

## Poster papers – Northern royal albatross (*Diomedea sanfordi*) behaviour deduced from prototype loggers

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Prototype geolocation data loggers were designed by Embedded Pty Ltd and fabricated by Sirtrack Ltd. They recorded time, light, and temperature at 23-s intervals into flash memory which is potentially retained for 10 years. Different loggers from the British Antarctic Survey recorded time and light only. Loggers were deployed at fixed points ashore and on the leg of northern royal albatrosses (*Diomedea sanfordi*) at the Taiaroa Head colony in New Zealand. Data were recovered from 4 loggers giving continuous monitoring and over 10000 records. Examples illustrate recordings from a fixed point in the albatross breeding colony and from albatrosses while incubating ashore and flying or resting at sea. Two loggers recorded activity from 4.7 to 9.5 months at sea including a round-the-world migration. Daily patterns at a fixed point ashore are contrasted with those from a bird. Easily discerned was the shift of local midday due to longitudinal movement by the bird. Likewise the combinations of light and temperature for different behaviours (e.g., incubating with local flights; trans-oceanic flights; 'rest and recreation' activity). Differences suggested alternate positions of the legs during flight for two individuals. The periods around full moon are illustrated. The proportion of time spent flying and not-flying for different behaviours illustrate the consequences of not-flying on the point-to-point daily speeds obtained from both satellite tracking and geolocation loggers.

## What's happening to our black-fronted terns (*Sterna albostrata*)?

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Black-fronted terns (*Sterna albostrata*) are a threatened species endemic to New Zealand. Population size may be as low as 5000 birds and data from surveys through time suggest the population is in decline. Studying their breeding ecology can help us understand limiting factors and assess the potential for management. In this study I examine black-fronted tern productivity based on results from population monitoring in the Ohau River, Mackenzie Basin in 1998 and 1999.

I monitored egg survival at eleven colonies and colony hatching success varied from 0-71%. On average, predators were directly responsible for 20% of egg loss but more than 20% of eggs were deserted in response to predation events within the colony. Chick survival from hatching to fledging varied from 0-50% at each colony. A further 27% of birds died in the two weeks following fledging. Predation was the main cause of mortality for chicks and juveniles.

Based on the above rates of survival, the average productivity of black-fronted terns in the Ohau River is 0.25 young/pair/year. This may be enough to sustain the population at current levels but productivity could be increased by decreasing predation. For example, the largest colony in 1999 experienced only 1% egg predation and as a result the productivity for that colony was 0.55 young/pair<sup>-1</sup> year<sup>-1</sup>. Protecting key colonies from predators may increase the productivity enough to mitigate potentially declining populations.

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