

Eighth in a series of *Feature Articles*

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Satellite Tracking Southern Giant Petrels at Palmer Station, Antarctica

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Southern giant petrels (*Macronectes giganteus*) are large, surface feeding predator-scavengers with a circumpolar distribution in the Southern Ocean. Like many other Procellariids that have large oceanic feeding ranges in this region, Southern giant petrel breeding populations are decreasing throughout much of their range. Although this species is highly susceptible to some types of human disturbance near their breeding colonies such as tourism, aircraft operations and construction, studies suggest that the observed population decreases are due primarily to entanglement mortality induced by commercial longline fishing operations.

These operations are rapidly expanding in the Southern Ocean, thus posing an increasing hazard to these wide-ranging predators and scavengers because they are attracted to the baited hooks associated with these fisheries. If hooked, giant petrels most often drown or are mortally wounded when trying to escape. Indeed, with current estimates that as many as 100,000 seabirds are being killed annually by these fishing operations in the Southern Ocean, the Southern giant petrel is now listed as vulnerable by the International Union for the Conservation of Nature (IUCN).

A notable exception to this decreasing population trend, however, occurs in the vicinity of Palmer Station, Antarctica (64° 46' S, 64° 04' W, Fig. 1), where our monitoring since the mid-1970s has shown that the breeding population has more than doubled to nearly 500 pairs over the past 30 years. Although we have noted an increase in the incidence of entanglement events in the vicinity of Palmer Station during the last decade (e.g., the presence of monofilament line and hooks around giant petrel nests, or birds that actually return as survivors bearing embedded hooks), we have long-hypothesized that the area's increasing population may be due in large part to foraging ranges that exhibited minimal overlap with commercial longline fishing operations. Knowing that this hypothesis could only be tested with available satellite technologies, we began our research in the early 1990s with the objective of developing a better understanding of the foraging ranges and locations that characterize this anomalous, thriving population of giant petrels.

Because giant petrels are extremely skittish in the presence of humans, and we did not want our activities to impact the study population (the approach of humans, for example, will elicit vomiting of stomach contents by both chicks and adults), we spent the first two years of the study habituating a subpopulation of 15 breeding pairs on a nearby island to our presence. This was done primarily by visiting the colony every day during the breeding season (November-May) and slowly decreasing approach distances to individual nests,



Photo courtesy of Donna Patterson

A female Southern giant petrel and chick sharing the nest



Fig. 1. Palmer Station, Antarctica is located on the southwest coast of Anvers Island, approximately 900 km south of South America

which, over time, eventually allowed us to weigh and measure chicks without consequences and to deploy satellite transmitters (PTTs) without having to restrain adults. Interestingly, during our continuing study, the giant petrel population on the entire island has increased to 55 breeding pairs from the original 30. About 35 pairs are currently habituated to our presence.

We attached PTTs weighing between 30 and 45 g (PTT-100) to the middorsal feathers with Tesa tape and plastic zip-ties, an attach-



A Southern giant petrel is instrumented with a 33 g PTT near Palmer Station, Antarctica

Photo courtesy of Heidi Geisz

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