

Interactive comment on “Seabirds as samplers of the marine environment – a case study in Northern Gannets” by Stefan Garthe et al.

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Since the pioneering work of Jouventain, Weimerskirch and others, the fitting of seabirds with devices that record or transmit their locations and activities while at sea has provided a wealth of information as to how seabirds relate to oceanographic phenomena at spatial and temporal scales out of reach of either colony-based or ship-based studies. The present paper, by Garthe et al. continues in that vein with the tracking of northern gannets in the German Bight. They report several findings of interest- that some birds repeatedly used the same foraging location, that birds did not focus their foraging on a single location, and that overall, the gannets avoided foraging or passage through a wind farm. The last finding is perhaps good news, as many more wind farms are planned for the German Bight. Their methods seem robust and appropriate, and their analyses are adequate as far as they go.

The above notwithstanding, my feeling is that the authors could have extracted much more information from the data that they amassed. How do their results relate to optimal foraging theory, or ideas about central place foraging? They mention the one bird that flew far to the north, but what about the dispersed nature of the foraging patterns of the other birds? How did the outbound and inbound travel patterns compare? Did a given bird use the same foraging location? Did the flight patterns of high-flying birds differ from those of flight paths at low altitudes? Perhaps the sample sizes necessary for a formal evaluation of these and other questions was not sufficient, or perhaps there are plans for additional papers that will examine these and other questions. How did the foraging locations of individual birds compare with those used by the group as a whole? Clearly there was one outlier, but among the others, what was the relationship of individual variability to the variability of the group as a whole. It would be good to make the most complete use possible of the available data.

Some small stuff:

Page 3, line 4: There are much better references for relating foraging seabirds to prey patches and physical processes: Hunt and Harrison, 1990, MEPS; Hunt et al., 1998, MEPS; Russell et al., 1999, MEPS; Jahncke et al., 2005, Fish Oceanography; Davoren GK, many papers, some with Garthe. Haney did not understand the system in which he was working, and the Decker and hunt paper did not have solid measures of prey distributions.

Page 3, line 22: Your observations were not really experiments in the normal sense of the word.

Page 4, line 6: to what does “respectively refer?

Page 4, line 16: What was the time lag? Minimal is in the eye of the beholder.

Page 4, line 20: It has a mass of 2.3 – 3.6 kg. we do not need the goose-sized. . .

Page 6, line 21: I believe that that should be Figure 7 that you are calling out.

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Page 6, line 27: remove “actively”. It adds no information.

Page 7, line 8: I believe that that should be Fig. 3 that is being called out.

Figures 1 and 2: Both nice, but not necessary.

Figure 9: Maybe add an insert to show more clearly what happens around gthe wind farm closest to the colony?

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