Acoustic tracking of Sea Trout in Swansea Bay: Pilot study

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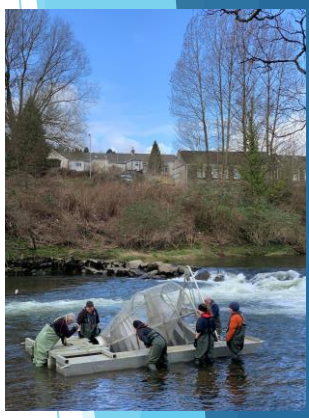
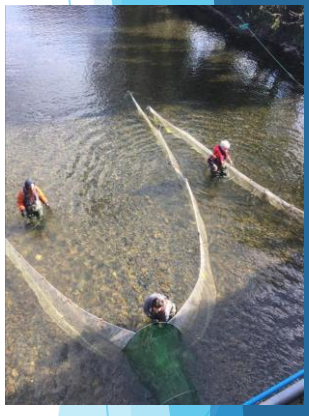
Rationale



Modelling of fish movements in Swansea Bay has predicted high impacts from the proposed tidal lagoon for populations of Twaite Shad (Alosa fallax L.), spawning in the River Severn SAC, and for Sea Trout (Salmo trutta L.), spawning in the Tawe, Neath and Afan rivers. While in-river movements of Sea Trout are well understood, data on inshore movements and residence times in estuaries and embayments are limited. NRW are concerned about the potential for anadromous fish (salmonids, shad and eels) to be drawn into the tidal lagoon impoundment, resulting in losses during turbine passage, and increased predation. Local angling societies have raised concerns about the effects of the tidal lagoon on fishing and have requested collaborative research to learn more about fish movements and residence time in Swansea Bay.

The objectives of this fish movement study are to increase our understanding of the movement of sea trout migrating in and out of River Tawe, as well as understand the practical limitations of the deployment and operation of a large acoustic receiver array.

Methods



Sea trout (sewin) at different life stages (smolts and adults) will be captured during in-river migration, tagged with acoustic transmitters and released at the site of capture. Smolts will be netted using fyke nets or rotary screw trap in March-April 2020. Adults will be captured using Panteg trap and/or seine netting of pools in September-October 2020.

The tags used will be VEMCO 69 khz acoustic tags; V9 for adults and smaller V7 tags for smolts. Ping frequencies will be set to enable tagged fish to be detected on the outmigration as kelts, and (subject to extended funding) on 2 subsequent return migrations to the river.

Acoustic receivers will be placed in the lower Tawe river and Swansea Bay with further opportunity to extend into the Bristol Channel area in order to track fish migration patterns and behaviour. The receivers will be supplemented by active tracking using a VEMCO VR100 deck box and acoustic towed array in Swansea Bay and the estuaries and lower river of the Tawe, Neath and Afan.

Outcomes

The study will be established as a pilot study to; (1) track adult Sea Trout kelts and smolts to establish post tagging survival and egress from the river, (2) provide initial estimates of passage/residence times and behaviour of Sea Trout exiting the River Tawe and moving through Swansea Bay, (3) establish and operate a fixed array in Swansea Bay as a proof of concept to identify practical constraints and operating practices.

This project is part funded by the European Regional Fund through the Development Welsh Government and carried out in collaboration with Pontardawe and Swansea Angling Society, Tawe and Tributaries Angling Association, Natural Resources Wales (NRW) and John Bolland (HIFI, University of Hull).

SEACAMS

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