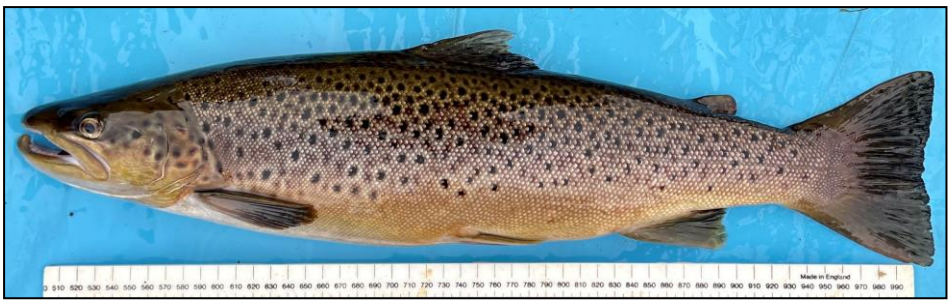
WESTER ROSS FISHERIES TRUST

REVIEW April 2023



 www.wrft.org.uk

WESTER ROSS FISHERIES TRUST

A Charity Registered in Scotland No. SCO50755 and A Company Registered in Scotland No. SC687827

REVIEW

compiled by Peter Cunningham

April 2023

Cover photos (all photos in this report © WRFT unless stated otherwise)**:**

Please note that all the photographs of fish from our surveys in this report are of anaesthetized fish which were kept out of water for typically less than 30 seconds before being transferred into a recovery bucket to wake up prior to release.

From top left *(clockwise):*

(1) Keith Dunbar at the oars, Loch Maree, 1st September 2022. Later we caught and returned a sea trout along the North Shore on a bushy dapping fly. Loch Maree and River Ewe anglers reported that the finnock were fatter (in better condition) in 2022 than for many years; the largest sea trout reported was about 3lb.

(2) Loch na Feithe Mugaig in the Gairloch Hills; photo taken from a biodiversity hotspot where crows and raptors perch. The productivity of much of the land and freshwaters around Wester Ross is limited by lack of nutrients. In contrast, coastal seas around Wester Ross were becoming increasingly eutrophic (nutrient enriched) as a result of discharges from open cage salmon farms; currently there is concern about the spread of blanket weed (filamentous algae) which can smother protected seabed habitats such as maerl and sea grass (see part 5).

(3) Male sea trout, Loch Gairloch, September 2022. Despite high levels of sea lice every second year on sea trout sampled in Loch Gairloch since 2015 (correlating with the salmon farm production cycle in Loch Torridon), some sea trout are able to survive by remaining close to freshwater where they are able to de-louse. Levels of sea lice on sea trout are indicative of lice levels in coastal waters; how many of the wild post-smolt salmon from the Torridon, Balgy and Applecross rivers have been killed as a result of sea lice infestation during the years when there are very high numbers of sea lice sampled on sea trout nearby? Marine Scotland Science tracked sea trout and post-smolt salmon in Loch Torridon in 2022 and earlier years.

(4) Andy Vicks and Dr Steve Kett by a waterfall in the upper Bruachaig river above Leckie. Historically, wild salmon were thought to have been able to ascend waterfalls to reach a productive area of nursery habitat in Srath Chromhuill, where in 2018 many signs of water voles were found. The current challenge is to support the restoration of a wild salmon populations above the lower falls following hydropower development; one step at a time . . ..

(5) The sweep netting team by the mouth of the Applecross River on 31st August 2022: James Brown, Gregor Watson, David Abraham, Roger MacLachlan, Alison Hewitt and Ian McFadyen. Thanks everyone! WRFT was contracted by MOWI to carry out wild fish monitoring at Applecross in support of the Caol Mor Environment Management Plan (see part 3).

(6) Herring larvae, sampled using a plankton net from a kayak near Melvaig, and photographed by Fiona (Fee) Mackenzie (Aberdeen Science Centre) at the herring exhibition at Gairloch Museum on 15th April 2022. Thank you to Marine Scotland Science for confirming identity; and to Gairloch Museum and many people for supporting the herring exhibition.

The WRFT has the right to use information it has collected and analysed in order to meet its aims and objectives. Since the WRFT is funded in part by income from the public sector, this information may be passed on to other public or charitable bodies involved in fisheries management. It is not the WRFT's right or intention to use this information for commercial gain.

Learning about little fish, Aultbea Stories Seashore Day, Mellon Charles, 27th July 2022. (Photo by Ailsa Maclellan)

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(at 30th March 2022)

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The Wester Ross Fisheries Trust has been generously supported by:

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and by generous donations from members and other individuals and in-kind support from estates, boat operators, and many local volunteers from Achiltibuie to Applecross.

Preface

In 2020 the amalgamation of the Skye & Wester Ross Fisheries Trust was dissolved and the remaining entity was renamed Skye & Lochalsh Rivers Trust. In February 2021 WRFT was reformed as a new charity (SC050755) and a Company Limited by Guarantee (SC687827).

The past 15 months have been a particularly busy period for Trust staff and volunteers to fulfil the many projects and the annual field work that have been required. The WRFT successfully sought a Nature Scot "Working with Rivers" award for two trainees over the three months from March to May 2022. Once the training programme finished both were retained on a part-time basis for the remainder of the fieldwork season. One of the trainees (Emma Watson) has since been employed on a part-time contract and is now the WRFT administrator.

Details of our fieldwork can be found in this review and on our website here. The WRFT also has a Facebook page which can be accessed here.

The Trust has continued to work in close collaboration with Wester Ross Area Salmon Fishery Board. Clerk, Peter Jarosz and Chairman, Stephen Bate, have worked tirelessly in support of wild fish and wild fisheries interests, attending meetings on behalf of both organisations across Scotland. The Trust has been called upon by WRASFB to provide information and comment on a range of issues, including responses to planning applications for new salmon farms. This largely unfunded and unseen extra work for the Board and the Trust has at times stretched our resources somewhat further than anticipated.

To that end the WRFT Trustees would like to thank all benefactors who have supported the Trust over the past 15 months, either financially or as willing volunteers - thank you very much.

pp. *Prof Dave Barclay*

Chairman,
Wester Ross Fisheries Trust

Part 1 **Introduction**

Following the coronavirus pandemic and the breakup of the Skye and Wester Ross Fisheries Trust in 2020, the 'new' Wester Ross Fisheries Trust [WRFT] was formed in 2021 to cover the area between the River Kanaird in the north and the Applecross River in the south, the same area as that of the Wester Ross Area Salmon Fishery Board [WRASFB]. The Skye and Lochalsh Rivers Trust [SLRT] covers the Isle of Skye and Lochalsh areas.

WRFT remains as focussed as ever on reviving and supporting wild fish populations. A core objective is to provide all those who seek to protect wild salmon and sea trout with up-to-date information about their status, the issues that affect them, and opportunities and guidance for practical actions. The Trust provides scientific support for the Wester Ross Area Salmon Fisheries Board, the statutory body responsible for looking after the wild salmon and sea trout fisheries of the area. We work in partnership with other organisations that are committed to protecting and enhancing the environment, protecting biodiversity, and sustainable economic development.

From the relaunch in 2021, initial tasks were to assess the status of wild salmon populations (see Part 2) and to set up monitoring of sea trout for sea lice infestation (Part 3) to gain an up-to-date understanding of the distribution and health of salmon and sea trout and of some of the issues of concern. In 2022 we also sampled adult salmon, larval herring (Part 5), and juvenile cod; and responded to proposals for new open-cage salmon farms within the Wester Ross Marine Protected area by helping to raise awareness of the need to protect and revive wild fish populations and the marine and freshwater habitats that sustain them (Part 6).

Open cage salmon farming remained a major threat to wild fish populations in Wester Ross as in Norway (Part 3). 2022-2023 was another year of high levels of on-farm mortality of salmon associated with complex disease affecting gill health in particular, and high reported sea lice levels on many farms. 'Climate change', 'unexpected blooms of micro-jellyfish' and other explanations were offered by the industry. The Scottish Government proposed new measures to regulate the salmon farming industry to protect wild fish, to be delivered by SEPA; these will be a while yet. The findings of Marine Scotland Science's tracking studies of wild post-smolt salmon and sea trout in Loch Torridon where parasitic sea lice have proliferated in recent years can help to inform the new regulatory framework for salmon farming.

The Scottish Government plans new measures to strengthen MPAs. Following on from a successful Wester Ross MPA Discovery Day at Ullapool in October 2022 (Part 5), WRFT will support new measures to be put in place to protect wild fish populations and the fisheries that they support in the seas around the Wester Ross Marine Protected Area by providing as much science-based information as we can.

WRFT is also keen to promote riparian woodland revival and catchment-scale habitat restoration projects (Part 6). Invasive *Rhododendron ponticum* continues to spread. Over many years, several local estates have taken actions to revive woodland habitat along river banks. In 2022, a new documentary film 'Riverwoods' was screened to raise awareness of the need for riparian woodlands. Peatland restoration can also help to mitigate against adverse consequences of climate change.

We've had a great year working with Nature Scot Trainees Emma Watson and Colin Simpson, many estates staff and volunteers and other helpers; thanks everyone! Progress? The following pages provide further details of some of our work over the past 18 months and of some future opportunities. There is still so much to do . . .

Peter Cunningham, March 2023

Part 2 **Salmon and sea trout stocks**

2.1 Rod catches

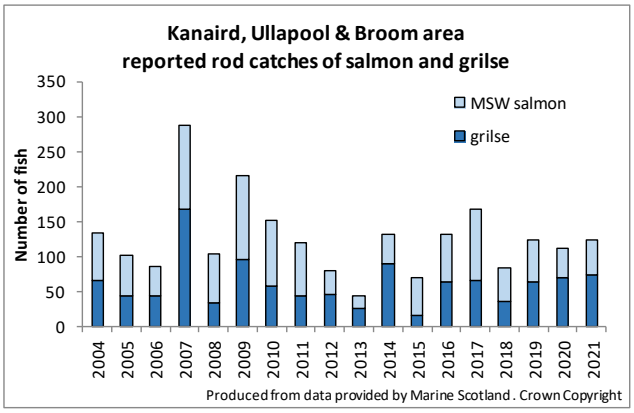
Reported rod catches of salmon and sea trout contribute to an understanding of the status of respective wild fish populations within the WRFT area. Each fishery completes a catch return for the Scottish Government. Note that catch data for individual rivers can be downloaded via the new on-line tool https://scotland.shinyapps.io/sg-salmon-sea-trout-catch/ .

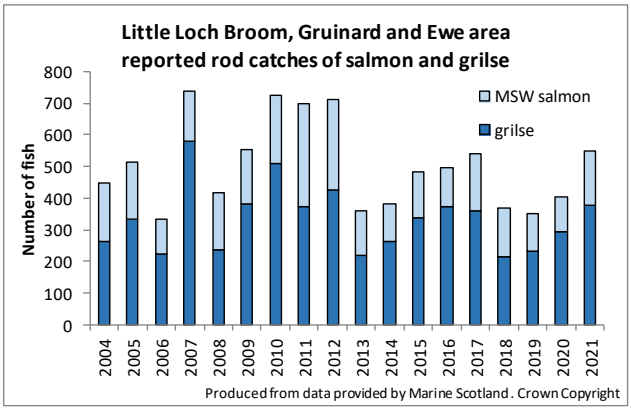
The report below provides a summary of information up to 2021 season for the area covered by WRFT.

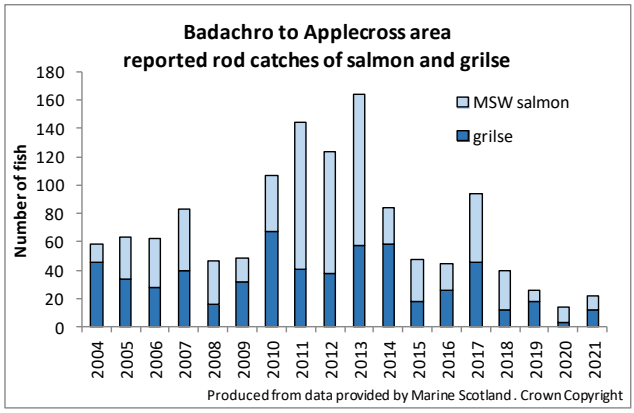
Salmon and grilse

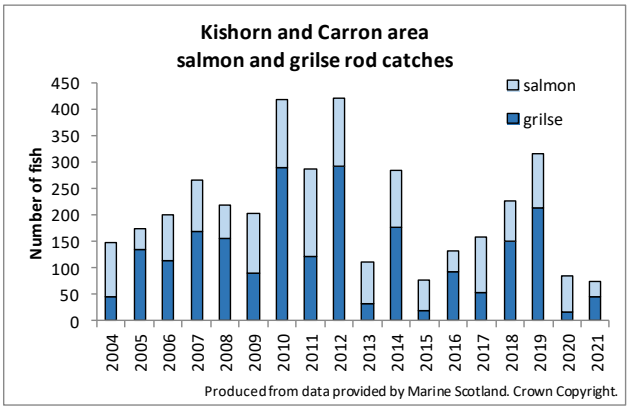
For the rivers which flow into the Wester Ross Marine Protected Area, reported catches of grilse and salmon in 2021 when combined, were comparable to other recent years (Figure 2.1). This was despite low water during early summer of 2021 limiting the ability of salmon to enter rivers. In contrast, very few rod caught salmon and grilse were reported for the rivers to the south of Loch Gairloch in either 2020 (coronavirus year) and 2021.

Figure 2.1 Rod catches of salmon and grilse for mainland parts of the WRFT area to 2021





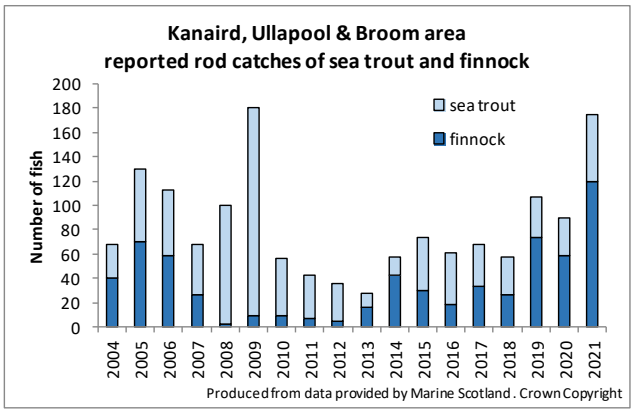


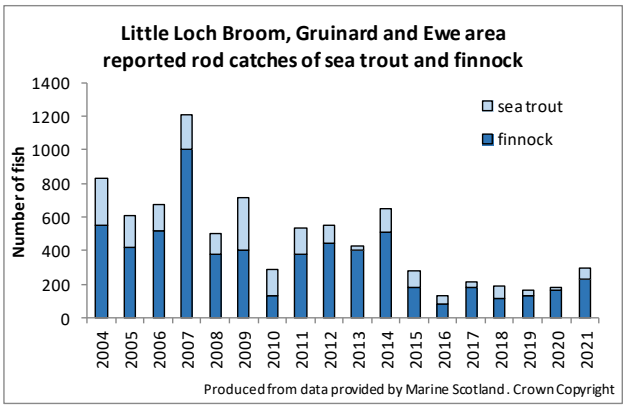


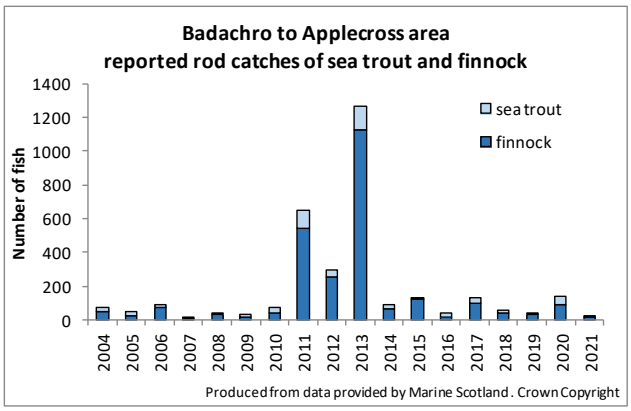
Sea trout

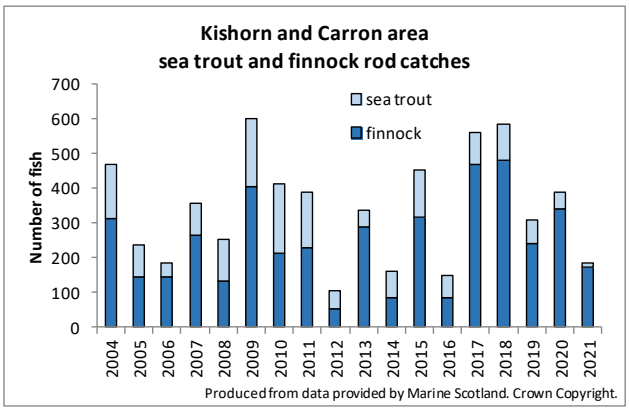
Reported catches of sea trout and finnock were also higher in 2021 in comparison to earlier years for 'northern' rivers (those entering the Wester Ross Marine Protected Area, vs. Kanaird to Ewe) than for rivers to the south of Gairloch (Figure 2.2).

Figure 2.2 Rod catches of sea trout for southern mainland part of the WRFT area









Initial reports for the 2022 season again suggest that rod catches of salmon and sea trout for the rivers which flow into the Wester Ross MPA were higher, compared to previous years, than those for the rivers which flow into coastal areas where there is a higher density of sea lice producing open cage salmon farms (e.g. Loch Torridon).

(right) Keith Dunbar, Dr Michael Aitchison, Prof Kathy Pritchard-Jones and Dr James Close. Preparing for the afternoon session, Loch Maree, 2nd September 2022.

2.2 Adult salmon monitoring project

In 2021 and 2022, WRFT was able to catch and examine samples of adult salmon from the Dundonnell River and the Gruinard River with support from nearby estates, angling guests and from the Scottish Government via Fisheries Management Scotland. The purpose of this project was to gain accurate data for the length, weight and age of adult salmon returning to rivers from the sea, for comparison with data from previous years. Sampling also provided an opportunity to check for red vent syndrome (associated with parasitic nematode *Anisakis simplex*) and red skin disease characterised by hemorrhaging along the underside of the body and occasionally the lower flanks.

Rod and net caught fish were lightly sedated prior to being accurately weighed and measured, photographed and scale samples taken. Following a period of recovery, fish were returned to the river.

Figure 2.3 is a graph showing the lengths of fish sampled in 2021 and 2022. The majority of sampled fish were grilse (one sea winter salmon).

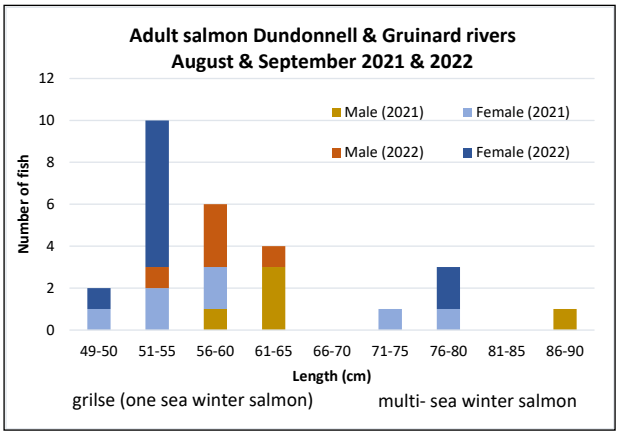
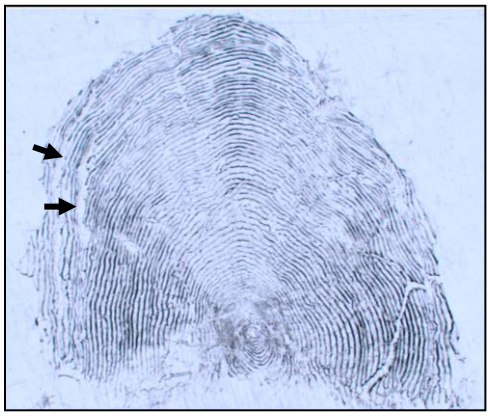


Figure 2.3 Size distribution graph of adult salmon sampled in the Gruinard and Dundonnell rivers in 2021 and 2022. Theses rivers are close together and sample sizes were small, so for purposes of illustration samples from 2021 and 2022 are shown together.

A female salmon of 74cm length caught and released in 2021 was identified as having returned to freshwater to spawn for a third time from scale reading. This fish is shown *(below)* together with the scale *(right)* showing 'spawning marks' where the eroded scale has regrown (black arrows) from which the interpretation was made.



Thank you to all the anglers and other people who helped with this project, and to Gruinard estate, Eilean Darach estate and Dundonnell estate for support.

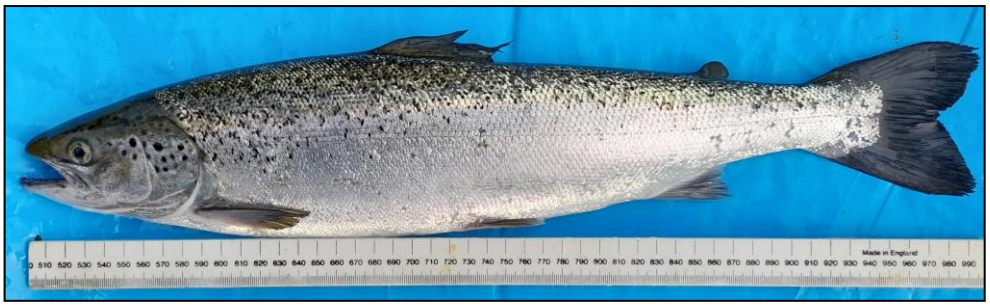
(left) Adult salmon sampling team by the Gruinard River on 14th September 2022r; Nicky Middleton-Jones, Steve Merrill, Peter Cunningham (returning a salmon), Fiona (Fee) Mackenzie, with Dave Barclay, Kitty Bell and Kris Wall providing support on the bank. Photo by Connaire Cann. Many thanks everyone and to Gruinard and Eilean Darach estates!

Escaped farm salmon,

Few escaped farm salmon were reported in rod catches for rivers entering the WRFT area in 2020 or 2021. However, on 29th August 2022, three escaped farm salmon were caught in a sweep net in the estuary of the Kanaird River. These fish were relatively small and silvery. One of these fish was retained for future examination should this be needed.

Please report any possible escaped farm salmon to Fisheries Management Scotland using the on-line app. https://fms.scot/fish-farming/escapes/ . Please also report any diseased salmon https://fms.scot/fish-health-and-disease/ and any pink salmon https://fms.scot/pink-salmon-in-scotland/ (none reported in Wester Ross to date) to Fisheries Management Scotland.

Escaped farm salmon from seine net sample, River Kanaird estuary, 29th August 22.



2.3 Juvenile fish surveys

supported by the Scottish Government, WRASFB & local businesses

Electro-fishing surveys, using specially designed equipment, provide the means of monitoring the distribution and relative abundance of juvenile fish within the river systems of the area. Using this method, juvenile salmon have been recorded within 22 stream systems within the area of the Wester Ross Area Salmon Fishery Board from the River Kanaird in the north to the Applecross River in the south. In recent years, 13 of these rivers have supported rod and line fisheries for wild salmon. Sea trout have also been caught in all of these rivers in addition to several smaller stream systems; so, there is interest in finding out about the occurrence of both juvenile salmon and juvenile trout.

Primarily to learn about the status of juvenile salmon, the WRFT field team set itself the task of surveying as many rivers within the WRASFB area as time and river conditions permitted during July-October 2021. This survey was carried out with support of the Scottish Government (National Electro-fishing Programme of Scotland [NEPS] site) and the Wester Ross Area Salmon Fishery Board. Results were reported in the 'Status of Juvenile Salmon in Wester Ross' report which can be found here.

Surveys in 2022

Two larger salmon river systems, the Dundonnell River and the River Balgy were not surveyed in 2021 so they were of top priority for a juvenile fish survey in 2022.

Sites on several smaller coastal stream systems were also surveyed in 2022: Allt Beith, Tournaig river system, and sites on the Toscaig burn and Cuaig River. A site was fished in the Abhainn Bruachaig in the headwaters of the River Ewe system above the falls (hydro scheme) to check for salmon fry.

The method used at each site was a one-pass survey based on Scottish Fisheries Coordination Centre (SFCC) and NEPS protocol using the same Electracatch e-fishing backpack which has been used for over 20 years by the Trust field team. The backpack discharges up to 400 volts DC (it is usually turned back to nearer 300 volts) at typically at between 0.1 amps to 0.5 amps according to the conductivity of the water. At each site the wetted area of river habitat surveyed was typically around 50m^2; habitat area is estimated and recorded in addition to the time taken.

The electro-fishing team in 2022 was Peter Cunningham with Colin Simpson, both of whom have many years of experience of working together and SFCC e-fishing qualifications; and for the Tournaig survey, Ben Rushbrooke who has also supported monitoring of wild fish over 20 years or so.

Results

Please refer to the 'Status of Juvenile Salmon in Wester Ross' report for the results for 2021 and river by river summaries and discussion. Figure 2.6 and figure 2.7 have been updated from this report to include 2022 results for the Dundonnell River, River Balgy headwaters, and for the Allt Beith, Tournaig and sites in smaller rivers surveyed in 2022. The Status of Juvenile Salmon in Wester Ross report (link above) also explored the relationship between Catch Per Unit Effort and fish densities for sites surveyed by the WRFT e-fishing team.

Figure 2.6 Recorded distribution and relative abundance of salmon fry at sites surveyed within the SWRFT area in 2019. For NEPS sites on the mainland, only the fish in the first run are included.

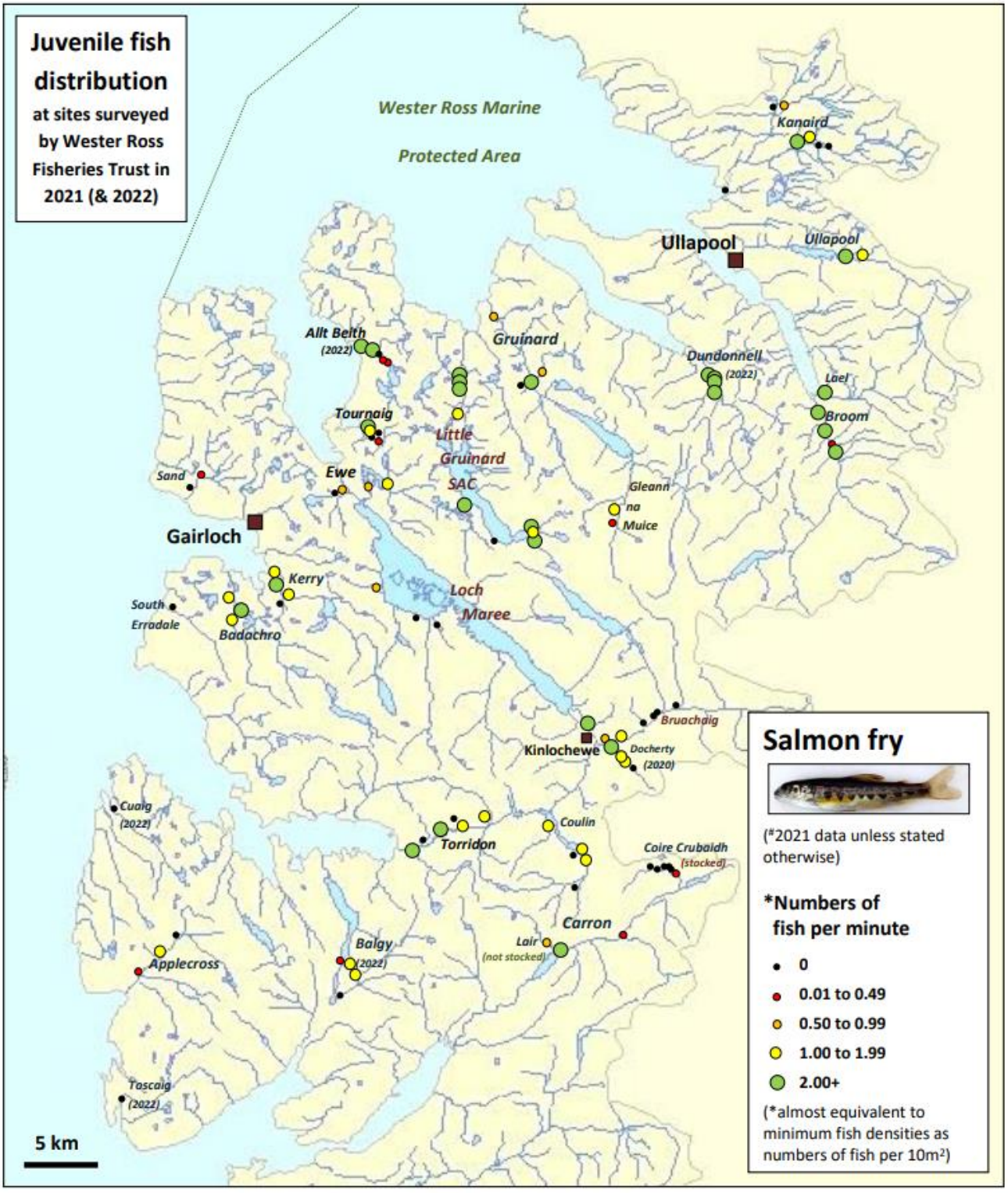
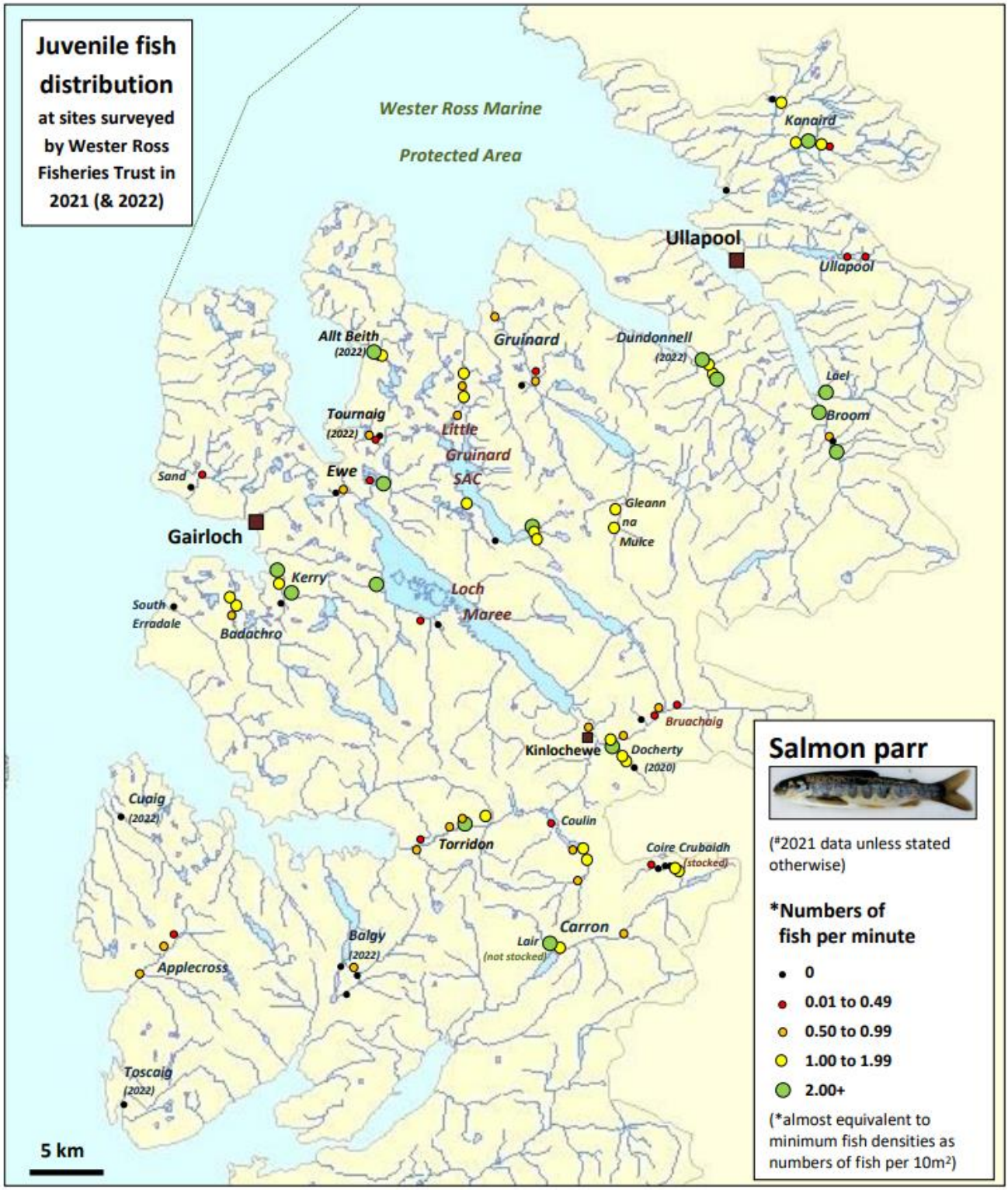


Figure 2.7 Recorded distribution and relative abundance of salmon parr at sites surveyed within the SWRFT area in 2019. For NEPS sites on the mainland, only the fish in the first run are included.



River by river summaries

Dundonnell River

The Dundonnell River enters the head of Little Loch Broom and is accessible to salmon and sea trout for over 5km upstream from the top of the tide. It drains a catchment area with several smaller lochs, then descends steeply into a gorge where impassable waterfalls are located. Below the gorge the, Dundonnell river flows through a fertile valley with a well wooded riparian corridor, and a diverse mix of native trees, including many notable veteran trees, on valley sides.

In some previous years the river has suffered from suspected 'washout' of salmon eggs and juvenile fish, with inputs of large amounts of sediment (pebble and cobbles) causing destabilisation of the main river channel. Much work has been done in recent years to address problems and stabilise the river channel, thereby minimising bank erosion and collapse.

On 10th August 2022, nine sites were surveyed in the Dundonnell River, comprising 6 main river sites and 3 sites in tributary burns.

Salmon fry were found at high CPUE at all 6 main river sites (including sites by islands) at an estimated average minimum density of 48 fry per 100m^2. This was a great result, demonstrating a combination of good spawning and good overwinter and early spring survival of salmon fry, without washout or other major environmental challenges. Salmon parr were present at high CPUE (same scale as for fry) at three of the six sites; at moderate CPUE at two sites which was also a good result. At two other main river sites, the habitat was of shallow, marginal nursery area, considered less suitable for parr.

(right) Salmon parr (top) and fry from the Dundonnell River on 10th August 2022

For trout, fry densities were low at main river sites as in previous years. Juvenile salmon outcompete trout fry from shallow riffly habitat; they are better adapted for life in faster water with big pectoral fins to help maintain position on the stream bed. However, at a site in a tributary burn, trout fry were recorded at high CPUE at an estimated density of 50 per 100m^2.

Overall, results for juvenile salmon and trout for the Dundonnell River in 2022 were good and much improved for salmon fry from those in 2019 when few fry were recorded; with combined fry and parr CPUE for the four main river sites fished regularly as high as at any other time in the past 20 years.

(left) Alasdair Macdonald returning juvenile fish including an eel to the Dundonnell River on 10th August 2022.

Tournaig

The wild salmon of the Little Tournaig river system have been monitored by WRFT for over 20 years. In addition to an upstream trap (for adult salmon and sea trout) and downstream trap (for smolts emigrating to sea), a juvenile fish survey of the spawning stream Allt na Coille above Loch nan Dailthean has been carried out each year.

In 2021, no adult salmon nor sea trout were recorded in the upstream trap. So, we were not optimistic about finding salmon fry in the system in 2022. However, on 9th August 2022, salmon fry were found at five of the six electro-fishing sites, and at high CPUE at the lowest two sites! This demonstrates that adult salmon are able to bypass the trap, most likely by ascending the waterfall around which the fish pass was constructed, when the river is at very high spate flow.

Salmon parr (top), juvenile trout (bottom), and possible trout-salmon hybrid (middle) from the Allt na Coille, Tournaig on 9th August 2022 (photo Ben Rushbrooke)

(left) This eel from the Allt na Coille (Tournaig) was over 300mm long and may have spent over 12 years in freshwater. (right) Ben Rushbrooke returning a bucket of mostly juvenile salmon and eels to the Allt na Coile on 9th August 2022.

Allt Beith

The Allt Beith (birch burn) is a wonderful little river that runs from Loch a' Bhaid Luachraich (known locally as the 'goose loch') to Loch Ewe ('Aultbea' is a derivation of 'Allt Beith'). WRFT has surveyed the river every two or three years over the past 20 years and recorded juvenile salmon, including some of the biggest, on each occasion.

In 2004, an old fish ladder constructed around a waterfall, was partly repaired by local volunteers. The fish ladder is thought to have been built in the late 1800s when Drumchork became a sporting estate; the fish ladder is not shown on the 1875 Ordnance Survey map, but is shown on the OS 1904 map.

Following restoration of the fish ladder by WRFT volunteers, salmon fry were recorded at the top of the fish ladder in 2005, 2007 and 2015 and as far upstream as the outflow of the goose loch.

In August 2022 the juvenile fish survey of the Allt Beith was part of a series of events organised in collaboration with Katie Grant of the Autlbea Stories Project. Salmon fry were found at high CPUE at the bottom of the river by the old clapper bridge and at the stepping stones in the flats above the road; salmon parr were also present at high CPUE at the ladder site. Salmon fry were recorded at low CPUE at the top of the fish ladder and a site just below the outflow of the goose loch demonstrating that salmon had ascended the fish ladder in 2021.

(left) Colin Simpson, Fiona Mackenzie, Chloe Hall and Anthony Hall with the yellow buckets, at the top of the Allt Beith on August 2022.

(right) Both trout and juvenile salmon grow very quickly at the top of the Allt Beith. This site has produced the biggest salmon parr of the year within the WRFT area on several occasions.

In 2023 we plan to find out whether there are juvenile salmon in any of the spawning burns around the goose loch? Have sea trout also ascended the fish ladder?

At the time of writing there are also plans for doing further repairs to the fish ladder (it leaks) and participating in a Buglife Guardians of Our Rivers project with other local enthusiasts. Get in touch if you would like to help!

River Balgy headwaters, above Loch Damh

The River Balgy flows for less than 2km from Loch Damh to where it enters the sea (Loch Torridon). Loch Damh is the largest freshwater water body within the catchment area. In addition to trout and salmon, the loch has arctic charr (current status uncertain), minnows and eel. Since the 1980s, two freshwater salmon smolt production farms have operated in Loch Damh.

On 22nd July 2022, four sites were surveyed by the WRFT e-fishing team above Loch Damh: (1) in the Abhainn Dearg by Kinlochdamph lodge; (2) in the Allt Eisg (tributary of the Abhainn Dearg above a new hydropower house); (3) in the Abhainn Dubh by the bridge; and (4) in the Allt a' Ghuithais above Loch Coultrie and Loch an Loin by the bridge at Glasnock.

Salmon fry were recorded at sites (1) and (2) demonstrating spawning by salmon in the Abhainn Dearg in 2021. At site (3), only 1 salmon fry was recorded; this fish may have entered this tributary from Loch Damh. No salmon fry were found in the Allt a' Ghuthias. Salmon parr were only found at site (2) by the lodge.

(left) Peter and Colin surveying the Allt a' Ghuithais as 'Highland Cathedral' is played from the bank (photo by Diana Thompson)

In contrast, trout fry and older trout were recorded at all sites. Trout fry were present at high CPUE at sites (3) and (4). In contrast to the wild salmon population, the wild trout population in the River Balgy system may have benefited from nutrient enrichment and waste feed associated with the open cage salmon farms; some very large trout have been caught by anglers in the past 20 years.

Overall, the population of juvenile salmon in streams above Loch Damh remains small. Salmon fry have been found above Loch Coultrie on only one occasion out of the 8 surveys in the past 20 years (in 2007). Juvenile salmon in the Abhainn Dubh and further up this system are likely to be predated upon by brown trout, for which much of the loch habitat is ideal; any surviving salmon smolts from headwater streams in this part of the system would also be targeted by piscivorous trout in Loch Damh.

(right) juvenile trout, minnows and just one salmon fry were found at the site in the Allt a' Ghuithais. (photo by Diana Thompson)

Marine Scotland Science have gathered much data on salmon smolts and trout smolts which have been trapped for a series of studies, including a tracking project in Loch Torridon. From genetic studies, some juvenile Balgy salmon were found to retain 'native' wild attributes in addition to those which more closely matched attributes of fish farm salmon. Of all the wild salmon populations within the WRFT area, the River Balgy is the one where the wild salmon population has been subject to greatest genetic introgression associated with escaped farm salmon; this may also partly explain the restricted distribution of juvenile salmon and fry within the accessible catchment area.

Part 3 **Sea trout, sea lice and salmon**

Supported by The Scottish Government via FMS, WRASFB and MOWI

3.1 Sweep netting for sea trout

Samples of sea trout were taken in 2021 and 2022 from the estuary of the River Kanaird, Little Loch Broom, Loch Ewe, Flowerdale estuary (Loch Gairloch) and from the Applecross estuary using a seine net, fyke net traps, and rod and line for the purposes of gaining information about the health and condition of sea trout and the occurrence of parasitic sea lice, particularly the salmon louse *Lepeophtheirus salmonis.* Most of the fish were caught using a 50m long seine net with the help of many volunteers. Sites at Kanaird and Flowerdale have been subject to sampling using this method for over 10 years, so it is possible to compare and contrast results with those of previous years. For further background information, please see https://www.wrft.org.uk/files/Skye%20and%20Wester%20Ross%20Fisheries%20Trust%20Review%20Sept%202020.pdf, from page 29.

Results

Table 3.1 provides a summary of data collected, including the numbers of fish examined, and the overall estimated projected 'mortality' of fish in the sample based on levels of lice infestation. In 2022, levels of lice infestation were relatively low compared to some previous recent years, with most fish carrying lice levels which would not cause health issues. The follow pages provide site specific details.

Table 3.1 Summary of sea trout sampling data collected in 2021 and 2022. Samples where the average number of lice per gram of sea trout was greater than 0.2 are shaded in yellow; those where the average is greater than 0.3 are shaded in pink. See 'notes' at bottom of table for further explanation.

Location	Habitat type	Date	Method of capture	Number of fish in sample	Number of infested fish	Abundance (number of lice per fish)	Intensity (number of lice per infested fish)	Projected lice-related mortality of fish in sample*	Comment
Kanaird	estuary	11-Jun-21	sweep	20	4	0.2	1	0	
Kanaird	estuary	09-Jul-21	sweep	33	33	14.48	14.48	8.39	
Kanaird	estuary	14-Jun-22	sweep	17	4	0.24	1	0	
Kanaird	estuary	25-Jul-22	sweep	4	2	1	2	0	
Kanaird	estuary	29-Aug-22	sweep	33	27	16.8	20.5	14.24	
Dundonnell (L. L. Broom)	head of sealoch	23-Jul-21	sweep	2	2	14	14	25	
Dundonnell (L. L. Broom)	head of sealoch	12-Aug-21	sweep	2	1	13	6.5	25	
Dundonnell (L. L. Broom)	head of sealoch	15-Aug-22	sweep	3	2	1	1.5	0	
Boor (Loch Ewe)	bouldery shore	Aug&Sep22	fyke	6	6	16.2	16.2	10	coastal fyke net trial
Inverasdale (Loch Ewe)	cobbly shore	01-Jul-21	sweep	3	3	7.67	7.67	33	trout of 177mm caried 43 lice
Flowerdale (Loch Gairloch)	estuary	19-Apr-19	sweep	30	30	107.93	107.93	55	included for comparison
Flowerdale (Loch Gairloch)	estuary	30-Apr-21	sweep	24	23	83.92	86.52	37.5	
Flowerdale (Loch Gairloch)	estuary	11-Jun-21	sweep	17	9	2.88	5.44	26.15	
Flowerdale (Loch Gairloch)	estuary	13-Jul-21	sweep	3	3	7.67	7.67	20	
Flowerdale (Loch Gairloch)	estuary	23-Sep-21	sweep	5	5	8.4	8.4	0	
Flowerdale (Loch Gairloch)	estuary	16-Apr-22	sweep	8	3	1.25	3.33	0	
Flowerdale (Loch Gairloch)	estuary	16-Jun-22	sweep	9	1	4.78	43	0	trout of 430mm carried 43 lice
Flowerdale (Loch Gairloch)	estuary	12-Jul-22	sweep	3	0	0	0	0	
Flowerdale (Loch Gairloch)	estuary	13-Sep-22	sweep	30	30	8.33	8.33	0.67	
Applecross	estuary	21-Jun-22	mix	14	14	9.64	9.64	12.86	1 fish in sweep, 13 fish by rod & line
Applecross	estuary	07-Jul-22	rod & line	1	1	35	35	0	trout of 370mm carried 35 lice
Applecross	estuary	31-Aug-22	sweep	1	1	0	0	0	

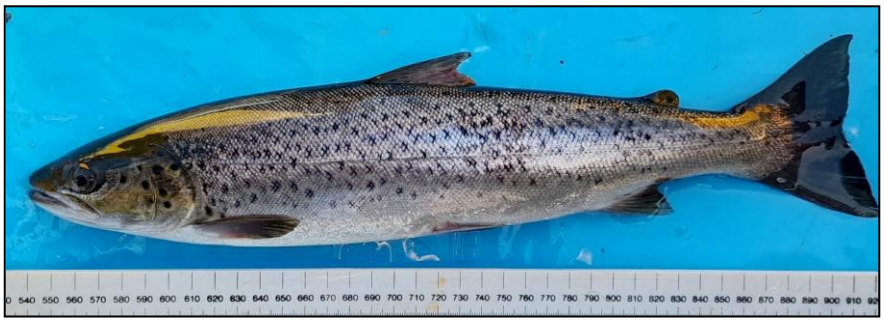
Kanaird River estuary

Samples of sea trout were taken on 14th June, 25th July and 29th August 2022. In the June and July sweeps; 21 trout in total were caught; these were louse-free or carried low numbers of lice (8 or less).

(right) Sweep netting team at Kanaird on 25th July 2022. Thanks everyone!

Our most successful session was on the 29th August 2022, with 33 trout and three escaped farm salmon (see earlier in report) recorded. Most of the trout (78%) carried no lice or low numbers of lice not considered high enough to be of concern to their health. Six trout fish in sample of 33 had 'moderate' or 'high' sea lice scores with an overall projected lice-related mortality 14% of fish in the sample (based on Taranger *et al* 2014 formulae).

The most heavily infested fish recorded on 29th August 2022 at Kanaird was a sea trout of 370mm with an estimated 105 lice and a red raw sea lice damaged dorsal fin (below).



Little Loch Broom

Since the 1990s, sea trout have been sampled by Dundonnell in June to learn about levels of sea lice infestation. In some years, large number of early-returned sea trout were caught in the river estuary, carrying averages of over 100 lice per fish[1]. However, in more recent years, sea trout sampled have carried fewer lice.

The sweep netting team in Little Loch Broom in summer of 21 produced just four small sea trout; these carried moderate numbers of sea lice (see Table 3.1). On 15th August 2022, three trout were with a maximum of just two lice per fish. Other species recorded included flounder, cod, pollack, plaice and tub gurnard. Thank you to all the helpers *(left).*

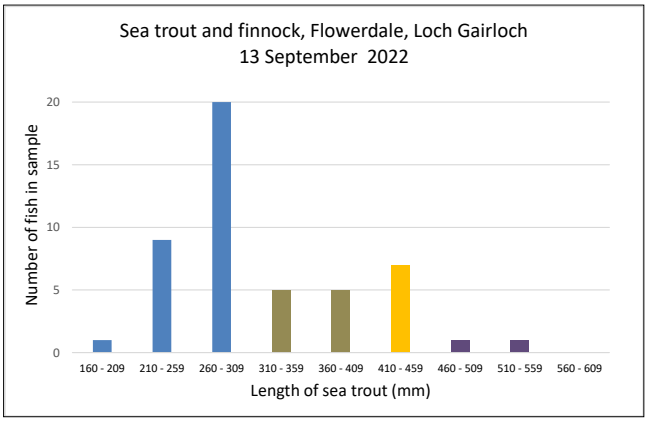
[1] For example, see https://www.wrft.org.uk/files/Sea%20trout%20presentation%2020%20February%202014%20compressed96dpi1.pdf

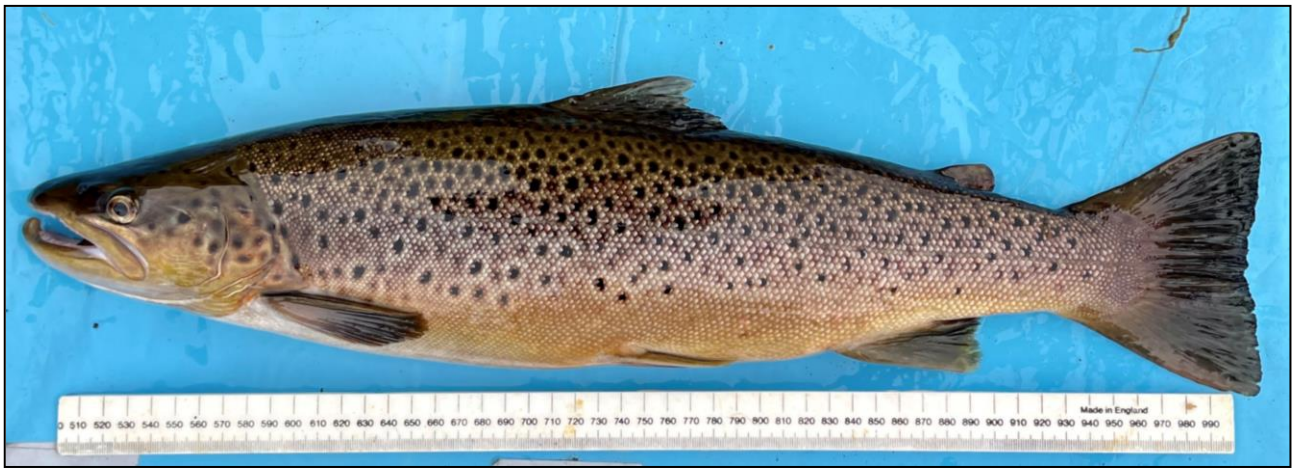
Flowerdale estuary, Gairloch

The Flowerdale (Gairloch) seine netting site has provided useful samples of sea trout for over 10 years. Very high numbers of sea lice were recorded on sea trout sampled at Flowerdale on 30th April 2021; results were posted on the WRFT website to raise awareness of the sea louse problem in nearby waters[2]. A pattern of higher burdens of sea lice in odd years than in even years can be seen from 2015 to 2021; this correlated with the farm salmon production cycle in Loch Torridon, and in 2021 also for MOWI farms in the east of Skye (nearest salmon farm 25+ km away), with higher lice numbers during years when farms were in the second year of the production cycle[3] .

In 2022, samples of sea trout were taken at Flowerdale on 16th April, 16th June, 12th July and 13th September using the seine net as in previous years. The number of larger fish caught particularly in the April sweep was lower than anticipated raising questions about trout mortality in 2021. However, our catch on 13th September exceeded expectations with fifty trout caught, including nineteen trout of over 30cm in length, most of which would have been subject to sea louse infestation pressures in the Loch Gairloch area in 2021. Many of these trout had stunted, though healed dorsal fins indicative of earlier sea louse damage; however, they had few lice on them having presumably been able to shed them by returning to freshwater.

(below) Sweep netting team at Flowerdale on 13th September 2023. Figure 3.1 length - distribution graph of the sea trout in the sample. The largest sea trout of the day, a male in pre-spawning colouration, is shown below.





[2] See news item on WRFT Website https://www.wrft.org.uk/news/newsitem.cfm?id=229

[3] See SWRFT Review September 2020, page 36 https://www.wrft.org.uk/files/Skye%20and%20Wester%20Ross%20Fisheries%20Trust%20Review%20Sept%20%202020.pdf .

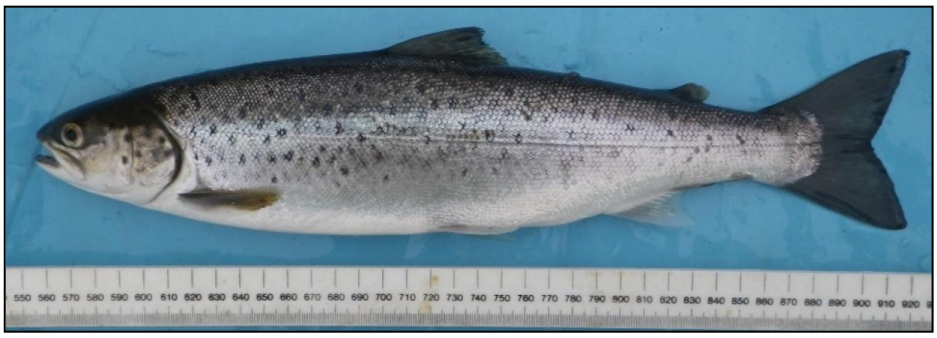
Applecross River estuary

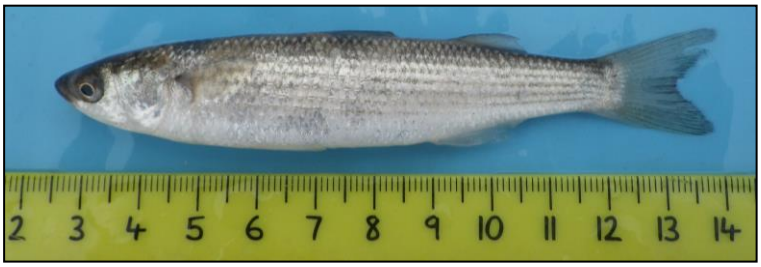
In June 2022, the WRFT sweep netting team returned to the mouth of the Applecross River to obtain samples of sea trout for sea lice monitoring purposes for the first time since 2018. In July 2018, the WRFT sweep netting team caught 17 trout in the sea pool of the Applecross River[4]. In 2022, the purpose of sampling sea trout was to inform the Caol Mor (south east of Skye) salmon farming Environmental Management Plan [EMP] with data describing sea lice burdens on wild fish in nearby waters, as part of a contract for MOWI.

Sampling effort took place on 4 days: 8th June, 21st June, 7th July and 31st August using a seine net with much help from enthusiastic local assistants! However, few sea trout were caught; the sea pool may have changed since 2018, having become shallower with more snag-stones making seine netting much more difficult. Only a handful of sea trout were caught using the seine net; rod and line using small teal & blue flies with crimped barb was used with greater success. Altogether 16 trout were caught, 13 of which were taken on 21st June using rod and line (lengths 176mm – 261mm). Lice levels were low to moderate (up to 25 lice per fish); two of these trout carried lice burdens in excess of 0.2 lice per gram bodyweight.

Netting the Applecross River sea pool on 7th July 2022 (photo by Alison Hewitt)

(right) sea trout; and (below) juvenile mullet taken at Applecross in July 2022.





[4] See https://www.wrft.org.uk/files/SWRFT%20Newsletter%20February%202019%20v%2011%20Feb%202019.pdf

3.2 Coastal fyke net trial

With support from the Crown Estate (via Fisheries Management Scotland), and following permissions from Marine Scotland and a Crown Estate lease, a coastal fyke net fish trap was deployed in Loch Ewe in late August to sample sea trout and learn about site suitability for future sea trout monitoring within Loch Ewe. The coastal fyke is like a large floating lobster pot with long leaders (instead of bait) to guide fish into the trap. An otter guard is fitted to the entrance to prevent an otter from entering; the guard also prevents larger fish from going in.

The site by the former MOWI salmon farm base at Boor provided good access to the shore with a nearby slipway from where to launch our row boat, used for setting anchors, leaders and for operating the net.

The trap was set to fish over four days during the following two weeks into September.

(left) The coastal fyke net being checked at low tide; the leaders are exposed on the shore line.

Six sea trout were recorded (183mm to 278mm) demonstrating that the trap can work as intended. Sea lice (*Lepeophtheirus salmonis*) were seen on all of the trout with counts ranging from 4 lice per fish to 31 lice per fish.

(right) Sea lice (Lepeophtheirus salmonis) including adult female with egg strings and mating pair on sea trout. Photo by Roger Mclachlan

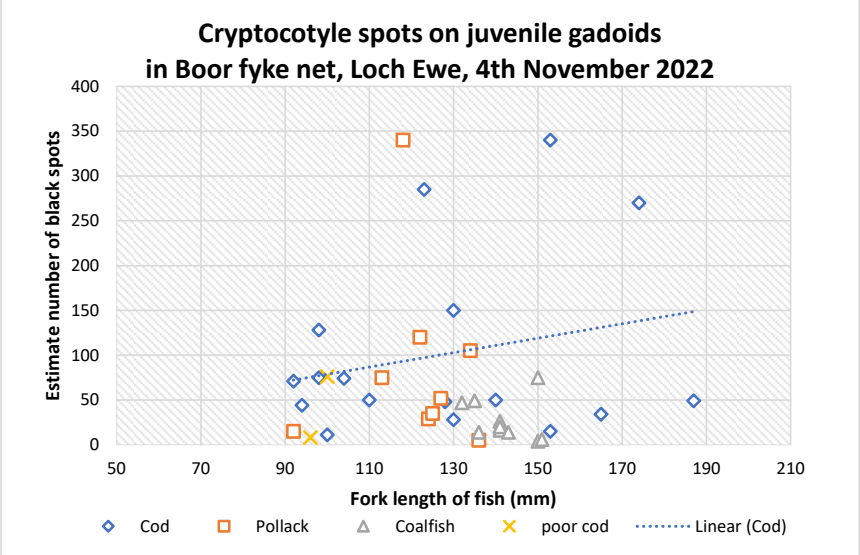
The trap was redeployed in early November to gain more experience and fished for a further three days. No sea trout were caught this time.

The majority of sea trout that feed in Loch Ewe during the summer months are assumed to return to freshwater (including Loch Maree) in the autumn to spawn or overwinter. However, if deployed earlier in the summer, the coastal fyke at Boor may be able provide more reliable samples of sea trout (especially of post-smolt seatrout) than from sweep netting from the shore nearby. We plan to be able to redeploy the fyke in May 2023.

Redeployment of the costal fyke in November 2022 provided an opportunity to learn about black spot infestation of juvenile gadids (members of the cod family). 'Black spot' is caused by the trematode fluke, *Cryptocotyle* sp., which has a complex life cycle that normally includes a periwinkle, a fish, then a bird (typically a gull).

(right) Live gadoids (under light sedation) from the fyke net at Boor, 3rd November 2022. Top to bottom, left to right: pollack, coalfish, poor cod, cod, whiting. Photo by Roger Mclachlan.

Levels of infestation by this parasite were high enough to be of concern for the health of juvenile cod and pollack (Figure 3.2). So, two infested fish were sent to the Marine Scotland marine lab to confirm the identity of the parasite.



(right) Figure 3.2 Estimated numbers of Cryptocotyle lingua spots on a small random sample of gadoids from the coastal fyke net at Boor by Loch Ewe, 4th November 2022. Numbers of black spots were based on counts of spots seen in photographs taken of a random subsample of lightly sedated fish.

Marine Scotland subsequently recorded 189 *Cryptocotyle* sp. 'cycts' on the small pollock and 489 'cycts' on a small juvenile cod.

To what extent is infestation of juvenile cod by *Cryptocotyle lingua* contributing to low numbers of adult cod in the seas around the West of Scotland? Cod stocks in the west of Scotland (ICES area VIa) were assessed by ICES in 2022 as being at near their historic lowest ever biomass, with advice for zero catch. A more detailed report about the coastal fyke net at Boor in autumn 2022 can be found on the WRFT website: https://www.wrft.org.uk/files/Coastal%20fyke%20catches%20spotty%20cod%20in%20Wester%20Ross%20MPAdocfordownload.pdf .

Thank you to Roger Mclachlan for related Boor iSpot project; to Colin Simpson, Finn Simpson, Peter Burk, Stephen Merrill, Emma Watson, Dorje Khandro and Tracy Mclachlan for help, to MOWI for permission to use the shore base; and to Dr Campbell Pert and colleagues at Marine Scotland Science for additional parasite counts and further information about blackspot.

3.3 Salmon farming, sea lice and wild fish protection

Background information about how sea lice levels on wild fish relate to farm salmon production cycles within the Wester Ross area can be found in the SWRFT Review September 2020, Part 3[5]. Since that report was produced, the situation has not improved. Sea lice (*Lepeophtheirus salmonis*) infestation associated with salmon farming remained a major cause of concern for wild salmon and sea trout in the coastal waters of the West of Scotland[6].

Loch Torridon salmon farms unable to control lice to safeguard wild salmon and sea trout

Within the 'new' Wester Ross Fisheries Trust area, Loch Torridon remains the hot spot for open cage salmon farming and sea lice infestation. When a new salmon farm was proposed for near Sgeir Dughall in 2012, the applicant (Scottish Salmon Company) and planning authorities were warned that sea lice control would be a major problem; that it would not be possible to protect wild fish from sea lice infestation associated with the new farm. Despite objections from WRASFB and others, planning permission was granted by The Highland Council for the new farm, subject to a condition that for planning permission to be renewed after 10 years of operation, the farm should demonstrate an ability to control sea lice to protect wild fish in nearby waters.

Production commenced in 2013. However, during the 2nd production cycle in 2015, it became apparent that the Scottish Salmon Company was unable to control sea lice to protect wild fish. WRFT recorded high levels of sea lice on sea trout in surround areas[7]. In response, the Scottish Salmon Company lodged a 'Section 42' planning application to the Highland Council to have the planning condition requiring wild fish to be protected from sea lice emissions from the fish farm removed, with instead an Environment Management Plan [EMP] to be produced to demonstrate how sea lice would be controlled through 'adaptive management of sea lice' to protect wild fish. No EMP has been agreed. On-farm sea lice levels were again much too high during the winter of 2023.

There is no evidence that large-scale open cage salmon farming as practiced in the Wester Ross and Isle of Skye area is compatible with the protection and recovery of healthy wild salmon and sea trout populations in nearby waters. Indeed, the scaling up of farm salmon production in Loch Torridon demonstrates the opposite, as Marine Scotland Science can confirm. The best hope for protecting remaining relatively healthy wild salmon populations and associated wildlife in the NW of Scotland is that some coastal areas remain as fish farm free as possible.

There may be an opportunity for protecting some salmon populations. The most important rivers within Wester Ross, including the Little Gruinard River (Special Area of Conservation [SAC] for Atlantic Salmon), the big Gruinard, and the River Ewe – Loch Maree system (famous for both salmon and sea trout; Special Protection Area [SPA] for Black-throated diver) flow into the Wester Ross Marine Protected Area. At the time of writing, the Scottish Government is about to seek views for strengthening protection of marine ecosystems within the existing MPA network. Currently, only some of the seabed habitats found within the Wester Ross MPA are listed as protected features. Missing from the list of protected features are seagrass beds (*Zostera marina*), and also important fish species including the critically endangered Flapper skate (*Dipturus cf. intermedius*) and the Atlantic salmon (*Salmo salar*) for which the Wester Ross MPA remains one of the most important coastal important areas.

[5] SWRFT Review September 2020 https://www.wrft.org.uk/files/Skye%20and%20Wester%20Ross%20Fisheries%20Trust%20Review%20Sept%20%202020.pdf

[6] Scottish Salmon Pressures mapping tool https://www.gov.scot/publications/regional-national-assessment-pressures-acting-atlantic-salmon-scotland-2021-scottish-marine-freshwater-science-vol-14-no-4/pages/2/

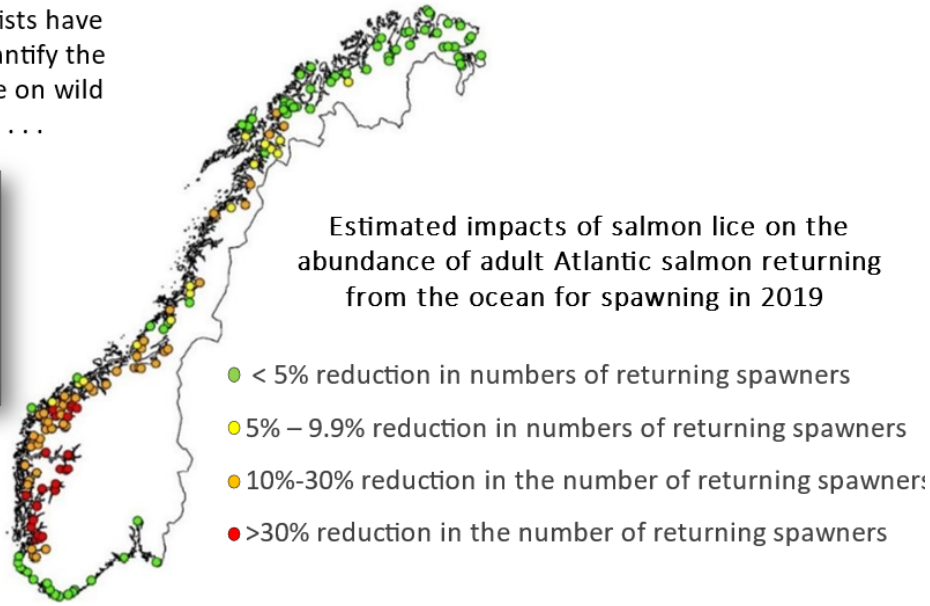
[7] See WRFT Torridon Wild Trout Report 2015 https://www.wrft.org.uk/files/Torridon%20sea%20trout%20report%20Jan%202016.pdf

In February 2023, the Scottish Government published the Wild Salmon Strategy Implementation Plan[8]. This includes the following action:

'3.4 Protecting and enhancing marine biodiversity, including salmon and the habitats they depend on, through a well-managed network of Marine Protected Areas, Highly Protected Marine Areas and other conservation measures, and implementing the UK Marine Strategy to achieve or maintain Good Environmental Status [2026] (Scottish Government, Nature Scot)'

Comparison can be made with Norway. Each year, leading scientists in Norway have been given the freedom to report on the threat from open cage salmon farms, via sea lice emissions, to wild salmon populations. The figure below is from the annual 'Wild Atlantic Salmon in Norway' report for 2021 (also 2022), produced by a team of the most knowledgeable scientists in the country, without institutional 'strings' attached.

In Norway scientists have been able to quantify the impact of sea lice on wild salmon numbers . . .



Note that in the west of Norway, the majority of rivers are estimated to have lost from 10% to 30% or more of their adult salmon to sea lice infestation. In Norway, a pragmatic approach has already been adopted with designation of a network of **'national salmon fjords'** where there is minimal open cage salmon farming to help to protect Norway's most important wild salmon water. However, the authors conclude: *'Escaped farmed salmon, salmon lice and infections related to salmon farming are the greatest anthropogenic threats to Norwegian wild salmon. The present mitigation measures are insufficient to stabilize and reduce these threats.'*

In Scotland, SEPA, informed by Marine Scotland Science, has been tasked by the Scottish Government to develop new regulations to protect wild fish from sea lice[9]. Progress has been scheduled to be slow. The SEPA proposals, initially to introduce regulations only for new salmon farms, are far short of what is required to protect wild salmon and sea trout populations in the waters around Wester Ross any time soon. Quite simply, open cage salmon farming as currently practiced remains incompatible with controlling sea lice to safeguard the health of wild fish populations in nearby waters. You can have either one or the other, not both.

[8] Wild Salmon Strategy Implementation Plan, February 2023 https://www.gov.scot/publications/wild-salmon-strategy-implementation-plan-2023-2028/

[9] SEPA's 'world leading' approach to sea lice regulation https://media.sepa.org.uk/media-releases/2022/new-framework-will-help-create-world-leading-approach-to-protecting-scotland-s-most-iconic-fish.aspx

Part 4 **Report by Wester Ross Area Salmon Fishery Board**

supported by the Fisheries Management Scotland [FMS] and Fish Legal

by Peter Jarosz (Clerk to WRASFB)

The Wester Ross Area Salmon Fishery Board (WRASFB) has continued to work in close co-operation with Wester Ross Fisheries Trust (WRFT) since the reforming of WRFT in February 2021:

Monitoring of fisheries.

Data collected in 2021 and in 2022 by WRFT (e.g. from sweep netting and electro-fishing surveys) has added to the data bank that the WRASFB requires in performing its remit as the statutory consultee for wild fish. A summary of these surveys can be seen elsewhere within this document.

Responding to planning applications

Over the past years, WRFT has provided background information for responses to planning applications for fish farm sites both within and outwith the board's area.

As far as aquaculture planning applications are concerned, the past twelve months has witnessed three fish farms in Loch Torridon operating under planning consents that each required an Environmental Management Plan (EMP) to be signed off by the Highland Council (THC) prior to fish being stocked. To date all three farms are stocked and in their second year of production with harvesting being imminent, with no EMPs being signed off by the Highland Council.

The WRASFB, as a statutory consultee in the planning process of these fish farms and with the assistance of Fisheries Management Scotland (FMS), has been in fairly constant communication with the Highland Council in order to agree acceptable wording for these EMPs.

Attempts to engage Marine Scotland Science (MSS), in their role as a statutory consultee, into this process resulted in a meeting in January 2023 with THC, MSS, FMS and WRASFB. Nothing of any substance was agreed at that meeting and to date there are still no signed off EMPs for these fish farms in Loch Torridon.

In addition to the Torridon aquaculture planning situation, in the north of our area a S42 planning application has been made by Wester Ross Fisheries Ltd (WRF) to remove the ten-year condition under which their Ardmair site currently operates. The Board has submitted a robust objection to this application stating that we would like to see either a refusal or the granting of another ten-year term condition. A new coastal planning officer (Jethro Watson) at the HC planning department is handling this application. The Board has taken the same line as we have in Loch Torridon and insisted that should permanent planning consent be granted then it must have a robust EMP extremely similar to those put forward for Loch Torridon.

One other "possible" aquaculture application is the Horse Island fish farm that has been submitted for screening and scoping. The WRASFB does not respond to screening and scoping applications and prefers rather to wait for the full planning application submission before responding.

ASC Accreditation Process

The Aquaculture Stewardship Council (ASC) accreditation scheme has its own standards that they consider to be adequate for the protection of wild fish. The standard has been recently raised from 0.1 lice per fish to 0.5 lice per fish. So whilst the Board has responded to Mowi's ASC application it has not supported the accreditation scheme itself. In an earlier ASC report on the Mowi application ASC have stated that there is no written area agreement between Mowi and Bakkafrost for Loch Torridon and have emphasised that such an agreement is a requisite condition for membership of the accreditation scheme. On 1st March 2023 ASC confirmed accreditation of the Mowi Torridon fish farm.

SEPA's New Regulatory Regime

There is an interim report from SEPA that deals with their proposals in a bullet point way and which is available on their web site. It would seem that SEPA are intent on producing a regulatory regime that is "fit for purpose" and that will have consequences for the exceedance of the target figures built into the regime. Two SEPA workshops took place in early December that detailed the proposed regime as well as indicating SEPA's timescale for its further development, its ultimate "roll out" and their view on the introgression of the existing fish farms into this new regime. Following an email request from SEPA for the WRASFB to submit a response to their proposed regulatory regime the Board submitted a detailed response.

Further information about WRASFB, including copies of responses to planning applications, can be found on the Board's website at http://wrasfb.dsfb.org.uk/ .

Salmon fishing: Scottish Government proposed river gradings for 2023 season

Source https://www.gov.scot/publications/salmon-fishing-proposed-river-gradings/

River name	2018	2019	2020	2021	2022	2023 proposed
Kanaird	3	2	2	2	2	2
Ullapool	3	3	3	2	2	3
Broom	3	2	2	2	1	1
Dundonnell	3	3	3	3	3	3
Gruinard	3	2	1	1	1	1
Little Gruinard	3	3	3	3	3	3
Ewe and Loch Maree	3	1	1	1	1	2
Badachro and Kerry	3	1	2	2	3	3
Torridon	3	3	3	3	3	3
Balgy	3	2	2	3	3	3
Applecross	3	3	3	3	3	3

Notes: The conservation status of each stock is defined by the probability of the stock meeting its conservation limit over a five-year period. Rather than a simple pass or fail, stocks are allocated to one of three grades, each with its own recommended management actions:

Category 1 At least 80% probability of meeting the conservation limit. Exploitation is sustainable therefore no additional management action is currently required. This recognises the effectiveness of existing non-statutory local management interventions.

Category 2 Between 60-80% probability of meeting the conservation limit. Management action is necessary to reduce exploitation. Catch and release should be promoted strongly in the first instance. The need for mandatory catch and release will be reviewed annually.

Category 3 Less than 60% probability of meeting the conservation limit. Exploitation is unsustainable therefore management action, including mandatory catch and release (for all methods), is required to reduce exploitation

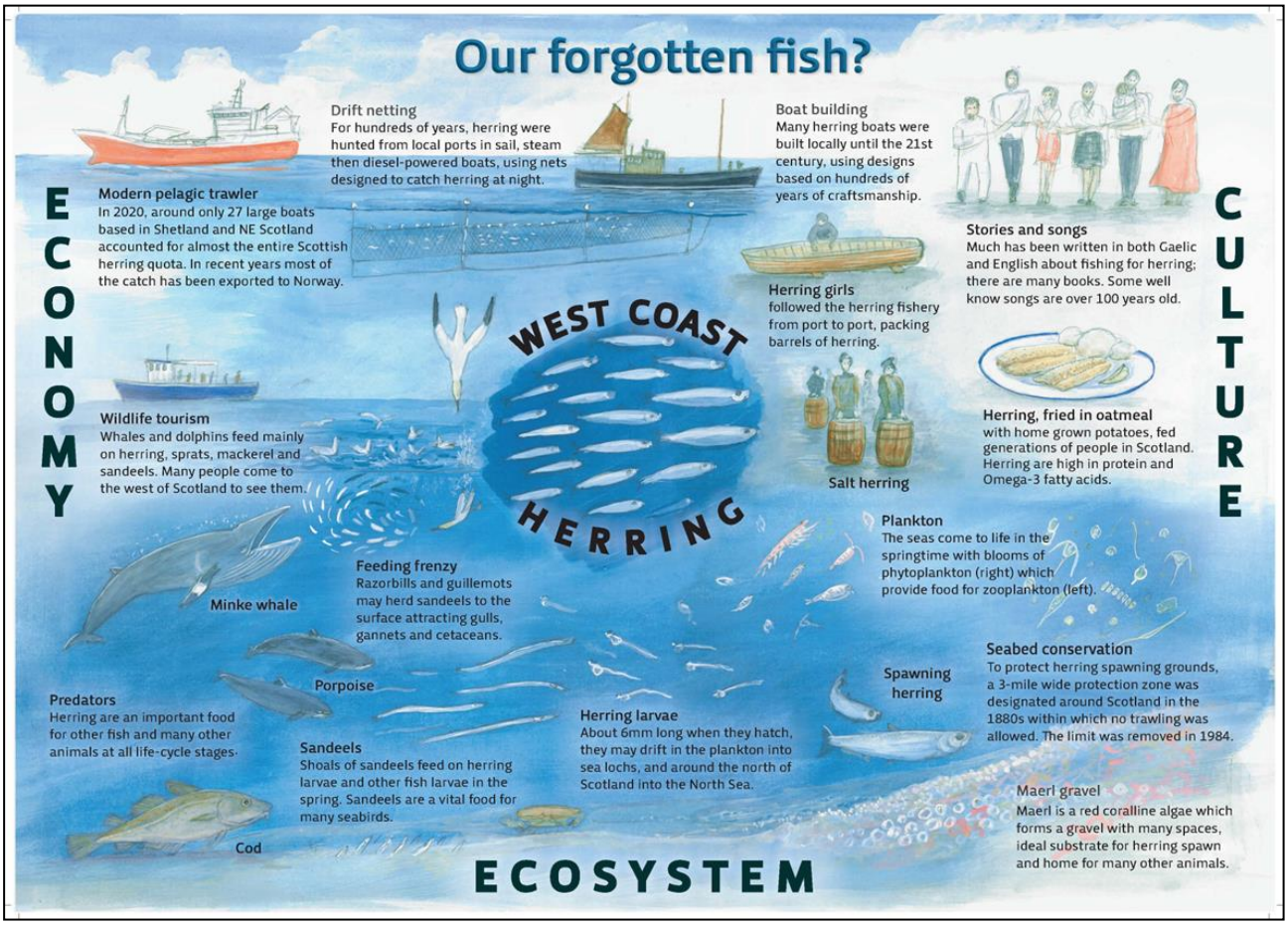
Part 5 **Other marine activities**

5.1 Herring exhibition

In March and April 2022, WRFT provided support for an exhibition in Gairloch Museum about herring, including those which spawn in the sea around Wester Ross. Much of the material for the exhibition was prepared by Peter Cunningham (with his Gairloch Ecocentre Ltd.), with support from the West of Scotland Herring Hunt Project, a herring biology specialist (who wished to remain anonymous), and in collaboration with the concurrent Global Shorelines exhibition and Fiona Mackenzie of the Aberdeen Science Centre.

In addition to the display prepared for the upstairs gallery, microscopes and a seabed habitat board game (prepared by the Gairloch adult learning group) were set up in the multi-purpose teaching room at the back of the museum. During the Easter holidays in 2022, several family activity days were organised to provide visitors with an opportunity to learn all about the wild herring which were formerly so abundant around Wester Ross.

(below) Herring were especially important to the Wester Ross area (illustration by Peter Cunningham).



On the last activity day (15th April 2022), visitors were able to view herring larvae (see cover photo), sampled the day before using a plankton net from the sea to the west of Melvaig. Thank you to many people (too many to list here) for supporting this exhibition and related activities; further details and acknowledgements can be found on the WRFT website[10]. The exhibition is available to be shown elsewhere, please contact the Trust if interested.

[10] Recently hatched herring larvae sampled by Wester Ross https://www.wrft.org.uk/news/newsitem.cfm?id=234

5.2 NTS Inverewe Underwater Garden Exhibition

the National Trust for Scotland
a place for everyone

SUPPORTING 2020 COASTS & WATERS

Seaweeds (marine algae) have been an important source of nutrition for the soils that support the world-famous plant collections at the National Trust for Scotland's Inverewe Gardens. They are also the most important marine habitat forming features of the Wester Ross Marine Protected Area. As part of the '2020 Year of Coasts and Waters', NTS received funding for an exhibition on the remarkable diversity of seaweed and seaweed habitats around Inverewe Gardens by Loch Ewe.

The exhibition was delayed due to the covid pandemic but finally was set up in 2021 in the summer house near Inverewe House in the center of the gardens, with examples of wracks, kelps and maerl on display, in addition to parts of some of the animals that associate with seaweed habitats nearby. WRFT worked with talented graphic designer, Chantal Awbi in preparation of display material *(left).*

In parallel, volunteers surveyed the seashore by Camus Glas at the back of Inverewe Gardens where lush forests of egg wrack were recorded, but also a blanket of the brown filamentous algae smothering the seabed from close to the low spring tide mark offshore. The filamentous algae is of much concern as it also grows over the maerl beds located on the seabed nearby. We plan to learn more about the distribution of filamentous algae and its impact on maerl and seagrass habitats within the Wester Ross MPA later in 2023.

Thank you to Chantal Awbi, Chloe and Anthony Hall, Gareth Parkinson, Dorje Khandro, Steve Kett and Andy Vicks for lots of help, and to everyone at NTS Inverewe for their interest, encouragement and support.

5.3 Learning about fish life around Aultbea

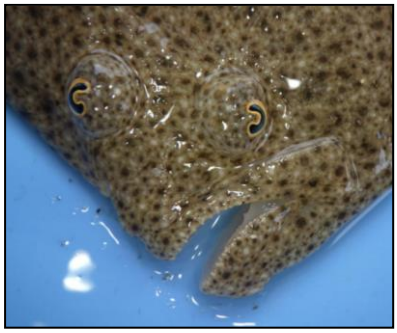
One of the highlights of 2022 was working with Katie Grant of the Aultbea Stories project to learn about some of the amazing fishes that can be found in Wester Ross waters.

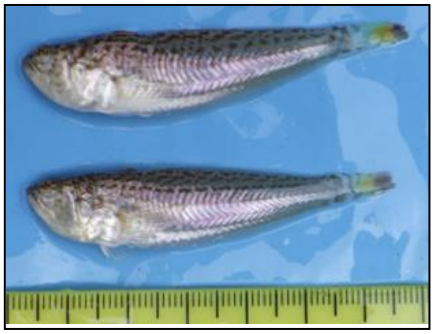
There are many undocumented stories of salmon and sea trout in the Aultbea River (Allt Beith). In years gone by, sea trout were taken from the river as a seasonal food source for local people. In November 2001, the radio-tag from a rod-caught grilse that was caught and released in the River Ewe was found on the bank of the Allt Beith. That fish must have gone back out to sea, then run up the Allt Beith to spawn; it may have been part-spawned when it was taken by an otter; there were bits of fin and salmon eggs on the bank nearby[11].

Since then, juvenile salmon have been recorded regularly in the Allt Beith, usually at high CPUE at sites as far upstream as the stepping stones midway between the sea and Loch a' Bhaid Luachraich (locally known as the 'Goose Loch'). In 2022, two expeditions set off to explore the river. On 23rd August 2022, juvenile salmon were found above the fish ladder and as far upstream as the Goose Loch outflow. Trout and eels were also recorded; Arctic charr are also known to inhabit the Goose Loch from netting studies supported by WRFT in earlier years.

On 27th July 2022 we enjoyed a day learning about marine wildlife in the sea by the 'Boom' beach at Mellon Charles. This day provided an opportunity to catch a wonderful variety of juvenile fish. The fish species list (nearly all juveniles) was quite impressive: sprat (or herring fry), sandeel sp., pollack, coalfish, plaice, turbot, gurnard sp., lesser weaver, greater pipefish. Thank you to Katie Grant and all the helpers!

Seine netting at Mellon Charles, by Aultbea (photo by Ailsa MacLellan). The catch included juvenile turbot, gurnard sp. and Lesser weaver fish. Weaver fish hide in the sand and have a poisonous spine on their dorsal fin; best to wear shoes when paddling in the sea at low tide! (photos by Chole Hall)





[11] Predation and scavenging of salmon report https://www.wrft.org.uk/files/finalASTrept10-02.pdf

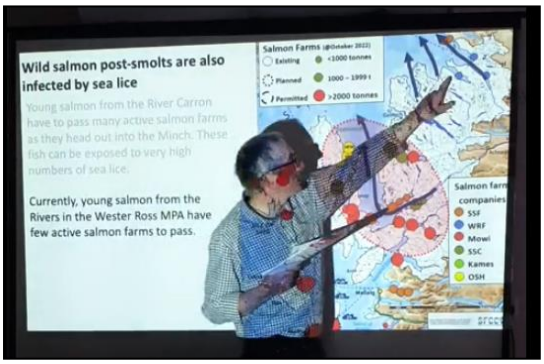
5.4 Wester Ross MPA Discovery Day

Over forty people attended the Wester Ross Marine Protected Area discovery day in Ullapool on 14th October 2022, organised by WRFT with active support from several other local marine coastal community groups.

The purpose of the day was to raise awareness of protected seabed habitats (Figure 5.1), the amazing diversity of wild fish which live within and around the MPA including wild salmon and sea trout, and to share and celebrate some of the latest discoveries including some amazing underwater videos of wild fish in their natural habitats.

The day was motivated by concerns about possible new salmon farm developments within the MPA which could potentially harm protected seabed features including maerl beds and wild fish populations, especially wild salmon and sea trout. Much new information was shared. However, the question of whether it is possible to safeguard healthy wild salmon and sea trout populations alongside very large open cage salmon farms, a question put to Marine Scotland Science prior to the meeting, was not answered as clearly as is required.

(left) Peter Cunningham explaining how salmon smolts from Wester Ross MPA rivers currently have relatively few salmon farms to pass compared to those which migrate to sea from the Loch Carron – Loch Alsh area. From live stream video recording on WRFT22 facebook page. (right) There are many opportunities to support local marine monitoring activities around the Wester Ross MPA. Photo by Anwen Page, Little Loch Broom 2021.

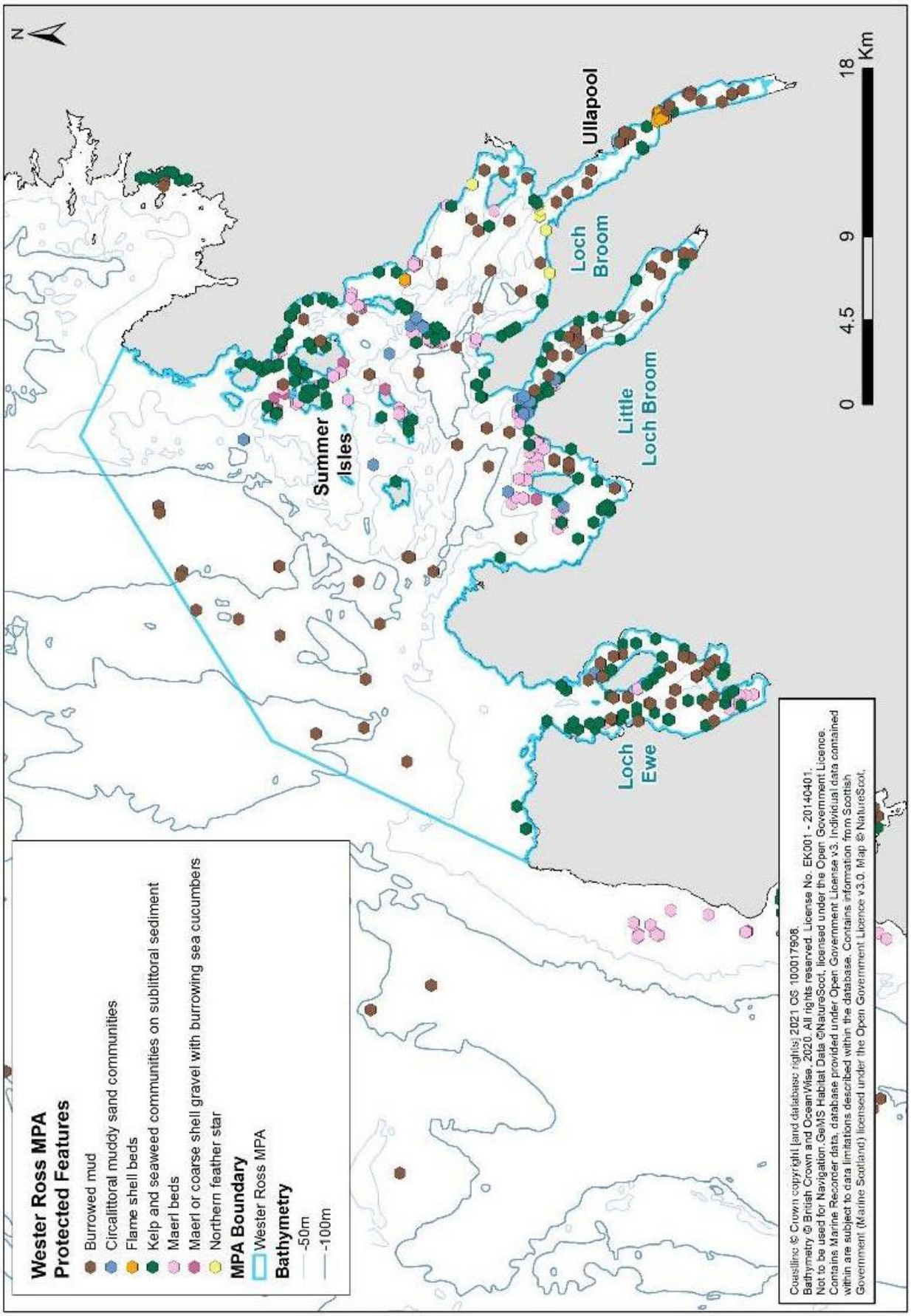


A report from the meeting with links to presentations can be found on the WRFT website https://www.wrft.org.uk/news/newsitem.cfm?id=238 . Some of the presentations can still be viewed on the WRFT22 facebook page.

Thank you very much to all who supported the Wester Ross Marine Protected Area Discovery Day, especially all the presenters, Nature Scot, Sue Pomeroy, Emma Watson, Dorje Khandro, Fiona Mackenzie, Donald Rice, Finlay Pringle, Chloe Hall, Ullapool Unpacked, the Macphail Centre and staff; An Talla Solais Art studio and exhibition, artist Julia Barton; Joanie Bones (aka Dorje Khandro), Heather Yule, Irene Brandt, and the Ullapool Harbour Trust for the evening event of songs and stories about the sea. We had a great day!

Butterfish (gunnel) in maerl (Graham Sanders); flapper skate investigating bait box from BRUV video (Neil Burns)

Figure 5.1 Recorded distribution of features which were protected within the Wester Ross MPA as at September 2022. Will other seabed habitats and important species including wild Atlantic salmon and flapper skate be added to the list of protected features? Thank you to Nature Scot for this map.



Part 6 **Riparian woodlands and freshwater productivity**

6.1 Protecting and recovering riparian woodlands for salmon

There is much interest in protecting and restoring riparian woodlands around Scotland as a means of helping to support wild Atlantic salmon populations and other freshwater wildlife especially given predictions for more intensive rainfall events and higher temperatures associated with climate change. Not only do trees that grow along river banks provide important nutrition in the form of leaf litter and woody debris for aquatic food webs, tree roots help to bind river banks together, maintaining channel form.

Trees can also help to cool rivers by providing shade. Stream water temperatures of mid to high 20C have already been recorded in July in several parts of Scotland; these are already dangerously high for juvenile salmon. Water temperatures are forecast to rise further in coming years associated with global warming. Riparian trees would be particularly beneficial to wild salmon populations and production along parts of the Gruinard River, Little Gruinard River, River Ewe headwaters, Torridon River and Applecross River.

In July 2022, WRFT supported screening of the new Riverwoods film at The Loch Torridon Community Centre, hosted by Beinn Eighe NNR which was well attended by local enthusiasts *(below).*

The film screening was followed up in November 2022 with planting of trial riparian tree enclosures along the Torridon River nearby, following a visit to Coulin Estate earlier in the day to view riparian tree planting projects, including one established in 2004 along a sea trout spawning burn; and to consider future opportunities for collaboration to make rivers as resilient as possible for wild sea trout and salmon populations *(below)*.

Thank you to Nature Scot Beinn Eighe NNR, NTS Torridon, Ben Damph Estate and The Woodland Trust for much interest in promoting and supporting riparian woodland restoration along the Torridon River, and to Coulin Estate for much support for sea trout and salmon spawning and nursery habitats over many years!

6.2 Rhidorroch River sediment management project

The Rhidorroch River is the main spawning stream for wild salmon within the Ullapool River system above Loch Achall. The river has been very unstable over many years, with periodic spate events which have caused much bedload transportation of sediment carried by strong currents, associated with bank errosion and bank collapse. This has caused washout of salmon eggs, juvenile salmon and the invertebrate fauna upon which salmon feed.

The Ullapool River Fisheries Management Plan[12] discussed the issues and describes how much of the sediment which is responsible for the unstable charactersitics of the Rhidorroch River originates in headwaters streams far upstream from the section of river accessible to wild salmon. Rather than simply adressing the symptoms of the problem through riparian tree planting along the Rhidorroch River, this project aimed to locate the main sources of sediment input within Glen Douchary and to propose actions required to reduce the amount of sediment that enters the river and is carried all the way down. Working with Angus Davidson Ltd, we have been to map out the main problem areas from drone aerial photographs, satelite imagery and to propose actions that can be taken at catchment scale to reduce the amount of sediment entering the water.

(below) Erosion and bank collapse feeds much sediment into the River Douchary (13th May 2022)

Successful intervention in headwater areas can reduce the severity of damaging sediment-laden spate flows, providing longer lasting stability of river banks and fish habitats far downstream along the Rhidorroch River. Proposed actions include peatland restoration projects and riparian woodland schemes. Such actions can also increase resiliance to anticipated more extreme weather events associated with climate change.

(left) Survey team by River Douchary, 13th May '22

Thank you to everyone who has support this project to date, especially Julien and Iona Scobie (East Rhidorroch), Colin Morrison (Angus Davidson Ltd) and Mary Gibson.

[12] https://www.wrft.org.uk/files/Ullapool%20FMP%202006.pdf

6.3 Controling invasive *Rhododendron ponticum* by the River Kerry

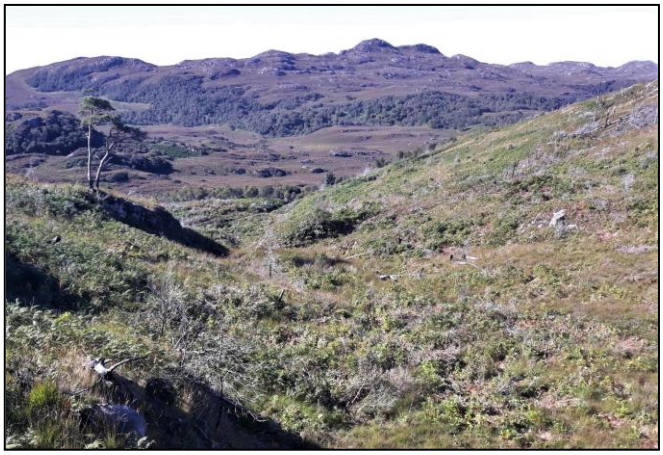
Invasive non-native plants, particularly *Rhododendron ponticum* are a growing threat to biodiversity in Wester Ross including to freshwater wildlife. With support from Scottish and Southern Energy, Landfill Communities Fund and permissions from Gairloch Estate, the Manta Ecology team (led by Eamonn Flood and Chantal Awbi) continues its work to control *R. ponticum* from along the River Kerry near Gairloch. The River Kerry is a Special Area of Conservation for the freshwater mussel (*Margaritifera margaritifera*).

As elsewhere in Wester Ross, ponticum has spread from around nearby gardens to surrounding land, where it has formed a dense almost impenetrable barrier to light for other plants and to people attempting to move about. A major problem is that some people still rely on ponticum for shelter and seclusion and like to see it.

Large plants have been treated using herbicide stem-injection techniques. A large area to the north of the River Kerry has now been tackled. The picture below illustrates the successful outcome following stem and stump treatment of most of the larger plants across a large section of hillside above the River Kerry. Much of this work was carried out by Fraser Anderson who has been trained to safely administer the herbicide glyphosate, which is currently the most cost-effective way to kill larger ponticum plants.

However, with only one year of the current funding grant remaining, there is still much to do. Many more years of follow up work will be required if the project is to have longterm success. Until landowners and government agenencies are more effective with an adequately funded longterm strategic approach to control the spread of ponticum, many further expensive invasive ponticum control projects will be required, eating into the limited pool of cabable manpower within the local area and grant funds for biodiversity conservation related work.

(below) A large area of spreading ponticum has been controlled here to allow native plants to grow back. If the pontium had not been controlled, all the land in the foreground (above the River Kerry), would soon have become a monoculture of ponticum, a plant which is toxic to deer and has virtually no other wildlife value. This is a message that is still not well enough understood by many people (below right) Eamonn Flood, Rob Dewar (NTS) Emma Watson and Chantal Awbi visit the project area in February 2023. (photos below left & top right by Fraser Anderson).



Part 7 **Nature Scot Trainees**

As part of the Nature Scot's Working with Rivers Training Placement scheme, WRFT received funding from Nature Scot to employ Colin Simpson and Emma Watson as trainees between 1st March 2022 – 23rd May 2022.

Colin and Emma were able to gain much experience of a range of Trust activities, including much 'learning by doing days' and training courses. Activities included surveying for riparian woodland restoration, invasive Rhododendron ponticum control by the River Kerry, aquatic invertebrate investigation *(right)*, and supporting the herring exhibition at Gairloch Museum including family days with Fee Mackenzie (Aberdeen Science Centre), preparing grant applications, and sampling sea trout in the sea. Colin has since found full-time employment nearby; and we are delighted that Emma was able to take on part-time employment with WRFT.

Prolific tree planters! Both Emma and Colin have much tree planting experience from previous work in Wester Ross. Here they are by the roadside between Kinlochewe and Torridon. Colin is pointing to the young Scots pine woodland he planted as a self-employed contractor in previous years. Colin planted 10,000s of trees in Wester Ross over many years in support of WGS schemes including the Balle Mor woodland on Gairloch Estate. Before joining WRFT, Emma worked as a volunteer on Beinn Eighe NNR and her work included tree planting on the other side of the road. Many of Emma's and Colin's trees are now well established and providing diverse habitat for wildlife.

Part 8 **Financial Statement**

Because the Trust is a Charity, its accounts are necessarily comprehensive and complex to read without additional explanatory notes. The Trustees have decided therefore in future to provide only a summary statement within the review itself, but to provide a link to the full OSCR accounts.

2023 Financial Statement

Background

The Trust is just twenty four months old and the primary objective over this time has been ensuring that there has been sufficient income for the Trust to operate and, importantly, to survive. At this point it is most important to recognise the donations from many benefactors that ensured the financial stability of the Trust in its first year (2021-22). Our thanks go out to those benefactors who made these donations. Over the last two years there have been variations in the income and expenditure of the Trust. These fluctuations were primarily caused by two factors:

1. An increasingly challenging environment for the Charitable Trusts and other grant sources, from which approximately two thirds of our income originates.
2. Reduced funding from the WRASFB.

Present Position

Stringent economy measures over the past two years that included Peter Cunningham agreeing to work a reduced hours week have stabilised our financial position and given the Trust a financial basis for the future.

Whilst successfully fulfilling all its aims and objectives as planned, at the time of writing (April 2023), the Trust has operated on a better than cost neutral basis throughout the 2021/22 financial year. We further expect to show a small increase in financial reserves at the end of the 2022/23 financial year.

The full accounts are available via this link: http://www.wrft.org.uk/downloads/files.cfm?id=38

Acknowledgements

Wester Ross Fisheries Trust has received a great deal of help and advice over the past 15 months. Thank you to:

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Colin S
Connaire C (The Highland Council)
Cory J
Craig M
Prof Andrew (Dave) B
David A (Applecross Trust)
Derek R
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Donald R
Dorje K
Doug A (NTS Inverewe Gardens)
Doug B (Nature Scot Beinn Eighe NNR)
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Duncan D
Duncan M (Gairloch Estate)
Duncan M
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Eric W
Finlay O (Gairloch Estate)
Finlay P
Finn S
Frank B
Frank K (Kinlochewe Estate)
Fraser A
Fred R
Gairloch Estate
Gareth P (NTS Inverewe)
Gary W (Gruinard Estate)
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Gregor W
Hamish L
Hugh W
Huw B
Ian M (Applecross Trust)
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Jake B
James B
James C
Dr James C
Dr James M
James R (MSS)
Dr James F
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Janet U
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Jen S (Gairloch Museum)
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Dr John A
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John O & family and friends
John M
John P
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Julien L & Iona S (East Rhidorroch)
Kaenchullish Estate
Katherine V
Katie G (Aultbea Sotries)
Keith D
Kerri W
Kevin G
Kitty B & Kris W
Les B
Letterewe Estate
Lizzie B
Liz Jackson
Dr Lorna B
Louise G (Beinn Damph Estate)
Lucy & Steve R
The Macphail Centre & staff
Malcolm T (The Woodland Trust)
Mark L
Mark and Kirsty W
Martin H (NTS Inverewe)
Mary G
Matthew Z (WRF)
Dr Michael A & Prof Kathy P-J
Dr Michelle F & Prof Karen D (WOSHH)
Neil M (Coulin Estate)
Nick B
Nigel and Meryl C
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Paul B (NTS Torridon)
Peter B
Peter C (Nature Scot Beinn Eighe NNR)
Peter J
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Philip S and family
Ray D (River Ewe)
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Rob A
Rob D
Robin A
Roderick M
Roger & Tracy M
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Sara N
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Sean R (FMS - SFCC)
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Simon S
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Sue P & family
Terry J
Dr Toby L
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Ullapool Harbour Trust
Ullapool Unpacked
Ullapool Sea Savers
Veronica M

…and all the other anglers, wildlife enthusiasts, keepers and ghillies, fish farmers, school teachers, schoolchildren and parents, and everybody else who has helped us with our work to support wild fisheries and the ecosystems that support them in the Wester Ross area.

The **field work programme for 2023** will include sweep netting for sea trout; an aquatic Buglife project; juvenile fish surveys of many rivers between Ullapool and Applecross; excursions to sample trout lochs and streams; a Gairloch nature trail project; seashore days and much else. There are many opportunities for becoming actively involved with the work of Wester Ross Fisheries Trust or for simply coming along for a day in the field to find out what we do and help out. Please contact the WRFT biologist at info@wrft.org.uk for further details.