A Potential Successor to SALSEA-Track

Purpose

The purpose of the paper is to document the outcome of decisions made by the Board by correspondence, in February 2022, following the SAG's Technical Evaluation of the 'Developing an International Atlantic Salmon Modelling and Management Initiative'. It also provides information on the ROAM project which is a potential successor to SALSEA-Track.

Decisions

The Board may wish to:

- agree that the Secretariat should continue to seek a potential successor to SALSEA-Track;
- agree whether the Board should fund or endorse the *preparation* of research proposals; or that this question should be considered alongside the recommendations of the Report of the Review of the Metadatabase, ICR(22)03 (Agenda item 4).

Background

At the 2020 Annual Meeting of the Board, it was agreed that the SALSEA-Track Programme should be closed, CNL(20)12. It was also agreed that:

> *'any successor to SALSEA-Track should have the following attributes: be problem focused with a clearly defined internationally relevant question, which is not solely developed based on the newest technology available; have clear SMART objectives; have clear timelines; have a clear budget; be at the basin-scale; and have an identified owner / co-ordinator. Additionally, it should address issues such as: data gaps / climate change / commonalities across the jurisdictions / mechanisms for supporting new technologies.'*

At that meeting, the Board also discussed seeking a potential successor to SALSEA-Track in future years. The ROAM project (see below) was discussed and it was proposed that Board members could canvass colleagues on other potential successors, should the ROAM programme not be deemed a feasible candidate successor. Further, the Board recognised that the process of considering a new programme could happen alongside developments of the ROAM programme.

Therefore, prior to the Annual Meeting in both 2021 and 2022, the Secretariat asked Board members whether they were aware of any potential successor programmes to SALSEA-Track, and if so, to provide information that would be collated into a paper for the Board meeting.

Decision

- agree that the Secretariat should continue to seek a potential successor to SALSEA-Track.

Technical Evaluation of the 'Developing an International Atlantic Salmon Modelling and Management Initiative'

In response to the request for a potential successor to SALSEA-Track in 2021, a project proposal on 'Developing an International Atlantic Salmon Modelling and Management Initiative' (ISMMI) was provided. Information on this proposal was contained in paper 'A Potential Successor to SALSEA-Track', ICR(21)07. At the 2021 Annual Meeting of the Board,

the ISMMI was presented by the NGO representative, Ken Whelan, ICR(21)12. In response, the Board agreed that:

- it would refer the proposal to its Scientific Advisory Group (SAG) for a technical evaluation;
- individual SAG members could consult with other relevant experts on this evaluation;
- the SAG would be asked to address their Terms of Reference and report their technical evaluation to the Board; and
- the Board would consider this evaluation and, if necessary, a virtual inter-sessional meeting of the Board could be arranged.

The SAG met by video conference in October 2021 to conduct a technical evaluation of the ISMMI proposal. The Report of the Technical Evaluation of the 'Developing an International Atlantic Salmon Modelling and Management Initiative' is available, SAG(21)05. In its overall comments the SAG stated (in paragraph 4.3):

> *'There was agreement amongst members of the SAG that the proposal was difficult to review. It was unclear whether the SAG should provide a technical scientific evaluation of the £96 K request to the Board, which was primarily focused on preparing a large multi-year project proposal, or the potential larger multi-year project. Much of the proposal's text focused on the need for that larger effort.'*

As agreed, the Board considered a paper relating to the Report of the SAG, inter-sessionally by correspondence, ICR(22)02. The correspondence had two components: one relating directly to the ISMMI proposal; and the other relating to more general issues of the Board's funding and endorsement of projects.

The Board's Consideration of the ISMMI proposal

- there was consensus that the Board should not fund the ISMMI proposal; and
- there was consensus that the Board should not endorse the ISMMI proposal.

However, some members indicated that they might be willing to consider endorsing a revised proposal in future. It was noted that this could be discussed at the Annual Meeting in June under the agenda item 'A Potential Successor to SALSEA-Track'.

The ISMMI consortium was informed of these decisions on 8 February 2022.

The Board's Consideration of General Issues of Funding and Endorsing projects

Many members felt that the Board should not consider funding or endorsing the *preparation* of research proposals. However, there was no overall consensus in this regard. Therefore, during the period of correspondence it was proposed that these issues could be discussed during the Annual Meeting under the agenda item 'A Potential Successor to SALSEA-Track'.

In considering these issues, the Board may wish to take into account one of the recommendations of the Report of the Review of the Metadatabase of Salmon Survey Data and Sample Collections of Relevance to Mortality of Salmon at Sea, ICR(22)03. As well as consideration of the Metadatabase, that Working Group considered whether other areas of the Board's work required review (as set out in its Terms of Reference, ICR(21)15). That Working Group agreed to recommend that the Board may wish to:

- consider its overall vision, scope and purpose;

- assess whether the funding available to the Board is commensurate with its vision, scope and purpose;
- identify the priorities the Parties now have for the Board; and
- consider establishing a process for requesting and reviewing proposals.

These recommendations will be considered under Agenda item 4.

Decisions

In light of the discussion above, the Board may wish to:

- agree whether the Board should fund or endorse the *preparation* of research proposals;

or that

- this issue should be considered alongside the recommendations of the Report of the Review of the Metadatabase…, ICR(22)03 (Agenda item 4).

The RAFOS Ocean Acoustic Monitoring (ROAM) Approach to Marine Tracking

As mentioned above, in 2020 the Board recognised that the process of considering any successor to the SALSEA-Track programme can happen alongside development of the ROAM programme. The ROAM programme is described in the SALSEA-Track Final Report, ICR(21)04.

> *'ROAM is an acoustic tracking system where low frequency long ranging sound wave "pongs" are emitted from ocean moored sound sources and received by a tag equipped with a hydrophone attached to the study animal. A primary advantage of the ROAM approach is the long range of the "pongs" which could result more accurate geolocation over a wider spatial and temporal range compared to traditional light-based methods. However, it should be noted that this technology is in the early stage of development and field testing is ongoing.'*

At the Annual Meeting in June 2020, the Board member for the United States provided an update on the ROAM programme, ICR(20)16. He stated that there had been some delays in starting field trials. He noted that the trials were intended to piggyback on a survey of the Woods Hole Oceanographic Institution (WHOI) but with the pandemic, all field activities had been cancelled or delayed. He reported that as long as the original plan moved forward as the restrictions were lifted, there was no reason why the ROAM trials would not happen, but he could provide no clear schedule as to when the trials would take place.

In January 2021, a further update was received from the Board member for the United States who reported that WHOI collaborators remained keen on the project, and that some progress has been made. The pandemic had meant that marine survey time had been very limited, and the field trials had not yet been conducted. There had been some advances with the tag production, and progress with tag development, with two commercial tag companies involved. The ROAM approach is a key component to another WHOI project, the Ocean Twilight Zone and there is increased pressure to get the field trials done in order to move to the implementation stage. In summary, the ROAM team was waiting for the marine survey side of things to progress, before seeking an opportunity to couple the ROAM field trials onto an existing survey.

A further update was provided in April 2021. The Board member for the United States stated that many marine surveys had resumed but had been staffed at half capacity due to restrictions associated with the pandemic, which had limited the ability to 'piggy-back' additional work

such as the ROAM field trials. However, there was a real opportunity for the field trials to be conducted in July 2021 and collaborators were trying actively to secure the necessary ship time and commitments, and to develop the field trial plan. The development of multi-frequency ROAM tags was also ongoing, which would increase the versatility of the tag greatly and allow it to operate efficiently in both freshwater and saltwater environments. The Board member for the United States presented a further ROAM update during the 2021 Board meeting. The presentation is available as document ICR(21)13.

A further update was provided in May 2022. The Board member for the United States stated that two ROAM sound sources, to be used for field testing, had been deployed off the coast of the Northeast United States in early summer 2021. A series of opportunistic glider missions were organized to conduct the trials. Unfortunately, the tests were not optimally designed (e.g. gliders were programmed to stay relatively shallow) or equipment malfunctions (e.g. glider breakdowns) decreased the efficacy of the field trials significantly. To date, data have been recovered from a one-month deployment in July-August 2021 that yielded promising results. This was the first open-ocean test of a tag, with profile depths up to 200 m. The glider-attached tag was deployed within a large warm-core ring and registered 14 (of 32 possible) pong detections. Most of the missed detections were when the glider was in the mixed layer or at the surface, where ambient noises from wind and waves are high. Distances between the glider and the sound source ranged from 42 to 84 km during the test. Geolocation estimates from the ROAM tags were ~1 km of the gliders actual position.

Two new dedicated field trials are being planned for the summer of 2022. A dedicated glider mission is being organized and the glider will be programmed to travel from the Northeast coast of the United States southeast to Bermuda. The glider will be programmed to behave like a migrating fish with frequent dives to depth. A second trial is also planned where large pelagic animals (e.g. sharks, swordfish) will be captured in the relative vicinity of the two deployed sound sources, fitted with both GPS and ROAM tags and released. The tags will be programmed for a short deployment making the collected data available for analysis in 2022. If successful, these two trials will provide a robust assessment of the performance of the ROAM technology to track marine animals over large distances in the ocean.

In spite of the setbacks experienced over the past few years, interest remains high in ROAM and resources are being mobilised to support these dedicated field trails. In addition, numerous funding proposals are being developed, or have been developed and submitted, for consideration. These proposals are, generally, looking for funding to support ROAM monitoring projects across vast areas of the Northwest Atlantic and the Great Lakes of the United States. Collaborating researchers recognise the importance of having positive results from field trials to strengthen their proposals. However, given the results to date and the potential the technology holds for tracking animals over vast aquatic areas, they are pursuing funding opportunities regardless, while eagerly awaiting the results from the 2022 efforts.

Secretariat
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