

SHORT NOTE

Buller's mollymawk (*Thalassarche bulleri platei*) count at Rosemary Rock, Manawatāwhi (Three Kings Islands)

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On 21 February 2020 we landed on Rosemary Rock, Manawatāwhi (Three Kings Island's), to collect blood samples and measurements from breeding Buller's mollymawk *Thalassarche bulleri*. Buller's mollymawk, one of New Zealand's more numerous small albatrosses, has been described as two distinct subspecies (northern Buller's mollymawk, *Thalassarche bulleri platei* breeding on the Chatham Islands; and southern Buller's mollymawk, *Thalassarche bulleri bulleri* breeding on the Snares and Solander Islands (Gill *et al.* 2010). In 1983 a small population of Buller's mollymawk was discovered breeding on Rosemary Rock and has been assigned to *T. b. platei* (Wright 1984; McCallum *et al.* 1985). The purpose of our visit was to obtain genetic and morphological data to help clarify the taxonomic

relationships between this colony and the species' larger populations approximately 1,500 km to the south east and south of Manawatāwhi.

During approximately four hours (1100 h – 1500 h) we made a thorough ground survey of Rosemary Rock for mollymawk nests, aided by the aerial survey results of Frost *et al.* (2018). We found four nests containing live mollymawk chicks which were estimated at between four and six weeks old (P. Sagar *pers. comm.*) (Fig. 1 A, B). Two other nests contained dead chicks, which we estimate had perished between three and six weeks previously. We found only one other intact pedestal nest that looked like it had been used in the same season and there was no other nesting sign (e.g. broken eggshell). We were able to capture three adult mollymawks and observed 13 adults either loafing on the rock or flying past. No adults were in attendance of any chick.

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Figure 1. A. Positions of nesting Buller's mollymawk on the southern face of Rosemary Rock adapted from Frost *et al.* (2018). Yellow arrows show locations of apparent nesting birds on 23 November 2017: A is the location where Wright (1985) discovered the species nesting; B-D were single sites occupied by pairs of birds in 2017. Green and red arrows show nesting locations identified by Frost *et al.* (2018) that contained living and dead chicks respectively on 21 February 2020. (Photograph: Richard Robinson). B. Two Buller's mollymawk chicks on Rosemary rock estimated between four to six weeks old. Their position on the rock is shown by two green arrows closest to C in previous figure. (Photograph: Kevin Parker).

Our count of only four mollymawk chicks on Rosemary Rock was surprisingly low given that historic surveys suggest a greater chick output. The first complete count of the colony in January 1985 documented 18 adults and 13 occupied nests, eight with an egg or young chick (McCallum *et al.* 1985). From aerial photographs taken on 23 November 2017, Frost *et al.* (2018) counted 34 apparently active nests with incubating birds (although some birds may have been birds sitting on empty nests). They also reported a count of 11–14 chicks and six adults made from boat-based photographs taken by Ian Southey and Igor Debski in March 2014.

Compared with previous observations our count suggests a poor breeding season for Buller's mollymawk on Rosemary Rock in 2019/20. This

is supported by the presence of dead chicks. At-sea mortality, foraging conditions, and colony breeding habitat and weather are contributors to reduced breeding success in the shy mollymawk *Thalassarche cauta* (Alderman *et al.* 2010; Alderman 2012; Alderman *et al.* 2012; Thomson *et al.* 2015). There are no survivorship or foraging and chick provisioning data for adult mollymawks from Rosemary Rock. However, our observations at the colony suggest that a poor breeding outcome in 2020 could be related to the quality of breeding habitat and/or local weather. There is a limited amount of level nesting sites in the preferred areas on the steep southern side of the rock. These areas likely protect birds from extreme gales arising from summer-time subtropical weather systems and provide shade from the sun.

Our visit coincided with one of the worst droughts in Northland's history, with record low rainfall and temperature extremes. The rock was a near "lunar landscape" baked dry with little or no vegetation or low leafless shrubs in comparison with historic photographs (Wright 1984), albeit these were taken at an earlier stage of the season. In surface nesting seabirds, high colony temperatures can kill chicks, which have a poor ability to reduce rising body temperatures (Alderman *et al.* 2012). For example, in the shy mollymawk daily maximum temperatures over 23°C are strongly associated with reduced breeding success through increased chick death (Thomson *et al.* 2015). A review of meteorological data from the Cape Reinga weather station (approximately 60 km from Rosemary Rock) across January and February 2020 (up to the day of our visit) showed 26 days of maximum temperatures exceeding 23°C (CliFlo 2020). These temperature extremes may explain the observed low chick numbers and/or mortality in the 2019/2020 season. However, with few or no available data on interannual population size, adult survival and breeding success variability, further work is clearly required to ascertain the trajectory and threats to New Zealand's most northern albatross colony.

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