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EUROPEAN INLAND FISHERIES AND AQUACULTURE ADVISORY COMMISSION

Thirty-First Session

Killarney, Ireland, 22 - 24 June 2022

REPORT FROM THE TECHNICAL AND SCIENTIFIC COMMITTEE (TSC) ON OUTCOMES OF EIFAAC PROJECTS SINCE THE 30TH SESSION OF EIFAAC

Executive Summary

- This document summarizes the work of the Commission under the direction of the Technical and Scientific Committee (TSC) during the intersessional period October 2019-April 2022. It describes the EIFAAC projects and Working Groups initiated and ongoing under the Work Plan 2020-2021.
- A summary of this report will be presented to EIFAAC 31 for discussion by the Commission.
- This document should be read in conjunction with EIFAAC/2022/Inf.6 - Report on the work of EIFAAC for the 33rd Regional Conference for Europe.

Suggested action by the Commission:

- The Commission is invited to review the inter-sessional activities and progress made by the Members and EIFAAC projects on the implementation of the Work Plan 2020-2021.

Particularly, the Commission is requested to:

- Advise on the maintenance, abolition or establishment of EIFAAC Projects and Working Groups.
- Consider support, in-kind and/or financially, to specific activities of the EIFAAC Projects and Working Groups and other activities under the draft Work Plan 2022 - 2024 (see EIFAAC/2022/10) or to other activities that the Commission wishes to include in the Work Plan.

BACKGROUND

1. At EIFAAC 26 (Zagreb, Croatia, 2010), a Technical and Scientific Committee was established. According to the Rules of Procedure, the Technical and Scientific Committee (TSC) works under the coordination of the Management Committee (MC). The TSC was created to support and strengthen the work of the Commission. The TSC consists of a chairperson and six members elected by the Commission during a session. Main tasks of the TSC are to provide technical oversight, monitor and evaluate EIFAAC projects and related activities and to formulate advice for consideration by the MC. This document contains the work conducted by the TSC for the intersessional period October 2019-April 2022.

2. The functions of the TSC in achieving the goals and objectives of EIFAAC are to:
- make, review, evaluate and as appropriate recommend to the Management Committee proposals for programs or projects to be carried out by the Commission in accordance with these Rules;
 - develop Terms of Reference for programs/projects and monitor project implementation against

the Terms of Reference;

- provide technical oversight, monitoring and evaluation of projects and related programs of work activities;
- formulate and draft technical and scientific advice for consideration by the Management Committee;
- function as an editorial and publications committee.

3. EIFAAC 30 re-elected Mr Teppo Vehanen (Finland) as the chairperson for the TSC. Elected members for the intersessional period were: Ms Marina Piria (Croatia), Mr Colin Bean (United Kingdom of Great Britain and Northern Ireland), Mr Cristian Skov (Denmark), Mr Robert Arlinghaus (Germany), Ms Fiona Kelly (Ireland) and Mr Jan Kubecka (Czech Republic). Mr Andreas Melcher (Austria) and Mr Russell Poole (Ireland) were elected as alternate TSC members.

4. The TSC held seven meetings during the intersessional period: one in 2019, three in 2020, two in 2021, and one in 2022.

NEW PROJECTS

5. Proposals for new EIFAAC projects may be developed by the Technical and Scientific Committee, a Member, a donor, a partner organization or an independent partner institution. According to the Rules of Procedure, the Technical and Scientific Committee shall review and evaluate each project proposal, taking into account the following criteria:

- the project proposal is consistent with the objectives and functions of the Commission and with the terms of its Agreement;
- the project outcomes shall have relevance to one or more Members of the Commission;
- to the extent possible, the project proposal is forward-looking, proactive and results-based.
- the total financial and other support for the project is identified and shall not require any contributions or additional resources from EIFAAC.

After the TSC has evaluated the project proposal, it forwards its recommendations to the MC. Once a project is accepted, a project template needs to be filled.

6. During the intersessional period five earlier accepted projects made progress. Reports on their achievements are included under Annex 1. The projects are:

- 1) “Management / Threat of Aquatic Invasive Species in Europe”, manager: Marina Piria (Croatia);
- 2) “Developing Advice on Sustainable Management Actions on Cormorant Populations”, manager: Niels Jepsen (Denmark);
- 3) “Joint EIFAAC/ICES/GFCM Working Group on Eel (WGEEL)”, coordinator: Jan-Dag Pohlmann (Germany);
- 4) “Workshop on Citizen Science in Fisheries”, manager: Ciara O’Leary (Ireland); and
- 5) “EIFAAC symposium 2021 in Ireland”, manager: Cathal Gallagher (Ireland).

Two new projects started:

- 6) “Capacity development on systems and methodologies of data collection in inland fisheries” (2019), managed by FAO and Teppo Vehanen (Finland).
- 7) “Downstream Passage of Fish at Hydropower Dams”, (2021) manager: Teppo Vehanen (Finland).

7. Two projects were successfully completed in 2021:

- “Capacity development on systems and methodologies of data collection in inland fisheries” by delivering the final project report, which was published as an FAO Fisheries and Aquaculture Technical Paper.
- “Monitoring the Performance of Fish Passes; CEN standard”, manager: Emma Washburn (UK). The project produced a new European Committee for Standardization (CEN) standard (EN 17233:2021) titled “Water quality – guidance for assessing the efficiency and related metrics of fish passage solutions”.

8. In 2020, the TSC prepared draft concept notes for six project proposals based on priority needs identified by EIFAAC Members. These six concept notes were approved by the MC in 2020 and officially launched in 2021. The themes were developed based on common challenges faced in the management of inland fisheries and freshwater aquaculture in Europe. Invitations to join in the new projects were circulated to the EIFAAC operational focal points.

9. The six project proposals are the following:
- 1) The problems and challenges of climate change and its impact on inland aquatic resources and fisheries of Europe.
 - 2) Interactions of inland fisheries and aquaculture with other freshwater uses: conflict identification and potential benefits.
 - 3) Environmental DNA in freshwater fisheries, current status and future possibilities.
 - 4) Determination of economic, cultural and social values of inland fisheries and freshwater aquaculture in Europe.
 - 5) Fish stocking guidelines, including general principles, best practices, economic aspects, interaction with natural stocks and safeguarding biodiversity.
 - 6) Downstream passage of fish at hydropower dams.
10. Those countries expressing interest attended virtual meetings in 2021 to further develop the projects. Table 1 contains information on the participation in the new projects. As these projects are in the early stages, EIFAAC Members and observers are encouraged to join one or more of the projects, depending on their priorities.

TABLE 1: EIFAAC projects launched in 2021

PROJECT	PARTICIPATING COUNTRIES	PROJECT MANAGER
Climate change	Croatia, Czech Republic, Finland, Germany, Ireland	TBD
Conflict identification	Croatia, Czech Republic, Finland, Germany, Hungary	TBD
Environmental DNA	Austria, Czech Republic, Denmark, Finland, Germany, Greece, Ireland, Norway, Spain, Switzerland, United Kingdom of Great Britain and Northern Ireland	Reinhold Hanel (Germany) Thuenen Institute of Fisheries Ecology
Economic and social value	Croatia, Czech Republic, Denmark, Finland, France, Germany, Ireland, Latvia, the Netherlands	TBD
Fish stocking guidelines	Austria, Croatia, Czech Republic, Finland, Germany, Ireland, Latvia, Romania	Marina Piria (Croatia) University of Zagreb, Department of Fisheries, Bee Keeping, Game Management and Spec. Zoology
Downstream passage	Belgium, Denmark, Finland, France, Germany, Ireland, the Netherlands, Norway, Sweden, Switzerland, United Kingdom of Great Britain and Northern Ireland	Teppo Vehanen (Finland) Natural Resources Institute Finland

11. Out of these project proposals only one “Downstream passage of fish at hydropower dams” has developed into an EIFAAC project in 2022. Others are under preparation by their facilitators.

PROJECT MONITORING

12. Project managers are required to report to the Technical and Scientific Committee no less than twice a year, to enable the TSC to compile a report to MC on the progress of the projects. The latest progress reports received from EIFAAC project managers and Working Group coordinators are presented in Annex I. Progress of all projects will be presented and discussed at EIFAAC 31.

PUBLICATIONS

13. Three EIFAAC projects and the Working Group on eel produced research papers and advice in the intersessional period:

14. **EIFAAC Project on “Capacity development on systems and methodologies of data collection in inland fisheries”**

Vehanen, T.; Piria, M.; Kubečka, J.; Skov, C.; Kelly, F.; Pokki, H.; Eskelinen, P.; Rahikainen, M.; Keskinen, T.; Artell, J.; Romakkaniemi, A.; Suić, J.; Adámek, Z.; Heimlich, R.; Chalupa, P.; Ženíšková, H.; Lyach, R.; Berg, S.; Birnie-Gauvin, K.; Jepsen, N.; Koed, A.; Pedersen, M. I.; Rasmussen, G.; Gargan, P., Roche, W. & Arlinghaus, R. 2020. Data collection systems and methodologies for the inland fisheries of Europe. FAO Fisheries and Aquaculture Technical Paper No. 649 – T649. Budapest, FAO. <https://doi.org/10.4060/ca7993en> <https://www.fao.org/publications/card/en/c/CA7993EN/>

Visser, T.A.M, Valbo-Jorgensen, J. and Chomo, V. 2021. Good practices guidelines for data collection systems to support sustainable inland and recreational fisheries in the Western Balkans region. Fisheries and Aquaculture Circular No. 1218. Budapest. <https://doi.org/10.4060/cb3261en> <https://www.fao.org/documents/card/en/c/cb3261en/>

15. **EIFAAC Project on “European Standard for fish pass monitoring”**

The European Committee for Standardization (CEN), EN 17233:2021: “Water quality – guidance for assessing the efficiency and related metrics of fish passage solutions using telemetry.” <https://standards.iteh.ai/catalog/tc/cen/649a49d1-a61c-474b-ae80-9a582da0598b/cen-tc-230-wg-24>.

16. **EIFAAC Project on “Management / Threat of Aquatic Invasive Species in Europe”**

Tarkan AS, Tricarico E, Vilizzi L, Bilge G, F. FG, Filiz H, Giannetto D, İlhan A, Killi N, Kırıkaya SG, Koutsikos N, Kozic S, Kurtul I, Lazzaro L, Marchini A, Occhipinti-Ambrogi A, Perdikaris C, Piria M, Pompei L, Sarı H, Smeti E, Stasolla G, Top-Karakuş N, Tsiamis K, Vardakas L, Yapıcı S, Yoğurtçuoğlu B, Copp GH (2021). Risk of invasiveness of non-native aquatic species in the eastern Mediterranean region under current and projected climate conditions. The European Zoological Journal, 88, 1130-1143 <https://doi.org/10.1080/24750263.2021.1980624>

Piria, M., Stroil BK, Giannetto D, Tarkan AS, Gavrilović A, Špelić I, Radočaj T, Killi N, Filiz H, Uysal TU, Aldemir C, Kamberi E, Hala E, Bakiu R, Kolitari J, Buda E, Durmishaj Bakiu S, Sadiku E, Bakrač A, Mujić E, Avdić S, Doumpas N, Giovos I, Dinoshi I, Ušanović L, Kalajdžić A, Pešić A, Četković I, Marković O, Milošević D, Mrdak D, Sarà G, Bosch Belmar M, Marchessaux G, Trajanovski S, Zdraveski K. (2021). An assessment of regulation, education practices and socio-economic perceptions of non-native aquatic species in the Balkans. Journal of Vertebrate Biology, 70, 21047. Q4 <https://doi.org/10.25225/jvb.21047>

Vilizzi, L., Copp, G.H., Jeffrey E. Hill, Adamovich B., Aislabie L., Akin D., Abbas J. Al-Faisal, Almeida D, et.al Dariusz Pietraszewski, **Marina Piria**, Sophie Pitois, Laura Pompei, Nicolas Poulet, Cristina Preda, Riikka Puntala-Dodd, Ali T. Qashqaei, Tena Radočaj, Hossein Rahmani, Smrithy Raj, David Reeves, Milica Ristovska, Viktor Rizevsky, D. Ross Robertson, Peter Robertson, Laura Ruykys, Abdulwakil O. Saba, José M. Santos, Hasan M. Sarı, et al., Stacey Clarke (2021). A global-scale screening of non-native aquatic organisms to identify potentially invasive species under current and future climate conditions. Science of the Total Environment, 788, 147868 <https://doi.org/10.1016/j.scitotenv.2021.147868>

All publications related to this project can be downloaded here:

<https://www.researchgate.net/project/EIFAAC-Project-on-Aquatic-Invasive-Species-in-Europe>

17. **Joint EIFAAC/ICES/GFCM Working Group on Eel (WGEEL)**
ICES Advice on fishing opportunities, catch, and effort Ecoregions in the Northeast Atlantic. 4 November 2021. <https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2021/2021/ele.2737.nea.pdf>

OTHER ACTIVITIES

18. All TSC activities were implemented through projects. No other activities were carried out.

Annex I: Project progress reports

PROGRESS REPORT

EIFAAC Project “Management / Threat of Aquatic Invasive Species in Europe”

Manager: Marina Piria, University of Zagreb Faculty of Agriculture, Department of Fisheries, Aquaculture, Wildlife management and spec. Zoology (contact: mpiria@agr.hr)

Background

In January 2012 a Project Proposal entitled ‘Management / Threat of Aquatic Invasive Species in Europe’ was submitted to the EIFAAC TSC by Joe Caffrey (Inland Fisheries Ireland). The Project was agreed by both the TSC and the MC and commenced in early 2013. In December 2016 manager of the EIFAAC project “Aquatic Invasive Species in Europe” became Marina Piria (University of Zagreb, Faculty of Agriculture). In 2017 the project was added to Research gate:

<https://www.researchgate.net/project/EIFAAC-Project-on-Aquatic-Invasive-Species-in-Europe>

In 2021 collaboration started with EC project titled: “Invasive alien species: improvement of understanding and communication” (ENV.D.2/SER/2019/0006); aquatic recreation (angling) cluster (in further text IAS Angling). The project aim is to gather knowledge of the different sectors (i.e. freshwater angling) related to Invasive Alien Species (IAS), to improve cooperation and communication and allow an open discussion on potential future actions.

Terms of Reference

Project purpose and objectives are available at:

<http://www.fao.org/fishery/static/eifaac/WPAquaticInvasive/WPAquaticInvasive2018.pdf>

The initial objectives of the project have been achieved, and further work has been planned on the broader theme of aquatic invasive species.

Activities carried out in the second half of 2021 on IAS angling

2 September 2021 IAS Angling meeting

22 September ECIAS Communication, Aquatic Recreation 3rd Platform Meeting

Results achieved until March 2022

- I. Four papers have been published: (1) ‘A global-scale screening of non-native aquatic organisms to identify potentially invasive species under current and future climate condition; (2) ‘Risk of invasiveness of non-native aquatic species in the eastern Mediterranean under current and projected climate conditions’ submitted for consideration by Fisheries Management and Ecology; and (3) ‘Finding of hybrid African catfish ‘Clariobranchus’ in the Danube River.’; (4) An assessment of regulation, education practices and socio-economic perceptions of non-native aquatic species in the Balkans
- II. Additionally, Special Issue "Recent advancements in the risk screening of freshwater and terrestrial non-native species" has been launched https://neobiota.pensoft.net/special_issues

Unrealized goals in 2021

- I. FINS III in Szarvas, HAKI institute, Hungary, was not held due to the COVID-19 pandemic and is further postponed in 2022 due to the war in Ukraine.

Goals for 2022

- I. *Neobiota Special Issue*
To publish the following papers in a special issue related to the project in 2022: (1) ‘Climate change may exacerbate the risk of invasiveness of non-native aquatic plants: the case of the Pannonian and Mediterranean regions of Croatia; (2) ‘ Changing climate may affect the invasiveness risk of non-native salmonids in the Danube and Adriatic basins of the Balkan Peninsula (south-eastern Europe);

and (3) ‘Risk screening of non-native fishes in the South Caucasus biodiversity hotspot and guidelines for management’

II. Other publications

- a) A protocol for risk screening potentially-invasive non-native species to inform policy and management procedures for the conservation of aquatic and terrestrial biota.
- b) Reflections on the use of calibrated thresholds to rank the risk levels of non-native aquatic species: corrections to past, and guidance for future, applications of the Aquatic Species Invasiveness Screening Kit.

III. Conference - FINS III

The organization of FINS III as an online conference is under consideration.

Latest publications

I. Multilingual AS-ISK risk assessment (v 2.1) for aquatic invasive species:

<https://www.cefas.co.uk/services/research-advice-and-consultancy/non-native-species/decision-support-tools-for-the-identification-and-management-of-invasive-non-native-aquatic-species/>

II. Guidance of freshwater alien fish species in Croatia (in local language) - free to download:

https://mzoe.gov.hr/UserDocsImages/Pristup%20informacijama/Slatkovodne%20ribe_web.pdf

III. New publications in 2021-22

1. Tarkan AS, Tricarico E, Vilizzi L, Bilge G, F. FG, Filiz H, Giannetto D, İlhan A, Killi N, Kırankaya SG, Koutsikos N, Kozic S, Kurtul I, Lazzaro L, Marchini A, Occhipinti-Ambrogi A, Perdikaris C, Piria M, Pompei L, Sari H, Smeti E, Stasolla G, Top-Karakuş N, Tsiamis K, Vardakas L, Yapıcı S, Yoğurtçuoğlu B, Copp GH (2021). Risk of invasiveness of non-native aquatic species in the eastern Mediterranean region under current and projected climate conditions. *The European Zoological Journal*, 88, 1130-1143 <https://doi.org/10.1080/24750263.2021.1980624>
2. Piria, M., Stroil BK, Giannetto D, Tarkan AS, Gavrilović A, Špelić I, Radočaj T, Killi N, Filiz H, Uysal TU, Aldemir C, Kamberi E, Hala E, Bakiu R, Kolutari J, Buda E, Durmishaj Bakiu S, Sadiku E, Bakrač A, Mujić E, Avdić S, Doumpas N, Giovos I, Dinoshi I, Ušanović L, Kalajdžić A, Pešić A, Četković I, Marković O, Milošević D, Mrdak D, Sarà G, Bosch Belmar M, Marchessaux G, Trajanovski S, Zdraveski K. (2021). An assessment of regulation, education practices and socio-economic perceptions of non-native aquatic species in the Balkans. *Journal of Vertebrate Biology*, 70, 21047. Q4 <https://doi.org/10.25225/jvb.21047>
3. Vilizzi, L., Copp, G.H., Jeffrey E. Hill, Adamovich B., Aislabie L., Akin D., Abbas J. Al-Faisal, Almeida D, et.al Dariusz Pietraszewski, **Marina Piria**, Sophie Pitois, Laura Pompei, Nicolas Poulet, Cristina Preda, Riikka Puntila-Dodd, Ali T. Qashqaei, Tena Radočaj, Hossein Rahmani, Smrithy Raj, David Reeves, Milica Ristovska, Viktor Rizevsky, D. Ross Robertson, Peter Robertson, Laura Ruykys, Abdulwakil O. Saba, José M. Santos, Hasan M. Sari, et al., Stacey Clarke (2021). A global-scale screening of non-native aquatic organisms to identify potentially invasive species under current and future climate conditions. *Science of the Total Environment*, 788, 147868 <https://doi.org/10.1016/j.scitotenv.2021.147868>
4. Piria, M., Jelkić, D., Gavrilović, A., Horváth Á, Kovác B, Enikő Balogh R, Špelić, I., Radočaj, T., Vilizzi, L, Ozimec, S., Opačak, A. (2022) Finding of hybrid African catfish ‘Clariobranchus’ in the Danube River. *Journal of Vertebrate biology*, accepted.

All publications related to the project can be downloaded here:

<https://www.researchgate.net/project/EIFAAC-Project-on-Aquatic-Invasive-Species-in-Europe>

The special issue of Management of Biological Invasions (MBI) with FINS II papers can be downloaded from: <http://www.reabic.net/journals/mbi/2017/Issue3.aspx>

FINS I paper can be downloaded here:
http://www.reabic.net/journals/mbi/2014/1/MBI_2014_Caffrey_etal.pdf

PROGRESS REPORT

EIFAAC Project “Developing Advice on Sustainable Management Actions on Cormorant Populations”

Manager: Niels Jepsen, DTU-Aqua, Denmark (contact: nj@aqua.dtu.dk)

Background

Understanding interactions among fish, fisheries, and cormorants is important for many stakeholders. Currently only national, regional and local management actions related to the cormorant population are taken whereas pan-European measures have been unreachable. The overall population of cormorants is slowly increasing, despite of widespread national management actions. Conflicts seem to occur more frequently in most of the European countries and the impact from cormorant predation on EU freshwater fish populations should not be underestimated. Recently, results from studies from the Koblenz-Landau University have indicated that cormorant predation may be the major reason for rivers failing to reach good or high status according to the EU Water Framework Directive (WFD). The same situation has been observed in Denmark, where some rivers now have so few fish that assessment of their ecological status based on fish data cannot be done. Likewise, results from the North Atlantic Salmon Conservation Organization (NASCO) supported SMOLTRACK project indicated that one of the reasons for the general decrease in Atlantic salmon populations may be the heavy predation from cormorants on migrating smolts. Recent research findings demonstrate that cormorants predation has a very high impact on survival of juvenile salmonids in small spawning streams.

This EIFAAC project has been acting as a liaison group, after EIFAAC 26 (Croatia, 2010) concentrated on following and participating in the discussions and meetings on cormorant issues in different countries and especially in the Baltic Sea countries. In Denmark there is an adaptive management plan with wide measures to regulate cormorants, and a stable population size. However, the predation pressure from Cormorants on river and lake fish populations generally remains very high. One of the reasons is the increasing number of wintering birds, coming from Swedish and Finnish colonies. In particular grayling, salmon and larger (resident) brown trout are being predated upon at unsustainable levels in most Danish and Central European rivers. Some populations of grayling in Denmark are presently close to local extinction. The same situation has been observed for decades in Central Europe/Alpine regions where Germany, Switzerland, Czech Republic, Slovenia and Austria have lost many valuable populations of brown trout and grayling. Results have also demonstrated high predation pressure from Great Cormorants on lake fish populations, in particular of trout and perch. Preventive methods to protect vulnerable fish stocks have not succeeded so far. In a recent study of the efficiency of protective shooting, the predation on wild salmon smolts increased from 45% in 2016 to 50% in 2017 despite very strong measures to protect the smolts. Research from many European salmon rivers shows high rates of cormorant predation on salmon smolts and a level of 50% was documented in Jepsen N, Flávio H, Koed A. The impact of Cormorant predation on Atlantic salmon and Sea trout smolt survival. *Fish Manag Ecol.* 2018;00:1–4. <https://doi.org/10.1111/fme.12329>, and available [here](#).

The continuing increase in breeding cormorants in Sweden and Finland provides increasing conflicts along the coasts in those countries, but also poses a problem for other countries by increasing the number of migrating cormorants causing conflicts due to winter in-river predation in Denmark, United Kingdom and Central Europe. Recently, several regions (län) in Sweden and Bundesländer in Germany, have revised their management plans to allow for more protective shooting (regulation) in acknowledge of the negative impact from the birds on vulnerable fish populations.

Terms of Reference

The TOR was approved at EIFAAC 27 (Finland, 2012) and supported at EIFAAC 28 (Norway, 2015). EIFAAC 28 expressed concern about the impact of cormorants on the status of fish stocks and eco-systems; EIFAAC recognized the trans-boundary nature of this issue and also recognized the need for international co-ordination and species management.

The tasks listed in the TORs are:

- Work for the pan-European cormorant management actions.
- Collect from different sources information on the abundance and distribution of the cormorants in the member countries.
- Assess the interaction between cormorants and different stakeholders.

- Assess cormorant's influence on socio-economic conditions of fisheries and aquaculture.
- Gather information of the new developments and experiences in controlling the number of cormorants and their influence on fish stocks, fisheries and aquaculture.
- Identify possible knowledge deficits for different geographical regions.
- Disseminate information through national focal points, project participants, project website and publications.

Benchmarks/deliverables

1. Update of the national situation with cormorants and experiences on management plans in EIFAAC member countries.

- The information on the present situation in member states has been presented by the Cormorant project in connection with the cormorant breeding colony count report (<http://dce2.au.dk/pub/TR22.pdf>).
- General information on Cormorant issues is available on the websites of the Cormorant-project, EAA, Helcom, Wetland International and national research institutes.
- Research made clear that even if we identify measures to minimize predation in rivers and streams, these will be costly and only possible in areas with well-organized volunteers. To really address this conflict, there is a need for extended international cooperation, working towards a general reduction of the EU-population of cormorants.

2. Develop elements for management actions and relevant suggestions.

DTU Aqua have strongly advocated a Nordic research and management project, where regulation efforts can be synchronized, exchange current knowledge, observations and ideas. Now a group from Sweden, Norway, Estonia, Finland and Denmark are supported by the Nordic Council of Ministers (NCM) and met to develop joint proposals for funding of networking and research activities. This group (meeting activities) has been supported with more money from the NCM. From 2020 onwards the group includes managers from the Nordic Countries, so that both managers and researchers meet and discuss cormorant management. So far (2020-21), two virtual meetings have been arranged first with participation from managers and second with participation from stakeholders. More information on the meetings held is available at: <https://www.fishpoint.net/towards-a-joint-nordic-cormorant-management>.

The Nordic cormorant population is expected to increase and move north with the current management practice. There are currently processes in Sweden and Finland to write management plans with measures to control cormorants as the pressure from the fisheries sector is increasing. There is much public debate and political attention to the problem. In Sweden some regulatory measures are being permitted now. In Finland there seems to be limited interest in mitigating the conflicts.

Goals for 2022 - 2023

1. Prepare an update of the national situation with cormorants and experiences with management plans in EIFAAC member countries. A request for formal submission of cormorant related information will be sent out by the EIFAAC Secretariat to all EIFAAC members. The project manager will compile and synthesize the national reports into an EIFAAC report.
2. Prepare and agree on an EIFAAC statement about the severity of the present situation and make press releases to inform the public on the extent of the problem of cormorant predation in freshwater environments throughout Europe and push for action by the European Union. The Statement (advisory note and/or resolution) should be shared by the EIFAAC Secretariat with all members and the public.
3. Advise the TSC on the preparation of a draft Pan-European Cormorant Action Plan.

PROGRESS REPORT

EIFAAC Project “Joint EIFAAC/ICES/GFCM Working Group on Eel (WGEEL)”

Manager: Jan-Dag Pohlmann, WG Chair. Thuenen Institute of Fisheries Ecology (contact: jan.pohlmann@thuenen.de)

1. Introduction

The EIFAAC Working Group on Eel (WGEEL) has been active since the 1970's and collated eel data and biology through its symposia in the 1980s and 1990s – a task it continues to achieve through its annual reports. A widespread severe decline in recruitment was observed in the early 1980s along with a longer term decline in landings. By 1993, this decline in recruitment, along with the stock-wide reduction in landings, was leading to serious concern. Since 1998, the EIFAAC Working Group has operated on a joint basis with ICES, providing scientific advice on stock data and eel management, particularly in relation to the development and implementation of the EU Action Plan for the Recovery of Eel (EU 2007: COM(2005) 472). From 2014, the GFCM (General Fisheries Commission for the Mediterranean) has joined i EIFAAC and ICES work on European Eel.

This report provides an update on activities undertaken during the second half of 2021 and early 2022, and a forward look to activities planned for the remainder of 2022.

2. Work undertaken in 2021/2022

2.1 Annual meeting of the joint EIFAAC/ICES/GFCM WGEEL (2021)

A workshop for the integration of data to the WGEEL data base, prior to the annual WGEEL meeting was recommended. This work has been integrated as part of WGEEL in the form of a split meeting. The WGEEL met virtually, in a split meeting from 7–10 September (virtually) and 27 September–4 October (virtually) to:

- a) Address the generic EG ToRs from ICES, and any requests from EIFAAC or GFCM;
- b) Report on developments in the state of the European eel (*Anguilla anguilla*) stock, the fisheries on it and other anthropogenic impacts;
- c) Report on updates to the scientific basis of the advice, including any new or emerging threats or opportunities;
- d) Address the findings of the [workshop on the future of eel advice](#) (WKFEA), consider their consequences for data collection, stock assessment and advice and make amendments to the current approach of the WG where necessary;
- e) Identify and address Mediterranean-specific issues on European eel.

For a better integration of the Mediterranean area, new members joined WGEEL, providing data and support as regional experts. This is considered a first step in a continuous process to identify and address Mediterranean-specific issues and harmonize the efforts of WGEEL and the recent '[GFCM research Programme on European Eel](#)'.

The recruitment of European eel strongly declined from 1980 to 2011. The glass eel recruitment compared to that in 1960–1979 in the “North Sea” index area was 0.6% in 2021 (provisional) and 0.9 % in 2020 (final). In the “Elsewhere Europe” index series it was 5.4 % in 2021 (provisional) and 7.1% in 2020 (final), based on available data series. For the yellow eel data series, recruitment for 2019 was 16% (final) of the 1960–1979 level; the 2021 data collection for yellow eel is ongoing. Time-series from 1980 to 2021 show that recruitment has stopped decreasing in 2011, but the trend thereafter is rather unclear.

Preliminary analyses of 160 data series on yellow or silver eel abundance show the potential of the yellow and silver eels' series to improve the stock assessment. A comprehensive framework of analyses of the yellow and silver stocks through these series will, however, require many iterations of data collection – analyses – further data needs.

Mortality and biomass indicators have been reviewed and visualized, preparing for a future workshop on

the evaluation of eel management plans (WKEMP 3). Spatial overviews and temporal trends show a lack of data for many regions and no evidence yet of a general improvement in stock status for regions with data. Overall silver eel escapement remains low and mortalities high. Doubts remain about the consistency of indicators across countries. The information provided on data and methods used for assessment are not available or sufficiently detailed to ensure transparency and reproducibility of estimates. These limitations and the incomplete reporting impair the use of these data to inform on the status of the stock at a larger scale.

A review of the effects of contaminants (in a broader sense: spawner quality) on the reproductive capacity of eel highlighted this as an important, but a frequently lacking, aspect of stock assessment. Monitoring of silver eel quality should be considered as part of new or existing programmes.

WGEEL supports the findings WKFEA and the suggested roadmap and agreed to implement the necessary steps to provide towards it. This implies further exploration and analyses of existing as well as the systematic collection of additional data.

The Working Group report for 2020 was published by ICES on its website and is available from this link: <https://www.ices.dk/sites/pub/Publication%20Reports/Forms/DispForm.aspx?ID=38324>

The official ICES Advice on European eel was prepared by the ICES Advisory Committee (ACOM) in response to the annual request from the European Commission. The headline statement is that *“ICES advises that when the precautionary approach is applied, there should be zero catches in all habitats in 2022. This applies to both recreational and commercial catches and includes catches of glass eels for restocking and aquaculture. All other anthropogenic mortalities should be minimized and eliminated where possible.”* and the Advice is available from this link:

<https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2021/2021/ele.2737.nea.pdf>

Note, the wording in the advice was amended from *“all anthropogenic impacts...should be reduced to, or kept as close to zero as possible”* to *“zero catch”*. This is a clarification based on a recommendation made by the workshop on the future of eel advice (WKFEA) and not based on new data. The previous wording was ambiguous, and though effectively advising for 0 catches, it indicated an (undefined) range of catches, which was not in line with the precautionary approach and ICES advise rules.

2.2 Workshop for the Technical evaluation of EU Member States’ Eel regulation Progress Reports (WKEMP 3)

The Workshop for the Technical evaluation of EU Member States’ Eel regulation Progress Reports 2021 (WKEMP3), chaired by J.-J. Maguire, Canada met 29 November–3 December 2021 (WKEMP3 part 1) and 31 January to 04 February 2022 (WKEMP3 part 2) to:

- a) Prepare the data for evaluation
- b) Evaluate the overall effectiveness of Eel Management Plans in terms of changes in biomass indicators and mortalities
- c) Evaluate the effectiveness and outcome of measures in terms of i) the status of implementation of planned measures, ii) where available, quantification of their effects and iii) comparing implemented measures against threats/pressures and potential other measures in a given region. Propose improvements to the management measures, as appropriate.
- d) Evaluate the effectiveness and outcomes of monitoring measures, particularly the used methodology and its feasibility under the given circumstances/challenges

By the time of writing, the workshop has concluded but the report is yet to be published (scheduled in April).

2.3 Chairs activities representing WGEEL

In addition to the scheduled meetings above, the Chair (Jan-Dag Pohlmann) was requested to attend several events since the last report (25th May 2021):

- **September 2021**
 - Participation and presentation of WGEEL work at Working Group on Science to Support Conservation, Restoration and Management of Diadromous Species (WGDIAD)

- **October 2021**
 - Participation in ICES Advice Drafting Group on Eel (ADGEEL) in order to prepare the advice on fishing opportunities for the European eel
- **February 2022**
 - Participation at the Webinar on the results of the GFCM research programme on European eel in the Mediterranean
 - Participation in the GFCM Working group on the management of European eel (WGMEASURES)

3. Activities foreseen in 2022

3.1 1st Scientific Meeting on Japanese Eel and Other Relevant Eels

The chair of the WGEEL was asked to participate in a meeting to share scientific knowledge and experience to provide scientific advice for the conservation and management measures of the species. The meeting will be held for 2 days in April 2022.

3.2 Annual ISSG meeting

Annual meeting of the intersessional subgroup for coordination of data collection on diadromous species. Meeting is scheduled for 3 days in April 2022 but no detailed agenda was available at the time of writing.

3.3 WKEELDATA 4

As several times in the past, a workshop is planned to draft the ICES data call on eel in 2022. While no resolution has been drafted at the time of writing, the workshop will likely be held in May and, apart from recurring tasks such as preparing country specific data call templates, it is planned to also focus on integrating the collection of biometric data collected under the EU data collection framework (DCF).

3.4 Annual meeting of the WGEEL (2022)

Currently, the resolution for the 2022 WGEEL is as follows:

The Joint EIFAAC/ICES/GFCM Working Group on Eels (WGEEL), chaired by Jan-Dag Pohlmann, Thünen Institute, Germany, will meet virtually, in a split meeting from 6–9 September (virtually) and 12 September–20 September (virtually) to:

- a) Address the generic EG ToRs from ICES, and any requests from EIFAAC or GFCM;
- b) Report on developments in the state of the European eel (*Anguilla anguilla*) stock, the fisheries on it and other anthropogenic impacts;
- c) Report on updates to the scientific basis of the advice, including any new or emerging threats or opportunities;
- d) Identify and address Mediterranean-specific issues on European eel
- e) Implement the roadmap proposed by WKFEA
- f) Compare methods to detect changes in recruitment, yellow and silver series

WGEEL plans to report by 11 October 2022 for the attention of ACOM, WGDIAD, FRSG and FAO, EIFAAC and GFCM.

Note, that the resolution may be amended (particularly ToRs d to f). A meeting in presence is planned, but will ultimately depend on the developments concerning the COVID-19 pandemic.

PROGRESS REPORT

EIFAAC Project “Citizen Science Workshop”

Manager: Ciara O’Leary, Inland Fisheries Ireland. (contact: Ciara.O’Leary@fisheriesireland.ie)

Introduction

Citizen science has many benefits to both the general public and the organisations involved in fisheries management. These include raising awareness of the state of our fish populations, gathering required information to help manage fish stocks and assess the quality of our waters. It can be used to encourage collaboration between agencies and invested stakeholders such as anglers, commercial fishermen and general water users such as kayaker’s, divers etc. The type of data being collected already under citizen sciences includes water quality, marine debris, invasive species and biodiversity surveys. Fishery scientists cannot monitor every stretch of river, every lake and transitional water in our jurisdiction, but by using citizen scientists we can get baseline data recorded for a greater number of sites. Combining the fishery scientist’s data with citizen science data will enable extrapolation from the data rich areas to the data poor areas.

Terms of Reference

The project started in 2018 and is managed by Dr. Ciara O’Leary.

This project falls under the EIFAAC strategic objective IV) Protection and restoration of the environment and species.

Benchmarks/deliverables

- To hold a workshop on ‘citizen science in fisheries’
- Create a network of experts to aid project creation and expansion of existing citizen science programmes
- Publish a paper on the potential of citizen science to benefit fishery management.

Progress to date

- A conference call was held on 4 April 2019, it was decided to investigate the option of writing a paper on citizen science in fisheries as an output instead of creating guidance and information sheets.
- A conference call was held on 21 November 2019 to discuss the layout of the paper and allocate responsibility of different sections to relevant people. Five people participated in the call, Kieran Hyder, Christian Skov, Paul Venturelli, William Roche and Ciara O’Leary. It was agreed to hold a writing workshop in Dublin in January 2020 to progress the paper.
- A workshop was held in Dublin on 27 and 28 January 2020. As part of this workshop there were 2 presentations to the group and Inland Fisheries Ireland staff. Paul Venturelli’s talk was titled "Gone digital: angler apps as a source of fishery-dependent data". Kieran Hyder presented a talk on ‘Marine recreational fishing in Europe: current status and future challenges’. An in-depth discussion was held over the 2 days on the different sections of the paper.
- The working title of the paper is ‘Citizen science in the digital era: a compelling resource for improving fisheries science and management’. The paper layout includes the following topics: citizen science and angling; biological sampling; tagging programmes; biodiversity and range of fish; environmental data; habitat restoration; socio-economics and benefits/limitations. The paper will be an opinion piece and the target journal is Fish and Fisheries.
- A draft manuscript has been created however the effects of covid-19 have impacted on progress of the manuscript. The time available for participants to work on this manuscript has been affected with little progress over the last 6 months.
- A conference call was held on 14 January 2021 to discuss the draft publication and highlight any gaps.
- The next meeting scheduled for 26 February was postponed following correspondence by email on progress of sections. This postponement was to allow participants more time to work on required sections as impact of Covid-19 has affected work schedules. The draft is about 50% complete at this point.

PROGRESS REPORT

EIFAAC Project “EIFAAC Symposium 2021”

Manager: Cathal Gallagher, Inland Fisheries Ireland (contact: cathal.gallagher@fisheriesireland.ie)

Introduction

Ireland has agreed to host the 2021 EIFAAC symposium and session

Terms of Reference

Non defined except that Inland Fisheries Ireland and Department of Communications, Climate Action and Environment will host the symposium.

Benchmarks/deliverables

- Establish Scientific Committee & Management Committee
- Select Venue and finalise date
- Draft Themes
- Develop symposium program
- Develop symposium web site and communication tools
- Open call for papers
- Agree symposium program
- Close registration
- Host symposium
- Publish Symposium findings

Progress

The date and location was officially agreed and signed off by FAO and Inland Fisheries Ireland parent Department (venue: Randles Hotel, Killarney, Co. Kerry (www.randleshotel.com) from 20 to 21 June with a welcome evening on the 19th and a tour (or tours) in the Kerry area on Wednesday the 22nd. The thirty first session of EIFAAC will be held on 22-24 June in the same location.

A symposium Scientific Committee & Management Committee have been established and meet regularly. The call for abstracts has opened with a closure date of the 11th March. Details of the symposium, its themes, registration details etc. are all available via a dedicated Web location [EIFAAC Symposium 2022 | Inland Fisheries Ireland](#).

Members of the organising committee visited the location in Killarney, Co. Kerry in December 2021, with a follow on visit planned to finalise session and symposium details in March 2022.

PROGRESS REPORT

EIFAAC Project “Downstream Passage of Fish at Hydropower Stations”

Manager: Teppo Vehanen, Natural Resources Institute Finland (contact: Teppo.Vehanen@luke.fi)

Introduction

Downstream migration of fish at hydropower dams has been identified as a key factor affecting fish populations in regulated rivers. It is essential to reduce migration delays, damage and mortality to fish at these migration barriers. At the moment, there is a lack of international comprehensive information on the downstream passage of fish at barriers. This project aims to fill this gap by collating information on the effects of barriers on downstream passage, as well as different mitigation and management approaches in different countries. Based on this information, the project also aims to develop a best practice guide for ensuring/improving downstream passage of fish.

Terms of Reference

Thus far, we have assembled a team to carry out this report, and have made a tentative outline for the report.

Progress 2021-2022

The team has had several online meetings 2021 to discuss and define the focus of the work and what kind of data should be collected. A consensus was reached and a template to collect examples of downstream solutions, successful and not so successful, was developed. The examples to be collected include technical data on the construction of the downstream structures, and the biological data on the success of the structures. The template was distributed among the project members in 2021. First examples were received in 2022 and the writing of the report started.