



TWEED SEA TROUT AT HOME (Electro-fishing, trapping of spawning runs, Stable Isotope studies and Sea-trout/Brown-trout sex ratios)

Overview of TF Work to Understand the Freshwater Stage

- Electro-fishing (juveniles)
- Traps (adult populations & Brown-trout/Sea-trout relationship)
- Stable Isotope Study (mapping maternal Sea-trout & Brown-trout spawning)
- Don't have enough time to go into each in great detail





Juveniles

- Fry monitoring shown that trout spawn in burns
- Mostly focused on channels averaging 2m width and under





Electro-fishing

- Use EF to survey juvenile production
- Use three minute timed samples (semi-quantitative) samples and not fully quantitative sampling
- Have a scoring system to allow the results to be classified
- System based on results from a complete sweep of the catchment











Obstructions



Fish Traps















A







Peebles Burn Population Profile – 2001 to 2003







Cardrona Burn Population Profile – 2007 to 2009







Jed Burn Population Profile – 2002 to 2006







Myre Burn Population Profile – 2009 to 2012







Scale Reading



Myre Burn – Scale Reading





Living North Sea





















A







Stable Isotopes & Carotenoid Pigments

A F Youngson, A I Mitchell, P T Noack, L M Laird. 1997. Carotenoid pigment profiles distinguish anadromous and nonanadromous brown trout (*Salmo trutta*). *Canadian Journal of Fisheries and Aquatic Science*. Vol:54. Issue 5. p1064-1066.

I D McCarthy, S Waldron. 2000. Identifying migratory Salmo trutta using carbon and nitrogen stable isotope ratios. *Rapid Communications in Mass Spectronomy*. Vol:14. Issue 15. p1325-1331

K Charles, J M Roussel, J M Lebel, J L Baglinière, D. Ombredane. 2006. Genetic differentiation between anadromous and freshwater resident brown trout (*Salmo trutta* L.): insights obtained from stable isotope analysis. *Ecology of Freshwater Fish*. Vol: 15. Issue 3. p255-263

K Charles, J M. Roussel, R A Cunjak. 2004. Estimating the contribution of sympatric anadromous and freshwater resident brown trout to juvenile production. *Marine and Freshwater Research*. Vol: 55. Issue 2. p185-191.





Carotenoid Pigment/Stable Isotope Study















Female Brown-trout

Female Sea-rout

Stable Isotope Results

Dual isotope ($\delta^{15}N$ and $\delta^{13}C$) biplot showing mean and standard deviation (n=10 for all points) of isotope ratios for trout sampled from different sites in (a) May and (b) September. Graph removed as data provided by external. Please contact Kenny Galt (Tweed Foundation) for details





Temporal Changes

Graph removed as data provided by external. Please contact Kenny Galt (Tweed Foundation) for details



Temporal changes in δ^{13} C isotope ratios in fish sampled from the Kelphope Burn population. Curves fitted to the data using nonlinear regression based on an exponential loss model. Dotted lines indicate mean isotope ratios of non-anadromous fish sampled in September for reference.















The End





