

Monitoring Hutton's shearwaters at the Kowhai River colony

The Hutton's shearwater is an endangered seabird that breeds only at altitudes between 1200 and 1800 masl in the Seaward Kaikoura Range. Since 2005, the Dept. of Conservation (DoC) and then The Hutton's Shearwater Charitable Trust (HSCT) have undertaken translocations to establish an insurance colony, Te Rae o Atiu, on the Kaikoura Peninsula. In *Birds New Zealand* No. 7, I reported on the first year of a programme comparing observations at the Kowhai River colony with those at Te Rae o Atiu. I have just completed the second year of work in which we monitored up to 27 accessible burrows at the Kowhai River amongst the many where it was not possible to reach chicks or adult Hutton's shearwater, and all nestboxes (artificial burrows) at Te Rae o Atiu which had birds visit. These burrows had passive integrated transponders tags (PIT tags) readers installed to monitor bird movements. While it would have been useful to have had both adults at all the Kowhai River burrows tagged, the realities of fieldwork in a mountain environment meant that this was not possible. Poor weather conditions curtailed several trips and underfoot conditions often meant it was not possible to visit the sites for fear of damaging too many burrows in the soft, friable, shallow soils. Despite these limitations, I believe we have some interesting results.



Two hundred Hutton's shearwater chicks were taken down to Te Rae o Atiu as part of the 2012 and 2013 translocations; about 50 chicks each year would have been taken from the Kowhai sub-colony under study here. The 2014-15 season had one 2012 bird return and the 2015-16 season has had 12 2012 and 15 2013 birds back to Te Rae o Atiu. To date, no birds from the early (2005-2008) translocations have been recovered at the Kowhai River colony by researchers working there, nor were birds from 2012 and 2013 seen. However, the PIT tag data from the Kowhai River had records of PIT tags from 7 birds that were not implanted there. To find 7 translocated birds return to the natal colony is remarkable as only 27 burrows were monitored in an area with more than 1000 burrows. One bird, X17297 was recorded at two Kowhai River burrows in January 2015 and again the next season. A second, and bigger, surprise was to have 2 birds recorded at the Kowhai River that had previously returned to Te Rae o Atiu from Australian waters early in the 2015-16 season, albeit recorded only on 1 day.

Two of the returned birds at the Kowhai River were recorded at 4 burrows in a season. This is probably an underestimate of burrows visited as we only monitored a small proportion of those available. These movements are in keeping with observations at Te Rae o Atiu where most returning birds visited more than one nestbox with 2012 and 2013 individuals recorded in up to 15 nestboxes in their first season back.

Intuition, rather than science, would suggest that the development of chicks at the Kowhai colony may be slower and they would fledge later than at Te Rae o Atiu as adults carrying food to chicks at the Kowhai River have to climb 1200 m higher and fly about an extra 20 km each way. Thus, for a similar amount of food collected, they should be using considerably more energy getting to the colony and providing less energy for chick growth than adults at Te Rae o Atiu. Chicks were weighed at all sites in early January and again either in mid-February or early March when wing-lengths were also measured. At comparable times, the average weights and wing lengths at the two sites were similar showing that there were no differences in chick development that could be attributed to sites.

Even though the sample from Te Rae o Atiu is small, the mean date of first emergence as noted by chicks first triggering the PIT tag readers and the mean fledging date as noted by the last record at both sites is similar for 2014-15. There were differences in 2015-16 when the dates for the Kowhai birds were earlier than Te Rae o Atiu but the latter were influenced by one very late hatching bird.

Some birds at the Kowhai appear to have fledged the day of first emergence whereas others were coming to the burrow mouths up to 18 days before leaving which is a lot longer than 1990s Kowhai River observations suggest. At Te Rae o Atiu, birds moved to the burrow entrances for up to 22 days before fledging and we know birds there travel around and enter other burrows before fledging. There were 3 records of Kowhai River chicks from 1 burrow triggering the readers at another burrow, a smaller number than at Te Rae o Atiu where the burrows are in closer proximity to each other. At neither site in this study have visual observations taken place and there is an obvious need for cameras to be installed to see what happens, especially with respect to exercising wings.

Nine breeding adult Hutton's shearwaters at the Kowhai River colony have been recorded triggering the antennae coils at burrows other than those from which they were found when on eggs. Except for one bird in 2014-15 and two in 2015-16 when two other burrows were visited, these birds visited one other burrow in a season. At Te Rae o Atiu in 2015-16, 27 birds from the 2006-2008 translocations visited an average of 6 burrows (up to 15) which is more than at the Kowhai River, but there the density of monitored burrows is a lot smaller and visits to unmonitored burrows will have been missed.

Adult Hutton's shearwater probably cease feeding chicks for a period before they fledge as they need to lose weight from their peaks around 600 gm to be able to fly. The PIT tag shows that adult birds may not be present for significant periods (up to 3 weeks) before the chicks fledge, but other adults have been recorded at burrows up to 5 days after the chicks have gone; it is not known how often chicks are fed during the last few visits by adults.

My overall conclusion is that there is no evidence from this work that chick growth and chick and adult behaviour at the Te Rae o Atiu and Kowhai River colonies are different. Therefore, our observations at Te Rae o Atiu are likely to be typical of activities at the natal mountain colonies.

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