MASTS Small Grant Award Scheme

Funding Report, February 2012, Lilian Lieber

Name: Lilian Lieber
Position: MASTS Prize PhD Student
Joint Research Themes:
Coastal zone: "the land-people-sea interface" & Marine predators: "bellwethers of change"
MASTS Institutes: University of Aberdeen and St Andrews University
Supervisors: Dr Les Noble and Dr Catherine Jones (UoA), Professor Andrew Brierley (UoStA)
Funding Application for: An introduction to using GIS in Marine Biology - 3-day GIS workshop
Funding Requested: £300
Funding Received: £300

I am a MASTS Prize PhD student and I recently received additional funding from the MASTS Small Grant Award Scheme for the following course:

A 3-day workshop: *An introduction to using GIS in Marine Biology.* The course was taught by Dr Colin D. Macleod and held in Glasgow on the 24th-26th of January 2012.

The funding covered the course cost of £300 and I provided additional funding of £80 to cover accommodation, food and travel. Having only started my PhD project in October 2011, it might have appeared unusual to apply for additional support so early on in my studentship. However, the majority of my existing financial resources feed into my genomic research and the additional support towards the GIS course has therefore helped me immensely to develop new aspects of my PhD.

Acquired Skills

The skills I have acquired during the course ranged from basic tasks, such as, adding locational data to a GIS project, creating simple maps for publication purposes, as well as, applying more powerful tools in GIS, for instance, relating a species' locational records to marine habitat variables such as water depth to elucidate species habitat preferences.

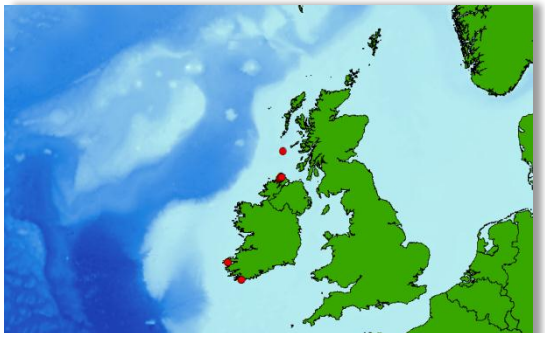

Figure 1: Map of a depth raster data layer showing various sampling sites around Ireland.

So far I have used my newly acquired skills to map my sampling sites from a genetic tagging project of basking sharks around Ireland which I was part of in 2010 (figure 1) . The next step will be to work out the shortest travel distance between the sites and finally, once more information has been collected regarding critical habitat variables, I can then apply cost path analysis to tie in genetic distances of sharks with their spatial ecology to investigate how sharks are connected across the Atlantic.

Benefits to PhD

Investigating the basking sharks' geographic range and associated ecologically important habitats will have paramount implications for the implementation of dynamic marine reserves for this highly vagile species. Therefore, the long-term aim of my PhD is to incorporate dynamic oceanographic variables to understand key processes influencing basking shark abundance and movement patterns. I'm hypothesizing that key habitats of basking sharks in the NE Atlantic will change as a response to

climate change and large-scale shifts in thermal fronts. Therefore I will apply an ecological theory-based framework to model basking shark distribution and how its range is predicted to alter in relation to temperature change over time.

The additional funds received from MASTS have provided me with an invaluable experience to engage myself with an excellent training opportunity which will undoubtedly contribute to the success of my PhD. I have gained confidence in using GIS and the additional funding further allowed me to develop novel ideas within my project. I am therefore especially grateful to MASTS that I can now start exploring spatio-temporal relationships within my dataset with the aim to eventually link basking shark movement with fine-scale population structuring. I am now provided with a basic GIS knowledge, and can start further developing this skill for the realization of a well-planned research project within my MASTS Prize studentship.

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