DISCOVERY OF THE FIRST EMPEROR PENGUIN *APTENODYTES FORSTERI* COLONY IN MARIE BYRD LAND, ANTARCTICA

MARY-ANNE LEA[1] & TIM SOPER[2]

[1] *Antarctic Wildlife Research Unit, School of Zoology, University of Tasmania, PO Box 252-05, Hobart, Tasmania, 7001, Australia (ma_lea@utas.edu.au)*
[2] *Gerston Point, Kingsbridge, Devon, TQ7 3BA, UK*

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Emperor Penguins *Aptenodytes forsteri* have been reported to breed at a total of 45 colonies surrounding the Antarctic Continent (Woehler 1993, Mellick & Bremers 1995, Coria & Montalti 2000, Todd *et al.* 2004). Their known breeding distribution extends from the Antarctic Peninsula at Snow Hill Island (64°31′S, 57°27′W) eastwards along the coasts of Dronning Maud Land, Enderby Land, Mac. Robertson Land and Wilkes Land to Cape Crozier on Ross Island (77°31′S, 169°23′E). Sightings of Emperor Penguins in rarely-visited Marie Byrd Land have been reported, although no colonies have ever been recorded in the sector between the Dion Islands (67°52′S, 68°43′W) in Marguerite Bay on the west coast of the Antarctic Peninsula and the Ross Sea (Woehler 1993). Because of the persistence of sea ice late into summer in this sector, few ships are able to reach the coast before post-breeding adults disperse from their colonies in December and early January. Since 1993, one of the few vessels to explore this section of coast has been the Russian icebreaker *Kapitan Khlebnikov,* carrying commercial tourists. Previous sightings of numerous adult Emperor Penguins on ice floes off the Getz Ice Shelf east of Siple Island in January 2003 (F.S. Todd pers. comm.), and of discoloured ice and penguin feathers close to the same ice shelf in late January 2000 (M.A. Hindell pers. comm.), suggested the possibility of an unrecorded breeding colony in the region.

During a partial circumnavigation of western Antarctica aboard the *Kapitan Khlebnikov* in December 2004 and January 2005, a reconnaissance flight by MI-2 helicopter was made along the coastline between 125°03′W and 132°50′W in an attempt to locate this possible colony. On 29 December 2004, a breeding colony was discovered on the northeast side of Siple Island at 73°24.7′S 125°37.9′W (Fig. 1, Fig. 2). The colony was located on stable fast ice below the Thurston Glacier ice shelf, 3.5 km south of Pranke Island. Numerous large tabular ice bergs were grounded in the fast ice in this region. A brief landing was made 1.5 km from the colony, but because the site was 85 nautical miles from the ship, the helicopter was unable to shut down to allow for a longer investigation.

Few adult penguins were present with the crèched chicks in the colony. A count of the birds estimated *ca.* 2500 chicks present (C3 accuracy of *ca.* 25%–50%, after Woehler 1993). Evidence of chick-feeding behaviour was indiscernible from our vantage point. The chicks had dispersed along the fast ice shelf into two groups of *ca.* 1500 and *ca.* 1000 individuals, approximately one kilometre either side of the winter colony site, as indicated by discoloured sea ice. This count represents a minimum estimate for the breeding population, given that an unknown number of chicks might have died or fledged before our visit. The fast ice edge in December 2004 was approximately three nautical miles northeast of the colony, and a large polynya was present west of Cape Dart on the northern tip of Siple Island, 20 nautical miles to the northwest. This area marks the eastern extent of the Wrigley Shelf Polynya (Arrigo & van Dijken 2003), a region characterized by maximum annual primary production in December/January, coinciding with fledging of Emperor Penguin chicks. The habitat is similar to that found Emperor Penguin colonies in the Ross Sea, characterized by stable fast ice, nearby open water, access to fresh snow and shelter from wind (Kooyman 1990). Fast ice extent is variable from year to year in this region (Swithinbank *et al.* 2003) and may have influenced previous locations of the colony. Approximately 100 adult Emperor Penguins, in groups of 10–25 individuals, were also sighted travelling northwards to the ice edge. Approximately 250 Weddell Seals *Leptonychotes weddelli* in groups of 10–30 were also sighted along tidal cracks in the vicinity.

Daytime wildlife sightings from the bridge of the *Kapitan Khlebnikov* were logged during the voyage by the authors and interested passengers (Table 1). Observations covered *ca.* 80%–90% of daylight hours, and Table 1 includes only verified sightings. On 30 December 2004, continuing west towards the Ross Sea, 141 adult Emperor Penguins were sighted on ice floes 300 nautical miles to the west of Siple Island between 74°17′S, 140°49′W and 74°07′S, 143°07′W (Table 1). That sighting might suggest that another Emperor Penguin colony occurs in this region, perhaps near Cruzen Island where observed shipboard satellite images and radar showed a suitable habitat of stable fast ice with grounded tabular icebergs. Weather conditions at the time did not permit a reconnaissance flight.

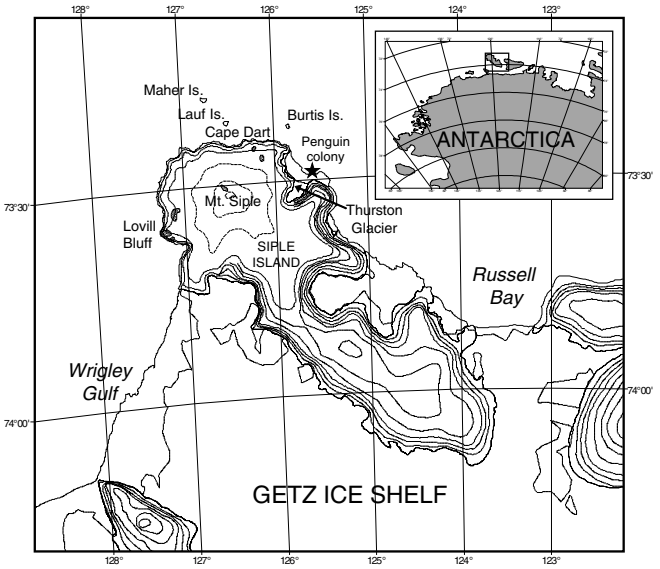

Fig. 1. The location of the newly discovered Emperor Penguin *Aptenodytes forsteri* colony east of Siple Island, Marie Byrd Land, Antarctica.

Sightings of numerous Emperor Penguins in the region of the Edward VII Peninsula (77°40′S, 158°30′W) at the eastern boundary of the Ross Sea were reported in 1902, 1940, 1976 and 1987 (Watson *et al.* 1971, Woehler 1993) also suggesting the possibility of a colony in the area. On 31 December 2004, following increasing sightings of adult Emperor Penguins on ice floes on approach to Cape Colbeck, the *Kapitan Khlebnikov* entered Bartlett Inlet to the east of the Cape. Here, approximately 600 downy Emperor Penguin chicks in three groups lined the fast ice edge at 77°04′S, 157°43′W. Helicopter reconnaissance around Bartlett Inlet located a colony at 77°08′S, 157°38′W, nine kilometres south-southeast of the ice edge, on the western side of a long embayment in the ice shelf. Approximately 1350 birds, primarily chicks dispersed on the fast ice in crèches, were present. Chick-feeding was observed on several occasions during the visit, and most chicks appeared healthy and robust. Few thin and downy chicks were observed. Additional birds, in transit from the colony to the fast ice edge, were observed from the air but were not counted. A minimum colony size of 2000 breeding pairs is estimated based on these chick counts (C3 accuracy after Woehler 1993). This site has been previously visited by the United States National Antarctic Program in 1993 and 2000 (G.L. Kooyman pers. comm.). The 2005 estimate is low relative to previous counts (G.L. Kooyman pers. comm.), which may be a consequence of early-season chick mortality and chick fledging.

Our observations made during this voyage along a 1850–nautical mile stretch of the remote West Antarctic coast confirm the presence of at least 2500 previously unknown breeding pairs of Emperor Penguins at Siple Island, the first confirmation of breeding for Mary Byrd Land. Further investigations of the coast between Marguerite Bay and the Ross Sea in December/January may reveal more Emperor Penguin colonies.

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REFERENCES

ARRIGO, K.R. & VAN DIJKEN, G.L. 2003. Plankton dynamics within 37 Antarctic coastal polynya systems. *Journal of Geophysical Research* 108: 3271.

CORIA, N.R. & MONTALTI, D. 2000. A newly discovered breeding colony of Emperor Penguins *Aptenodytes forsteri. Marine Ornithology* 28: 119–120.

KOOYMAN, G.L. 1990. Breeding habitats of Emperor Penguins in the western Ross Sea. *Antarctic Science* 5: 143–148.

MELLICK, D. & BREMERS, W. 1995. A recently discovered breeding colony of Emperor penguins (*Aptenodytes forsteri*) on the Budd Coast, Wilkes Land, East Antarctica. *Polar Record* 31: 426–427.

SWITHINBANK, C., WILLIAMS, R.S., JR, FERRIGNO, J.G., FOLEY, K.M. & ROSANOVA, C.E. 2003. Coastal-change and glaciological map of the Bakutis Coast area, Antarctica: 1972–2002. USGS Geologic Investigations Series Map I-2600-F. 2nd Ed. 1 sheet. Scale 1:1000 000. With 10-page pamphlet.

TODD, F.S., ADIE, S. & SPLETTSTOESSER, J.F. 2004. First ground visit to the Emperor Penguin *Aptenodytes forsteri* colony at Snow Hill Island, Weddell Sea, Antarctica. *Marine Ornithology* 32: 193–194.

WATSON, G.E., ANGLE, J.P., HARPER, P.C., BRIDGE, M.A., SCHLATTER, R.P., TICKELL, W.L.N., BOYD, J.C. & BOYD, M.M. 1971. Birds of the Antarctic and sub-Antarctic. Antarctic Map Folio Series. No. 14. New York: American Geographical Society.

WOEHLER, E.J. 1993. The distribution and abundance of Antarctic and Subantarctic penguins. Cambridge: Scientific Committee on Antarctic Research.

Fig. 2. Looking west towards the Siple Island colony, showing both Emperor Penguin *Aptenodytes forsteri* adults and chicks present on 29 December 2004. The Thurston Glacier ice shelf and southeastern lower slopes of Mount Siple are visible behind. Photo by Lisa Trotter.

TABLE 1
Emperor Penguins *Aptenodytes forsteri* sighted from the icebreaker *Kapitan Khlebnikov* while travelling westwards from Marguerite Bay to the eastern Ross Sea, December 2004–January 2005

Date	Latitude	Longitude	Birds (n)	Habitat	Observation platform
28 Dec 2004	72°53.0′S	132°25.6′W	1 adult	Ice floes	Ship
	72°59.8′S	132°31.0′W	1 adult	Ice floes	Ship
29 Dec 2004	73°24.7′S	125°37.9′W	*ca.* 2500 chicks	Fast ice east of Siple Island	Helicopter/land
30 Dec 2004	74°17.0′S	140°49.0′W	141 adults	Ice floes north of Cruzen Island	Ship
	to 74°06.6′S	143°06.8′W			
	74°32′S	144°55′W	*ca.* 30 adults	Ice floes	Ship
	to 75°05.4′S	150°22.8′W			
31 Dec 2004	76°59.4′S	157°57.3′W		Ice floes	Ship
	to 77°01.8′S	157°46.1′W			
31 Dec 2004	77°04′S	157°43′W	*ca.* 600 chicks	Ice edge, Bartlett Inlet	Ship
	77°08′S	157°38′W	*ca.* 1350 chicks	Fast ice, Bartlett Inlet	Land