RESEARCH NOTE

An Adélie penguin (*Pygoscelis adeliae*) 200 km from the sea

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Abstract

This brief note reports an observation of an Adélie penguin (*Pygoscelis adeliae*) 200 km from the open sea, at Troll Research Station, in Dronning Maud Land, Antarctica, on the morning of 5 January 2026. The bird, which appeared to be in good condition, was not interfered with and was last seen walking away from the station in the afternoon. This observation and previous reports of penguin signs so far inland are rare and raise questions about how these birds navigate.

Keywords

Avian navigation; bird orientation; vagrants; Antarctica

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Introduction

Birds are renowned for their spectacular navigation abilities. In addition to visual landmarks, they can use the sun, the Earth's magnetic field and stars for long-distance movements such as migration (Mouritsen et al. 2016). Odours (Nevitt 2000; Gagliardo 2013) and infrasounds (Patrick et al. 2021; Gillies et al. 2023) may also play a role in some species, guiding them to their breeding and/or feeding grounds. In penguins, which have lost the ability to fly, walking is often necessary to reach breeding sites, but it incurs high energetic costs (Pinshow et al. 1977). Consequently, even though alternative behaviours such as tobogganing (Wilson et al. 1991) can reduce energy expenditure when moving on snow, one can expect efficient navigation systems in penguins on land to minimize travelling distances (Quintana et al. 2022). Penguins use visual (e.g., landmarks, sun position) and acoustic (e.g., colony soundscape) cues to orientate themselves, return to their colonies and locate their nests or partners (Emlen & Penney 1964; Penney & Emlen 1967; Jouventin et al. 1999; Nesterova et al. 2013; Ainley & Wilson 2023). However, despite strong orientation abilities at sea and on land, sometimes things can go wrong and penguins may occasionally become disoriented.

Here we report an observation of an Adélie penguin (*Pygoscelis adeliae*) in Dronning Maud Land, Antarctica, recorded hundreds of kilometres inland.

Penguin at Troll Research Station

On 5 January 2026 in the morning (08:00), an Adélie penguin was observed near Troll Research Station, Dronning Maud Land, Antarctica (Fig. 1a). The nearest access to open sea was 200 km away (Fig. 1b), and the closest breeding colony—in Lützow-Holmbukta (Lützow-Holm Bay)—is about 1300 km away (Lowther et al. 2022). The bird appeared to be in good physical condition and was first observed between Troll Airfield and the station, walking on the ice (Fig. 2a). It then walked towards the station and stayed there, among the buildings, until 15:00. It then walked eastwards and disappeared. The individual was not captured, and all observations were made from a distance to minimize disturbance.

To our knowledge, the only comparable peer-reviewed record of extreme inland movement of an Adélie penguin comes from Sladen & Ostenso (1960), who reported Adélie penguin tracks located 300 km from the coast in 1958. A penguin track, most likely from an Adélie penguin, was observed near Troll Airfield in December 2002 (Steinar Vaadal, pers. comm.; Fig. 2b). Other historical sources, including British Antarctic Expedition reports (Wilson 1907), indicate that Adélie penguins occasionally wander inland, although details of these movements and their frequency are lacking.

Such inland movements of Adélie penguins are likely driven by a combination of ecological and environmental factors. Experiments have revealed that Adélie penguins can travel up to 60 km per day on land and that individuals translocated up to 300 km from their breeding colony were capable of homing

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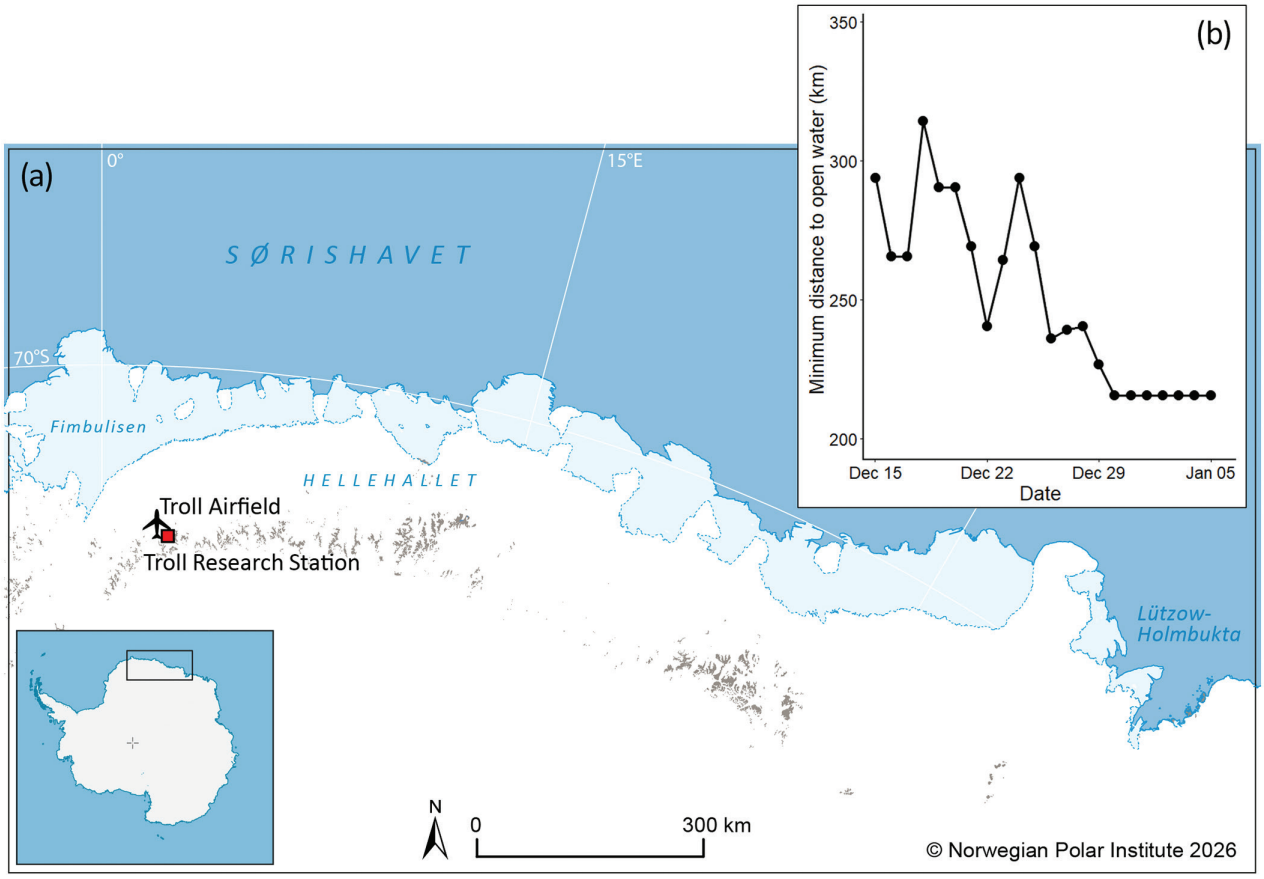

Fig. 1 (a) Location of Troll Airfield and Troll Research Station in Dronning Maud Land, Antarctica (map by Oddveig Ø. Ørvoll, Norwegian Polar Institute). (b) Minimum distance between the station and open-water areas (defined as having a sea-ice concentration of zero) in late December 2025 and early January 2026. The distance from the station to the centre of the nearest 25 × 25 km grid cell with zero sea-ice concentration decreased to 215 km from 29 December 2025 onwards. These distances were calculated on the basis of the global sea ice concentration interim climate data record (AMSR2 version 3.0, 2022; OSI-438, doi:10.15770/EUM_SAF_OSI_0024), a product of EUMETSAT Ocean and Sea Ice Satellite Application Facility (OSI SAF).

successfully (Emlen & Penney 1964; Penney & Emlen 1967). Disorientation may occur in featureless terrain, particularly under conditions of poor visibility, such as fog (Alerstam 1990). Consistent with this, previous displacement experiments have shown that when the sun is obscured by cloud cover, Adélie penguins can lose their sense of direction when moved away from familiar landmarks (Emlen & Penney 1964; Penney & Emlen 1967). In our case, in the two weeks preceding the penguin's appearance at the Troll Research Station, the area experienced periods of poor weather with low visibility, which may have contributed to navigational challenges for the bird.

Conclusion

This observation adds to the limited body of evidence showing that Adélie penguins, although highly adapted to coastal and sea-ice habitats, are capable of substantial inland excursions under unusual circumstances. These behaviours are likely maladaptive, offering no obvious fitness benefits.

Documenting rare natural history events is important as they provide insights into species' behavioural plasticity and the potential challenges penguins face when navigating unfamiliar or extreme environments. However anecdotal, this observation raises questions about how penguins navigate. Although we have some understanding of the cues they use, the mechanisms underlying such extreme and unusual movements remain largely unknown.

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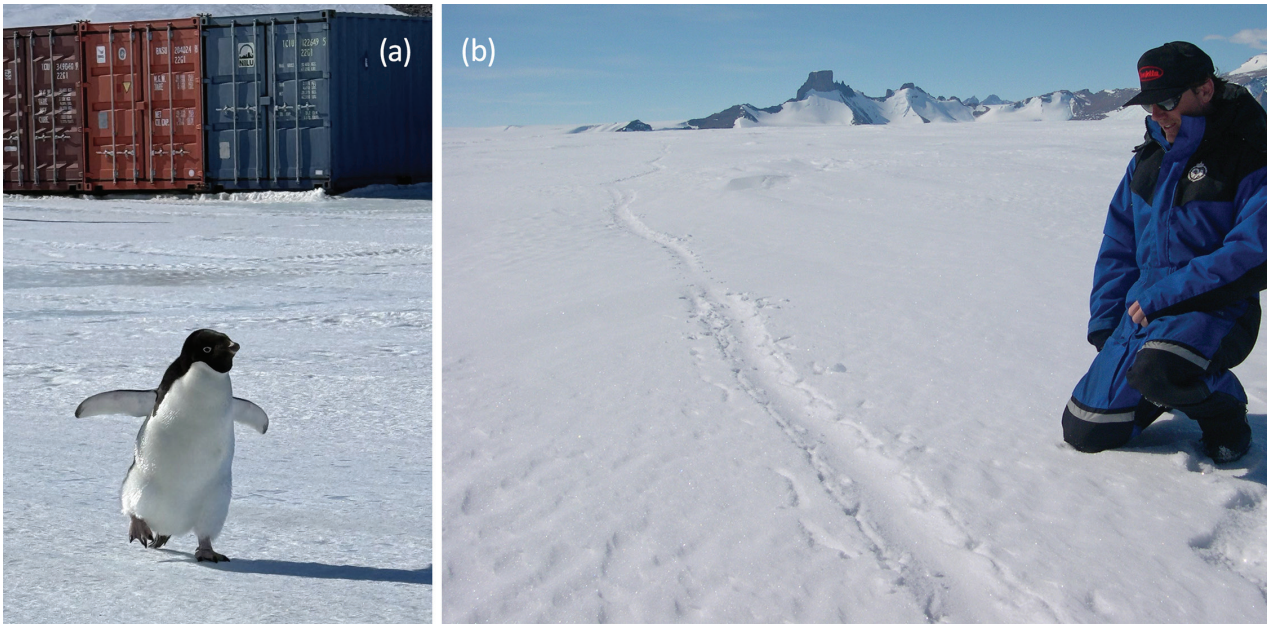

Fig. 2 Direct and indirect evidence of Adélie penguins at Troll Research Station in Dronning Maud Land, Antarctica: (a) the penguin seen at the station on 5 January 2026 (photo: Lars Sletten) and (b) the tracks observed near Troll Airfield on 31 December 2002 (photo: Steinar Vaadal).

sharing his penguin track observation and picture from 2002, and Lars Sletten for providing the picture of the penguin observed in January 2026.

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Disclosure statement

The authors report no conflict of interest.

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