected under the Bern Convention, European Habitats Directive, CITES, IUCN and additionally also in national regulations. A number of species are already known to be in great and require special protection. Water quality, migration barriers such as dams, and intense and widespread human alteration of estuaries and rivers are common threats for these species. Across a large scale, climate change can affect migration routes, the extent of estuarine habitat, and the balance between species. However, most of these species are not assessed nationally or internationally (e.g. by ICES) and thus, more information is needed on the current status of diadromous, data poor fish species in the context of international or national classification schemes.

Despite pressures on diadromous fishes, a few well-known species like striped bass have recovered significantly due to management interventions, while others like Atlantic salmon and European eel remain in a perilous state, and still other species have received little to no attention. We raise the need for more information on current threats, mitigation and restoration possibilities for other more poorly understood diadromous species, as well as examples of new possibilities in management and restoration for viable fisheries.

The ICES ASC 2017 meeting in Florida USA presents a unique opportunity to bring together researchers working on similar species but in very different political and geological settings.

We invite researchers working on any species of diadromous fishes in Europe or North American, in freshwater or marine environments, to highlight gaps and opportunities in enhancing conservation and management by contributing papers in the following topic areas:

- Status, distribution, ecology or biology of poorly understood diadromous fish species
- Approaches for systematic monitoring of poorly understood diadromous species, including:
    o Stock assessment methodologies for key species of interest for which assessments are currently not available or difficult
    o Ecosystem approaches for poorly understood diadromous fish, with science and advisory requirements relating to environmental drivers.
    o The integration of data poor diadromous fish into fisheries management - needs and implications
    o Using some species as index species
- Lessons learned that might help management and conservation of functionally similar species
- Impending threats, particularly invasive species or interactions with other species undergoing range expansion
- Physiological drivers controlling the movements of diadromous fish - gaps in knowledge

Suggested theme session format: one or two sessions, depending upon interest, with time for discussion

Expected participation: Members of WGDAM, WGRECORDS, WGNAS, WGBAST

Linkages to ICES Strategic Plan: The theme addresses goals 1 and 2 of the ICES Strategic Plan.

1. Building a foundation of science: Drawing comparisons between diadromous species in similar or different regions enhances knowledge transfer and understanding of these migratory species within their ecosystems; understanding the ecology and dynamics of these species improves our ability to place them within their marine, transitional and freshwater ecosystems; diadromous species provide ICES with the model to relate connectivity between the marine, transitional and freshwater ecosystems.

2. Producing the information and advice decision-makers need: learning lessons from management of some diadromous species and transferring this knowledge to others enhances evidence-based options for their sustainable use and protection.

Linkages to ICES Steering Groups and/or Advisory Committee (if relevant): --
WGDAM (Working Group on Data Poor Diadromous Species) is proposing the session;

WGRECORDS is the umbrella body for diadromous fish species work and is under SGEPD.

Linkages to ICES Strategic Initiatives and/or ICES action: -- SICME, SISAM.