Sea lice monitoring report for Applecross River estuary sampling, 23 Sept 2024.

Peter Cunningham, Biologist, WRFT. 26 Sept 2024 info@wrft.org.uk

Sea trout data

Location:		**Applecross River estuary**																	
Date:		23-Sep-24		**Time:**	11:15am														
***Counts:**		Peter Cunningham																	
Team:		4 helpers																	
Weather:		overcast, still, dry. Cool (~10C)																	
River		medium																	
Other notes:		1 sweep of top of sea pool																	
		2 snorkellers to move net over stones on river bed of pool																	
		tide full in at first - about 30cm above river level; halocline																	
		mostly silvery finnock, rather thin with signs of lice attchment earlier in the year; and some larger maturing sea trout and a thin salmon																	
										Caligus	***Lepeophtheirus salmonis***								
No.	**Location**	**Date**	**Method**	**Riv/Est/Beach**	**Fish**	**length (mm)**	**weight (g)**	**condition factor**	**total**	**Copepodid & Chalimus (estimate)**	**Pre-adult & adult**	**Ov. female**	**Total L. salmonis sea lice**	***estimated lice/g fish weight**	**Dorsal fin damage**	***Cryptocotyle ligua spots per cm2 of caudal fin***	**Predator damage**	**Photo**	**scale sample?**	**Comments**
1	Applecross	23-Sep-24	Sweep Net	est	Sea trout	285	237	1.02	0	4	2	0	**6**	0.025	2.0	2	N	Y	y	ragged
2	Applecross	23-Sep-24	Sweep Net	est	Sea trout	280	225	1.02	0	0	1	0	**1**	0.004	0.5	0	N	Y	y	
3	Applecross	23-Sep-24	Sweep Net	est	Sea trout	275	190	0.91	0	0	0	0	**0**	0.000	0.2	1	N	Y	y	
4	Applecross	23-Sep-24	Sweep Net	est	Sea trout	315	296	0.95	0	0	0	0	**0**	0.000	2.0	1	N	Y	y	quite thin
5	Applecross	23-Sep-24	Sweep Net	est	Sea trout	290	245	1.00	0	0	0	0	**0**	0.000	1.0	1	N	Y	y	silvery finnock
6	Applecross	23-Sep-24	Sweep Net	est	Sea trout	273	202	0.99	0	0	0	0	**0**	0.000	0.5	1	N	Y	y	
7	Applecross	23-Sep-24	Sweep Net	est	Sea trout	255	153	0.92	0	0	0	0	**0**	0.000	0.5	1	y	Y	y	old bird beak damage
8	Applecross	23-Sep-24	Sweep Net	est	Sea trout	265	180	0.97	0	13	2	0	**15**	0.083	1.0	3	y	Y	y	photo dsl fin; pred damage healed
9	Applecross	23-Sep-24	Sweep Net	est	Sea trout	275	200	0.96	0	0	0	0	**0**	0.000	0.2	2	N	Y	y	
10	Applecross	23-Sep-24	Sweep Net	est	Sea trout	233	120	0.95	0	0	0	0	**0**	0.000	0.2	0	y	Y	y	predator damage healed
11	Applecross	23-Sep-24	Sweep Net	est	Sea trout	222	101	0.92	0	0	0	0	**0**	0.000	0.2	4	N	Y	y	
12	Applecross	23-Sep-24	Sweep Net	est	Brown trout	335	382	1.02	0	0	0	0	**0**	0.000	0.0	0	N	Y	y	brown trout
13	Applecross	23-Sep-24	Sweep Net	est	Sea trout	383	610	1.09	0	0	3	0	**3**	0.005	1.0	0	N	Y	y	
14	Applecross	23-Sep-24	Sweep Net	est	Sea trout	273	199	0.98	0	1	1	0	**2**	0.010	0.5	2	N	Y	y	
15	Applecross	23-Sep-24	Sweep Net	est	Sea trout	264	195	1.06	0	2	5	0	**7**	0.036	2.0	3	N	Y	y	Badly damaged
16	Applecross	23-Sep-24	Sweep Net	est	Sea trout	335	395	1.05	0	0	1	0	**1**	0.003	2.0	1	N	Y	y	?Mature female sea trout
17	Applecross	23-Sep-24	Sweep Net	est	Sea trout	273	222	1.09	0	5	1	0	**6**	0.027	1.0	2	N	Y	y	
18	Applecross	23-Sep-24	Sweep Net	est	Sea trout	262	185	1.03	0	1	3	0	**4**	0.022	2.0	3	N	Y	y	
19	Applecross	23-Sep-24	Sweep Net	est	Sea trout	270	190	0.97	0	0	0	0	**0**	0.000	1.0	0	N	Y	y	
20	Applecross	23-Sep-24	Sweep Net	est	Sea trout	235	120	0.92	0	1	0	0	**1**	0.008	1.0	1	N	Y	y	
21	Applecross	23-Sep-24	Sweep Net	est	Sea trout	262	168	0.93	0	1	0	0	**1**	0.006	1.0	1	y	Y	y	predator damage healed
22	Applecross	23-Sep-24	Sweep Net	est	Sea trout	205	87	1.01	0	0	0	0	**0**	0.000	0.5	1	N	Y	y	
23	Applecross	23-Sep-24	Sweep Net	est	BT	238	120	0.89	0	0	0	0	**0**	0.000	0.2	0	y	Y	y	predator damage healed
24	Applecross	23-Sep-24	Sweep Net	est	Salmon	535	1340	0.88	0	0	0	0	**0**	0.000	0.0	0	y	Y	y	Thin, tatty, red vent, wild ?male
					Averages	**289**	**237**	**0.98**	**0**	**1**	**1**	**0**	**1.75**	**0.01**	**1.2**	**1**				

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Mortality / early returned estimates for sea trout in sample based on method from Taranger et al 2015, Risk assessment for the environmental impact of Norwegian salmon farming [(PDF) Risk assessment of the environmental impact of Norwegian Atlantic salmon farming (researchgate.net)]

total lice	47
number of sea trout	22
number infested	11
prevalence	50%
total lice	47
abundance	2.14
intensity	4.27
fish with >0.3 lice / g	0
fish with >0.3 lice / g	0%

Fish no.	≥13 lice/fish?	Lice/g fish weight	Range	Mortality category	Number of fish in category	Total number of fish in sample	% of sample in category	projected mortality for category %	projected mortality of fish in sample %
1	No	0.025	>0.3	100%	0	24	0.00	0.00	
2	No	0.004	0.2-0.3	50%	0		0.00	0.00	
3	No	0.000	0.1-0.2	20%	0		0.00	0.00	
4	No	0.000	<0.1	0%	24		100.00	0.00	**0.00**
5	No	0.000							
6	No	0.000							
7	No	0.000							
8	Yes	0.083							
9	No	0.000							
10	No	0.000							
11	No	0.000							
12	No	0.000							
13	No	0.005							
14	No	0.010							
15	No	0.036							
16	No	0.003							
17	No	0.027							
18	No	0.022							
19	No	0.000							
20	No	0.008							
21	No	0.006							
22	No	0.000							
23	No	0.000							
24	No	0.000							

Acknowledgements

Sampling carried out as part of the Caol Mor Salmon Farms EMP wild fish monitoring programme supported by MOWI to inform the WRASFB, The Highland Council and The Scottish Government

Thank you to the Applecross Trust for permission and assistance

Notes:

based on the assumption that small salmonid post-smolts (<150g body weight) will suffer 100% lice-related marine mortality, or return prematurely to freshwater for sea trout in the wild if the are infected with >0.3 lice per g of fish weight.
Furthermore, the lice related marine mortality is estmated to 50%, if the infection is between 0.2 and 0.3 lice per g fish weight, 20% if the infection rate is between 0.1 and 0.2 lice per g fish weight, and finally 0% if the salmon lice infection is <0.1 g fish weight.

0.05 and 0.1 lice per g fish weight, 20% for lice infections between 0.05 and 0.01 lice per g fish weight, and finally 0% if the salmon lice infection is <0.01 lice g fish weight.

colour code

Taranger, G. L., Karlsen, Ø., Bannister, R. J., Glover, K. A., Husa,V., Karlsbakk, E., Kvamme, B. O., Boxaspen, K. K., Bjørn, P. A., Finstad, B., Madhun, A. S., Morton, H. C., and Sva˙sand, T. (2014) Risk assessment of the environmental impact of Norwegian Atlantic salmon farming. – ICES Journal of Marine Science, doi: 10.1093/icesjms/fsu132.
https://www.researchgate.net/publication/266672998_Risk_assessment_of_the_environmental_impact_of_Norwegian_Atlantic_salmon_farming

100% sea lice related mortality or early return to freshwater
>50% to 99% sea lice related mortality or early return to freshwater
>20% to 50% sea lice related mortality or early return to freshwater
<20% sea lice related mortality or early return to freshwater

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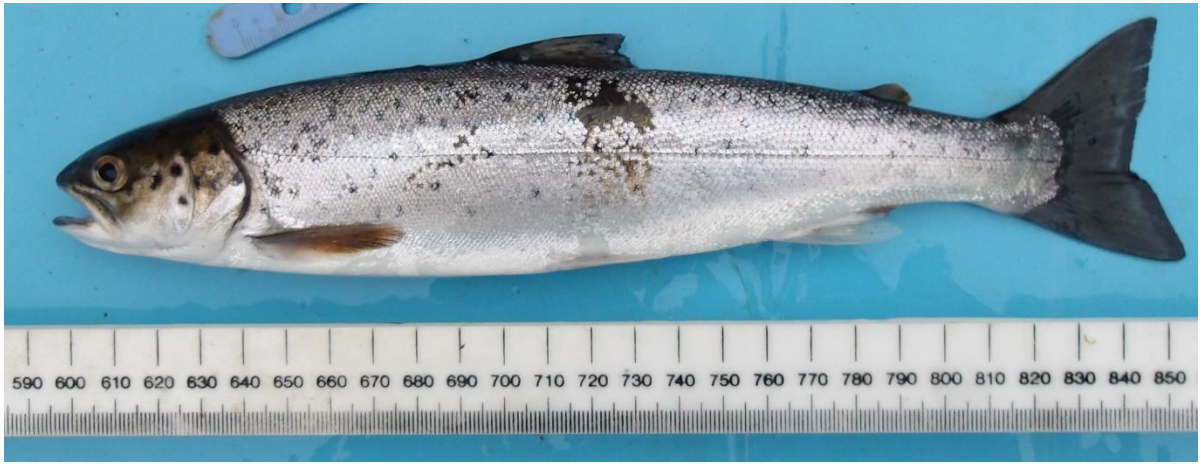
Sea trout 265mm Applecross 23rd September with (right) dorsal fin damage



Male sea trout (383mm) and resident brown trout (335mm), Applecross 23rd September 24