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Time investment and territorial behaviour of lesser black-backed gulls (*Larus fuscus*) during the pre-laying period

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Like many seabird species, lesser black-backed gulls arrive in their breeding colonies long before the onset of breeding (del Hoyo et al., 1996). This early arrival is likely related to the necessity of an early territory establishment in the colonies. Intriguingly, within a colony, there is a large variation in breeding densities. Typically, central parts with high concentrations of nests are surrounded by more scattered or isolated nesting territories. The highest concentrations of nests often reflect the most productive positions within a colony, characterized by a higher breeding success (Savoca et al., 2011). Such increased breeding success of central breeders likely result from lower predation rates on eggs or chicks. This suggests a high level of competition to get and maintain these high-quality territories - if territory quality or the social environment contributes to the enhanced reproductive success. If so, individuals of higher quality are predicted to relegate lower quality individuals to peripheral sites within a colony.

Using lesser black-backed gulls as a model species, the present work investigates arrival dates, time-budgets and territorial behaviour during the pre-laying period in function of breeding density and sex, given potential differences in competitiveness due to the sexual size dimorphism (Olsen & Larson, 2003). While accurate assessment of territorial behaviour in free-ranging gulls has long been hampered by their highly unpredictable nest presence, latest advances in miniaturized remote-sensing devices now allow to monitor individuals at unprecedented spatio-temporal resolution (for a review see Kays et al., 2015).

Since 2013, per year about 20 lesser black-backed gulls breeding in Zeebrugge (Belgium) and Vlissingen (The Netherlands) have been tagged with UvA-BiTS solar-powered GPS-ACC loggers as part of the LifeWatch GPS bird tracking network. In this project, we will combine information on time-budgets as derived from the GPS data, and the number of aggressive interactions as derived from the three-axial accelerometer, and relate these to extrinsic (breeding density, weather conditions, social context) and intrinsic (sex, body condition) factors. Next, we will relate these factors to individual reproductive success. We will present the first results of these currently ongoing analyses.

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