

Tracking the foraging behaviour of Hutton's shearwater (*Puffinus huttoni*) during the breeding season in New Zealand waters

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Previous research on the Hutton's shearwater (*Puffinus huttoni*) has been limited to monitoring population declines relative to predation at their terrestrial breeding grounds and conservation efforts within the alpine and peninsula colonies. Little is known about their foraging behaviour or dietary preferences, and the impacts this may have on their breeding success.

Every August, Hutton's shearwaters return from their Australian wintering grounds to breed in the Seaward Kaikoura mountains and at a newly-constructed predator-proof enclosure on the Kaikoura Peninsula. Monitoring this species is challenging as they spend their life predominantly at sea, making it difficult to observe their migration patterns, and to quantify their foraging behaviour and diet. Although adults return to breeding colonies at night when parents swap incubation duties and feed chicks, Hutton's shearwaters can spend numerous days at sea without returning to land. While at sea, large flocks of birds are observed rafting and flying, but foraging is rarely seen.

To investigate the foraging behaviour of Hutton's shearwaters, the Birds New Zealand Research Fund enabled the purchase of miniature loggers, which can be attached to individual birds and be used to record data on the depth of dives, water temperatures and timing and duration of dives. We used the loggers to assess the daily foraging behaviour of Hutton's shearwater adults from the Kaikōura Te Rae o Atiu Peninsula colony. Time-depth loggers were deployed on eight adult birds from 24 November 2014 to 25 January 2015. During this period, we were able to monitor the behaviour of adults both when incubating eggs and after the eggs had hatched, during which time they are actively feeding their chicks. Individual birds were observed for 12 to 36 days, at which point they were recaptured to download data and to retrieve loggers. Preliminary analyses of the results suggest that birds incubating eggs have different diving profiles to the birds actively feeding chicks. We also recorded considerable variation in how often they dived, dive depths and in the number of foraging events between the incubation and post-hatch periods. Diving behaviour changed both over the time of day and with the length of each foraging episode.



Our results indicate that foraging behaviour by Hutton's shearwaters in the breeding season is varied, indicating perhaps a high degree of flexibility and opportunity in their foraging strategy while at sea. One area yet to be investigated is whether this variation is the results of birds foraging within the coastal region compared to those foraging in more offshore regions.

We are very grateful to Birds New Zealand for the opportunity to track these birds.

Della Bennet during night retrieval of a time-depth logger from a Hutton's shearwater adult, after the chick was fed.