

Rod catches of Atlantic Salmon (*Salmo salar*) in three rivers in Wester Ross: a comparison between 2010 and 2011

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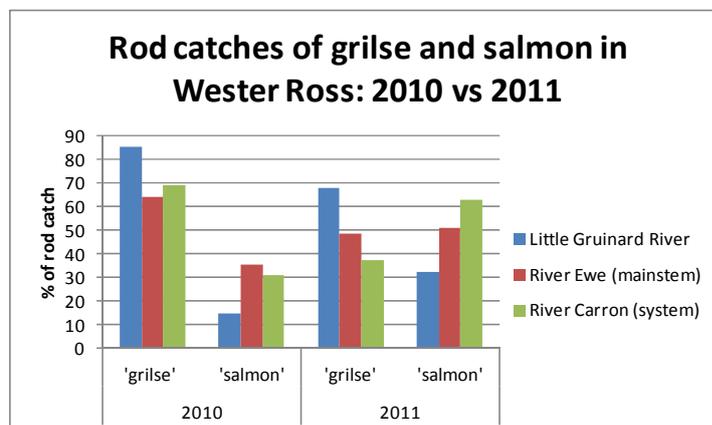
What can we learn from rod catches? Rod catches of salmon in 2010 and 2011 from rivers in Wester Ross were amongst the best on record for the last 20 years. The following graphs contrast the catch figures for three rivers where fishing effort is relatively consistent between years: the Little Gruinard River, the River Ewe and the River Carron (which enters the sea into Lochcarron; not to be confused with other River Carrons elsewhere in Scotland).

Rod catch data has been kindly provided by Graeme Wilson (keeper, Little Gruinard River), Ray Dingwall (keeper, River Ewe) and Bob Kindness (manager, River Carron Restoration Programme). Note that all rivers have a 'catch and release' policy whereby nearly all salmon are returned. Especially for the River Carron there is data to show that the same fish can be caught more than once, which should be taken into account especially for interpretation of rod catches for later in respective seasons.

1. Grilse vs. Salmon.

Figure 1 shows the relative proportions of 'grilse' vs. multi-sea winter 'salmon' for respective rivers for 2010 and 2011. For the Little Gruinard and Ewe, all fish up to 7lb are classed as 'grilse' and all fish over 7lb are classed as 'salmon'. For the River Carron, Bob Kindness has provided a breakdown of 'grilse' vs. 'salmon'. For all rivers, some of the fish taken towards the end of the season, in the 6-10lb size range may be incorrectly ascribed here; however, note that there is consistency from one year to the next.

Figure 1: Rod catches of 'grilse' vs. 'salmon' for the Little Gruinard River, River Ewe and River Carron in 2010 and 2011.



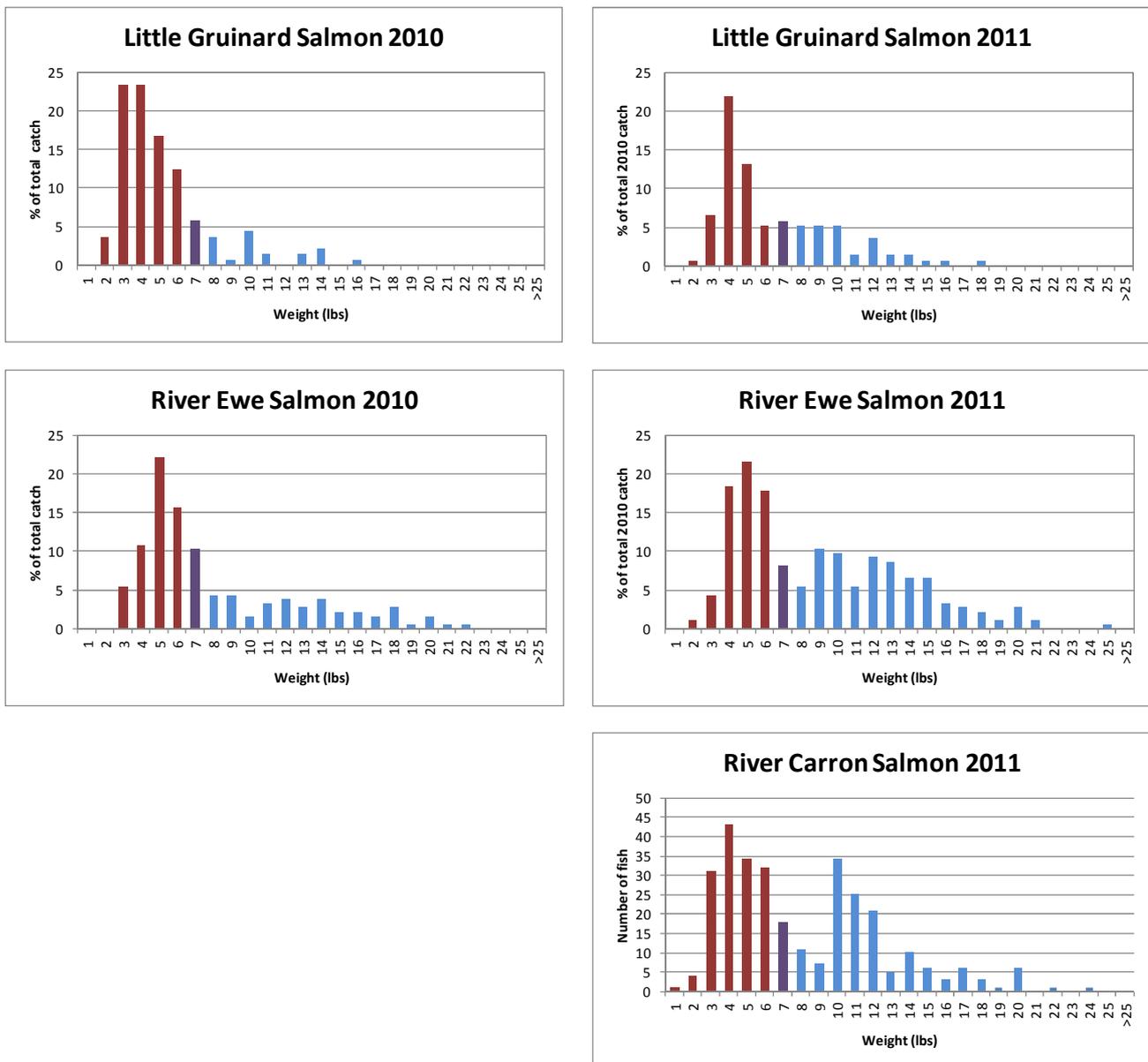
Two points:

1. All three rivers recorded higher proportions of 'salmon' and lower proportions of 'grilse' in 2011 than in 2010. For the Little Gruinard and River Carron the proportion of 'salmon' in 2011 was twice that of 2010.
2. In both years the Little Gruinard River had the highest % of grilse and smallest % of salmon of the three rivers.

2. Size of salmon

Figure 2 compares the sizes of salmon taken in each of the three rivers in 2010 with 2011. Graphs for the River Ewe and Little Guinard have been plotted as proportions of the total number of salmon caught in respective rivers in 2010, so the relative abundance of fish in each size class can be compared between years. For the River Carron, actual numbers of fish are plotted on the graph. Columns coloured red are assumed to be nearly all grilse; those blue, nearly all Multi-Sea Winter [MSW] salmon. The purple column (fish of 7lb) may be more even proportions of salmon (early fish) and grilse (late fish); indeed fish of 8 and 9 lbs may be

Figure 2: Comparison of sizes of salmon taken in the Little Guinard River, River Ewe and River Carron in 2010 and 2011. Columns coloured red are assumed to be nearly all grilse; those blue, nearly all Multi-Sea Winter [MSW] salmon, and the purple column fish which may be more even proportions of grilse and salmon.

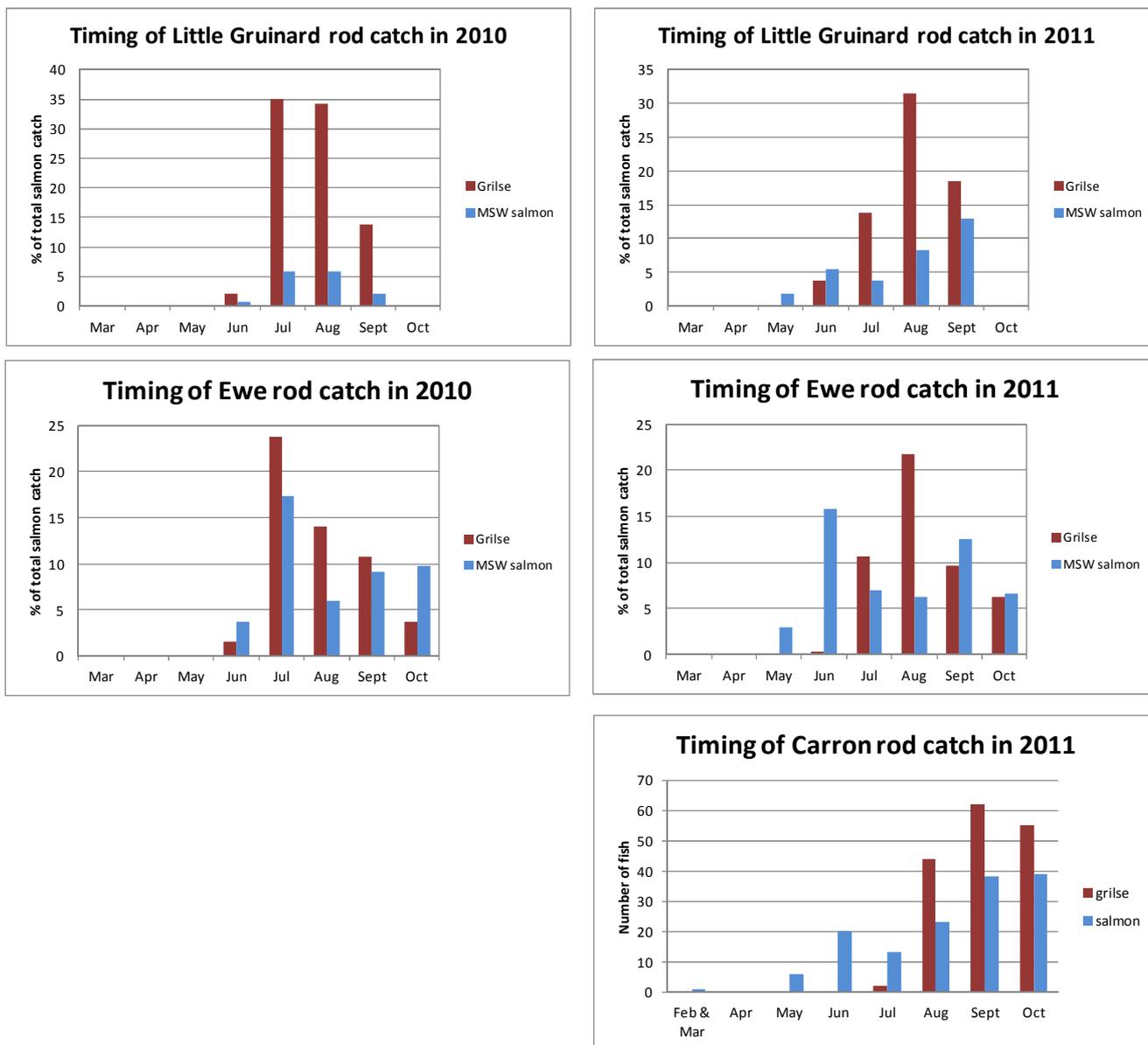


This figure again illustrates the higher catches of MSW salmon in rod catches in 2011 vs. 2010. The overall number of fish taken in the Little Guinard in 2011 was less than in 2010. However, although the numbers of 'grilse' sized fish were much lower in 2011 than 2010, there were more fish of 8lb and larger taken in 2011 than in 2010. The catch of larger salmon of 8lb and upwards in the River Ewe in 2011 was over twice that of 2010.

3. Timing of rod catch

Figure 3 compares the timing of rod catches of salmon for the three fisheries in 2010 with 2011. The separation of 'grilse' from 'salmon' is based on weight: fish of 7lb and under are classed as 'grilse'; those of 8lb and over as 'salmon'. Note that towards the end of the season when larger grilse may be present (i.e. September and October), this classification may be less accurate.

Figure 3. Comparison of timing of rod catches of salmon in the Little Gruinard, River Ewe and River Carron in 2010 and 2011. Note that the separation of 'grilse' from MSW 'salmon' is based on fish sizes, and for a small proportion of fish may be inaccurate especially towards the latter part of the season.

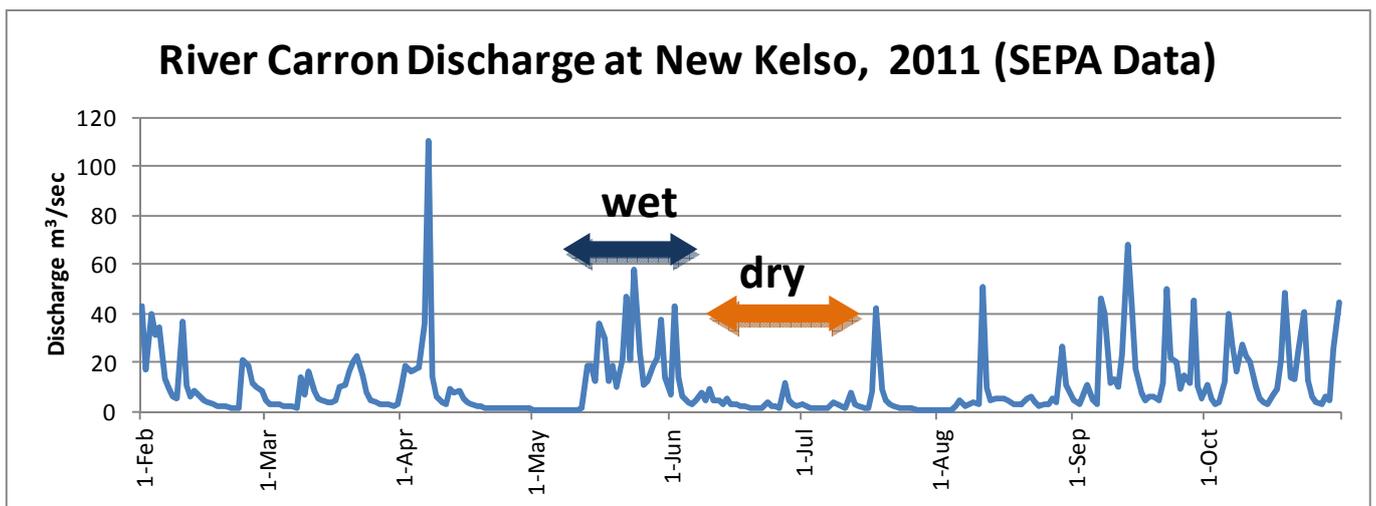
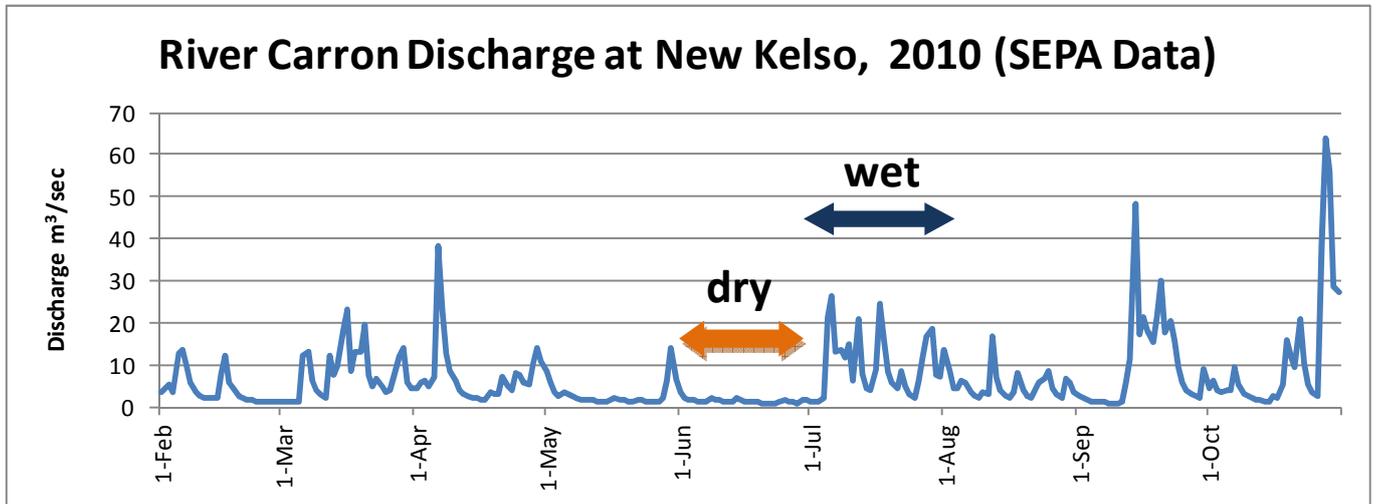


In the Little Gruinard River and River Ewe, the peak month for catches of grilse sized fish in 2011 was in August, where as in 2010 it was July. This may be partly a reflection of water levels: July 2011 was largely dry with low river levels, whereas July 2010 was wet with higher rainfall and river levels (Figure 4).

For the Little Gruinard and Ewe note that more salmon were in the early part of the season (before July) in 2011 than in 2010. Again, this may be partly a reflection of weather June 2010 was dry; mid May to mid June 2011 was unusually wet. For the River Carron, the higher catches in autumn particularly in October may reflect relatively

higher fishing effort towards the latter part of the season compared to the Little Gruinard or Ewe, or alternatively relatively higher proportions of fish entering the river towards the end of the season.

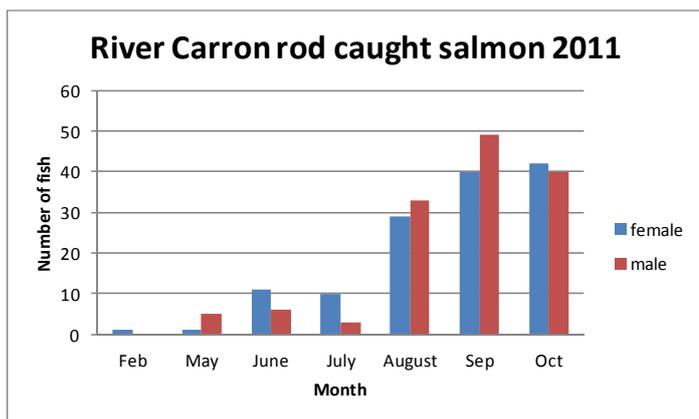
Figure 4. River Carron discharge at New Kelso, February to end October 2010 and 2011. Discharge values plotted are those recorded each day at 00:00 hrs. Note that in 2010 the month of July was relatively wet; and in 2011 the second half of May and early June were relatively wet, followed by a generally dry period until mid August.



4. Male vs. Female salmon for River Carron

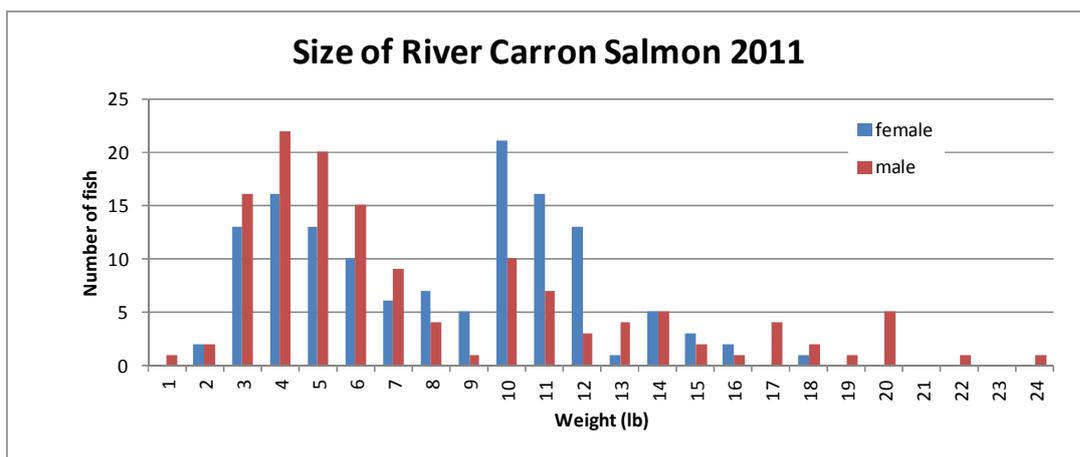
Figure 5 compares the relative proportions of salmon ascribed as male vs. female for the River Carron in 2011. Some rod caught fish were not easily recognised as either male or female so these have been excluded. Figure 6 compares the sizes of fish classed as male or female for the River Carron for 2011, using the same data set for Figure 5.

Figure 5. Numbers of male vs. female salmon recorded in rod catches month by month from the river Carron in 2011. Note that not all fish could be differentiated and some rod caught fish were not included in this analysis.



There were slightly higher proportions of female salmon (mainly MSW fish) in rod catches in the earlier part of the season, and higher proportions of male salmon (mainly grilse) towards the latter part of the season. However, there is no clear division between the timing of male and female salmon taken.

Figure 6. Numbers of male vs. female salmon of each size class recorded in rod catches for the River Carron in 2011. Note that not all fish could be differentiated and some rod caught fish were not included in this analysis.



Note that higher proportions of ‘grilse’ were male; higher proportions of smaller ‘salmon’ (?2 sea-winter fish) were female, and nearly all the larger ‘salmon’ of 17lb and more (?3 sea winter salmon) were male.

5. Some Conclusions

- Rod catch data indicate that there were relatively more grilse in 2010 than in 2011. All three rivers show this, however, the absolute number of grilse sized fish caught in the River Ewe was higher in 2011 than 2010.
- There were relatively more multi-sea winter salmon in rod catches in 2011 than in 2010. Again, all three rivers reflect this.
- These catch records are consistent with relatively higher marine survival of (/or a higher grilse proportion from) the 2009 salmon smolt-year class than the 2010 salmon smolt-year class. [MSW salmon from 2010 smolt year class to follow in 2012 & 2013 seasons]
- Differences in the timing of rod catches of both grilse and multi-sea winter salmon are likely to partially reflect contrasting fishing conditions between years.
- The higher catches of multi sea winter salmon in the early part of the 2011 season may also reflect an increase in their relative abundance.
- Data from the River Carron suggests that a higher proportion of grilse are males than females, a higher proportion of 2 Sea-Winter salmon are females than males; and a higher proportion of 3 sea Winter salmon are males than females.

6. Acknowledgements.

Thank you to Ray Dingwall (Inveran Estate), Graeme Wilson (Letterewe Estate & Eilean Darach Estate) and Bob Kindness (UHI Inverness College) for provision of data. Thank you to SEPA (& Jonah Tosney) for discharge data for the River Carron at the New Kelso gauging station.