

Ghillie Seminar 2022

29th April, Scourie Village Hall

Trust Update:

Shona Marshall

- Good salmon and trout densities seen throughout the electrofishing sites.
- There are increasing numbers of Cat 3 rivers within the Trust's operational area, though this is due to very little fishing, leading to low rod catches.

Sweep Netting:

- We are following the Norwegian colour coding on our sea lice count graphs.
- Lice counts on the wild fish follow the production year on the fish farms – higher counts during the 2nd year of production.
- Loch Duart have shown interest in the sweep net lice counts, with some volunteers.

Charr Project:

- eDNA samples are waiting for processing.
- 1 charr was found in the gill netting.

SISI:

- We have 55 mink rafts and tunnels run by 22 volunteers.
- Throughout 2021 invasive plants were treated:
 - 2 populations of Himalayan balsam.
 - 6 populations of Japanese knotweed.
 - Of which 3 have been cleared.
 - 2 populations of skunk cabbage.
- 2022 is the last year of the SISI project.

SANDS:

- Project that wants to increase the participation in angling, though needs volunteers.

Futher Discussion/Questions:

- 2 mink have been caught in the last year, the most in 1 year. This is possibly due to Wester Ross not hitting them so hard.
 - WSFT rafts are all close to roadsides, which means more remote areas are missed.
- Pink Salmon – 5 officially reported
 - Seen spawning in local rivers
 - Smolts were caught in the Shin
 - Redds raked out and found to be “empty” – possibly deeper than expected
 - Norway seeing x10 increase in numbers.

- Don't really know what damage they cause:
 - Aggressive fish – could displace or damage native species.
 - Nutrient input from the corpses.
 - Smolts could compete with sea trout.

Laxford Project:

Chris Conroy

Background:

- Since the 80's salmon population numbers are estimated to have dropped from 8-10 million to 2-3 million.
- Key drivers effect the sea life stages – namely climate change altering the marine environment.
- Marine environment cannot be easily controlled or monitored, so instead increases in smolt production is needed.
 - Bigger smolts - higher chance of survival.

Aims:

- Identify primary factors limiting salmon and sea trout production in the Laxford system.
- Bring in management actions to combat/mitigate these factors.
- Assess the effectiveness of these management actions.

Audit:

- Desk based task using existing data to identify likely impacts on the system and key factors, e.g., exploitation, predation, genetic pressures, invasive species, water scarcity, habitat loss/changes, etc.
- For example: temperature was seen to be one such key factor:
 - Thermal stress – Large areas of the Laxford system were estimated to have exceeded 23°C for an extended period during 2018, causing fish to go into thermal stress.
 - This can be combated with riparian planting to shade the water, reducing the temperature.
 - Has added bonuses of providing woody and other organic debris to the waterway, providing food for invertebrates and instream cover for fish.

Core Monitoring:

- PIT Tagging and Salmon Tracking:
 - PIT tags are passive, without a battery so they are very small. This allows smaller fish to be tagged.

- They will remain functional throughout the fish's lifetime.
- These tags do not necessitate recapture.
- PIT tag arrays on the Laxford will be the biggest network in Scotland
 - Required many pre-construction surveys: freshwater pearl mussel, otter, water vole, salmon and trout redds.
- The target is 2000 autumn parr tagged each year. This will allow the tracking of: parr migration, smolt migration, and returning adults.
- ARIS Fish Counter:
 - Produces high-definition sonar images, which are read with fish recognising software.
 - Will allow the counting of spawners, kelts, etc.
- eDNA Characterisation of Fish Communities (Phase 1):
 - Samples have been taken across the Laxford system.
 - Presence/absence metabarcoding of fish species.

Index River System:

- Monitoring methods involved will allow the Laxford to become an index river.
 - Will show the effectiveness of different management plans, informing other similar salmon and trout rivers.

Artic Charr:

- River spawning charr seen in the Laxford – very rare

Questions:

- Overfishing of salmon – Not really evidence supporting this, more evidence for climate change, and the feeding grounds retreating North.

West Coast Tracking Project

Angus Lothian (AST)

Background:

- The North Atlantic current (NAC) is known as the smolt highway, aiding smolts on their migration to feeding grounds.
- To protect smolts in the ocean, the timing and route of their migration needs to be known.
 - To assess their interactions with structures/developments offshore, possibly inform locations for future developments.
- Aim: Track smolt migration from river to the NAC.

Design and Method:

- Acoustic Telemetry - Uniquely coded tags implanted into smolts, allowing the tracking of individuals from the river to the NAC.

- Arrays of hydrophones are installed in the Minch, between the Hebrides, and off Cape Wrath.
 - Due to the same technology being used across different projects, it allows the collaboration of multiple projects through the UK – Irish arrays are also capturing data from Southern rivers.
- 1221 smolts were tagged as part of the project in total as of 2021

Preliminary Results:

- Many different migration routes have been observed.
- Some smolts travel through sea lochs much slower than previously thought.
 - This indicates there is a higher chance of interaction with offshore developments, e.g., wind farms, fish farms.

Biosecurity:

Shona Marshall

Invasive Non-natives:

- 5 invasive plant species are present in the area so far:
 - Gunnera
 - American skunk cabbage
 - Japanese knotweed
 - Himalayan balsam
 - Rhododendron
 - Don't want more!
- These are very easy to spread through accidental seed dispersal, or rhizome fragments. Once present they are difficult to eradicate.
- Spread can be prevented through vigilance - checking gear and vehicles, and if any new populations are spotted then rapid treatment.
- Invasive invertebrate species include:
 - Signal crayfish
 - Zebra mussel
 - Killer shrimp
- All have not made it to the area yet – as far as we know – but there are signal crayfish in the Nairn and the Ness.
- These are all incredibly damaging species, which would wipe out native species.
- **Gyrodactylus salaris – once spotted, it's too late**

CHECK, CLEAN, DRY