# SHORT NOTES

## BROWN-HOODED GULL *LARUS MACULIPENNIS*: FIRST RECORD FOR SOUTH GEORGIA

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On 21 May 1987, at approximately 1500 h GMT, T.D.W. noticed a small grey-backed gull being harried by a subantarctic skua, *Catharacta lonnbergi*, over the beach of Freshwater Bay, Bird Island (54° 00′ S, 38° 02′ W). The gull avoided the skua and was observed for about 2 min as it flew west into Main Bay, then over Square Pond towards Evermann Cove where it was last seen. Initially, good views were obtained of the head pattern and general appearance from about 70 m and in good light, but for much of the time the bird was flying directly away.

Field characters of the gull were as follows: much smaller than the subantarctic skua or dominican gull, *Larus dominicanus*; slightly larger and heavier than Antarctic tern, *Sterna vittata*, the wings longer and broader, the flight not quite as buoyant. Close comparisons were made with all these species and the following description taken: underparts pure white, wings pale, silver grey above with indistinct black tips to the outer primaries and probably two 'mirrors', tail and rump white; head white with obvious dark bar at hind edge of ear coverts and a further black spot above the eye. Bill and feet colours not observed. Flight habits were similar to black-legged kittiwake, *Rissa tridactyla*, of the northern hemisphere, i.e. buoyant, bouncy flight with occasional 'side-stepping' glides. Weather at the time of observation was bright and sunny with moderate south-westerly winds, gusting 25–30 knots at times.

### Discussion

At the time, reference was made to Harrison (1983) and to photographs in Woods (1975, 1982) for identification. Subsequently, additional reference works, especially Harrison (1987), could be consulted. All the large and dark coloured gulls could be excluded, and it was clear that our bird was a winter plumage example of an adult of one of the small species which have dark head markings in breeding plumage.

There are numerous species in this group distributed worldwide, but rather few of them are resident in, or regular visitors to, South American waters. We gave most critical attention to these latter species: laughing gull *Larus atricilla*, Franklin's gull *L. pipixcan*, brown-hooded gull *L. maculipennis*, Andean gull *L. serranus* and grey-headed gull *L. cirrocephalus*. However, we also considered the most similar widespread species of this group from other regions, e.g. black-headed gull *L. ridibundus* (Europe), Indian black-headed gull *L. brunnicephalus* (India) and Bonaparte's gull *L. philadelphia* (North America).

The paleness of the general colouration of the upper wing, the absence of extensive black areas on the wing-tip and the restricted but clearly visible nature of the head markings eliminated the majority of these species. Thus, laughing and Franklin's gulls are much darker with dark wing-tips and the latter shows in all plumages a pronounced trace of a dark hood. Indian black-headed gull shows dusky underwings and black wing-tips with pronounced white mirrors. Andean gull has a prominent black tip to the wing and a large white mirror patch; its head markings are barely distinguishable in winter.

Black-headed and Bonaparte's gulls have much less black on the wing and a head pattern rather similar to that described here, but both have very conspicuous white leading edges to the wing, forming a clearly visible patch. The primaries of our bird had a dark stripe along their entire length, producing a much more streaked effect than in these two species. Grey-headed gull is also rather similar to the description but has a rather greyer mantle, less prominent ocular spot and well-defined black wing-tips with a clear mirror.

The field description fits brown-hooded gull best of all, except in one respect, the presence of 'possible mirrors' on the upperwing. However, this species is known to have particularly variable markings on its primary tips (Dwight, 1926; Murphy, 1936; Harrison, 1983). The typical adult pattern has the fifth and sixth primaries white with dark margins on the outer webs not extending to the tips of the outer primaries. However, other descriptions and illustrations show up to five primaries with black tips and Dwight (1926) noted the presence of mirrors in second-year birds which could be retained into adult plumage (Harrison, 1983). Given this degree of documented variation we are confident that the bird we saw was an adult, in non-breeding (winter) plumage, of the brown-hooded gull *Larus maculipennis*. Furthermore, two of us (D. V. E., S. N. D.) have experience of this species in the Falkland Islands and were convinced of the correctness of this identification at the time.

The range of the brown-hooded gull also makes it by far the most likely of all the species considered to turn up on Bird Island. It breeds on the Falkland Islands (where birds were seen by D. V. E. in March) and in southern South America. Prevailing winds in the Drake Passage in the three to four days prior to this record were light to moderate westerlies (Steve Welsh, pers. comm.) and the fact that brown-hooded gulls disperse north in winter (Harrison, 1983) supports our conclusion. The likelihood is increased by the fact that all northern hemisphere species should be on their breeding grounds in May, and the only relevant species regularly occurring south of the Tropic of Capricorn in South America are grey-headed and Franklin's gulls.

This is the first record of the brown-hooded gull for South Georgia.

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# THE MOVEMENT OF HALLEY, DERIVED FROM SATNAV MEASUREMENTS 1986–1987

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## Introduction

Recent estimates of the velocity of the Brunt Ice Shelf have been based on fixing the position of the BAS station Halley (Simmons and Rouse, 1984), on shipborne observation of the ice front (Lange and Kohne, 1985) and on comparison of features seen on Landsat images taken some twelve years apart (Simmons, 1986).

In January 1986 a simple satellite navigation (satnav) receiver was installed at Halley and since then has been used to give regular 'position fixes'. These indicate that the velocity of 740 m per annum found for the period 1972–1982 (Simmons and Rouse, 1984) has been maintained in the period January 1986 to July 1987.

## Equipment and Field Programme

The receiver used was a 'Navstar A300S', receiving single band (400 MHz) signals from the US 'Transit' Navigation System satellites. Designed for yachts, it has a quoted accuracy of $\pm 0.05$ nm (approx. 100 m) and a memory that stores the results of the last twelve fixes. It was used with the optional stick antenna with built-in preamplifier.

Used in the 'Auto-locate' mode, it records the latitude and longitude for each successful computation from a satellite pass. Initially it was left on permanently and the last twelve fixes were read from memory every few days. All the positions recorded for each month were averaged to give a mean monthly position which was included in the regular monthly report telexed to Cambridge. Whilst the first few results confirmed a westerly movement of between 700 and 800 m per annum, they showed that improvements in the observing programme and analysis were desirable. The subsequent programme for longitude determination was restricted to passes where the maximum elevation of the satellite was between 20° and 50°, and these were averaged in groups of not more than 10 days.

## Initial Analysis

The first seven mean monthly positions gave the following results:

*Latitude*

| | |
|---|---|
| (1 min of latitude is 1853 m) | |
| Standard deviation of individual fixes | 0.05′. *or* $\pm 100$ m |
| Movement | < 100 m per annum, southwards |

*Longitude*

(At Halley's latitude 1 min of longitude is 461 m)
Standard deviation of individual fixes 0.4′, or ±200 m
Movement ~ 1.6′ per annum *or* 700–800 m per annum, westwards.

These results showed that the accuracy fell short of that expected from the equipment and that the movement in one month (60 m) was appreciable compared with the accuracy of good fixes. Information supplied by the manufacturers indicated that although good latitude fixes can be obtained from satellite passes of high elevation, longitude accuracy is improved by using passes of maximum elevation between 20° and 50°. With the change in latitude contributing less than 1% to the overall velocity, the longitude data were reworked, rejecting passes with elevations outside 20–50°, and grouped into periods not exceeding ten days.

## Final Analysis

The results of the analysis of the data from January 1986 to July 1987 are as follows:

*Latitude*

Analysis of 19 mean monthly positions:
Average number of latitude fixes per month 42
Average standard deviation of latitude fixes 0.04′
Error estimate for mean monthly position ±0.006′ *or* ±11 m

Slope by linear regression 0.037′ per annum *or* 50±15 m per annum, southwards

*Longitude*

Analysis of fixes grouped into periods of not more than 10 days.
Average number of longitude fixes per 10-day period 31
Standard deviation of longitude fixes in group 0.15′
Error estimate for mean 10-day position ±0.027′ *or* ±12 m

Slope by linear regression 1.606′±0.013′ per annum *or* 740±6 m per annum, westwards.

Fig. 1 shows the longitude of Halley plotted against day number from 1 January 1986.

## Summary

The analysis described above gives the following results:
Position on 1 January 1986, 75° 36.28′ S, 26° 40.85′ W.
Southerly (latitude) velocity 50±15 m per annum.
Westerly (longitude) velocity 740±6 m per annum.
Combining these values gives the following estimate of the velocity for the period January 1986 to July 1987:

742±6 m per annum in a direction 4° south of west.

This agrees with the 1972–80 value of 740±9 $ma^{-1}$ (Simmons and Rouse, 1984), though that applied to the site of the previous base some 15 km to the north.

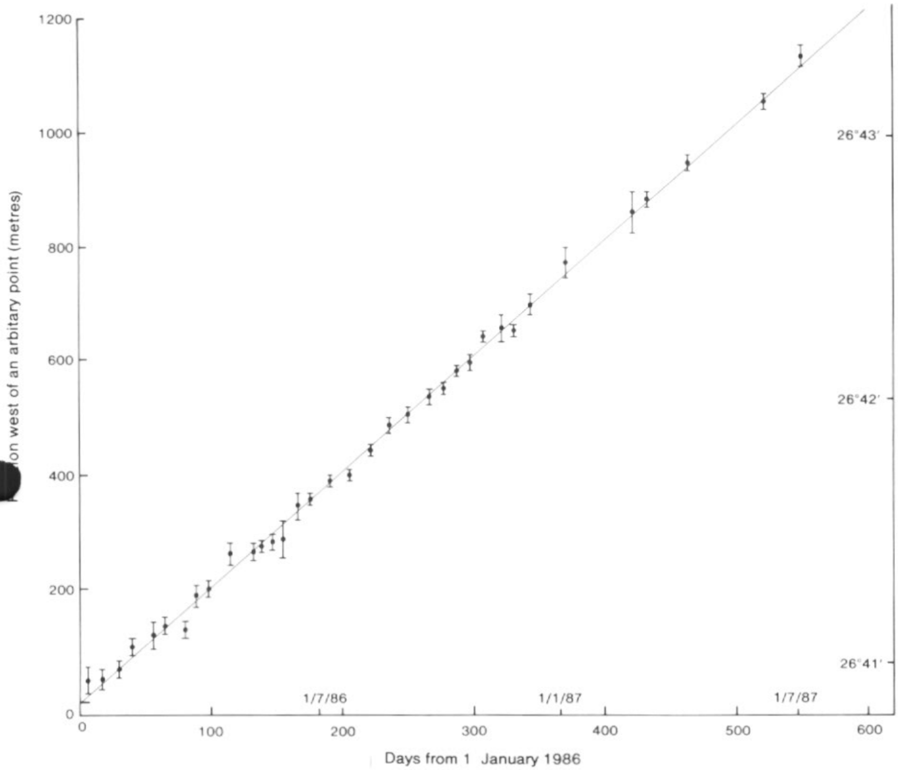


Fig. 1. Longitude, or position west of an arbitrary point, plotted against day number from 1 January 1986 for Halley station. The 'best-fit' line obtained by linear regression is also shown.

The error estimates quoted above are the standard deviations of the slopes of the linear regression lines such as shown in Fig. 1. They do not take into account the uncertainty of the individual values used. If these are taken into account, then the estimate for the overall velocity is: $743 \pm 16$ m per annum in a direction 4° south of west.

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