

WESTER ROSS FISHERIES TRUST

Wester Ross Sea trout Scale Reading Catalogue

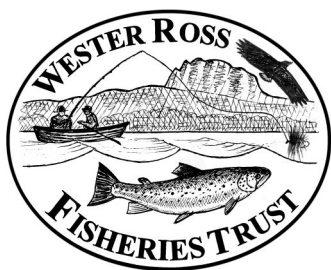


Plate 73

Lent by Major Baker

TWO GOOD SEA-TROUT FROM LOCH MAREE
13½ LBS. AND 6½ LBS., CAUGHT ON FLY BY MAJOR T. W. BAKER, JULY 8TH, 1927.

Peter Cunningham, info@wrft.org.uk, April 2011 Edition



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This on line document provides links to examples of sea trout scales from fish sampled from the sea and river estuaries in Wester Ross. The purpose of the catalogue is to have an easily accessible reference collection of photographs of sea trout and their scales for interpretation of fish ages, growth rates, ages at spawning, and comparative purposes.

Thank you to Dr Andy Walker for helping with a scale reading workshop on 17th February 2011 in Gairloch and Ben Rushbrooke of Tournig Garden Cottage Nursery for photos.

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Cover photo: from G. H. Nall 1930 The Life of the Sea Trout

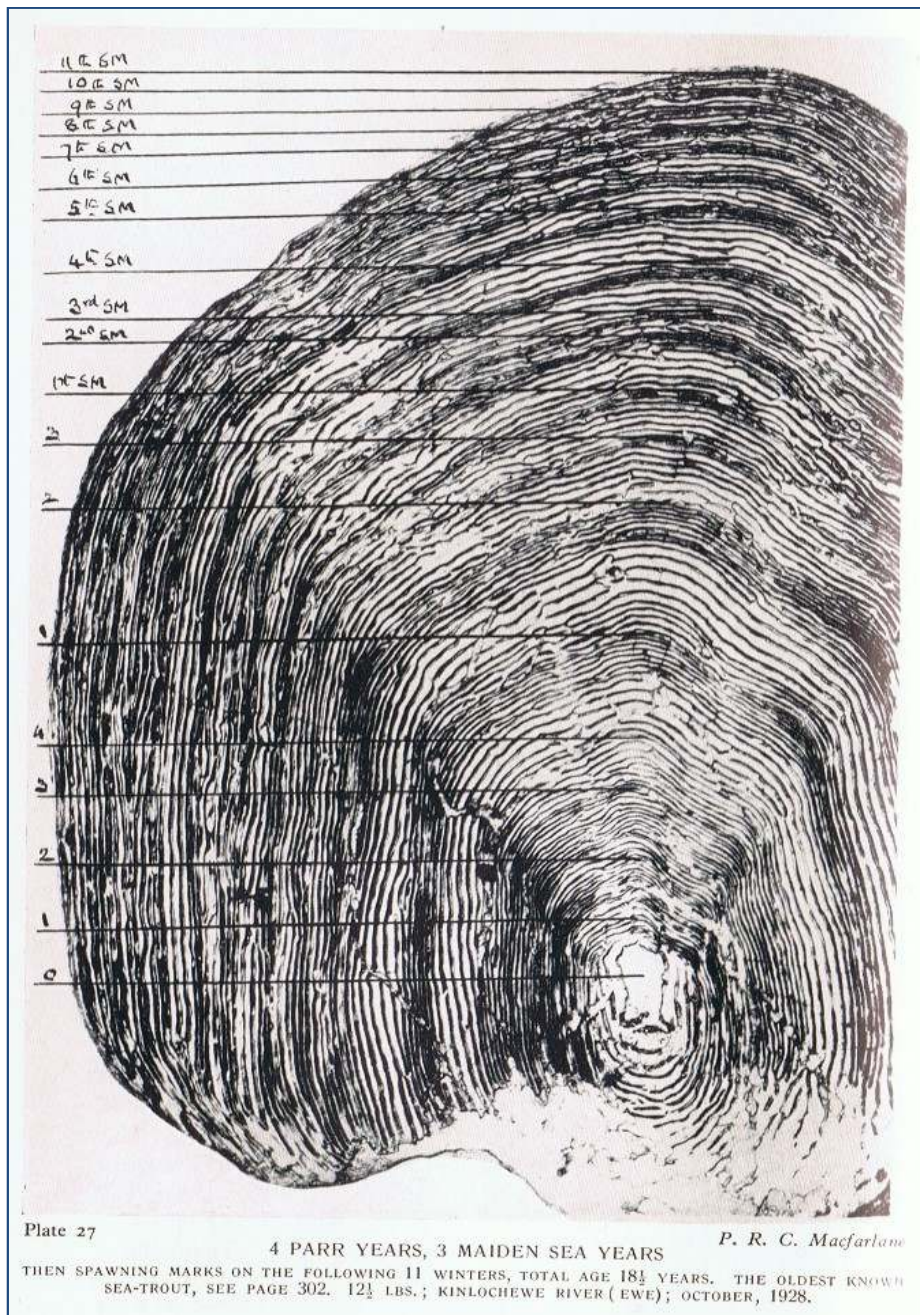
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Introduction

Protocols for sea trout scale reading date back to the 1920s. One of the most detailed scale reading studies of sea trout was that of G. Herbert Nall, who in 1930 published a book 'The Life of the Sea Trout Especially in Scottish Waters; with chapters on the reading & measuring of scales'.

The figure below from Nall 1930, is of a scale from the then oldest known sea trout, and beautifully illustrates freshwater growth with 4 winter checks (numbered from bottom, 1-4), marine growth (3 maiden winter checks, numbered 1-3), and 11 spawning marks 'SM' (1st SM – 11th SM) where the bottom edge of the scale has been eroded during the winter period prior to regrowing the following summer.

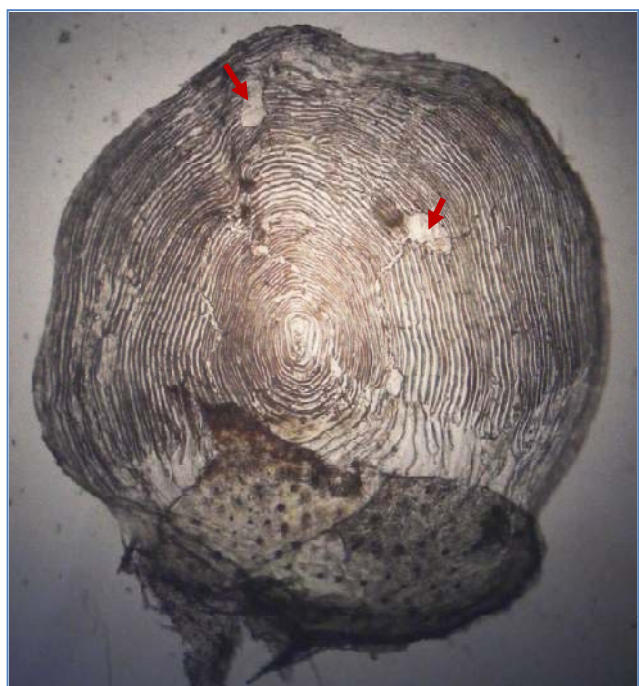


That Loch Maree has yielded both the oldest known sea trout and oldest known salmon in Europe highlights the loch's status as a special place for both species, at least in terms of fisheries heritage. However, it is many years since a 'double figure' sea trout (a fish of over 10lb in weight) was taken in the Loch.

The largest live Wester Ross sea trout so far seen by the WRFT biologist is a fish of 5lb taken in the sweep net at the mouth of the River Kerry in June 2010. This fish is shown below.



Nine scales were taken from the fish, only one of which shows growth rings to the centre (right). This scale, is the only one from which freshwater age can be ascertained; I think two or three winters before going to sea as a smolt. In its first summer at sea, growth is prolific; thereafter there is a growth check and there are a further 4 winter growth checks with marginal erosion (spawning marks), these are more clearly seen on the scale on the left and marked with black arrows. This gives the trout a total age of seven or eight winters after hatching. The circular marks (red arrows) are thought to be attributable to infection by the parasitic trematode, *Cryptocotyle lingua*.



The catalogue

Fish were sampled using sweep net, gill net or rod and line. Sea trout scales were read by projecting their image on to a screen using an EyeCom3000 microfiche reader, and photographed.

1. Sea trout in or after 1st summer at sea (post-smolts and finnock)

Some of these fish show remarkable early summer growth on scales. I'm not at all confident that the method used by Nall (1930) to back calculate size at age is appropriate for fish sampled in the early summer: it appears that scales initially grow faster than the skeleton of the fish; then fish convert 'girth' to 'length' as the summer progresses and the skeleton catches up.

<http://www.wrft.org.uk/files/ST333mmTournaitrap30Sept10.pdf>

<http://www.wrft.org.uk/files/ST188mmBoorBay15Jul2009.pdf>

<http://www.wrft.org.uk/files/ST197mmBoorBay13Sept2010.pdf>

<http://www.wrft.org.uk/files/ST199mmRiverEwe20Jun2007.pdf>

<http://www.wrft.org.uk/files/ST206mmBoorBay15Jul2009.pdf>

<http://www.wrft.org.uk/files/ST202mmBoorBay15Jul2009.pdf>

<http://www.wrft.org.uk/files/ST252mmBoorBay15Jul2009.pdf>

<http://www.wrft.org.uk/files/ST235mmBoorBay15Jul20091.pdf>

<http://www.wrft.org.uk/files/ST236mmBoorBay15Jul2009.pdf>

<http://www.wrft.org.uk/files/ST257mmBoorBay15Jul2009.pdf>

<http://www.wrft.org.uk/files/ST265mmBoorBay13Sept2010.pdf>

<http://www.wrft.org.uk/files/ST265mmTournaitrap3Sept2007.pdf>

<http://www.wrft.org.uk/files/ST300mmSguod27Apr10.pdf>

<http://www.wrft.org.uk/files/ST308mmBoorBay15Jul2009.pdf> very large post-smolt?

2. Sea trout in / after 2nd summer at sea

<http://www.wrft.org.uk/files/ST382mmTournaitrap30Aug08.pdf>

<http://www.wrft.org.uk/files/ST311mmPoolewe30Jun2007.pdf>

<http://www.wrft.org.uk/files/ST315mmRiverEwe20Jun20071.pdf>

<http://www.wrft.org.uk/files/ST381mmRiverKerrymouth21Feb2011.pdf>

<http://www.wrft.org.uk/files/ST393mmFlowerdale27Jul10.pdf>

3. Sea trout in / after three or more summers at sea

Not so many fish in this category; however the River Ewe, Tournaitrap, and Loch Gairloch sweep net have all produced a fish in this category.

<http://www.wrft.org.uk/files/ST590mmKerryBay7Jun10.pdf>

<http://www.wrft.org.uk/files/ST470mmTournaitrap30Sept10.pdf>

<http://www.wrft.org.uk/files/ST395mmBoorBay15Jul2009.pdf>

<http://www.wrft.org.uk/files/ST395mmRiverEwe22Jul2008.pdf>

4. Fat / fast growing sea trout

Many of these fish were taken in July 2009 when growth was prolific in both Loch Ewe and Loch Gairloch. There were many 0+ (young of the year) sandeels in the area at the time. In contrast, the ST381mm from River Kerry mouth on 21st Feb 2011 was one of the thinnest recorded, but the scale indicated good steady growth in its initial year (2009) at sea (but slower growth in 2010).

<http://www.wrft.org.uk/files/ST351mmInverasdale3Aug10.pdf>
<http://www.wrft.org.uk/files/ST370mmRiverEwe19Jun08.pdf>
<http://www.wrft.org.uk/files/ST188mmBoorBay15Jul2009.pdf>
<http://www.wrft.org.uk/files/ST197mmBoorBay13Sept2010.pdf> with sprats
<http://www.wrft.org.uk/files/ST202mmBoorBay15Jul2009.pdf>
<http://www.wrft.org.uk/files/ST206mmBoorBay15Jul2009.pdf>
<http://www.wrft.org.uk/files/ST252mmBoorBay15Jul2009.pdf>
<http://www.wrft.org.uk/files/ST235mmBoorBay15Jul20091.pdf>
<http://www.wrft.org.uk/files/ST236mmBoorBay15Jul2009.pdf>
<http://www.wrft.org.uk/files/ST257mmBoorBay15Jul2009.pdf>
<http://www.wrft.org.uk/files/ST380mmBoorBay15Jul2009.pdf>
<http://www.wrft.org.uk/files/ST381mmRiverKerrymouth21Feb2011.pdf>
<http://www.wrft.org.uk/files/ST395mmBoorBay15Jul2009.pdf>

5. Spawning marks

There were few clear examples of spawning marks on sampled scales. I'm not sure if this means that most sea trout (including larger ones) had not spawned; more likely the scales were not clear enough to see the marks or perhaps in the case of Gairloch sea trout, the fish continued to feed in weeks prior to spawning and returned to the sea shortly after spawning to feed again and no spawning mark was formed?

<http://www.wrft.org.uk/files/ST590mmKerryBay7Jun10.pdf>
<http://www.wrft.org.uk/files/ST381mmFlowerdale1Feb10.pdf>
<http://www.wrft.org.uk/files/ST393mmFlowerdale27Jul10.pdf>

6. Large sea trout without spawning marks

As discussed above.

<http://www.wrft.org.uk/files/ST450mmFlowerdale1Feb10.pdf>

7. Sea trout taken from the sea in the winter or early spring

These are some examples of the fish taken in Loch Gairloch during the winter. Fish were thin though supported adult sea lice suggesting that they had been in sea water for several weeks at least prior to capture.

<http://www.wrft.org.uk/files/ST450mmFlowerdale1Feb10.pdf>

<http://www.wrft.org.uk/files/ST381mmFlowerdale1Feb10.pdf>

<http://www.wrft.org.uk/files/ST381mmRiverKerrymouth21Feb2011.pdf>

8. Sea trout with parasitic *Cryptocotyle* infection spots on scale

These fish were mostly taken in Loch Gairloch, and the circular marks have been attributed to infection by the parasitic trematode *Cryptocotyle lingua* which causes 'black spot' disease. Sea trout are an intermediate host for this trematode parasite; the final host is usually a sea gull but may be another bird, otter, seal or other animal in which flukes grow in the intestine.

<http://www.wrft.org.uk/files/ST450mmFlowerdale1Feb10.pdf>

<http://www.wrft.org.uk/files/ST480mmFlowerdale27Aug10.pdf>

<http://www.wrft.org.uk/files/ST393mmFlowerdale27Jul10.pdf>

<http://www.wrft.org.uk/files/ST395mmBoorBay15Jul2009.pdf>

9. Loch Ewe – River Ewe sea trout

The collection so far:

<http://www.wrft.org.uk/files/ST351mmInverasdale3Aug10.pdf>

<http://www.wrft.org.uk/files/ST333mmTournai trap30Sept10.pdf>

<http://www.wrft.org.uk/files/ST370mmRiverEwe19Jun08.pdf>

<http://www.wrft.org.uk/files/ST382mmTournai trap30Aug08.pdf>

<http://www.wrft.org.uk/files/ST470mmTournai trap30Sept10.pdf>

<http://www.wrft.org.uk/files/ST188mmBoorBay15Jul2009.pdf>

<http://www.wrft.org.uk/files/ST197mmBoorBay13Sept2010.pdf>

<http://www.wrft.org.uk/files/ST199mmRiverEwe20Jun2007.pdf>

<http://www.wrft.org.uk/files/ST202mmBoorBay15Jul2009.pdf>

<http://www.wrft.org.uk/files/ST206mmBoorBay15Jul2009.pdf>

<http://www.wrft.org.uk/files/ST252mmBoorBay15Jul2009.pdf>

<http://www.wrft.org.uk/files/ST235mmBoorBay15Jul20091.pdf>

<http://www.wrft.org.uk/files/ST236mmBoorBay15Jul2009.pdf>

<http://www.wrft.org.uk/files/ST257mmBoorBay15Jul2009.pdf>

<http://www.wrft.org.uk/files/ST265mmBoorBay13Sept2010.pdf>

<http://www.wrft.org.uk/files/ST265mmTournai trap3Sept2007.pdf>

<http://www.wrft.org.uk/files/ST300mmSguod27Apr10.pdf>

<http://www.wrft.org.uk/files/ST308mmBoorBay15Jul2009.pdf> very large post-smolt?

<http://www.wrft.org.uk/files/ST311mmPoolewe30Jun2007.pdf> early returned

<http://www.wrft.org.uk/files/ST315mmRiverEwe20Jun20071.pdf> early returned
<http://www.wrft.org.uk/files/ST380mmBoorBay15Jul2009.pdf>
<http://www.wrft.org.uk/files/ST395mmBoorBay15Jul2009.pdf> *Cryptocotyle spots*
<http://www.wrft.org.uk/files/ST395mmRiverEwe22Jul2008.pdf>

10. Loch Gairloch sea trout

Some larger sea trout were taken from Loch Gairloch in 2009 and 2010 including the fish of 590mm in June 2010.

<http://www.wrft.org.uk/files/ST450mmFlowerdale1Feb10.pdf>
<http://www.wrft.org.uk/files/ST590mmKerryBay7Jun10.pdf>
<http://www.wrft.org.uk/files/ST480mmFlowerdale27Aug10.pdf>
<http://www.wrft.org.uk/files/ST381mmFlowerdale1Feb10.pdf>
<http://www.wrft.org.uk/files/ST393mmFlowerdale27Jul10.pdf>
<http://www.wrft.org.uk/files/ST381mmRiverKerrymouth21Feb2011.pdf>

11. Loch Carron sea trout

Examples to follow . . .

12. Predator damaged sea trout

Many fish have old scale damage perhaps attributable to a peck from a bird. The examples here are of fish with larger damage.

<http://www.wrft.org.uk/files/ST450mmFlowerdale1Feb10.pdf>
<http://www.wrft.org.uk/files/ST252mmBoorBay15Jul2009.pdf>

13. Early-returned sea trout with high numbers of sea lice (*Lepeopheirus salmonis*)

I had to go back through collection to find examples from the 2007 epizootic when many sea trout returned early to the River Ewe in poor condition.

<http://www.wrft.org.uk/files/ST199mmRiverEwe20Jun2007.pdf>
<http://www.wrft.org.uk/files/ST311mmPoolewe30Jun2007.pdf>
<http://www.wrft.org.uk/files/ST315mmRiverEwe20Jun20071.pdf>

14. Sea trout at sea with high numbers of sea lice

In 2009 and 2010, some of the sea trout carried quite high numbers of lice and were apparently growing quickly at sea even though dorsal fins were becoming rather tatty. Well fed sea trout may be better able to tolerate heavy sea louse infection than thin fish.

<http://www.wrft.org.uk/files/ST351mmInverasdale3Aug10.pdf>

<http://www.wrft.org.uk/files/ST252mmBoorBay15Jul2009.pdf>

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Cunningham, P. (2011) Sea trout monitoring report for 2009 - 2010

Nall, G. Herbert (1930) The Life of the Sea Trout, Especially in Scottish Waters; with chapters on the reading & measuring of scales'. Seeley, Service & Co. Ltd, 196 Shaftsbury Avenue

Walker, A. F. (1980) A Report on the Growth Rate, Size and Age Composition of Sea trout Caught by Anglers Fishing Lochs Maree, Clair and Coulin in 1980. Freshwater Fisheries Laboratory, Pitlochry, Scotland.