**Supplemental material:**

**Have burrowing petrels recovered on Marion Island two decades after cats were eradicated? Evidence from sub-Antarctic skua prey remains**

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**Estimating the abundance of burrowing petrel and penguin prey for sub-Antarctic skuas breeding at the Prince Edward Islands**

The approximate amount and density of prey available to sub-Antarctic skuas breeding on the Prince Edward Islands (Table IV) was calculated from breeding population estimates of summer-breeding burrowing petrels and penguins adapted from Cooper & Brown (1990), Ryan & Bester (2008), Crawford *et al*. (2009), Ryan *et al*. (2012) and unpublished data (Table S1). Burrowing petrel estimates for Prince Edward were inflated slightly from previous published estimates to reflect the 5–50-times greater burrow densities reported from that island by Schramm (1986). Masses of adult petrels were taken from Ryan & Bester (2008). Skuas target mainly penguin eggs and chicks, so available biomass was calculated as 1% of adult biomass (for the few adults eaten) + egg mass \* clutch size \* number of pairs + chick mass at 2 weeks \* hatching success \* number of pairs, using mass and breeding success data from Handrich (1989), Williams (1990a, 1990b), Cobley & Shears (1999), de Margerie *et al*. (2004), Poisbleau *et al*. (2008) and Crawford *et al*. (2009). The density of burrowing petrel prey at each island was calculated by dividing their biomass by the land area below 850 m estimated from a digital elevation model (Prince Edward Island is 850 m high, and no petrels breed above 850 m on Marion Island). The area of Marion Island below 850 m was taken to be 27 321 ha (adapted from Meiklejohn & Smith 2008). Comparative density estimates for penguins were made assuming most penguins breed below 100 m elevation: 6871 ha for Marion Island (Meiklejohn & Smith 2008) and 1750 ha for Prince Edward Island (Ryan *et al*. 2009).

**Table S1.** Approximate population estimates (number of breeding pairs) of summer-breeding penguins and burrowing petrels breeding at the Prince Edward Islands and the period (year) when the estimates were made.

Species Marion Island Prince Edward Island

 Pairs Year Source\* Pairs Year Source\*

King penguin 65,000 2008 1 2,000 2008 1

Macaroni penguin 290,000 2008 1 12,000 2008 1

Rockhopper penguin 42,000 2008 1 38,000 2008 1

Salvin’s prion 100,000 1980s 2 500,000 1980s 2

Fairy prion 1,000 1980s 2 1,000 1980s 2

Blue petrel 50,000 1980s 2 200,000 1980s 2

White-chinned petrel 24,000 2009 3 12,000 2011 3

Soft-plumaged petrel 5,000 1980s 2 50,000 1980s 2

Kerguelen petrel 10,000 1980s 2 20,000 1980s 2

Common diving petrel 100 2015 4 20,000 1980s 2

South Georgian diving petrel 50 1980s 4 5,000 1980s 2

Black-bellied storm petrel 1980s 2 5,000 1980s 2

Grey-backed storm petrel 1980s 2 1,000 1980s 2

\*1Crawford *et al*. 2009; 2Cooper & Brown 1990 and Ryan & Bester 2008, modified based on burrow densities in Schramm 1986 for Prince Edward Island; 3Ryan *et al*. 2012; 4Percy FitzPatrick Institute unpublished data.

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