

# AFT Biologist's Report



ADSFB AGM March 2023

# AFT Work Program 2022-24

## Staffing update:

- *Two full-time staff Sept-Mar 2023*
- *New AFT staff member joining in May 2023*

## The work programme include:

- *Salmon Smolt Tracking Project (AST / FMS / ADRIA)*
- *Monitoring sea lice burdens of Sea trout (FMS & EMPs)*
- *Electrofishing Programme (Fishery assessments)*
- *Nutrient / Juvenile Productivity Project (Catchment projects)*
- *Habitat Improvement Works (Catchment projects)*
- *Fish Habitat Surveys - (Contracts)*
- *Renewable Energy Development EIA Contracts*

# West Coast Salmon Tracking Project



Identify the migration route of smolts through inshore waters & time spent in the aquaculture zone

## Trapping & Tagging

- AFT 200 salmon smolts in the River Orchy and River Etive (2021 & 2022)
- AFT 100 salmon smolts in the River Orchy (2023)
- MS 100 salmon smolts in the River Aray & Fyne (Loch Fyne) (2023)



## Year 2 (2022) – Preliminary Results



### 2 tagging sites

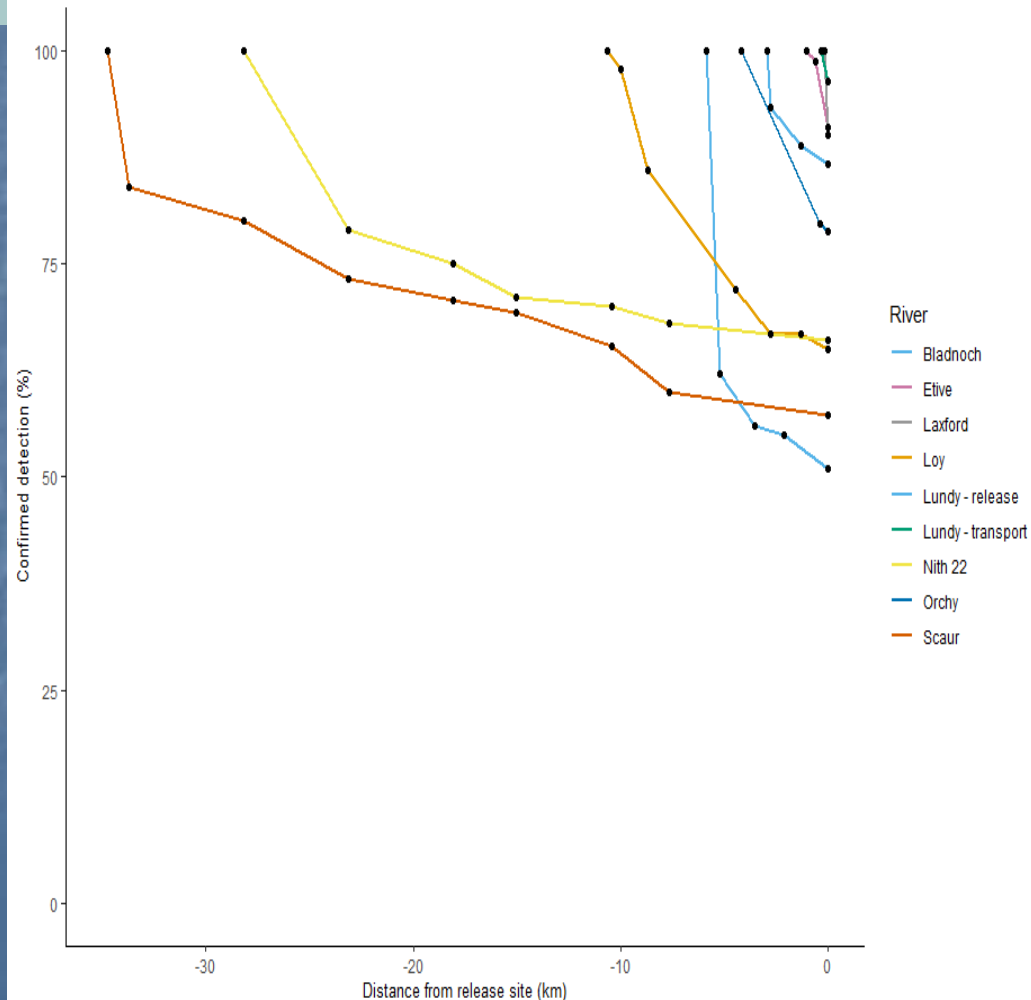
R. Etive 77 tagged smolts (13-26<sup>th</sup> April)

R. Orchy 121 tagged smolts (14-27<sup>th</sup> April)

### % of tagged smolts detected leaving their home river

Etive **91 %** in 2022 (71 of 77 smolts)  
(76 % in 2021)

Orchy **79%** in 2022 (96 of 121 smolts)  
(93 % in 2021)



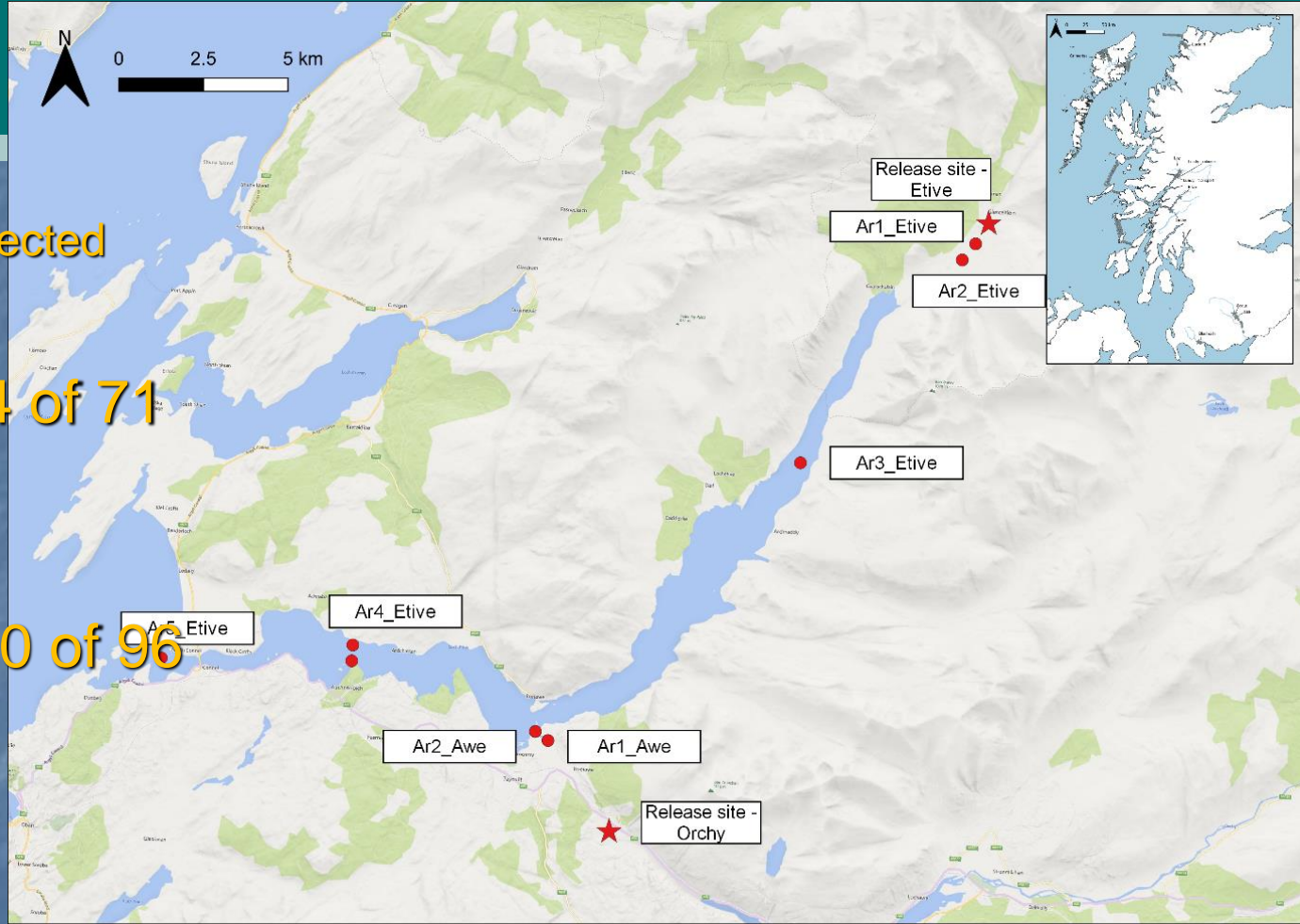
# Year 2 (2022) – Preliminary Results Sea Loch



% of tagged smolts detected  
leaving Loch Etive

Etive 90 % in 2022 (64 of 71  
smolts)  
(92 % in 2021)

Orchy 94 % in 2022 (90 of 96  
smolts)  
(84 % in 2021)



# Year 2 (2022) – Preliminary Results Loch Linnhe (Marine)



## Argyll & Lochy smolts detected:

### Sound of Mull – 42 tags

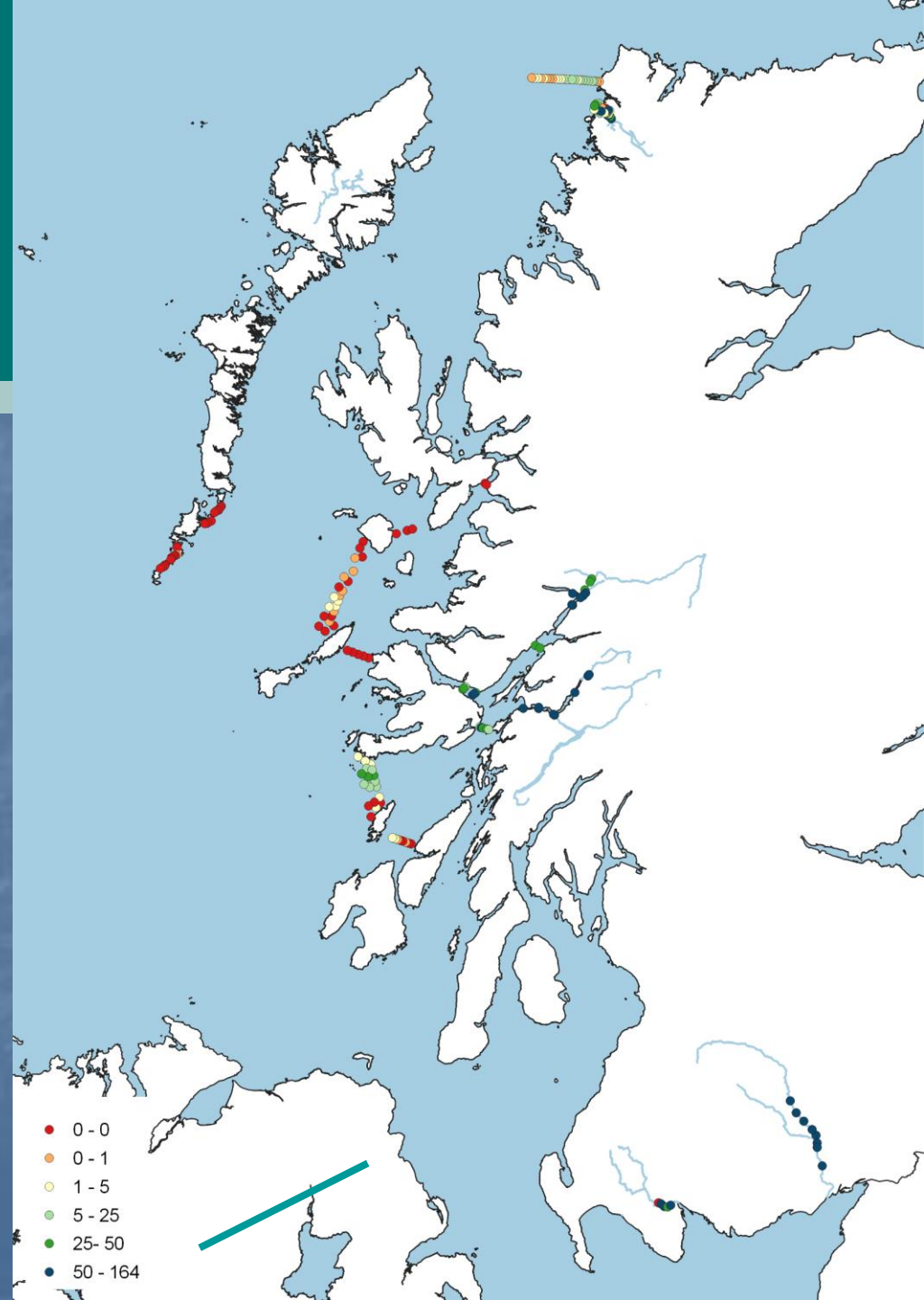
- 37 tags (D – Sound of Mull)
- 5 tags (E – Coll-Rum-Skye)

### Firth of Lorne - 178

- 104 tags (C – Kerrera / Mull)
- 74 tags (B – Iona / Colonsay / Jura)

A – 1 tag (N. Ireland-Islay)

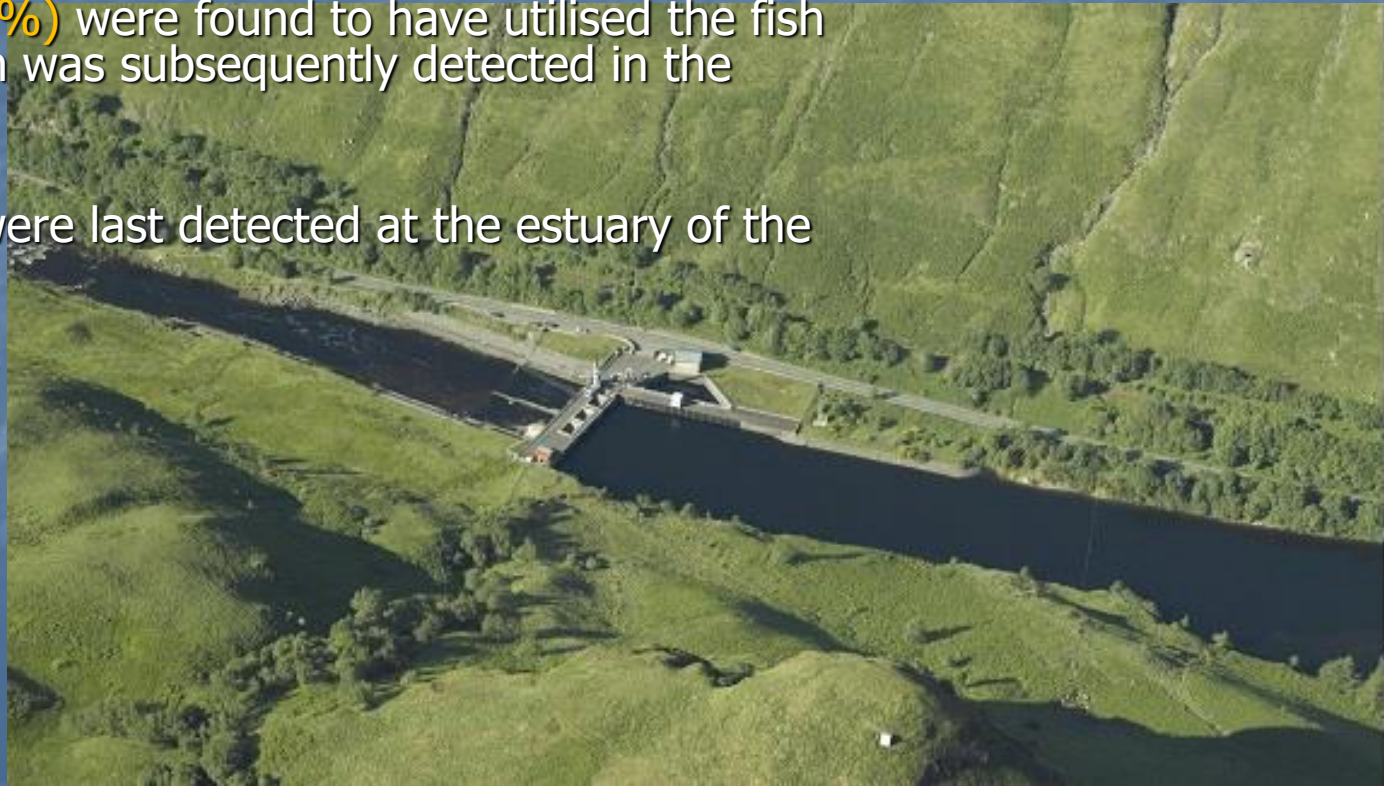
F – 1 tag (South Uist – Barra)



# Acoustic tracking of smolts - Pilot Study 2022

## Results Summary

- 25 of 26 (96 %) tagged smolts detected
- 12 of the 25 tags (48%) were not detected downstream of the Awe barrage
- Min. 4 smolts (16 %) were found to have utilised the fish pass, one of which was subsequently detected in the estuary.
- 9 smolts (36 %) were last detected at the estuary of the River Awe.



# Acoustic tracking of smolts at the Awe barrage - 2023

## Plans

- **Increase sample size** from 26 (2022) to 50 (2023) tagged smolts
- **10 tags are 'predator' tags** to identify if a tagged smolt is eaten by a predator
- **Increase no. of receivers** in the River Awe and detection rates.
- **4 ferox trout tagged in 2022** + 8 aimed for 2023 to identify potential Autumn migration and possible predation of smolts in spring.
- **100 Tags in 2024**





# Fish Habitat Improvement

- River Goil Green Bank Revetment
- River Ruel woody debris
- Dalvuie Burn realignment
- Cowal Rivers Project
- Riverwoods project development
- Creran & Orchy

# Habitat Improvement – River Eachaig

- Severely eroded bank due to failure of rock revetment
- £11K - Wild Salmonid Support Fund
- Green bank revetment
- Prevent further erosion and loss of adult fish refuge
- Fencing to regenerate riparian vegetation
- Planting willow & trees



# Habitat Improvement – River Ruel



Combination of GBR & LWD  
– reducing fine sediment in  
the riverbed

£12+K project in 2022

- Wild Salmonid Support Fund
- River Ruel Improvement Association
- Scottish & Southern Energy
- Cruach Wind Farm Trust



# Habitat Improvement – River Goil



- 5th Year of on-going habitat project
- Reduce bank erosion using green bank revetment
- Increase riparian vegetation by fencing & tree planting
- Benefits to riverbed condition
- £12K+ funding from Lomond & Trossachs National Park 2021-22-23
- Loch Goil Community Trust volunteers
- Tracked digger & dumper to increase productivity & reduce manual work

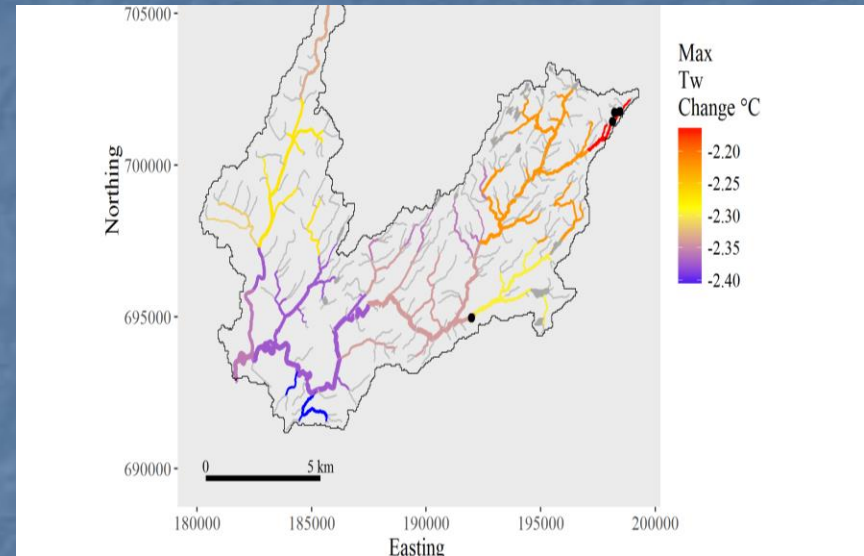
# Habitat Improvement – Dalvuie Burn



- Sea trout spawning burn – North Connel
- £18K WSSF Project
- 700m of burn re-meandered
- New fence on both banks
- Tree planting
- On-going monitoring of substrate condition

# Habitat Improvement – Riverwoods

- **Climate change**
- Warming water in upland streams
- **Lack of riparian woodland = no shading**
- Exacerbated by abstraction & hydro
- **AFT seeking to develop planting projects**



# Fisheries Management

- Temperature Monitoring (MSS / ADRIA)
- Adult Salmon Sampling (MSS)
- Juvenile Fish Sampling - Awe, Orchy & Etive, Creran, Loch Fyne Rivers
- Egg planting / nutrient study on R. Creran
- Fishery Management Plans – Argyll, Eachaig, Laggan & Sorn



# Commercial contracts

- Kintarbet sea trout migration
- 2 x Wind Farm Surveys (Kintyre)
- Machrie & Forsa Fish habitat surveys
- Hydro Survey
- FWPM Survey (River Orchy)
- EMP Monitoring





# Aquaculture Report



- Sound of Shuna & Carradale EMP Monitoring (Mowi)
- Loch Fyne, West Kintyre & West Mull EMP Monitoring (SSC)
- Linnhe EMP Development (SSF)
- FMS/MS Sea trout monitoring (L. Riddon / Linnhe)
- Carradale genetic sampling / NIPS
- Argyll DSFB Consultations
- Contracts

# Lice-related risk for individual trout

The framework assumes that small sea trout post-smolts (<150 g body weight) will suffer:

- **100%** lice-related marine mortality, or compromised reproduction potential, if they are infected with >0.3 lice g<sup>-1</sup> fish weight.
- **50%** if the infection is between 0.2 and 0.3 lice g<sup>-1</sup> fish weight,
- **20%** if the infection rate is between 0.1 and 0.2 lice g<sup>-1</sup> fish weight
- **0%** lice-related mortality if the salmon lice infection is <0.1 lice g<sup>-1</sup> fish weight.
- Lice-related risk is calculated slightly differently for trout > 150 g.

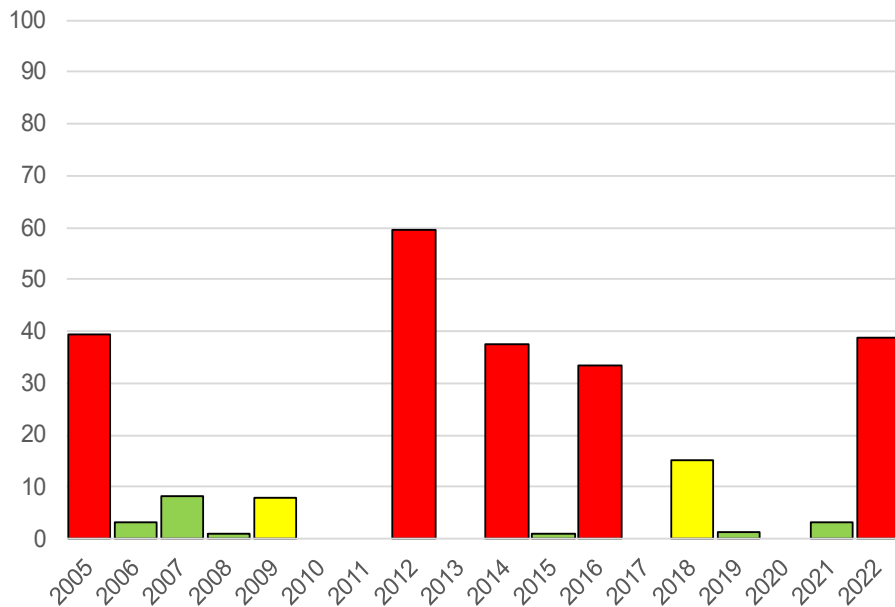
Sea lice g-1 fish weight	Mortality Risk category	Lice related mortality (%)
>0.3	Total	100
0.2 - 0.3	High	50
0.1 - 0.2	Medium	20
<0.1	Minimal	0

# Lice-related Risk to Sea trout in Loch Riddon

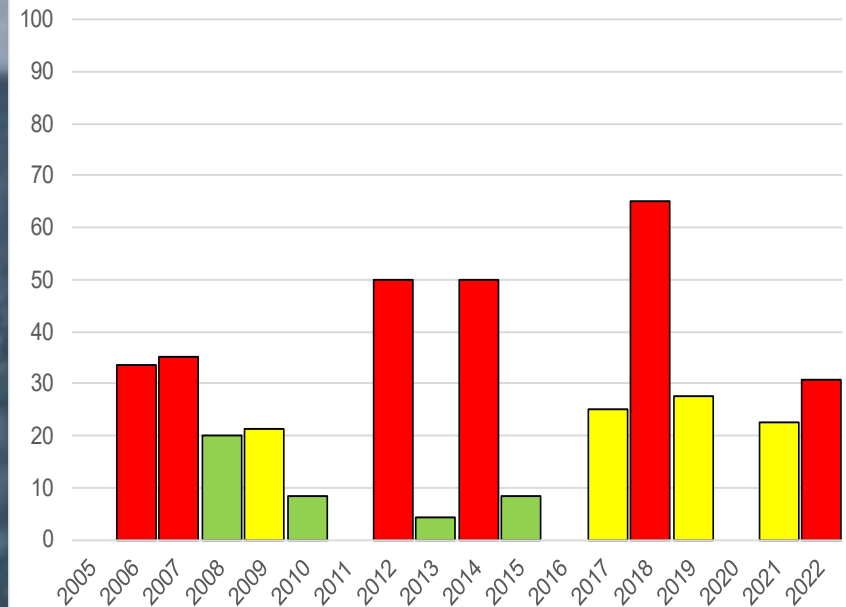
Lice-related risk **HIGH** for trout < 150g & > 150g in 2022

Since 2011, higher risk in second year of farmed production (two-year cycle).

Total Lice-related Mortality (% of sampled trout) < 150g



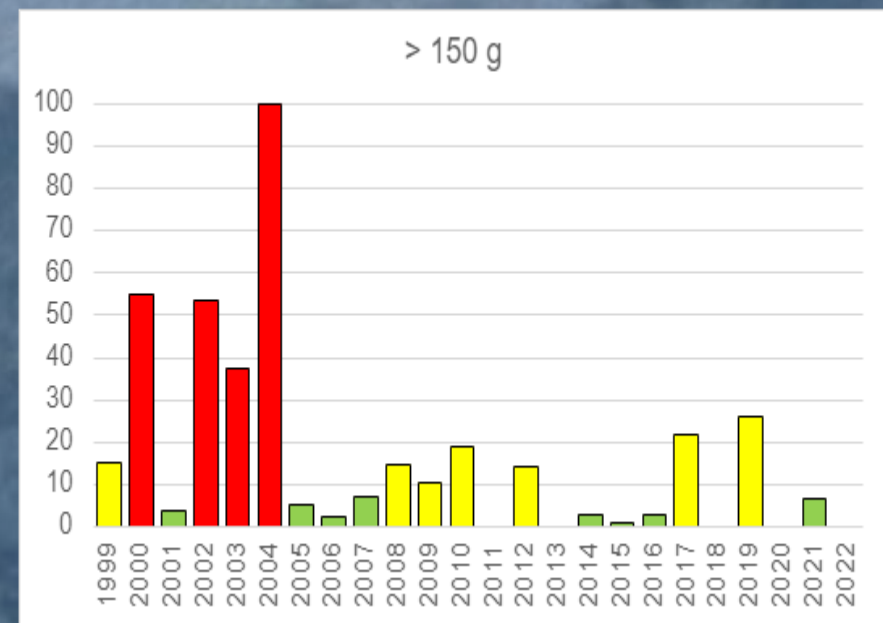
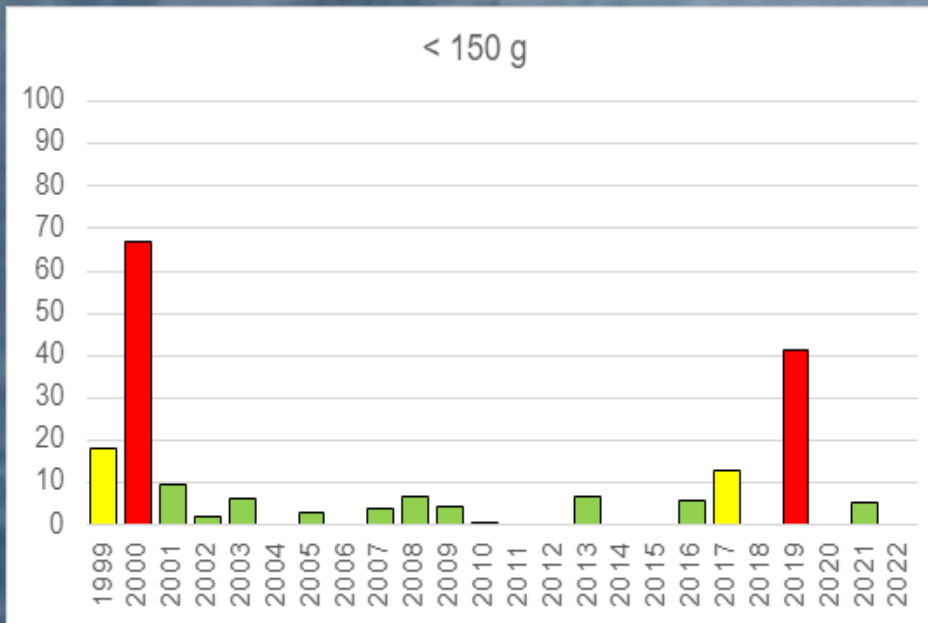
Total Lice-related Mortality (% of sampled trout) > 150g



# Lice-related risk to sea trout at head of Loch Fyne

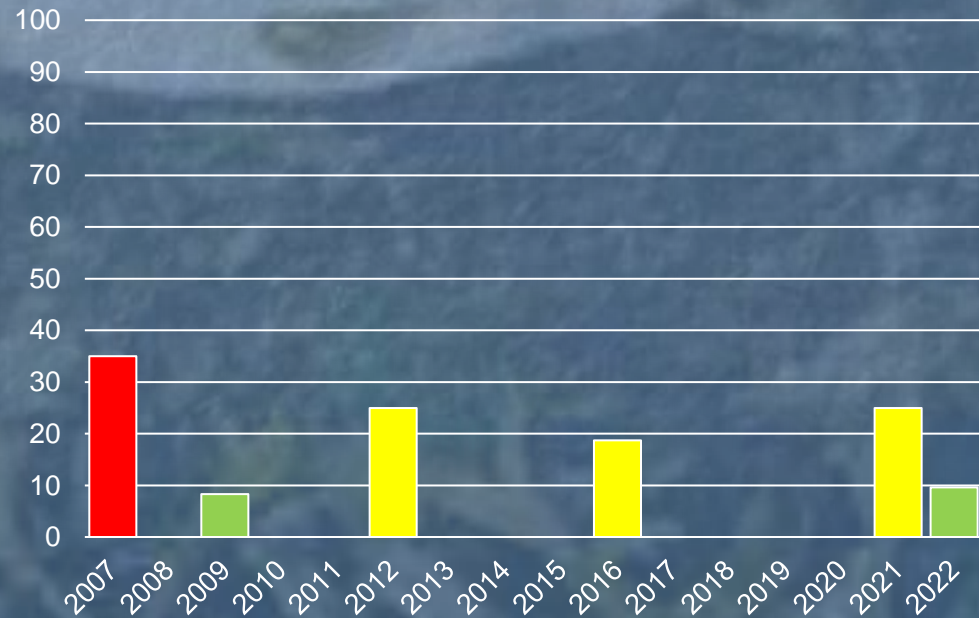
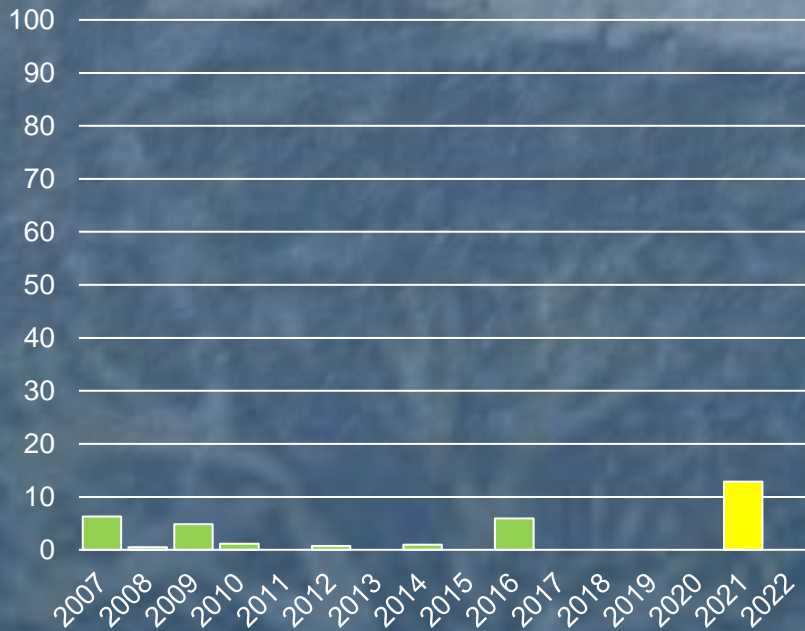
Lice-related risk **Low** for trout < 150g & > 150g in 2022

Change to synchronised production in 2001



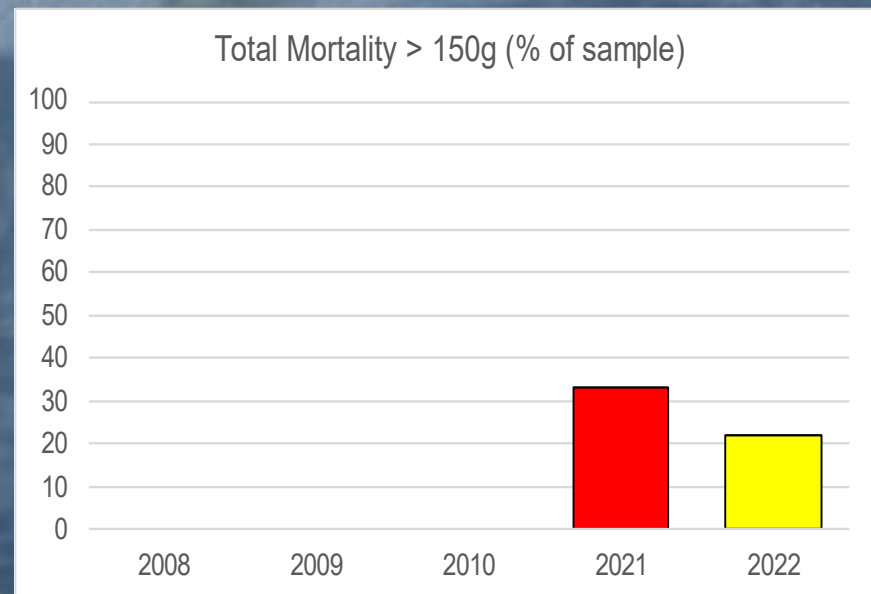
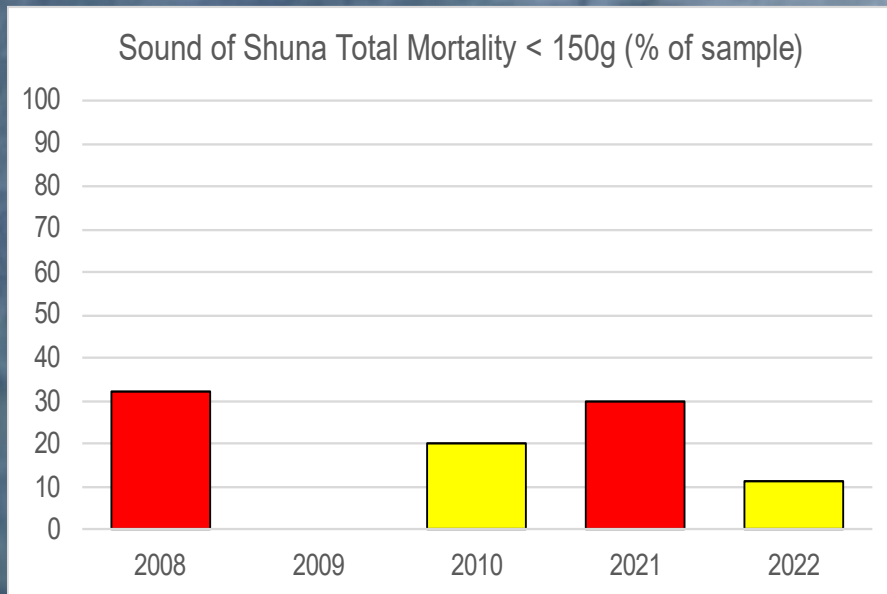
# Lice-related risk to sea trout at Carradale

Lice-related risk **Low** for trout < 150g & > 150g in 2022



# Lice-related risk to sea trout at Sound of Shuna

Lice-related risk **Moderate** for trout < 150g in 2021

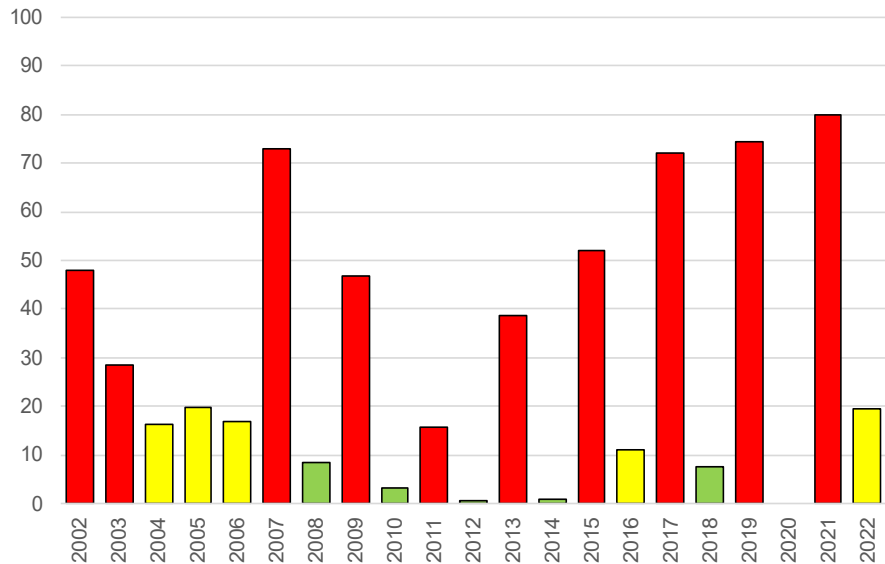


# Lice-related risk to sea trout at Lower Linnhe

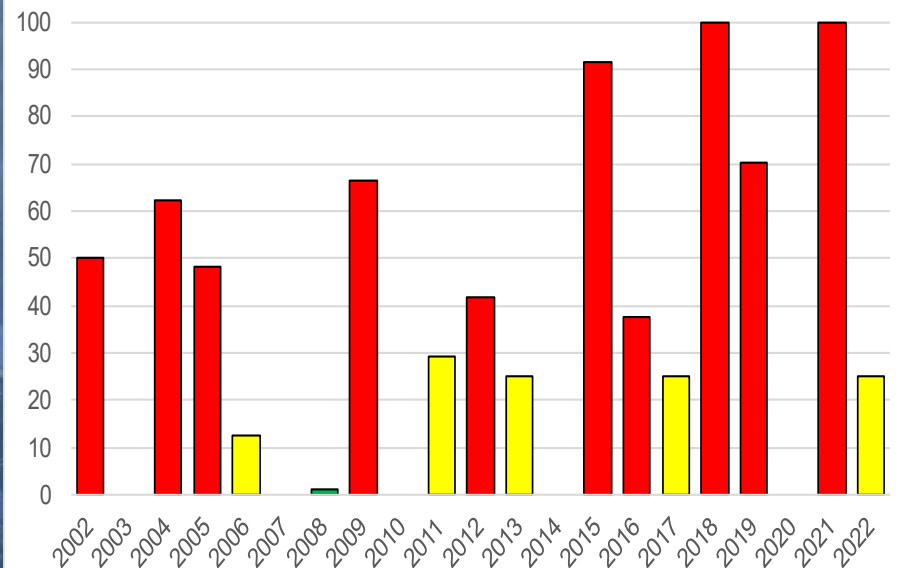
Lice-related risk **Moderate** for trout < 150g & > 150g 2022

Since 2007 **High** risk for trout in second year of farm cycle

Total sea lice-related risk to Trout < 150 g (%)



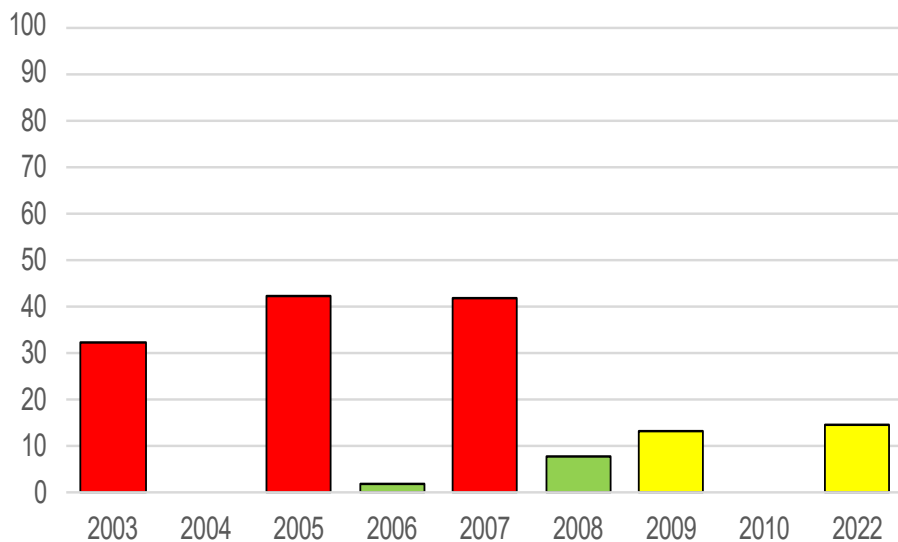
Percentage Risk to Trout > 150 g (%)



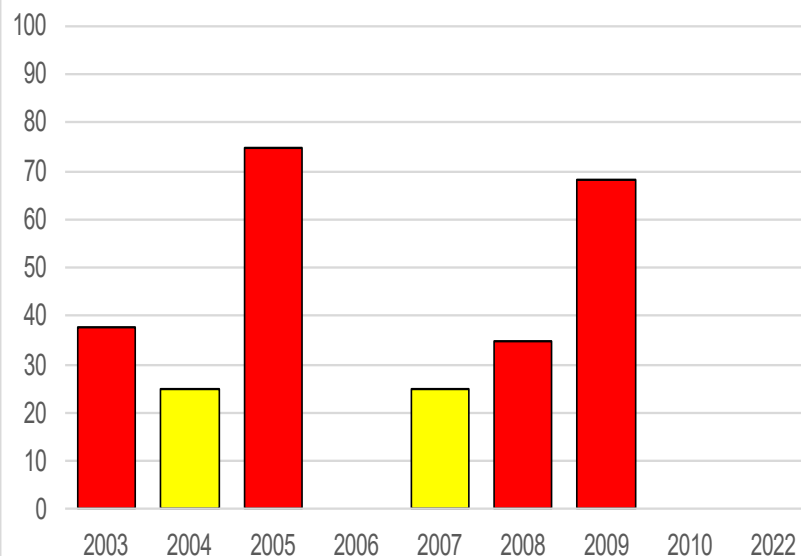
# Lice-related risk to sea trout at Loch Creran

Lice-related risk **Moderate** for trout < 150g in 2022

Total Lice-related Risk (% of Sample) < 150g



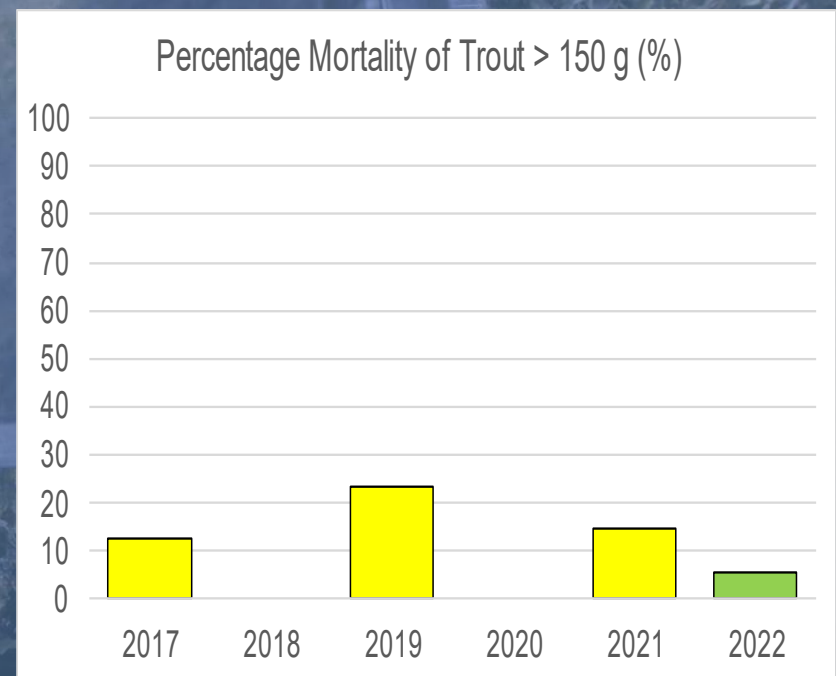
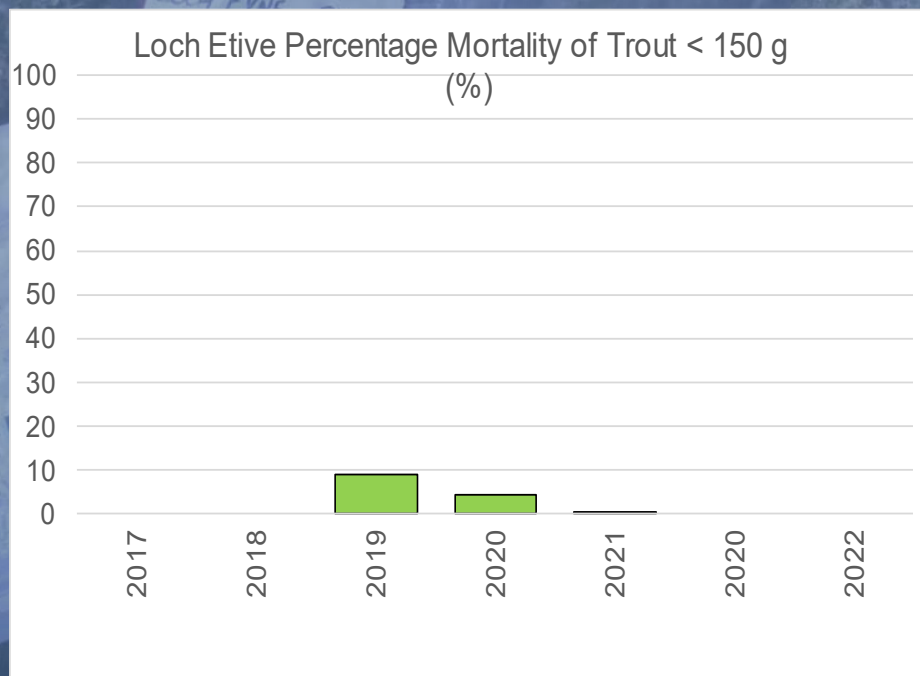
Total Lice-related Risk (% of Sample) > 150g





# Lice-related risk to sea trout at Loch Etive

Lice-related risk **Low** for trout < 150g & > 150g in 2022



Thank you for your support



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