

## Post-fledging dispersal of mainland hōiho

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It is common for fledgling seabirds to disperse away from their natal area. Mortality is higher for juveniles than adults because they lack foraging and predator avoidance experience, which must be learned (Riottte-Lambert and Weimerskirch 2013), but size, body fat, and overlapping industrial activities can negatively influence survival. Very little is known about the parameters that shape yellow-eyed penguin/hōiho dispersal away from the natal area. Less than c. 19% of each cohort survive the juvenile year, and less than c. 12% survive to breed at least once (Stein et al. 2017). These figures are in stark contrast to the recruitment of c. 26% of each cohort recorded by Richdale (1957).

Juvenile yellow-eyed penguins have been resighted as far north as Hawke's Bay (DOC, unpublished data), with most sightings occurring on the Canterbury Coast, but generally they spend most of their first year at sea, with survivors returning to near their natal area by the austral Spring.

It is expected that the mainland population of yellow-eyed penguins will be locally extinct as early as 2043 (Mattern et al. 2017), with the decline in juvenile survival playing a critical part in the collapse of this population. Extensive modelling of the mainland population's demographics suggests that regional threats, such as commercial fishing interactions and competition, are likely to explain most of the variation in mainland yellow-eyed penguin numbers, but they remain difficult to measure. Without detailed data on the patterns of juvenile yellow-eyed penguin dispersal and overlapping industrial activities that might increase juvenile mortality during this highly-specialised migration period, we cannot provide thorough evidence to fisheries, regional councils and conservation managers to appropriately manage both industry and endangered species.

I plan to deploy three yellow-eyed penguin fledglings with satellite tags in February 2018, and to track these three fledglings during their dispersal period for four months. The three satellite tags will be deployed from February 2018, and will be tracked from 1 February to 30 May 2018. This time period has been chosen based on a literature review of satellite tag attachment longevity in sympatric species, as we do not expect that the tags will stay attached for longer than 120 days. The outcome of this study will be to inform fisheries managers, regional councils and conservation managers of the dispersal strategies of wild-fledging yellow-eyed penguins, and to determine areas of potential conflict with commercial fisheries and other industrial activities that might negatively affect juvenile yellow-eyed penguin survival (e.g. sewage disposal, dredge spill disposal, trawling, etc.).

This is part of a larger study of juvenile yellow-eyed penguin behaviour during the fledging period, and is complemented by the analysis of all fledgling marking records and subsequent resightings as juveniles or adults (c. 13, 000 marking records), of which many records have been contributed by members of Birds NZ.

