

Date: Tuesday 31 October, 2017
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Room: Seminar Room

Distinct foraging behaviours differently constrain the physiological state in a hole-nesting seabird, the Scopoli's shearwater (*Calonectris diomedea*)

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It is expected that activities which require a high use of energy could generate high oxidative unbalance and stress, and negatively influence both the physiological state and the immune system of individuals. In the present study, we have compared two breeding periods with different energetic demands (incubation and chick rearing) in the hole-nesting and shallow-diving seabird species, the Scopoli's shearwater (*Calonectris diomedea*). Since chick rearing involves higher demanding activities, we predicted a higher oxidative unbalance (higher oxidative damage and lower antioxidant defences) and stress (Heterophil/Lymphocyte ratio), and lower triglycerides and non-esterified fatty acids, as well as a worse immunological state during chick rearing than during incubation. Fieldwork was conducted in the largest colony of Scopoli's shearwater on Linosa Island (35°51'33"N, 12°51'34"E), Italy, during the breeding season of 2016 and, apart from blood samples extraction, birds were equipped with Axy-depth data-loggers (Technosmart Europe S.r.l.). Surprisingly, incubating adults had their oxidative status unbalanced showing significantly lower antioxidant levels than those rearing chicks. In contrast, adults rearing chicks showed higher H/L ratio and lower triglycerides and non-esterified fatty acids compared to those incubating eggs, suggesting that both periods differently unbalance breeder's physiological state. Differential foraging effort could explain such results since shearwaters adjust their foraging location depending on the breeding period, performing longer foraging trips during incubation than during chick rearing. Consequently, this causes an oxidative status imbalance during incubation although results in a better physiological state, thanks to the high quality preys that might encountered (unavailable at the colonies vicinity during chick rearing). However, chick rearing appears to be more stressful due to chick demands (e.g. chick feeding). Our results therefore show the importance of examining physiological markers to assess breeding cycle differences and how foraging behaviour explains them.