

REPORT OF THE WORKING GROUP ON SCIENCE TO SUPPORT CONSERVATION, RESTORATION AND MANAGEMENT OF DIADROMOUS SPECIES (WGDIAD)

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Contents

Executive summary	1
1 WGDIAD Terms of Reference	2
2 List of Outcomes and Achievements of the WG in this delivery period	3
2.1 Meetings held in 2019	3
2.2 Summary Outcomes of the Meeting	3
3 Reviews of Expert Groups on Diadromous Species	4
3.1 WGEEL - Joint EIFAAC/ICES/GFCM Working Group on Eel	4
3.2 WGBAST - Working Group on Baltic Salmon and Trout	6
3.3 WGNAS - Working Group on North Atlantic Salmon	7
3.4 WKSALMON - Workshop for North Atlantic Salmon At-Sea Mortality	9
3.5 WGTRUTTA - Working Group with the Aim to Develop Assessment Models and Establish Biological Reference Points for Sea Trout (Anadromous <i>Salmo trutta</i>) Populations	10
3.6 WKEELDATA2 - The second Workshop on Designing Eel Data Call	13
3.7 WKBaltSalMP - Workshop on Evaluating the Draft Baltic Salmon Management Plan	13
4 New Expert Groups	14
4.1 Proposed/approved for 2020	14
5 Theme Sessions 2021 & 2022	15
5.1 Symposia	15
5.2 International Year of the Salmon	15
6 Proposals for Publications	16
7 Update from the Intersessional Sub Group Diadromous fish (ISSG Diad) of the Regional Coordination Groups (RCG)	16
8 Future coordination of Science on Diadromous Species	18
8.1 Participation in Fisheries Resources Steering Group (FRSG) meeting during the ASC	18
8.2 The Way Forward	18
8.3 Links with other EGs	19
9 Any other business and Close	19
Annex 1: List of participants	20
Annex 2: Agenda	21

Executive summary

The Working Group on Science to Support Conservation, Restoration and Management of Diadromous Species (WGDIAD) was established to provide a forum for the coordination of work on diadromous species following the disbanding of the Diadromous Fish Committee. The role of the Group is to coordinate work on diadromous species, organise Expert Groups, Theme Sessions and Symposia, and help to deliver the ICES Science Plan. The annual meeting of WGDIAD was held 10 September 2019 during the ICES Annual Science Conference in Gothenburg, Sweden, and chaired by Hugo Maxwell, Ireland, and Dennis Ensing, UK.

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:

- Outcomes and deliverables from ICES EGs on diadromous fish during the last year;
- International Year of the Salmon – progress report;
- A progress report of the work of the Intersessional Sub Group Diadromous fish (ISSG Diad) of the Regional Coordination Groups (RCGs). The subgroup has a coordinating function and identifies data collection needs for diadromous species in relation to the EU data collection regulation. The group met by WebEx in 2019, and was present at RCG, STECF, Liaison, and Decision Meetings. The outcomes of these meetings were presented and discussed at the WGDIAD meeting;
- The ongoing work within ICES to evaluate the stock assessment methods used by individual countries in their national eel management plans, and the importance of co-ordination at the international level;
- Working Group on North Atlantic Salmon (WGNAS) data call;
- Workshop on relevant geographical area on the temporal migration patterns of European eel (WKEELMIGRATION), in response to the EU request for ICES advice on the relevant geographical area and temporal migration patterns of European eel;
- A theme session proposal for ASC 2021/ 2022 on exotic species (and stocks) and their impact on native species and their fisheries;
- Possible future links with diadromous fish ‘working groups’ in within organisation such as the North Pacific Marine Science Organization (PICES) and North Pacific Anadromous Fish Commission (NPAFC);
- Completion of the Workshop on Designing Eel Data Call 2 (WKEELDATA2) in 2019.

1 WGDIAD Terms of Reference

The **Working Group on Science to Support Conservation, Restoration and Management of Diadromous Species** (WGDIAD), chaired by Dennis Ensing, UK, and Hugo Maxwell, Ireland, will work on ToRs and generate deliverables as listed in the Table below.

	Meeting dates	Venue	Reporting details	Comments (change in Chair, etc.)
Year 2018	25 September (during ASC)	Hamburg, Germany	Interim report by 31 December	
Year 2019	DATE September (during ASC)		Interim report by 31 December	Change of Chair: Outgoing: Johan Dannewitz, Sweden Incoming: Hugo Maxwell, Ireland
Year 2020	September (during ASC)		Final report by 31 December	

ToR descriptors

ToR	Description	Background	Science Plan codes	Duration	Expected Deliverables
a	Raise the profile of the group by maintaining international scientific co-operation in the study of diadromous fish species and provide a mechanism through which issues relating to these species and their environment, including also aspects connected to estuarine and fresh water habitats used by these species, can be addressed and coordinated within the ICES science plan.	There is a need to coordinate and draw the various elements of ICES work together to support the management advice provided for multiple species of diadromous fish, particularly in delivering commitments under various regulations, including the EU-Habitats and Water Framework Directives and the EU Eel Regulation.	1.4; 2.1; 3.1	Year 1, 2 and 3	Report of the WG and maintenance of a previously established network of diadromous fish experts.
b	Identify scientific needs and propose activities, including experts groups, theme sessions and symposia, to support the implementation of the Science Plan and the work of SCICOM and ACOM Experts Groups on diadromous species and review their outputs.	ICES is well placed to coordinate scientific activities which generate up to date information on the biology and ecology of diadromous species, threats to their status, including climate change, and advice on measures to be taken to restore habitats and ecosystems, and rebuild depleted populations.	1.7; 5.1; 6.1	Year 1, 2 and 3	Organise theme sessions, symposia or expert groups. Coordinate feedback from these sources for use in publications and CRR documents. Liaise with and support chairs of EGs and WGs to achieve their aims.
c	Assist EPDSG and ICES to integrate important activities with those of other Expert	Issues relating to, for example, rare and data limited species are widely	4.4; 5.2; 5.4	Year 1, 2 and 3	Keep ICES abreast of important issues relating to

Groups reporting to EPDSG, other SGs and/or ACOM.	dispersed across the ICES Science plan. This group provides a focal point for both internal and external communication and reporting of new developments and concerns regarding diadromous fish.	Diadromous fish species and ensure these issues are communicated within the ICES community to relevant EGs and SGs.
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2 List of Outcomes and Achievements of the WG in this delivery period

2.1 Meetings held in 2019

The Working Group on Science to Support Conservation, Restoration and Management of Diadromous Species (WGDIAD, formerly 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 coordinate work on diadromous species, organise Expert Groups, Theme Sessions and Symposia, and help to deliver the ICES Science Plan.

The annual meeting of WGDIAD was held on 10 September during the ICES 2019 Annual Science Conference in Gothenburg, Sweden, and chaired by Hugo Maxwell (Ireland) and Dennis Ensing (UK). There were 10 participants in total (one by phone) from five countries (Annex 1). For working groups and workshops that were not represented at the meeting, presentations were given by the WGDIAD chairs.

2.2 Summary Outcomes of the Meeting

Outcomes from meetings and activities during the last year include:

- Compilation and discussion of work carried out by EGs under the WGDIAD umbrella, and consideration of their progress and future requirements;
- Coordination of a proposal for a theme session at ICES ASC in 2021, focusing on exotic species and their impact on native species and fisheries for native species ;
- Discussions on possible focus areas for a theme session proposal for ICES ASC in 2020;
- An update on the Year of the Salmon;
- An update from the Regional Coordination Group (RCG) Intersessional Sub Group Diadromous Fish (ISSG Diad) meetings held at 2019.
- A discussion on ‘the way forward’ about the future plans for this EG.

3 Reviews of Expert Groups on Diadromous Species

During 2019, WGDIAD has coordinated the activities of four Expert Groups and three Workshops related to diadromous species, including three ACOM EGs, one SCICOM EGs and two ACOM Workshops. Separate summaries are presented below. At the end of some of the summaries, notes from the post-presentation discussions at the WGDIAD meeting have been added for the record.

3.1 WGEEL - Joint EIFAAC/ICES/GFCM Working Group on Eel

The recruitment of European eel from the ocean remained low in 2019. The glass eel recruitment compared to the 1960–1979 was only 1.4% (provisional) in the North Sea index area and 6.0% (provisional) in the Elsewhere Europe index area, based on available data-series. The final figures for 2018 were 1.9% and 8.9% respectively. For the yellow eel data-series no recruitment data was available for 2019 as data collection was still ongoing at the time of writing the report. The 2018 figure was 26.4% of the level during the 1960–1979 reference period.

Landings data were updated according to those reported to the WGEEL, either through responses to the 2019 Data call or in Country Reports, or integrated by the WGEEL using data from its previous reports. As some countries have not reported all their landings, even the raised versions reported here should be considered as minima.

Glass eel fisheries within the EU take place in France, UK, Spain, Portugal and Italy. Glass eel landings have declined sharply from 1980, when reported landings were larger than 2000 tonnes to 58.6 t in 2019 (provisional) and 62.2 t in 2018 (final, full reporting).

Yellow and silver eel landings are not always reported separately, so are combined here. The total reported landings of yellow and silver eels decreased from 10 000–12 000 tonnes in the 1950s to 2000–3000 tonnes since 2009, and a reported 2375 tonnes in 2018 (provisional, only 14 countries reporting) and 2249 tonnes for 2017 (final).

Recreational catches and landings are poorly reported so amounts must be treated as a minimum but were estimated as 0.9 tonnes for glass eel in 2019 (Spain only, provisional), and 148 tonnes for yellow and silver eel combined in 2018 (five countries reported); (2019 data not available at time of writing). Overall, the impact of recreational fisheries on the eel stock remains largely unquantified although landings can be thought to be at a similar order of magnitude to those of commercial fisheries.

Aquaculture production of eel increased until the end of the 1990s but started to decline from the mid-2000s from about 8000–9000 tonnes, and in 2017 the reported quantities of eels produced in aquaculture was 5497 tonnes the most recent year of most countries reporting: 10), mostly in The Netherlands and Germany. It should be noted that eel aquaculture is based on wild recruits, and part of the production is subsequently released as on-grown eel for stocking.

Restocking (the process of capture, translocation and restocking to new locations in the wild) of eel increased after the implementation of management plans in EU Member States in 2009. Although the definition of restocking is clear, the process is complex with a varied and broad sequence of steps and even life stages. As there is still some variation in the way that countries report some of these actions, the WGEEL broadly categorises them as RELEASES, though the term RESTOCKING is still used here for some circumstances. Most recent relatively complete

data show 36.3 million glass eel (2017, 15 countries), 14 million yellow eels (2016, six countries) and about 0.25 million silver eels (2018, three countries) were restocked or released (combined).

The WG has made substantial progress in developing the use of the Data Call and database to refine data submission, checking, analyses and reporting. The Data Call for 2020 will request updates for recruitment, landings, aquaculture and releases, plus abundance indices for yellow and silver eels.

The emerging threats and opportunities reported by WGEEL in each of the last three years continue to develop/evolve from their initial reporting. In addition, a new eel virus (picornavirus EPV-1) has been detected in eels in several German waters.

The WG has a new standing annual activity to examine quantification of the impacts of nonfishery factors, and to review methods for reducing these mortalities. A crude estimate of loss to all non-fishery anthropogenic factors (largely hydropower and pumps) of eel was estimated from reported mortality indicators from approximately half of countries reporting to WG. This amounted to 1625 tonnes annually.

Evidence on the impacts of hydropower facilities and water pumps was reviewed. The ranges of mortality as eel pass by or through hydropower stations are highly variable, and within the range of previous publications.

The WG considered the potential impact of changes to fishery regulations on the time-series used in support of the ICES advice. Many fishery-based time-series are used to assess temporal trends in recruitment and escapement. This is especially true for recruitment in the so-called 'Elsewhere Europe' area. New fishery regulations might introduce biases in those time-series and compromise their use in the analyses. Losing fishery-based indices would increase the noise in the stock assessment. As such, it seems worthwhile implementing new fishery-independent time-series.

The WG considered the consequences of the Precautionary Approach on advice for European eel. Based on the FAO Code of Conduct, the ICES form of advice, and the EU Eel Regulation, the WG developed a proposal for a coherent framework for advice on eel, consisting of a double-tiered approach: an international tier focused on the status of the whole stock and the long-term objectives (overall stock status, recruitment trends, biomass reference points), and a national (or lower) tier focused on mortality levels and related management actions, addressed per management unit. This proposal suggests adoption of the reference point of the Eel Regulation, as $B_{mgt} = 40\%$ escapement of pristine, and a corresponding mortality limit of $\Sigma A_{mgt} = 0.92$. Below B_{mgt} , mortality should be reduced further, to allow recovery of the stock. It is suggested to adopt a provisional time-frame in terms of number of generations for this, which would translate into a corresponding mortality limit for each management unit. Noting that the proposed comprehensive framework for advice deviates from conventional ICES approaches, it is concluded that a follow-up workshop convened by ACOM might be appropriate, to discuss and evaluate the proposed framework and consider any now unforeseen or unintentional consequences. An international process of Quality Assurance of national assessments and stock indicators is also required as a matter of urgency.

The WG considered the challenge of quantifying the effort that is undertaken in the commercial eel fisheries around Europe, based on new data provided by countries through the Data call. It was concluded that for many countries, the licensing of commercial eel fisheries needs to be improved in order to supply fishery managers and WGEEL with the appropriate information to assess the state of the stock. The WGEEL has recommended a workshop on harmonising the reporting of fishing effort.

3.2 WGBAST - Working Group on Baltic Salmon and Trout

The Baltic Salmon and Trout Assessment Working Group [WGBAST] (outgoing Chair: Stefan Palm, Sweden, in-coming chair: Martin Kessler, Estonia) met in St Petersburg, Russia, 27 March – 4 April 2019. A total of 26 experts from all nine Baltic Sea countries attended the meeting (whereof four were via correspondence). The group was mandated to assess the status of salmon in Gulf of Bothnia and Main Basin (subdivisions 22–31), Gulf of Finland (Subdivision 32) and sea trout in subdivisions 22–32, and to propose consequent management advices for fisheries in 2020. Salmon in subdivision 22–31 were assessed using Bayesian methodology, with a stock projection model (data up to 2018) for evaluating impacts of different catch options on the wild river stocks.

- The total salmon catch in 2018 (including recently revised estimates of trolling catches; below) was 921 tonnes, which is slightly higher than 2017, when the lowest catch in the time-series since the 1970s was recorded. The catch for 2018 is closer to the total catch from 2016. Catch levels have decreased continuously since the 1990s, although more slowly in recent years. Efforts in several important commercial salmon fisheries remained on a historically low level.
- The total level of estimated misreporting (of salmon as sea trout) increased to 42 600 salmon in 2018, a third more than in 2017, almost three times as much as estimated 2016. Poland continues to misreport salmon as sea trout. In 2019, a ban has been imposed on sea trout fishing outside 4 nm in the Baltic sea.
- The share of recreational catches of Baltic salmon in the sea and rivers has increased over time (50 % of total fishing mortality). In particular, the offshore trolling fishery has developed rapidly. According to updated estimates, the total recreational catch has in recent years been about 15 000–20 000 salmon larger than previously known.
- The natural salmon smolt production has gradually increased in the Gulf of Bothnia and Gulf of Finland rivers. For most rivers and assessment units, either increasing or stable smolt production is predicted also for 2019, as a result of good spawning runs in 2015–2016. Long-term trends in the Main basin remain stable. The current (2018) total wild production in all Baltic Sea rivers is above 3.1 million smolts, corresponding to about 81% of overall potential smolt production capacity. In addition, about 4.4 million reared salmon smolts were released into the Baltic Sea in 2018.
- Over time, an increasing proportion of the wild stocks have reached the management target (75% of potential smolt production capacity) with high or very high certainty, especially in the northern Baltic Sea. Also in the Gulf of Finland, wild Estonian rivers are showing recovery. As assessed previously, most weak stocks are located in the Main Basin, several rivers in this area showing decreasing development in recent years.
- The exploitation rate of Baltic salmon in the sea fisheries has been reduced to such a low level that most stocks (for which analytical projections are currently available) are predicted to recover at current levels of fishing pressure. However, due to local environmental issues, many weak stocks are not expected to recover without longer term stock-specific rebuilding measures, including low or no impact and removal of potential migration obstacles. In particular, nearly all Main Basin stocks require such measures.
- M74-related juvenile mortality increased in 2016–2018, but is expected to decrease in spring 2019. It is hard to predict if high levels of M74 (fry mortality due to thiamine deficiency). Also, other health issues (disease outbreaks, cause still unknown) with large numbers of dead spawners and collapsed parr densities in some wild rivers are

still topical and therefore of concern for the future particularly on east coast rivers of Sweden.

- Some positive development can be seen for sea trout in the Baltic Sea region, but many populations are still considered vulnerable. Stocks in the Gulf of Bothnia are particularly weak, although spawner numbers and parr densities are improving. Stock statuses are generally higher in the Main Basin and in southern Gulf of Finland. However, stocks are low in Lithuania and Germany (natural causes but also coastal fishery).
- In general, exploitation rates in most fisheries that catch sea trout in the Baltic Sea area should be reduced. This also holds for fisheries of other species where sea trout is caught as bycatch. In regions where stock status is good, existing fishing restrictions should be maintained in order to retain the present situation.

Notes from WGDIAD

The extent of misreporting of salmon as trout in the Polish offshore fishery is largely unknown but according to estimates from WGBAST it may be increasing and recent additional information indicates that it could be higher than previously thought. Poland should provide catch composition data from coastal and offshore fisheries (as defined in the EU regulation) covering all main gears; (see section 4.7 from WGBAST 2019).

Increasing health problems for salmon in the Baltic Sea has been observed in the last few years, and needs to be investigated further, including increased cooperation between veterinarian authorities in countries with affected rivers.

It was also noted that because no EU management plan has been decided upon, there are no time-frames decided for when weak stocks should have reached management objectives. Other challenges for the management and scientific advice include regional differences in status, a mixed stock fishery at sea, and management of the fisheries based on only two TAC (SD 22–31 and SD 32). ICES is dealing with some of these questions in two workshops in 2019–2020, Workshops on Evaluating the Draft Baltic Salmon Management Plan (WKBaltSalMP I and II), which are the result of an EC special request.

Regarding data needs for stock assessment, there is a need to improve catch statistics for the recreational fisheries, both in freshwater and at sea (trolling).

3.3 WGNAS - Working Group on North Atlantic Salmon

The Working Group on North Atlantic Salmon (WGNAS) chaired by Martha Robertson, Canada, met in Bergen, Norway, 26 March – 4 April 2019. There were in total 27 in-person participants, representing twelve countries from North America (NAC) and the Northeast Atlantic (NEAC): Canada, USA, Iceland, Norway, Finland, Ireland, UK (England & Wales), UK (Scotland), UK (Northern Ireland), and France. Information was also provided by correspondence or by WebEx link from Greenland, Faroes, Denmark, Portugal, 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 group was additionally mandated to deliberate on the following:

- Questions regarding data requirements under the EU Data Collection Framework (EU-DCF) and Data Collection-Multi-Annual Programme (EU-DCMAP).

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 2018 was 1090 t. This was 73 t below the updated catch for 2017 (1163 t) and 119 t and 283 t less than the previous five and ten year means, respectively.
- The provisional estimate of farmed Atlantic salmon production in the North Atlantic area for 2018 was 1575 kt; production of farmed Atlantic salmon in this area has been over one million tonnes since 2009 and in 2018 provisional worldwide production of 2335 kt is 2000 times the catch of wild Atlantic salmon.
- The Working Group reported on a range of new findings regarding salmon assessment and management: including an update of salmon populations in Germany, smolt marine survival studies in the UK, tracking programmes in the Northwest Atlantic, satellite tagging at Greenland, salmon sampling program in the Nordic Sea, long-term collaborative project focusing on salmon at sea in Norway, methods for estimating bycatch in pelagic fisheries, a single Bayesian life cycle model for the North Atlantic, and modelling the drivers of Atlantic salmon population declines across the Atlantic basin.
- A number of threats were discussed including disease and parasite events in wild salmon in England and Wales (RVS), Norway (salmon fluke and UDN), and Sweden (UDN and RVS); sea lice monitoring in Norway, infectious agents on salmon in the Labrador Sea, and pathogen testing at Greenland. As well as the biennial presence of pink salmon (*Onchorhynchus gorbuscha*) in the North Atlantic.
- The Working Group noted unusually dry river conditions throughout the North Atlantic area in 2018, with generally higher average summer month temperatures throughout the European landmass.
- Specific for the NEAC area, exploitation rates on NEAC stocks continue to decline and catches in 2018 were 960 t. This was 60 t below the updated catch for 2017 (1020 t) and 7% and 20% below the previous five-year and ten-year means respectively. Northern NEAC stock complexes, prior to the commencement of distant-water fisheries, were considered to be at full reproductive capacity. The southern NEAC stock complexes however, were considered to be suffering reduced reproductive capacity.
- Specific for the NAC area, the 2018 provisional harvest in Canada was 90 t, which was the lowest in the time-series since 1960. The majority of harvest fisheries on NAC stocks were directed toward small salmon. In recreational fisheries, large salmon could only be retained on 14 rivers in Québec.
- In 2018, 2SW returns to rivers were suffering reduced reproductive capacity in five of the six assessment regions of NAC, ranging from 3% in the USA to 127% in the Gulf.
- The continued low abundance of salmon stocks across North America, despite significant fishery reductions, strengthens the conclusions that factors acting on survival in the first and second years at sea, at both local and broad ocean scales are constraining abundance of Atlantic salmon.
- In Greenland, a total catch of 39.9 t was reported for 2018 compared to 28.0 t in 2017 (27 t in 2016). North American origin salmon comprised 83.1% of the sampled catch.
- There are no mixed-stock fishery options at West Greenland in 2018, 2019 and 2020 that would be consistent with a 75% probability or greater of simultaneously meeting the management objectives for the seven stock complexes.

- Members representing EU Member States replied to the questions by RCG-DSG on data needs for assessment by WGNAS by providing a list of data currently used in the assessment, data of potential use, and data of potential use in future. Regarding data quality the Group takes uncertainty into account in the assessment, but recognises potential challenges associated with the timeliness and completeness of data reporting. The Group reported that no formal process for the selection of monitored rivers currently exists, and recommends that selection of such rivers remains within the competence of individual MS. The data types and sampling frequency of data collection on such rivers were also reported on.
- With regards to “the future use of the RDBES database as a source of ICES data for analyses on salmon”, the Working Group is developing approaches to streamline data collection, storage and presentation (facilitated through an ICES data call approach) to facilitate analyses

Notes from WGDIAD

The development of an ICES data call is currently in the process of being finalised by a sub-group of WGNAS and approval by ICES is expected soon.

3.4 WKSALMON - Workshop for North Atlantic Salmon At-Sea Mortality

WKSALMON (Chairs: Gérald Chaput, CA, Niall Ó Maoiléidigh, IRL) was established in reply to a request to ICES from the North Atlantic Salmon Conservation Organisation (NASCO) with the following ToRs:

- a) Identify data sources that could inform estimates of at-sea salmon mortality and the associated available data, including data from North Atlantic salmon as well as ecosystem data (such as oceanographic time-series, plankton surveys, International Ecosystem Summer Survey in the Nordic Seas (IESSNS), pelagic or demersal fish surveys);
- b) Develop a ‘data call’ that will integrate these sources with existing ICES databases;
- c) Evaluate the appropriateness of data and methods used to estimate at-sea salmon mortality;
- d) Identify data gaps and develop recommendations for future data acquisition;
- e) Evaluate modelling approaches to integrate marine data fully to cover the whole life-cycle of Atlantic salmon in the context of the ‘Likely Suspects’ Framework (see http://www.nasco.int/sas/pdf/archive/papers/2018/SAG_18_04_AST%20Likely%20Suspects%20Framework%20Update.pdf);

WKSALMON organised a scoping workshop in Copenhagen, Denmark, on 24–28 June 2019, with 24 participants from nine different countries. The plan is to convene an evaluation and a modelling meeting in 2020/2021.

At the scoping meeting the focus was on identifying data that could be useful for quantifying at-sea mortality of salmon, and to start working and discussing the table of contents for the workshop report. Two main types of data were considered at the meeting: salmon data and marine ecosystem data. The salmon data related to distribution at sea (both single and repeat observations), migration modelling, physical habitat at sea, diet, predation, abundance estimates, population dynamics, biological characteristics, and diseases and parasites. The marine ecosystem data related to both the physical environment (oceanographic variables, circulation, ice cover,

and forcing indexes) as well as biological features (primary and secondary production, mesopelagic and pelagic fish communities, predator communities). In addition, bycatch of salmon in pelagic fisheries was also considered, as was the spatial and temporal overlap of salmon and monitored marine pelagic ecosystem components and gaps in data compilation. The WK noted that there was a notable absence of expertise on physical oceanography at the meeting due to a clash of the WKSALMON meeting with a conference on oceanography.

WKSALMON is planning two further meetings: in autumn 2020 for a three-day data evaluation meeting and a five-day modelling meeting in 2020/2021.

Notes from WGDIAD

WGDIAD is expecting a final report from WKSALMON by the end of 2021.

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

2019 summary

Sea trout are the anadromous migratory form of the brown trout (*Salmo trutta*) which go to sea to feed and mature as adults prior to returning to spawn, usually in their natal rivers. Extensive overviews of sea trout fisheries and biology have been prepared for ICES by the Study Group on Anadromous Trout (SGAT); (ICES, 1994) and the Workshop on Sea Trout (WKTRUTTA, WKTRUTTA2); (ICES, 2013, 2016). This Working Group builds on the scene-setting work of WKTRUTTA 1 and 2.

Stock declines, e.g. in areas where marine mixed stock fisheries prevail (e.g. the Baltic) and where there is salmon farming, have raised concerns about our lack of knowledge of the complex and variable life cycle of this species. Sea trout have historically taken second place to Atlantic salmon in national fishery assessment programmes and management priorities. As a result, relatively few sea trout stocks have been studied for sufficient time to allow the development of population models.

By using abundance data from different life stages, information on habitat quality and fisheries data etc., the Working Group will develop and evaluate different ways to model sea trout populations. Models taking into account e.g. habitat variation within rivers and between catchments, occurrence of lakes, migration obstacles and resident trout etc. will be evaluated. Biological Reference Points (BRPs) will be developed and considered across the natural range of sea trout.

The WG is delivering through 3 sub-groups (SG):

SG1: Database group

SG2: Population models, examining the effects of salmon, and resident trout

SG3: Trout recruitment versus habitat score systems/Stock recruitment relationships based on sea trout life history

The fourth meeting of the WGTRUTTA took place in Dorchester, UK from 25 February to 1 March, 2019. The meeting was chaired by Johan Höjesjö (Sweden) and Alan Walker (UK). The meeting was attended by 15 experts from eight countries. The sub groups presented on progress to date and their plans for the workshop and coming months.

SG1 Database

The purpose of the database (DB) is to inform the WG what data are available, and is to compile information from a selection of 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, in order to:

- facilitate the development of population dynamic models about sea trout;
- provide basic information on population dynamics and life history variation of sea trout in different areas and stream types;
- facilitate identification of geographical areas with data deficiencies (e.g. absence of stock-recruitment data and/or habitat mapping) that hampers the development of assessment methods;
- prioritise regions or specific areas for future monitoring and research programs.

Two database (DB) templates have been prepared: Environmental Data and Bio-ecological Data.

The database structure is complete, having been developed to take account of all the requests by other SGs regarding information required about sea trout rivers and their stocks. Recognising the vast amount of potentially useful data but the limited time and resource available to work on filling the database, the WG decided that the DB should be as encompassing as possible, including index rivers/data plus others, but also for data providers to highlight data that are available but where they don't have the time to input.

A questionnaire to capture details of the methods used to sample trout and habitat characterisation revealed few common methodological approaches that are uniform across all countries. The majority of fish sampling is done at 'whole site' scale though some is targeted at selected habitat types within the site. Most fish sampling is of a specified wetted area rather than for a unit of time. The number of electrofishing passes varies from one to three, depending on sampling method and objectives. Most surveys target both trout and salmon. Surveys are conducted mostly in spring and autumn, but some in the summer. Habitat characterisation has been documented by water velocity, depth, substrates, aquatic vegetation, shade and slope. Velocity is most often measured only through observation. The same applies to substrate, aquatic vegetation and shade. In a further complication there seems to be substantial variation in the substrate classes and categorizations, for example the granularity size classes and shade. In contrast, depth is typically directly measured. Slope is most often measured from maps or a GIS.

The SG are liaising with ICES and their Regional Database and Estimation System (RDBES) working towards a time when ICES will host the WGTRUTTA DB.

SG2 developing population models examining effects of resident trout and salmon

A literature review manuscript entitled "Brown trout *Salmo trutta*: a review of ecological factors affecting the abundance and life history of anadromous fish" has been published in Fish and Fisheries. It remains challenging to identify resident vs anadromous origin, and to predict future life history - while growth rate is implicated it is not a simple predictor.

The original plan to review or develop population models that would explicitly account for the interaction between freshwater resident and migratory brown trout was not pursued because it was found that several sea trout models are available or are being developed elsewhere. A new model on climate change effects would be useful, but is unlikely in the next year (at least) because not enough is known about the explanatory relationships.

A document on knowledge gaps and associated research requirements has been drafted listing potential research projects grouped under themes such as life history, assessment of state, management of impacts; climate change; ecosystem services and socio-economics.

SG3 developing the trout habitat scoring system (THS)/ SG4 developing stock recruitment (SR) life history

In October 2018, Sub-Groups 3 & 4 merged and identified four task areas to address the ToRs:

1. Identify key rivers across Europe with suitable data that could be used for establishing or developing models (index rivers) (ToRa);
2. Carryout a stock indicator/pressure state analysis of individual stocks and the underlying cause and effect mechanisms (ToR b);
3. Develop and build on the Swedish THS model, available electrofishing data and other sea trout stock dynamics data, such as S/R or pseudo S/R to build a Bayesian sea trout population model (ToRb);
4. Bring the outcomes forward into a management framework and/or the development of BRPs, either local or regional (ToR c).

To acquire good data from smolt emigration rates existing PIT tagging infrastructure in rivers throughout the distribution area can be used. WGTRUTTA partners provided nine such catchments for incorporation into the DB.

In 2018, SG3 developed a set of indicators to assess the status of a stock using index catchments and identify where pressures may have had an impact and caused a change based on the work of WKLIFE who summarised a set of length-based indicators (LBI) and reference points (RP). Tested on six rivers it was concluded that LBIs are useful to give an overview of changes in stock structure.

Potential smolt production capacity of rivers was evaluated by combining the THS Model with juvenile trout density data. THS was initially categorised according to substrate, velocity, shade and riparian complexity. The THS models developed with data from Sweden, testing the importance of different habitats and adding other descriptor variables (such as Latitude and Longitude), demonstrated that stream width and depth were important as continuous variables and by adding covariates such as distance to the sea, latitude, longitude and altitude, the model explained 75% of the variation. A model based fry and parr abundance, including the THS and Lat & Long was the best fit. The Random Forest model with depth, altitude, distance to the sea, lat, lon and year explained much of the variation in juvenile trout density, but a linear model may be more appropriate when extending the geographic area outside Sweden.

A breakpoint analysis was applied to 0+ trout data from Northern Irish rivers that were expected to be dominated by sea trout rather than resident trout to identify potential reference levels. This was successful for THS score 1, 2 and 3 but not 0. This suggests it is worth testing this outside the Baltic.

Other issues

The WG has also applied for a series of nested PhDs within the Marie Curie International Trainee Network (ITN) actions that will be closely linked to the WG. The group is curious whether ICES can provide a letter of support for this proposal.

WGTRUTTA has come to the end of its three-year cycle. A new resolution will be submitted to ICES for a second cycle of three years.

Notes from WGDIAD: WGDIAD would support a continuation of the work of WGTRUTTA but does not expect an international request for advice outside the Baltic.

3.6 WKEELDATA2 - The second Workshop on Designing Eel Data Call

The second Workshop on Designing an Eel Data Call (WKEELDATA2), chaired by Cedric Briand (France) and Jan-Dag Pohlmann (Germany), met in Rennes, France from 18 March–22 March 2019 to design a data call to all countries having natural production of European eel. Eight scientists representing five countries participated in this meeting.

The life cycle of the European eel is complex, with a unique spawning area in the Sargasso Sea and growth areas widely distributed across Europe and Northern Africa. The stock is genetically panmictic, but the continental eel stock shows strong local and regional differences in population dynamics and local stock structures (sex ratio, length and age distributions). Local impacts by fisheries with various gears may vary from almost nil to heavy exploitation. Other forms of anthropogenic mortality (e.g. hydropower, pumping stations) have an impact on eel too, and vary in distribution and local relevance. Data on stock and impacts are reported to the Working Group on Eels (WGEEL), which generates the advice. Data correspond to several different life stages, from juveniles to prespawning eels, in different habitats (from freshwater to saltwater environments).

To collect more efficiently those data, ICES and GFCM have started a process of data call in 2017. The ICES Workshop on Designing an Eel Data Call (WKEELDATA) defined the main step of this process, generated the first version of the data call and improved the WGEEL database to host the collected data. During the 2017 meeting of the WGEEL, the first data were collected and integrated into the WGEEL database. In 2018, a workshop on Tools for Eel (WKTEEL) improved the integration and use of the collected data. During this workshop the database was improved further, data call spreadsheets were adapted, enhanced and automated tools for extracting and visualising data from the PostgreSQL database were developed.

This working group has further prepared for the next data call, by extracting data from the database to send back to national correspondents, by developing tools to enable access to the database to the working group through a local raspberry server, and by designing the data call sheets, database, integration tools and visualisation for new types of data (yellow eel standing stock series and silver eel series).

Notes from WGDIAD: WG held a discussion on whether tagging data are included. The consensus was negative because the data call was limited to data in support of the assessment and advice. In addition questions arose on data quality, which can only be addressed by the international quality assurance as proposed by WGEEL.

The completion of the WKEELDATA2 report was noted by the WG.

3.7 WKBaltSalMP - Workshop on Evaluating the Draft Baltic Salmon Management Plan

The Workshop on Evaluating the Draft Baltic Salmon Management Plan (WKBaltSalMP I) met at ICES HQ in Copenhagen, Denmark, on 4–5 November 2019, chaired by Stefan Palm (Sweden) and Eskild Kirkegaard (Denmark). A total of 20 persons attended, including ICES experts, managers from Baltic Sea countries (BALTFISH) and stakeholder representatives.

The overall aim was to scope efforts needed in order to evaluate the draft of a multiannual management plan for the salmon stocks in the Baltic Sea, proposed by BALTFISH, and to respond to the associated specific request from the EC.

WKBaltSalMP 1 was tasked with the following ToRs:

- a) Clarify the essential factors in the draft management plan upon which basis ICES will give advice. This should include principal discussions regarding:
 - i) Use of the current MSY proxy versus river - specific MSYs as management targets;
 - ii) “Adequate timelines” for stocks to achieve management targets, including whether biological reference points (PSPC) and estimates of current smolt production should be based on the most recent year or an average of several years;
 - iii) Probability levels of attaining management targets.
- b) If required following on the discussions under ToR a), identify potential modifications to the proposed management plan that would improve its effectiveness.
- c) Produce a clear plan and timeline

Based on the discussions during the workshop, five main work packages (WPs), along which continued work should proceed, were identified. These include Management strategy simulations, Comments on the draft plan, Dynamic harvest rules, Optimisation of fishery yield, and Assessment units 5 & 6.

Given the need for ample preparations and other workloads, the meeting identified last week of February 2020 as the earliest time possible for holding the second workshop (WKBaltSalMP 2). This workshop take place on 24–28 February 2020 in Riga, Latvia (Institute of Food Safety, Animal Health and Environment, BIOR). After the 2nd workshop, a complete first draft of the final report will be prepared until 20 March 2020, i.e. about one week before next WGBAST meeting (scheduled for 31 March – 8 April). During WGBAST 2020, the draft report will be presented to the whole expert group, discussed and worked further upon. A final version should then be ready for review soon after the meeting has been closed. A draft advice, based on the final report also has to be prepared before the beginning of the RGADG (Review and Advice Group Meeting), scheduled for 20–23 April 2020.

Notes from WGDIAD: Information about these workshops was not revived until early 2020 and was thus not discussed in the 2019 annual meeting.

4 New Expert Groups

WGDIAD discussed the proposed Terms of References and meeting arrangements for existing EGs. There is a proposal for WGTRUTTA2, as mentioned in the section above on WGTRUTTA. This will be a continuation of the work on WGTRUTTA. There were no further proposals for new EGs, but there are needs for establishing workshops during 2020 as well as a workshop of interest to people working on diadromous fish. These are listed below.

4.1 Proposed/approved for 2020

The Workshop on relevant geographical area on the temporal migration patterns of European eel (WKEELMIGRATION), in response to the EU request for ICES advice on the relevant geographical area and temporal migration patterns of European eel, specifically answer the questions agreed with the EU, will meet in January 2020 addressing the following ToRs:

- i. Describe the period and the peak time of arrival of European glass eel on the different EU shores, and whether this has changed substantially since before 2007 (by eel management unit (EMU) if possible, or next higher aggregate level. Areas outside the EU are not to be covered).
- ii. Describe the period and the peak time of escapement of European silver eel from the different relevant regions in the EU towards the Sargasso Sea, and whether this has changed substantially since before 2007 (by EMU and idem to 1).
- iii. Describe the period and the peak time of migration of the yellow eel, when relevant, through different relevant regions in the EU (when, and from and to where yellow eels migrate), and whether this has changed substantially since before 2007 (by EMU and idem to 1).
- iv. Describe in the relevant cases, the period when migrating eels need to pass through narrow passages (e.g. such as the exits of the Baltic and Mediterranean) on the way to their destination, and whether this has changed substantially since before 2007.
- v. Assess whether the closure periods set up under the national Eel Management Plans prior to the EU temporal closure are consistent (in terms of time periods of the closures) with the periods established following the EU closure. This requires delivery of information on glass/silver, yellow and silver eel fisheries on (i) the fishery closure periods per EMU area in place from 2000 to 2007, (ii) any changes introduced through EMPs, and (iii) in response to the EU closures in 2018 and 2019.

A proposal for a Workshop in scale and otolith biochronology archives (WKBioArc) was received (and subsequently approved). This meeting will take place in Galway, Ireland, on 11–12 February 2020. It could be of interest to people working on archives of scales and otoliths of diadromous fish.

The Second Workshop on Evaluating the Draft Baltic Salmon Management Plan (WKBaltSalMP 2) is taking place on 24–28 February 2020 in Riga, Latvia (Institute of Food Safety, Animal Health and Environment, BIOR). The same ToRs as for WKBalSalMP 1 apply to this workshop.

5 Theme Sessions 2021 & 2022

A tentative proposal for a Theme Session for 2021 on exotic species (and stocks) and their impact on native species and their fisheries was discussed on the back of the recent increases of pink salmon abundance in the Atlantic. Dennis Ensing and Hugo Maxwell agreed to convene the session. This proposal will be submitted before the summer 2020 deadline.

5.1 Symposia

There were no specific proposals for symposia, but it is interesting to note here a Theme Session on eels at the World Fisheries Congress in Adelaide, Australia October 2020.

5.2 International Year of the Salmon

The IYS is an international framework for collaborative outreach and research, and is established 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. Activities under the IYS framework culminated during 2019, but research and outreach will continue through to 2022.

Primary Partners of IYS are the North Pacific Anadromous Fish Commission (NPAFC) and North Atlantic Salmon Conservation Organization (NASCO) - international inter-governmental organizations established to conserve anadromous salmon in the North Pacific and Atlantic oceans respectively http://www.npafc.org/new/science_IYS.html and <http://www.nasco.int/iys.html>

An update on specific activities under IYS relevant to the WGNAS, WGDIAD, ICES and NASCO is provided below.

1. The “Likely Suspects” conceptual framework for evaluating marine mortality in Atlantic salmon has now resulted in the establishment of the ICES Workshop for North Atlantic Salmon At-Sea Mortality (WKSALMON, see section 5.4 of this report).
2. A NASCO working group was established to produce the State of North Atlantic Salmon report, which was published on December 13th 2019.
3. The symposium ‘Managing the Atlantic salmon in a rapidly changing environment – management challenges and possible responses’ was held alongside the NASCO Annual Meeting on 3–4 June 2019 in Tromsø, Norway, and the proceedings are expected to be published as part of the outreach programme under IYS.
4. A workshop to be held in Vancouver, Canada, in January 2019 focussed on identifying representative time series of data and associated meta-data to understand salmon status and trends. The aim of the Workshop is to determine how well or poorly these datasets represent salmon status and trends for reasonably broad geographic areas. The primary goal of this workshop will be to identify a series of legacy datasets and standards associated with major categories of data. Later, a separate workshop will focus on identifying the coastal and high seas climate and oceanographic data that can be linked to salmon data.

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

6 Proposals for Publications

There were no specific proposals for publications.

7 Update from the Intersessional Sub Group Diadromous fish (ISSG Diad) of the Regional Coordination Groups (RCG)

The Intersessional Sub Group Diadromous fish (ISSG Diad) of the Regional Coordination Groups did not physically meet during 2019, but instead met multiple times by teleconference. Membership of the group consists currently of 23 experts representing 12 EU Members States and one ICES member. Members are nominated by the National Correspondents. The group is chaired by Alan Walker (UK), Tapani Pakarinen, and Dennis Ensing (UK).

The Group reported (by WebEx due to agenda clashes) to the RCG Baltic and RCG North Atlantic, NorthSea & Eastern Artic. ISSG Diad was also represented at the RCG Liaison Meeting and

Decision Meeting, as well as the meeting of the Scientific, Technical and Economic Committee for Fisheries (STECF).

The overall task of the ISSG Diad is to progress development of the regional work/sampling plans for data collection for diadromous species/stocks (Atlantic salmon in the Atlantic and Baltic, sea trout in the Baltic, European eel throughout its natural range) and quality assurance of those data. For 2019, the following tasks were set by the RCGs in the Liaison and Decision Meeting:

- 1.1 Working with RCGs and subgroups, identify what regional work/sampling plans are intended to contain and achieve, and how they can be beneficial to the Member States (MS) in terms of eels, salmon and sea trout.
- 1.2 Make recommendations on fisheries and fishery-independent data needs for these regional work/sampling plans, considering the tables of data needs drafted by RCGs 2018 and then updated by ICES expert working groups
- 1.3 Support the ICES WGs in determining the effect of fisheries and fishery-independent data quality issues on their assessments, and make recommendations for addressing issues via the regional work/sampling plans.
- 1.4 Work with the end-users and the RDBES steering group and developers to make best use of the RDBES for developing and implementing regional work/sampling plans.
- 1.5 Define the rivers to be monitored for eel and salmon at regional level.
- 2.1 Make recommendations on how to address any fisheries and fishery-independent data transmission issues reported by the end-users.
- 2.2 Make recommendations for the revision of the EU MAP based on end-user requirements.

On task 1.1 progress has been made on for example overviews of fisheries and current sample collection, but certain areas still require further work such as development of sound statistical sample design and Quality Assurance. In addition, considerations are also required for how costs could/should be shared, and to develop and agree rules on how a regional sampling programme is decided and the implications for any country that does not take part in the programme.

For task 1.2 the Group concluded workplans should follow the recommendations in the WKESDCF (ICES, 2012) report following feedback from the relevant end-users (WGBAST, WGNAS, and WGEEL). WGEEL further replied to ISSG Diad with the suggestion that information should be collected on all commercial fisheries targeting eel, on different life stages (i.e. glass, yellow or silver) and in different environments (marine, estuarine and freshwater), in a way that is sufficient to meet national needs to derive the biomass and mortality indicators required in each EMU. Also a pilot study is required to identify a standardised method for the collection of catch and biological data on recreational fishing for eel, both retained and released.

On task 1.3 the Group reported on the uncertainty of recreational catch data and mis- and underreporting, the need to evaluate electrofishing programmes, and the need for a Quality Assurance System be established for eel.

For task 1.4 the ISSG Diad recognised the feasibility to include commercial landings and biological data for Baltic in the RDBES. Furthermore, uncertainties remain on how recreational catch data and biological monitoring data (e.g. electrofishing data, smolt counts) can be included. Work on a specific eel DB is ongoing with WGEEL.

On task 1.5 the Group reported that WGBAST judges the current selection of index river for Baltic salmon to be sufficient, salmon abundance data from non index rivers is also necessary for ICES stock assessment and advice, a need for sea-trout index systems to fulfil assessment requirements, and that MS should provide their list of eel index rivers or habitats and describe their selection process.

For task 2.1 ISSG Diad concluded that the content of different data calls relevant to eels and salmon must be checked for inconsistencies and a method developed to standardize and optimise data calls in the future, and that the WGEEL eel stock coordinator should be made aware of all data calls that feature eels.

On the final 2019 task the Group concluded that there should be no changes made to the legislation tables unless and until they are fully and carefully considered by the relevant expert groups and approved by the end users, and that there is a gap on economic data of migratory species in freshwater.

The work ISSG Diad was discussed at the Liaison and Decision meeting in Brussels in September 2019 and the following tasks were set to the Group for 2020:

1. Work towards regional sampling plans (depending on FishPi2 outcomes)
2. Work towards a pilot study to identify a standardised method for the collection of catch and biological data on recreational fishing for eel, both retained and released catch
3. Investigate levels and effects of mis- and unreporting of diadromous fish in fisheries
4. Work with end-users on issues such as evaluation of electrofishing programmes for salmon and sea trout, and establishment of Data Quality Assurance Systems for diadromous fish.
5. Work with the end-users and the RDBES steering group and developers to make best use of the RDBES
6. Continue work with end users on selection of index rivers (= water bodies) for eel, and sea trout (Baltic)
7. Keep abreast of Data Calls for diadromous fish
8. Consider the collection of economic data of migratory species in freshwater
9. In the Baltic investigate different possibilities to share costs between countries with few and countries with many salmon rivers according to their stock exploitation level

ISSG Diad has already started addressing these tasks as it has to report in June 2020 to the RCGs which leaves very little time to do the actual work. A WebEx meeting was convened in December 2019 to agree on the 2020 workplan. A further WebEx meeting is scheduled for February 2020 and a face-to-face meeting for May 2020 at a venue to be decided.

8 Future coordination of Science on Diadromous Species

8.1 Participation in Fisheries Resources Steering Group (FRSG) meeting during the ASC

One of the chairs of WGDIAD attended the Fisheries Resources Steering Group (FRSG) meeting during the ASC.

8.2 The Way Forward

Discussions were held on future ideas for the group. There was consensus that WGDIAD is very important as a voice for diadromous fish within the ICES community. The members agreed that without WGDIAD and its predecessors fewer diadromous fish ASC Theme Sessions and EGs

would have existed. Still, WGDIAD should try to increase its visibility both inside and outside ICES and try to attract more members. Social media can be used to increase the Group's profile, but attracting more members is difficult and the current way of holding the meeting during the ICES ASC probably the best one. One thing the group can do is to make sure the e-mail list is kept up-to-date and reflect the full membership of the group and not just the members who regularly attend meetings.

8.3 Links with other EGs

The Group would like to strengthen links with relevant non-diadromous fish groups such as the Working Group on Biological Parameters (WGBIOP), Working Group on Application of Genetics in Fisheries and Aquaculture (WGAGFA), Working Group on Recreational Fisheries Surveys (WGRFS) and Working Group on Environmental Interactions of Aquaculture (WGEIA).

Outside of ICES, the Group expressed a desire to forge links with diadromous fish 'working groups' in within organisation such as the North Pacific Marine Science Organization (PICES) and North Pacific Anadromous Fish Commission (NPAFC) with a view of sharing expertise and organising knowledge-exchange events such as symposia.

9 Any other business and Close

Niels Jepsen gave an update of the Amber project. The project produced a river barrier atlas with about 600k entries. The project also focuses on effects of removing barriers and the challenges of barrier removals. Meta-analysis shows that even very small structures can have a big effect on fish communities.

It was also noted that the University College Cork is involved in a project mapping lost salmon habitat.

Annex 1: List of participants

Name	Institute	Country	Email
Dennis Ensing (co-chair)	Agri-Food and Biosciences Institute, Belfast	UK	dennis.ensing@afbini.gov.uk
Hugo Maxwell (Co-chair, by phone)	Marine Institute	Ireland	Hugo.Maxwell@Marine.ie
Johan Dannewitz	Swedish university of agricultural sciences	Sweden	johan.dannewitz@slu.se
Henrik Sparholt	Nordic Marine Think Tank	Denmark	henrik.sparholt@gmail.com
Stefan Palm	Swedish university of agricultural sciences	Sweden	stefan.palm@slu.se
Alan Walker	Centre for Environment, Fisheries and Aquaculture Science	UK	alan.walker@cefas.co.uk
Niels Jepsen	DTU Aqua	Denmark	nj@aqua.dtu.dk
Kevin Friedland	National Oceanic and Atmospheric Administration	USA	kevin.friedland@noaa.gov
Liese Carleton	ICES secretariat		liesecarleton@gmail.com
Johan Höjesjö	University of Gothenburg	Sweden	johan.hojesjo@bioenv.gu.se

Annex 2: Agenda

Chairs: Dennis Ensing & Hugo Maxwell

Tuesday 10th September 09.00-18.00, room R15 (1st floor), Svenska Mässan, Gothenburg

Agenda:

Welcome and Introductions

Adoption of the Agenda and Appointment of a Rapporteur

WGDIAD ToRs for 2018 to 2020

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: Stefan Palm, SE)
- **WGNAS** – Working Group on North Atlantic Salmon (Chair: Martha Robertson, CA)
- **WGTRUTTA** – Working Group on Sea Trout (Chairs: Johan Höjesjö, SE and Alan Walker, UK)
- **WKSALMON** - Workshop for North Atlantic Salmon At-Sea Mortality (Chairs: Gérald Chaput, CA, Niall Ó Maoiléidigh, IRL))
- **WKEELDATA2** – The second Workshop on Designing Eel Data Call (Chairs: Cedric Briand, FR, Jan-Dag Pohlmann, DE)

Proposals for new Expert Groups

- Workshop on Designing Atlantic salmon Data Call?
- Workshop on Atlantic Salmon Scale reading?

Theme Sessions ASC 2021 & 2022

- Exotic species and impact on fisheries for native species?

Proposals for Symposia

- ?
- Update on the International Year of the Salmon

Update from the RCGs

- Short presentations from the pan-regional Diadromous fish RCG meetings (separate for salmon and eel)

The Way Forward

- WGDIAD Interim Report for 2019
- How can we increase attendance at WGDIAD meetings and promote work on diadromous species within ICES?
- Links with non-diadromous EGs (WGBIOP, WGAGFA, etc.)

Any Other Business

- Exotic salmonids (pink salmon in Ireland?)

Close Meeting