PIP

Petroleum Infrastructure Programme

DEVELOPING A TOOL TO PREDICT SEABIRD VULNERABILITY TO OIL POLUTION

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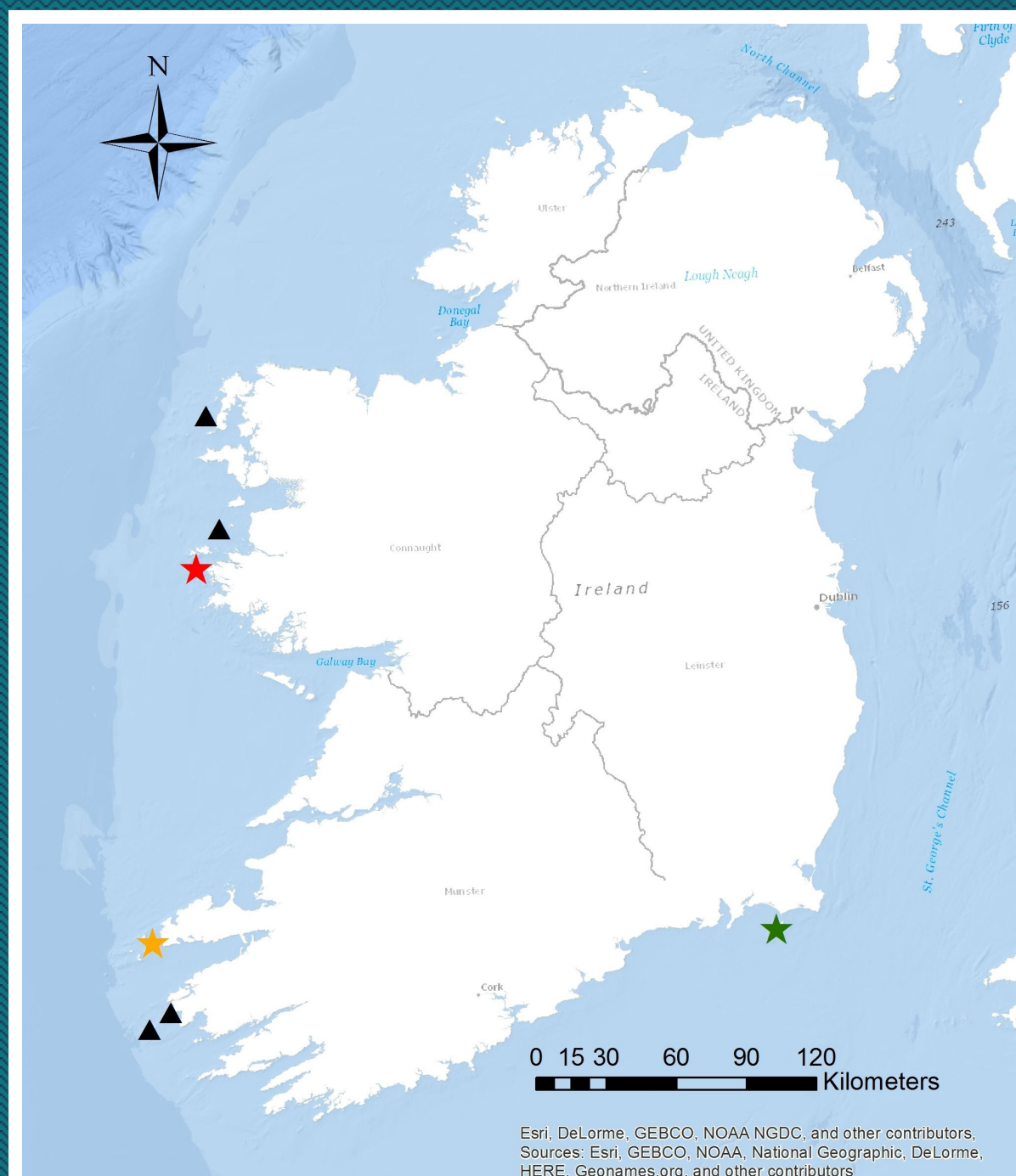[2] Coastal and Marine Research Center, University College Cork, Irish Naval Base, Haulbowline, Cobh
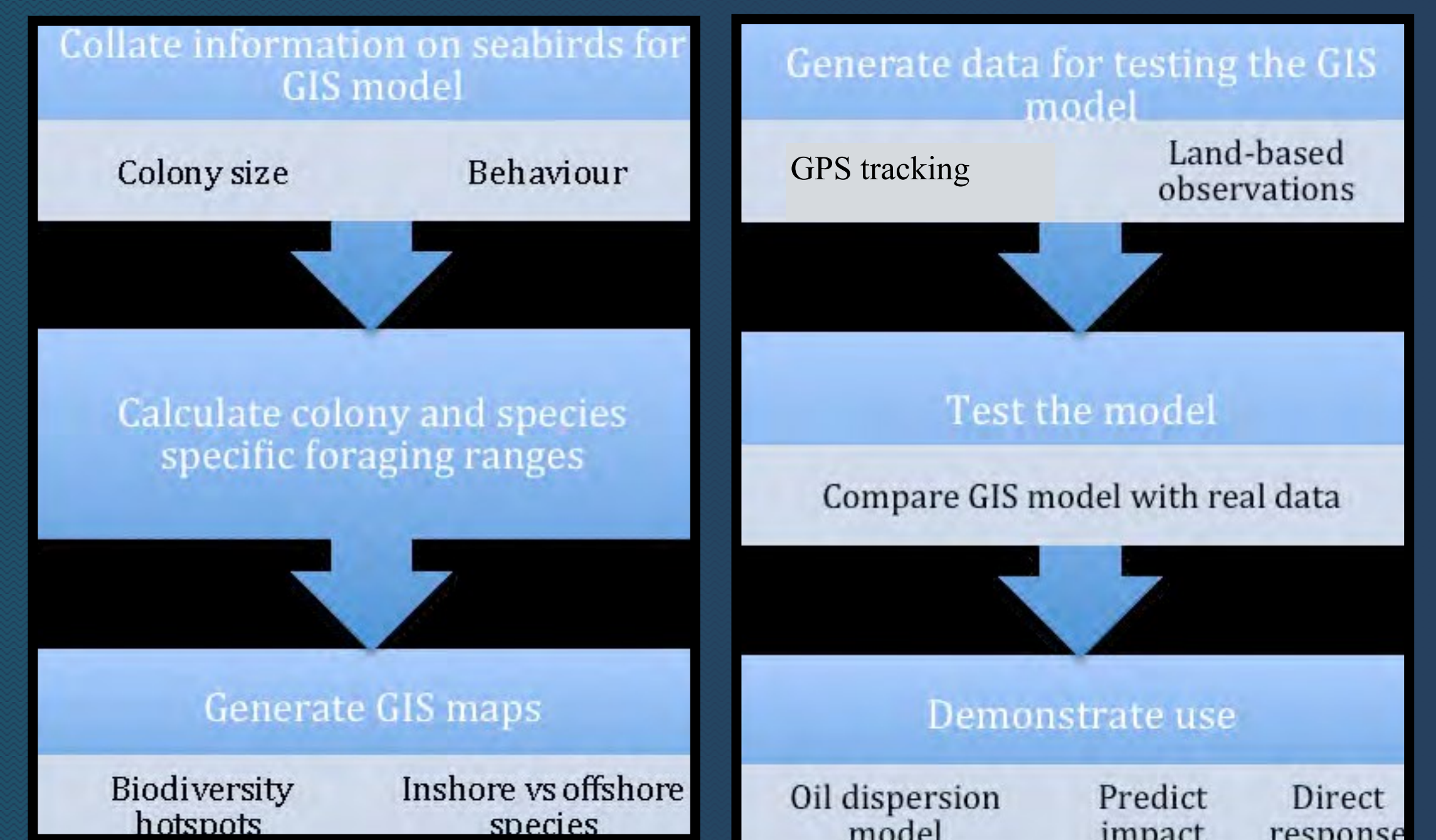
Project outline

Due to its position at the edge of the Atlantic Ocean, Ireland has a large number of seabirds, which are protected under EU legislation and so far not well studied. This makes it difficult for the oil industry,to reliably predict potential impacts of oil spills on seabirds and to develop the required mitigation measures.

Seabirds spend the majority of their life at sea and there is a major need to determine where they go in order to improve our ability to predict effects of oil spills and manage seabird populations effectively.

Figure 1. Schematic representatan of activities during the project.

Figure 2. The location of study sites along the Irish coast. *Stars indicate present study sites (High Island=red; Great Blasket=yellow; Great Saltee=green) Triangles show potential future study sites*

Figure 3. Main target species. Razorbill (*Alka torda*) t.l.) Manx Shearwater (*Puffinus puffinus*) (t.r.) and Fulmar (*Fulmarus glacialis*) (r.).

By using tracking devices to gain insights into seabird behaviour and distribution at sea, this study will develop a GIS model to predict the vulnerability to oil spills (Fig. 1) for multiple seabird species with variable life history characteristics and foraging ranges at several study sites along the Irish west coast(Fig. 2 and 3).
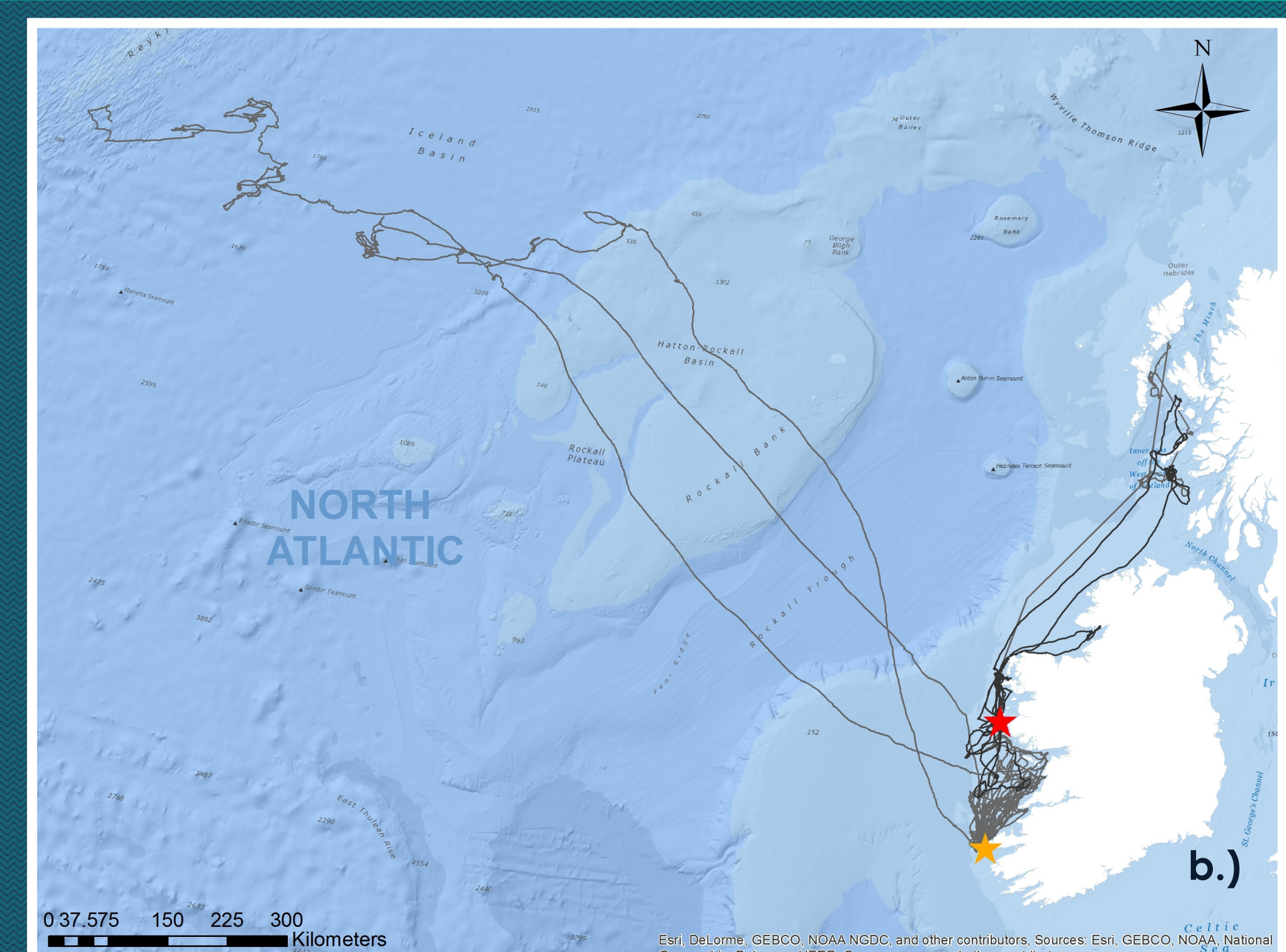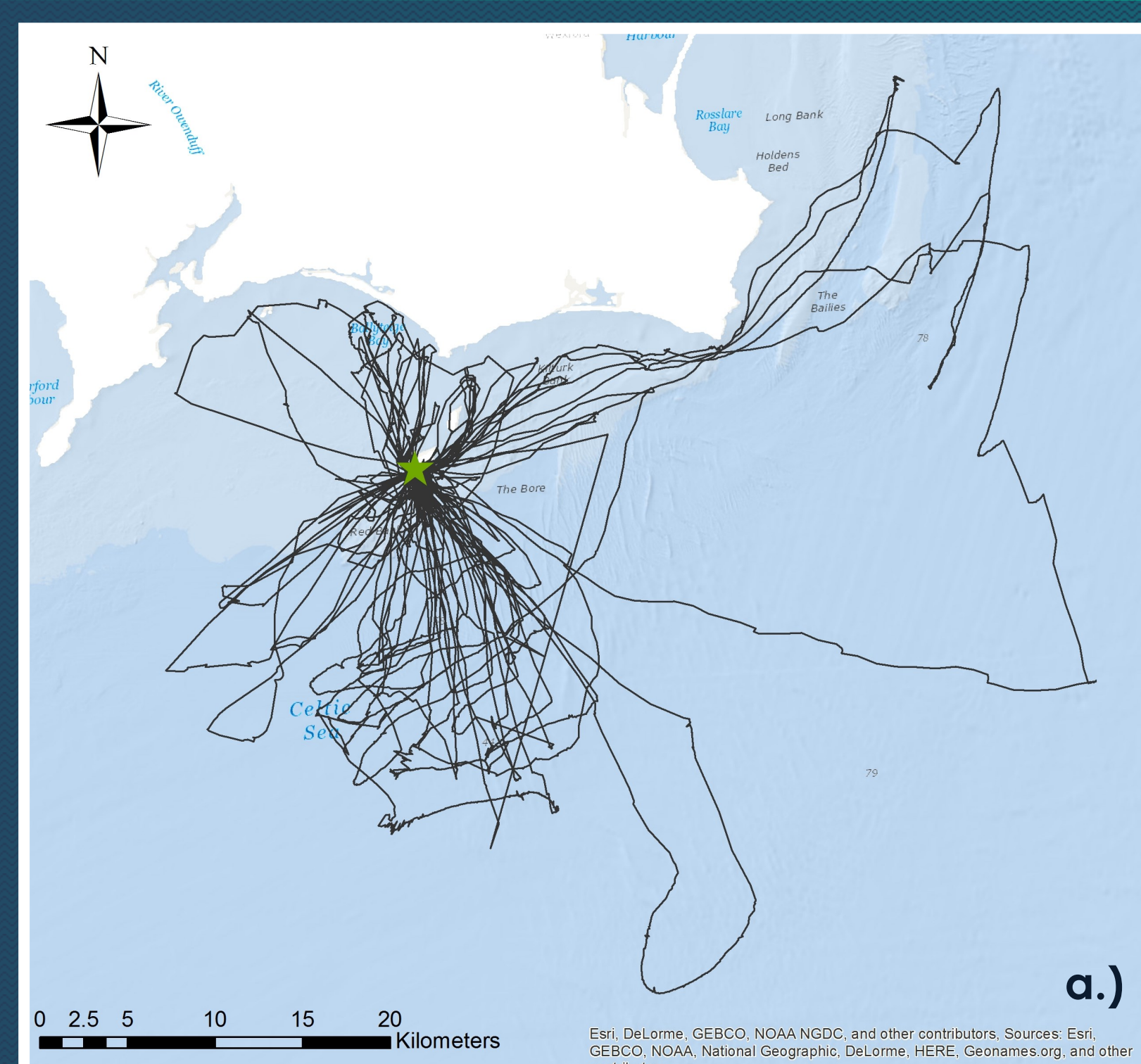
What has been done so far...

GPS tags (iGotU GT120) have been deployed during chick rearing (Fig.4 and 5)on:

1.)Razorbills (*Alka torda*),(June 2014): 13 recovered (of 32 deployed)

2.)Manx Shearwater (*Puffinus puffinus*)(July-August 2014): 14 recovered (of 54 deployed)

Figure 4. Fieldwork 2014. *Fieldteam ready to trap (a.), handling Manx Shearwater at night (b. and c.), Razorbill with tag (d.), weighing a Razorbill (e.).*

Figure 5. Razorbill (RB) foraging trips from Great Saltee (green star) in June 2014 (N=13) (a.) and Manx Shearwater (MS) foraging trips from High Island (red star, dark tracks) and Great Blasket (yellow star, light tracks) during July and August 2014 (N=14) (b.).

The tracking results highlight the importance of local data for model validation:

- Razorbill data mostly fits published data on foraging ranges and behavioural pattern
- Manx Shearwater tagged off the west coast covered significantly greater distances than previously recorded

Future outlook

Analysis of the data, preparation for publication, and the development of the spatial model are in progress. Additional species, such as Fulmars (*Fulmarus glacialis),* will be tracked in 2015 to collect more local data from a greater range of seabirds.

The results will provide a comprehensive model of at-sea seabird distribution, and will be used to create "risk maps", which will highlight hot-spots of seabird density as well as diversity, and provide a powerful tool to improve management in regards to potential oil pollution risks.

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