



A brief summary of Deveron Trout Scale Collections

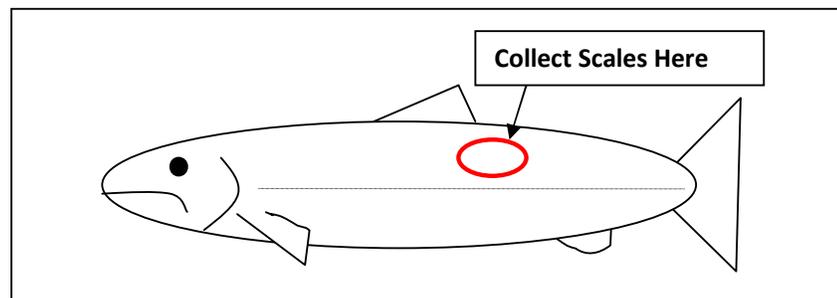
Marcus Walters & Dr Andy Walker, August 2011

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. Local Fisheries Trusts and Boards have also contributed scales they have collected during routine fieldwork and the MFSTP has undertaken various sampling strategies to further increase the collection effort. 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. They were also supplied with MFSTP scale collection envelopes which required 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 Scales are deposited inside by gentle finger pressure upon the outsides of the packets as the knife or forceps is withdrawn and then left to air dry.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. Scale results and Analysis

Due to the range of methods and different sources used to collect scales a degree of caution has to be adopted when comparing results within and between scale collections. Often the measurements taken by anglers have been estimated and are not accurate furthermore each capture method will involve some bias in size selection, capture efficiency, seasonal timing, and location. However, the coverage and number of scales collected across the Moray Firth region would not have been feasible using only one method and the results provided are essential to better understanding the life history of Moray Firth sea trout.

4. Deveron Scales

The scales from the Deveron will be considered as two separate collections; sea trout collected by anglers and ghillies around the catchment and those collected by the Trust from the population of trout in the Blackwater tributary. The Blackwater trout show different characteristics to the typical sea trout and it is unclear whether they are sea trout or resident brown trout.

4.1. Deveron Sea Trout

Scales from forty fish have been collected by volunteers from the Turriff Water, Huntly Water, Eucrie, Isla, Muiresk and Cabrach.

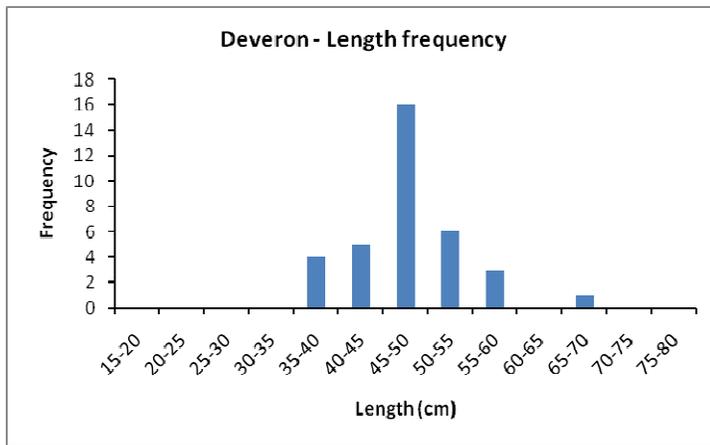


Figure 1, Deveron sea trout length frequency distribution. The average length was 48cm with the largest being 65.5cm and the smallest 36cm.

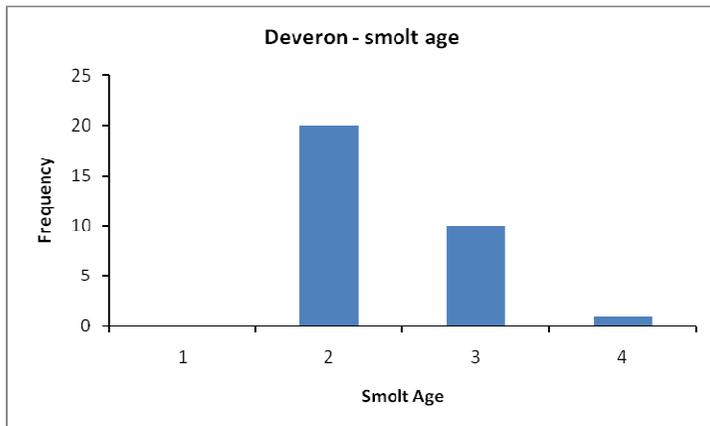


Figure 2, Deveron sea trout smolt age. The majority (65%) of the Deveron sea trout collection smolted at 2 years old and only 32% at 3 years old.

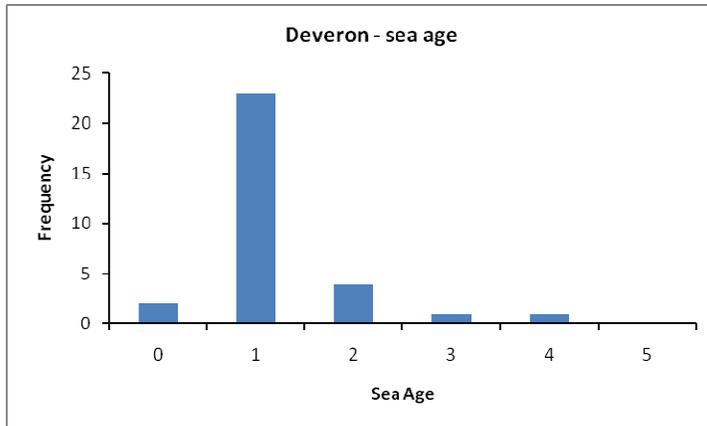


Figure 3, Deveron sea trout sea age. 74 % of the sea trout in the collection had spent 1 year in the sea before returning to the river Deveron where they were caught.

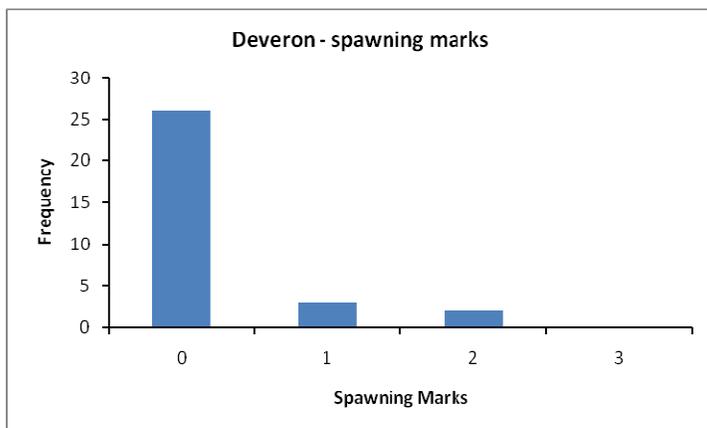


Figure 4, Deveron sea trout spawning marks. The majority (84%) of the sea trout had not spawned before, ie. they were maiden fish. Only 3 fish had spawned once before and 2 twice before.

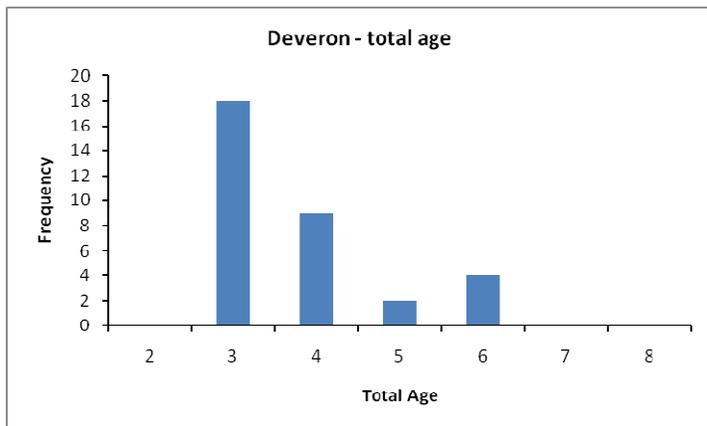


Figure 5, Deveron sea trout total age. The majority of sea trout in the collection were 3 years old in total.

In summary the Deveron sea trout in this collection were on average 48cm long (Approx 2.6 lb) and the majority had smolted and left the river at 2 years old before spending 1 year at sea feeding before returning to the river for the first time as maiden fish when they were caught.

4.2. Blackwater Trout

Scales from 142 trout have been collected by the Deveron Bogie and Isla Rivers Trust from the Blackwater tributary in 2008, 2009 and 2010. Although the trout in the Blackwater often look like sea trout and behave as such with a clear autumn spawning run the scales appear to be more similar to fast growing resident trout. This question is the subject of an ongoing project to try and determine the life history of these fish.

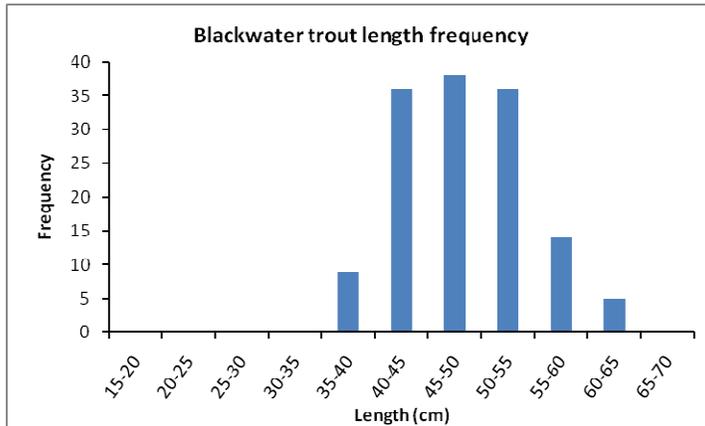


Figure 7, Blackwater trout length frequency distribution. The average length of trout sampled from the Blackwater was 49cm with the largest fish being 62cm long and the smallest 37cm.

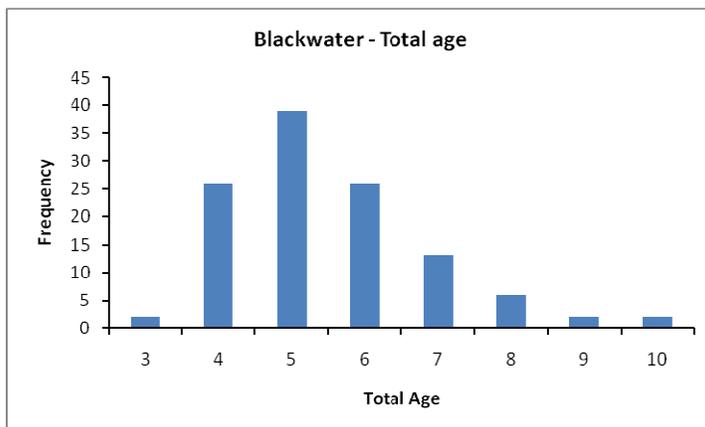


Figure 8, Blackwater trout total age frequency. There is a fairly even distribution of ages in the Blackwater trout sample. The largest age group is 5 years old with the youngest trout being 3 and the oldest 10 years old.

Due to the nature of the Deveron, Blackwater scales it is not possible to provide more information than the total age of the fish. Although some scales show characteristics similar to sea trout the majority don't show the typical sea growth and spawning marks that allow the calculation of smolt age, sea age and spawning age. On average the trout in the Blackwater collection are much the same size to the Deveron sea trout collection being on average 49cm long which is typically about 2.8lb in weight.

5. Deveron sea trout compared to Blackwater trout

Due to the nature of the Blackwater trout scales there is not that much that can be compared to the Deveron sea trout collection. In Figure 9 the length at total age has been graphed for both Deveron sea trout and Blackwater scales. There is a much greater range of ages in the Blackwater sample but for the ages that can be compared (3,4,5,6) the sea trout are very slightly longer. It should be noted that the average sea trout length for ages five and six is only based on a sample size of two and four fish respectively.

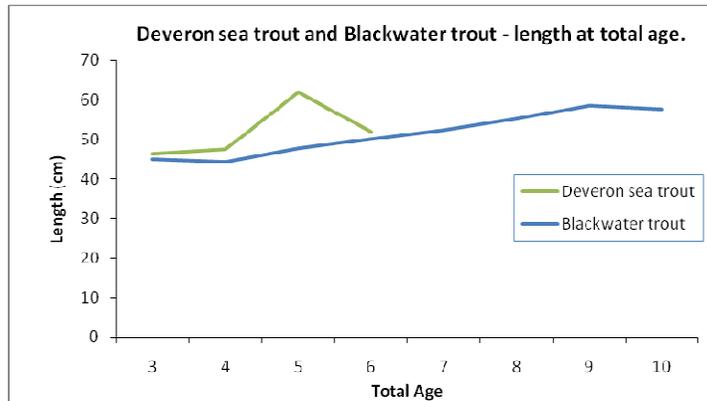


Figure 9, Average length of Deveron trout at total age.

Where Deveron sea trout can be compared to Blackwater trout they are very slightly longer on average.