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Species- and sex-specific differences in foraging behaviour and foraging zones in blue-footed and brown boobies in the Golfo of California

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When two closely related species, with each species presenting strong sex specific differences in size, coexist resource partitioning can be expected. We studied the sex specific foraging behaviour of two sympatric seabird species in the Gulf of California to disentangle the respective role of the species, of the sex and of the size in the differences in foraging behaviour observed. We used high precision data loggers to study foraging movements as well as diving behaviour and activity of brown and blue-footed boobies rearing young chicks. The study shows that some differences observed in foraging behaviour are mainly due to size, in particular the depths attained during diving, the flight speeds and flapping frequency. The differences between species were limited, brown boobies having longer foraging trips and spending less time on the water than blue-footed boobies. The major differences observed were sex specific, in each species females tend to have longer foraging trips, to forage farther from the colony and to cover longer distances, to have larger zones of area restricted search. The sex specific differences are more pronounced in brown than in blue-footed boobies. Analysis of diet and stable isotopes shows that during the study period both species feed on sardines, and that outside the breeding season the Carbon and nitrogen signatures are similar. In these sympatric species feeding on a super abundant prey, the sex specific differences are more pronounced than species specific differences, suggesting that sex specific differences may be mainly related to breeding involvement, males being more involved in nest attendance and defence, and females in provisioning. The role of size is particularly important in the parameters influenced by biomechanics constraints such as flight and diving.

Palabras clave: isotopes, diet, Accelerometers, GPS tracking, *Sula leucogaster*, *Sula nebouxii*, area-restricted search, fractal landscape method

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