



Hōiho nest camera study

Yellow-eyed penguins/hōiho on mainland New Zealand are currently undergoing a significant decline, with recent population models suggesting that they will be locally extinct within the next 30 years.

In the 1980s, predation by introduced mammalian predators, food shortages and terrestrial habitat loss were considered the primary threats to mainland hōiho. Many communities have undertaken remarkable transformations of coastal areas and have maintained significant predator control initiatives to allow hōiho to increase in numbers over the last 30 years. However, as marine animals, hōiho are at the mercy of the sea to provide them with high- quality and reliable sources of food. In spite of terrestrial management actions, mainland hōiho have still declined in numbers. Threats in the marine environment include marine pollution, fisheries by-catch, competition and disturbance to the sea floor, where hōiho forage. Declining diet quality, and in some years, diet quantity, may be driving the overall decline of mainland hōiho. A poor diet results in higher susceptibility to disease, lowered juvenile survival and recruitment, and population decline through mass starvation events affecting adults, juveniles and chicks.

Previous studies of hōiho suggest that in poor breeding seasons, adult penguins had to forage for longer to find food, but delivered larger, poorer-quality meals to chicks (chronic nutritional stress). This is in contrast to more recent observations of high investment in pair-bond maintenance on return from sea and less frequent feeding exchanges to chicks, which suggests that some birds are struggling to return with any food (acute nutritional stress). Reliable access to high-quality prey within the foraging range of yellow-eyed penguins on Otago coast may be threatened by climate change, or by industrial activities such as dredging, fishing or dumping. Nest cameras will provide us with reliable data over two seasons and a wide geographic area to determine inter-individual differences in foraging trip duration, investment in pair-bond maintenance, and the timing and frequency of chick provisioning. This is part of a larger PhD study of nutritional stress in hōiho on the Otago coast, which will include determining winter and pre-moult foraging locations, juvenile dispersal, and the overlap of contemporaneous industrial activities. The information will be coupled with diet analysis (diet composition, quantity and quality). Using nest cameras will vastly increase our understanding of chick provisioning during the breeding season, without being invasive, as it will allow us to monitor 30 nests across 11 breeding sites and 3 breeding regions over 2 seasons.

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*Photo credit: Catriona Gower