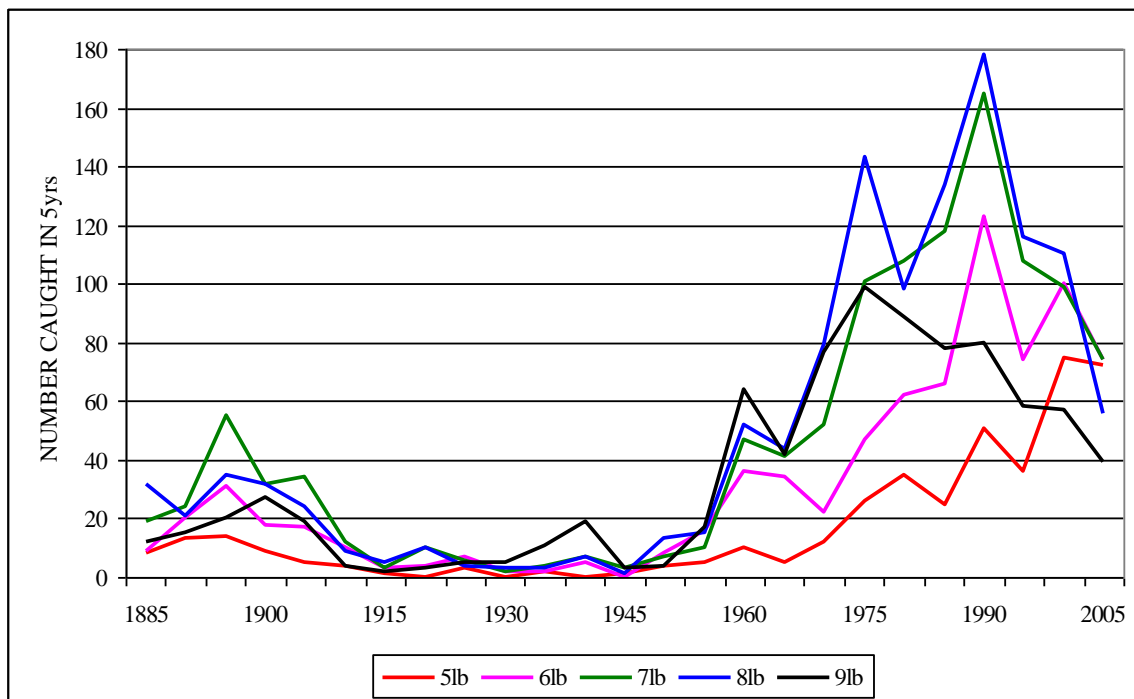




Changes in the size of Tweed Autumn Grilse 1.1

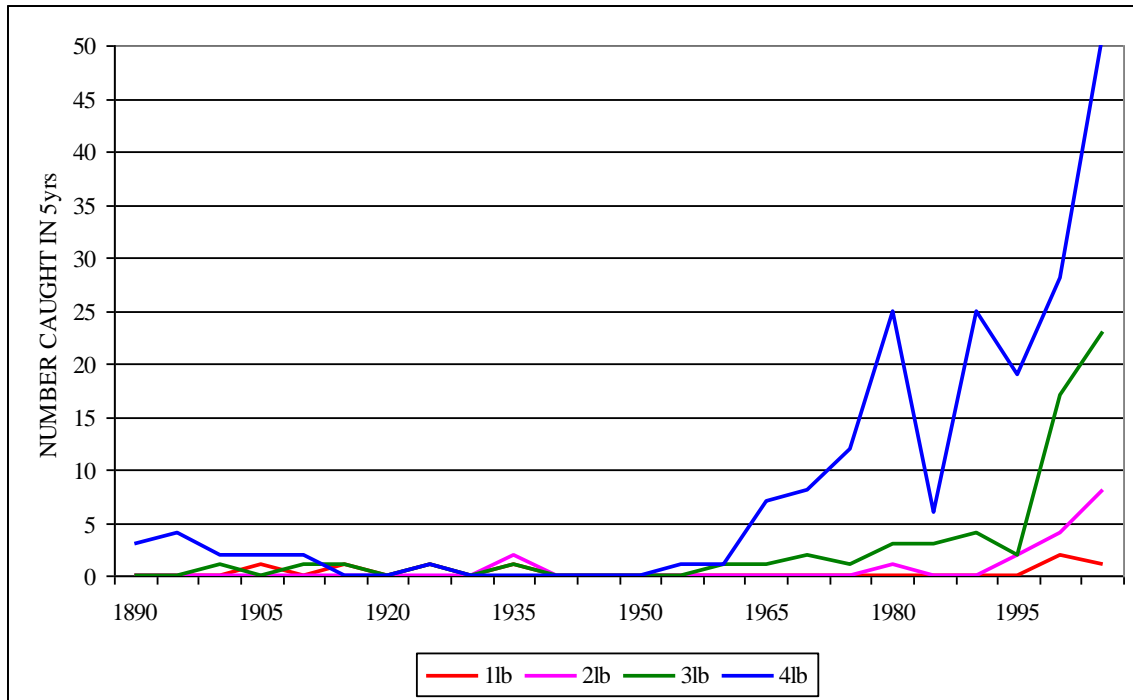
1. There has been a long-term trend towards more small fish being caught in autumn and fewer large. Part of this has been due to Grilse becoming commoner than Salmon. There have also been changes in the sizes of Grilse caught in autumn, as shown in the two graphs below, one for what would be considered "normal" sized Grilse of 5 to 9lbs and one for small Grilse of under 5lbs.
2. The numbers of 5 to 9lb fish caught at a Middle Tweed beat from 1887 to 2006 in September, October and November are shown in the graph below. The figures shown are averages for 5 year periods, except for 1885-89, which includes only the years 1887, 1888 and 1889 as the records start in 1887 and for the period 2005-09, which has only data for the years 2005 & 2006 as later records have not been computerised.



- The **black** line shows the numbers of fish of 9lbs (nearest whole lb weight), which rose rapidly in the 1940's and 1950's, peaked in the 1970's and has been falling since.
- The **blue** line shows the numbers of 8lb fish caught which also rose rapidly from the 1940's, then peaked in the 1990's, before falling.
- The **green** line shows the numbers of 7lb fish caught. These follow the pattern for the 8lb fish, also peaking in the 1990's.
- The **purple** line shows the numbers of fish of 5 6lbs which also rose from the 1940's, peaked in the 1990's but have remained at much the same level since.
- The **red** line shows the fish of 5lbs in weight. These also increased from the 1940's, but less rapidly than the other sizes shown in this graph. Their highest numbers so far have been in the 2000's when they matched the numbers of 8lb and 9lb fish for the first time.

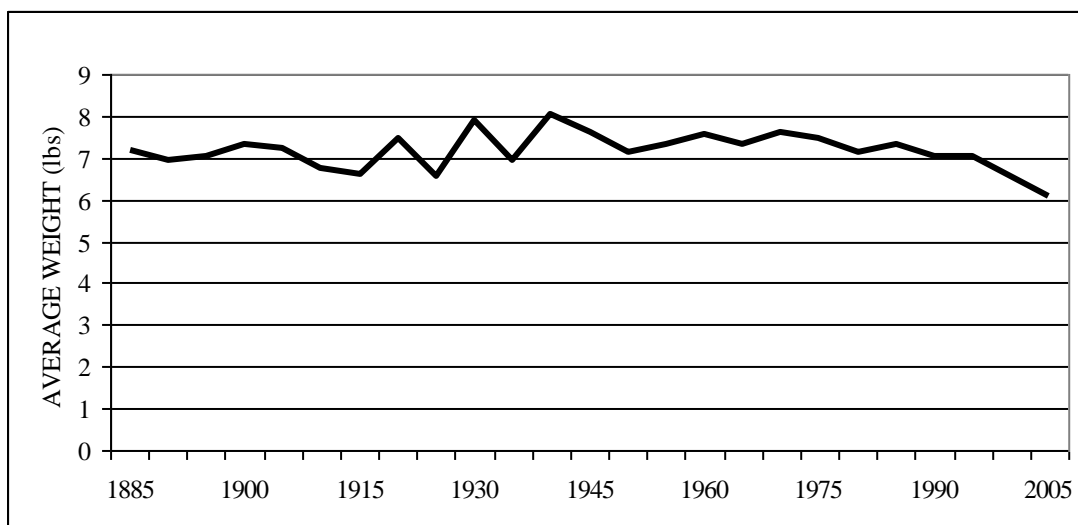
The low numbers of all these sizes in the 1915-1955 period reflects the fact that that this time the main run was in spring, with few fish and little fishing in autumn.

3. The graph below is for the same beat and time periods and shows the catches of fish from 1 to 4lbs (nearest whole lb).



- The **blue** line shows the numbers of 4lb fish caught which rose rapidly from the 1950's and is now at its highest recorded numbers.
- The **green** line shows the numbers of 3lb fish caught, which show a similar pattern to the 4lb fish.
- The **purple** and **red** lines show the numbers of fish of 2 and 1lbs fish, which are at very low numbers but have become slightly more common in recent years. Fish of around 1lb appeared again in the mid 1990's having been entirely absent from the catch records since 1905-15.

4. The average weight of all fish recorded as 9lbs or less is shown in the graph below, from which it can be seen that this has changed little over the years, at around 7 to 8lbs, until very recent years, when it has dipped towards 6lbs. This reflects the higher proportion of smaller fish in more recent years. However, a few large fish will have more influence on the result of the calculation of an average than a bigger numbers of smaller fish which has to be remembered when averages are considered.



Average weight of fish of 9lbs and under 1887-2006 at a Middle Tweed beat



5. There are two basic reasons as to why more small Grilse are being caught: -

- a. Particular stocks of fish that only grow to smaller sizes are increasing in numbers while those stocks that produce larger fish are reducing, and/or
- b. Growth of fish is being "stunted" at sea, so that fish that would otherwise become larger are returning at a smaller size.

6. The main aim of the Tweed Foundation's genetics work, now underway as part of the RAFTS FASMOP programme (part funded by the Scottish Government) is to work out the stock structure of the Salmon of the Tweed. Tissue samples for analysis have been collected by boatmen along the river from a range of sizes of fish killed and one of the questions being asked is whether small fish come from a particular stock or stocks breeding in particular area(s) of the catchment. If they do, then it would be a very different situation from small fish coming randomly from a range of different populations and being small simply due to restricted growth. If small fish did come from particular populations that were expanding in numbers, it would indicate that their small size was giving them an advantage in survival over populations whose fish grew – or tried to grow – larger.