



Kyle and Oykel sea trout scale collection report

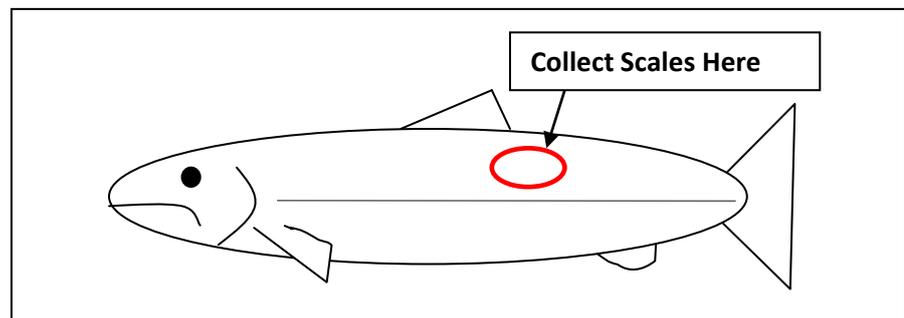
Marcus Walters & Dr Andy Walker 2011

1. Scale Collection

Over the last 3 fishing seasons (2008, 2009 & 2010) the MFSTP has recruited volunteer anglers and ghillies to collect scales from sea trout in the Moray Firth area. Volunteers were supplied with a detailed protocol explaining how to take scales from the flank between the trailing edge of the dorsal fin and the lateral line (See diagram), by scraping with the point of a knife or with forceps. Scales are stored in a scale collection envelopes which also records details of date, location and method of capture, body length (mm) from tip of nose to fork of tail, weight (g), sex and any other supplementary information. Scales are deposited inside by gentle finger pressure upon the outsides of the packets as the knife or forceps is withdrawn and then left to air dry.

SEA TROUT
Name.....
Length.....
(Tick if accurately measured)
Weight.....
Date.....
Place.....
Sex.....
Remarks.....

Moray Firth
Sea Trout Project



Scale Envelope and diagram of where to collect scales.

2. Scale Reading Method

Using low-power microscopy, the dry scales with complete centres are pressed between two thin celluloid strips. This creates a "finger print" impression of the scales in the celluloid from the circular growth ridges (cerculi) and the image of the permanent impression can then be projected onto a scale reading screen. From the pattern of cerculi key aspects of sea trout life history can be determined; age at smolt migration, age at first spawning, overall age, number of SMs and growth performance, especially at sea. Each of these biological aspects may vary from stock to stock and may change over time.

As reading sea trout scales is complex and requires a lot of experience the MFSTP used Dr Andy Walker to read the scale collections. Results were validated by repeated blind readings and repeated readings by independent scale reading experts. Due to the complex movements of sea trout to and from the sea, especially at the finnock (0+ sea winters) stage average growth patterns may only become clearer by reading scales from many fish, requiring large samples to be made available.

3. The River Kyle Scales

The MFSTP has collected 73 sets of scales from Kyle of Sutherland Angling Association (KOSAA) volunteers fishing in their tidal waters of the lower Kyle (2006-2010). The MFSTP has also received 29 sets of scales from the Ghillies George Ross and Steven Mackenzie on the Lower Oykel beat (2008 & 2010). As both these collections have been made in distinct locations they will be considered as distinct sample sets but compared in Figures 1-7.

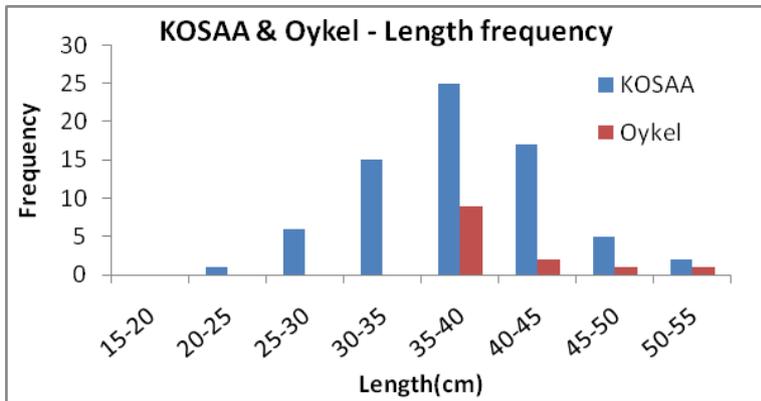


Figure 1, KOSAA & Oykel sea trout length frequency distribution. The KOSAA sample is from a very evenly distributed sample of fish averaging 37.6cm long. The Oykel sample averaged 40.6cm but the sample is skewed as the beat does not record fish under 1lb.

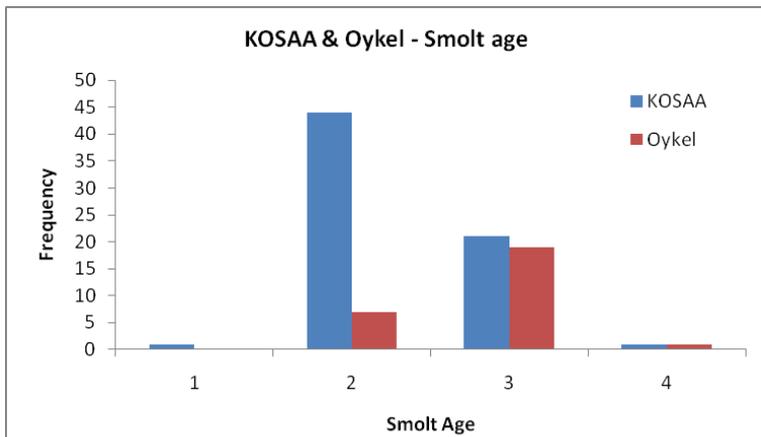


Figure 2, KOSAA & Oykel sea trout smolt age. The majority of the KOSAA sample smolted at 2 years old (65.7%) while the majority of the Oykel sample smolted at 3 years old (70.4%).

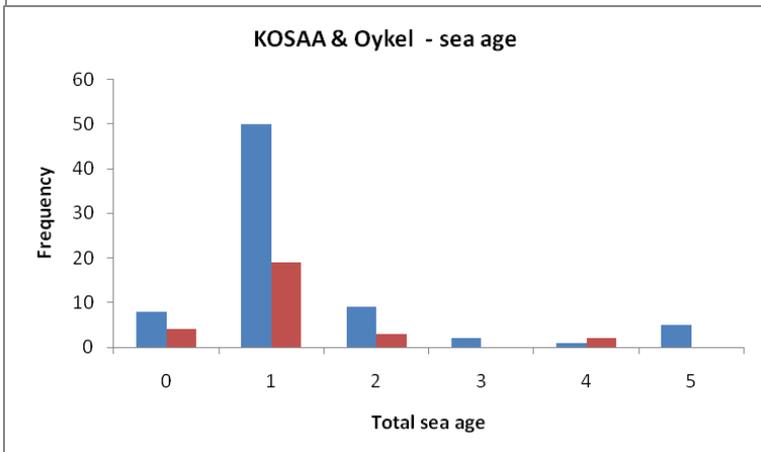


Figure 3, KOSAA & Oykel sea trout sea age. The majority of both the KOSAA (74.6%) and Oykel (79.2%) samples had been at sea for 1 year before returning to the river where they were caught.

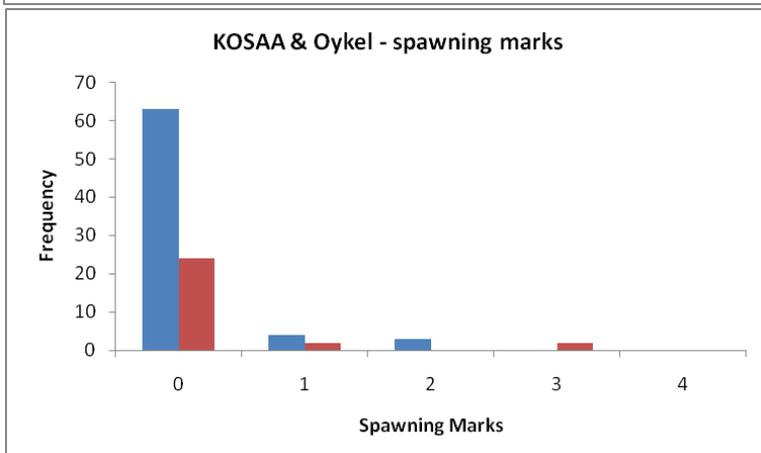


Figure 4, KOSAA & Oykel sea trout spawning marks. The majority of the sea trout in both The KOSAA (90%) and Oykel (85.7%) samples had not spawned before.

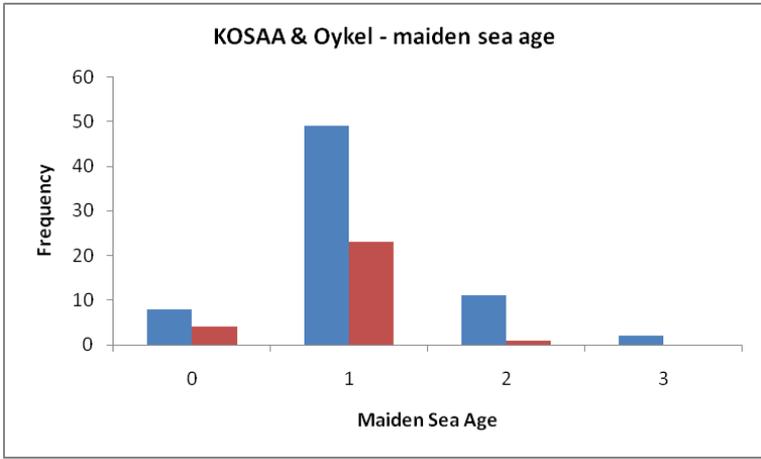


Figure 5, KOSAA & Oykel sea trout maiden sea age. The majority of trout in the KOSAA (70%) and Oykel (82.1%) samples have spent one year at sea after smolting and are returning to the river as maiden fish having not spawned before.

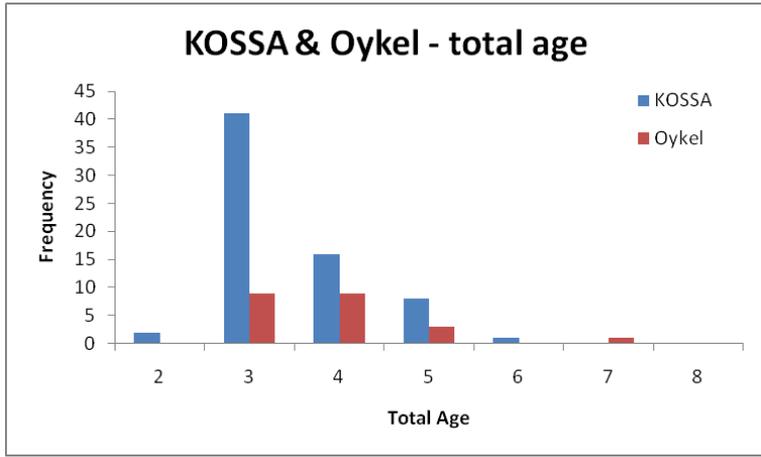


Figure 6, KOSAA & Oykel sea trout total age. The majority of the KOSAA collection (60.3%) had a total age of 3 years. The majority having smolted at 2 (Fig 2), and been at sea for 1 year (Fig 3). The majority (81.8%) of the Oykel collection are 3 or 4 years old having typically smolted at 2 or 3 years old and then been at sea for 1 or 2 years.

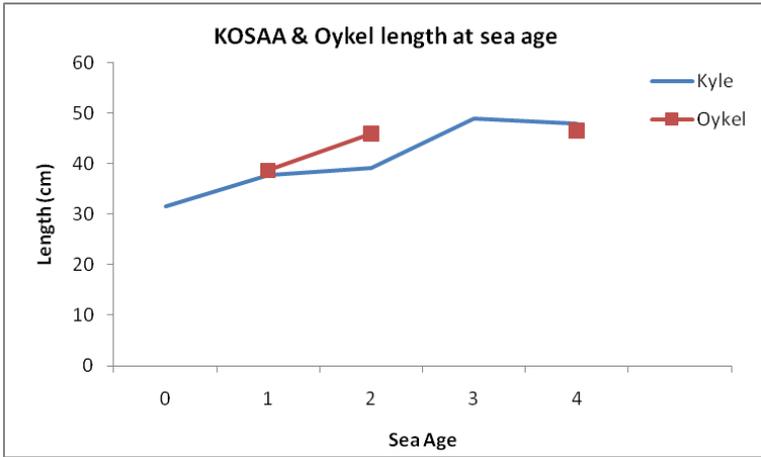


Figure 7, KOSAA and Oykel average length at sea age. The average length of sea trout at sea age is a good a measure of the growth rate and an indicator of food availability at sea. Both collections show very similar lengths at sea age. Samples of trout with a sea greater of greater than 1 are very limited.