

## Activities in the Marine Environment

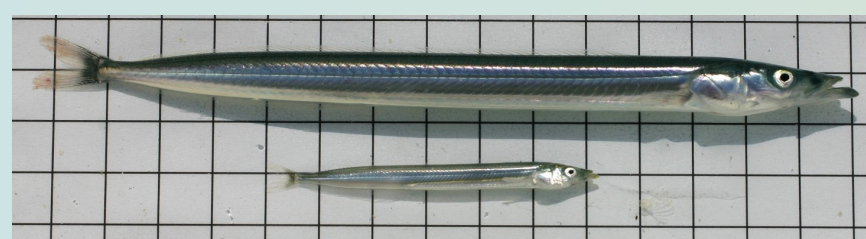


# WESTER ROSS FISHERIES TRUST

## Activities in Rivers and lochs



(left) An exceptionally fat, well-fed finnock from the River Ewe in July 2009.  
(right) The sweep net being set in Loch Gairloch in June 2010.



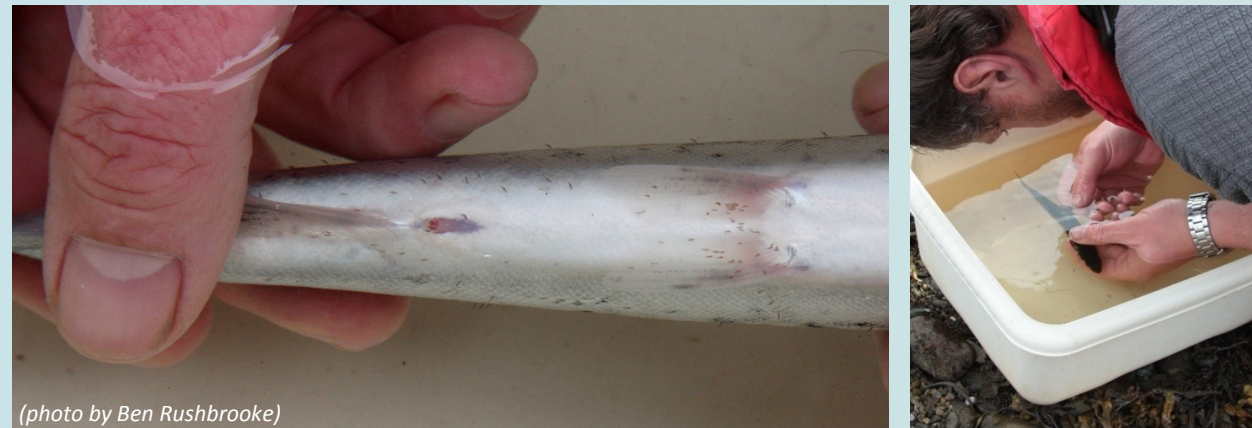
(above) Sandeels, caught in Loch Gairloch in July 2009. Small sandeels and herring fry provide food for post-smolts, larger sandeels provide alternative food for predators of post smolts.



(below) This herring, in spawning condition, was caught in Loch Ewe in January 2011.

### • Sea trout monitoring (March to September)

Sea trout were sampled around the coast of Wester Ross to maintain an understanding of sea trout health for local management purposes and to provide data on parasite burdens for the RAFTS Aquaculture Project. Sea trout grew much fatter in 2009 than in 2010 and 2011. In some sea lochs, high levels of infection by parasitic sea lice (*Lepeophthirus salmonis*) caused problems for sea trout in both 2010 and 2011. WRFT also supports the work of Marine Scotland Science in the Loch Torridon area to learn more about relationships between sea lice and the salmon farming industry.



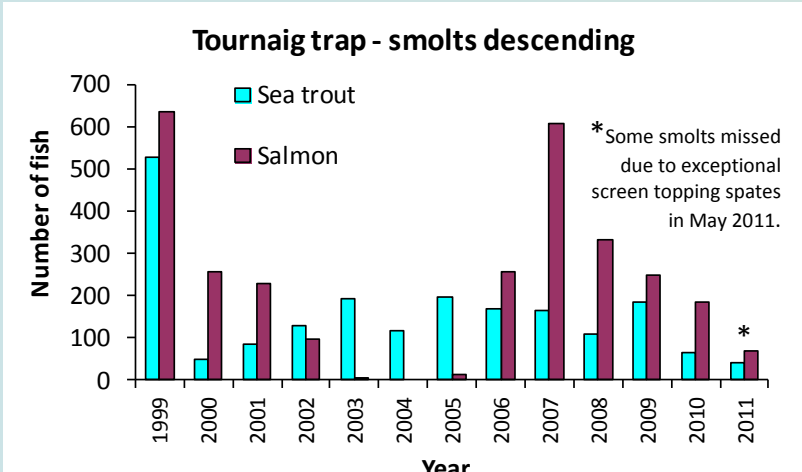
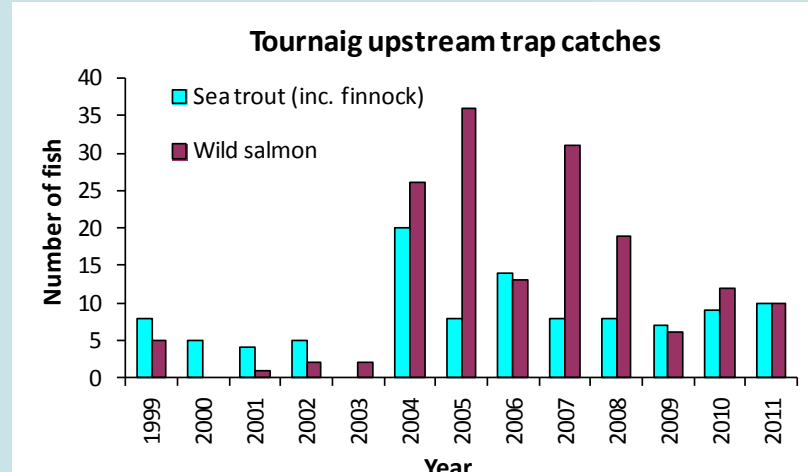
(above) Copepodid and chalimus stage sea lice are very small and most accurately counted on anaesthetised fish held beneath the water in good light, as demonstrated by Ben Rushbrooke on this sea trout from the River Kanaird estuary in June 2011.

### • Trout Scale Reading Workshop and on-line Catalogue

In February 2011, WRFT invited Dr Andy Walker to provide guidance to WRFT biologists tasked with interpreting trout life-histories from scale readings. Recently, few sea trout have survived for more than two summers at sea. Photographs of images of scales from trout sampled in Wester Ross can be found via links on the WRFT website.

### • Genetic studies: FASMOPI

The 'Focusing Atlantic Salmon Management on Populations [FASMOPI]' project is a collaborative RAFTS-led venture. To learn about population structuring in Atlantic salmon populations, genetic samples were taken from juvenile salmon from local rivers by WRFT in 2010, and analysed by the RAFTS FASMOPI team.



(above) Escaped farm salmon (top) and wild (bottom) male salmon from wild-caught broodstock in November 2009. Escaped farm salmon have bred in some rivers within Wester Ross since the 1990s. The genetic consequences and management implications for salmon populations in Wester Ross will be better understood via collaborative work led by the RAFTS FASMOPI team.

### • Tournai Trap Project (March to October)

This project has been recording the numbers of salmon and sea trout entering and leaving the little Tournai River system since 1999. The project was set up to monitor natural fluctuations in the performance of wild fish populations. The system remains unstocked. The annual electro-fishing survey of the spawning & nursery stream complements the operation of traps within the old fish ladder near the mouth of the stream. Following recolonisation by stray wild salmon in 2004 & 2005, salmon smolt production has varied greatly according to the number of adult fish, and according to weather and river conditions during the spawning season and during the smolt migration period (April-May). Tournai salmon are believed to be part of a 'metapopulation', to be confirmed by genetic analyses.



### • Salmon in the Classroom

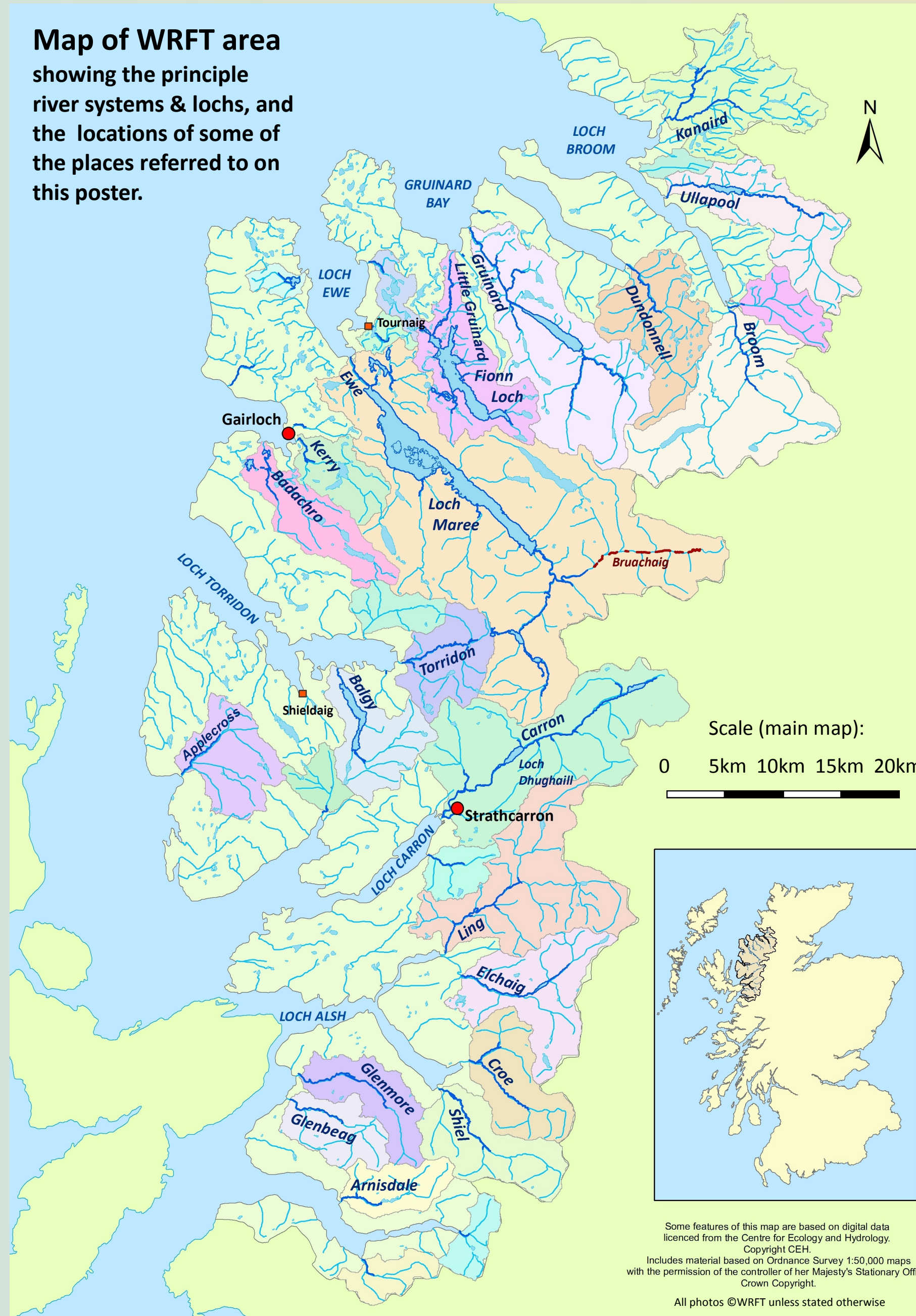
This project has been successfully adapted to the specific requirements and opportunities of local schools and has been to all the primary schools within the WRFT area at least once. Other WRFT projects for primary and secondary schoolchildren included 'Life in Lochs' and 'Lochan Life'.

(left) Dr Lorna Brown with schoolchildren at Applecross Primary School in September 2011. In recognition of Lorna's work with local schools, the Trust received a 'Business Partnership Award' from the Highland Council in 2011.

(for left) Ben Rushbrooke at the Tournai trap.

The overall purpose of WRFT is to maximise and sustain the productivity of wild salmonid fisheries in the rivers and lochs of Wester Ross and the Loch Alsh area. To address problems facing wild salmon and sea trout populations in the WRFT area, the WRFT Fisheries Management Plan was published in 2009 with support from the Scottish Government via RAFTS. This poster provides an outline of some of the main activities carried out within the WRFT area following completion of the plan.

Map of WRFT area showing the principle river systems & lochs, and the locations of some of the places referred to on this poster.



### • Wester Ross and Lochalsh Biosecurity Plan

As part of the RAFTS Invasive Species management initiative, this plan was produced in 2010 to address local problems and deliver local solutions. Non-native species that are already causing expensive problems include *Rhododendron x superpoticum* and Japanese knotweed. There are threats to native biodiversity from many others.



(left) Participants at the 'Lever & Mulch' & 'Stem injection' Rhododendron control training course, organised in collaboration with the National Trust for Scotland at NTS Inverewe Gardens in January 2010.

### • Juvenile fish surveys (July to October)

WRFT electro-fishing teams visited all major salmon river systems (shown left) during the period 2010–2011. Our primary objective was to maintain an understanding of the distribution and status of juvenile Atlantic salmon within the area. In both years, densities of salmon parr were highest in core habitat areas downstream from lochs. In 2010 we discovered that wild salmon had recolonised the upper Glenbeag and Glenmore rivers above waterfalls, following almost a decade of absence from these areas. In 2011 salmon fry were outnumbered by one year old salmon parr in many of the smaller streams.



(left) Clint Barker, Garry Bulmer (using a banner net) and WRFT Biologist Peter Cunningham (fishing) recorded high densities of juvenile salmon in the Little Gruinard River in August 2011, as part of a 'Special Area of Conservation' [SAC] site assessment contract commissioned by SNH. (photo by Dave Barclay)



(left) Despite high water conditions, Roger McLachlan and work experience pupil Chris Young (left) were able to record healthy numbers of salmon fry and parr (below) in the Rhidorrach River (Ullapool system) in September 2011.

### • Provision of information and support (all year)

The results of field surveys are written up in reports primarily to inform local management. Recommendations focus on opportunities for taking action to improve habitat and support the production of juvenile fish. These provide the basis for discussions with river owners and fishery managers. Please visit the WRFT website for examples of reports and management plans.



(right) The Little Gruinard FMP focuses on the production of both wild salmon & wild trout. (far left) Salmon fry of nearest native origin being stocked into the upper Bruachaig by Neil Morrison and George Pennington in July 2011. (inset) At low populations densities, fish stocked in earlier years grew quickly, sometimes reaching 120mm or more by the end of their second summer.

### • Bruachaig Wild Salmon Restoration Project

Wild salmon were last recorded in the upper Bruachaig (Ewe system) above complex waterfalls in 1996. To 'kick-start' the restoration of juvenile salmon production from a large area of suitable habitat, a stocking programme, using progeny of wild salmon caught below the falls, has been developed. Pending the outcome of annual electro-fishing surveys in search of wild fry, the stocking programme will continue until 2015.



All the anaesthetised fish in the tray (right), a mix of juvenile salmon and trout, were caught in the stream section between the two nets (above right), as part of the collaborative 'Carrying Capacity Project'. David Mullaney is holding the site label.

(left) The Arctic Charr discovery week in November 2011 was another opportunity for collaboration. Alex Lyle, Ruth Watts (from SEPA), Aly Ainsworth and Richard Wilson provided expertise and support.

### • Carrying Capacity Project

The aim of this series of management trials is to learn more about the factors which limit the numbers and biomass of juvenile salmon in typical Highland streams. By comparing fish occurrence in different types of habitat we are learning how carrying capacity varies, and how natural fertility can be managed. This is a joint project with the Cromarty Firth Fisheries Trust and the MSS Freshwater laboratory.



(right) WRFT Biologist, Jonah Tosney, returning a male Arctic Charr to Loch Sgamhain. (below) Two types of male Arctic Charr, both in breeding condition, were found in Loch Dhughail.



### • Arctic Charr Discovery Week

The lochs of Wester Ross are a stronghold for Arctic Charr. WRFT organised a 3rd 'Discovery Week' in November 2011 to focus on the lochs of the River Carron system. Healthy charr populations were recorded in three lochs. Data and DNA samples were collected for studies by Charr specialists working in academic institutions elsewhere in Scotland.



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