

Combining GPS tracking and stable isotope analysis to predict changes in gull dynamics

Sotillo Alejandro¹, Eric Stienen², Magda Vincx³ and Luc Lens¹

¹ Terrestrial Ecology Unit, Ghent University
K.L. Ledeganckstraat 35, B-9000 Ghent, Belgium
E-mail: alejandro.sotillogonzales@ugent.be

² Instituut voor Natuur- en Bosonderzoek
Kliniekstraat 25, B-1070 Brussels, Belgium

³ Marine Biology Section, Ghent University
Krijgslaan 281, Campus Sterre – S8, B-9000 Ghent, Belgium

During the second half of the 20th century, populations of Herring Gull (*Larus argentatus*) and Lesser Black-backed Gull (*Larus fuscus*) have grown substantially along the coasts of the North Sea. Their protected status, and additional food supply in the form of urban waste and fishery discards, are considered responsible for the proliferation of these species. Belgian populations of Herring and Lesser Black-backed Gull breed mainly on the docks of the outer Port of Zeebrugge and the roofs of the city of Ostend. They are highly dependent on anthropic sources of food, namely fishery discards, which might be crucial during the chick rearing stage of the breeding season. The prospect of a strong drop in the production of discards in the near future brings up the question on which responses can be expected from large gulls in terms of habitat use and feeding patterns, in a context of global decline of their populations.

To answer this question, I study the habitat use, food dependencies and movement patterns of breeding *L. fuscus* and *L. argentatus* using a combination of GPS tracking and stable isotope analysis techniques. Data from the first breeding season show the importance of specific, individual and seasonal variation in habitat use. Specific variation is driven by the different foraging niche of the two studied species, which overlaps marginally. Individual variation suggests the development of particular foraging strategies that may be influenced by ontogeny. Seasonal variation reflects changes in nutritional and energetic demands of the breeding population, determined by the stage of the breeding season: egg-laying, hatching, chick-rearing, fledging and post-fledging.

GPS tracking data of future breeding seasons will inform on annual variations in habitat use. Stable isotope ratio analyses will inform on the real dependence of the breeding population on each of its main food sources at the different stages of the breeding season.