

Population ecology of the Sable Island horses

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In 2007, we initiated a long-term, 30+ year individual-based research program on the ecology and evolution of the feral horses of Sable Island National Park Reserve, Nova Scotia, Canada. Our research is directed at explaining variation in single-generational proxies of fitness (e.g., lifetime reproductive success) from effects of behaviour, morphology, and a horse's unique experience of its environment. Long-term study of the life histories of most or all individuals of a closed demographic unit allows for the construction of population-wide pedigrees, prompting fundamental questions like why do some lineages grow and flourish while others decline or go extinct, and why might some strategies be selected for at one time but against at another. The core field component of our program on Sable Island, which entered its tenth year in 2017, is an individual-based regime of sampling the horse population: each summer we obtain weekly observations of every individual on the island, which recently has fluctuated between 450 and 550 horses. Collected data from the more than 1000 horses to have lived on Sable Island over the past decade provides the basis for many student projects requiring knowledge of movements and habitat, life history, known relationships and band dynamics, morphology, parasite loads, time budgets, habitat selection, and calculations such as individual exposure to local density. We also collect samples for analyses of genetics, stress (corticosterone), and diet from stable isotope analysis. We will present an update on our newest research findings, particularly with respect to the population dynamics of the horses.