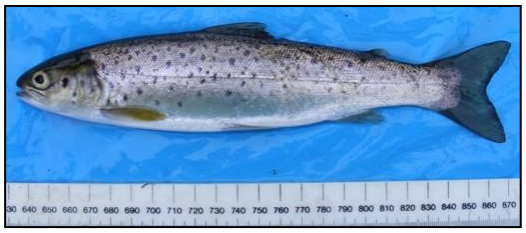
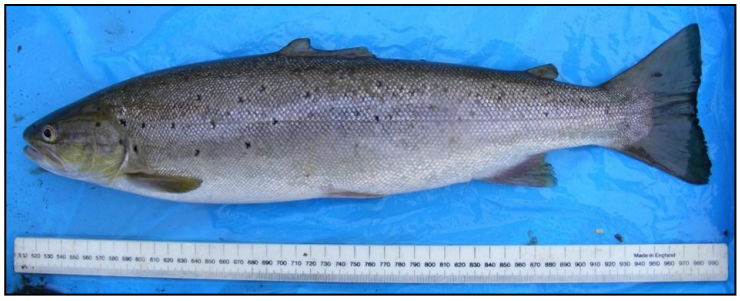
WESTER ROSS FISHERIES TRUST

Wester Ross Wild Trout Report for 2011





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Wester Ross Wild Trout Report for 2011

Contents

1. Introduction 4
   1.1 Objectives 4
2. Methods 5
   2.1 Sampling 5
   2.2 Condition factor 5
   2.3 Scale reading 5
3. Results 6
   3.1 Freshwater discharge 6
   3.2 Results of trout sampling in the sea 7
      3.2.1 WRFT Sampling results in chronological order 7
      3.2.2 Results in geographic order (north to south) 8
      3.2.2.1 Overview 8
      3.2.2.2 Kanaird 9
      3.2.2.3 Dundonnell 11
      3.2.2.4 Gruinard Bay 12
      3.2.2.5 Loch Ewe 13
      3.2.2.6 Loch Gairloch 18
   3.3 Results of trout sampling in freshwater 27
      3.3.1 Loch Maree 27
      3.3.3 Sguod 30
      3.3.4 Loch Dhughaill 31
4. Discussion and conclusions 32
   4.1 Size and longevity of sea trout taken in 2011 32
   4.2 Infection by parasitic sea lice 33
   4.3 Sea trout populations and spawning burns 33
5. Acknowledgements 35
6. References 35
Appendix 1: Sea lice data for trout sampled by WRFT in 2011 (sweep netting part-funded by the Scottish Government via RAFTS) 37
Appendix 2 Trout caught in Loch Dughaill, 4th November 2011 43
Appendix 3 Trout caught in spawning streams in the Kernsary sub-catchment 44
Appendix 4. Trout and their scales. 45
Appendix 5 Notes on a Loch Sguod trout 74

Wester Ross Wild Trout Report for 2011

Summary

This report presents the results of wild trout sampling in Wester Ross during 2011. The primary objective of sampling was to obtain sea trout to assess their health and growth, to inform those with an interest in sea trout fisheries management. 223 sea trout were sampled from sites in or near coastal waters in Wester Ross during the year. Most of these fish were taken from estuary or beach sites using a 50m long sweep net with a minority of fish taken from rivers in tidal waters, using a fyke net or rod and line.

Levels of infection by parasitic sea lice (*Lepeophtheirus salmonis*) on sea trout were variable. In early June, lice numbers on small sea trout sampled in Loch Ewe were low (less than 10 lice per fish). Towards the end of June, sea trout taken from the Kanaird estuary and Gruinard Bay had moderate to high numbers of small chalimus lice. Some of the small sea trout taken in a fyke net at Dundonnell in early July also carried over 100 lice. Lice levels on post-smolt sea trout were highest during the period of drier weather in late June to early July when there was the least discharge of freshwater into sea lochs. The relationship between sea lice levels on wild sea trout and the salmon farming industry continues to be the subject of investigation by Marine Scotland Science in collaboration with RAFTS.

Fish were generally in similar condition to those sampled in 2010 but not as 'fat' as those caught in 2009. The largest sea trout were taken in Loch Gairloch. On 4th August, 6 sea trout were caught in Flowerdale Bay, Loch Gairloch. The two largest fish were over 450mm & 1kg in weight. Both of these fish were recaptures. One fish had previously been captured in September 2010 in Flowerdale Bay and carried over 200 pre-adult and adult lice and had a 'raw' eroded dorsal fin on August 4th. The other large trout, previously captured in February 2011 at the mouth of the River Kerry, had only 12 lice and was in much better condition. Three of the sea trout caught in Loch Gairloch on 27th September were also identified from photographs as recaptures, including the two recaptured fish taken on 4th August. The fish that had over 200 lice on 04/08, had only 80 lice on 27/ 09 and was again the lousiest fish in the sample. This fish had grown more slowly in 2011 than the other two recaptured trout. Two of the other trout were over 50cm in length. Sea trout of over 1kg were also taken in Gruinard Bay and Loch Ewe.

Samples of trout were also taken in Loch Maree in August and Loch Dughaill in November using rod and line and sweep & gill nets. These included both sea trout and brown trout which had not been to sea. Scale reading, particularly of scale samples from the Loch Dughaill fish, demonstrated that many sea trout had grown well at sea in 2011.

To learn more about the distribution of spawning sea trout in freshwater, several trout spawning streams were sampled in autumn 2011. One sea trout was found in a spawning stream above Loch Sguod on 10th October, along with many smaller brown trout. Over 40 trout were sampled from spawning streams in the Kernsary sub-catchment (Ewe system) in late October 2011. Although some of these fish were large (over 40cm in length), from scale reading there was no clear indication that any of them had been to sea.

Cover photos: *(clockwise) WRFT Sweep netting team of Dr Steve Kett; Alan, Greg and Frank Choonara; David, Dougie and Flora Foreman, and WRFT Biologist Peter Cunningham with a sea trout of 465 mm in Flowerdale bay, Loch Gairloch, August 2011; Brown trout 700mm from spawning stream in Loch Maree catchment, October 2011; Sweep netting team at Boor Bay, August 2011. Small post-smolt sea trout, caught at Boor Bay, August 2011.*

Wester Ross Wild Trout Report for 2011

1. Introduction

1.1 Objectives

This report presents results of the WRFT wild trout sampling programme for 2011. It has been prepared primarily for local management purposes, to inform those who own and manage trout fisheries and those who manage local salmon farms, and for other wild trout enthusiasts wherever they may be. It is designed to be viewed on-line: please use the 'zoom' function to view pictures of trout scales (see Appendix 4).

This report aims to complement a West of Scotland-wide report produced as part of the Scottish Government funded RAFTS Aquaculture project . In addition, this report includes the results of additional trout sampling within the WRFT area, including the Dundonnell fyke net sea trout sampling, and sea trout caught using rod and line from the River Ewe in July. The results of sampling in freshwater later in the year are also reported, including information about trout caught in Loch Maree and tributary streams in August & October, and in the lochs of the River Carron system in November 2011.

The primary objective of the sea trout sampling programme was to obtain sea trout to assess levels of infection by the sea louse, *Lepeophtheirus salmonis*. In addition, from recorded measurements of length and weight, and from the reading of scales taken from sea trout, information about growth rates and condition have been obtained, and information about infection by other parasites. From samples of trout caught towards the end of the year, the overall status of respective trout populations has been assessed.

The following are included:

- Data for all sea trout caught at respective sampling sites, including length, weight and parasite burdens.
- Information about growth rates of recaptured sea trout in Loch Gairloch
- Information about trout caught in Loch Dhughaill (River Carron system) in November 2011
- Information on trout sampled in spawning streams in Autumn 2011.
- General discussion of the health of sea trout populations in respective sampling areas

This report follows reports on Sea trout Monitoring in Wester Ross prepared in 2009 and 2011 as follows:

The WRFT Sea lice Monitoring Report for 2007-2008 can be found on-line at: http://www.wrft.org.uk/files/WRFT%20Sea%20lice%20monitoring%20report%202007-2008%20for%20web.pdf . This report considers relationships between lice levels on sea trout within the WRFT area and the location and year of production of nearby salmon farms within the area.

The WRFT Sea lice Monitoring Report for 2009-spring 2011 can be found on-line at: http://www.wrft.org.uk/files/WRFTSeatroutintheSeaReport2009-spring2011.pdf. The 2009-2010 report includes information on the growth of sea trout within the area, and also provides information about the parasite *Cryptocotyle lingua.*

2. Methods

2.1 Sampling

2.1.1 Sampling in the sea and tidal waters

Samples of sea trout were taken using a sweep net, from north to south, in the River Kanaird estuary, Gruinard Bay, Loch Ewe, Loch Gairloch and the River Carron estuary. At the mouth of the Dundonnell River, a fyke net was used as in previous years. Sea trout were also taken using rod and line from the Sea Pool of the River Ewe in July 2011.

The methods used for catching fish and recording sea lice data follows the protocol adopted by the Scottish Fisheries Co-ordination Centre. Successful sweep netting is dependent on there being a suitable site where sea trout congregate over a shallow-shelving substrate without too many snags to catch the leadline of the net as it is pulled in. Some sites where sea trout have been successfully caught are in the estuary pools of rivers where fish gather as the tide goes out (e.g. River Carron Sea Pool). In contrast, several beaches further from river mouths have produced reliable, if usually somewhat smaller samples of sea trout, along with sandeels, sprats, wrasse and juvenile gadids (mostly Pollack, Coalfish and Cod). Boor Bay and the Inverasdale shore (Loch Ewe) and Kerry Bay (Loch Gairloch) are examples of such sites. Supplementary samples of sea trout were taken using rod and line from lower pools of rivers during the summer and autumn.

Following capture, fish were anaesthetised, measured, weighed and lice were counted by holding the immobilised fish underwater in a light coloured basin. Details of parasite infection (by the sea louse, *Lepeophthierus salmonis* and *Caligus* spp*.,* and trematode fluke*, Cryptocotyle lingua*) were recorded, and many fish were photographed.

2.1.2 Sampling in freshwater

Trout were caught using rod and line, fyke net, sweep net, and gill nets (set to target Arctic Charr during November 2011). Trout caught in freshwater were processed in the same way as those caught in the sea.

2.2 Condition factor

This is a measure of the relationship between the length and weight of a fish, according to the formula:

$$\textit{Condition factor} = (\textit{weight [in grams]} \times 100) / (\textit{length [in cm]}^3)$$

At the end of the winter, sea trout are usually thin, and typically have a condition factor of less than 0.90. After entering the sea they may grow quickly if there is abundant food. Unusually plump sea trout with a condition factor of over 1.40 were recorded in July 2009.

2.3 Scale reading

Trout scales were read to determine the ages of respective fish. Trout scales were read by projecting their image onto a screen using an EyeCom3000 microfiche reader. Photographs of some scales were taken and are included in this report. The on-line Sea Trout Scale Catalogue provides additional photographs of projected

images of scales together with the fish they were taken from; follow links here. Otherwise, the method of reading scales follows that of Nall 1930, Walker 1980, and Cunningham 2011.

3. Results

3.1 Freshwater discharge

For the sea trout in the seas around Wester Ross, 2011 was a rather unusual year. Graphs showing freshwater discharge in 2011 at the SEPA monitoring station on the River Carron and levels recorded at the Tournaig trap are shown in Figure 1a and 1b.

Following a very large spate in early April 2011, the latter part of April and early May were exceptionally dry, and water levels dropped exposing streambeds and hindering migration of smolts to the sea. Little freshwater entered sea lochs during this period. Then, from mid-May to early June, it was unusually wet with high discharge of freshwater into sea lochs. Towards the end of June the rains relented and freshwater levels fell and remained low through much of July.

Figure 1a. River Carron discharge at New Kelso, February to end October 2010 and 2011. Discharge values plotted are those recorded each day at 00:00 hrs.

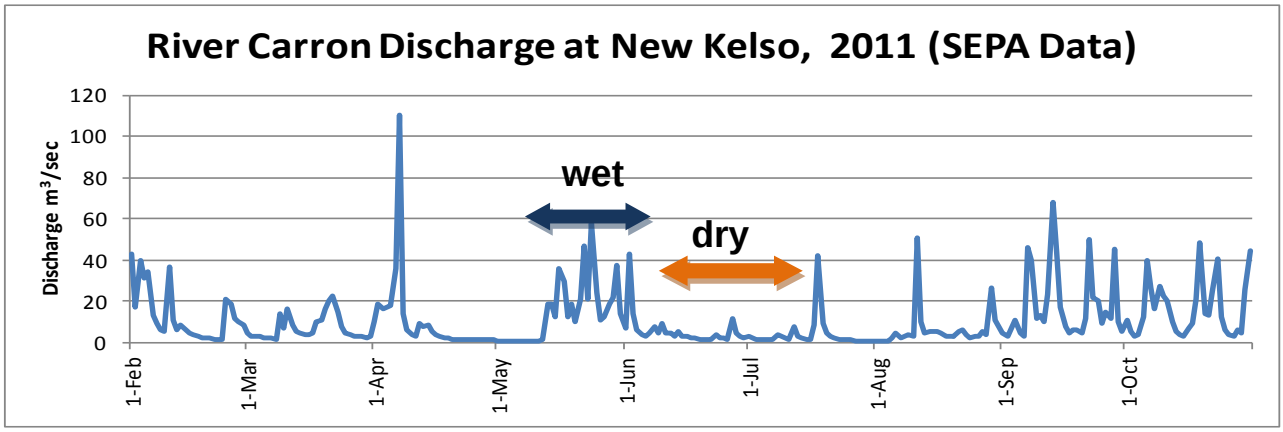
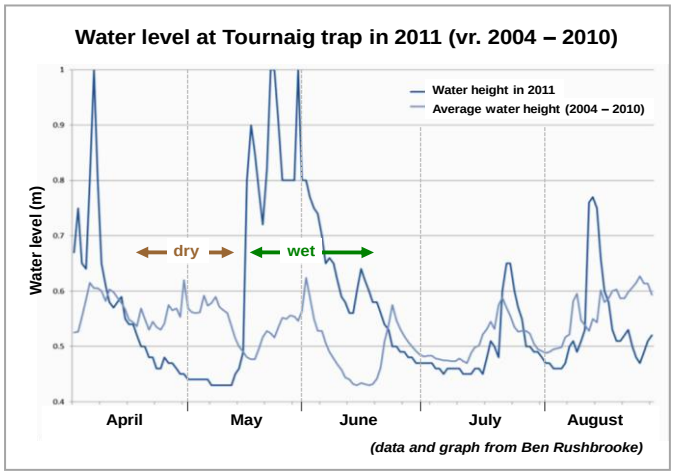


Figure 1b. Water levels recorded at the Tournaig Traps between April and August 2011.



3.2 Results of trout sampling in the sea

In total, 223 trout were sampled in the sea or in river estuaries in Wester Ross by WRFT sampling teams in 2011. Appendix 1 provides details these fish, including measurements and parasite numbers.

3.2.1 WRFT Sampling results in chronological order

The results are initially summarised here in chronological order to enable comparison with freshwater discharge into the sea. Table 1 provides a chronological (first to last) summary of all the samples of sea trout taken by WRFT as part of its Sea trout monitoring programme.

Table 1. Summary information for sea trout sampled in coastal or estuarine waters around Wester Ross in 2011.

Date	Location	Method	Sample size (no. of fish)	Number of infected fish	Abundance (= average number of lice per fish)	Average number of copepodid & chalimus	Average number of preadults & adults	Prevalence (% of sample infected with sea lice)	Intensity (= average no. of lice per infected fish)
22-Feb	Carron	sweep	6	0	0.00	0.00	0.00	0.00	**0.00**
16-Mar	Inverasdale	sweep	0						
18-Mar	Flowerdale	sweep	14	14	15.64	3.64	12.00	100.00	**15.64**
16-May	Boor Bay	sweep	3	2	14.00	4.33	9.66	66.00	**21.00**
18-May	Flowerdale	sweep	30	21	8.13	7.10	1.03	70.00	**11.61**
2-Jun	Boor Bay	sweep	31	3	0.42	0.32	0.10	10.00	**4.33**
7-Jun	Kanaird	sweep	2	0					
14-Jun	Flowerdale	sweep	11	6	7.63	1.90	5.73	54.00	**14.00**
15-Jun	Mungasdale	sweep	7	7	26.71	8.14	18.58	100.00	**26.71**
16-Jun	Boor Bay	sweep	0						
17-Jun	Carron	sweep	2	0	0.00	0.00	0.00	0.00	**0.00**
22-Jun	Kanaird	sweep	33	30	36.06	31.84	4.21	91.00	**39.67**
30-Jun	Carron	sweep	2	1	0.50	0.50	0.00	50.00	**1.00**
7-Jul	Carron	sweep	0						
12-Jul	Inverasdale	sweep	1	1	91.00	53.00	38.00	100.00	**91.00**
12-Jul	River Ewe	rod	10	10	31.80	16.90	14.90	100.00	**31.80**
Jun-Aug	Dundonnell	fyke	33	25	56.76	53.82	3.66	76.00	**74.92**
4-Aug	Flowerdale	sweep	6	6	80.50	36.16	44.33	100.00	**80.50**
31-Aug	Boor Bay	sweep	4	4	6.00	2.75	3.75	100.00	**6.00**
27-Sep	Flowerdale	sweep	28	19	6.46	2.04	4.42	68.00	**9.52**

On the 16th of March, a sample of sea trout carrying sea lice was taken in Flowerdale Bay, Loch Gairloch. No samples were taken in April. On the 16th of May a sample was taken from Boor Bay, Loch Ewe, just after the onset of much wetter weather. This sample included fish with signs of lice damage associated with high numbers of lice. Sea trout sampled at Mungasdale Bay (Gruinard Bay) on the 15th June carried pre-adult lice and also some very small chalimus lice indicative of another period of settlement. Subsequently, numbers of small chalimus lice were high on many of the small post-smolt sea trout taken at the mouth of the Kanaird River on 22nd June, and also sea trout taken in the Dundonnell Fyke net at the end of June and in early July. Sea trout taken in Flowerdale Bay, Loch Gairloch on the 4th August included some very lousy fish with mainly larger pre-adult lice. On the 27th September, lice abundance on a subsequent sample of sea trout taken at Flowerdale

was lower than in August; the September sample included two of the fish taken in August (more about them later . . .).

3.2.2 Results in geographic order (north to south)

3.2.2.1 Overview

This section provides a more detailed review of the results of sea trout sampling, presented sea loch by sea loch. Table 2 provides the same summary information as in Table 1, here the results are presented in geographical order along the coastline, north to south.

Table 2. Summary information for sea trout sampled in coastal or estuarine waters around Wester Ross in 2011 (north to south)

Date	Location	Method	Sample size (no. of fish)	Number of infected fish	Abundance (= average number of lice per fish)	Average number of copepodid & chalimus	Average number of preadults & adults	Prevalence (% of sample infected with sea lice)	Intensity (= average no. of lice per infected fish)
7-Jun	Kanaird	sweep	2	0					
22-Jun	Kanaird	sweep	33	30	36.06	31.84	4.21	91.00	39.67
Jun-Aug	Dundonnell	fyke	33	25	56.76	53.82	3.66	76.00	74.92
15-Jun	Mungasdale	sweep	7	7	26.71	8.14	18.58	100.00	26.71
12-Jul	River Ewe	rod	10	10	31.80	16.90	14.90	100.00	31.80
16-May	Boor Bay	sweep	3	2	14.00	4.33	9.66	66.00	21.00
2-Jun	Boor Bay	sweep	31	3	0.42	0.32	0.10	10.00	4.33
16-Jun	Boor Bay	sweep	0						
31-Aug	Boor Bay	sweep	4	4	6.00	2.75	3.75	100.00	6.00
16-Mar	Inverasdale	sweep	0						
12-Jul	Inverasdale	sweep	1	1	91.00	53.00	38.00	100.00	91.00
18-Mar	Flowerdale	sweep	14	14	15.64	3.64	12.00	100.00	15.64
18-May	Flowerdale	sweep	30	21	8.13	7.10	1.03	70.00	11.61
14-Jun	Flowerdale	sweep	11	6	7.63	1.90	5.73	54.00	14.00
4-Aug	Flowerdale	sweep	6	6	80.50	36.16	44.33	100.00	80.50
27-Sep	Flowerdale	sweep	28	19	6.46	2.04	4.42	68.00	9.52
22-Feb	Carron	sweep	6	0	0.00	0.00	0.00	0.00	0.00
17-Jun	Carron	sweep	2	0	0.00	0.00	0.00	0.00	0.00
30-Jun	Carron	sweep	2	1	0.50	0.50	0.00	50.00	1.00
7-Jul	Carron	sweep	0						

The main point here is that fish carrying high numbers of sea lice (> 50 lice per fish) were taken in sweep net samples at the estuaries of the Kanaird and Dundonnell rivers; at Inverasdale (Loch Ewe – just one fish), and Flowerdale (Loch Gairloch). The rod and line sample from the River Ewe in July also included fish with high numbers of sea lice. Few fish were sampled from the River Carron and those taken carried few lice.

Outwith the WRFT sea lice sampling programme, sea lice levels on sea trout taken in the lower pools of the Shieldaig River (Loch Torridon) were reported to have high numbers of sea lice relative to those taken in other years. The forthcoming MSS Shieldaig report will provide further details.

For WRFT sampling sites, the following sections provide further information about samples taken.

3.2.2.2 Kanaird

Samples of sea trout were caught in the River Kanaird estuary using a sweep net on the 7th of June and the 22nd of June.

On the 7th June only two trout were caught (of 155mm & 170mm respectively) neither of which carried any sea lice. These fish were thin, with condition factors of 0.77 & 0.81. A few lice spots were noted on these fish although there was no dorsal fin damage.

(left) The sweep netting team by the River Kanaird estuary on 7th June 2011.

On the 22nd June, 33 trout were caught in total, from 5 sweeps within the river estuary as the tide ebbed. Of these, 29 fish were 'silvery' and looked like sea trout, the four other fish were small trout with 'brown trout' colouration. 26 of the trout were grouped as post-smolt sea trout (with lengths ranging from 135mm – 249mm). From scale reading there was some uncertainty about the sea age of the largest two trout in this group (240mm & 249mm respectively). The average condition factor of these fish was 1.01 (range 0.72 – 1.16). Some of these fish were heavily infected with lice. The average *L. salmonis* lice count was of 36.48 lice per fish (range 0-124); of which the average copepodid and chalimus count was 32.11 (range 0-120).

Three larger sea trout were also caught, of 347mm, 416mm and 420mm. The largest of these fish was the best conditioned in the sample with a condition factor of 1.21. However, this fish carried 117 lice of which 97 were attached (copepodid and chalimus lice) and 20 were 'mobiles' (pre-adult and adult lice). There were no ovigerous females on this fish. This fish also had a partly eroded dorsal fin.

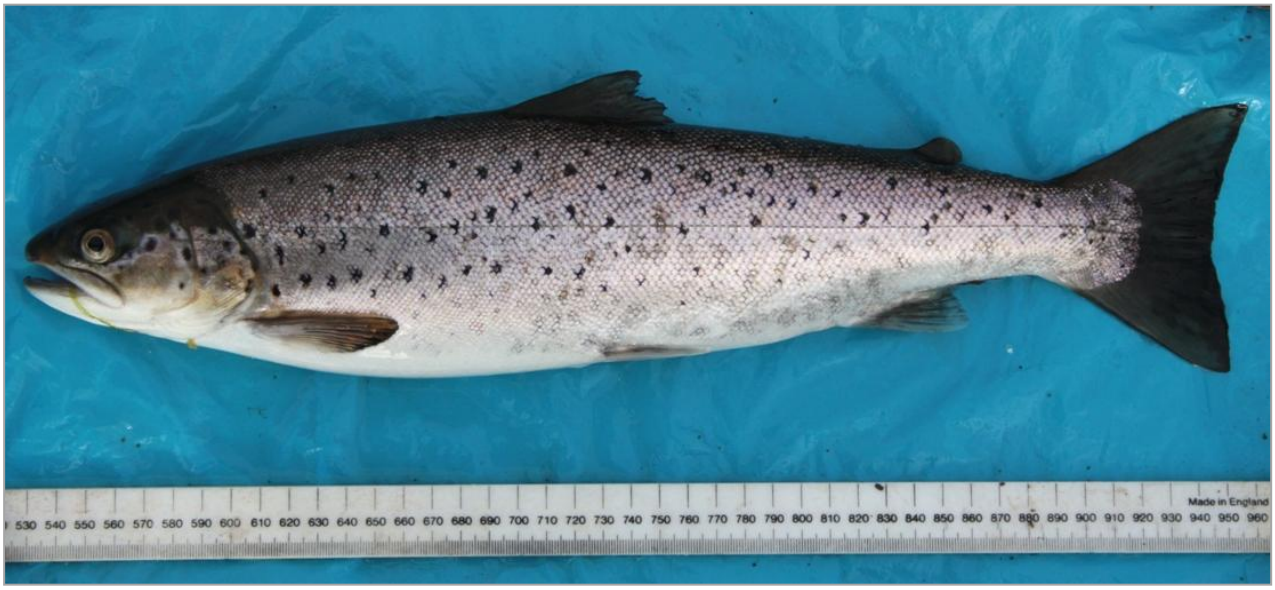
(below) Sweep netting team by the mouth of the River Kanaird on 22nd June 2011; Ben Rushbrooke counting lice on a post-smolt sea trout.

Wester Ross Wild Trout Report for 2011

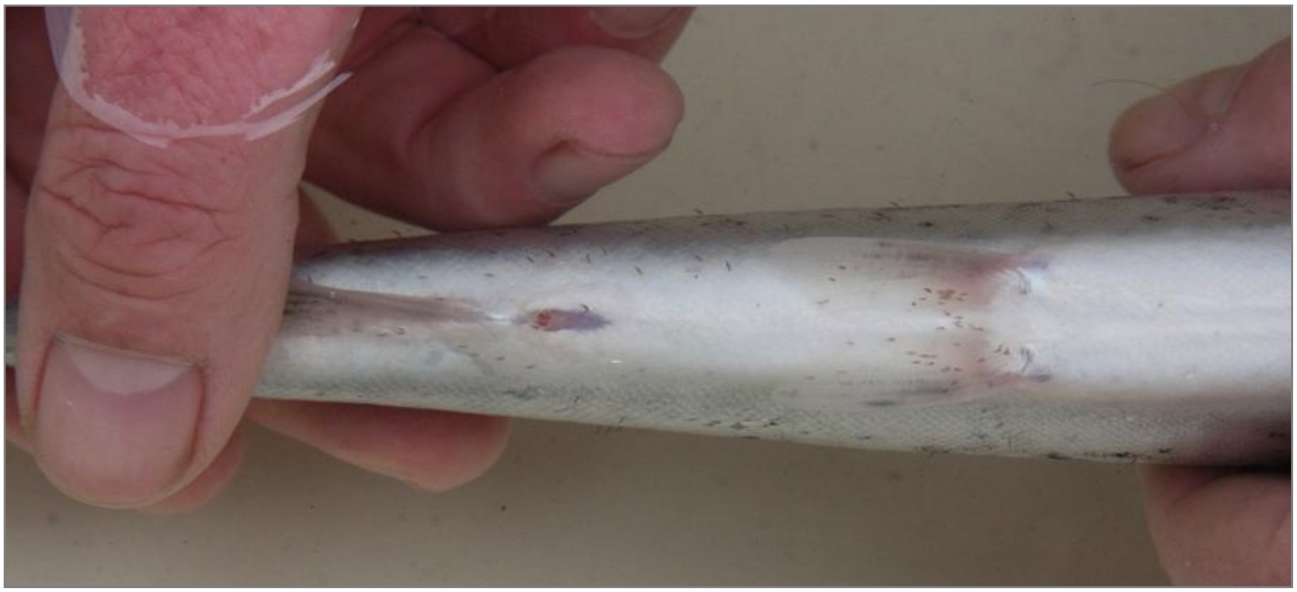
Interpretation

The high numbers of small attached lice on the post-smolt sea trout taken on 22nd June at the mouth of the River Kanaird are indicative of recent infection in nearby waters. Many of the post-smolt sea trout taken in this sample are assumed to be fish which have 'returned-early' to the estuary (fresh/brackish water) to rid themselves of lice or because of osmotic discomfort (c. Wells *et al,* 2007).

Sea trout 420mm, 895g (condition factor 1.21) with 117 L. salmonis lice, from the River Kanaird estuary on 22rd June 2011. This was the largest and best-conditioned sea trout in the sample taken that day.



Sea trout post-smolt of 229mm, 110g, (condition factor 0.92) Kanaird Estuary 22nd June 2011. In total, 120 small attached lice were recorded on this fish. Note how the lice attached to the sides of the fish can be seen when the fish is held underwater as shown (Photo by Ben Rushbrooke).



3.2.2.3 Dundonnell

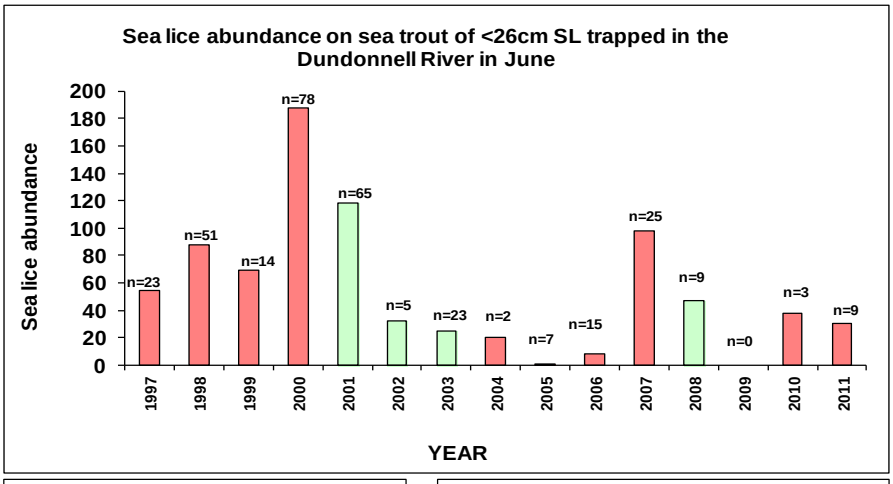
A fyke net was set in the estuary of the Dundonnell River at the head of Little Loch Broom and operated between the 21st June and the 3rd August. During this period, the net caught a total of 33 sea trout. All trout were between 160mm and 240mm in length and assumed to be post-smolt sea trout. Fish were not weighed, but some were described as 'plump' suggesting good feeding in nearby waters.

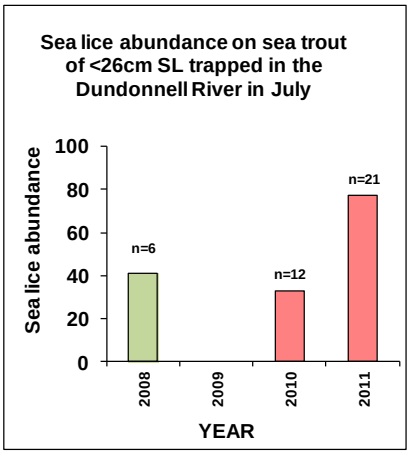
26 of the trout carried sea lice, with an average of 72.8 lice per infected fish (range 11 - 550) of which the average chalimus & copepodid count was 68.31 (range 10-500). The six fish which carried no lice when sampled all had either black marks and / or dorsal fin damage indicative of earlier infection by sea lice. Five of these fish were taken at the end of the sampling period (30th July – 3rd August) and may have shed any lice they were carrying having been back in freshwater for several weeks prior to being captured.

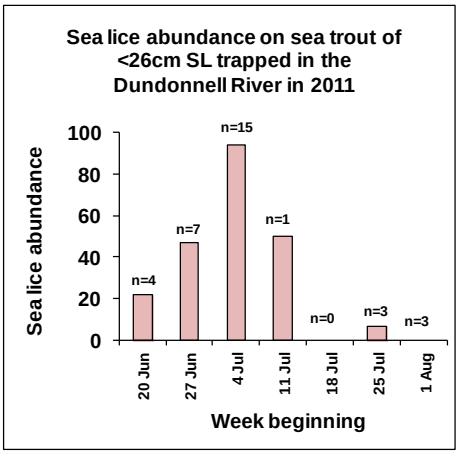
Interpretation

The high numbers of recently attached sea lice on sea trout taken towards the end of June and in early July at the mouth of the Dundonnell River indicate recent infection and very high infection pressures in nearby water. Figure 2 shows how lice abundance has varied on post-smolt sea trout sampled at Dundonnell during the period 1997 - 2011.

Figure 2. Sea lice abundance on sea trout caught in the Dundonnell River fyke net in June (below) and July (bottom left); and week by week in 2011 (bottom right). Green columns are for years when the nearby salmon farm at Ardessie has been unstocked; red columns are for when the farm was stocked.







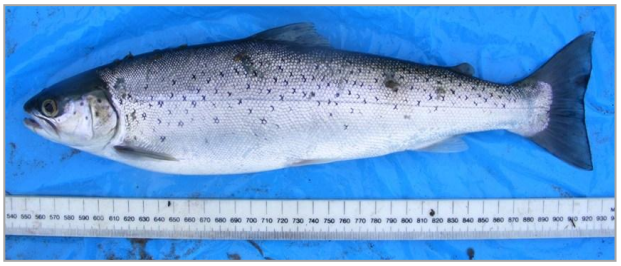
3.2.2.4 Gruinard Bay

On 15th June 2011, the WRFT sweep netting team explored the shore around the mouth of the Gruinard River. The weather was overcast, mild, with SW wind. Rain became heavy as the day progressed. The 50m x 3m sweep net (knot to knot mesh of 12mm) was set from a 'Pioner 12' boat, and pulled on shore. No sea trout were caught; the only fish of note taken were a mullet of approximately 35cm (species uncertain: photographs out of focus!) and several flounders.

Later in the day, the netting team moved to Mungasdale Bay. Seven sea trout were caught in a sweep off the mouth of the Mungasdale burn at very low tide, over a substrate of shell shingle, with patchy eel grass (*Zostera marina*) and sea weeds. The sea trout ranged in size from 294mm to 465mm. Some of the fish were quite plump, with condition factors of up to 1.15.

All the fish carried sea lice, mostly pre-adult and adult lice, with an average of 27 lice per fish (range 19 to 50). All the fish had slightly eroded dorsal fins associated with sea louse infection.

Processing sea trout taken in the sweep net on the beach at Mungasdale on the 15th June 2011; and (right) the two largest sea trout taken.



Interpretation

The sea trout sample taken at Mungasdale Bay on the 15th of June included some larger fish in their second or third summer at sea with condition factors which demonstrated good growth and reasonable feeding. The presence of older lice on fish indicated infection some weeks earlier; and smaller copepodid and chalimus lice, a more recent period of attachment, presumably in nearby waters.

Sea trout from the Gruinard River are known to migrate to the head of Little Loch Broom. A sea trout tagged on the 30th May 1998 at the mouth of the Dundonnell River was recaptured in Loch na Sealga (Butler, 2001).

3.2.2.5 Loch Ewe

Boor Bay

Sweep net sampling took place at low tide along the beach at Boor Bay on the 16th May, 2nd June, 16th June and 31st August. In total, 38 sea trout were caught of which 31 were taken on the 2nd June.

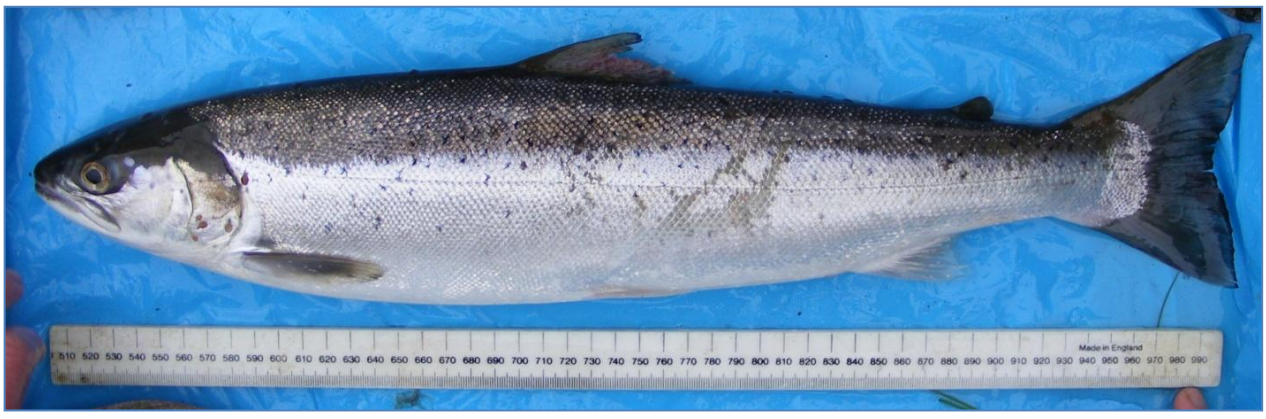
On the 16th May three sea trout were caught. The largest was a fish of 487mm, 1150g with 36 lice, of which 27 were pre-adults or adults (no ovigerous females were present). This fish had a raw, eroded dorsal fin indicative of lice damage. Salinity was measured at 14ppt, reflecting high recent discharge of freshwater into Loch Ewe.

On the 2nd June, 31 small sea trout were caught with an average length of 186mm (range 131mm – 251mm). These fish were thin, with an average condition factor 1.02. These fish carried an average of less than one louse per fish (range 0-11).

On 16th June no sea trout were caught. The site was not sweep netted again until the 31st August when 4 trout of lengths 181mm-272mm were caught. Condition factors ranged from 0.69-1.21. The average number of lice was 6 per fish (range 2-11).

Ben Rushbrooke and Roger McLachlan at Boor Bay on 31st August (photo by Clint Barker).

The fish below is the sea trout of 487mm taken on the 16th May at Boor Bay. Appendix 4 has more information about this fish.



Wester Ross Wild Trout Report for 2011

Inverasdale

An early exploratory sweep netting sampling day took place on the 16th March along shore from Midtown to Inverasdale. No sea trout were caught. Small patches of sea grass (*Zostera marina*) were noted near the slipway at Midtown.

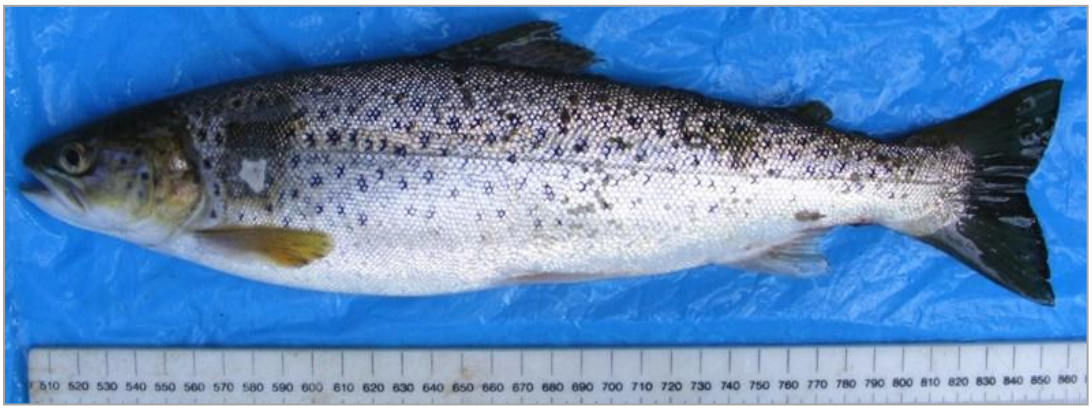
Inverasdale sweep netting day, 16th March 2011

Wester Ross Wild Trout Report for 2011

On 12th July, to accommodate filming for a BBC documentary about sea lice infection of sea trout, a sweep netting team was assembled by the shore at Inverasdale. The only sea trout taken in over 8 sweeps was a fish of 345mm with a healed scar on its flank, and 91 sea lice.

The sweep netting team including volunteers and BBC film crew at Inverasdale shore on 12th July 2011. The pictures below were mostly taken by Jane Murphy.

The sea trout of 345mm taken on 12th July 2011 in the sweep net at Inverasdale.



River Ewe

Later on the 12th July (following sweep netting at Inverasdale), 10 small sea trout were caught in a one hour sampling period (6pm – 7pm) in the Sea Pool of the River Ewe, using rod and line and a size 12 'Teal Blue and Silver'. These fish had an average length of 241mm (range 213mm - 277mm), and an average condition factor of 1.10 (range 1.02-1.17); and carried an average of 31.8 sea lice (range 5-67); of which averages of 16.9 were chalimus and copepodid lice, 14.9 preadult and adult lice. There were no ovigerous female lice on these fish.

Interpretation

No sea trout were sampled from the Loch Ewe area during the long dry spell from mid-April to mid May 2011. Following the onset of a wetter period, the large sea trout of 487mm taken on 16th May had dorsal fin damage typically associated with infection by high numbers of attached *L. salmonis*. This indicates that larval sea lice densities within the Loch Ewe area in late April and early May 2011, before the onset of higher freshwater discharge into Loch Ewe, were at levels where the health of at least some of the sea trout in the area was compromised.

The sample of 31 small post-smolts taken on the 2nd of June at Boor Bay was taken following a period of unusually heavy rain. These fish carried few lice. Lice infection pressures during this wetter period may have fallen as a result of high volumes of freshwater into the loch during preceding weeks.

No sea trout were caught at Boor Bay on the 16th June. However, on the 12th of July, the sea trout taken at Inverasdale and the small finnock taken from the River Ewe carried higher numbers of lice and are indicative of problematic levels of sea lice in the Loch Ewe area towards the end of June. An interpretation that the Ewe finnock had returned to the River Ewe prematurely is consistent with their high lice loading and dorsal fin damage. However, from scale reading, it can be seen that these fish had grown reasonably well in the sea during the weeks prior to capture. This is also indicated by condition factors higher than on the post-smolts taken on 2nd June around the corner at Boor Bay.

Table 3 and Figure 3 contrasts the condition factors of finnock taken in the Sea Pool of the River Ewe in late June - early July in 2007, 2008, 2009 and 2011. From Table 3, note that samples of sea trout taken in 2007, 2008 and 2009 were also infected with sea lice. In 2007, the sample taken in June followed earlier rod and line samples taken from as early as mid May that year, with lice levels in earlier weeks exceeding 100 lice per fish. A local source of lice larvae was indicated by high numbers of very small chalimus lice on early–returned fish in May and June that year. In 2008, lice levels were initially low on sea trout caught at Boor Bay in May using the sweep net, but much higher on finnock in the River Ewe in July. In 2009, lice levels were lower and fish were fatter (higher condition factor) than in other years. These rod and line caught samples of finnock taken from the River Ewe in early July provide a relatively consistent gauge for assessing both the growth of sea trout and sea lice infection pressures affecting sea trout in the Loch Ewe area.

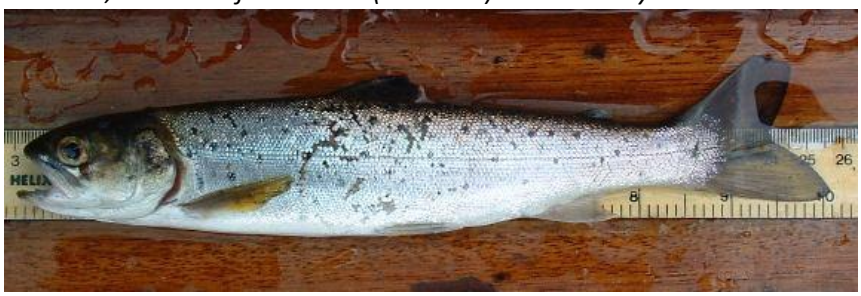
During the spring and early summer of 2011, the salmon farm in Loch Ewe reported 'very low' sea lice numbers on farmed fish; lice figures for farmed fish have not been seen. One explanation for the high numbers of lice on River Ewe finnock in July 2011 is that some of these fish encountered lice larvae emanating from the same sources as sea trout caught between mid June and early July at the mouth of River Kanaird, Dundonnell River and Gruinard Bay. This hypothesis would also fit observations in 2008 when lice levels were also very high on sea trout sampled at the head of Little Loch Broom, and the local Loch Ewe farm was in the first year of the production cycle with low lice levels. If this is indeed the case, it is therefore important for River Ewe (& Loch Maree) sea trout that the sea area in which lice are controlled at very low levels on farmed salmon extends beyond the mouth of Loch Ewe into the 'Two Brooms' area.

Wester Ross Wild Trout Report for 2011

Table 3 & Figure 3 Lice infection levels on River Ewe sampled from Sea Pool of River Ewe in the using rod and line in early July 2007, 2008, 2009 and 2011.

Year	Sampling date	Number of finnock	Average length (mm)	Range (mm)	Average condition factor	Average copepodid and chalimus	Average total number of lice	Range	Average dorsal fin damage	Comments
2007	04-Jul	13	214	190-232		10.50	15.00	0-64	1.00	lice numbers higher in June
2008	10-Jul	8	263	220-330	1.20	22.00	40.87	9-96	0.68	finnock and sea trout
2009	9&10-Jul	13	245	230-270	1.34	4.08	11.80	0-25	0.35	high condition factor elsewhere
2010	16-Jul	0								river high; 2 larger sea trout
2011	12-Jul	10	241	213-277	1.10	16.90	31.80	5-67	0.55	

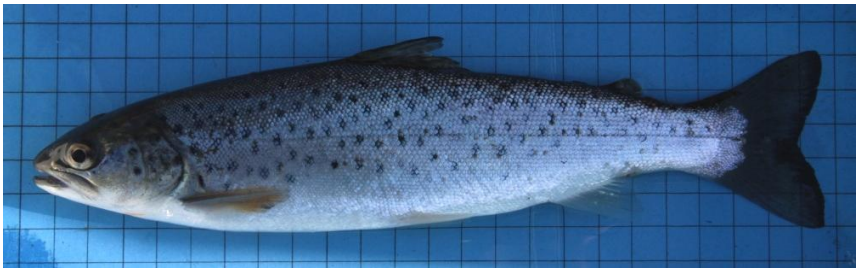
River Ewe, 14th June 2007, condition factor <1.0 (estimate): a thin 'early return' with > 30 sea lice



River Ewe, 10th July 2008; condition factor 1.25: good growth at sea

River Ewe, 10th July 2009; condition factor 1.31: exceptionally good growth at sea

River Ewe, 12th July 2011; condition factor 1.06: modest early summer growth at sea



3.2.2.6 Loch Gairloch

The results of sweep netting in Loch Gairloch in February and March 2011 are reported in the WRFT Sea lice monitoring Report for 2009-Spring 2011, which can be found on-line at:
http://www.wrft.org.uk/files/WRFTSeatroutintheSeaReport2009-spring2011.pdf

On the 18th May 2011, 30 trout were caught in a sweep of the Flowerdale River estuary. All but one of these fish (a sea trout of 300mm) was less than 200mm in length (average 153mm; range 133mm-194mm).

Some of the trout taken in the Flowerdale sweep net on 18th May 2011.

Fish were still thin with an average condition factor of 0.96 (range 0.72-1.09). 21 of the fish carried sea lice, with an abundance of 8.1 (range 0 – 48 lice per fish); with averages of 7.1 chalimus & copepodids and 1.0 adult/preadult lice per fish. There were no ovigerous female lice on any of the fish. Only the largest fish (of 300mm) had an eroded dorsal fin associated with sea lice.

On the 14th June, 11 sea trout were caught at Flowerdale, ranging in length from 123mm to 510mm. Fish were slightly fatter with an average condition factor of 1.05 (range 0.83-1.14). Six of the fish carried sea lice, with lice numbers ranging from 2 to 41, and averages of 1.9 chalimus and copepodid lice, 3.8 pre-adult and adult lice, and 1.9 ovigerous female lice per fish. Note that this sample was taken following the period of wet weather and most of the lice were older that in the sample taken on the 18th May.

On the 4thAugust, out with the RAFTS Aquaculture project, six sea trout were caught in the sweep net at Flowerdale. These included a fish of 465mm which was recognised as a fish previously caught at the mouth of the Flowerdale River in February 2011. The average condition factor was 1.11 (range 1.01-1.22). All fish carried sea lice, with very high numbers of lice on two of the fish: a finnock of 262mm with 150 chalimus lice; and an older sea trout of 282mm with 221 lice of which 209 were pre-adults and adults (including ovigerous female lice). This larger fish had a raw, eroded dorsal fin. All the other fish had damaged dorsal fins associated with lice infection.

On the 27th September, 28 trout were caught in the sweep net at Flowerdale. Many of these were large sea trout and the average length was 365mm (range 162mm-565mm). The sample included two fish that were also in the August 4th sample, and one recapture from March 2011. Recaptured fish were recognised from their spot patterns (Figure 5, fish A, B & C). Fish were thinner than on 4th August with an average condition factor of 0.96; and indeed, the two fish caught on August 4th had lost weight since their previous capture. Lice levels were generally low: nine of the fish carried no lice, and the abundance was 6.46 lice per fish (range 0 - 80). However, most of the fish had dorsal fin damage, including 4 of the fish that were lice free. The fish with 80 lice was the one that had carried 221 lice on the 4th August.

Figure 4 is a series of size-frequency graphs for trout caught in Loch Gairloch. Each year-class has been coloured differently to illustrate how year classes have grown. Fish ages are based on scale readings. Note that growth rates varied widely between individual fish: compare fish A with fish C in Figure 5.

Figure 4. Combined catches of sea trout within Loch Gairloch at sweep netting sites in Kerry Bay and Charleston Bay, indicating the numbers and sizes of fish from respective smolt-year classes caught in each sample. Year classes are coloured as follows: 2008 and earlier, blue; 2009: green, 2010: orange, and 2011: purple.

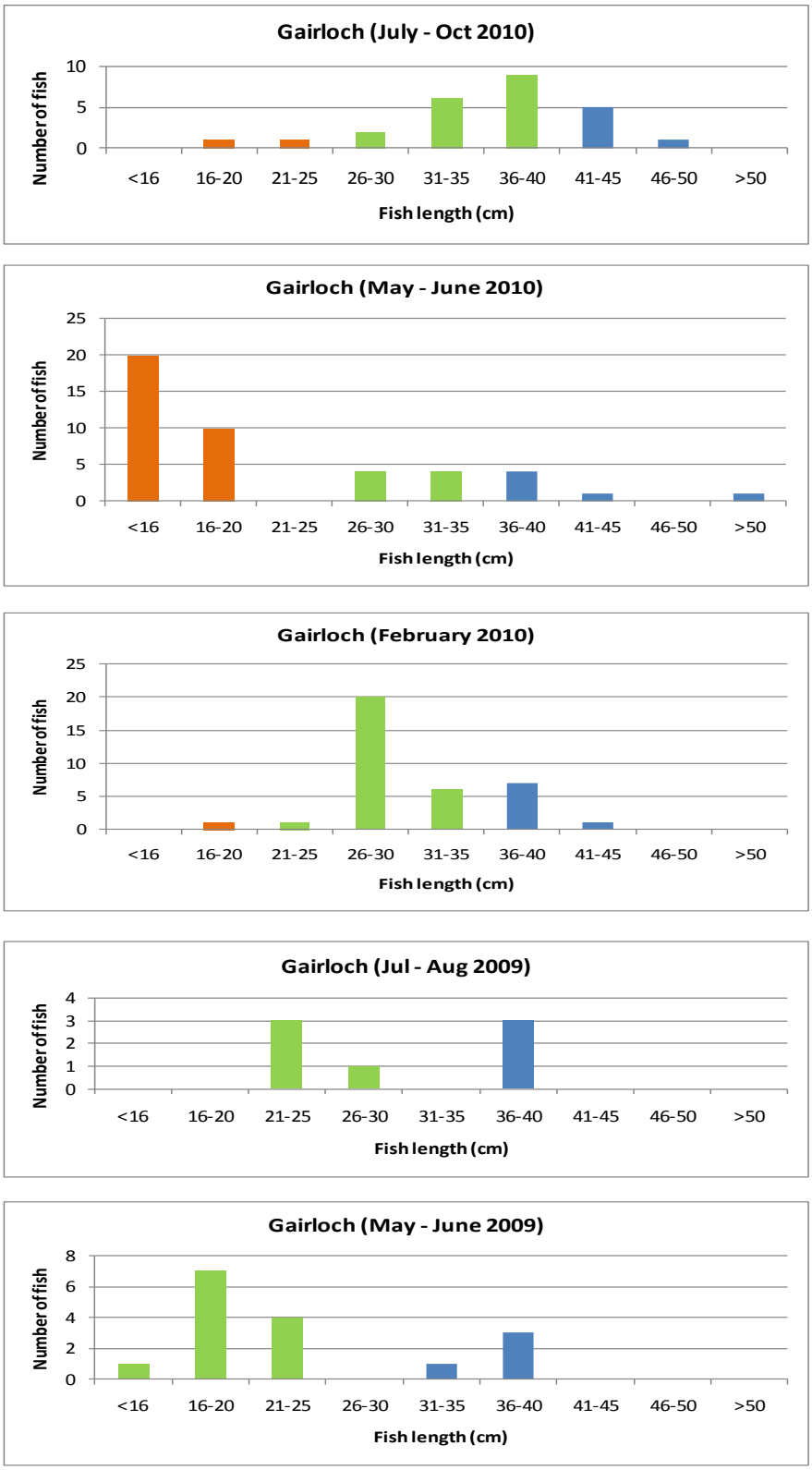
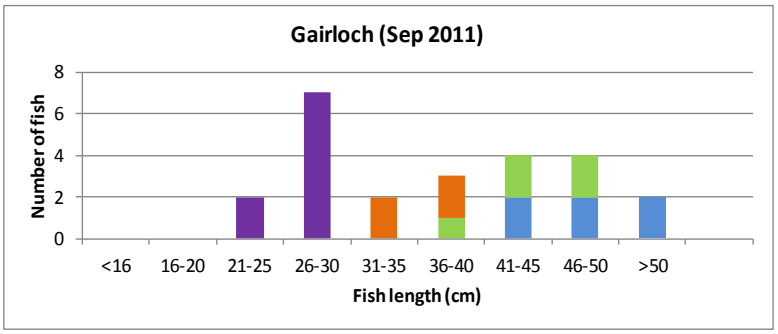
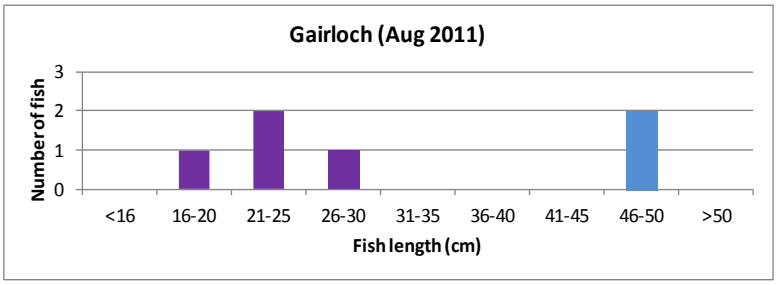
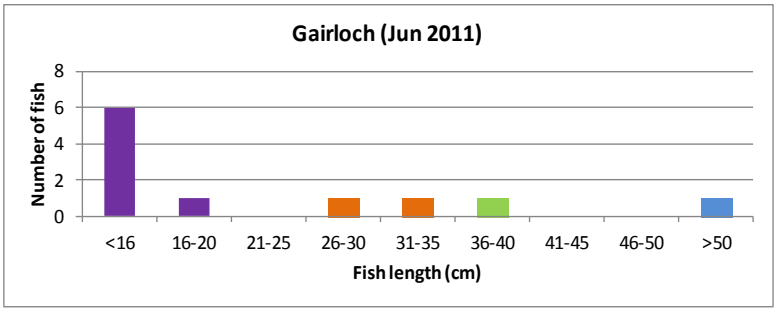
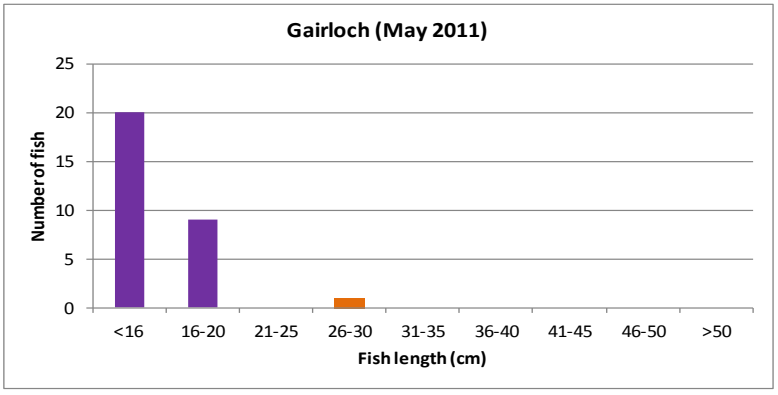


Figure 4 (continued). Combined catches of sea trout within Loch Gairloch at sweep netting sites in Kerry Bay and Charleston Bay, indicating numbers and sizes of fish from respective smolt-year classes caught in each sample. Year classes are coloured as follows: 2008 and earlier, blue; 2009: green, 2010: orange, and 2011: purple.









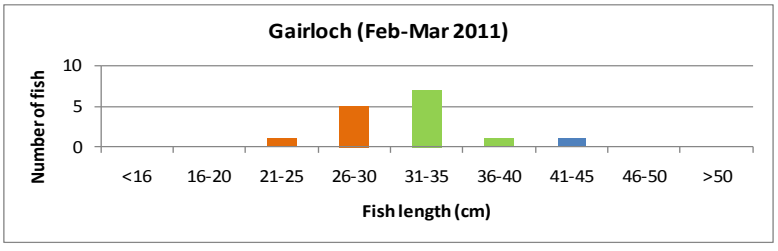
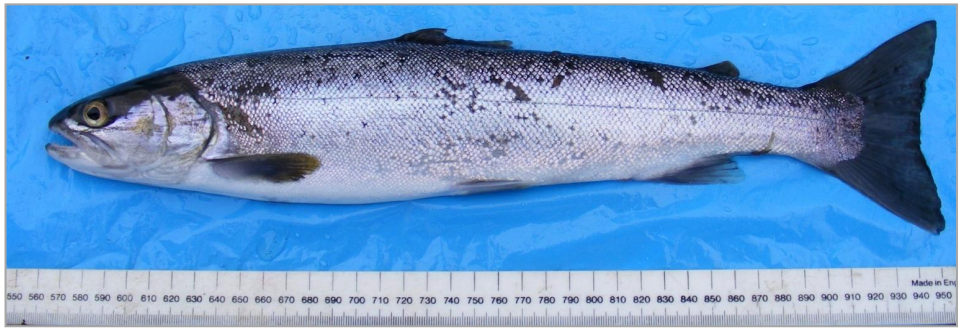
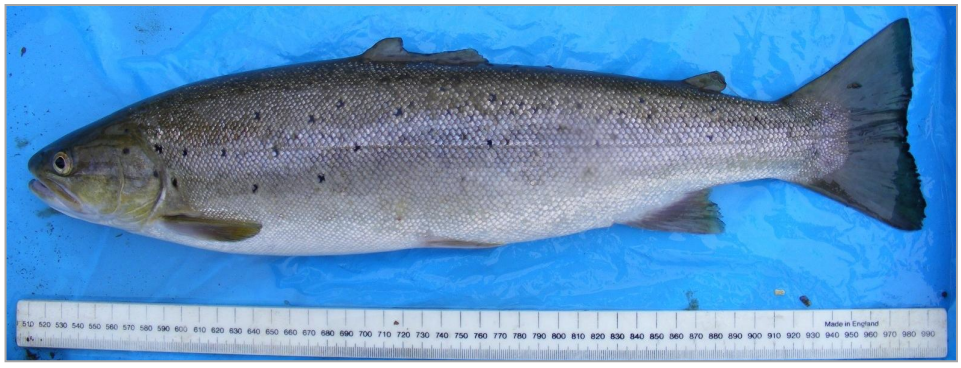


Figure 5. Recaptured Gairloch sea trout: Fish A

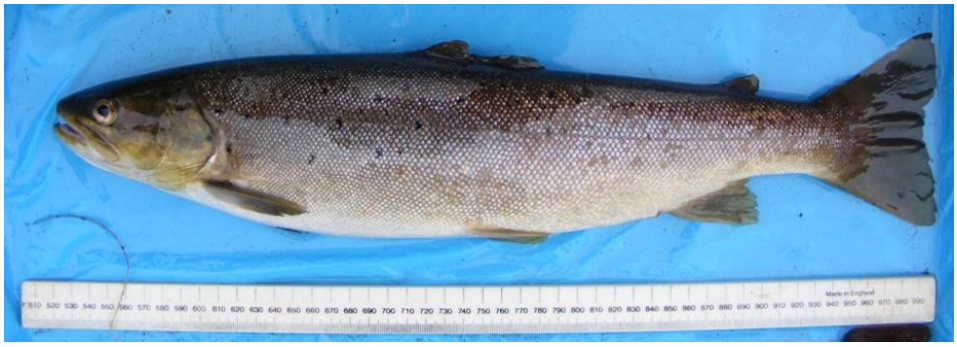
Sea trout 381mm, 471g, mouth of River Kerry, Loch Gairloch, 21st February 2011



Sea (?estuarine) trout 465mm, 1230g, condition factor 1.22, Flowerdale Bay, Loch Gairloch, 4th August 2011



Sea trout, 472mm, 1075g, condition factor 1.02, Loch Gairloch 27th September 2011

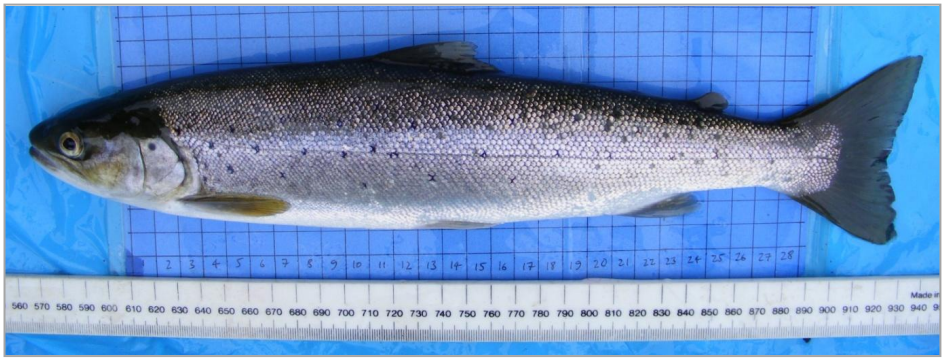


This fish, taken at mouth of River Kerry (below fish farm discharge pipe) in February, was thin with a condition factor of only 0.85. From the shape of the healed dorsal fin and the positions of black spots, a sea trout of 465mm taken at Flowerdale Bay on the 4th August is believed to be the same fish. Although only 84mm longer than when first caught in February 2011, this fish had gained 759g in weight, to reach a condition factor of 1.22. This fish was recaptured again on the 27th September, and had grown to 472mm in length, but lost over 100g in weight since the previous capture. By the 27th September, the fish, a female trout, was in spawning condition.

On the 21st February, 14 *L. salmonis* lice were counted on this fish (3 small chalimus, 10 pre-adults and adults, 1 ovigerous females). On the 4th August, 12 lice (1 chalimus, 10 pre-adults and adults, 1 ovigerous female) were recorded. Scales for this fish are shown in Appendix 4.

Figure 5 (continued). Recaptured Gairloch sea trout: Fish B

Sea trout, 350mm 416g, condition factor 0.97, Flowerdale Bay, 18th March 2011 (photo J. Tosney)



Sea trout, 392mm, 622g, 14th June 2011, condition factor 1.03, Flowerdale Bay, (photo P. Maguire)

Sea trout, 425mm, 828g, 27th September 2011, condition factor 1.08, Loch Gairloch

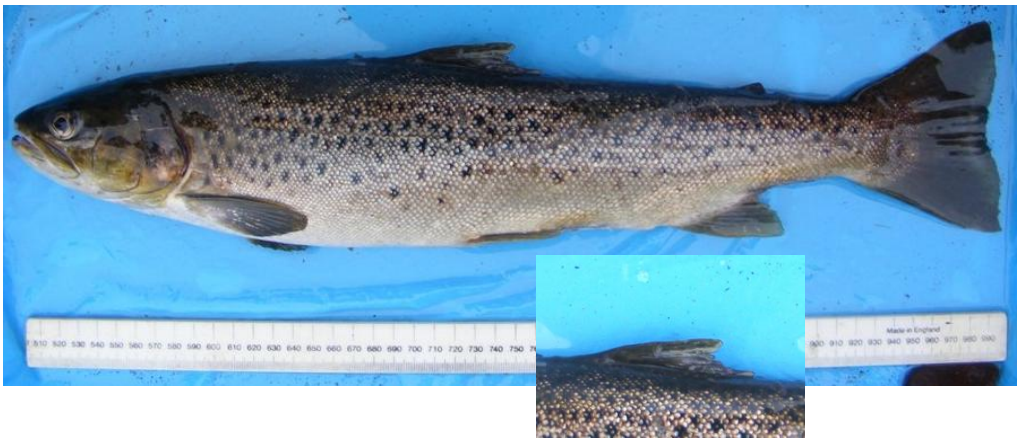
This sea trout was the best conditioned of those caught on the 18th of March 2011, the other 13 fish in the sample varied in length from 259 – 424mm, and condition factors of 0.47 – 0.86. It was recaptured on the 14th June having grown an additional 42mm in length and 206g in weight between times. The fish has been aged as a 3 or 4 year old smolt, with 1 maiden year at sea, and ?two spawning marks giving a total age of 6 or 7. The fish had 6 lice on it on the 18th March and 15 lice on the 14th June 2011, by which time the dorsal fin had become slightly damaged.

Figure 5 (continued). Recaptured Gairloch sea trout: Fish C

Sea trout, 434mm, 845g, with 27 lice, 23 Sept 2010, Flowerdale Bay

Sea trout, 482mm, 1132g, with 221 lice, taken in WRFT sweep net in Loch Gairloch on 4th August 2011

Sea trout, 487mm, 1000g, 80 sea lice, taken in WRFT sweep net in Loch Gairloch on 27th September 2011. The inset picture shows partial healing of the dorsal fin.



This fish was initially captured on the 23rd September 2010, and was already a large mature trout of 434mm. On the 4th August 2011, it was recaptured, and was heavily infected with *L. salmonis* lice with 12 chalimus lice, over 200 adult and pre-adult lice, and 9 ovigerous female lice, and had a raw, eroded dorsal fin, indicative of lice infection earlier in the summer. The fish also had high densities of *Cryptocotyle lingua* spots on its tail (approx 20 spots per cm^2 of caudal fin). The fish was captured again on the 27th September 2011 with fewer lice.

Growth curves for sea trout taken in the Flowerdale Bay sample on the 27th September 2011, based on scale readings, are shown in Figure 6.

Figure 6. Length – age plots for Loch Gairloch sea trout caught on the 27th September 2011.

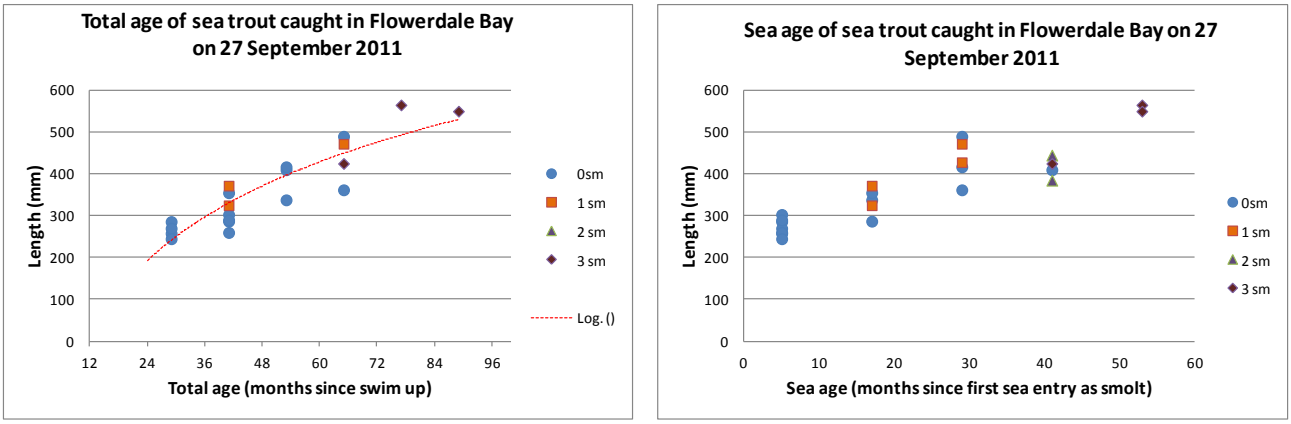
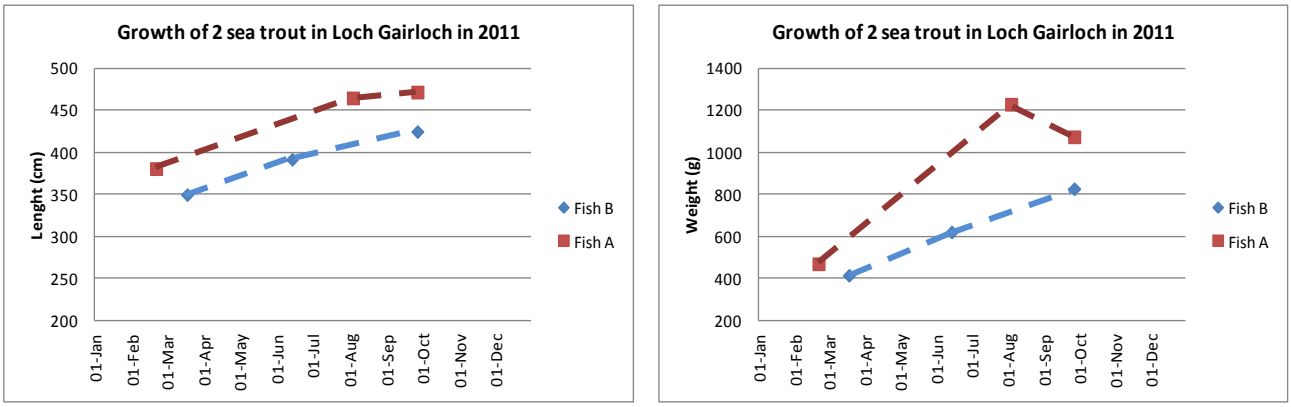


Figure 7 is a plot of the growth of two of the sea trout shown in Figure 5, 'Fish A' and 'Fish B'. Note the remarkable growth of Fish A, which was initially caught near the outlet pipe of the Kerrymouth fish farm. There were large amounts of waste feed pellets on the seabed nearby. Note, however from Figure 5, that Fish C grew much more slowly than fish A and B over the year from when it was first captured in September 2010 to when it was recaptured in September 2011.

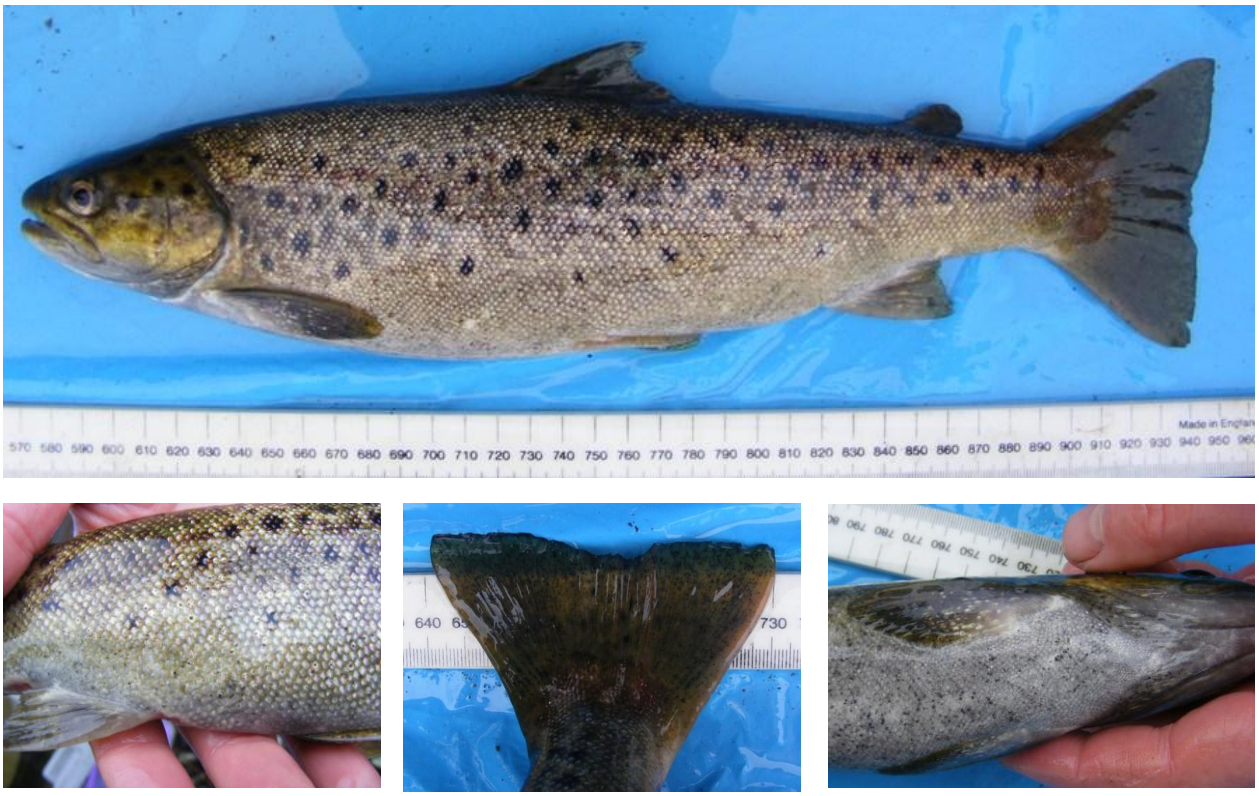
Figure 7. Growth curves for two sea trout caught on three occasions in Flowerdale Bay.



Wester Ross Wild Trout Report for 2011

As in 2010, some of the sea trout caught in Loch Gairloch were heavily infected with the parasitic trematode, *Cryptocotyle lingua.* This was discussed in the sea trout report for 2009-2011 (Cunningham, 2011). One of the most heavily infected fish taken in 2011 is shown in Figure 8.

Figure 8. Sea trout, 372mm, 585g, condition factor 1.14, with over 100 C. lingua 'spots' per cm^2 of caudal fin caught on 27th September 2011.



Interpretation

In 2011, Loch Gairloch again produced the largest sea trout sampled by WRFT during the year. Fish infected with high numbers of sea lice were caught in May (up to 48 – mainly chalimus); June (up to 41, mainly mobiles), and August: one fish with 150+ chalimus lice and another with 200+ mainly mobiles. Other fish in respective samples carried fewer lice. Loch Gairloch is as far away from a fish farm as any sea trout sampling site in Wester Ross. The nearest farms are in Loch Torridon to the south, approximately 30km away as the fish swims. It is possible that either larval lice from Loch Torridon drifted towards Loch Gairloch, or some of the sea trout from Loch Gairloch moved into Loch Torridon, or a combination of larval lice and fish movements towards each other.

3.2.2.7 River Carron estuary

In contrast to 2010, very few trout were caught in the River Carron estuary in 2011. The sea pool was sampled using a sweep net on two occasions in June 2011, and once in July 2011. In total, only 4 trout were caught, none of which were fully silvered. The largest trout caught in the River Carron estuary in 2011 is the rather fine looking trout shown in Figure 9.

At the time of sampling, we were rather perplexed about this. However, an explanation for our lack of success is offered in part 4 of this report.

Figure 9. Estuarine trout, 418mm River Carron Sea Pool, 17 June 2011

3.3 Results of trout sampling in freshwater

3.3.1 Loch Maree

On the 15th September, three boats set off from the Loch Maree Hotel to 'sample' sea trout using rod and line. With bright sunshine and blue skies the weather was perfect for an enjoyable day in a boat on the loch. However, the lack of breeze made conditions for trout fishing very challenging.

Five trout were caught. Four of these were sea trout. Three of these fish were returned following processing; unfortunately one of the fish was already dead by the time the WRFT biologist was able to measure it.

Pictures of these fish and their scales can be seen in Appendix 4.

Roger McLachlan fishing the north shore of Loch Maree on 15th September 2011.

3.3.2 Loch Kernsary sub-catchment trout

Details of trout caught in the Loch Kernsary sub-catchment in 2011 are given in Appendix 3.

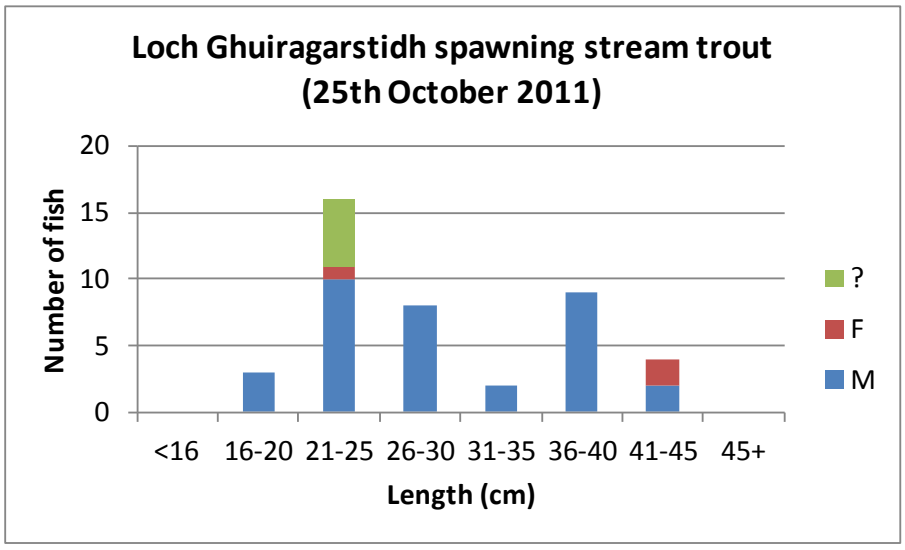
3.3.2.1 Loch Ghuiragarstidh

Trout were sampled from a spawning stream above Loch Ghuiragarstidh using a fyke net set overnight on the 25th October 2011. Our aim was to find out whether the trout included any sea trout. 42 trout were caught. The majority of the male fish were male trout with a distinctive olive – yellow colouration.

The Ghuiragarstidh fyke net set in October 2011. (right) Brown trout, male, 410mm, from Loch Ghuiragrstidh, 25th October 2011. (Photos by Ben Rushbrooke)

Figure 10 shows their size distribution. Scale samples indicated that all the trout were brown trout and had not been to sea. Some examples of these trout and their scales can be seen in Appendix 4.

Figure 10. Size-frequency distribution of trout taken in the Loch Ghuiragarstidh spawning stream on the 25th October 2011.



3.3.2.1 Loch Kernsary

On the 27th October, trout were seen in a spawning stream entering Loch Kernsary. Six trout were sampled using electro-fishing equipment from one of the pools in this burn. These fish comprised 4 male trout and 2 female trout, ranging in length from 265mm to 700mm. At least 20 other trout were seen in this stream, none as large as the 700mm fish sampled.

Scale reading indicated that none of the sampled fish were sea trout. The two larger trout had scale growth patterns characteristic of *ferox* (see Appendix 4). In contrast to the Ghuiragarstidh trout, the male trout from Kernsary had yellow-brown colouration.

To confirm whether or not any sea trout are produced within the Kernsary sub-catchment, further sampling is recommended.

Roger McLachlan and the 700mm Kernsary 'ferox' trout.

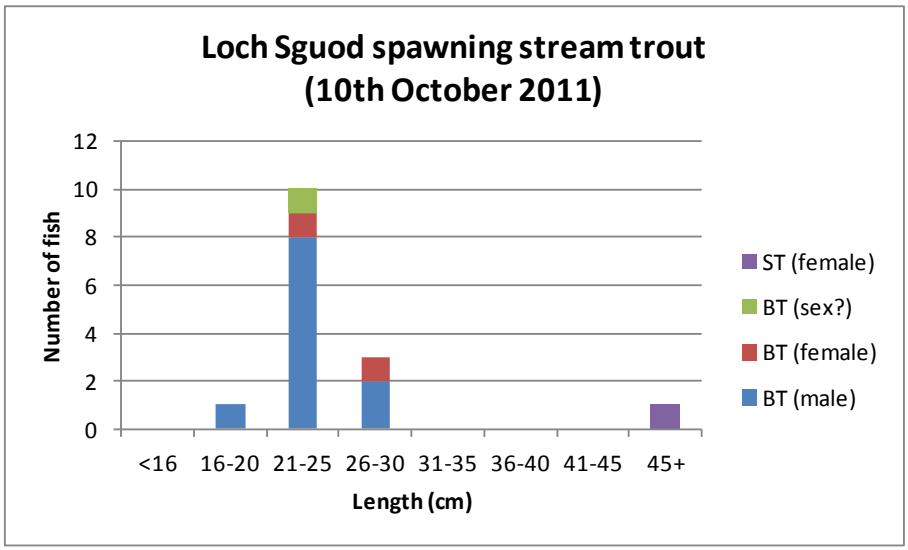
3.3.3 Sguod

On the 10th October, trout were seen in a spawning stream in the Sguod river system. To find out if sea trout were present, 15 fish were temporarily removed from the stream using electro-fishing equipment for inspection. These comprise 14 brown trout and a sea trout of 460mm.

Figure 11 shows their size distribution. The sample included a large female sea trout and two smaller female brown trout in spawning condition.

Sea trout and brown trout from spawning stream in Loch Sguod catchment, 10th October 2011.

Figure 11. Size-frequency distribution of trout sampled from a Loch Sguod spawning stream on 10th October 2011.



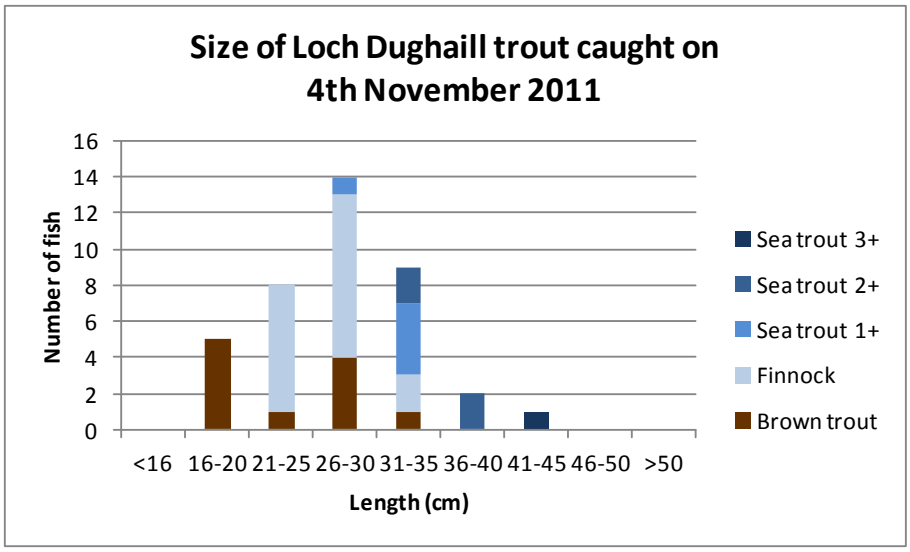
3.3.4 Loch Dhughaill

As part of the 'Arctic Charr and Wild Trout Discovery Week' in November 2011, 40 trout were caught in Loch Dhughaill. These included several trout taken as bi-catch in multi-mesh gill nets set to sample charr, and also samples of trout caught by sweep netting Broad Bay at the south western end of the loch, following the protocol described by Nall 1938.

Over 40 trout were caught, all of which were scale-sampled and photographed. From these, information about the ages of 39 trout was obtained. These fish ranged in length from 160 – 420mm. Scale reading demonstrated that a majority of trout were sea trout which had spent one summer at sea, as shown in Figure 12, and Appendix 2. These fish were of similar size for their age to those sampled in November 1936 & 1937 and described by Nall 1938. Further details of the trout of the River Carron system will be given in a future report.

Pulling in the sweep net at Big Bay, Loch Dhughaill, 4th November 2011.

Figure 12. Size and ages of sea trout and brown trout caught in Loch Dhughaill on 4th November 2011.



4. Discussion and conclusions

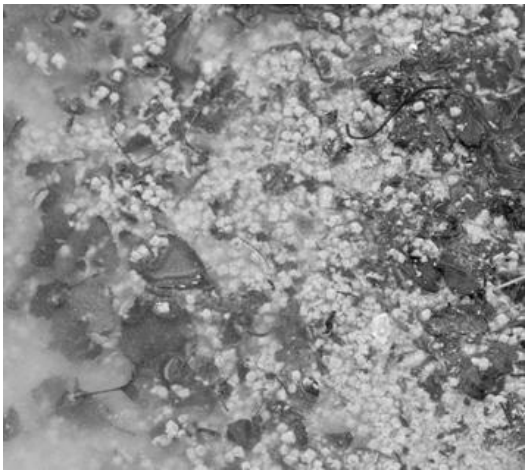
This draft report has presented only some of the results of trout sampling in 2011. It remains far from 'polished'. Other information may be added at a later date; time does not currently permit further scale reading or analyses of data collected in 2011. However, some observations have been made which provide useful information, from which a broader assessment of the status of some of the sea trout populations within the area and their performance at sea can be made.

4.1 Size and longevity of sea trout taken in 2011

The biggest and oldest sea trout sampled in 2011 were caught in Loch Gairloch. Three fish of over 50cm and several fish of over 40cm in length were caught. The largest fish were female, had already spawned several times and were in their 4th, 5th or 6th summer at sea. Loch Gairloch also produced the largest and oldest sea trout in 2009 and 2010. The sea trout of Loch Gairloch demonstrate that there is still potential to produce relatively large sea trout in Wester Ross waters.

Reasons for the longevity of Loch Gairloch sea trout are not clear. They may be entirely natural. However proximity to the Inverkerry salmon farm discharge pipe may be a factor. The pictures below, taken on 22nd February 2011 (when and near where this fish was initially caught), shows the outflow of the fish farm and waste feed pellets lying on the sea bed nearby. The sea trout which was recaptured in August (Fish A) demonstrated remarkably fast growth following initial capture in the River Kerry estuary on the 22nd February near where these pictures were taken.

River Kerry estuary, showing Inverkerry fish farm discharge pipe and (right) waste feed lying on the sea bed on 22 February 2011. No need for a Loch Gairloch fish to be hungry!



Sea trout of over 1kg (2.2lb) in their third summer at sea were also caught in Loch Ewe (16th May) and Gruinard Bay (15th June) by WRFT sweep netting teams. There were also report of other sea trout of 2lb or over taken by anglers within the area, but details were not available for this report.

The performance of the 2011 sea trout smolt –year class was mixed. Post-smolt sea trout taken in the River Kanaird and Dundonnell estuaries were generally thin for the time of year for capture, with condition factors of around only 1.0. The sample of finnock taken in the River Ewe on 12th July demonstrated steady growth of

post-smolt sea trout in Loch Ewe in the early summer of 2011. However these fish were not as fat as those taken in July 2009. Relatively few finnock were taken in Loch Gairloch: the majority of sea trout taken in the September sample were older fish.

Sweep netting teams failed to catch sea trout in the River Carron estuary during the summer of 2011. However, the November sweep net sample of sea trout from Loch Dhughaill provides useful information. The scale samples of finnock taken in Loch Dhughaill in November showed good growth (some of which are shown in Appendix 4), demonstrate generally good growth of these fish during the summer of 2011 in Loch Carron or nearby waters.

Terns, which like sea trout also feed on sandeels and 'whitebait' (sprats and herring fry), bred successfully in Loch Ewe in 2011.

4.2 Infection by parasitic sea lice

Sea trout with over 100 *Lepeophtheirus salmonis* sea lice were taken in the River Kanaird estuary, Dundonnell River estuary and in Loch Gairloch in 2011. In terms of intensity, the sample (of more than one fish) with the highest number of lice was the one taken in Loch Gairloch on 4th August. One of these fish, a large sea trout of 482mm in length, had over 200 lice (mostly older 'mobile' lice); another smaller sea trout of 262mm had 150 smaller chalimus stage lice. Other fish in this sample also carried sea lice. This sample was taken out with the RAFTS Aquaculture Project sampling period (May to early July), and demonstrates that sea trout can experience high levels of lice infection towards the end of the summer which may compromise their health.

The WRFT biologist is unaware of reports of sea trout infected by such high numbers of lice out with areas where salmon farms are present within 50km. Within the Wester Ross area, the Loch Gairloch sampling site is most distant from a marine salmon farm; the nearest farms to Flowerdale Bay are in Loch Torridon approximately 30km away. Information on sea lice in Loch Torridon in 2011 has been requested from Marine Scotland Science.

Samples of early-returned post-smolt sea trout taken in the Kanaird estuary on 22 June and Dundonnell estuary in June and early July also demonstrate high sea lice infection pressures in nearby waters. Further improvements in sea lice control on salmon farms within the Loch Broom area may be needed to reduce levels of infection by sea lice on sea trout in the loch broom – Little Loch Broom area.

The finnock caught in Loch Dhughaill in November 2011 were in good condition, with no signs of sea lice damage (e.g. eroded dorsal fin) from their time in the sea in 2011.

4.3 Sea trout populations and spawning burns

River Ewe system

In previous years, sea trout have been taken in fyke nets in spawning burns around Loch Coulin in the autumn. The Coulin and Loch Clair area is known to be one of importance to sea trout within the River Ewe system. However, less was known about the occurrence of sea trout in the Loch Kernsary sub-catchment. In 2011, the samples of trout taken from spawning burns near Kernsary provided no evidence of sea trout. Scale reading indicated that both the male and female trout sampled were freshwater loch trout; including the large 'ferox'

trout. Further investigations of trout in the Kernsary area are needed to find out whether this part of the Ewe catchment (still) produces sea trout smolts.

Loch Sguod system

With both migratory and non-migratory trout spawning together in this system, the progeny may be of mixed tendencies. Proportions of sea trout vs. brown trout in spawning streams may vary according to the relative survival of fish according to life history.

Loch Gairloch

The recapture of several sea trout in Flowerdale Bay, Loch Gairloch and the occurrence of relatively large number of mature female sea trout in the sample taken on 27th September suggests that this sea trout population, is not large (possibly 50-100 mature adult sea trout), and remains within Loch Gairloch. This is also supported by the higher prevalence of *Cryptocotyle lingua* on Loch Gairloch sea trout than on sea trout taken in other areas. There are anecdotes of sea trout being seen in the Flowerdale burn, and it seems likely that most of the sampled fish belong to a Flowerdale burn sea trout populations which runs up the burn to spawn later in the autumn when flows are high. The Flowerdale burn has a few deep pools and no lochs, and therefore provides relatively little cover for larger trout, compared to systems with freshwater lochs. The majority of the adult trout population (at least the female trout) are therefore likely to be sea going fish; as represented by the sample taken on 27th September.

River Carron system

Initial analyses of data collected from trout sampled in Loch Dughaill indicates that adult sea trout outnumber adult brown trout in this system. Indeed, the composition of catches taken in Loch Dhughaill in November 2011 was similar to that taken in November 1936 and 1937 in terms of numbers of sea trout vs. brown trout; and the growth and size of finnock (0+ sea trout). The Carron system has been stocked with sea trout progeny over the past ten years, and some of the fish taken may be of stocked origin; this could not be deduced from initial scale reading. Additional data for trout taken in Loch Sgamhainn in 2011 can be added to a future report on the status of trout and sea trout populations within the River Carron system.

Loch Maree 15 Sept 2011

5. Acknowledgements

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Alasdair MacDonald (Dundonnell Estate), Sally Clements and Brian Fraser (Eilean Darach Estate) operated the fyke net at the mouth of the Dundonnell River.

The sweep netting programme in May, June and July was part-funded by the Scottish Government as part of the RAFTS Aquaculture Project. Thank you to all the estates, particularly Dundonnell and Tournaig, and helpers, especially volunteers, for their support with sweep netting and other sampling of sea trout and brown trout during the year.

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Appendix 1: Sea lice data for trout sampled by WRFT in 2011 (sweep netting part-funded by the Scottish Government via RAFTS)

									Caligus	*Lepeophtheirus salmonis*						*Cryptocotyle lingua*		
No.	**Location**	**Date**	**Method**	**Riv /Est / Beach**	**Sal/St**	**Length (mm)**	**Weight (g)**	**Condition factor**	**total**	**Chalimus**	**Pre-adult & adult**	**Ovigerous female**	**Total**	**Dorsal damage**	**Spots**	**densities (spots /cm^3)**	**Predator damage?**	**Comments**
1	River Carron	22-Feb-11	Sweep	estuary	T	393		0.00	0	0	0	0	0	0		5		
2	River Carron	22-Feb-11	Sweep	estuary	T	407		0.00	0	0	0	0	0	0				
3	River Carron	22-Feb-11	Sweep	estuary	T	387		0.00	0	0	0	0	0	0				
4	River Carron	22-Feb-11	Sweep	estuary	T	387		0.00	0	0	0	0	0	0				
5	River Carron	22-Feb-11	Sweep	estuary	T	384		0.00	0	0	0	0	0	0				
6	River Carron	22-Feb-11	Sweep	estuary	T	345		0.00	0	0	0	0	0	0			Y	Tail fin damage
7	Charleston Bay	18-Mar-11	sweep	estuary	ST	333	290	0.79	0	4	1	0	5	0.5	N	10	N	
8	Charleston Bay	18-Mar-11	sweep	estuary	ST	355	380	0.85	0	3	5	3	11	0.5	N	0	Y	Beak. Deformed right pectoral fin
9	Charleston Bay	18-Mar-11	sweep	estuary	ST	350	416	0.97	0	2	4	0	6	0	N	0	Y	
10	Charleston Bay	18-Mar-11	sweep	estuary	ST	306	231	0.81	0	3	12	1	16	0.5		5		
11	Charleston Bay	18-Mar-11	sweep	estuary	ST	296	206	0.79	0	2	3	2	7	0.5		30		
12	Charleston Bay	18-Mar-11	sweep	estuary	ST	318	278	0.86	0	0	2	1	3	0.2		50		
13	Charleston Bay	18-Mar-11	sweep	estuary	ST	279	152	0.70	0	9	15	0	24	0.5		10	Y	beak tail and flank
14	Charleston Bay	18-Mar-11	sweep	estuary	ST	331	196	0.54	0	6	13	14	33	1.5		0		ulceration on head
15	Charleston Bay	18-Mar-11	sweep	estuary	ST	251	105	0.66	0	1	14	8	23	0.5		0		
16	Charleston Bay	18-Mar-11	sweep	estuary	ST	295	145	0.56	0	2	1	0	3	0		0	Y	beak slightly deformed tail
17	Charleston Bay	18-Mar-11	sweep	estuary	ST	324	178	0.52	0	13	54	2	69	1		0	Y	heron
18	Charleston Bay	18-Mar-11	sweep	estuary	ST	288	119	0.50	0	0	2	3	5	0.2		1	Y	bird
19	Charleston Bay	18-Mar-11	sweep	estuary	ST	337	180	0.47	0	6	2	0	8	0.2		0		possible fin clip
20	Charleston Bay	18-Mar-11	sweep	estuary	ST	424	380	0.50	0	0	5	1	6	0.5		0		
21	Boor Bay	16-May-11	sweep	beach	ST	245	143	0.97	0	4	2	0	6	0	N	0	Y	
22	Boor Bay	16-May-11	sweep	beach	ST	187	53	0.81	0	0	0	0	0	0				
23	Boor Bay	16-May-11	sweep	beach	ST	487	1150	1.00	0	9	27	0	36	2	Y		Y	Dorsal fin raw. Healed lice damage on back.
24	Charleston Bay	18-May-11	sweep	estuary	ST	155	38	1.02	0	23	1	0	24	0	N	0	N	
25	Charleston Bay	18-May-11	sweep	estuary	ST	145	29	0.95	0	5	0	0	5	0	N	0	N	
26	Charleston Bay	18-May-11	sweep	estuary	ST	162	48	1.13	0	10	1	0	11	0	N	0	N	
27	Charleston Bay	18-May-11	sweep	estuary	ST	133	22	0.94	0	0	0	0	0	0	N	0	N	
28	Charleston Bay	18-May-11	sweep	estuary	ST	160	46	1.12	0	7	0	0	7	0	N	0	N	
29	Charleston Bay	18-May-11	sweep	estuary	ST	170	48	0.98	0	9	4	0	13	0	N	1	N	
30	Charleston Bay	18-May-11	sweep	estuary	ST	160	38	0.93	0	29	2	0	31	0	N	1	N	
31	Charleston Bay	18-May-11	sweep	estuary	ST	194	73	1.00	0	44	4	0	48	0	N	0	N	
32	Charleston Bay	18-May-11	sweep	estuary	ST	133	27	1.15	0	0	0	0	0	0	N	0	N	
33	Charleston Bay	18-May-11	sweep	estuary	ST	185	65	1.03	0	6	5	0	11	0	N	0	N	
34	Charleston Bay	18-May-11	sweep	estuary	ST	184	62	1.00	0	14	2	0	16	0	N	4	N	
35	Charleston Bay	18-May-11	sweep	estuary	ST	176	55	1.01	0	8	4	0	12	0	N	0	N	high winds
36	Charleston Bay	18-May-11	sweep	estuary	ST	155	37	0.99	0	4	0	0	4	0	N	0	N	
37	Charleston Bay	18-May-11	sweep	estuary	ST	147	30	0.94	0	0	0	0	0	0	N	0	N	
38	Charleston Bay	18-May-11	sweep	estuary	ST	152	32	0.91	0	6	0	0	6	0	N	0	N	half tail missing

Wester Ross Wild Trout Report for 2011

39	Charleston Bay	18-May-11	sweep	estuary	ST	137	26	1.01	0	6	0	0	6	0	N	2	N	
40	Charleston Bay	18-May-11	sweep	estuary	ST	136	19	0.76	0	2	0	0	2	0	N	6	N	
41	Charleston Bay	18-May-11	sweep	estuary	ST	143	24	0.82	0	0	0	0	0	0	N	0	N	
42	Charleston Bay	18-May-11	sweep	estuary	ST	133	21	0.89	0	0	0	0	0	0	N	1	N	
43	Charleston Bay	18-May-11	sweep	estuary	ST	148	33	1.02	0	0	1	0	1	0	N	0	N	
44	Charleston Bay	18-May-11	sweep	estuary	ST	300	295	1.09	0	4	1	0	5	1.5	N	0	N	
45	Charleston Bay	18-May-11	sweep	estuary	ST	186	70	1.09	0	15	2	0	17	0	N	0	N	
46	Charleston Bay	18-May-11	sweep	estuary	ST	151	35	1.02	0	6	0	0	6	0	N	0	N	windy
47	Charleston Bay	18-May-11	sweep	estuary	ST	137	24	0.93	0	0	1	0	1	0	N	0	N	
48	Charleston Bay	18-May-11	sweep	estuary	ST	153	39	1.09	0	9	3	0	12	0	N	0	N	windy
49	Charleston Bay	18-May-11	sweep	estuary	ST	128	15	0.72	0	0	0	0	0	0	N	0	N	
50	Charleston Bay	18-May-11	sweep	estuary	ST	146	27	0.87	0	0	0	0	0	0	N	0	N	
51	Charleston Bay	18-May-11	sweep	estuary	T	158	32	0.81	0	0	0	0	0	0	N	0	Y	brown trout tail damaged
52	Charleston Bay	18-May-11	sweep	estuary	ST	144	25	0.84	0	0	0	0	0	0	N	0	N	windy
53	Charleston Bay	18-May-11	sweep	estuary	ST	147	28	0.88	0	6	0	0	6	0	N	0	N	
54	Boor Bay	2-Jun-11	sweep	beach	ST	199	93	1.18	0	0	0	0	0	0			N	
55	Boor Bay	2-Jun-11	sweep	beach	ST	162	34	0.80	0	0	0	0	0	0			N	
56	Boor Bay	2-Jun-11	sweep	beach	ST	191	76	1.09	0	0	0	0	0	0			N	
57	Boor Bay	2-Jun-11	sweep	beach	ST	251	165	1.04	0	0	0	0	0	0			N	
58	Boor Bay	2-Jun-11	sweep	beach	ST	200	78	0.98	0	0	0	0	0	0			Y	beakmark
59	Boor Bay	2-Jun-11	sweep	beach	ST	198	78	1.00	0	0	0	0	0	0			N	
60	Boor Bay	2-Jun-11	sweep	beach	ST	162	42	0.99	0	0	1	0	1	0			N	
61	Boor Bay	2-Jun-11	sweep	beach	ST	210	120	1.30	0	0	0	0	0	0			N	
62	Boor Bay	2-Jun-11	sweep	beach	ST	236	151	1.15	0	0	0	0	0	0			N	
63	Boor Bay	2-Jun-11	sweep	beach	ST	193	68	0.95	0	0	0	0	0	0			N	
64	Boor Bay	2-Jun-11	sweep	beach	ST	196	87	1.16	0	0	0	0	0	0			N	
65	Boor Bay	2-Jun-11	sweep	beach	ST	180	62	1.06	0	0	0	0	0	0			N	
66	Boor Bay	2-Jun-11	sweep	beach	ST	180	68	1.17	0	0	0	0	0	0			N	
67	Boor Bay	2-Jun-11	sweep	beach	ST	164	47	1.07	0	0	0	0	0	0			N	
68	Boor Bay	2-Jun-11	sweep	beach	ST	165	48	1.07	0	0	0	0	0	0			N	
69	Boor Bay	2-Jun-11	sweep	beach	ST	211	98	1.04	0	0	1	0	1	0			N	
70	Boor Bay	2-Jun-11	sweep	beach	ST	131	23	1.02	0	0	0	0	0	0			N	
71	Boor Bay	2-Jun-11	sweep	beach	ST	197	58	0.76	0	0	0	0	0	0			Y	bird. Thin fish
72	Boor Bay	2-Jun-11	sweep	beach	ST	216	107	1.06	0	0	0	0	0	0			Y	bird
73	Boor Bay	2-Jun-11	sweep	beach	ST	190	77	1.12	0	0	0	0	0	0			N	
74	Boor Bay	2-Jun-11	sweep	beach	ST	172	47	0.92	0	0	0	0	0	0			N	
75	Boor Bay	2-Jun-11	sweep	beach	ST	182	54	0.90	0	0	0	0	0	0			Y	tail
76	Boor Bay	2-Jun-11	sweep	beach	ST	153	47	1.31	0	0	0	0	0	0			N	
77	Boor Bay	2-Jun-11	sweep	beach	ST	160	36	0.88	0	0	0	0	0	0			N	
78	Boor Bay	2-Jun-11	sweep	beach	ST	193	71	0.99	0	0	0	0	0	0			N	
79	Boor Bay	2-Jun-11	sweep	beach	ST	160	36	0.88	0	0	0	0	0	0			Y	Bird

Wester Ross Wild Trout Report for 2011

80	Boor Bay	2-Jun-11	sweep	beach	ST	181	55	0.93	0	0	0	0	0	0			N	
81	Boor Bay	2-Jun-11	sweep	beach	ST	175	58	1.08	0	0	0	0	0	0			Y	one side
82	Boor Bay	2-Jun-11	sweep	beach	ST	230	129	1.06	0	10	1	0	11	0			N	
83	Boor Bay	2-Jun-11	sweep	beach	ST	172	47	0.92	0	0	0	0	0	0			N	
84	Boor Bay	2-Jun-11	sweep	beach	ST	168	41	0.86	0	0	0	0	0	0			N	
85	Kanaird	7-Jun-11	sweep	estuary	ST	155	30	0.81	0	0	0	0	0	0	Y		N	Lice spots
86	Kanaird	7-Jun-11	sweep	estuary	ST	170	38	0.77	0	0	0	0	0	0	Y		N	Lice spots
87	Charleston Bay	14-Jun-11	sweep	estuary	ST	305	321	1.13	0	1	7	2	10	1.5		20		
88	Charleston Bay	14-Jun-11	sweep	estuary	ST	333	420	1.14	0	5	7	2	14	1.5		20		
89	Charleston Bay	14-Jun-11	sweep	estuary	ST	148	34	1.05	0	0	0	0	0	0		0		
90	Charleston Bay	14-Jun-11	sweep	estuary	ST	132	19	0.83	0	0	0	0	0	0		15		
91	Charleston Bay	14-Jun-11	sweep	estuary	ST	392	622	1.03	0	8	6	1	15	1		1		recapture - caught in March 2011
92	Charleston Bay	14-Jun-11	sweep	estuary	ST	123	18	0.97	0	0	0	0	0	0		0		
93	Charleston Bay	14-Jun-11	sweep	estuary	ST	143	32	1.09	0	0	1	1	2	0		1		
94	Charleston Bay	14-Jun-11	sweep	estuary	ST	146	32	1.03	0	0	0	0	0	0		4		
95	Charleston Bay	14-Jun-11	sweep	estuary	ST	510	1373	1.04	0	6	20	15	41	0		2		split fin. Top of tail damaged.
96	Charleston Bay	14-Jun-11	sweep	estuary	ST	170	56	1.14	0	0	0	0	0	0		3		
97	Charleston Bay	14-Jun-11	sweep	estuary	ST	130	25	1.14	0	1	1	0	2	0		1		
98	Mungasdale	15-Jun-11	sweep	estuary	ST	300	305	1.13	0	3	12	4	19	0.5	Y	0	N	
99	Mungasdale	15-Jun-11	sweep	estuary	ST	465	1016	1.01	0	0	14	17	31	0.5	Y	0		
100	Mungasdale	15-Jun-11	sweep	estuary	ST	340	453	1.15	1	2	10	7	19	1	Y	1		
101	Mungasdale	15-Jun-11	sweep	estuary	ST	294	286	1.13	0	6	10	5	21	1	Y	0		
102	Mungasdale	15-Jun-11	sweep	estuary	ST	342	400	1.00	0	12	7	5	24	0.5	Y	0		
103	Mungasdale	15-Jun-11	sweep	estuary	ST	363	551	1.15	1	6	6	11	23	0.5	Y	0		
104	Mungasdale	15-Jun-11	sweep	estuary	ST	409	755	1.10	0	28	13	9	50	1	Y	0	Y	tail
105	River Carron	17-Jun-11	sweep	estuary	T	418	775	1.06	0	0	0	0	0	0	Y	0	N	3 *Paragnathia*
106	River Carron	17-Jun-11	sweep	estuary	T	329	384	1.08	0	0	0	0	0	0	N	0	N	
107	Dundonnell	21-Jun-11	fyke	estuary	ST	185	no data	#VALUE!	0	0	0	0	0	0	Y		N	y
108	Kanaird	22-Jun-11	sweep	estuary	ST	229	110	0.92	0	120	0	0	120	0	Y	0	N	very small chalimus lice
109	Kanaird	22-Jun-11	sweep	estuary	ST	347	435	1.04	0	22	1	0	23	0	y	0	Y	
110	Kanaird	22-Jun-11	sweep	estuary	ST	206	88	1.01	0	42	7	0	49	0	y	0	Y	varied size of chalimus
111	Kanaird	22-Jun-11	sweep	estuary	ST	173	45	0.87	0	35	0	0	35	0	y	0	N	
112	Kanaird	22-Jun-11	sweep	estuary	ST	128	15	0.72	0	2	0	0	2	0	n	0	N	windy
113	Kanaird	22-Jun-11	sweep	estuary	T	119	10	0.59	0	0	0	0	0	0	n	0	N	windy
114	Kanaird	22-Jun-11	sweep	estuary	ST	173	45	0.87	0	3	0	0	3	0	n	0	N	
115	Kanaird	22-Jun-11	sweep	estuary	ST	167	52	1.12	0	3	0	0	3	0	y	0	N	
116	Kanaird	22-Jun-11	sweep	estuary	ST	416	646	0.90	0	64	0	0	64	0	n	0	N	
117	Kanaird	22-Jun-11	sweep	estuary	ST	420	895	1.21	0	97	20	0	117	1	y	0	N	
118	Kanaird	22-Jun-11	sweep	estuary	ST	164	40	0.91	0	7	2	0	9	0	y	0	N	
119	Kanaird	22-Jun-11	sweep	estuary	ST	222	116	1.06	0	23	0	0	23	0	y	0	N	

Wester Ross Wild Trout Report for 2011

120	Kanaird	22-Jun-11	sweep	estuary	ST	213	108	1.12	0	47	4	0	51	0	y	0	N	
121	Kanaird	22-Jun-11	sweep	estuary	ST	193	78	1.08	0	35	0	0	35	0	y	0	N	
122	Kanaird	22-Jun-11	sweep	estuary	ST	212	110	1.15	0	86	9	0	95	0	y	0	N	white worm
123	Kanaird	22-Jun-11	sweep	estuary	ST	240	138	1.00	0	24	0	0	24	1	y	0	N	
124	Kanaird	22-Jun-11	sweep	estuary	ST	233	123	0.97	0	31	2	0	33	1	y	0	N	white-orange worm in vent
125	Kanaird	22-Jun-11	sweep	estuary	ST	197	71	0.93	0	17	0	0	17	0	y	0	N	
126	Kanaird	22-Jun-11	sweep	estuary	ST	222	105	0.96	0	75	15	0	90	1	y	0	N	
127	Kanaird	22-Jun-11	sweep	estuary	ST	191	80	1.15	0	18	0	1	19	0	y	0	N	
128	Kanaird	22-Jun-11	sweep	estuary	ST	210	106	1.14	0	15	1	0	16	0	y	0	N	
129	Kanaird	22-Jun-11	sweep	estuary	ST	203	89	1.06	0	115	9	0	124	1	y	0	N	
130	Kanaird	22-Jun-11	sweep	estuary	ST	232	134	1.07	0	8	0	0	8	0	y	0	N	
131	Kanaird	22-Jun-11	sweep	estuary	ST	197	77	1.01	0	13	61	0	74	2	y	0	N	rough looking dorsal fin
132	Kanaird	22-Jun-11	sweep	estuary	ST	191	70	1.00	0	13	0	0	13	0	y	0	N	
133	Kanaird	22-Jun-11	sweep	estuary	ST	200	85	1.06	0	24	0	0	24	0	y	0	N	
134	Kanaird	22-Jun-11	sweep	estuary	ST	206	78	0.89	0	54	5	0	59	2	n	0	N	
135	Kanaird	22-Jun-11	sweep	estuary	ST	249	165	1.07	0	35	0	0	35	0	y	0	N	
136	Kanaird	22-Jun-11	sweep	estuary	ST	203	83	0.99	0	7	2	0	9	0	y	0	N	
137	Kanaird	22-Jun-11	sweep	estuary	ST	205	100	1.16	0	15	0	0	15	0	y	0	N	
138	Kanaird	22-Jun-11	sweep	estuary	T	116	7	0.45	0	0	0	0	0	0	n	0	N	
139	Kanaird	22-Jun-11	sweep	estuary	T	126	19	0.95	0	1	0	0	1	0	n	0	N	
140	Kanaird	22-Jun-11	sweep	estuary	T	135	22	0.89	0	0	0	0	0	0		0		
141	Dundonnell	24-Jun-11	fyke	estuary	ST	180	no data		0	16	8	0	24	1	Y		N	
142	Dundonnell	24-Jun-11	fyke	estuary	ST	180	no data		0	22	9	0	31	1.5	Y		N	
143	Dundonnell	25-Jun-11	fyke	estuary	ST	215	no data		0	34	0	0	34	1.5	Y		N	
144	Dundonnell	29-Jun-11	fyke	estuary	ST	240	no data		0	10	0	0	10	0	N		N	
145	Dundonnell	29-Jun-11	fyke	estuary	ST	175	no data		0	33	0	0	33	2	Y		Y	beak mark
146	Dundonnell	29-Jun-11	fyke	estuary	ST	200	no data		0	28	0	0	28	1.5	Y		N	
147	River Carron	30-Jun-11	sweep	estuary	T	370	511	1.01	0	0	2	0	0	0	N	0	N	
148	River Carron	30-Jun-11	sweep	estuary	T	387	570	0.98	0	1	1	0	0	0	N	0	N	
149	Dundonnell	30-Jun-11	fyke	estuary	ST	200	no data		0	20	0	0	20	1	Y		N	
150	Dundonnell	30-Jun-11	fyke	estuary	ST	195	no data		0	80	11	0	91	2.5	Y		N	
151	Dundonnell	1-Jul-11	fyke	estuary	ST	180	no data		0	77	3	0	80	1.5	Y		N	
152	Dundonnell	1-Jul-11	fyke	estuary	ST	230	no data		0	64	2	0	66	1.5	Y		N	
153	Dundonnell	5-Jul-11	fyke	estuary	ST	175	no data		0	47		0	47	1	Y		Y	?crab
154	Dundonnell	5-Jul-11	fyke	estuary	ST	205	no data		0	38	2	0	40	1	Y		Y	?crab
155	Dundonnell	5-Jul-11	fyke	estuary	ST	195	no data		0	38	0	0	38	1	Y		Y	?crab
156	Dundonnell	7-Jul-11	fyke	estuary	ST	200	no data		0	120	9	0	129	1	Y		N	
157	Dundonnell	7-Jul-11	fyke	estuary	ST	235	no data		0	33	0	0	33	1.5	Y		N	
158	Dundonnell	7-Jul-11	fyke	estuary	ST	185	no data		0	50	0	0	50	0	Y		N	
159	Dundonnell	7-Jul-11	fyke	estuary	ST	200	no data		0	27	1	0	28	1	Y		N	

Wester Ross Wild Trout Report for 2011

160	Dundonnell	7-Jul-11	fyke	estuary	ST	160	no data		0	42	1	0	43	0	Y		N	
161	Dundonnell	7-Jul-11	fyke	estuary	ST	230	no data		0	0	0	0	0	0	n		N	
162	Dundonnell	7-Jul-11	fyke	estuary	ST	220	no data		0	55	7	0	62	1	Y		N	
163	Dundonnell	7-Jul-11	fyke	estuary	ST	190	no data		0	52	8	0	60	1.5	Y		N	
164	Dundonnell	7-Jul-11	fyke	estuary	ST	215	no data		0	300	2	0	302	1	Y			
165	Dundonnell	9-Jul-11	fyke	estuary	ST	205	no data		0	500	50	0	550	0	?			
166	Dundonnell	9-Jul-11	fyke	estuary	ST	185	no data		0	10	3	0	13	0	Y	0	N	
167	Dundonnell	9-Jul-11	fyke	estuary	ST	195	no data		0	10	1	0	11	0	Y		N	
168	Inverasdale	12-Jul-11	sweep	beach	ST	345	488	1.19	0	53	37	1	91	0.5			Y	wound on flank
169	River Ewe	12-Jul-11	rod	river	ST	224	127	1.13	0	20	16	0	36	0	Y		N	
170	River Ewe	12-Jul-11	rod	river	ST	277	238	1.12	0	13	14	0	27	0	Y		Y	
171	River Ewe	12-Jul-11	rod	river	ST	240	143	1.03	0	11	13	0	24	0	Y		N	milkiness in left eye
172	River Ewe	12-Jul-11	rod	river	ST	252	187	1.17	0	6	22	0	28	1	Y		N	
173	River Ewe	12-Jul-11	rod	river	ST	228	126	1.06	0	0	5	0	5	2	Y		N	
174	River Ewe	12-Jul-11	rod	river	ST	241	158	1.13	0	17	7	0	24	0	Y		N	
175	River Ewe	12-Jul-11	rod	river	ST	213	101	1.05	0	20	21	0	41	0.5	Y		N	
176	River Ewe	12-Jul-11	rod	river	ST	244	148	1.02	0	44	23	0	67	1	Y		N	
177	River Ewe	12-Jul-11	rod	river	ST	248	168	1.10	0	17	13	0	30	0	Y		N	
178	River Ewe	12-Jul-11	rod	river	ST	243	165	1.15	0	21	15	0	36	1	Y		Y	sawbill
179	Dundonnell	13-Jul-11	fyke	estuary	ST	195	no data		0	50	0	0	50	0	Y	y	N	y
180	Dundonnell	26-Jul-11	fyke	estuary	ST	185	no data		0	20	0	0	0	1	Y	Y	N	Y
181	Dundonnell	30-Jul-11	fyke	estuary	ST	190	no data		0	0	0	0	0	0	N			
182	Dundonnell	30-Jul-11	fyke	estuary	ST	240	no data		0	0	0	0	0		N	N	N	N
183	Dundonnell	2-Aug-11	fyke	estuary	ST	205	no data		0	0	0	0	0	1	Y	N	N	N
184	Dundonnell	2-Aug-11	fyke	estuary	ST	240	no data		0	0	0	0	0	1.5	Y	N	N	N
185	Dundonnell	3-Aug-11	fyke	estuary	ST	205	no data		0	0	0	0	0	0	Y	N	N	N
186	Charleston Bay	4-Aug-11	sweep	estuary	ST	262	191	1.06	0	150	1	0	151	1		0	Y	
187	Charleston Bay	4-Aug-11	sweep	estuary	ST	205	108	1.25	0	22	1	0	23	0		15	Y	
188	Charleston Bay	4-Aug-11	sweep	estuary	ST	235	140	1.08	0	18	15	8	41	0.5	few	8	Y	
189	Charleston Bay	4-Aug-11	sweep	estuary	ST	208	93	1.03	0	14	13	8	35	0.5	few	15-20	Y	
190	Charleston Bay	4-Aug-11	sweep	estuary	ST	482	1132	1.01	0	12	200	9	221	2		20	Y	
191	Charleston Bay	4-Aug-11	sweep	estuary	ST	465	1230	1.22	0	1	10	1	12	2+ HEALED		0	Y	recapture from February 2011
192	Boor Bay	31-Aug-11	sweep	beach	ST	181	41	0.69	0	0	9	0	9	0.5	y		N	
193	Boor Bay	31-Aug-11	sweep	beach	ST	230	123	1.01	0	0	2	0	2	0		2	Y	
194	Boor Bay	31-Aug-11	sweep	beach	ST	229	119	0.99	0	2	0	0	2	0	y		N	
195	Boor Bay	31-Aug-11	sweep	beach	ST	272	244	1.21	0	9	2	0	11	1	y		y	
196	Charleston Bay	27-Sep-11	sweep	estuary	ST	565	1900	1.05	0	0	18	10	28	1.5		0		female
197	Charleston Bay	27-Sep-11	sweep	estuary	ST	550	1617	0.97	0	0	2	0	2	1.5		15		female
198	Charleston Bay	27-Sep-11	sweep	estuary	ST	445	933	1.06	0	0	2	0	2	0.2		0		male
199	Charleston Bay	27-Sep-11	sweep	estuary	ST	425	700	0.91	0	2	1	0	3	1.5		1	Y	female; bird damage

Wester Ross Wild Trout Report for 2011

200	Charleston Bay	27-Sep-11	sweep	estuary	ST	428	760	0.97	0	2	3	2	7	0.2		40		male
201	Charleston Bay	27-Sep-11	sweep	estuary	ST	445	915	1.04	0	8	3	2	13	0		0		female
202	Charleston Bay	27-Sep-11	sweep	estuary	ST	325	300	0.87	0	0	1	0	1	1		1	Y	female; silver, split dorsal; bird damage
203	Charleston Bay	27-Sep-11	sweep	estuary	ST	472	1075	1.02	0	0	1	0	1	2.5		4		female, recapture from Feb 2011
204	Charleston Bay	27-Sep-11	sweep	estuary	ST	372	585	1.14	0	0	1	0	1	1		100		female
205	Charleston Bay	27-Sep-11	sweep	estuary	ST	425	828	1.08	0	2	4	3	9	trace		0		female, recapture from March 2011
206	Charleston Bay	27-Sep-11	sweep	estuary	ST	490	1000	0.85	0	25	25	30	80	1.5		10		female
207	Charleston Bay	27-Sep-11	sweep	estuary	ST	417	695	0.96	0	2	2	1	5	1.5		20		female
208	Charleston Bay	27-Sep-11	sweep	estuary	ST	286	248	1.06	0	0	0	0	0	1.5		1		female, silver
209	Charleston Bay	27-Sep-11	sweep	estuary	ST	338	358	0.93	0	0	0	0	0	1		50		male
210	Charleston Bay	27-Sep-11	sweep	estuary	ST	385	560	0.98	0	1	0	3	4	1		50		female
211	Charleston Bay	27-Sep-11	sweep	estuary	ST	258	162	0.94	0	13	4	0	17	0		0		female
212	Charleston Bay	27-Sep-11	sweep	estuary	ST	270	185	0.94	0	0	0	2	2	0		8		immature
213	Charleston Bay	27-Sep-11	sweep	estuary	ST	287	200	0.85	0	0	0	0	0	0		8		
214	Charleston Bay	27-Sep-11	sweep	estuary	ST	260	140	0.80	0	0	0	0	0	trace		0	Y	bird; silver fish
215	Charleston Bay	27-Sep-11	sweep	estuary	ST	162	26	0.61	0	0	0	0	0	0		15		immature
216	Charleston Bay	27-Sep-11	sweep	estuary	ST	410	650	0.94	0	0	0	0	0	0.5		8		female
217	Charleston Bay	27-Sep-11	sweep	estuary	ST	355	420	0.94	0	0	1	0	1	trace		1	Y	male, missing right pectoral
218	Charleston Bay	27-Sep-11	sweep	estuary	ST	362	430	0.91	0	0	3	0	3	0.5		25		female, recapture
219	Charleston Bay	27-Sep-11	sweep	estuary	ST	245	145	0.99	0	0	0	0	0	0		2		immature
220	Charleston Bay	27-Sep-11	sweep	estuary	ST	303	242	0.87	0	0	0	0	0	0.5		4		silver
221	Charleston Bay	27-Sep-11	sweep	estuary	ST	278	175	0.81	0	1	0	0	1	0.5		0.5		female; silver
222	Charleston Bay	27-Sep-11	sweep	estuary	ST	290	210	0.86	0	1	0	0	1	0		5	Y	lots of damage
223	Charleston Bay	27-Sep-11	sweep	estuary	ST	330	420	1.17	0	0	0	0	0	0		0		

Appendix 2 Trout caught in Loch Dughaill, 4th November 2011

									Scale Reading			
Fish no.	Location	Date	Net	Length (mm)	Weight (g)	Condition Factor	Fin Damage	Fish photo	freshwater	marine	BT / ST	Comments
1	Loch Dughaill	4-Nov-11	SWP 1	160	32	0.78						
2	Loch Dughaill	4-Nov-11	GIL 2	170	59	1.20			2 or 3+		?BT	possible been as far as estuary in 2011
3	Loch Dughaill	4-Nov-11	GIL 4	192	82	1.16		DSCF2464	2+		BT	stocked?
4	Loch Dughaill	4-Nov-11	GIL 1	198	98	1.26	0	DSCF2375	1+		BT	even growth, stocked?
5	Loch Dughaill	4-Nov-11	GIL 4	201	85	1.05		DSCF2462	?4+		BT	
6	Loch Dughaill	4-Nov-11	GIL 4	232	139	1.11			4+		BT	
7	Loch Dughaill	4-Nov-11	SWP 1	234	120	0.94	0	dscf2470	3	0+	ST	great 2011 sea growth
8	Loch Dughaill	4-Nov-11	GIL 1	247	145	0.96	0	DSCF2377	3	0+	ST	
9	Loch Dughaill	4-Nov-11	GIL 1	253	167	1.03		DSCF2385	?2	0+	ST	photo; smolt age uncertain
10	Loch Dughaill	4-Nov-11	SWP 2	254	140	0.85	0	dscf2517	2	0+	ST	great 2011 sea growth
11	Loch Dughaill	4-Nov-11	SWP3&4	255	135	0.81		DSCF5414	4	0+	ST	
12	Loch Dughaill	4-Nov-11	GIL 3	255	160	0.96	0	DSCF2444	?3	0+	ST	
13	Loch Dughaill	4-Nov-11	SWP3&5	258	140	0.82	0	DSCF5406	2 or 3	0+	ST	photo
14	Loch Dughaill	4-Nov-11	SWP 2	260	150	0.85		dscf2518	5+		BT	
15	Loch Dughaill	4-Nov-11	SWP 1	260	138	0.79	0	dscf2468	2	0+	ST	great 2011 sea growth
16	Loch Dughaill	4-Nov-11	SWP3&4	260	132	0.75	0	DSCF5403	?	0+	ST	?stockee
17	Loch Dughaill	4-Nov-11	GIL 3	260	152	0.86	0		3	0+	ST	great 2011 summer growth
18	Loch Dughaill	4-Nov-11	GIL 4	265	194	1.04		DSCF2463	3	0+	ST	
19	Loch Dughaill	4-Nov-11	SWP 1	270	176	0.89	0	dscf2467	2 or 3	0+	ST	great 2011 sea growth
20	Loch Dughaill	4-Nov-11	SWP3&4	275	179	0.86		DSCF5410	3	0+	ST	
21	Loch Dughaill	4-Nov-11	SWP 1	280	162	0.74		dscf2471	?2	1+	ST	modest 2010 sea (or loch) great 2011 sea growth
22	Loch Dughaill	4-Nov-11	GIL 1	280	251	1.14	0	DSCF2370	5+		BT	one year indistinct
23	Loch Dughaill	4-Nov-11	GIL 1	297	300	1.15		DSCF2386	7+		BT	spawning marks not counted
24	Loch Dughaill	4-Nov-11	SWP3&4	299	230	0.86	0	DSCF5400	3	0+	ST	loch year prior to going to sea
25	Loch Dughaill	4-Nov-11	GIL 4	306	282	0.98		DSCF2455	4.sm.sm+		?BT	no clear marine growth
26	Loch Dughaill	4-Nov-11	SWP 1	309	260	0.88	0	dscf2469	?4	0+	ST	?loch year prior to sea: very good 2011 sea growth
27	Loch Dughaill	4-Nov-11	SWP3&4	309	250	0.85	0	DSCF5412	?	?	ST	all replacements
28	Loch Dughaill	4-Nov-11	GIL 2	316	287	0.91		DSCF2419	3 or 4	1+sm+	ST	odd, poor 2009 & 2010 marine growth; or a 5.0+
29	Loch Dughaill	4-Nov-11	SWP3&4	318	250	0.78	0	DSCF5407	?2	1+	ST	poor 2010 sea growth, fast 2011 sea growth
30	Loch Dughaill	4-Nov-11	SWP3&4	319	309	0.95	0	DSCF5401	?2	1+	ST	mid summer 2011 lull in growth
31	Loch Dughaill	4-Nov-11	SWP 2	320	240	0.73		dscf2524	3	?+sm+	ST	may have had poor / estuarine marine year
32	Loch Dughaill	4-Nov-11	SWP3&4	320	319	0.97	0	DSCF5409	3	1+	ST	better 2011 than 2010 sea growth
33	Loch Dughaill	4-Nov-11	GIL 4	320	295	0.90	0	DSCF2450	3	2+	ST	or 5.0+ best growth in 2011
34	Loch Dughaill	4-Nov-11	SWP3&4	330	340	0.95		DSCF5405	5+		BT	
35	Loch Dughaill	4-Nov-11	SWP3&4	332	323	0.88		DSCF5413	4	0+	ST	with 2 loch years; or 2.2+ with modest sea growth until 2011
36	Loch Dughaill	4-Nov-11	SWP3&4	339	350	0.90	0	DSCF5397	4	0+	ST	or 3.1+ with poor sea summer or loch year in 2010
37	Loch Dughaill	4-Nov-11	GIL 4	380	487	0.89	1	DSCF2451	3	2+	ST	or 5.0+ ; slower 2009 & 2010 than 2011
38	Loch Dughaill	4-Nov-11	GIL 3	390	492	0.83	0	DSCF2443	2	1+sm+	ST	great 2009& 2011 marine growth
39	Loch Dughaill	4-Nov-11	GIL 3	420	620	0.84	1	DSCF2442	2	2+sm+	ST	possibly other sms; good 2008&09 sea growth

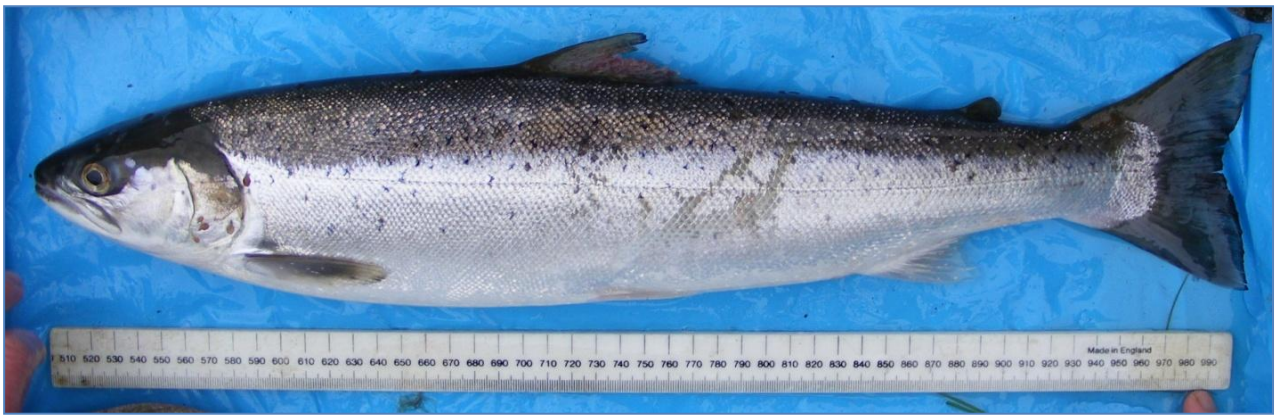
Appendix 3 Trout caught in spawning streams in the Kernsary sub-catchment

					Scale Reading				
Fish no.	Location	Date	Net	Length (mm)	freshwater	marine	BT / ST	M/F	Comments
1	Ghuiragarstidh	25-Oct-11	Fyke	218	?4+		BT	M	
2	Ghuiragarstidh	25-Oct-11	Fyke	304	4+		BT	M	
3	Ghuiragarstidh	25-Oct-11	Fyke	302	4+		BT	M	
4	Ghuiragarstidh	25-Oct-11	Fyke	410	no scales		BT	M	
5	Ghuiragarstidh	25-Oct-11	Fyke	219	replace		BT	M	
6	Ghuiragarstidh	25-Oct-11	Fyke	221	?3+		BT	M	or 4+
7	Ghuiragarstidh	25-Oct-11	Fyke	269	?3+		BT	M	or 4+
8	Ghuiragarstidh	25-Oct-11	Fyke	257	?4+		BT	M	centres missing
9	Ghuiragarstidh	25-Oct-11	Fyke	237	3+		BT	?	
10	Ghuiragarstidh	25-Oct-11	Fyke	209				M	
11	Ghuiragarstidh	25-Oct-11	Fyke	325				M	
12	Ghuiragarstidh	25-Oct-11	Fyke	241				M	
13	Ghuiragarstidh	25-Oct-11	Fyke	365	?6+		BT	M	
14	Ghuiragarstidh	25-Oct-11	Fyke	226	4+		BT	F	scale photo
15	Ghuiragarstidh	25-Oct-11	Fyke	245				?	
16	Ghuiragarstidh	25-Oct-11	Fyke	231				M	
17	Ghuiragarstidh	25-Oct-11	Fyke	210				?	
18	Ghuiragarstidh	25-Oct-11	Fyke	385				M	
19	Ghuiragarstidh	25-Oct-11	Fyke	265				M	
20	Ghuiragarstidh	25-Oct-11	Fyke	210				M	
21	Ghuiragarstidh	25-Oct-11	Fyke	360				M	
22	Ghuiragarstidh	25-Oct-11	Fyke	372				M	
23	Ghuiragarstidh	25-Oct-11	Fyke	189				M	
24	Ghuiragarstidh	25-Oct-11	Fyke	324				M	
25	Ghuiragarstidh	25-Oct-11	Fyke	275				M	
26	Ghuiragarstidh	25-Oct-11	Fyke	346	?6+		BT	F	scale photo
27	Ghuiragarstidh	25-Oct-11	Fyke	422				M	
28	Ghuiragarstidh	25-Oct-11	Fyke	223				?	
29	Ghuiragarstidh	25-Oct-11	Fyke	327	4+		BT	F	kelt
30	Ghuiragarstidh	25-Oct-11	Fyke	259	?4+		BT	?	
31	Ghuiragarstidh	25-Oct-11	Fyke	384				M	
32	Ghuiragarstidh	25-Oct-11	Fyke	394				M	
33	Ghuiragarstidh	25-Oct-11	Fyke	263				M	
34	Ghuiragarstidh	25-Oct-11	Fyke	364	?5+		BT	M	
35	Ghuiragarstidh	25-Oct-11	Fyke	362				M	
36	Ghuiragarstidh	25-Oct-11	Fyke	368	?6+		BT	M	
37	Ghuiragarstidh	25-Oct-11	Fyke	188				M	
38	Ghuiragarstidh	25-Oct-11	Fyke	235				M	
39	Ghuiragarstidh	25-Oct-11	Fyke	221				M	
40	Ghuiragarstidh	25-Oct-11	Fyke	229				M	
41	Ghuiragarstidh	25-Oct-11	Fyke	266				M	
42	Ghuiragarstidh	25-Oct-11	Fyke	302				M	
43	Kernsary	27-Oct-11	Fyke	265	?4+		BT	M	
44	Kernsary	27-Oct-11	Fyke	410	?10+		BT	F	
45	Kernsary	27-Oct-11	Fyke	280	4+		BT	?F	scale photo
46	Kernsary	27-Oct-11	Fyke	420	8+		BT	M	scale ohoto
47	Kernsary	27-Oct-11	Fyke	500				M	
48	Kernsary	27-Oct-11	Fyke	700	11 or 12+		BT	M	BIG FEROX

Appendix 4. Trout and their scales.

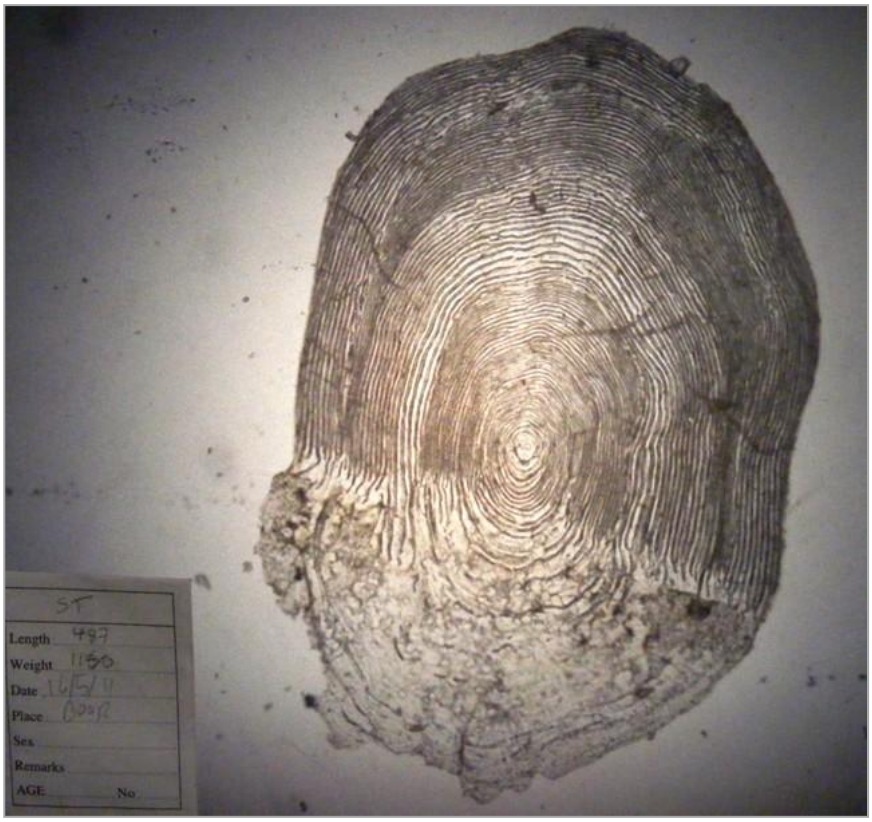
1. Loch Ewe & River Ewe system trout taken in 2011 (in chronological order)

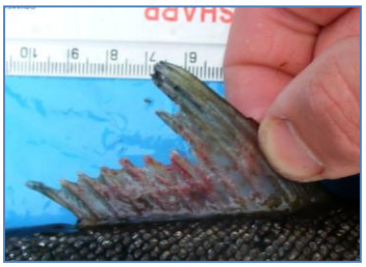
Sea trout, 487mm, 1160g, taken in WRFT sweep net on 16th May 2011, Boor Bay, Loch Ewe.



This is the longest sea trout we've caught in the Boor Bay sweep net to date. 38 lice were counted on this fish (9 chalimus and 27 pre-adults and adults). Note the raw dorsal fin damage usually associated with chalimus infection.

The fish was in water of 14ppt, with much freshwater in loch after heavy rain, lice burdens may have been higher a few days earlier.

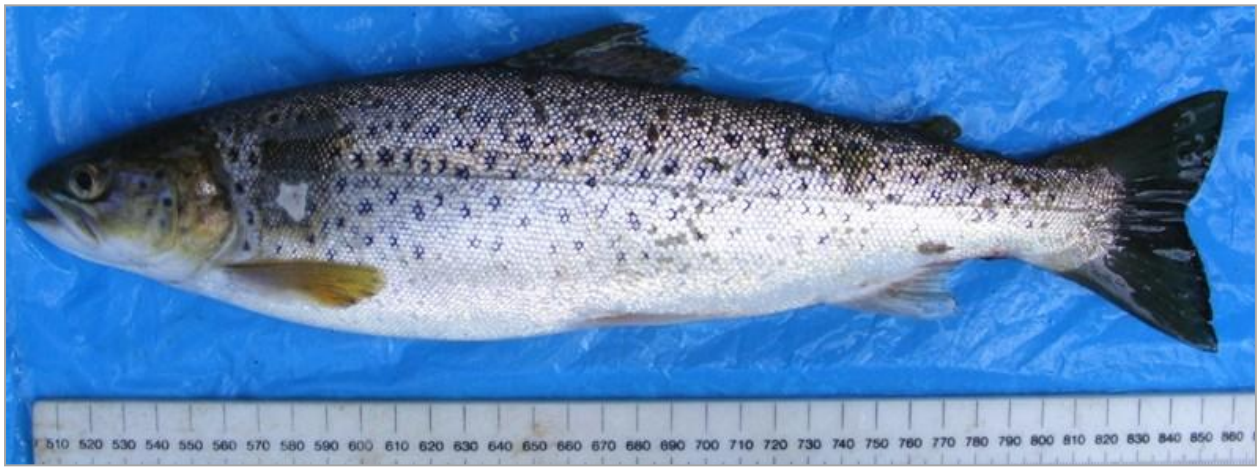




The fish is aged as a 3.1+2sm(+), spawning after its second and third summers in the sea (in 2009 & 2010 respectively). Note the fast growth in its initial summer in the sea (?summer 2008).

Wester Ross Wild Trout Report for 2011

Sea trout, 345mm, taken by WRFT sweep netting team on 12th July 2011 at Inverasdale



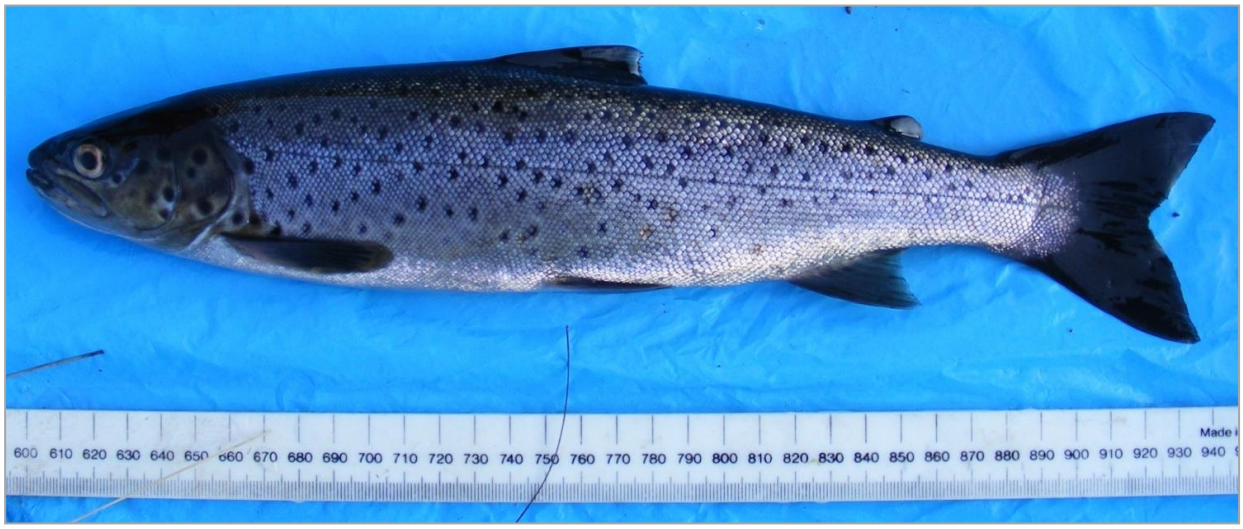
This fish has been aged as a 2 year old smolt with unusual steady, relatively slow and sustained sea growth in 2010. I think the fish is in its second summer at sea. However, there is little 2011 growth towards the outer edge of the scale: this can most obviously be explained by the scarring from an injury earlier in 2011 (as suggested by replacement scale growth around the scar).

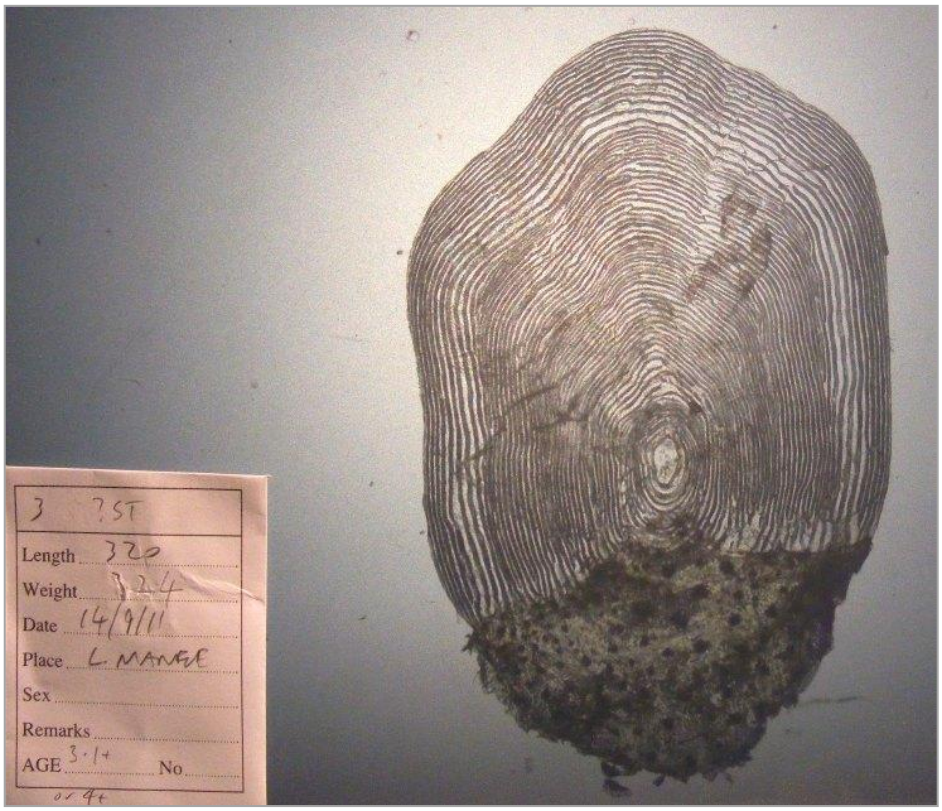
This was the lousiest fish taken in Loch Ewe in 2011.

?2.1+

Wester Ross Wild Trout Report for 2011

Sea trout, 320mm, 324g, caught by rod and line from Loch Maree, 15th September 2011





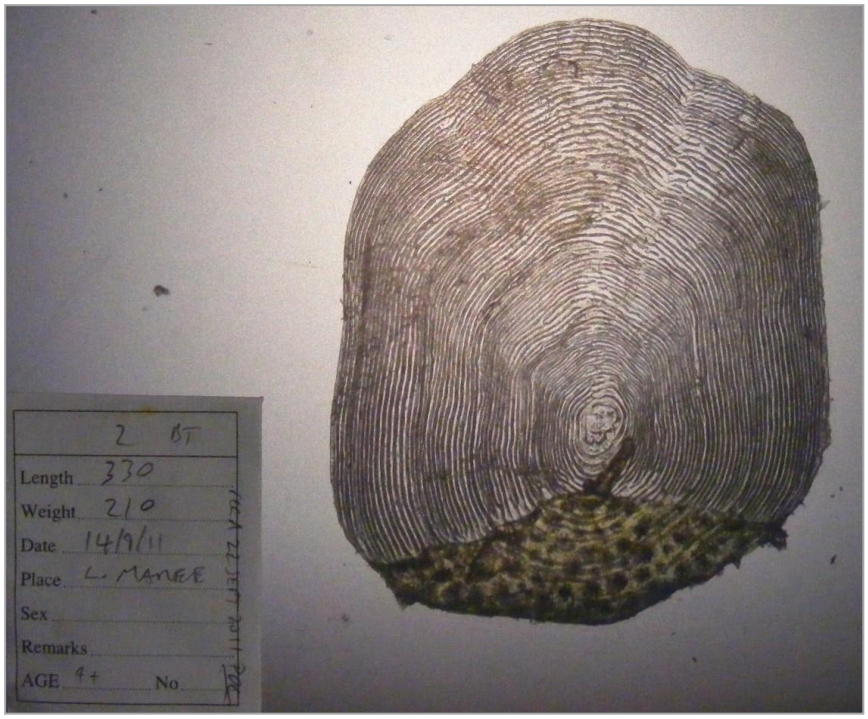
Quite a silvery trout.

The scale suggests that it has been to sea earlier in the year with 3 or 4 widely spaced circuli indicative of rapid early summer 2011 growth. Growth in summer 2010 may also be marine growth; however, circuli are never as widely spaced as for summer 2011. My best guess: a large finnock that went to sea in 2011 for the first time as a large 4+ year old smolt.

4.+

Wester Ross Wild Trout Report for 2011

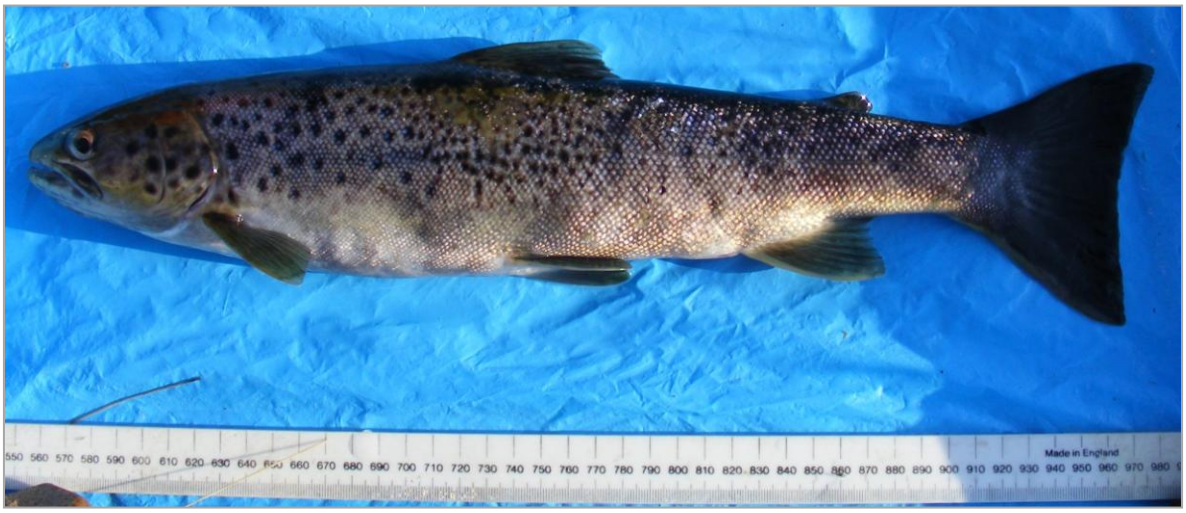
Brown trout 330mm, Loch Maree, 15th September 2011

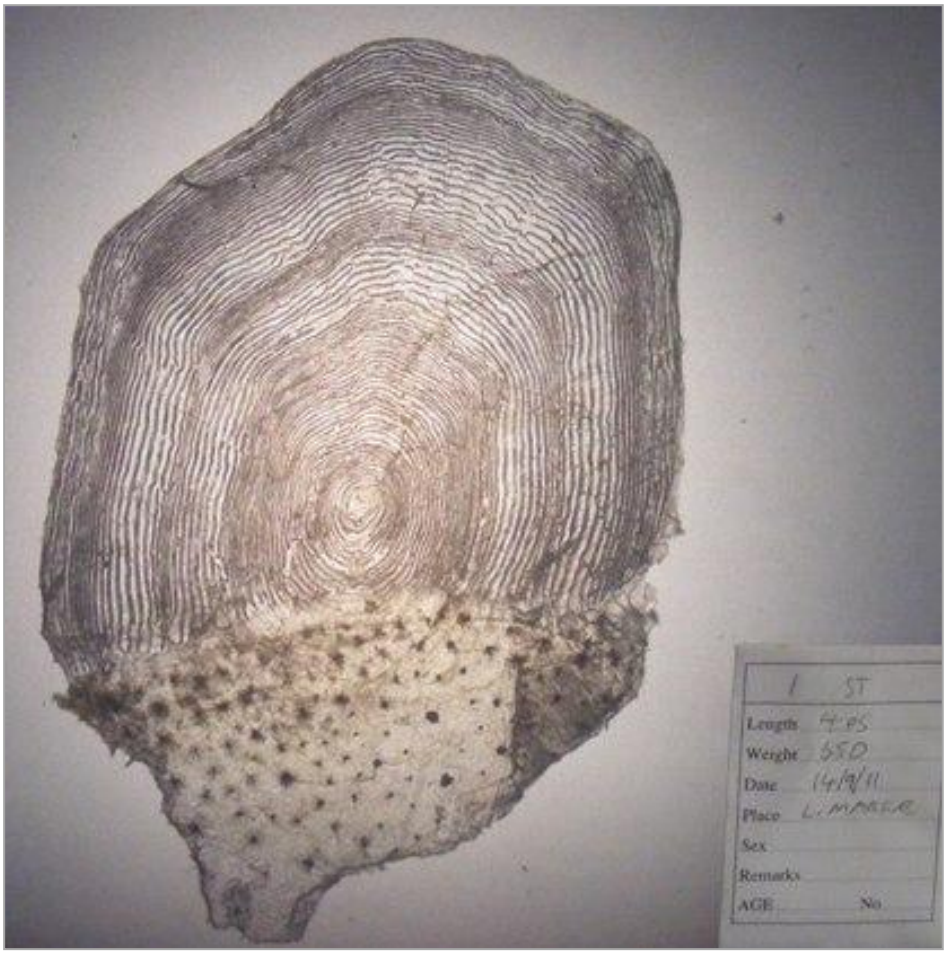


This trout was very yellow and has been aged as a 4+ year old brown trout. There may be an additional 'fry year' towards centre of scale. However, growth has been rapid for a brown trout throughout its life.

Wester Ross Wild Trout Report for 2011

Sea trout, 405mm, Loch Maree, 15 September 2011



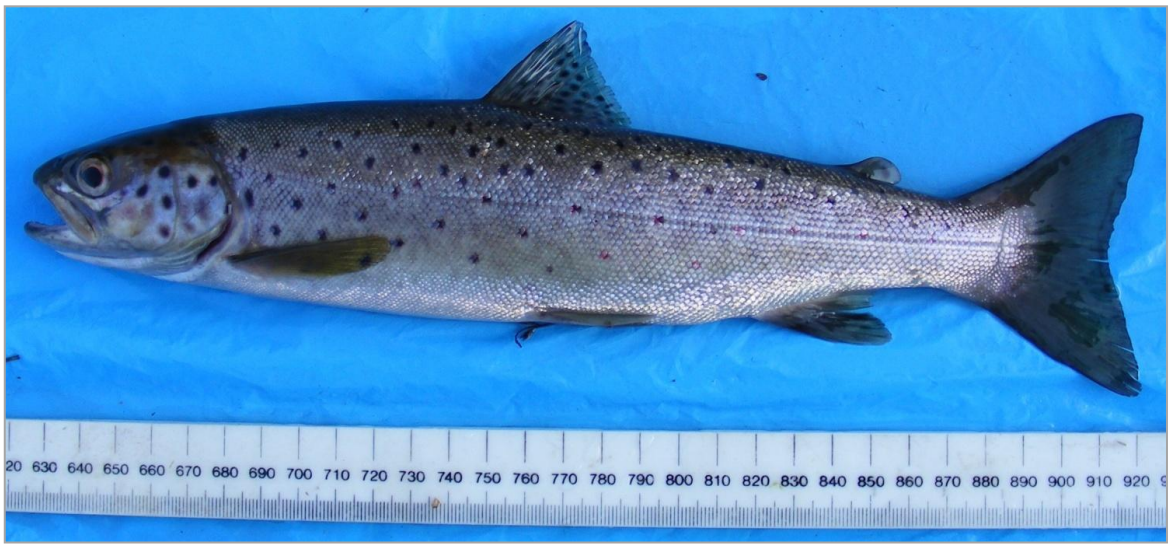


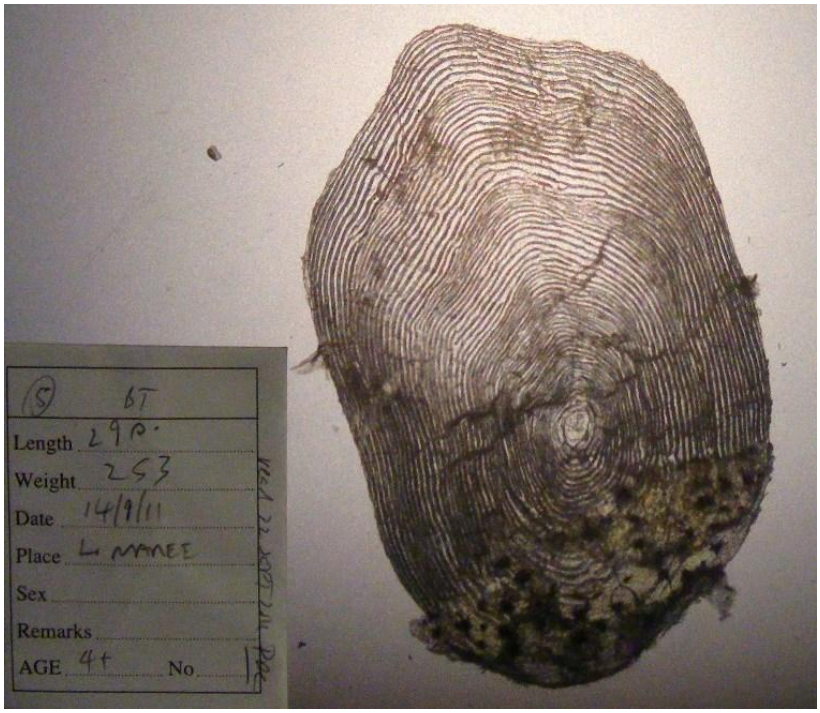
This fish is clearly a sea trout. The freshwater age is not quite clear from this photograph, possibly 3 years in freshwater. Thereafter, the fish went to sea for the first time in 2009 and again in 2010 growing fast in both summers. Thereafter there is an indistinct spawning mark. Growth in 2011 has been more modest.

?3.2+sm+

Wester Ross Wild Trout Report for 2011

Trout, 290mm, 253g, caught by rod and line from Loch Maree, 15th September 2011



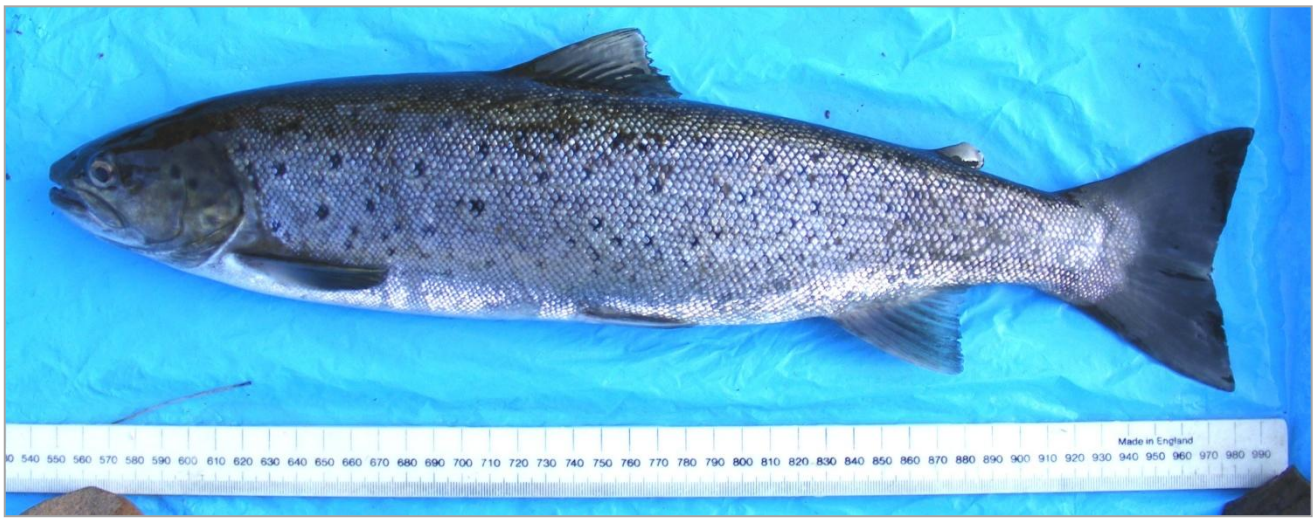


This fish is quite silvery, and has grown well in the previous three years. However, I think it is a brown trout that has remained in the freshwater loch rather than a sea trout, although I have some doubt: the alternative is sea trout of age ?2.2+, rather small for its age. The fish was returned to the loch after being measured.

4+

Wester Ross Wild Trout Report for 2011

Sea trout, 425mm, 787g, caught by rod and line from Loch Maree, 15th September 2011

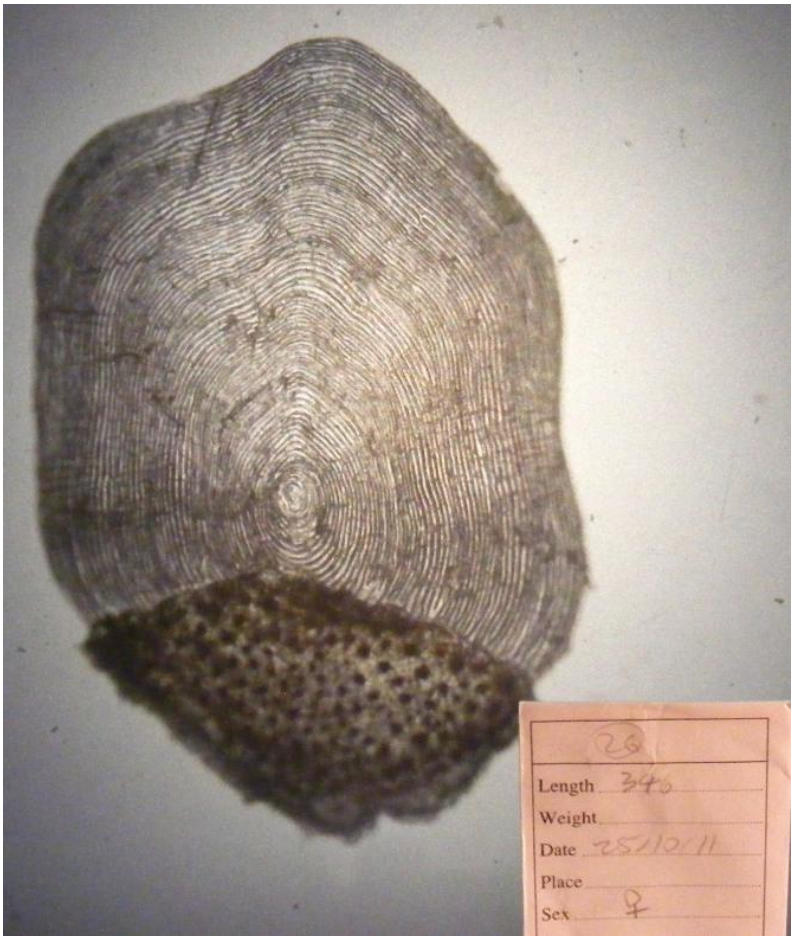


This was the largest 'trout' caught in Loch Maree on the WRFT fishing day, when three boats were fishing. It's clearly a sea trout, and has had three summers at sea since its initial excursion as a ?3 year old smolt. The fish spawned in 2010: the spawning mark is best seen on the right side of scale. There were no lice on this fish. The fish was caught by Prof Dave Barclay and returned to the loch after being measured and weighed.

?3.2+sm+

Wester Ross Wild Trout Report for 2011

Brown trout, female, 346mm, Loch Ghuiragarstidh, 25th October 2011

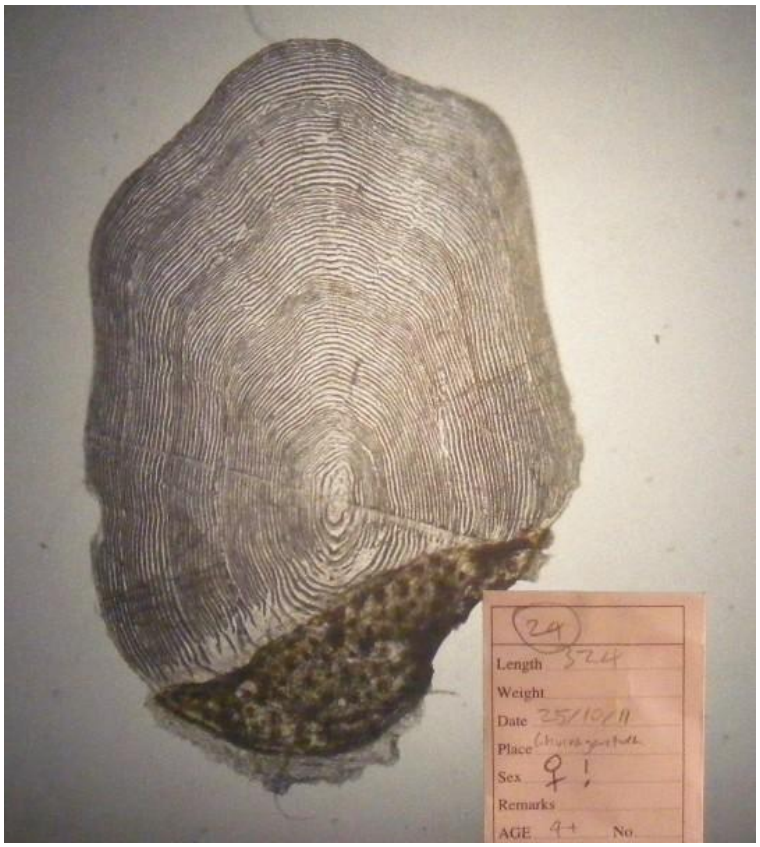


This fish has been ages as a 6 year old 'brown' trout which has not been to sea, which may have spawned once previously.

6+

Wester Ross Wild Trout Report for 2011

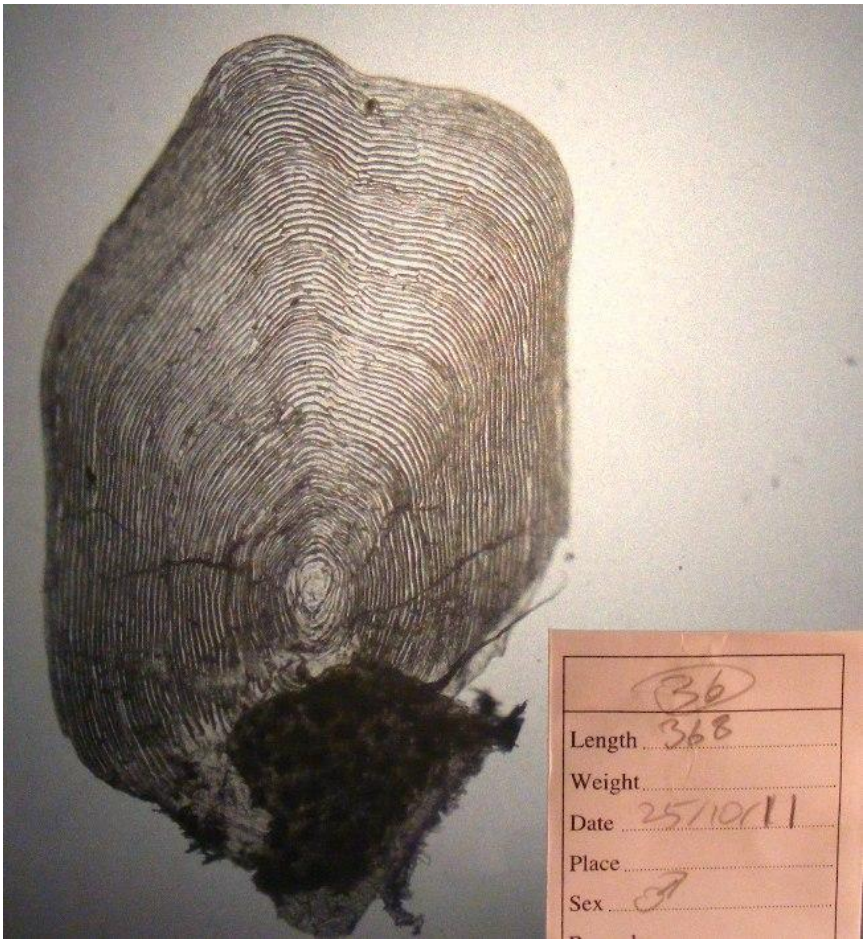
Brown trout, female, 324mm, Loch Ghuiragarstidh, 25th October 2011



This fast growing loch trout is only 4+ years old. Compare with the Loch Maree trout of 290mm.

Wester Ross Wild Trout Report for 2011

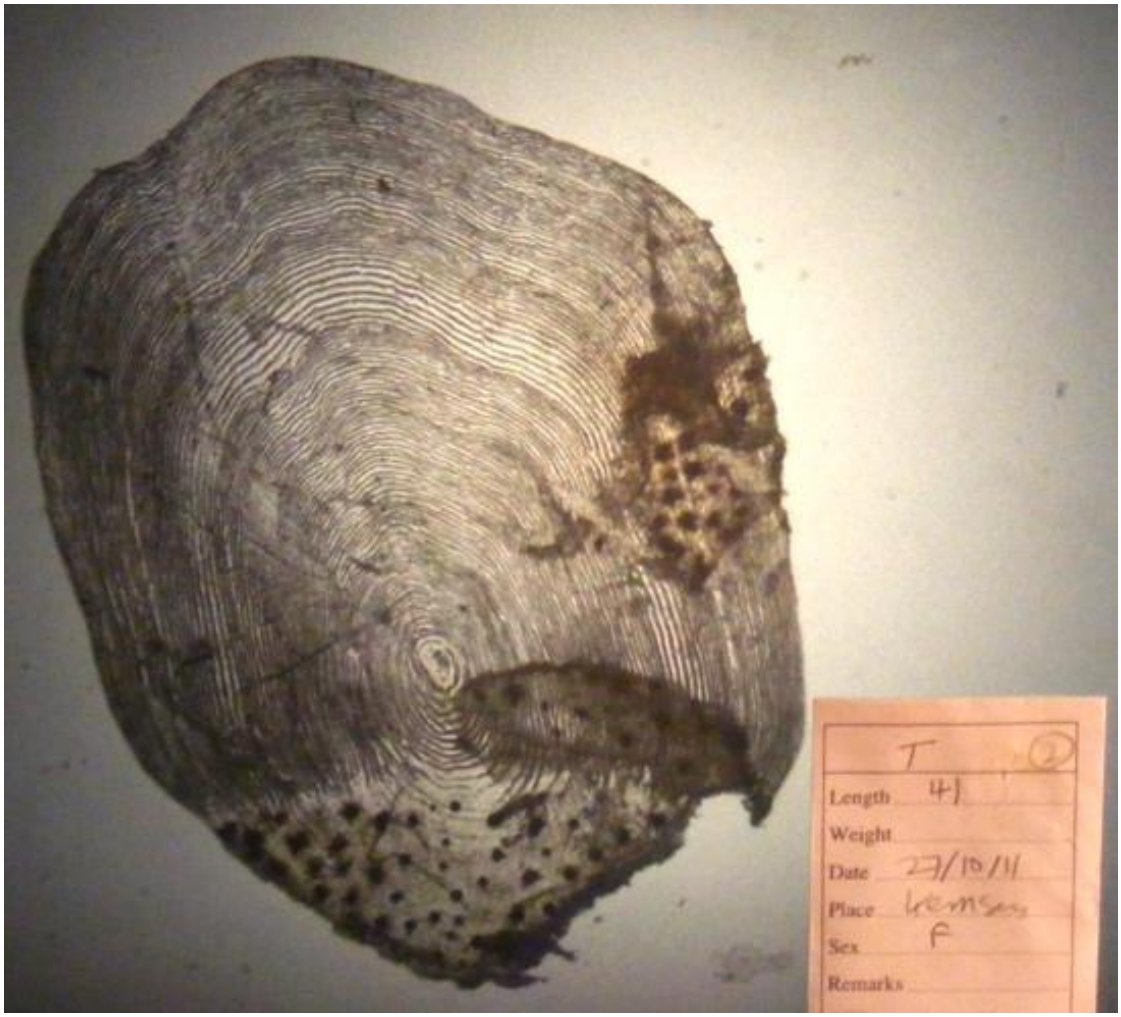
Brown trout, male, 368mm, Loch Ghuiragarstidh, 25th October 2011



This fast growing loch trout is only 5+ years old

Wester Ross Wild Trout Report for 2011

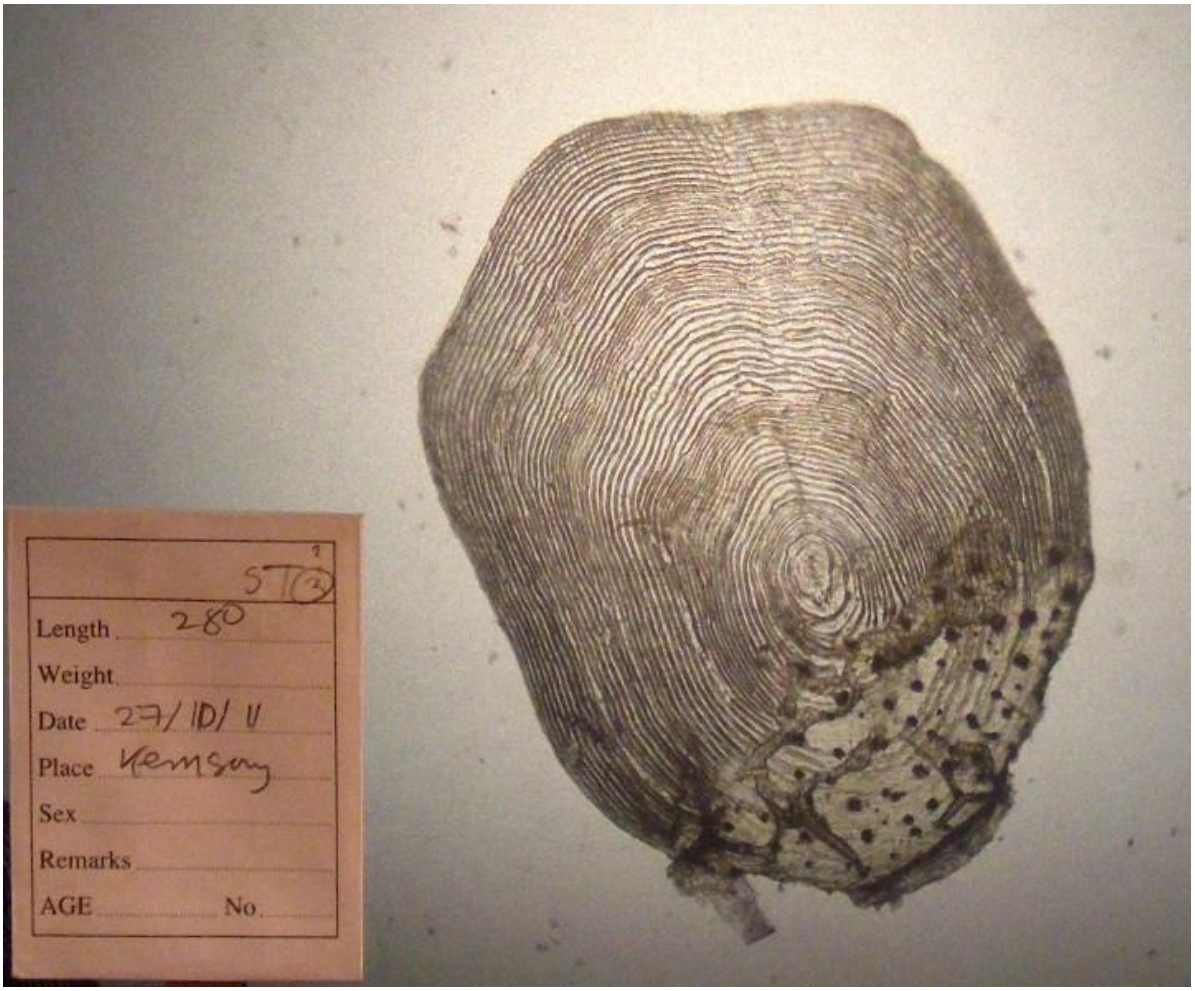
Brown trout, female, 410mm, Kernsary, 27th October 2011



This trout has been aged as an 8 winters, and is possibly older. She grew more rapidly in her 5th summer than earlier, almost suggesting a trip to sea, or more likely a good season in Loch Kernsary (?) prior to spawning for the first time. I've not totted up spawning marks, and the scale photo is not clear enough to see them.

Wester Ross Wild Trout Report for 2011

Brown trout, 280mm, Kernsary, 27th October 2011

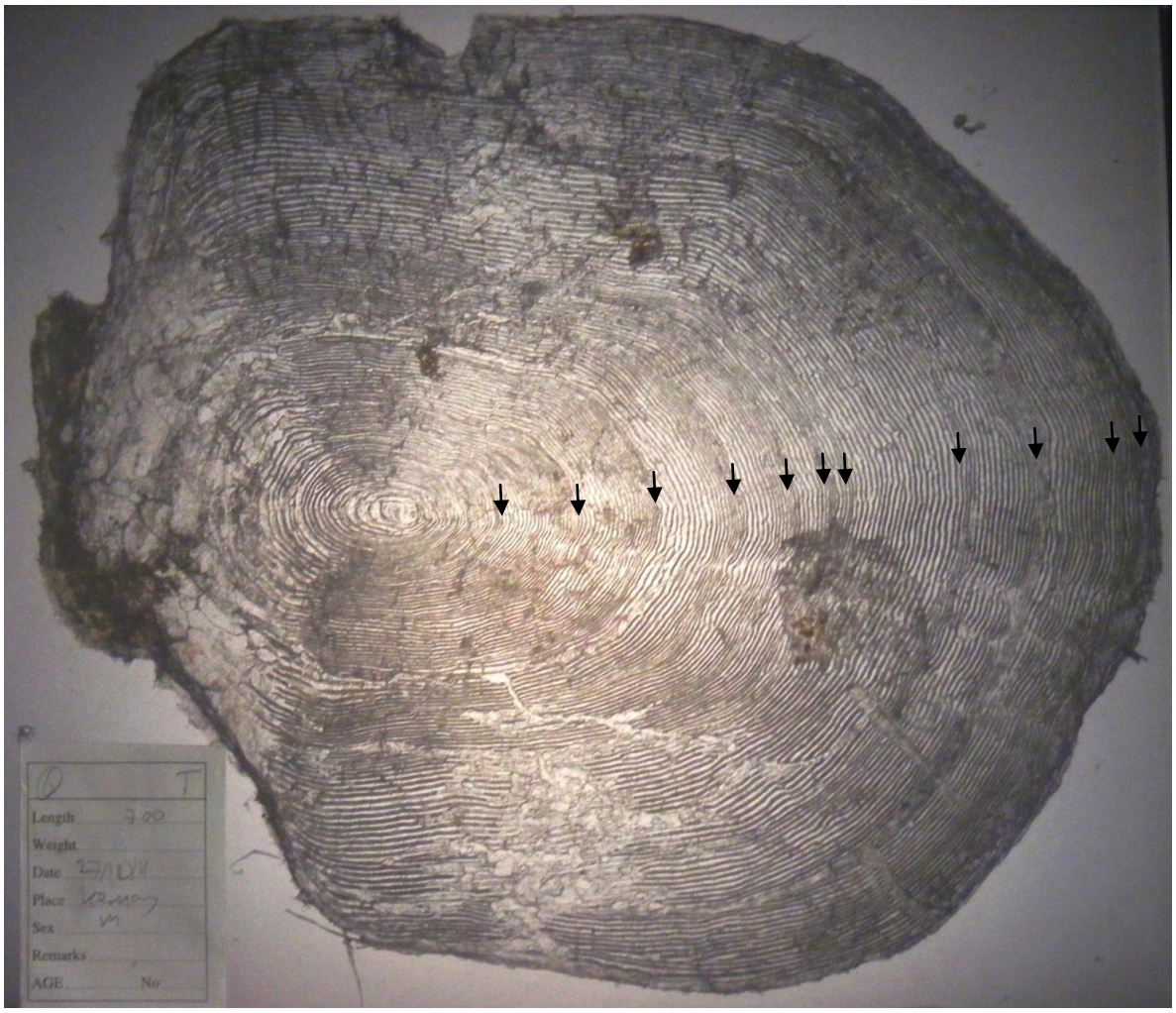


This trout is aged has grown rapidly each spring and early summer since aged 1+. However I think this is loch rather than sea growth, even in third summer?

Wester Ross Wild Trout Report for 2011

Brown trout, male, 700mm Kernsary, 27th October 2011.

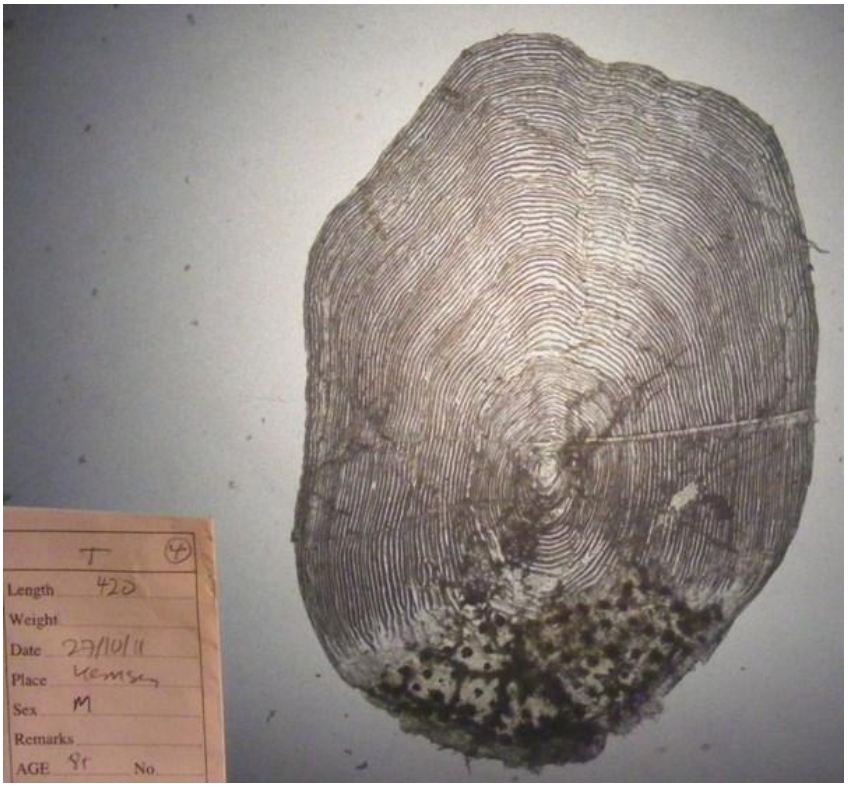
This is the biggest trout seen by WRFT Biologist, Peter Cunningham, within the Loch Maree catchment in the past 10 years. The scale shows 6 or 7 years of steady growth (marked by arrows); latterly slowing then a quite dramatic increase in growth rate in 8th year, continuing in 9thand and 10th year before reducing in 11th and 12th years. The fish has all the characteristics of a male *ferox*, a trout that has changed its diet from invertebrates to other fish (Arctic charr?) in its 8th year.



Wester Ross Wild Trout Report for 2011

Brown trout, male, 420m, Kernsary, 27th October 2011.

This trout is on a similar growth trajectory as the 700mm fish on previous page. I think its 6+ years old (perhaps one year more). There is at least two spawning marks, however the scale photo is not clear enough to be sure how many.

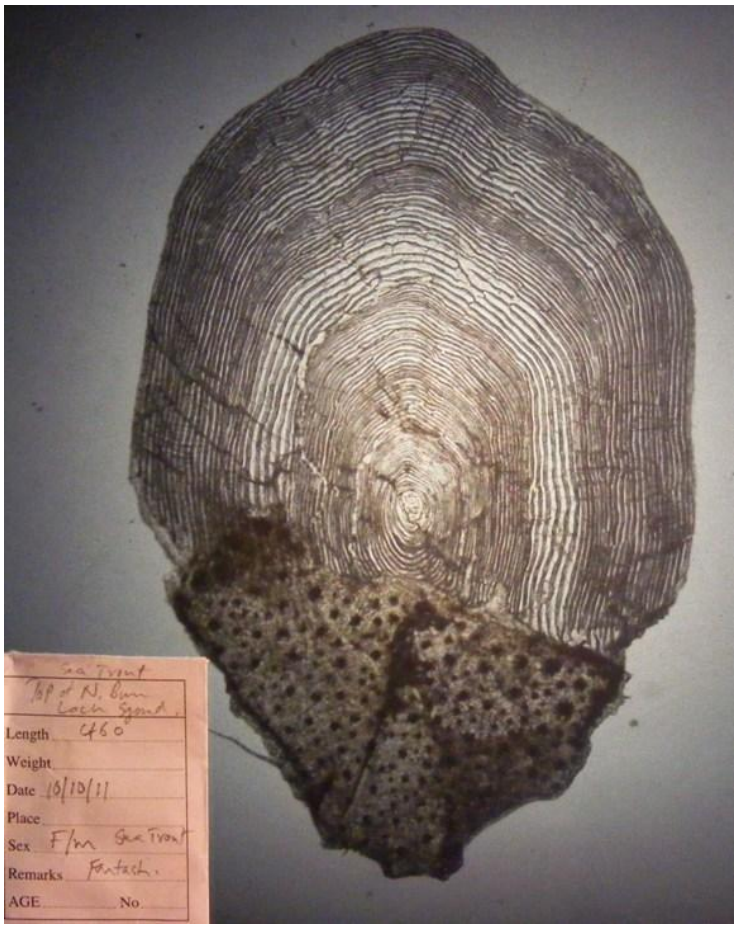


Wester Ross Wild Trout Report for 2011

Sea trout, female, 460mm, Sguod spawning burn, 16th October 2011.

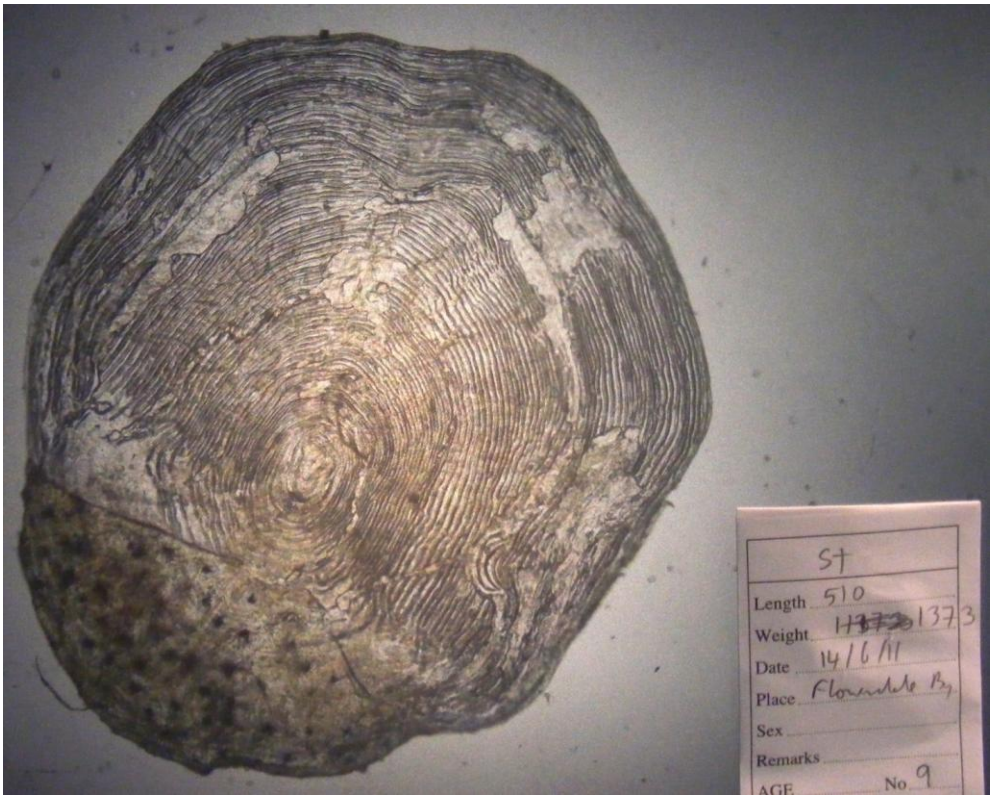
This sea trout (top fish) was found together with smaller loch brown trout in a spawning burn above Loch Sguod. She has been aged as 3.2+ ; three years in freshwater, then two winters (three summers) after her first excursion to sea. She's in pretty good nick, with no signs of sea lice damage!

[All the scales from the small brown trout beneath were missing their centres and so it was not possible to age it].



2. Loch Gairloch trout taken in 2011

Sea trout, 510mm, 1373g, condition factor 1.04, Gairloch, 14 June 2011

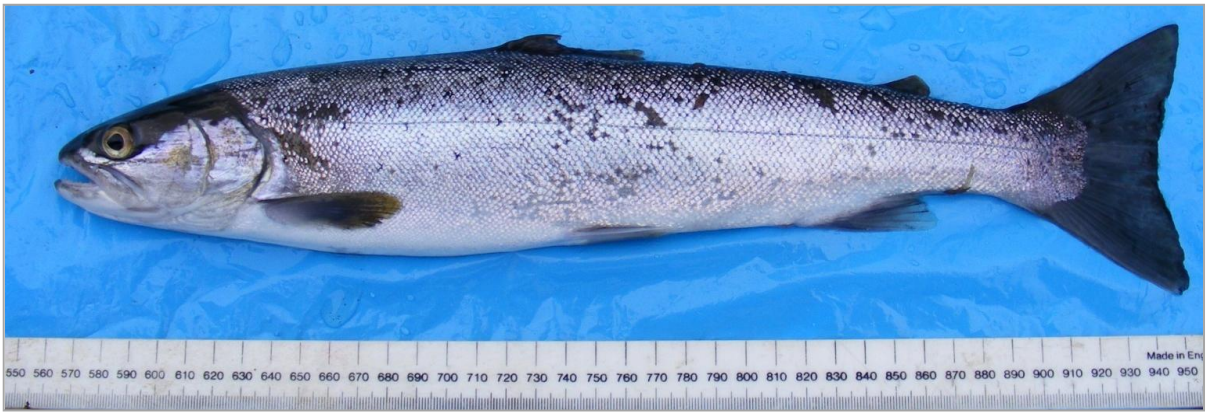


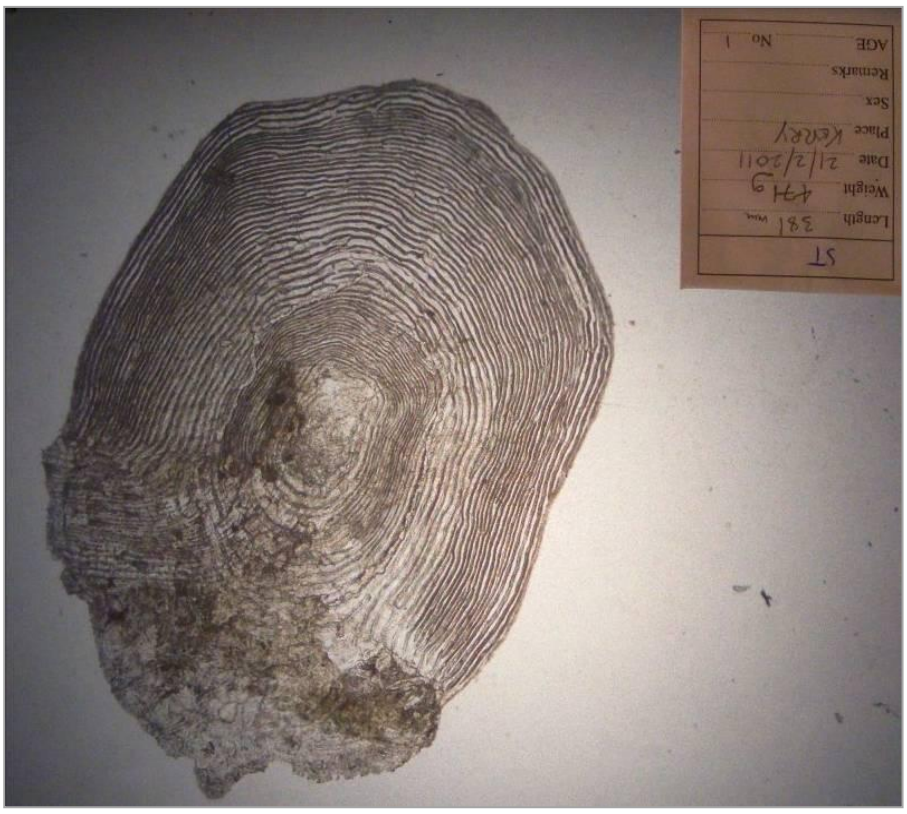
This fish has been aged as a 3 year old smolt, then spawning after its 2nd, 3rd, 4th and 5th summer (2010) at sea, giving a total age of 8+ years. Note the regrowth following erosion associated with spawning. At the time of capture it was the second biggest sea trout sampled in Loch Gairloch since 2007. The fish carried 41 sea lice (6 chalimus, 20 adults and pre-adults, and 15 ovigerous females). Photo of trout by Peter Maguire.

3.2+4sm+

Wester Ross Wild Trout Report for 2011

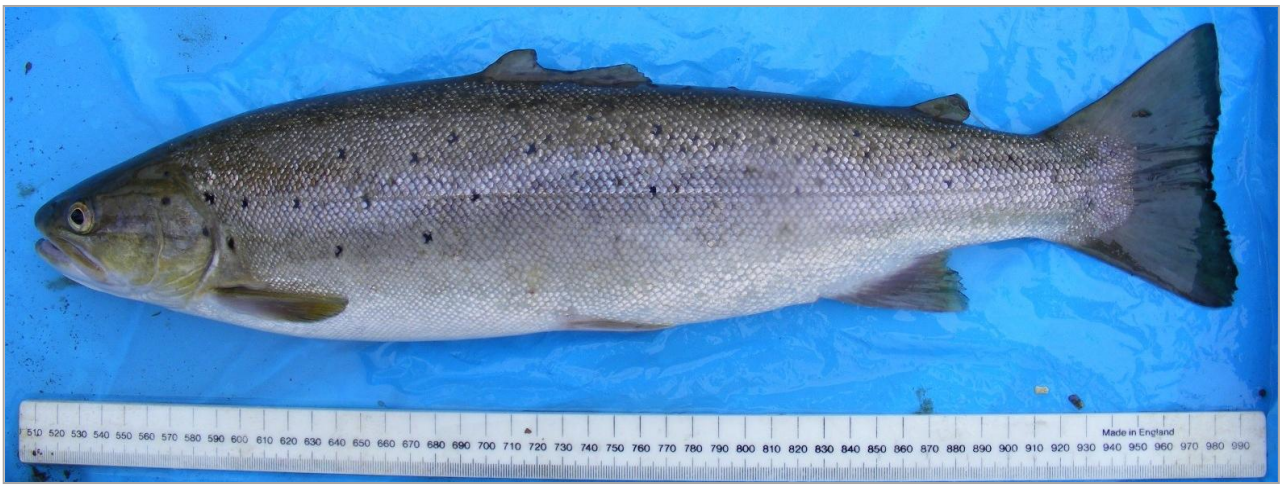
Sea trout 381mm, 471g, mouth of River Kerry, Loch Gairloch, 21st February 2011 (Fish A in report)

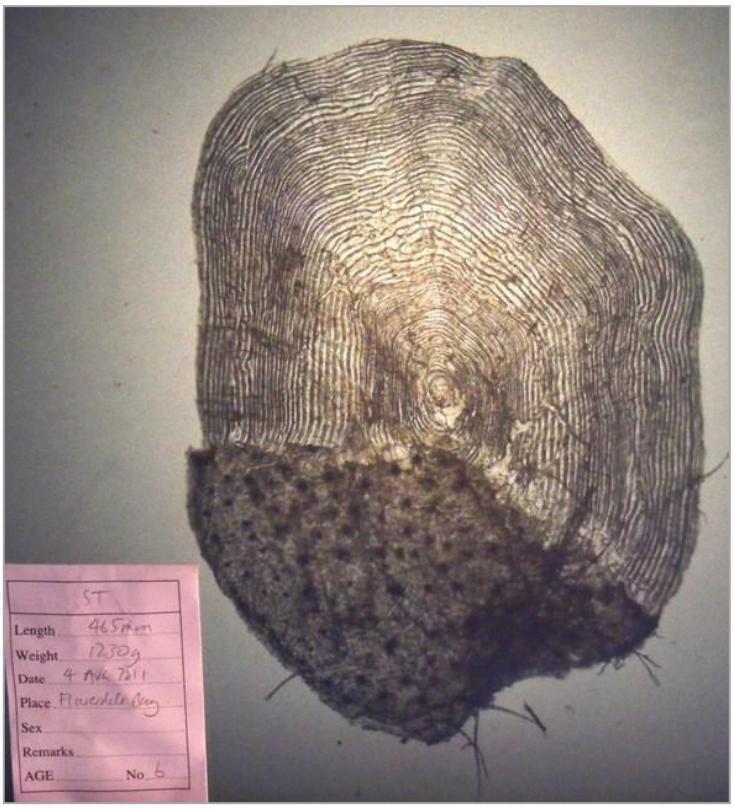




Wester Ross Wild Trout Report for 2011

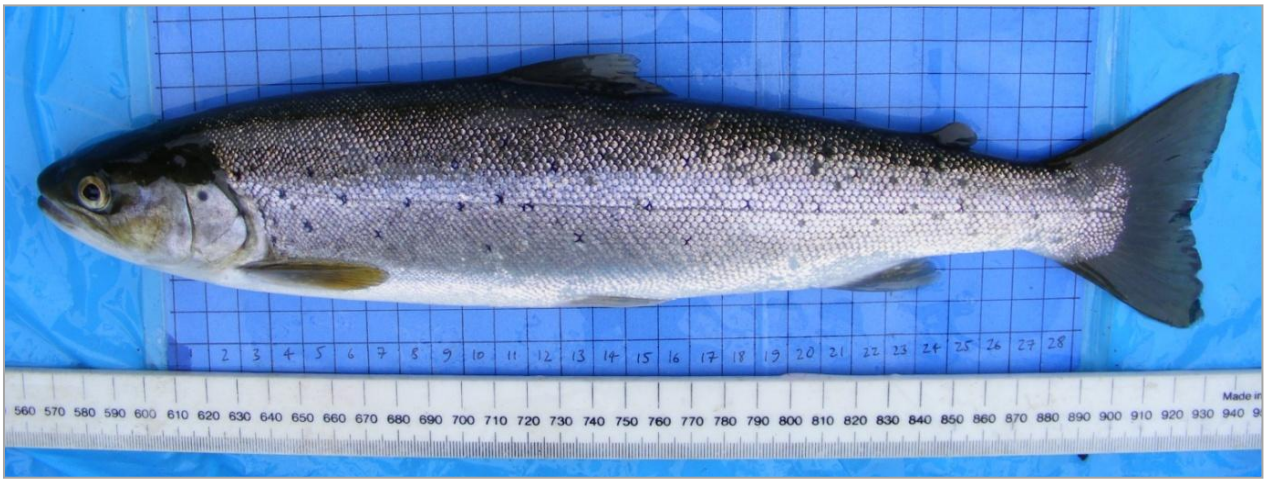
Sea (?estuarine) trout 465mm, 1230g, condition factor 1.22, Flowerdale Bay, Loch Gairloch, 4th August 2011 (Fish A, recaptured)





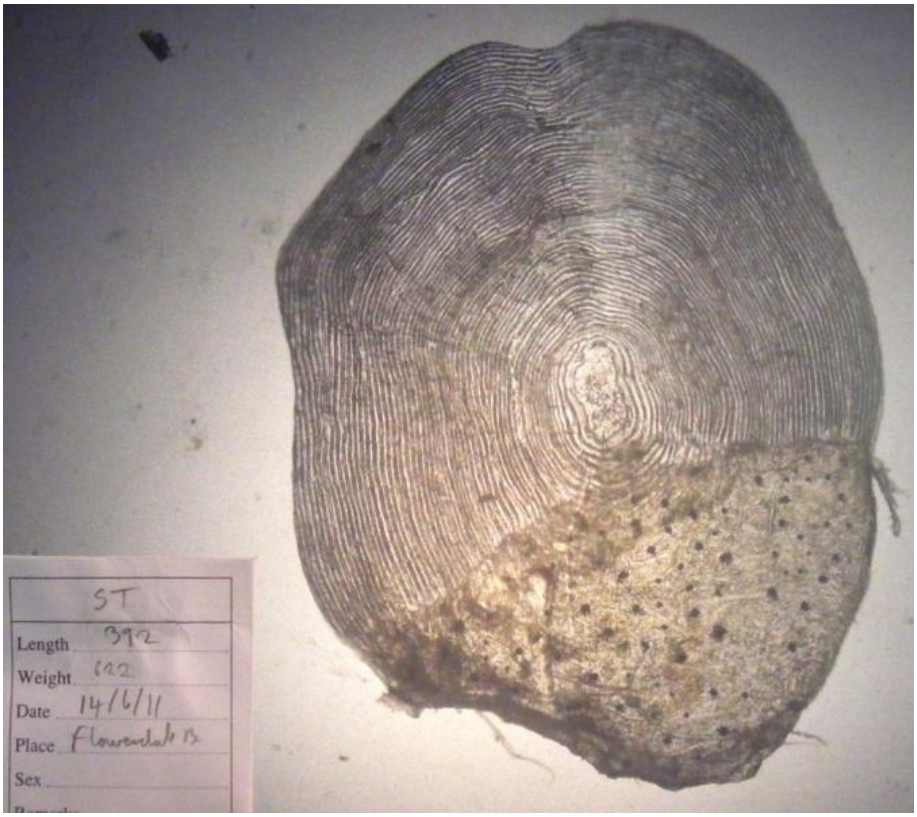
Wester Ross Wild Trout Report for 2011

Sea trout, 350mm 416g, condition factor 0.97, Flowerdale Bay, 18th March 2011; Fish B in report (photo J. Tosney)



Wester Ross Wild Trout Report for 2011

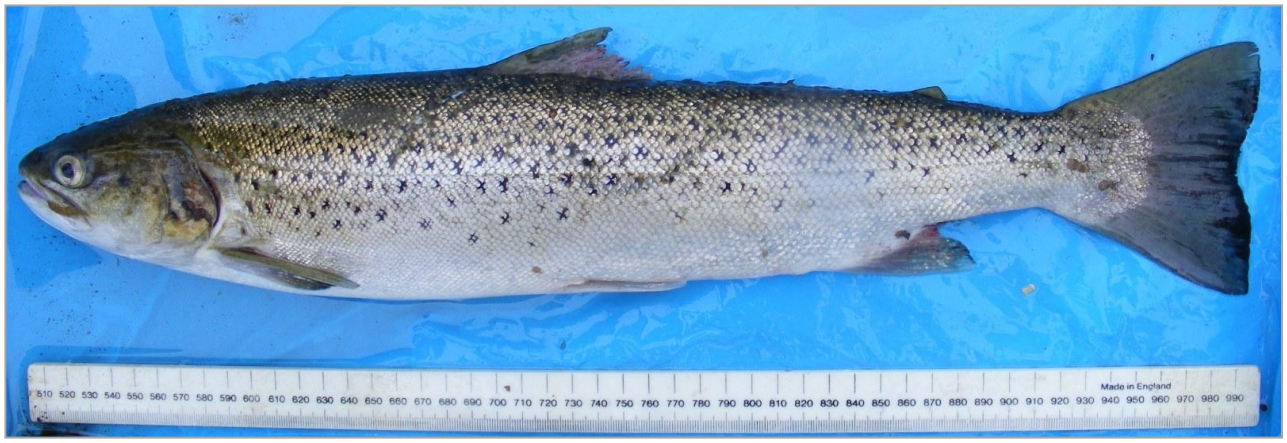
Sea trout, 392mm, 622g, 14th June 2011, condition factor 1.03, Flowerdale Bay [Fish B recpatured] (photo by P. Maguire)

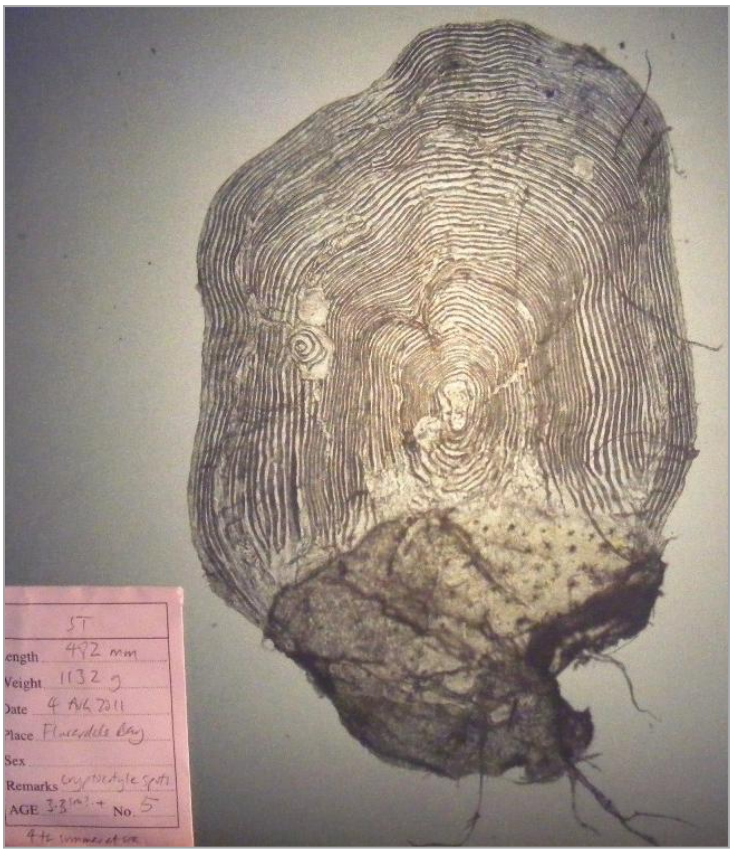


Recaptured sea trout in Loch Gairloch: fish C

Some of the circular spots and whirls on the scale are thought to be associated with *Cryptocotyle* infection. The fish went to sea as a 3 year old smolt (in 2008 or 9) and has been back to sea for two or three subsequent summers. The fish spawned in the autumn of 2010, and possibly in an earlier year.

3.2+sm+

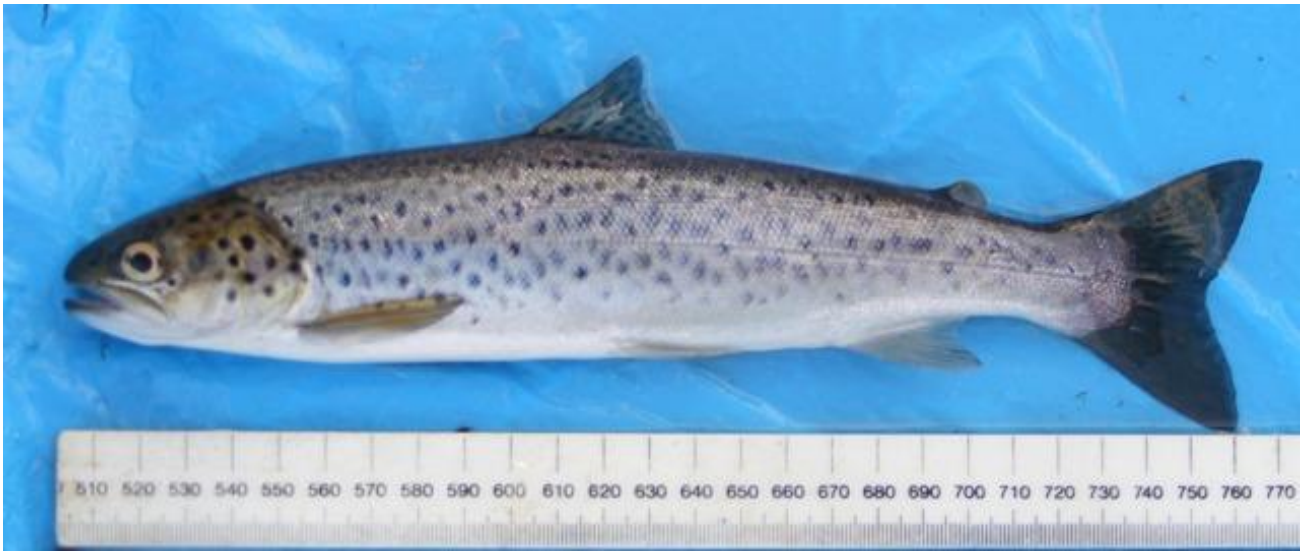


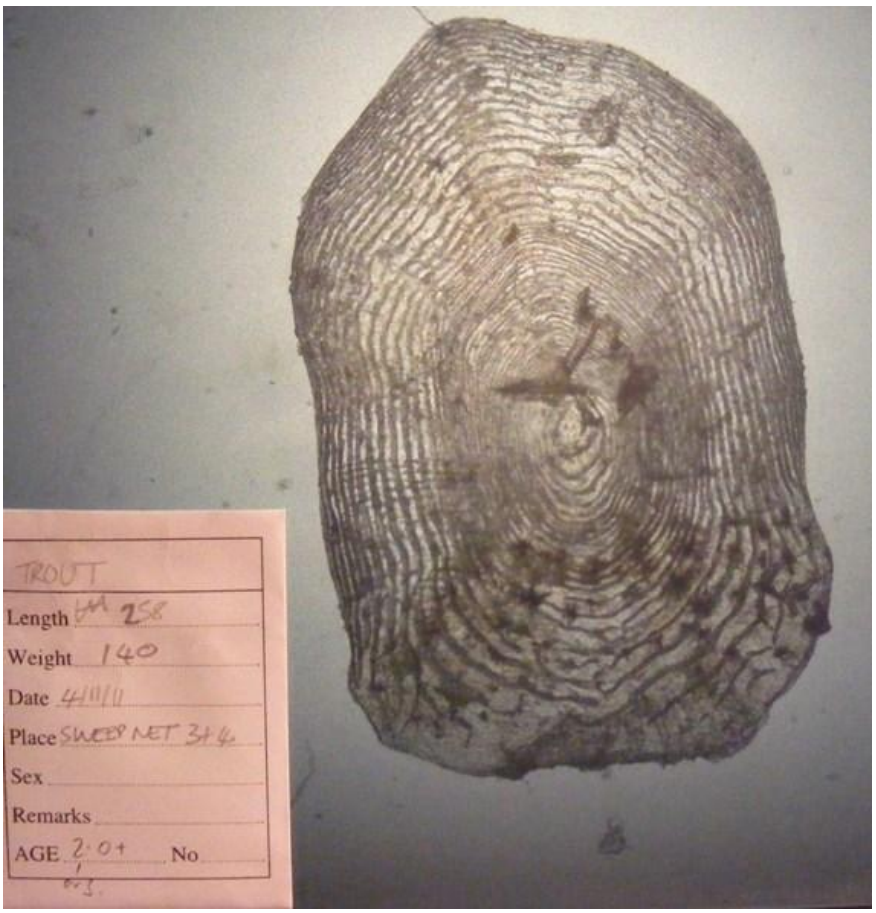


3. Carron system trout

Sea trout, 258mm, 140g, caught in the sweep net Loch Dhughaill, 4th November 2011

This has been read as a 2.0+ finnock. Note the fast 2011 summer sea growth.

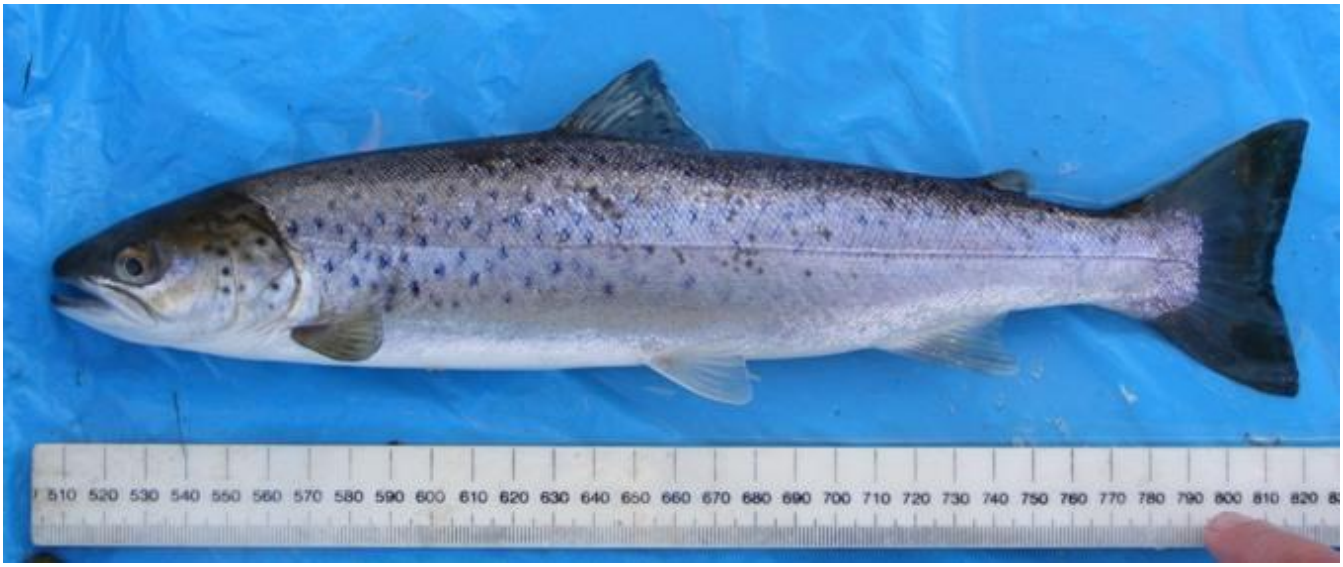




Wester Ross Wild Trout Report for 2011

Sea trout, 318mm, 250g, caught in the sweep net Loch Dhughaill, 4 November 2011

This has been read as a 2.1+ sea trout, with relatively little 2011 summer growth?



Wester Ross Wild Trout Report for 2011

Brown trout, 330mm, 340g, caught in the sweep net Loch Dhughaill, 4th November 2011

A 5 + year old brown trout.

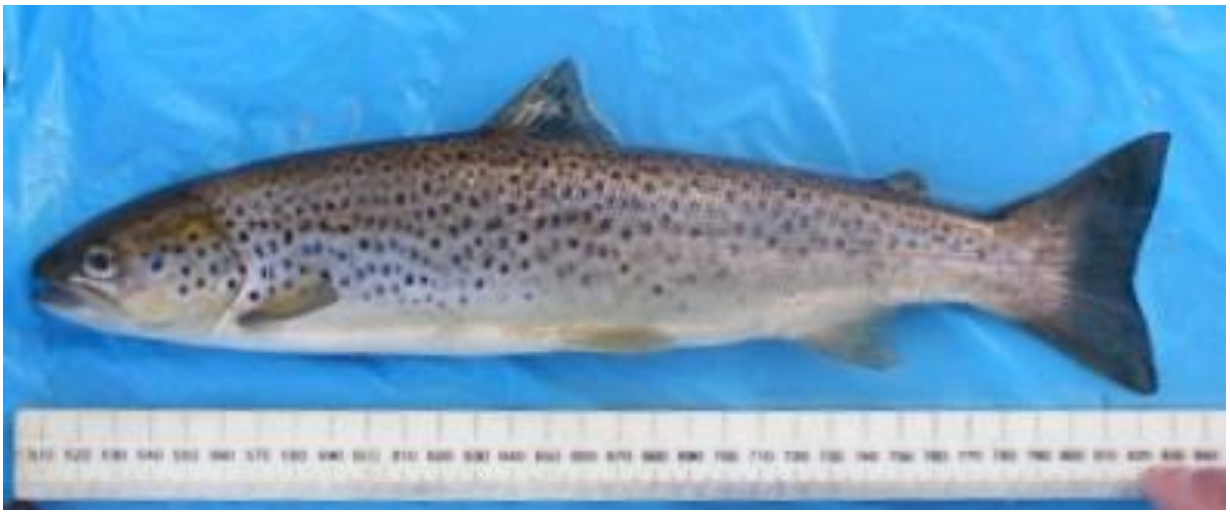
Sea trout, 420mm, 620g, caught in gill net set for Arctic charr, Loch Dhughaill, 4th November 2011

think it has had 4 summers at sea; though rather modest scale growth in last two (best growth in summer 2009?)? A 2.2+ sm (or 2sm) + sea trout. I

Wester Ross Wild Trout Report for 2011

Sea trout, 319mm, 309g, caught in the sweep net Loch Dhughaill, 4th November 2011

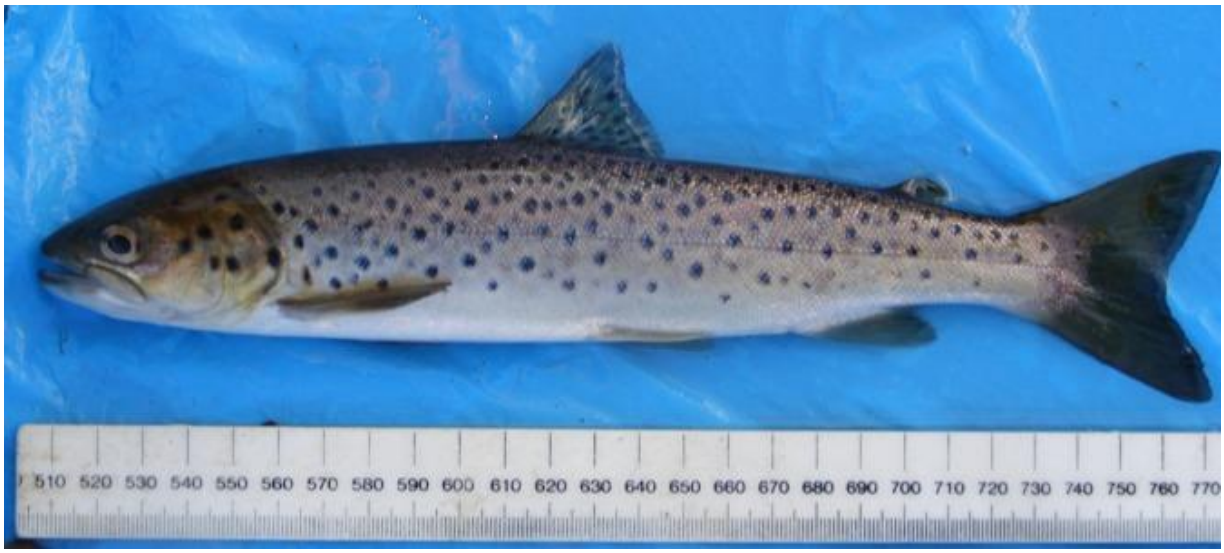
This has been read as a 2.1+ sea trout. Note that the outer circuli are broken or missing from the scale around most of the margin. However, the scale shows good freshwater growth (loch or estuary) towards the centre of the scale in the year prior to going to sea?



Wester Ross Wild Trout Report for 2011

Sea trout, 260mm, 132g, caught in the sweep net Loch Dhughaill, 4th November 2011

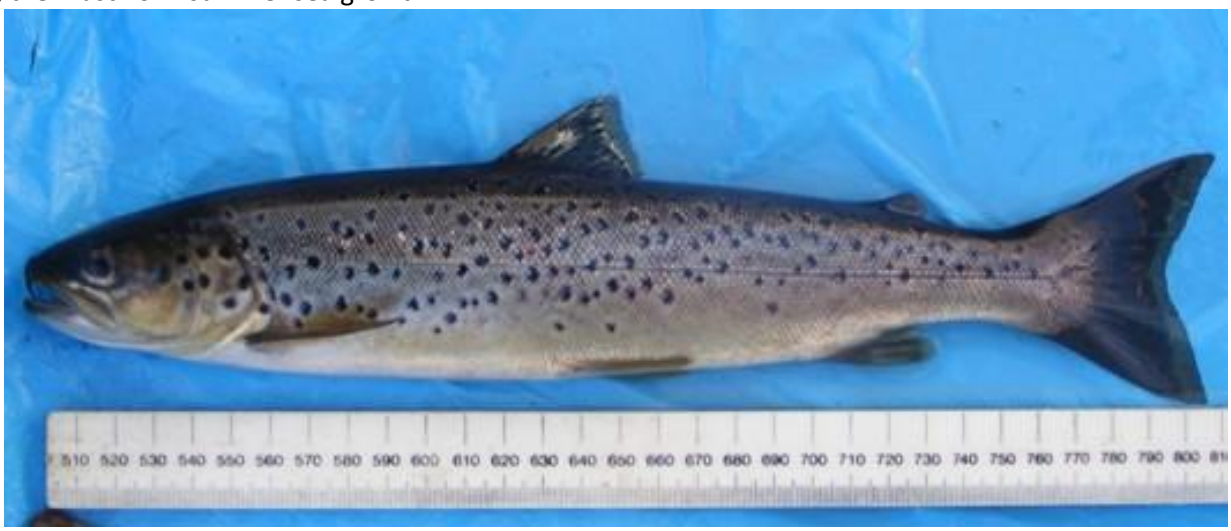
This has been read as a ?.0+ finnock. Freshwater growth seems steady and I can't see winter checks - is this a stocked sea trout smolt? Note the fast 2011 summer sea growth.



Wester Ross Wild Trout Report for 2011

Sea trout, 299mm, 230g, caught in the sweep net Loch Dhughaill, 4th November 2011

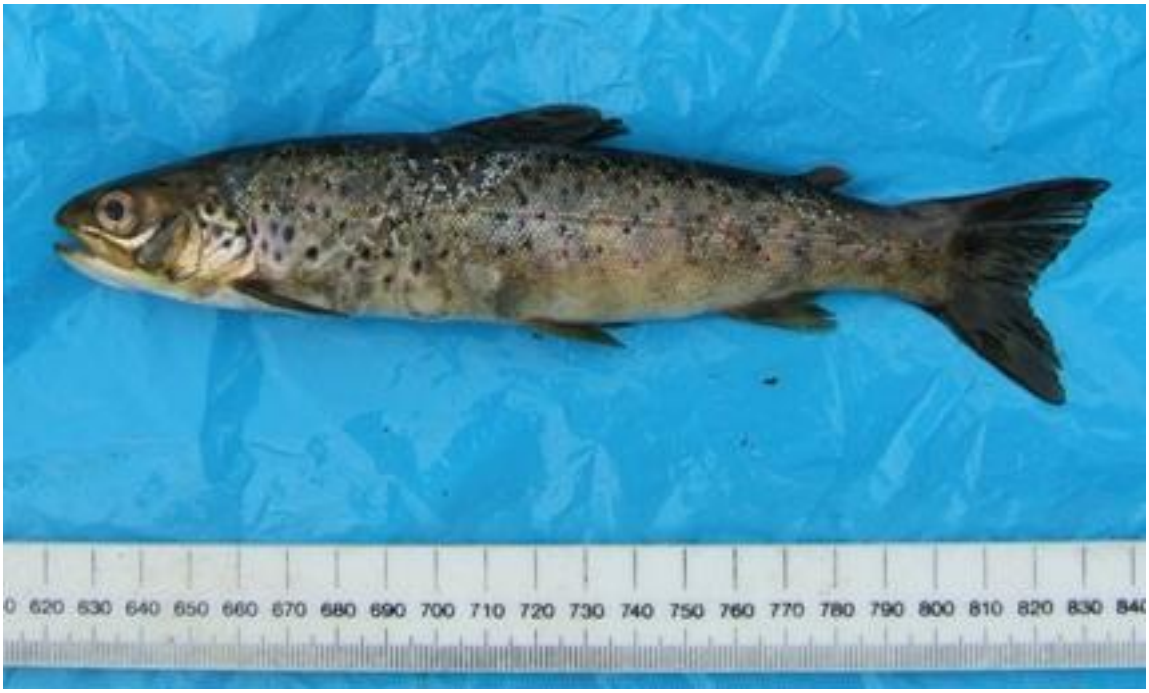
This has been read as a 3.0+ finnock. Note good freshwater growth (loch growth) in year prior to going to sea, then fast 2011 summer sea growth.



Wester Ross Wild Trout Report for 2011

Sea trout, 198mm, 140g, caught in the sweep net Loch Dhughaill, 4th November 2011

This wee trout hasn't been to sea: I think it's had two indistinct winters and three summers in freshwater growing steadily during 2011 or has it been grown in a pond and stocked?



Appendix 5 Notes on a Loch Sguod trout

This trout taken from Loch Squod on 2nd May 2011 by Mark Williams contained a minnow. Rather surprisingly, there are few other documented reports of minnows being ingested by Brown trout.

The trout is approximately 200mm long and the minnow 75mm long.

Sguod trout and minnow 2nd May 2011