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

24–26 April 2017

Gothenburg, Sweden



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Executive 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 Workshops on Sea Trout (WKTRUTTA, WKTRUTTA2); (ICES, 2013, 2016). This Working Group builds on the scene-setting work of WKTRUTTA and WKTRUTTA2.

Stock declines, for example 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 existing abundance data from different life stages, information on habitat quality and fisheries data etc., the Working Group with the Aim to Develop Assessment Models and Establish Biological Reference Points for Sea Trout (Anadromous *Salmo trutta*) Populations (WGTRUTTA) 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 first meeting of WGTRUTTA took place in Gothenburg, Sweden, 24–26 April 2017 and was attended by 33 experts from 15 countries – all but 3 (Latvia, Spain and Iceland) of the countries thought to be supporting sea trout production from the natural range of the species. Spain and Iceland provided information but could not be physically represented at the meeting. During the meeting, contact was made with additional expertise in Latvia who will support the WG.

In the first meeting we achieved a regional overview of the information and knowledge from almost all sea trout producing countries in Europe (17 out of 18 countries) where representatives from each country presented national reviews of sea trout data collection, assessment and management practices. These provided a baseline of information and knowledge, updating from WKTRUTTA2, to support the WG in developing the sea trout database. Experts then presented updates on method development, data collection and sea trout/trout biology.

The WG then established and divided tasks among group members and organized themselves into 4 subgroups (see section 4).

1 Administrative details

Working Group name

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

Year of Appointment within current cycle

2017

Reporting year within current cycle (1, 2 or 3)

1

Chair(s)

Johan Höjesjö (Sweden)

Alan Walker (UK)

Meeting dates

24–26 April 2017

Meeting venue

Gothenburg, Sweden

2 Terms of Reference

a) Compile information from a selection of suitable rivers across Europe with long-term data on parameters such as juvenile densities, habitat characteristics and, if available, abundances of ascending spawners and out-migrating smolts (year 1).

b) Develop new, validate and fine tune existing population models for sea trout (year 1-3).

c) Establish and evaluate different approaches for estimating Biological Reference Points (BRPs) across regions with different characteristics and conditions for sea trout (year 2-3).

3 Summary of Work plan

The WG will address key questions relating to the assessment of sea trout stocks in the North Atlantic and Baltic. The overall plan is to establish the WG in 2017 with subgroups across Europe. Over the 3-year period, there will be 4 meetings in total; Sweden (Gothenburg), Denmark (Copenhagen), Portugal (Lisbon) and UK (place to be decided). Subgroups will work on the ToRs between these meetings with regular contact through email and/or webinars. Most of the work regarding deliverables for the different ToRs will be planned and performed in parallel. The main goal of the WG is to take on the

work initiated during WKTRUTTA2, i.e. develop and evaluate different methods for modelling sea trout populations, and define BRPs and a protocol that can be used to assess status of sea trout populations in different regions.

Year 1

In year 1, the WG will be established and divide tasks among group members and prioritize among available data sources. The group will start to create a database for European rivers in support of testing existing, and developing new, population models. The database will be developed in year 1 and will lead to recommendations on suitable index rivers in different areas, and identification of gaps and weaknesses in current monitoring programs. In parallel, the group will start to develop population models based on the available data.

Year 2

In year 2, the group will continue to work on the database and potentially add new data and stream systems. Development of population models will continue. The group will also start to evaluate different approaches for estimating Biological Reference Points (BRPs), based on the population modelling work.

Year 3

During year 3, the focus will be to continue the development and validation of different population models, and the work to establish BRPs in different regions across Europe. At the completion of the year, WGTRUTTA should be able to recommend suitable population models and approaches to estimate BRPs, which could be used to assess status of sea trout populations across Europe.

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

- The working group was established in January 2017;
- At the first meeting in Sweden (April 2018), representatives from each country gave presentations on national reviews of sea trout data collection;
- Assessment and management practices;
- A regional overview of a baseline of information and knowledge were also presented, updating from WKTRUTTA2, to support the WG to consider
- Creation of the sea trout database.

Four subgroups were created with the following focus and progress:

- Sub-group 1 has begun to create a database in a gradient across European rivers to be able to develop (and test) new and existing population models.
- Sub-group 2 has started to develop population models, examining the effects of salmon, and resident trout.
- Sub-group 3 has started to develop a model applying trout recruitment versus habitat score systems.

- Sub-group 4 will develop stock recruitment relationships based on sea trout life history.

Dissemination

A report was prepared after the April 2017 meeting in Sweden, and the WG was presented by Alan Walker at the ICES Annual Science Conference (ASC) in Fort Lauderdale, Florida in September 2017, at the WGRECORDS (WGDIAD) meeting and Theme session N: Population status, life histories, ecology, assessment, and management of diadromous fishes.

5 Progress report on ToRs and workplan

Progress by ToR (a–b)

a) "Data". Sub-group 1 has begun to create a template for a database based on the data available (data provider) as well as the type of data that were demanded (data users) from the working group consortium. Information has been collected from a selection of suitable rivers across Europe with long-term data on parameters such as juvenile densities, habitat characteristics and, if available, abundances of ascending spawners and out-migrating smolts.

b) "Models". Sub group 2 has started to identify the knowledge gaps regarding the impact of salmon on trout survival, growth, migration and population dynamics as well as the potential influence on the proportions of freshwater resident vs anadromous components. A peer reviewed paper has been prepared and will be circulated at the February 2018 meeting. Sub group 3 and 4 have started to evaluate different approaches / methods for modelling sea trout populations, with respect to factors such as assessment needs, availability of data, geographical coverage and complexity.

c) "BRPs". This work will start in 2018

Changes/ Edits/ Additions to ToR

None

Cooperation with other WG

The WG has some synergies with the Working Group on Data-Poor Diadromous Species (WGDAM), as the latter has sea trout in its list of target species. Members of WGTRUTTA are leading on representing sea trout in WGDAM, having written a review chapter for the report and will work across both WGs to ensure knowledge transfer and efficient use of resources.

Cooperation with Advisory structures

The EU Regional Coordination Groups (RCG) for the Data Collection Framework (DCF) have created a sub-group for diadromous species, including sea trout which qualifies for the DCF in the Baltic area. WGTRUTTA members take part in the RCG-Diad, therefore ensuring knowledge transfer.

6 Revisions to the work plan and justification

A tentative database will be presented and distributed among WGTRUTTA members in December 2017 and the final database as well as suggestions for suitable index rivers in different areas will be decided in the second meeting in Copenhagen (February 2018). This is a delay of 3 months in regards of the original workplan but the data turned out to be more difficult to organize than estimated but this is not believed to affect the overall progress.

7 Next meetings

WGTRUTTA will meet twice in 2018:

- 6-8 February 2018, at ICES HQ, Copenhagen, Denmark;
- October 2018 (dates to be confirmed) in Lisbon, Portugal.

8 References

ICES. 1994. Report of the Study Group on Anadromous Trout. Trondheim Norway 29-31 August 1994. ICES CM 1994 M:4.

ICES. 2013. Report of the Workshop on Sea Trout (WKTRUTTA) 12-14 November 2013, ICES Headquarters, Copenhagen, Denmark. ICES CM 2013/SSGEF:15

ICES. 2016. Report of the Workshop on Sea Trout 2 (WKTRUTTA2), 2–5 February 2016, ICES Headquarters, Copenhagen, Denmark. ICES CM 2016/SSGEPD:20. 121 pp.

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