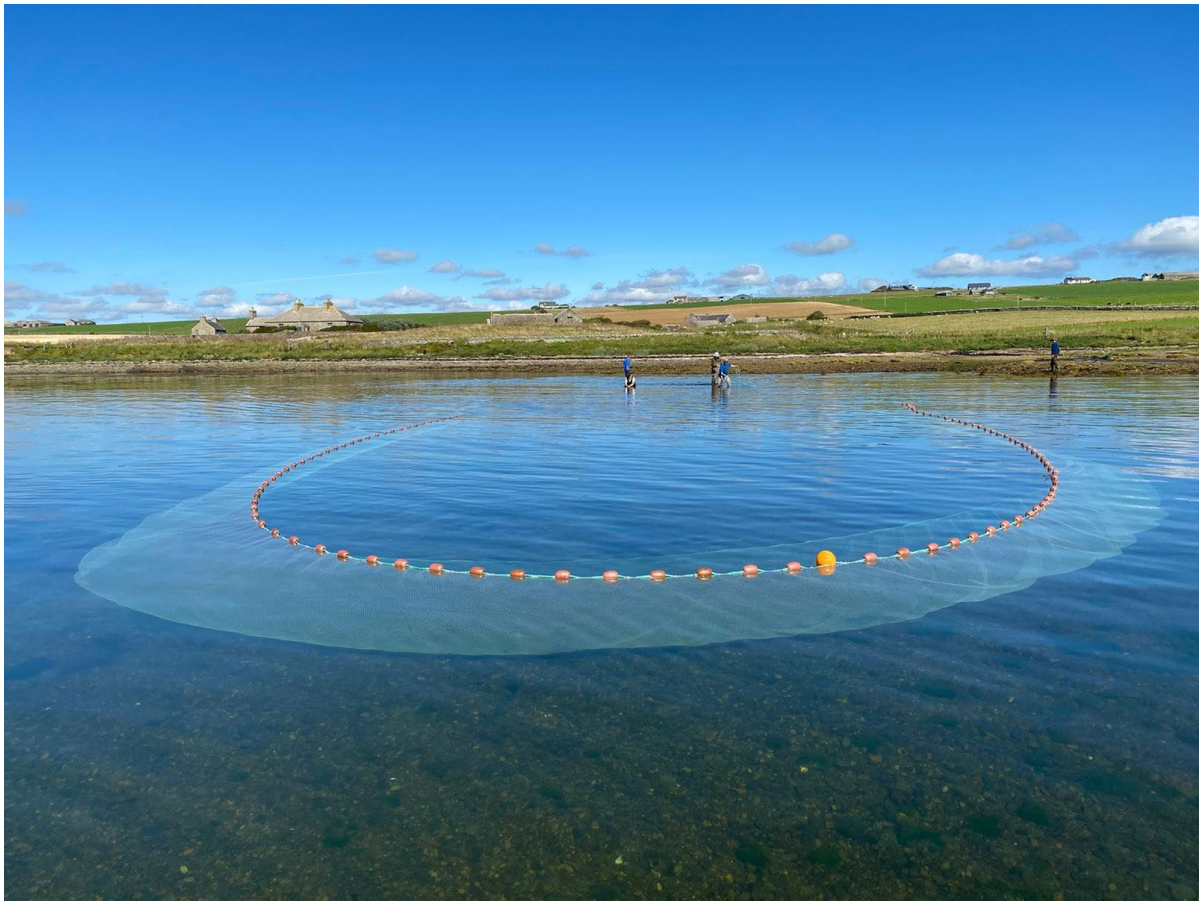
OTFA SEA TROUT SAMPLING 2023

In 2023, OTFA members stepped up their efforts to learn more about the health of Orkney's wild sea trout populations. This mainly involved using the sweep net, gifted to the OTFA by NatureScot, to gather sea trout samples over the spring and summer period. The main objective was obviously to gather useful information on sea trout to help with conservation, but another objective was to gain more experience using the sweep net and to determine if it's an effective sampling method here in Orkney. As usual, the OTFA carries out this type of work under licence from the Marine Directorate (formerly Marine Scotland).



Sweep netting in action at the Bay of Ireland (Andy Cuthbertson).

Sweep netting was carried out on 8 occasions in 2023, seven at the Bay of Ireland and a single attempt at The Bush, the outflow from the Loch of Stenness. These areas are known to be used by sea trout and were also convenient from a logistical point of view. The overall catch for 2023 was 19 trout, all of which were caught at the Bay of Ireland (see below). The best single day's catch was 9 on the 30th June. All were safely returned to the water after examination.

Date	Location	Sweeps	Sea trout
7th April	Ireland	3	2
3rd June	Ireland	3	2
16th June	Ireland	2	0
17th June	The Bush	3	0
30th June	Ireland	2	9
9th July	Ireland	5	0
16th September	Ireland	5	3
7th October	Ireland	4	3
	TOTAL	**27**	**19**

What was learnt from the sea trout we caught? Most of the fish were post-smolts that ranged from 150mm to 250mm in length and had only been in the sea for a few weeks. It is highly likely that these fish originated from the Burn of Ireland, which can produce hundreds of smolts each spring. These new arrivals are of particular interest as they provide a snapshot of marine conditions over their first summer at sea, e.g. food availability, parasite burdens, predator damage, all of which can affect survival rates during the marine phase of their life cycle.

The occurrence of salmon lice is a particular concern for the OTFA and detailed lice counts were carried out on all sea trout caught in the sweep net, plus an additional four caught by angling, also at the Bay of Ireland. The total sample size was therefore 23 trout, 17 of which were post-smolts. The results are summarised below:

- Salmon lice (*Lepeophtheirus salmonis*) were present on all 23 trout.
- Numbers varied from 3 – 111 with an average of 50.3 lice per trout.
- 76% of post smolts carried a fatal burden of lice, i.e. >0.3 lice per g body weight[1]. For example, a fatal lice burden on an 80g smolt (about 200mm long) would be 30 lice or more.
- Where weight was recorded, condition factor averaged 1.1.
- Another species of louse, *Caligus elongatus*, was also present in low numbers.

National lice monitoring protocols presently recommend a minimum sample size of 30 trout from one site within a one-week period - this was not achieved in 2023. It is difficult therefore to make any firm conclusions here – more data from multiple sites would be required to understand the wider impact of lice on Orkney's sea trout. The results do however illustrate the potential magnitude of the lice problem and underline the pressing need to better understand the issue.

[1] Based on the method of Taranger et al., 2015. This method is the best available assessment of lice impact on salmonids. It is currently used as a guide by Marine Scotland and Fisheries Management Scotland.

The survey team gained plenty of experience using the sweep net, which was deployed a total of 27 times. By the last sampling session, the process of loading, deploying and recovering the net was being done quickly and with minimum fuss. The main drawback was the relatively low catch for the amount of effort. Better results might be obtained from other sites. The survey timing might be altered as well – the most activity in the Bay of Ireland appeared to be in June, so focussing sample effort around that time might pay off. Other sampling methods, including angling, also need to be considered and it's possible a combined approach is required. It is worth remembering that sea trout are not that numerous and they have a huge coastline to occupy so sampling by any method is a major challenge.

What work is planned for 2024? It is likely that OTFA sweep net will be used again to build on the success of 2023. The amount of effort put in by OTFA members in 2023 was commendable and (as far as I am aware) it's the only group in Scotland doing this type of work on an entirely voluntary basis. It's not reasonable to expect this effort to increase however and other organisations will have to get involved if an Orkney wide monitoring strategy is to be developed. Having set the trend, it would be good if the OTFA can have a continuing role in this process.

Thanks go to all OTFA members who helped with the sweep netting program in 2023 include Dave Cousins, Su Cousins, Douglas Sinclar, Dan Brazier, Zach Brazier, Andy Cuthbertson, Jason Gillespie, Tomas Fedor, Colin Kirkpatrick, Daniel Kirkpatrick, Magnus Kirkpatrick, Sandy Kerr, Neil Firth, Neil Macleod, Antoine Pietrie, James Bews, Malcolm Thomson, Joe Thomson, Sean Tait, and Lee Thomson. It was good to see many children accompanying their parents and taking an interest – future OTFA members! Kirsty Brown and Chris Webb representing the local fish farming industry also helped out. The OTFA is also grateful to SULA Diving, the Orkney Hyperbaric Trust and Scapa Flow Charters for the provision of the boat, outboard and trailer that were used during this work. If anyone is interested in helping out with sea trout sampling in 2024 then please get in touch.

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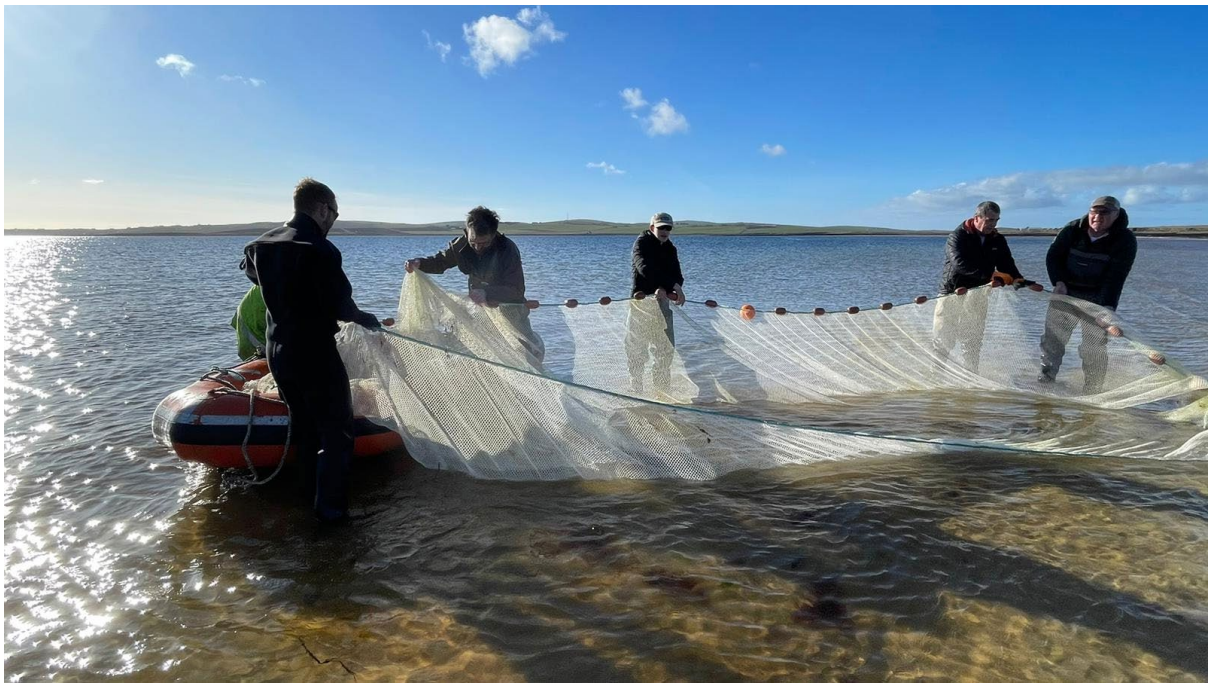
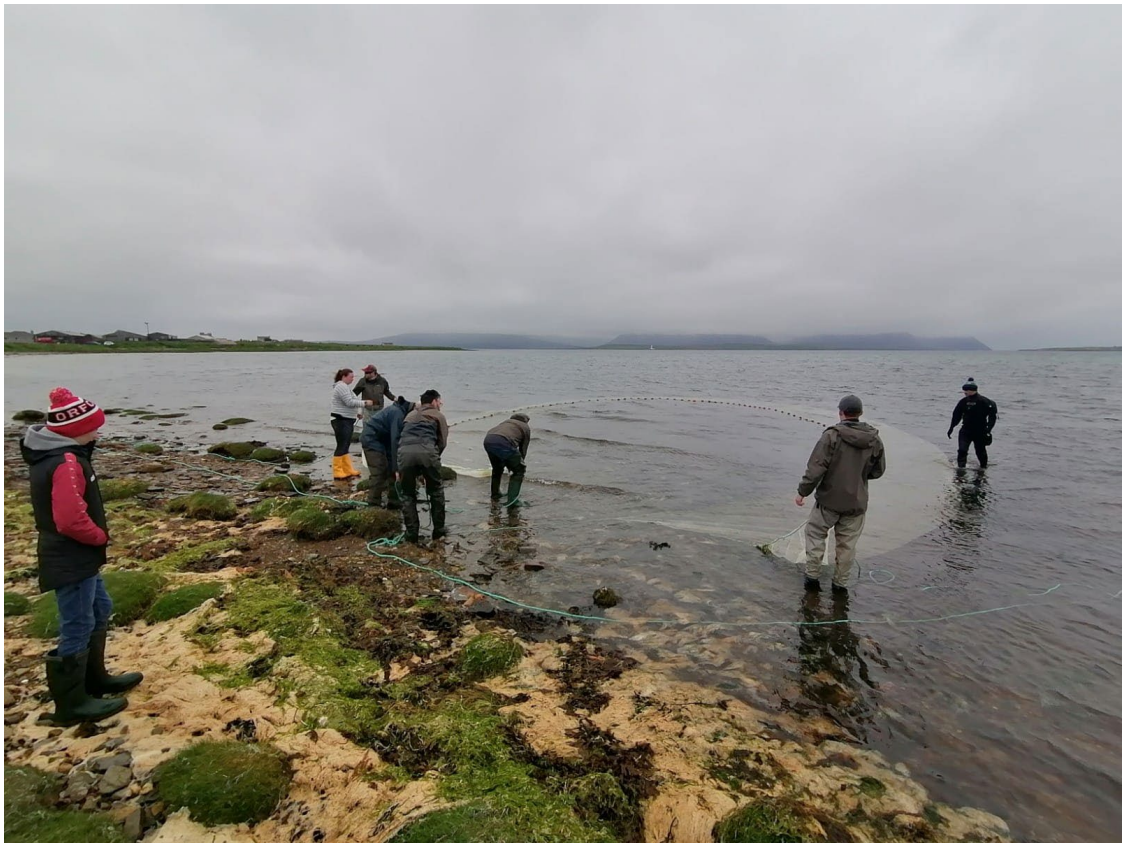
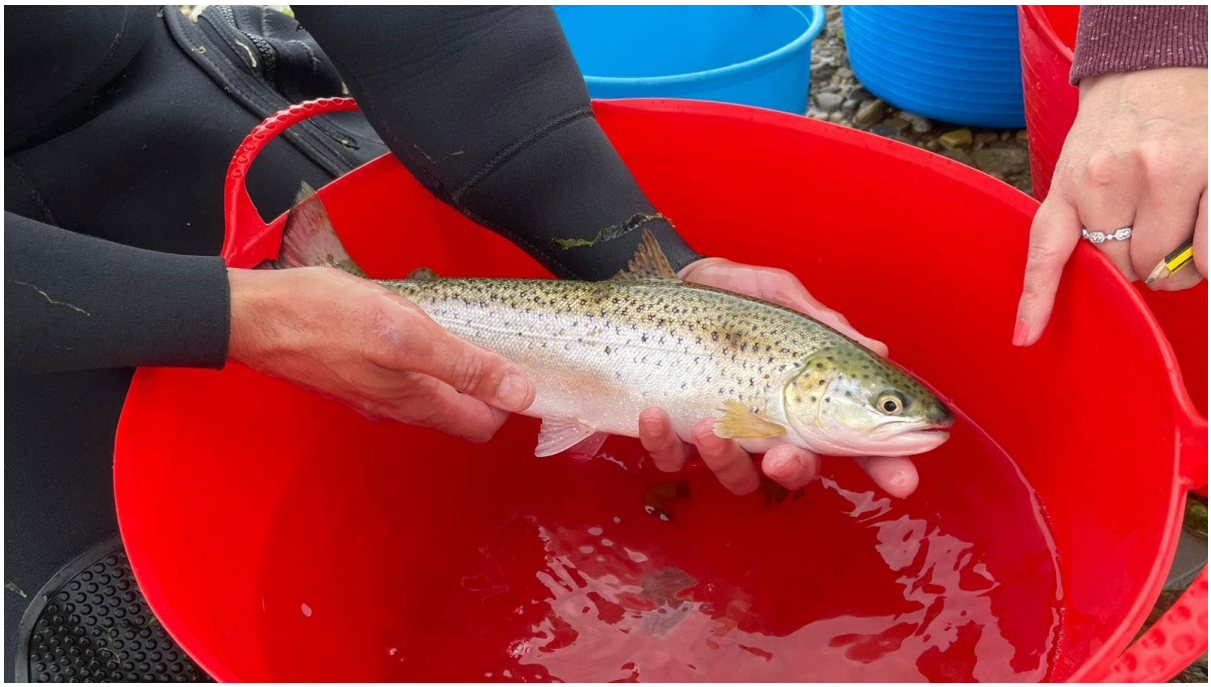


Loading the net prior to deployment (Colin Kirkpatrick).

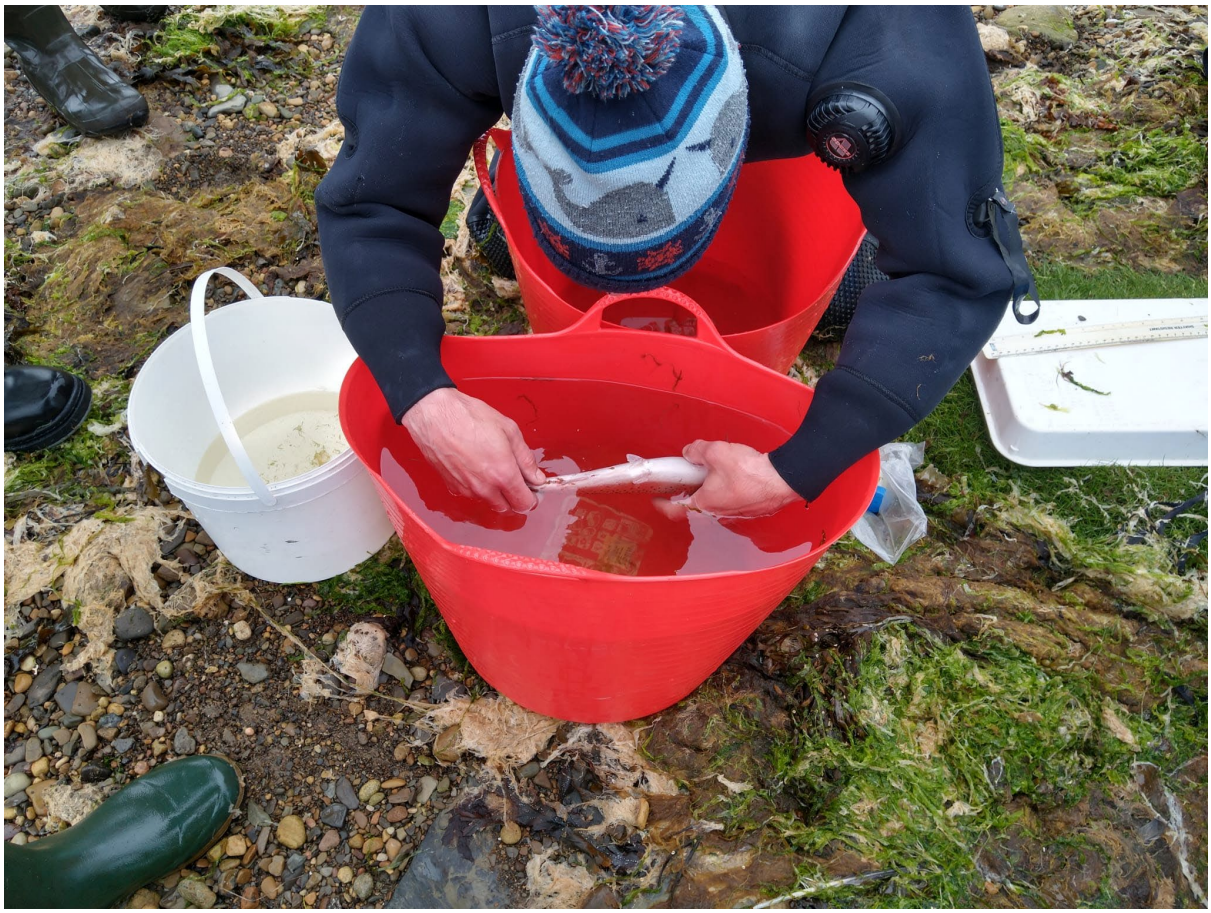


Recovering the net (Antoine Pietri).

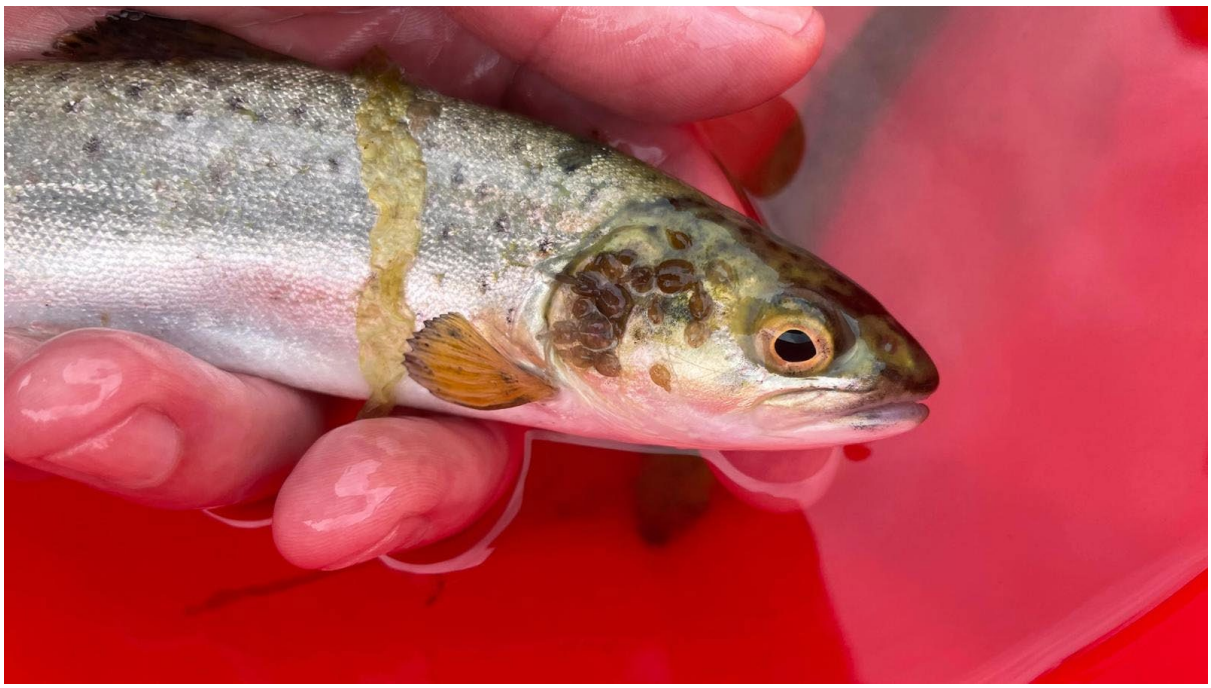
The best catch – 30th June (Colin Kirkpatrick).



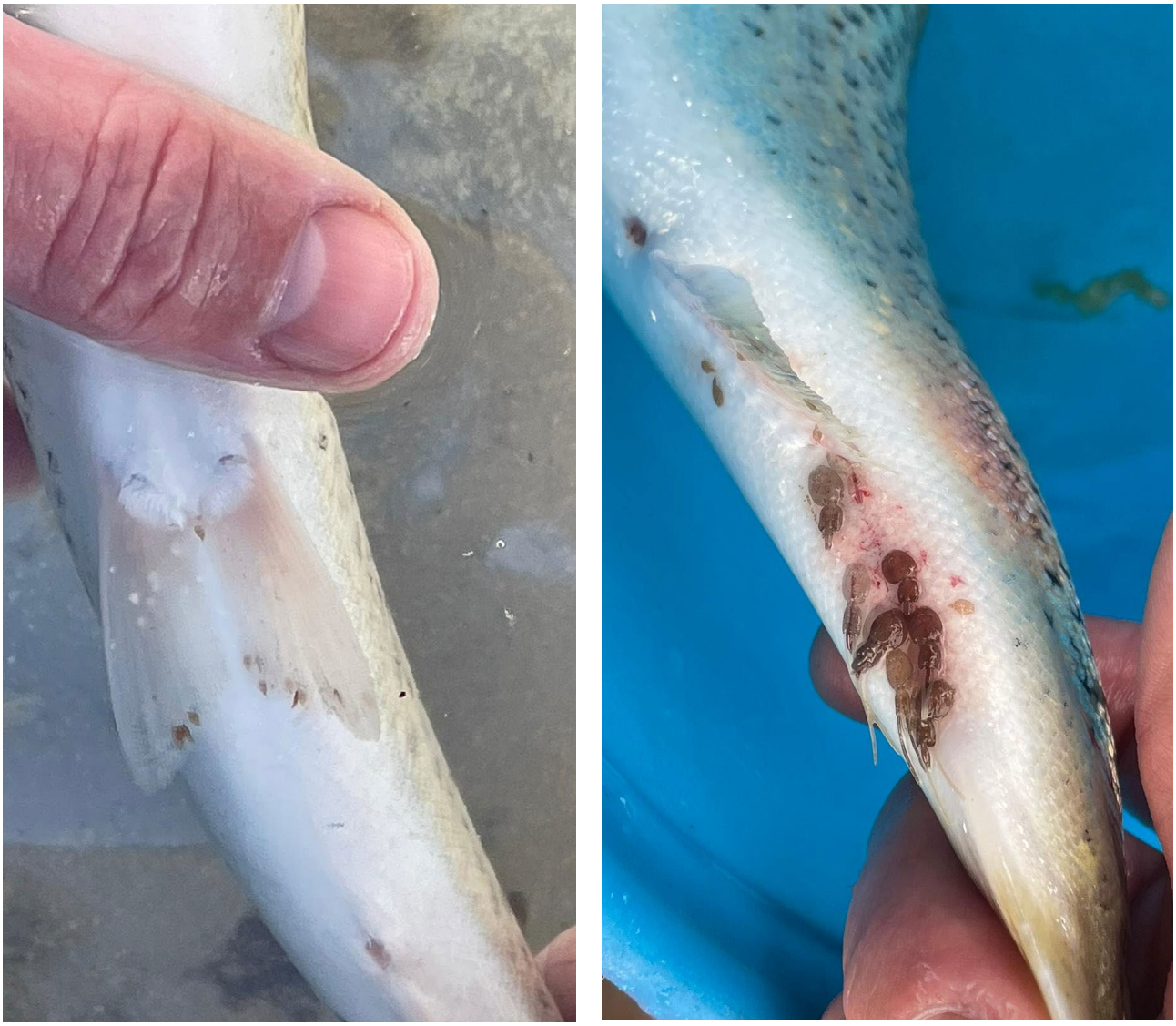
One of the biggest sea trout caught in 2023 (Colin Kirkpatrick).



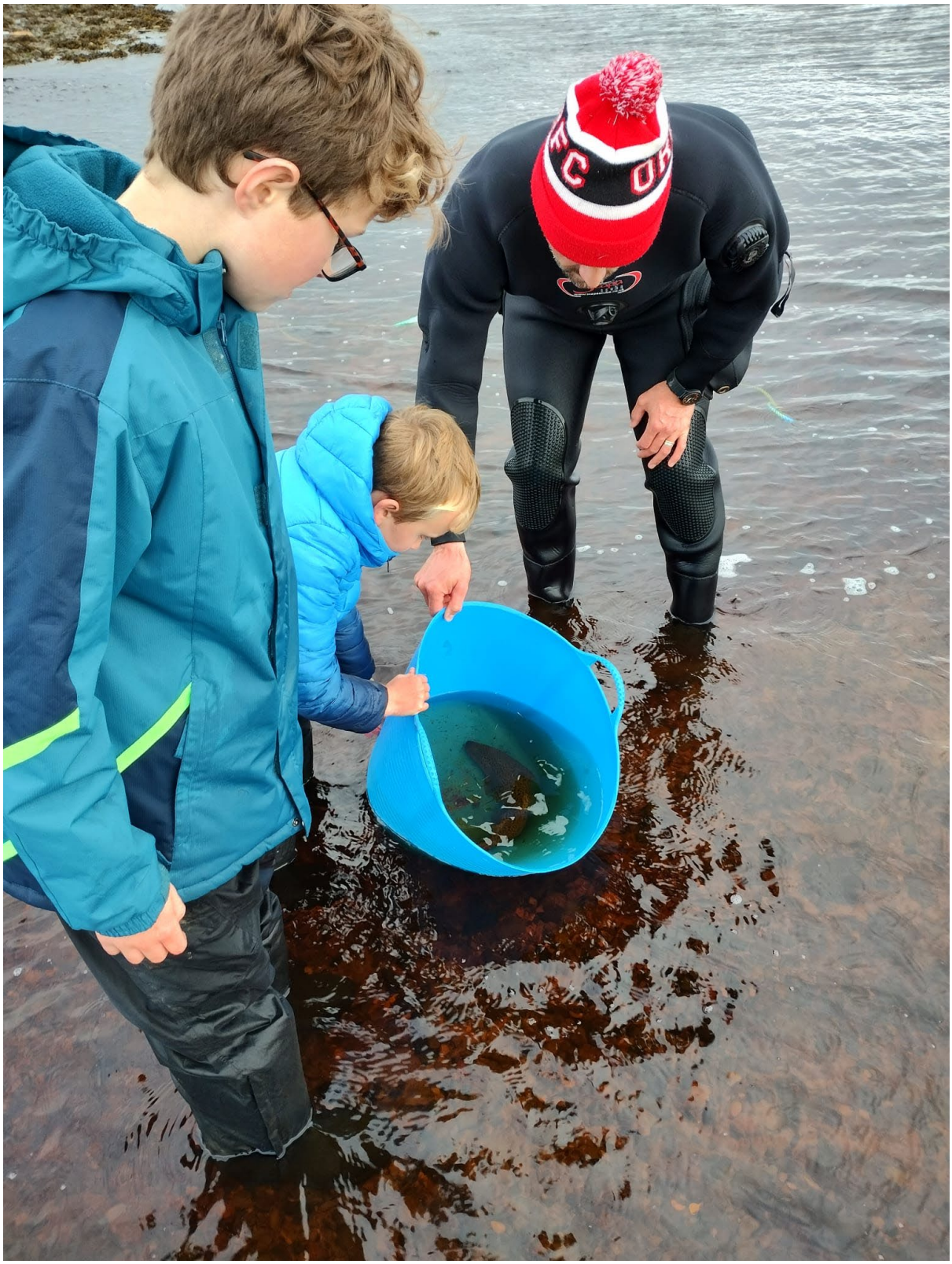
All fish were anaesthetised prior to examination (Colin Kirkpatrick).



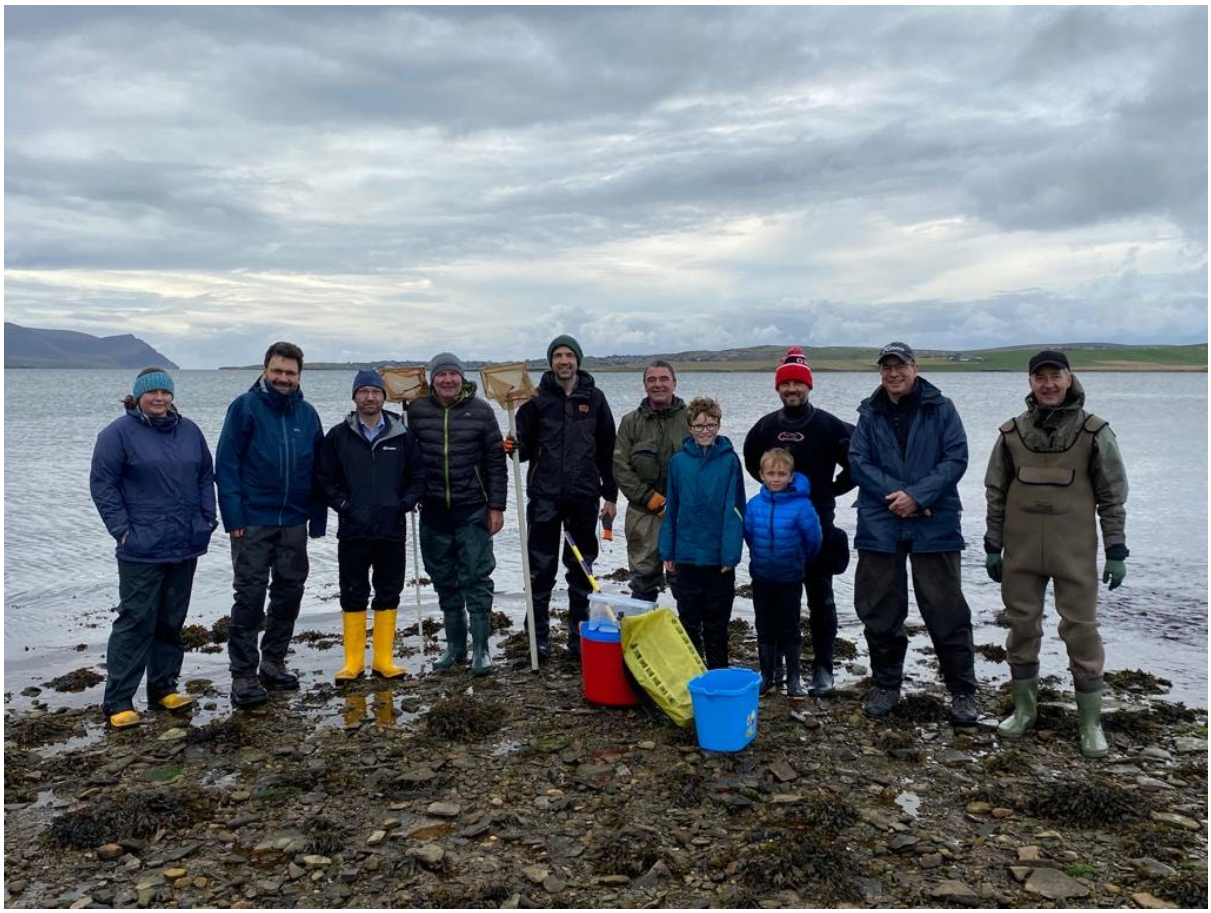
Accumulation of salmon lice on the gill cover (Colin Kirkpatrick).



Different stages of lice development. Left image shows small lice that have recently attached to the host. Right image shows adult lice that have been on the fish for several weeks, including some mature females with egg strings (Colin Kirkpatrick).



Fish being released after examination. It was really good to see some of our young folk taking an interest and lending a hand (Colin Kirkpatrick).



The sampling team on the last outing, October 2023 (F. Thomson).