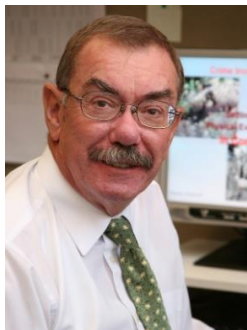


Wester Ross Fisheries Trust 2021 - 2022



Chairman
Prof Dave Barclay



Administrator
Peter Jarosz



Biologist
Peter Cunningham



Field assistant
Colin Simpson



Tournait trap
Ben Rushbrooke



Ponticum control
**Eamonn Flood &
Chantal Awbi**



Research scientist
Dr Steve Kett
(Trustee), & student
Becca Macpherson



Field assistant
(Trustee)
Alasdair MacDonald

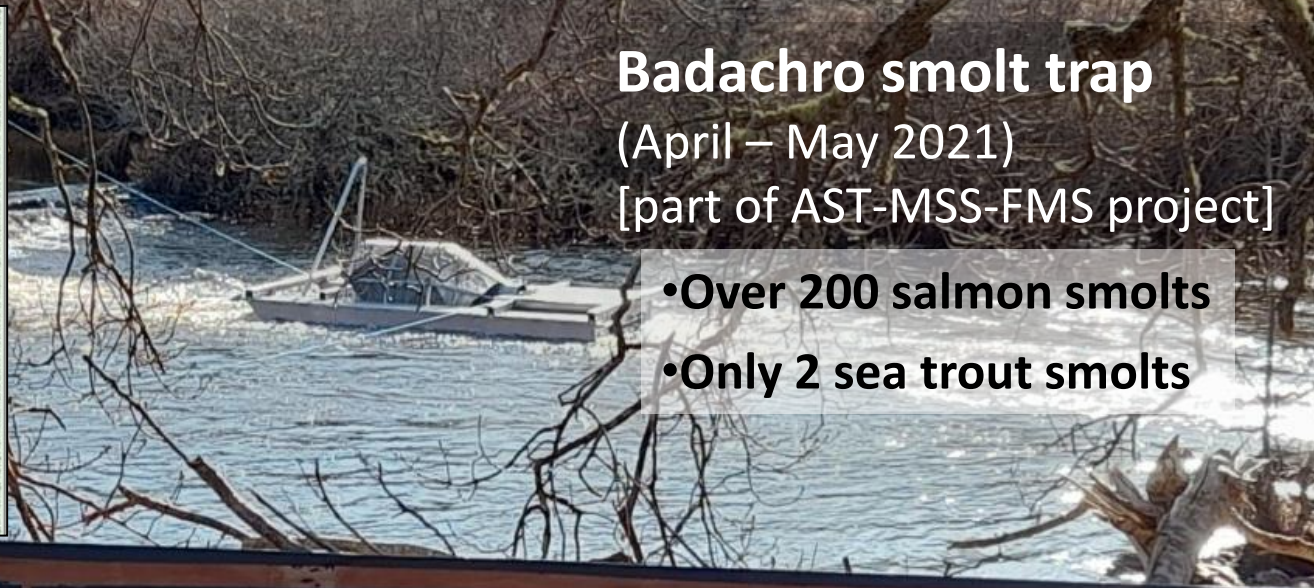
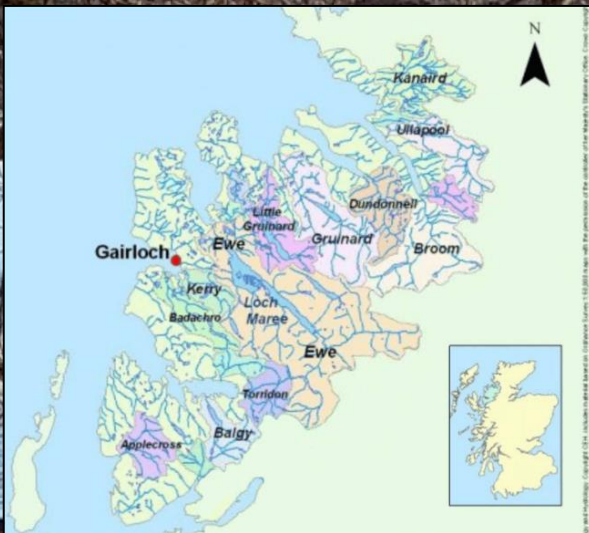


Field assistant
(& Trustee)
Mark Williams



Field assistant
Chris Beresford

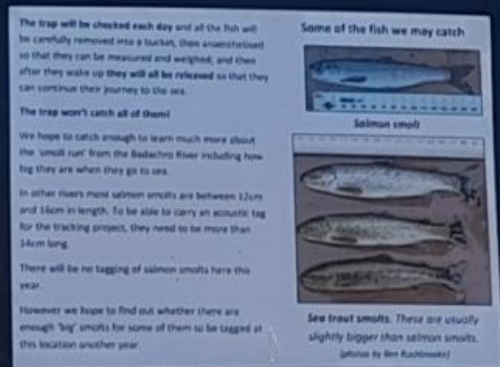
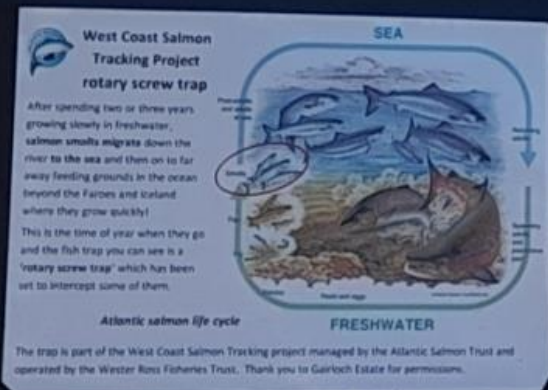
& lots of other helpers . . .



Badachro smolt trap

(April – May 2021)
[part of AST-MSS-FMS project]

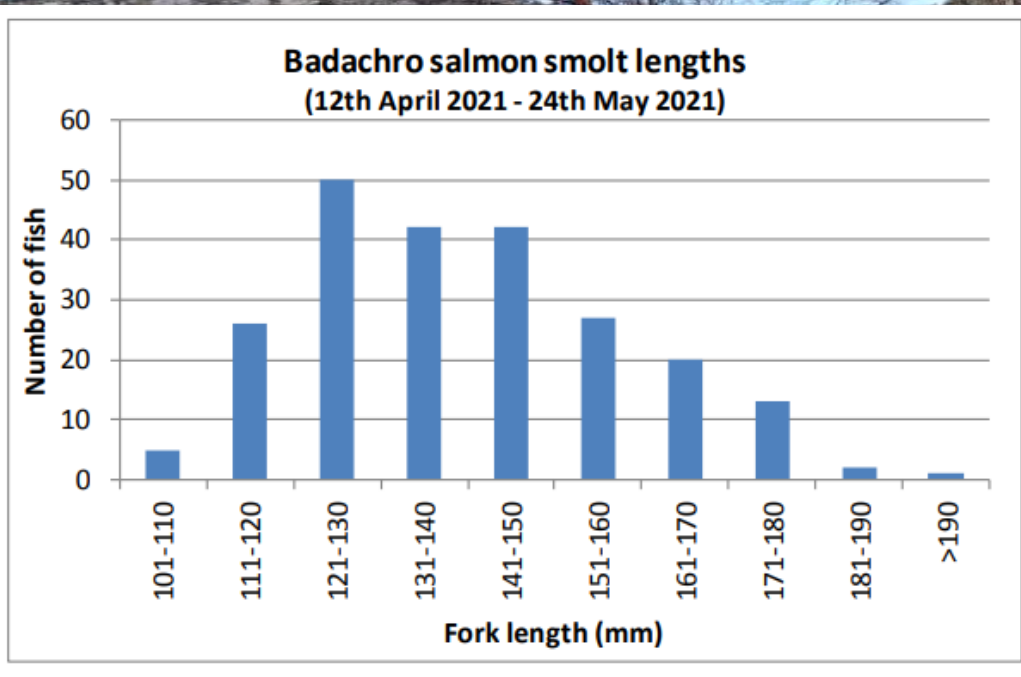
- Over 200 salmon smolts
- Only 2 sea trout smolts



- Biggest smolt nearly 20cm!

Badachro screw trap (April – May 2021)

thank you to **Chris Beresford**, Bill Whyte,
James Close, Roger McLachlan, Scott Buchan.



Sea trout sea lice monitoring 2021

- 2 sweep netting sessions Kanaird near Ullapool
- Dundonnell fyke net (Alasdair MacDonald)
- 2 sweep netting sessions Little Loch Broom
- 1 sweep netting session Inverasdale, Loch Ewe
- 4 sweep netting sessions Flowerdale, Loch Gairloch
- Electro-fishing for sea trout Sand River, Flowerdale Burn, South Erradale

Thank you to Scottish Government, WRASFB, Kaechullish Estate, Dundonnell Estate, Wester Ross Fisheries, Mark Williams and many other volunteers . . .



Flowerdale, 23rd Sept 2021



Flowerdale (Loch Gairloch) sweep 30th April 2021

- Licey sea trout.
- This was our biggest catch of season in 2021 at Flowerdale.
- Sweeps in June and July caught few fish (filamentous algae was a problem).
- In September sweep fewer mature sea trout were caught than usual for autumn sweep.

Location:	Flowerdale Estuary		Time:		Aim: to sample overwintered finnock and sea trout as in previous years. net in about 14:30; low tide 16:10ish													
Date:	30-Apr-21		Team:		8 volunteer helpers (from 4 other local family groups); social distancing was maintained as much as possible.													
*Counts:	Peter Cunningham		Weather:		bright and sunny. Cold, stayed dry; light NE breeze.													
Other notes:	8 volunteer helpers (from 4 other local family groups); social distancing was maintained as much as possible.		Salinity:		variable with Flowerdale burn flowing through sweep netting area, but also marine animals (e.g. 15 spined stickbacks in catch)													
	Just one sweep when top of shingle by stones already exposed. So we had to go quite quickly! Sweep netting are cleared of some sticks and stones (potential snags) 3 days before sweep netting.																	
	In addition 29 sea trout smolts (all <200mm) returned without processing; assumed to be recently descended smolts that had not been exposed to marine sea lice infestation pressure. Too early in year to do post-smolt sampling.																	
	Lice numbers on larger sea trout possibly higher earlier in month given high dorsal fin damage scores (and scarring). A bit too late in the month to get just overwintered finnock and sea trout; rather too many small smolts in catch.																	
	Sea trout seen jumping in estuary occasionally on days before and following sweep. Is this behaviour sea lice infestation related?																	
No.	Location	Date	Method	Fish	length (mm)	weight (g)	condition factor	Copepodid & Chaimus	Pre-adult & adult	Ovigerous females	Total L.s	lice per (g) ¹	Dorsal fin damage ²	Cryptocotyle sp. (spots per cm ² of tail fin)	Predator damage	Photo	Scale sample	Comments
1	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	480	1015	0.92	50	5	14	69	0.068	2	1	n	Y	Y	
2	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	465	870	0.87	50	8	27	85	0.098	2	20	n	Y	Y	
3	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	455	920	0.98	88	4	7	99	0.108	1	0	n	Y	Y	
4	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	355	446	1.00	104	15	12	131	0.294	2	10	Y	Y	Y	split tail
5	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	355	380	0.85	170	1	0	171	0.450	0	0	Y	Y	Y	scar on left flank
6	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	314	235	0.76	20	0	4	24	0.102	1	0	n	Y	Y	ex scale loss and regrowth
7	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	258	140	0.82	12	3	1	16	0.114	1	10	Y	Y	Y	old scar; light scale loss
8	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	455	730	0.77	800	10	8	818	1.124	2	4	n	Y	Y	
9	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	520	1345	0.96	0	2	2	4	0.003	1	25	n	Y	Y	
10	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	525	1295	0.89	50	3	2	55	0.042	2	20	n	Y	Y	
11	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	445	780	0.89	40	2	2	44	0.056	1	2	n	Y	Y	
12	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	330	325	0.90	12	2	0	14	0.043	1	1	n	Y	Y	
13	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	290	208	0.85	20	1	0	21	0.101	1	5	n	Y	Y	
14	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	297	236	0.90	100	0	0	100	0.424	1	3	n	Y	Y	
15	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	392	490	0.81	40	0	3	43	0.088	1.2	1	Y	Y	Y	beak scar lower left flank
16	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	368	430	0.86	14	2	2	18	0.042	1	0	Y	Y	Y	photo both sides of beak
17	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	360	330	0.75	30	2	2	34	0.097	2	0	Y	Y	Y	damage to head
18	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	301	196	0.72	40	4	3	47	0.240	2	15	n	Y	Y	scale loss both sides
19	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	340	70	0.51	60	0	0	60	0.857	1	0	n	Y	Y	very thin
20	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	246	103	0.69	14	2	0	16	0.155	0.5	0	n	Y	Y	
21	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	235	78	0.80	36	0	0	36	0.468	1	0	n	Y	Y	
22	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	235	103	0.79	0	0	0	0	0.000	0	2	n	Y	Y	
23	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	223	84	0.76	34	0	0	34	0.408	1	1	n	Y	Y	mild scale damage
24	Flowerdale estuary	30-Apr-21	Sweep Net	sea trout	246	110	0.74	50	1	0	51	0.464	1	0	n	Y	Y	
				Averages	349.58	455.79	0.82	76.42	2.79	3.71	82.92	0.24	1.2	5				
							</											

Kanaird 9th July 2021

- 30+ trout
- few sea lice
- Recaptured trout (identified from spots)
- Thank you to Mark MacKenzie, Kaenchullish estate, WRF and many volunteers.



Photo by Thomas Martin

Recaptured Kanaird Trout 2021

Three fish were caught on Gullie sessions in 2021

Pool K21a

10th June 2021 378mm, 840g



8th Jul 2021 382mm, 838g (2 L salmonella lice)



Pool K21b

10th June 2021 380mm, 888g



8th July 2021 382mm, 891g (12 L salmonella lice)



Pool K21a

10th June 2021 380mm, 880g



8th Jul 2021 387mm, 918g (7 L salmonella, 2 C. gylae)



Sea lice dispersal models

+

Sea lice

= mismatch?

Modelling the Dispersal of Sea Lice Larvae from Scalpay Salmon Farm

Mowi Scotland Limited
Written by Philip Gillibrand, June 2019

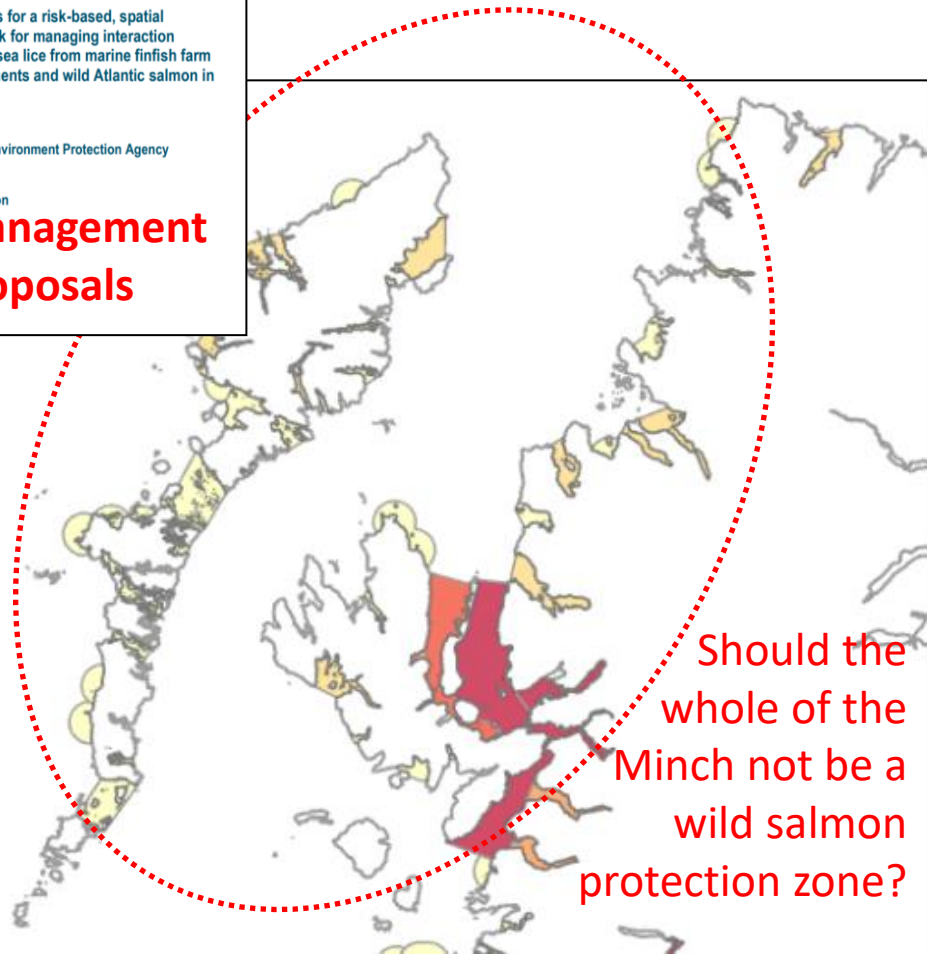
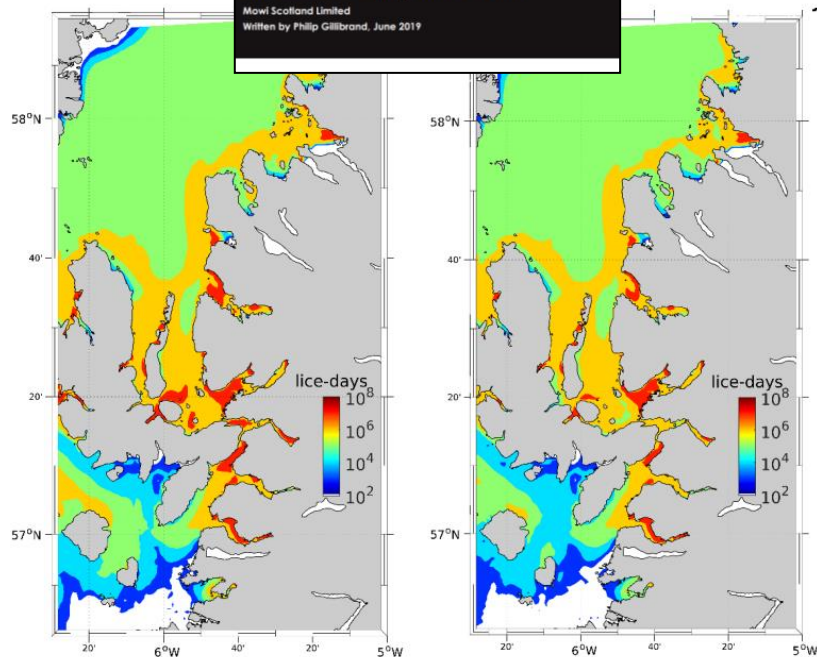
Proposals for a risk-based, spatial framework for managing interaction between sea lice from marine finfish farm developments and wild Atlantic salmon in Scotland

Scottish Environment Protection Agency

Consultation

Management proposals

December 2021



Should the whole of the Minch not be a wild salmon protection zone?

Figure 4. Predicted mean infection pressure (lice-days) for April – June from Simulation 2 (left) and 3 (right). In Simulation 3, Mowi sites are modelled with an average adult female lice count of 0.2. All sites are assumed to be at maximum biomass. Note that the colour scale is logarithmic, indicating orders of magnitude of infection pressure.



WRFT Juvenile fish surveys 2021

Main aim:

to update knowledge of the distribution and abundance of juvenile salmon within the Wester Ross Salmon Fishery Board area

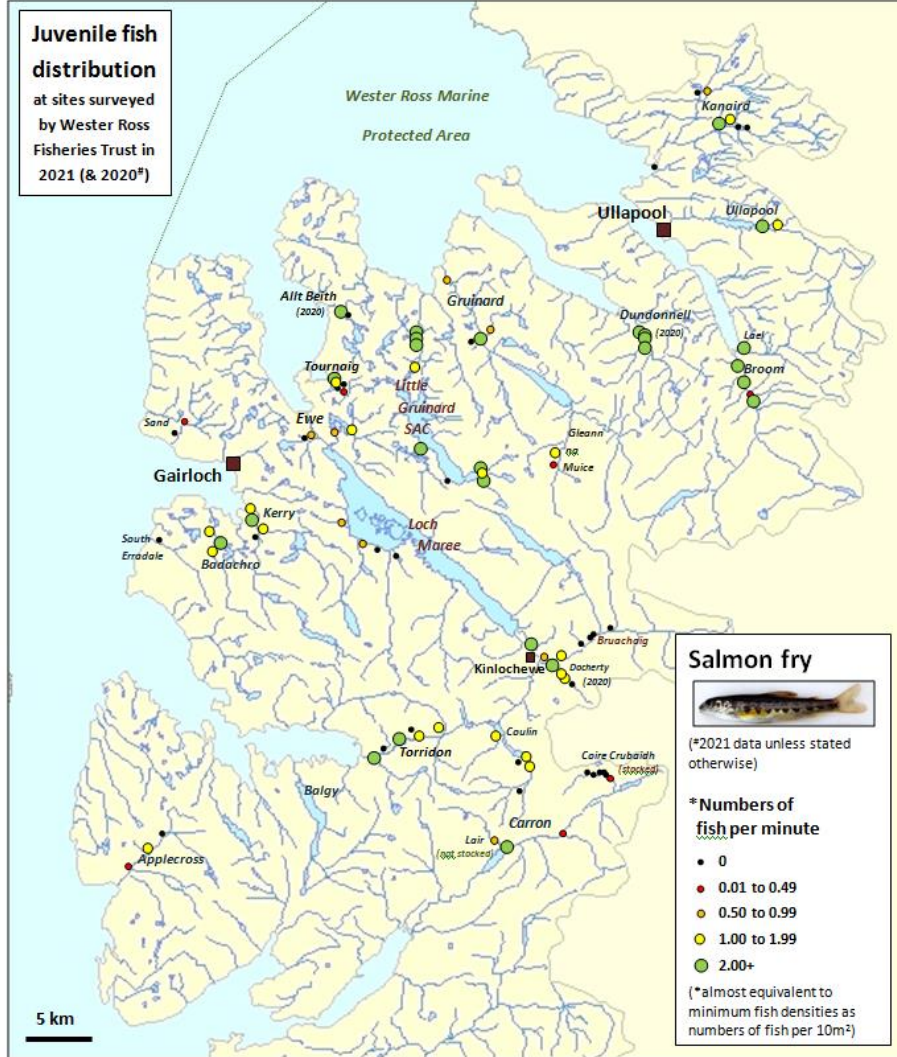
WRFT electro-fishing team: **Peter Cunningham** and **Colin Simpson** (both SFCC qualified)
80 sites surveyed :

- **15 NEPS sites** including two in River Carron (supported by Scottish Government)
- 13 hydropower contract sites (Kanaird, Bruachaig, Allt Coire Crubaidh [Carron])
- 5 Tournaig project sites (supported by MOWI)
- **50 other sites** (mostly WRASFB and core donation funded)

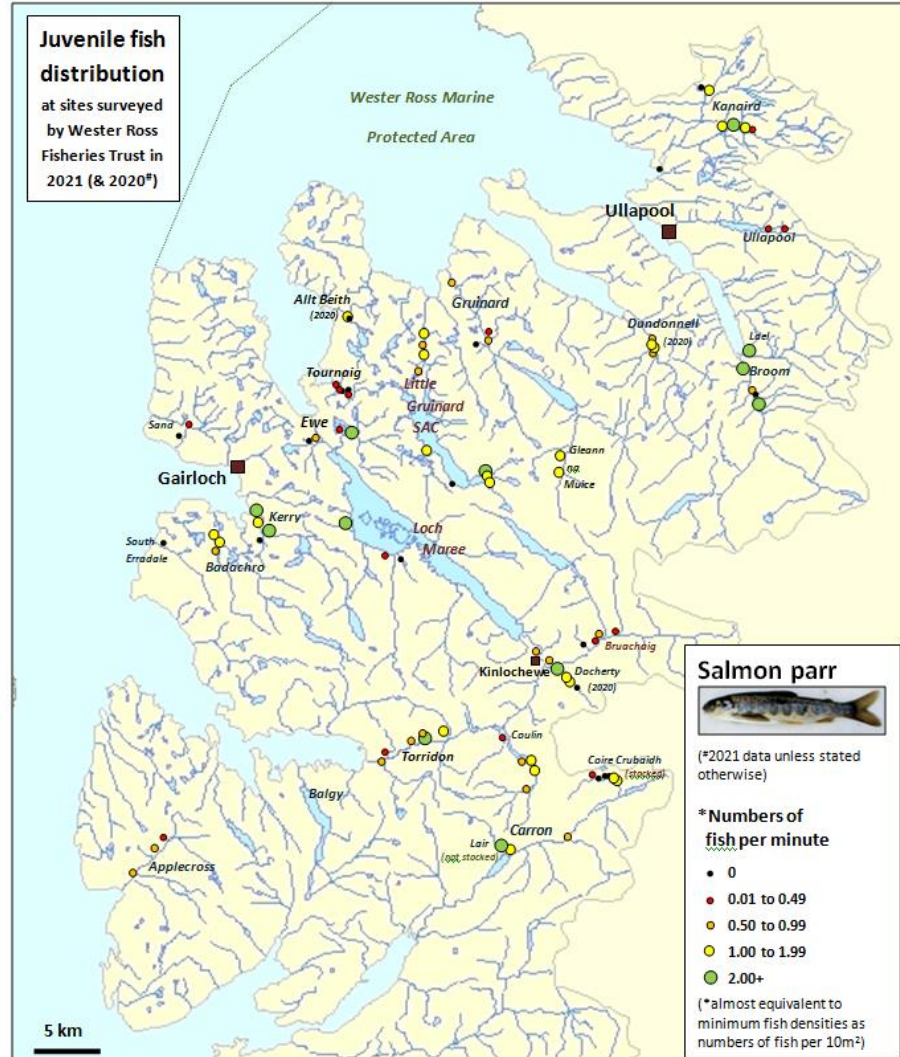
- **Progress good (July – mid September); low water!**

Note that all the fish including those in photographs were lightly sedated prior to being returned to the water after full recovery.

**Juvenile fish
distribution**
at sites surveyed
by Wester Ross
Fisheries Trust in
2021 (& 2020*)



**Juvenile fish
distribution**
at sites surveyed
by Wester Ross
Fisheries Trust in
2021 (& 2020*)



Little Gruinard River [SAC for Atlantic salmon] 6th August 2021 (below lochs)

- river exceptionally low
- big parr at top site (NEPS2892)

- back channel at top flats too shallow to survey
- small fry and parr at sites further down



Top of river at loch outflow
• very big 1+ parr



Top flats
• ancestral redds exposed
• small fry.



Near First Flats
• Small fry and small parr

Little Gruinard River [SAC for Atlantic salmon] 10 August 2021 above Fionn Loch and around the Dubh Loch

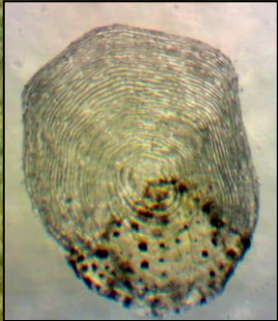
- **Salmon fry and parr** in main burns at moderate to good densities
- Just trout in one burn (sea trout status uncertain . . .)
- **Water voles extirpated** from head of Dubh loch?
- Midgiest survey day of the year . . . Colin got **fist-full of midges** from inside waders!
- Thank you to Kernsary team, Letterewe Estate!



River Ewe system

Bruachaig River above falls, 16th September 2021

- HP fish monitoring contract sites
- **Huge salmon parr** (196mm) found at top site close to second powerhouse!
- **No fry** at either site
- **low densities of large parr** at second site
- **Big parr progeny of salmon spawned above falls in 2017 or 2018** (aged by scale reading)



Abhainn Gleann na Muice, 19 August 2021

- Low densities of salmon fry and parr
- River bank degradation



One of many
dead / dying
riparian alder
trees and root
systems!

Thank you to
Iain Allison,
Eilean Darach
estate.



Torridon River 2nd September 2021

- No salmon fry at a main river site (main picture)

- Lack of spawning adult fish?

- Low water may have hindered dispersal of fry from main spawning areas further upstream?



Summary information about status of wild salmon populations in WRFT area

River system	Estimated potential smolt output ^{1.}	Conser- vation grade 2022 ^{2.}	Genetic status 2021 ^{3.}	River system	Sub-catchment	Juvenile fish survey - number of electro-fishing sites surveyed by WRFT in 2021					Comments & Actions needed
						NEPS	WRASFB	Contract	Other	Status ^{4.}	
Kanaird	10500	2	mod	Kanaird	mainstem			4		mod	Langwell falls!
				Kanaird	Runie		3			good?	
Ullapool	9700	2	good	Ullapool	below loch						
				Ullapool	Rhidorroch	2				mod	Catchment sediment management
Lael	1500			Lael			1				
Broom	6900	1		Broom			4			good	
Dundonnell	3100	3	mod	Dundonnell							2020 survey fry high; 2019 survey fry low
Gruinard	19700	1	good	Gruinard	mainstem	2	2		(2 SEPA sites)	good?	Impoverished (not enough food . . .)
				Gruinard	ab've L'n' Sealga	1	1			mod	Riparian habitat! Impoversished
Little Gruinard	14600	3		Little Gruinard	mainstem	1	3			good?	Impoverished (not enough food . . .)
(SAC)				Little Gruinard	above Fionn L.		6			good?	
Allt Beith	800			Allt Beith							2020 survey good parr densities
Tournaig	600			Tournaig				5		poor	Low water
Ewe	49800	1		Ewe	mainstem						Fish eating birds . . .
				Ewe	Kernsary	1	1			good	
			good	Ewe	L. Maree burns	2	2			mod	
			good	Ewe	Kinlochewe		1			good?	Kinlochewe septic tank?
				Ewe	Bruachaig upper		3	4		poor	Bruachaig falls!
				Ewe	Bruachaig lower	2				good?	
			mod	Ewe	A' Ghairbhe						Spawning activity, Nov 2021
				Ewe	Coulin		5			good?	Impoverished (not enough food . . .)
Sguod	500			Sguod							
Sand	500			Sand					2	poor	Sea lice!
Kerry	4000	3	good	Kerry		1	3			good?	Sea lice!
Badachro	3600	3		Badachro			3			good?	Sea lice!
Torridon	8300	3	good	Torridon			6			mod	Sea lice!
Balgy	5400	3	poor	Balgy							
Cuaig	1600			Cuaig							
Applecross	4200	3		Applecross		1	2			poor	Sea lice! Catchment sediment management
(Carron)	(25000)			(Carron)		2	2	5		?	Heavily stocked obscuring wild population

Sources / notes:	1. Potential smolt output estimates from habitat based calcuations in WRFT Fisheries Management Plans etc.	
	2. Scottish Government Conservation grading https://www.gov.scot/publications/salmon-fishing-proposed-river-gradings-for-2022-season/	
	3. From Gilby et al 2021 National assessment of influence of farmed salmon escapes to genetic integrity (based on samples collected by WRFT in 2018)	
	4. Juvenile fish status based on WRFT e-fishing survey 2021 results and other considerations (e.g. growth rates)	

Loch and lochan studies



Dr Steve Kett &
Becca MacPherson
Freshwater zooplankton
study, August 2021



Thank you to:



the National Trust
for Scotland
a place for everyone



and to members, other supporters, estates and many volunteers for lots of in-kind help in 2021.

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Wester Ross Fisheries Trust

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www.wrft.org.uk