

PREDATION BY SOUTHERN GIANT PETRELS *MACRONECTES GIGANTEUS* ON ADULT IMPERIAL CORMORANTS *PHALACROCORAX ATRICEPS*

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The diet of the Southern Giant Petrel *Macronectes giganteus* has been studied at a number of Antarctic and Subantarctic colonies (e.g. Conroy 1972, Bonner & Hunter 1982, Hunter 1983, Voisin 1991) and found to consist of penguins, burrowing petrels, seal carrion, cephalopods, crustaceans and fish. However, observations of predation by giant petrels on adult Imperial Cormorants *Phalacrocorax atriceps* at their colonies has not been previously published.

During 17, 18, 20 and 22 November 1991, we observed predation by a Southern Giant Petrel on breeding Imperial Cormorants at Isla Isabel (45°07'S, 66°30'W), Chubut, Argentina. Observations were made during early egg-laying by the cormorants. The cormorant colony had 182 active nests, 22 of which were under study. On all days, the giant petrel involved had a similar colouration pattern, with the head and neck almost completely white, suggesting that the attacks were made by the same individual.

Predation attempts occurred between 15h00 and 19h00 on all days and in all cases they elicited a similar behavioural response from the cormorants. We noted the start of each attack by sudden nest abandonment by some cormorants and their regrouping at the centre of the colony. This was followed by the immediate appearance of the giant petrel, which flew over the colony at a height of approximately 0.5 m. The giant petrel always approached the island flying into the wind and never landed at the colony. As a result, approximately 40–50 cormorants took flight. Once the cormorants were flying over the water, the giant petrel chased them and usually approached a cormorant that had become separated from the group. These flights and chases, or attacks, were repeated several times and consisted of a mean of 21 ± 13 attacks (range 4–34) daily. The duration of each attack lasted between three and five minutes.

During the chases, the giant petrel sometimes hit the

cormorant several times with its beak or body while still flying. On occasions, when the giant petrel was close, the cormorant dived below the water surface and was then followed by the giant petrel. On two of the four days when we observed attacks, the giant petrel landed on the sea surface, captured a cormorant and continued hitting it with its beak. Two out of 85 observed attacks resulted in a cormorant being killed and eaten. The Southern Giant Petrel ate only part of the cormorant's viscera, starting from the cloaca.

During all predation attempts, Kelp Gulls *Larus dominicanus*, Dolphin Gulls *L. scoresbii* and Greater or Palefaced Sheathbills *Chionis alba* took advantage of the predator's disturbance of the cormorant colony by preying almost immediately on exposed cormorant eggs. Except for groups of between 10 and 15 individuals, cormorants did not return immediately to their nests after being attacked. Most disturbed cormorants remained at sea, approximately 50 m from the coast, until some time after the giant petrel had stopped attacks and many did not return to the colony until evening. Cormorants lowered their probability of being preyed upon with this behaviour, but increased the probability of losing their clutches to gulls and sheathbills. It is possible, however, that due to the timing of predation events most cormorants that did not return to the colony after attacks had not yet laid their eggs.

Thirteen of the nests under study had eggs (15 in total) at the time of the attacks. Four eggs (27%) from four nests (30.8%) were taken by predators. We confirmed later that two (15.4%) of the depredated nests were permanently abandoned. Additionally, another eight eggs were lost between 22 November and our next visit to the colony on 26 November, suggesting that other attacks had occurred. In addition to egg loss to gulls and sheathbills, several eggs rolled out of the nests when cormorants fled at the approach of the giant petrel. This egg mortality was not quantified.

Predation by giant petrels on adult seabirds is apparently frequent at Subantarctic localities (Hunter 1983, 1990, Voisin 1991), where penguins and, to a lesser degree, small petrels are captured. Along the Patagonian coast, Southern Giant Petrels prey on Magellanic Penguins *Spheniscus magellanicus*, Kelp Gulls and Imperial Cormorants (Harris 1986, A. Bos & P.M. Yorrio pers. comm.). In the Chubut Province, Southern Giant Petrels have also been observed attacking adult Imperial Cormorants at their colonies at Isla Lobos during the 1991/92 breeding season (F. Fauring pers. comm.) and at Isla Vernaci Oeste during the 1993/94 breeding season (G. Herrera pers. obs.).

Egg mortality and nest abandonment as a consequence of Southern Giant Petrel predation at the colony at Isla Isabel during the 1991/92 season were significant. However, it is possible that the predation impact was underestimated, because daily predation observations were not made throughout the breeding cycle. Our data suggest that giant petrel predation, although apparently uncommon, may significantly affect not only the adult population but also breeding success. It is possible that giant petrels may affect other breeding variables, such as settlement and pair formation. Given that apparently only one Southern Giant Petrel was involved, more information is needed to know how common this type of predatory behaviour is or whether this was an isolated occurrence.

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REFERENCES

- BONNER, W.N. & HUNTER, S. 1982. Predatory interactions between Antarctic Fur Seals, Macaroni Penguins and giant petrels. *Br. Antarct. Surv. Bull.* 56: 75–79.
- CONROY, J.W.H. 1972. Ecological aspects of the biology of the giant petrel *Macronectes giganteus* (Gmelin) in the maritime Antarctic. *Sci. Rep. Br. Antarct. Surv.* 75: 1–74.
- HARRIS, G. 1986. The penguin and the petrel. *Animal Kingdom* 89: 40–43.
- HUNTER, S. 1983. The food and feeding ecology of giant petrels *Macronectes halli* and *M. giganteus* at South Georgia. *J. Zool., Lond.* 200: 521–538.
- HUNTER, S. 1990. The impact of introduced cats on the predator–prey interactions of a sub-Antarctic avian community. In: Kerry, K.R. & Hempel, G. (Eds). *Antarctic ecosystems. Ecological change and conservation*. Berlin: Springer-Verlag. pp. 365–371.
- VOISIN, J-F. 1991. Sur le régime et l'écologie alimentaires des Pétrels géants *Macronectes halli* et *M. giganteus* de l'archipel Crozet. *Oiseau* 61: 39–49.