

SHORT NOTE

Marine predation of southern royal albatross (*Diomedea epomophora*) by New Zealand sea lion (*Phocarctos hookeri*)

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Many species of pinnipeds (Pinnipedia), including true seals (Phocidae), fur seals and sea lions (Otariidae), and walrus (*Odobenus rosmarus*), have been observed to depredate seabirds (Lucas & McLaren 1988; Gertz 1990; Long & Gilbert 1997). Penguins (Spheniscidae) are the most frequent prey, but other victims include auks (Alcidae), gulls (Laridae), cormorants (Phalacrocoracidae), and gannets (Sulidae) (Hofmeyr & Bester 1993; Long & Gilbert 1997; Du Toit *et al.* 2004). Predation of Procellariiformes has rarely been reported and predation of albatrosses (Diomedidae) has been reported (to our knowledge) just twice (McHugh 1951; Moore *et al.* 2008). The single report of “greater” albatross predation involved a New Zealand sea lion (*Phocarctos hookeri* hereafter NZSL) killing at least 128 nesting southern royal albatross (*Diomedea epomophora*, hereafter SRA) on Campbell Island (Moore *et al.* 2008). Permission was given to cull the sea lion because of the significant impact on the SRA population (Moore *et al.* 2008).

Typically, seabirds make up a minor part of the prey of fur seals and sea lions (Rogers & Bryden 1995; Marks *et al.* 1997), but there are cases of these pinnipeds becoming frequently involved or specialized in seabird predation (Du Toit *et al.* 2004). Cape fur seals (*Arctocephalus pusillus pusillus*) at Dyer Island, South Africa are responsible for the annual mortality of 7% of adult African penguins (*Spheniscus demersus*) (Makhado *et al.* 2013). Adult Cape fur seals at Dyer Island specializing

in predation of Cape cormorants (*Phalacrocorax capensis*) successfully taught juvenile seals how to hunt and handle this prey (Marks *et al.* 1997).

New Zealand sea lions primarily forage on smaller marine-life including fish, crustaceans and krill (Childerhouse *et al.* 2001). A research team on Campbell Island in August 1988 discovered a solitary NZSL preying on yellow-eyed penguins (*Megadyptes antipodes*) (Moore & Moffat 1992). Predation of yellow-eyed penguins was subsequently noted on the Otago Peninsula, New Zealand (Lalas *et al.* 2007). Modelling of the findings at this site revealed that predation by NZSL could threaten the viability of yellow-eyed penguins on mainland New Zealand (Lalas *et al.* 2007). Similarly, Subantarctic fur seal (*Arctocephalus tropicalis*) predation may be a significant factor in the dramatic population decline of northern rockhopper penguin (*Eudyptes moseleyi*) at Gough and Amsterdam Islands (Guinard *et al.* 1998; Cuthbert *et al.* 2009; Ryan & Kerr 2012). Frequent and specialized predation can thus pose a significant threat to localized seabird populations (Lalas *et al.* 2007).

Campbell Island is a 112.68 square kilometer uninhabited Subantarctic island that lies over 600 kilometers southeast of South Island, New Zealand. It is the breeding site for over 99% of the world’s SRA. The most recent estimates place the Campbell Island population at 7,800 breeding pairs (Moore *et al.* 2012). The International Union for Conservation of Nature (hereafter IUCN) Red List of Threatened Species classifies the SRA as vulnerable and notes multiple past and present threats including long-line fishing (BirdLife International 2017). The NZSL

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is categorized as endangered on the IUCN Red List of Threatened Species. Although the largest breeding site is the Auckland Islands, Campbell Island holds a substantial population (Chilvers 2015).

On 8 November 2011 the author participated in a rigid-hull inflatable boat cruise at Perseverance Harbour, Campbell Island, New Zealand (52°32'S, 169°10'E). It was an unusually calm morning with virtually no wind and the sea was flat. We observed a SRA sitting on the water being harried by a small group of red-billed gull (*Chroicocephalus novaehollandiae*) and kelp gull (*Larus dominicus*). The SRA was becalmed and vulnerable to predators.

The SRA was attacked from below by a NZSL. The NZSL bit into the abdominal region of the SRA and in the process lifted the bird out of the water. For 45 minutes the NZSL repeatedly attacked and weakened the SRA. The gulls continued to harass the SRA between each attack. The albatross at one point caught a young kelp gull by the neck with its bill and attempted to drown it. The SRA survived at least eight attacks by the NZSL before succumbing. The gulls fed on the intestines of the dead SRA, but we did not see the NZSL devour the carcass. Later

that afternoon we witnessed another SRA perish in a similar manner. While the NZSLs in each attack appeared similar we cannot be sure that it was the same individual. The plumage aspect of both SRA victims aged them as recently fledged. The young birds showed entirely black upper wings with crisp white tips to the coverts that wear off shortly after fledging (Onley & Scofield 2007).

Land-based and a marine-based predation of SRA by NZSL have now been described at Campbell Island (Moore *et al.* 2008). The vulnerability of the SRA population to predation by NZSL requires monitoring. On a broader scale, the many burgeoning populations of pinniped species pose a potential threat to highly localized populations of seabirds and this requires evaluation by conservation authorities (Bester *et al.* 2003; Bester *et al.* 2006). Culling marine mammals that pose a threat to commercial interests or natural resources is well described (Bowen & Lidgar 2012). However, the potential benefit versus risk of culling individual pinnipeds that specialize in seabird predation is limited to anecdotal reports and remains controversial (Du Toit *et al.* 2004; Lallas *et al.* 2007; Moore *et al.* 2008).



Figure 1. Southern royal albatross (*Diomedea epomophora*) undergoing predation by a New Zealand sea lion (*Phocarctos hookeri*) at Perseverance Harbour, Campbell Island, New Zealand, 8 November 2011. Image: Kirk Zufelt.

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