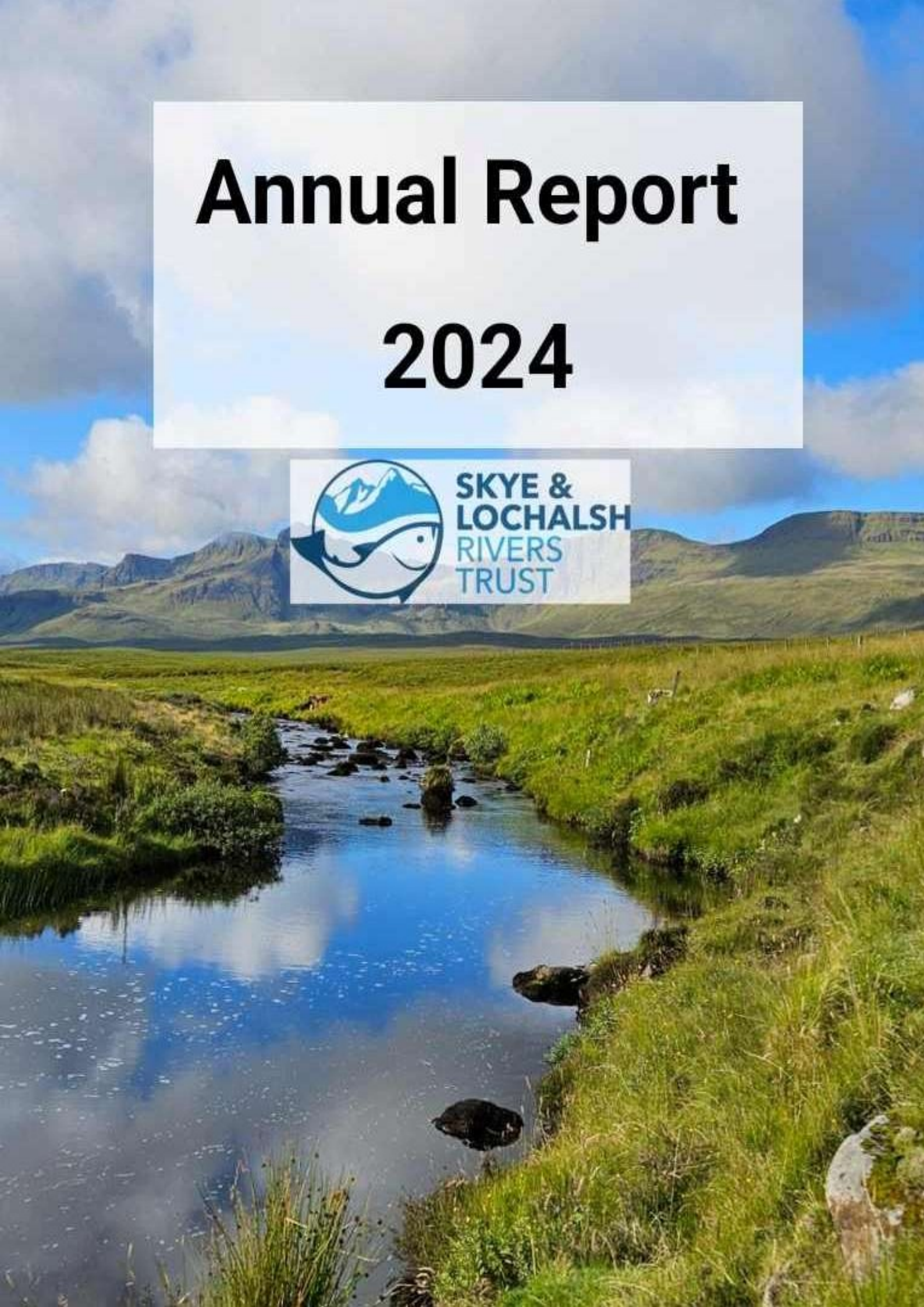
Annual Report

2024



SKYE & LOCHALSH RIVERS TRUST

Chairperson's report

This report summarises our activities during 2024, outlining an extensive program of monitoring activities across rivers on Skye and adjacent areas of the mainland. Monitoring of our salmon and brown trout populations extends across virtually all life stages and we continue to build our understanding of the status and distribution of salmonid and other species of high conservation value.

The results of this work are reported to policy makers and industry, and contribute to national databases managed by the Marine Directorate and Fisheries Management Scotland. Meanwhile, along with Fisheries and Rivers Trusts across Scotland, we have contributed significantly to SEPA's consultation on their new Sea Lice Monitoring Framework. This framework is due to be implemented fully in 2026 and will undoubtedly have a significant impact on our work.

For those interested in our rivers, whether as anglers, managers or conservationists, 2024 has continued a very concerning trend – with UK populations of Atlantic Salmon, once ubiquitous across our local rivers, continuing to be classified as "Endangered" on the International Union for Conservation of Nature Red List. We are confident that the results of our expanded monitoring programmes carried out over the past few years, together with increased staff resources, gives us a credible base to move towards a greater emphasis on conservation at a practical level.

Over the past 30 years across the entire UK river and habitat improvement programmes costing many millions of pounds have been delivered and funded by both Government, Rivers and Fisheries Trusts. We are acutely aware that no such initiatives have been targeted at the small, high gradient spate rivers typical of Skye and much of the NW of Scotland. 2024 has seen the Trust agree strategic and practical plans to address this significant omission. As such, we have agreed to seek to fund, implement and monitor the effects of river, habitat and population improvement techniques which have been used elsewhere, with a view to reducing local declines. The work of the Trust this year has laid the ground for a challenging and exciting year ahead.

Richard Hendry
SLRT Chair

Figure 1. The River Sligachan, Isle of Skye

Overview

As we look ahead to the upcoming field season, it is important to note some major milestones that SLRT achieved in 2024. Firstly, after acting as Interim Chairperson for a number of months, Richard Hendry was appointed as the permanent Chairperson of SLRT. Also, our newest Trustee – Catherine – was appointed.

Finally, in December 2024 SLRT hired Rob Pitkin as our Trust Director. Rob has joined us from the Lochaber Fisheries Trust and we are thrilled that he has joined our small but dedicated team. This change in personnel resulted from our long-standing Senior Biologist's decision to step down, although Isabel will continue to provide invaluable support to the Trust via a part-time admin post.

These steps highlight how much time, effort and hard work has gone into the development of the Trust in recent years and we are extremely grateful for the continued support of our friends, volunteers and collaborators. We hope to continue making progress and increasing the number of important research and monitoring projects we deliver each year, as well as investigating new ways to support our wild fish populations and local communities.

Figure 2. Electrofishing survey on the River Shiel, with help from volunteers.

Fieldwork

Despite the temperamental Highland weather, SLRT delivered a wide-ranging fieldwork programme in both the freshwater and coastal environment during the 2024 field season. The work delivered was a combination of government-funded monitoring, salmon aquaculture Environmental Management Plan (EMP) monitoring, and a small number of projects that the Trust delivers on its own.

Further details and results from work carried out can be found below.

Smolt monitoring

The first monitoring programme of the 2024 field season was delivered during the annual salmonid spring smolt run. Each spring, juvenile salmon and sea trout leave the freshwater environment and begin their migration to the ocean. They will spend at least a year feeding in the marine environment before returning to their natal river to spawn. The smolt migration in the Skye and Lochalsh area normally occurs in April and May, and is initiated by changes in temperature, daylight and water flow.

SLRT has conducted smolt run monitoring in several rivers on Skye since 2019. This type of work provides additional information about the survival rates of juvenile salmonids in the freshwater environment and gives a more accurate view of the number of young fish leaving the river each year.

In 2024, SLRT monitored the smolt run in two rivers on Skye, the Kilmartin and Snizort, both located in the north of the island. The Snizort monitoring programme was funded and delivered by SLRT, while the Kilmartin smolt run was monitored as part of an Environmental Management Plan (EMP) under the planning conditions of a local aquaculture operator. Any data collected through aquaculture EMP programmes has been shared in this report with the permission of relevant aquaculture operators.

River Snizort

The methodology for smolt run monitoring in the River Snizort has changed over time as SLRT has identified new techniques to improve capture efficiency and fish welfare. Fyke nets were used to successfully monitor the smolt run in the Snizort in 2022, but the nets suffered from predator attacks which led to the use of a neighbouring Fisheries Trust's box trap in 2023. The box trap was successful in capturing fish and protecting them from predators and so in 2024, SLRT constructed their own prototype box trap with assistance from a local angler. The box trap was set in the River Snizort on the 20th of April (Figure 3) and remained in place for approximately two weeks. Due to low numbers of fish during the first two weeks, the box trap was removed and replaced with a fyke net (Figure 4) on the 1st of May and remained in place until the 8th of May.

Figure 3. Box trap deployed in the River Snizort during the spring 2024 salmonid migration.

Figure 4. Estuarine fyke net deployed in the River Snizort during the spring 2024 salmonid migration.

A total of 766 salmonids were captured during the spring smolt run on the River Snizort. Of the individuals that were captured, 289 were identified as salmon. The remaining 477 fish were identified as brown trout. Within the sampled trout population, 384 individuals showed clear signs of smolting (streamlined, silvery body with few to no parr marks), whilst a further 93 individuals showed no clear signs of smolting and were considered to be juvenile or residential brown trout that were not migrating to the marine environment during the 2024 spring smolt run.

Figure 5. Two sea trout smolts captured on the River Snizort.

Figure 6. Salmon smolt captured on the River Snizort. One of the largest salmon smolts captured in 2024 with a fork length of approximately 160mm.

Catches of salmon, sea trout and resident trout from the River Snizort increased relative to the data collected in the 2023 survey, but were still reduced compared to the numbers of juvenile fish reported in 2022 (Figure 7 and Table 1). There are a number of possible explanations for this difference in catch numbers over the last three years.

Firstly, it is possible that 2022 was an exceptional year for the number of smolts leaving the river, and the numbers recorded in 2023 and 2024 show a more realistic population of migrating salmonids.

	2022		2023		2024	
Species	**N**	**% of captured population**	**N**	**% of captured population**	**N**	**% of captured population**
Salmon	1232	73	266	48	289	38
Sea trout	323	19	229	42	384	50
Resident trout	126	8	19	10	93	12

Table 1. Counts of species captured during the smolt migration on the River Snizort and the overall percentage composition of each species by year (2022-2024).

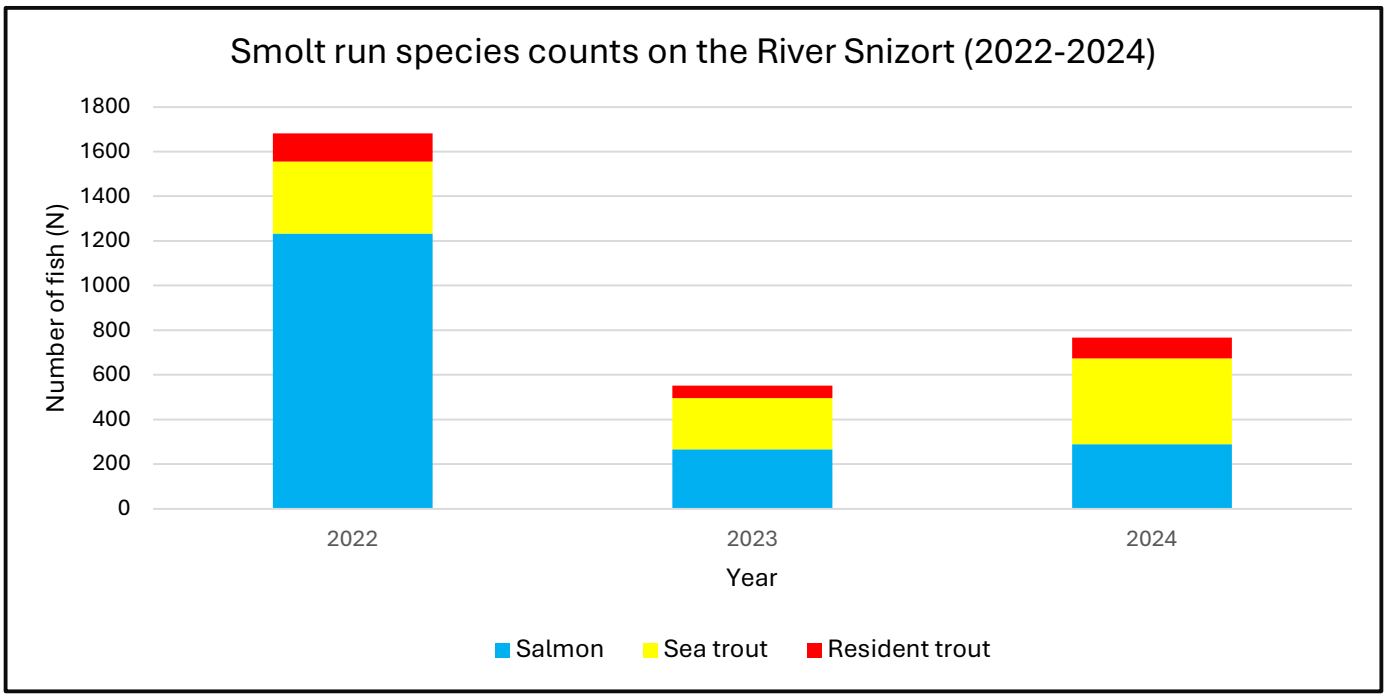


Figure 7. Annual catches of smolts on the River Snizort (2022-2024)

The trapping method used could also have impacted the total number of smolts caught each year. For example, in 2024, small numbers of juvenile salmonids (ranging between 0 and 14 individuals a day) were caught during the first two weeks of monitoring while the box trap was deployed. Given the time of year and the improving weather conditions, this reduced number of fish was unexpected and the decision was made to remove the box trap and replace it with a fyke net to determine if the box trap was negatively impacting capture efficiency.

Following this change in methodology, catches of fish increased immediately with over 260 individuals caught the following day (Figure 8). It is unclear why the capture efficiency of these two traps is so varied, however, fyke nets do appear to be more successful at catching juvenile salmonids in the Snizort than box traps. The difference in capture efficiency between box and fyke traps could also explain the difference in reported smolt catches in 2022 and 2023.

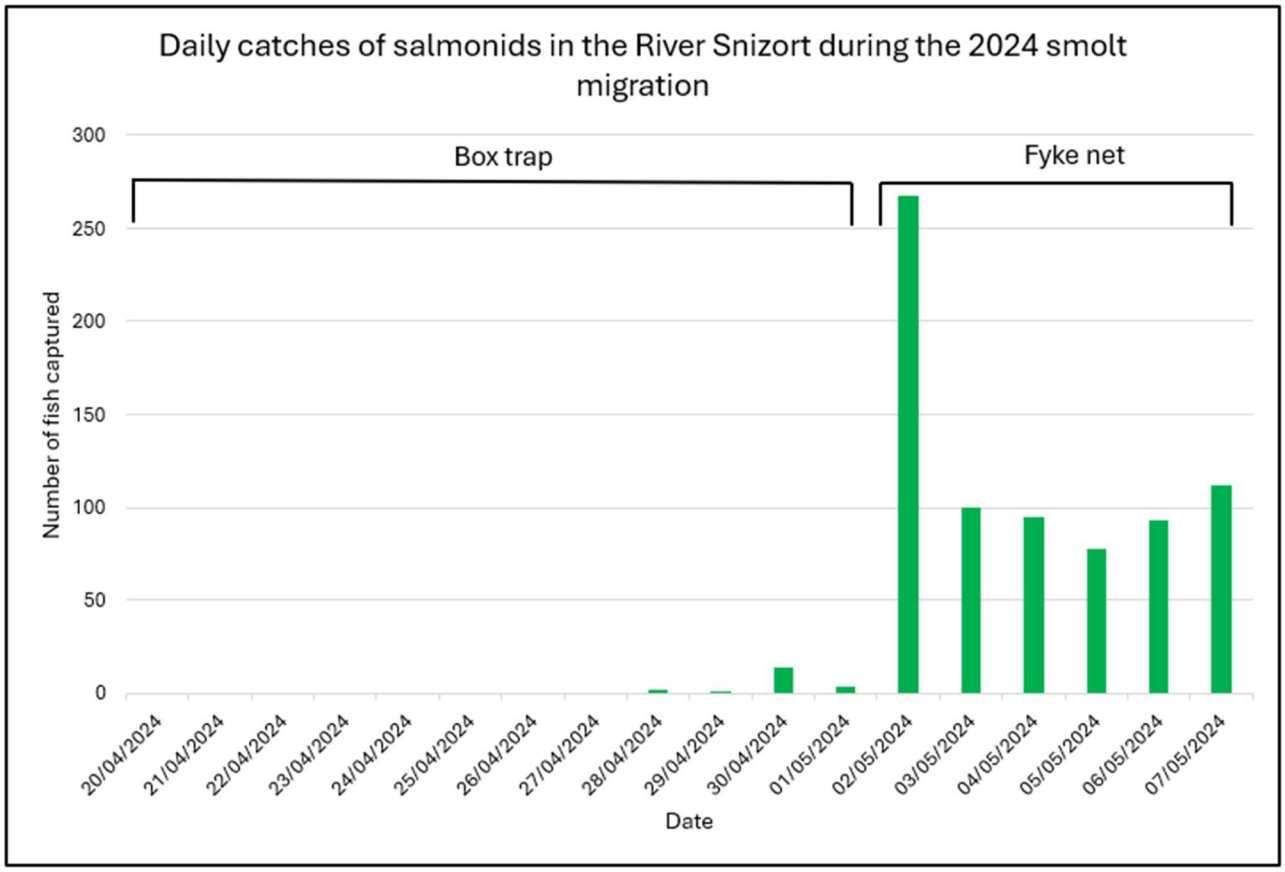


Figure 8. Daily catches of salmonids captured on the River Snizort during the spring 2024 smolt migration with capture methods identified.

Another factor that could have contributed to the observed catches of juvenile salmonids could be the weather conditions. Limited rainfall and low water levels through the spring could have delayed the migration of smolts from the upper headwaters of the catchment to lower sections of the river where the monitoring was occurring. It rained heavily in the days following the removal of the fyke net, which could have caused more fish to migrate once SLRT's monitoring period was over.

Additionally, water temperatures in April and May remained low which could have delayed the smolts from beginning their migration. Increased fish numbers became more consistent when water temperatures exceeded 10°C.

SLRT aims to continue this monitoring in future years to further investigate the annual smolt run in the River Snizort.

Kilmartin River

In addition to monitoring work carried out in the River Snizort, fyke nets were deployed in the Kilmartin River on the 2nd of May to monitor a small proportion of the smolt run. Increased catches of salmon, sea trout and resident trout were reported relative to previous years (Figure 9 and Table 2). A total of 932 salmonids were captured at the beginning of May 2024. The majority of the captured fish were identified as salmon (N= 786 individuals). The remaining 146 fish were identified as brown trout, with 124 individuals within this population showing clear signs of smolting. The remaining 22 individuals did not show signs of smolting and were identified as juvenile or residential brown trout that would not be migrating to the marine environment during the 2024 smolt run.

	2022		2023		2024	
Species	**N**	**% of captured population**	**N**	**% of captured population**	**N**	**% of captured population**
Salmon	233	83	280	64	786	84
Sea trout	35	12	137	31	124	13
Resident trout	14	5	19	4	22	2

Table 2. Counts of salmonids captured during smolt run monitoring on the Kilmartin River and the overall percentage composition of each species by year (2022-2024).

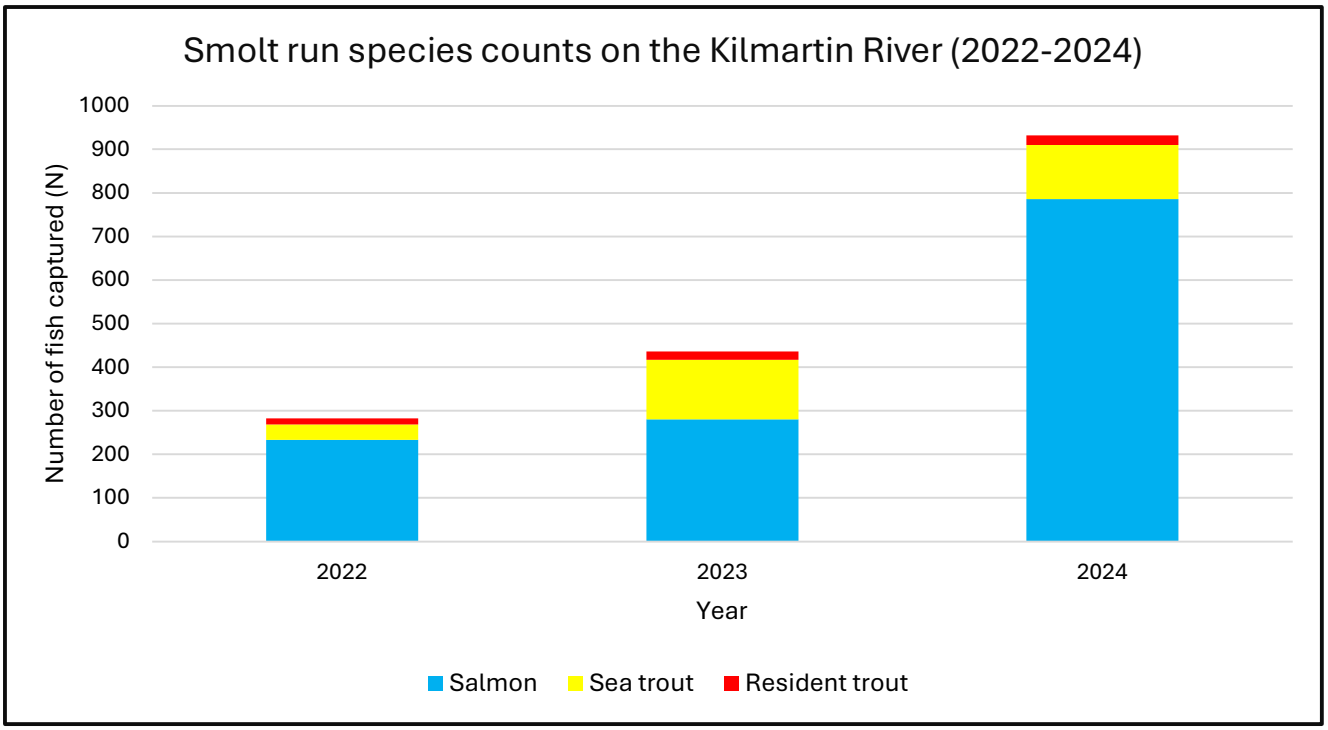


Figure 9. Annual catches of smolts on the Kilmartin River (2022-2024)

Catches of smolts were higher in 2024 when compared to previous years (Figure 9), this could have been caused by several factors. Firstly, changing weather conditions at the time of the survey could have influenced the numbers of observed smolts. Water flow levels and water temperatures both remained low for much of April which could have delayed the initial migration of salmonids smolts through the catchment. Water temperatures began to increase at the end of April which would have encouraged some migration, but it is possible that most of the smolts were waiting for an increase in water height before beginning to move downstream towards the mouth of the river.

Additionally, water levels in the river rose after a rainfall event on the 30th April and the nets were set the following day (1st May). The increase in flow could have encouraged a large number of smolts to move at once. This theory is supported by data collected during the survey. A large pulse of salmon (75% of the sampled population) was captured during the first 72 hours of sampling, after which the height of the river dropped, as did the number of salmon caught in the fyke nets each day.

As the full smolt migration is not monitored on the Kilmartin River, it is difficult to accurately assess how many salmonids are leaving the river each year. However, it is encouraging to see over 900 smolts captured in a short space of time.

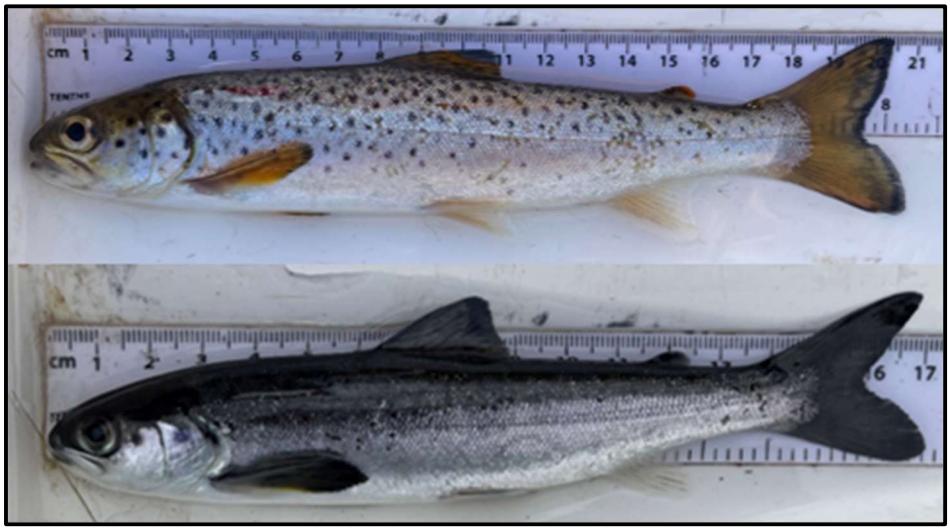


Figure 10. Sea trout (top) and salmon (bottom) smolts captured on the Kilmartin River in 2024.

Sea lice monitoring

Sea lice (Figure 11) are a naturally occurring marine parasite that attach to wild fish, including salmonids, and feed off the mucous, tissue and blood of their host. In high densities, the presence of lice can result in physiological damage, a decline in fish health and general condition, and can ultimately lead to increased levels of mortality amongst wild fish[1].

Figure 11. Sea lice attached to the body of an adult sea trout.

There is a large body of scientific research that demonstrates that the presence of open net-pen salmon aquaculture can result in increased densities of sea lice in the surrounding water column[2,3]. The salmon aquaculture industry is a continuously growing sector in Scotland and their facilities are predominantly located in near-shore coastal environments along the west coast. These areas are also of high importance to anadromous salmonids, particularly sea trout who often spend prolonged periods of time feeding in sea loch systems. This overlap in habitat use between aquaculture and wild fish means that wild salmonids, especially sea trout, are at risk of being exposed to increased lice levels emanating from aquaculture facilities in the surrounding water column, which in turn can lead to increased lice burdens and increased rates of mortality in sea trout populations[4].

There is substantial concern regarding the impacts of open-net pen aquaculture on wild salmonids in the SLRT area due to the presence of almost 20 active salmon and rainbow trout aquaculture sites in our district, not to mention the extensive number of farms located

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[1] Ives, S., Armstrong, J., Collins, C., Moriarty, M. and Murray A. (2023). Salmon lice loads on Atlantic salmon smolts associated with reduced welfare and increased population mortalities. Aquaculture Environment Interactions **15**, 73-83

[2] Thorstad, E., Todd, C., Uglem, I., Bjørn, P., Gargan, P., Vollset, K., Halttunen, E., Kålås, S., Berg, M. & Finstad, B. (2015). Effects of salmon lice Lepeophtheirus salmonis on wild sea trout Salmo trutta – a literature review. Aquaculture Environment Interactions **7**, 91–113. https://doi.org/10.3354/aei00142

[3] Shephard, S., MacIntyre, C. & Gargan, P. (2016). Aquaculture and environmental drivers of salmon lice infestation and body condition in sea trout. Aquaculture Environment Interactions **8**, 597-610.

[4] T Taranger, G., Karlsen, Ø, Bannister, R., Glover, K., Husa, V., Karlsbakk, E., Kvamme, B., Boxaspen, K., Bjørn, P., Finstad, B., Madhun, A., Morton, H. & Svåsand, T. (2015). Risk assessment of the environmental impact of Norwegian Atlantic salmon farming. ICES Journal of Marine Science **72**, 997-1021. DOI: 10.1093/icesjms/fsu132

across Lochaber, Wester Ross and the Outer Hebrides that contribute to the cumulative impacts of the industry on the natural environment.

In 2024, SLRT conducted sea trout and sea lice monitoring surveys in seven sea lochs across our area as part of agreed Environmental Management Plan (EMP) programmes with local aquaculture operators (Figure 12). An eighth site was also sampled as part of the Marine Directorate sea lice monitoring programme. Each site was sampled in the spring and the summer to monitor changes in lice densities over time. The aim of this work is to monitor the sea lice burdens on wild salmonid populations in relation to nearby aquaculture facilities.

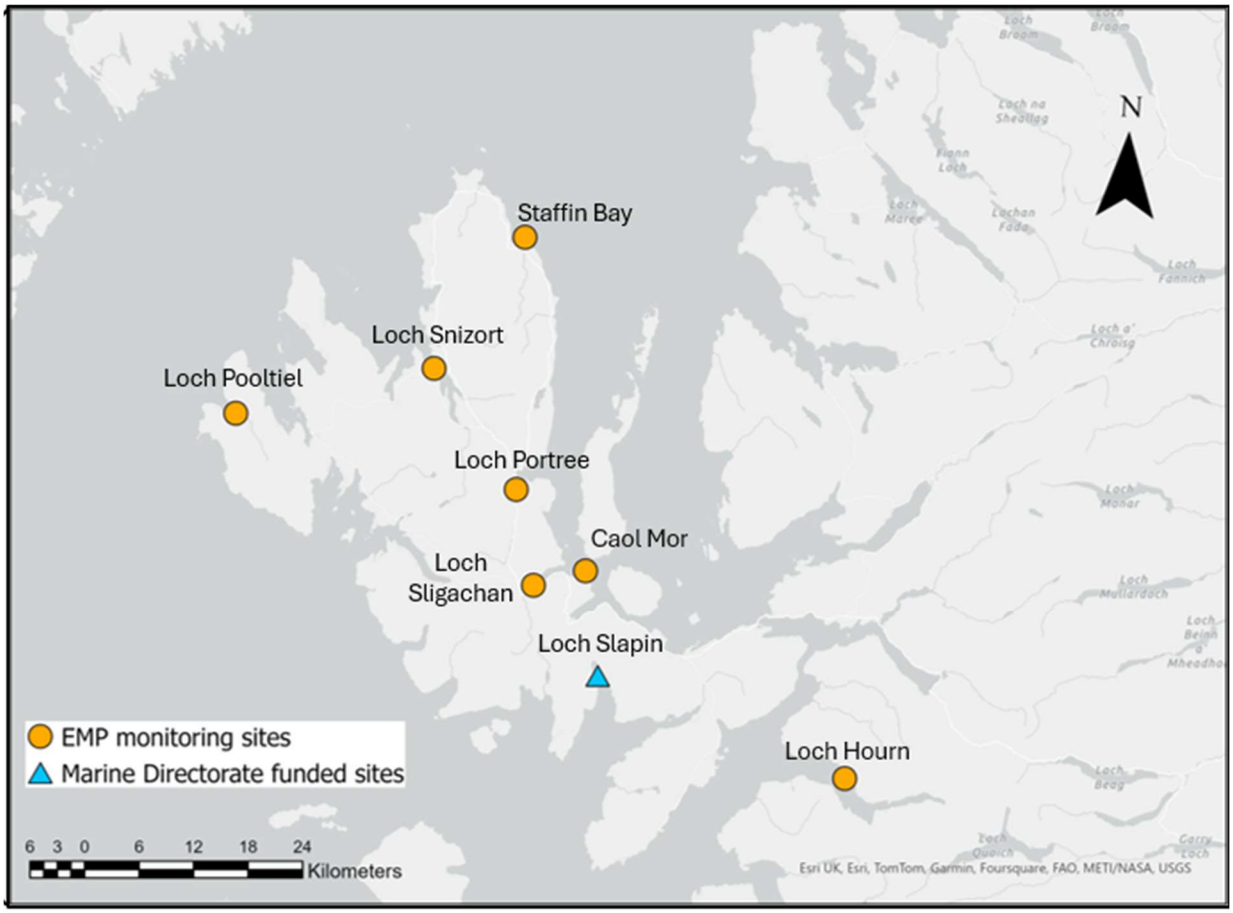

Figure 12. Locations of EMP and Marine Directorate sea trout and sea lice monitoring sites in the SLRT area surveyed during the 2024 field season

The methodology used to conduct these surveys is dependent on factors such as the topography and accessibility of the site. SLRT uses three different methods to capture sea trout: seine netting, coastal fyke netting, and estuarine fyke netting.

Seine netting (Figure 13) and estuarine fyke netting occur near the mouth of the river in the intertidal zone where nets are deployed on foot or with the help of a small boat. Coastal fyke nets are deployed by boat in deeper water off the coastline and do not need to be placed near the mouth of a river.

All fish that are captured during these surveys are released back into the water after processing. Any data collected through aquaculture EMP programmes has been shared in this report with the permission of relevant aquaculture operators.

Figure 13. Seine netting to investigate sea lice burdens on wild salmonids.

Over 60 salmonids were captured during the spring monitoring sessions. The majority of these fish were sea trout (including finnock, post-smolts and mature adults). A small number of salmon post-smolts (N=2) and brown trout (N=9) were also captured. The highest recorded lice burdens reported in the spring of 2024 were found near Loch Sligachan, where the mean (average) number of lice on sampled sea trout was 34 lice/fish.

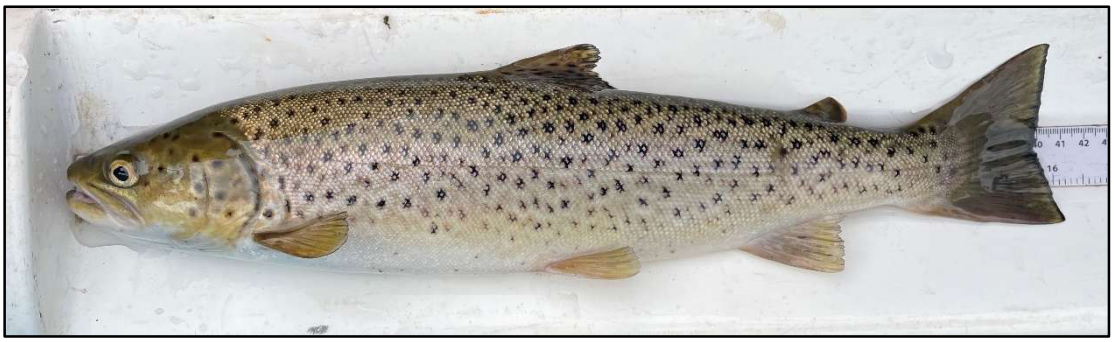

Figure 14. Adult sea trout captured during monitoring in Loch Slapin.

During the summer sampling period, over 100 salmonids were captured and sampled. Like the spring session, the majority of these fish were sea trout (N=102). A small number of brown trout were also captured (N=5). The highest recorded lice burdens reported in the summer of 2024 were found in Loch Hourn. The mean (average) number of lice on sampled fish was almost 11 lice/fish.

Fewer fish were caught in 2024 than in previous years. This could be influenced by the number of sites that were surveyed. Due to weather and scheduling conflicts, several monitoring sessions were not completed: this also likely influenced the lower catch numbers that were observed during 2024. Comparisons in annual catch numbers can be found below in Figure 15.

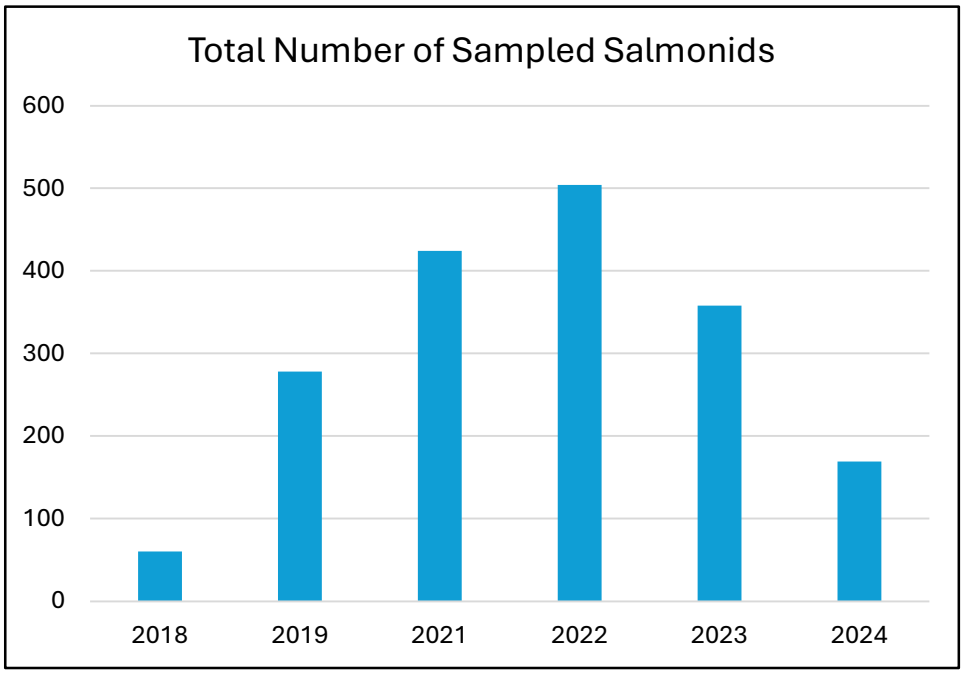

Figure 15. The total number of salmonids captured during annual sea trout and sea lice monitoring surveys. The number of sea lochs sampled each year is as follows; 2018 – 4 sites, 2019 – 4 sites, 2021 – 7 sites, 2022 – 10 sites, 2023 – 6 sites, 2024 – 8 sites.

In addition to capturing salmonids, several other species were caught as by-catch during this monitoring work including saithe/coley (*Pollachius virens*), European sea bass (*Dicentrarchus labrax*. Figure 16) and juvenile Atlantic herring (*Clupea harengus.* Figure 17). All by-catch species are identified for species and counted before being released.

Figure 16. European sea bass captured during a survey in the summer.

Figure 17. Juvenile Atlantic herring captured during a seine netting session.

SLRT will continue to monitor sea trout and their sea lice parasite burdens in 2025, but some changes are expected in the future as the new SEPA Sea Lice Regulatory Framework rolls out. This framework came into effect on 1st February 2024 and made SEPA the lead regulatory body for managing interactions between sea lice on farmed fish and wild salmon. The new framework will replace Environmental Management Plans (EMPs) and uses a risk-based approach to determine applications for new or expanding fish farm sites. Existing active fish farm sites across the west coast and Western Isles have been assessed by SEPA and categorised into one of four relative risk categories. While SEPA have indicated that sea lice levels on wild fish will be monitored under the new framework, exact locations and methodologies have not yet been confirmed. Further information on the SEPA sea lice risk framework is available on their website.

Scale reading

In November, with assistance from a neighbouring Trust, SLRT's Biologist Charlotte conducted some basic scale reading. Scale samples were taken from adult sea trout that were captured during previous sea lice monitoring surveys. By using these scales, SLRT was able to identify freshwater and marine growth stages which allowed for an estimate of the age of the fish, the growth rate, and whether or not the fish had spawned prior to the scale sample being taken. Photos of the fish that were sampled as well as the scales that were read can be found below (Figures 18-21).

Figures 18 and 19. Adult sea trout captured in 2022. Growth rings indicate approximately four years of growth in the freshwater environment and an additional three years in the marine environment.

Figures 20 and 21. Adult sea trout captured during the 2022 field season. Growth rings indicate approximately 2 years of growth in freshwater, and an additional 2 years in the marine environment.

Juvenile population monitoring

In order to monitor juvenile salmonid densities and distributions across the Skye and Lochalsh area, a mixture of fully- and semi- quantitative electrofishing surveys are conducted at the same sites each field season. A total of 37 sites across 12 river catchments were sampled between July and September 2024 (Figure 22). Any data collected through aquaculture EMP programmes has been shared in this report with the permission of relevant aquaculture operators

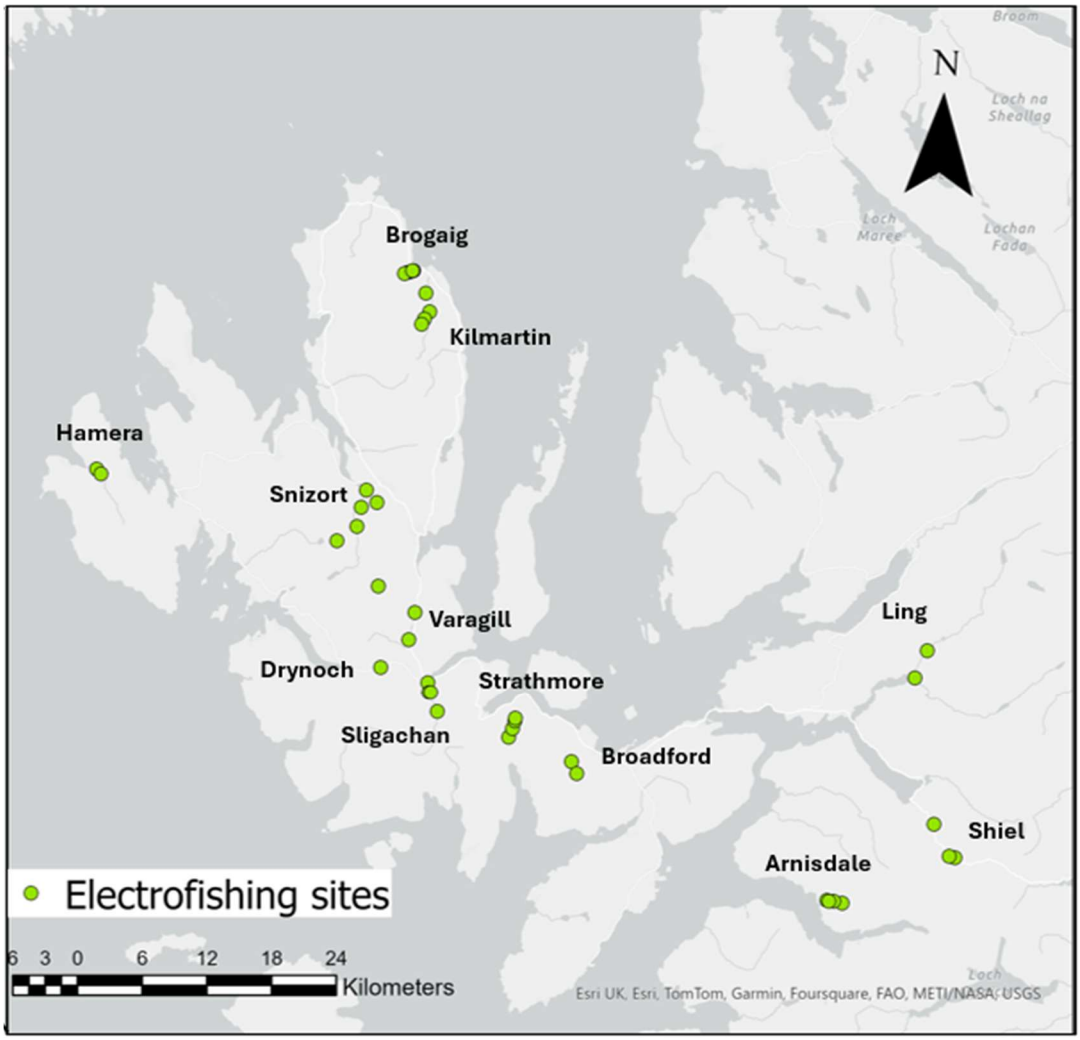

Figure 22. Electrofishing sites across Skye and Lochalsh visited by SLRT during the 2024 field season

A total of 296 trout and 805 salmon were captured across all monitoring sites that were surveyed. The total amount of time spent electrofishing and the total number of salmonids can be found below in Table 3.

As well as salmonids, other species that are often observed include European eel (*Anguilla anguilla*) and the common minnow (*Phoxinus phoxinus.* Figure 23). It is always encouraging

to see European eels, which are a protected species, in the majority of catchments that we visit. The common minnow is a non-native species and can be found in catchments such as the Broadford River and the River Snizort. While this species of fish is invasive, it is possible that they are providing a food source for larger salmonid species that occupy the same areas.

Figure 23. Male minnow in breeding colours captured during an electrofishing survey in the Broadford River.

Please note that although these data can provide important annual information about the fish populations in each river, they do not provide a full assessment of present salmonid densities. The available habitat at each site can influence the number and type of fish present during an electrofishing survey. For example, juvenile salmon prefer faster flowing water in the main stem of a river, while juvenile trout are more often found in slower moving tributaries and headwater areas of the catchment. Since most of the Trust's annual monitoring is conducted in the main stem of river systems, it is not unexpected for higher numbers of salmon to be recorded rather than trout, while a more thorough survey of the upper sections of a catchment would likely yield inverse results.

River	Number of sites	Total time fished (minutes)	Total trout caught	Total salmon caught
Arnisdale	4	128	7	64
Broadford	2	157	28	66
Brogaig	4	66	43	0
Drynoch	1	20	2	29
Hamera	2	224	72	41
Kilmartin	4	86	26	47
Ling	2	51	0	25
Shiel	3	126	11	210
Sligachan	4	84	15	73
Snizort	6	304	67	145
Strathmore	4	86	19	3
Varagill	2	152	6	102

Table 3. The number of sites electrofished, the total amount of time spent fishing, and the numbers of trout and salmon caught per catchment surveyed in 2024.

In order to provide comparisons between river systems, catch data were corrected to a catch per unit effort (CPUE) metric expressed as the number of fish collected per minute electrofishing. CPUE data from rivers sampled in 2024 can be found in Table 4. CPUE data for salmon captured across all sampled river catchments can be found in Figure 24, and trout CPUE data can be found in Figure 25.

River	Salmon CPUE	Trout CPUE
Arnisdale	0.50	0.05
Broadford	0.42	0.18
Brogaig	0.00	0.65
Drynoch	1.45	0.10
Hamera	0.18	0.32
Kilmartin	0.55	0.30
Ling	0.49	0.00
Shiel	1.67	0.09
Sligachan	0.87	0.18
Snizort	0.48	0.22
Strathmore	0.03	0.22
Varagill	0.67	0.04

Table 4. The CPUE data (fish per minute electrofishing) for all annually monitored river catchments in the Skye and Lochalsh Area in 2024.

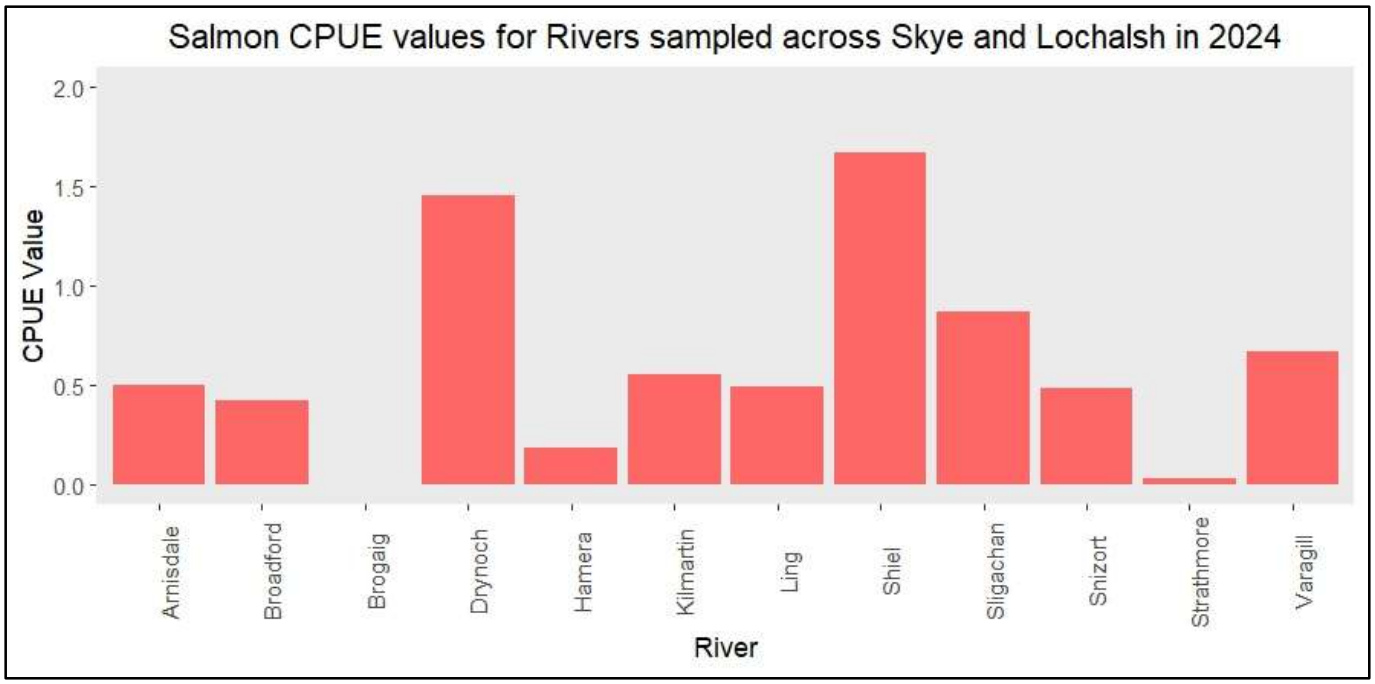

Figure 24. Salmon CPUE data (fish/minute electrofished) for catchments surveyed across Skye and Lochalsh in 2024.

Salmon CPUE values ranged from 0.03 fish/minute (Strathmore River) to 1.67 fish/minute (River Shiel. Figure 24). One catchment reported a CPUE value of 0 as no juvenile salmon were captured during the surveys that were conducted. A variety of densities were observed between the 12 catchments. The lowest densities (where fish were observed) were reported in the Strathmore River, while the highest densities were reported in the River Shiel.

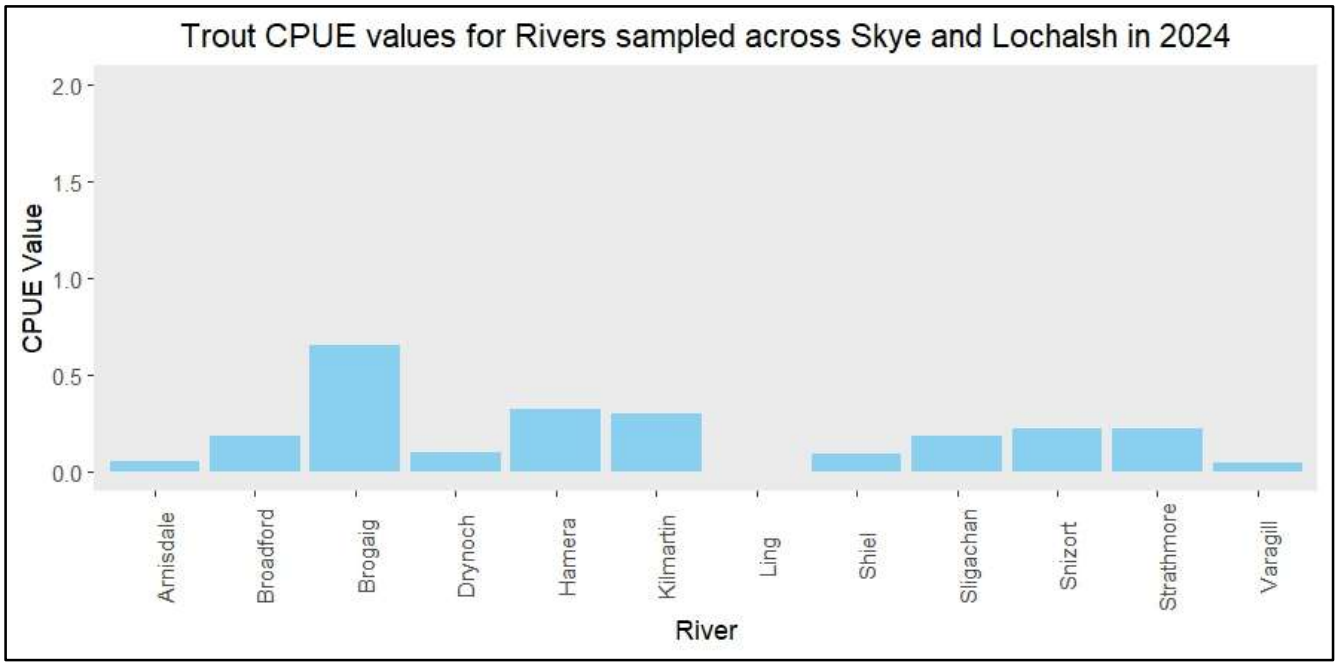

Figure 25. Trout CPUE data (fish/minute electrofished) for river catchments surveyed across Skye and Lochalsh in 2024.

Trout CPUE values ranged from 0.04 fish/minute (River Varagill) to 0.65 fish/minute (Brogaig River). One catchment reported a CPUE of 0 as no trout were captured during the conducted surveys. A variety in densities were seen between the 12 catchments that were visited. The lowest trout densities were reported in the River Varagill and the highest densities were reported in the Brogaig River.

Figures 26 and 27. Juvenile salmonids captured during electrofishing surveys

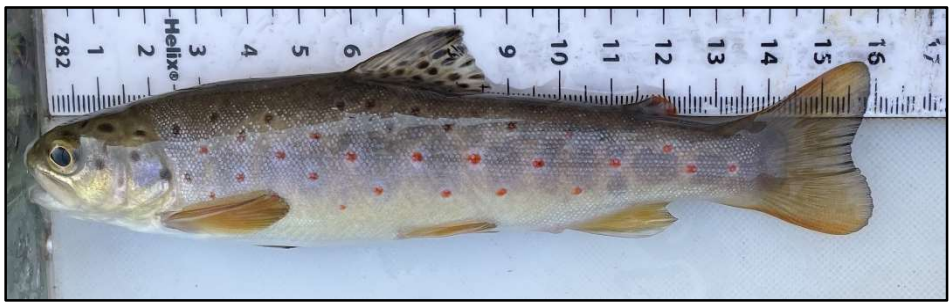

Figure 28. Brown trout captured during an electrofishing survey.

While recorded salmon and trout numbers are low in many of the surveyed rivers, the results from most sites have remained similar in recent years, suggesting that there is limited annual variation in juvenile densities at repeat sites.

The results above show that the catchments that were visited in 2024 have suitable habitat to support populations of juvenile salmonid. It is encouraging to see juvenile Atlantic salmon in almost every catchment that was visited, and whilst some of the reported catch numbers are low it is possible that higher densities of juvenile salmonids can be found in other locations within the catchments.

Outreach

In March 2024 SLRT conducted the Silver Darlings project in local primary schools. This project was an extension of the West of Scotland Herring Hunt (WoSHH) that has been ongoing for a number of years. The programme was a collaboration between SLRT, Edinburgh Napier University and Albatross Arts and involved mixing art with science to create a unique learning experience for the pupils. The students learned about Atlantic herring, their associated habitats, as well as pressures that they face and what can be done to protect the species for future generations.

The pupils used ecologically friendly methods to create maerl (a coral-like seaweed that provides crucial spawning habitat for Atlantic herring), used a Japanese form of printing to print real herring onto rice paper, and used watercolour ink techniques to create a watery background for their fish. Following their workshops, the pupils had their artwork displayed in an exhibition that was open to the public. The feedback we received from the pupils was very positive, with several of them saying that they were more likely to remember the experience because it was unique and fun. The feedback from the parents was also positive. SLRT looks forward to organising more education and outreach programmes in our area.

Figures 29 to 31. Pupils from Portree Primary and Bun-Sgoil Ghaidhlig Phort-Righ taking part in the Silver Darlings project in early 2024.

In early August, SLRT staff attended the Moy Country Fair with the West Sutherland Fisheries Trust. This event was used as an opportunity to connect with the public and spread awareness about the work that is carried out in the Skye and Lochalsh area, as well as answer any questions that community members may have about the organisation.

Figure 32. SLRT and West Sutherland Fisheries Trust stall setup at the Moy Country Fair.

Thanks

We are, as always, incredibly grateful to everyone who has supported, donated, and volunteered their time to help us achieve such a busy field season. If you are interested in volunteering, please contact biologist@slrt.org.uk, call 07852 280 814 or visit our website slrt.org.uk for more information on how to get involved.

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