

**SESSION: Marine Mammals****MARS Themes:**

Ecosystems, biodiversity and biodiscovery

**Title:**

Considering individual variation when investigating marine predator behaviours during life-history events

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**Abstract:**

Marine predators undergo life-history events (e.g. breeding or moult), but behaviours can vary widely across individuals of the same species: differing within an individual over time and between individuals of the same population. Furthermore, behaviours can vary due to variations in plasticity, geography and individual personality. However, behavioural studies of life-history events often focus more on understanding 'typical' behavioural patterns than understanding variations in life-history events. We use examples of marine predators in the Southern Ocean to illustrate the importance of taking individual variation into account when studying the behaviour during life-history events. Linear mixed-effects models were fitted to account for repeated individual observations by including individual identity as a random effect. The individual random effect partitions the total variation in behaviours into between- and within individual variation. Considering individual variation improves the understanding of the factors that contribute to varying behaviours. For example, the age and breeding stage of southern elephant seals (*Mirounga leonina*) at Marion Island explained 65% of the between-individual variation in moult arrival date. Furthermore, individual variation can describe patterns of observed and consistent behavioural variation. For example, we have found that during the breeding season of chinstrap penguins (*Pygoscelis antarcticus*), foraging trip behaviours of individuals varied between sites and breeding stages. However, chinstrap penguin diving behaviours were highly repeatable with individuals showing similar dive patterns. Our findings emphasize the inclusion of individual variation in behavioural studies. This approach provides greater insight into the adaptability of marine predators in dynamic environments.

**Format:**

Oral Presentation (5 min)

**Keywords:** (add ; between keywords)

southern elephant seals; life-history; individual variation; Marion Island; moult