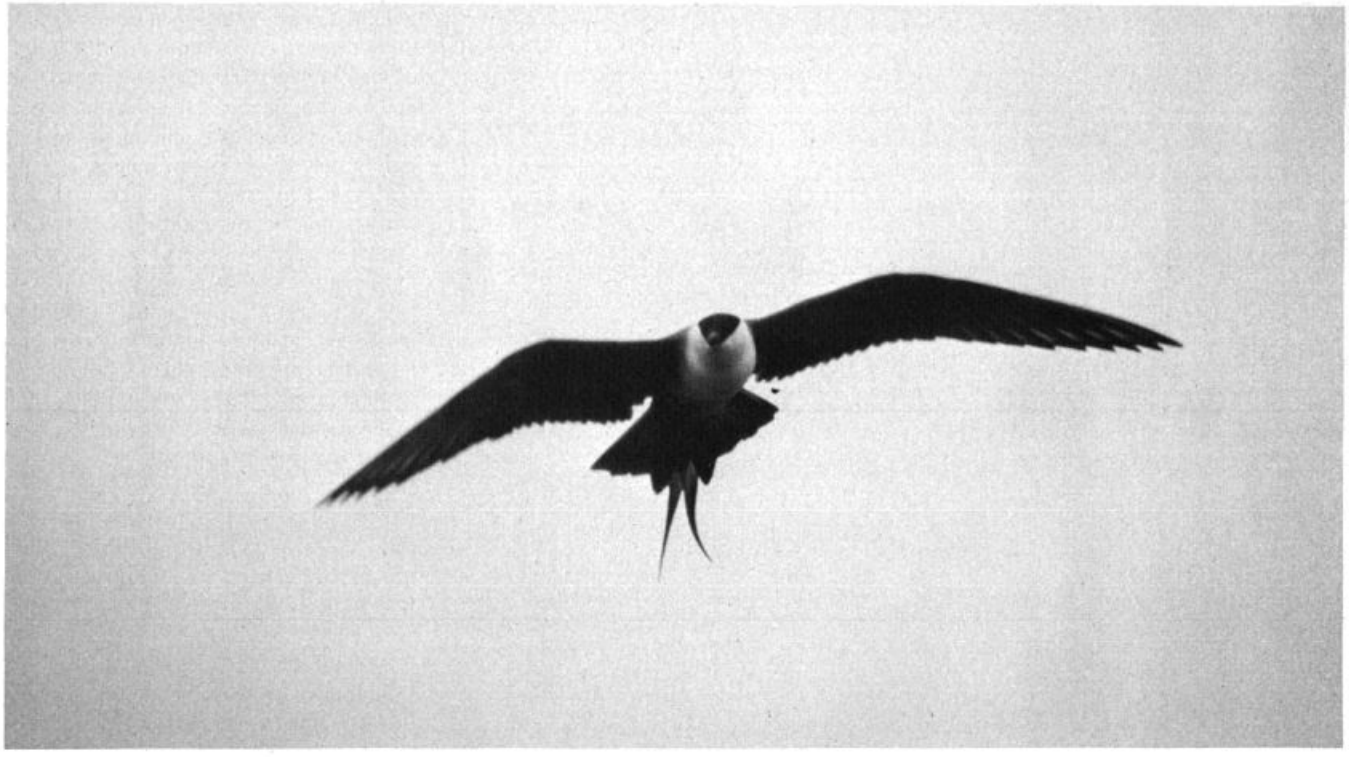
Long-tailed Jaegers wintering along the Falkland Current



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Observations at sea over a three-year-period indicate that oceanographic features play an important role in the winter distribution of this species

Richard R. Veit

LONG-TAILED JAEGERS (*Stercorarius longicaudus*) have only sporadically been observed during migration and, with the exception of storm-blown birds in Argentina (Wetmore 1926), had not been reported in numbers anywhere during winter until the mid-70s, when Lambert (1980) found hundreds off the coasts of Namibia and South Africa. Wintering grounds in the western hemisphere, however, are largely unknown. When Long-tailed Jaegers have been encountered at sea during the non-breeding season, they are usually much farther offshore than either Parasitic (*S. parasiticus*), or Pomarine (*S. pomarinus*) jaegers. In this paper are described observations of more than 500 Long-tailed Jaegers off the Argentine coast in March 1983, March 1984, December 1984, and March 1985. Their association with certain oceanographic features which might help to explain their highly pelagic distribution off South America and elsewhere are discussed.

Observations

During the austral summers of 1983, 1984 and 1985, I studied the distribution of marine birds off eastern South America from the United States Coast Guard icebreakers *Polar Star* (1983) and *Polar Sea* (1984) and the British Antarctic Survey *RV John Biscoe* (1985). The cruise tracks are listed in Figure 1. In 1983, at least 45, and in 1984, at least 410 Long-tailed Jaegers were counted between 39°-45° S latitude, roughly 150-200 miles east of central Argentina. In 1985, on two

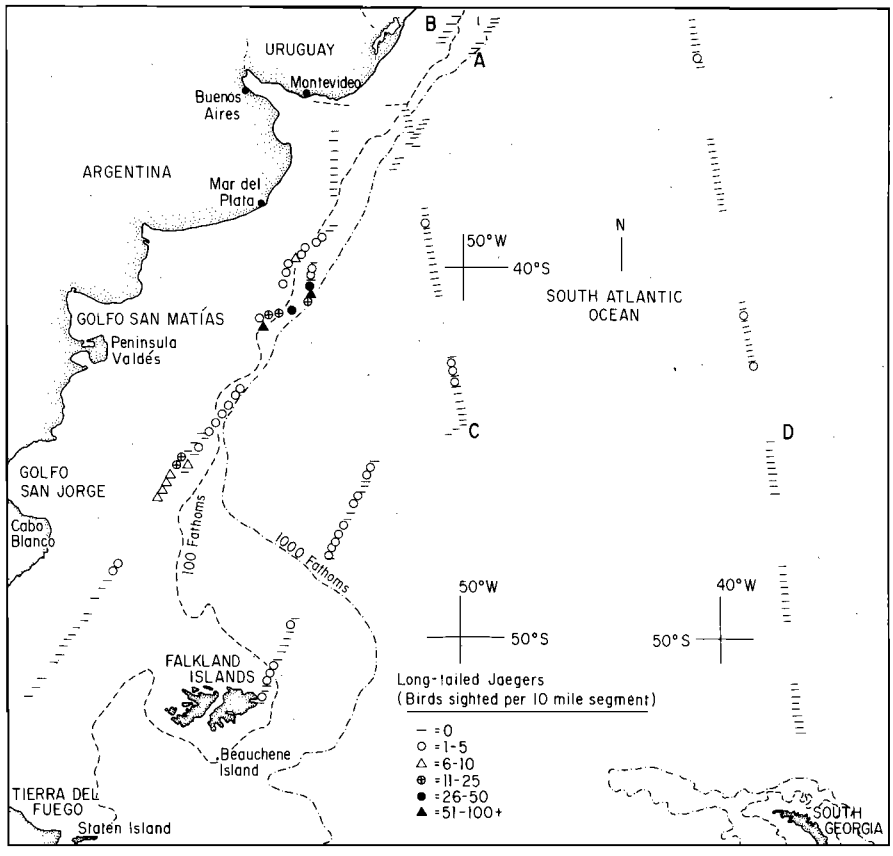

Figure 1: Distribution of Long-tailed Jaeger sightings in the South Atlantic Ocean during winter. Cruise Tracks: A) Strait of Magellan to Rio de Janeiro, March 9-17, 1983. B) Strait of Magellan to Montevideo and Montevideo to Rio de Janeiro, March 15-25, 1984. C) Montevideo to Stanley, Falkland Islands, December 31, 1984-January 4, 1985, and D) South Georgia to Rio de Janeiro, March 22-29, 1985.

transects farther to the east over deep water, a total of about 50 Long-tailed Jaegers (Fig. 1) were observed. Most were resting in monospecific flocks of up to 60, but more often 10-12 birds, and were flushed by the approach of the ship. Some of the flocks sat alone on the water, while others mixed among flocks of shearwaters, storm-petrels and albatrosses. Some of these sightings were of individuals flying about 100′-200′ above the surface of the water. There was little consistency in the direction of their flight, so they did not appear to be migrating.

For the most part, the jaegers were not feeding. A few picked briefly at the ocean's surface while hovering, but I could not see if they caught anything. I never observed a Long-tailed Jaeger chase or harass another seabird, despite numerous opportunities for them to do so In 1983, I also identified 18 Pomarine and six Parasitic jaegers, and recorded 13 unidentified jaegers between 41° and 43° S In 1984, two Pomarine, two Parasitic and 13 unidentified jaegers were seen between 42° S. and Montevideo. The unidentified jaegers were either Parasitic or Long-tailed and definitely not Pomarine.

Plumage, age, molt

It is especially difficult to judge the age of basic-plumaged Long-tailed Jaegers in the field. From the presence or absence of barring on the underwings, an estimated 50% to 75% of the birds in those flocks were less than two years old, at least 25% were in first basic plumage, and a maximum of 20% were adult.

Most of the jaegers had begun pre-alternate molt, as they were molting flight feathers and wing coverts. In 1984, only seven of the 400 or so observed were clearly adults. These resembled alternate plumaged adults, except that they lacked elongated central rectrices, had pale edges to the mantle feathers, and had more extensively dark bellies (Fig. 2). One was of the "dark" phase, with uniformly sooty gray plumage and two strikingly white primary shafts, while another (Fig. 3) was also entirely dark save for a creamy facial streak that outlined the base of the blackish cap.

At least one-half of the birds were identified as immature (*i.e.*, non-adult) on the basis of their barred underwing coverts (Fig. 4). These exhibited a great array of color patterns, owing to the combined effects of polymorphism, stage of molt, extent of feather wear, and perhaps difference in age. The most variable part of the plumage was that of the head and underparts. The palest birds had pale buffy or whitish heads and upper breasts, lightly barred flanks and undertail coverts, and dusky bellies. Others had pale heads, conspicuous pale brown pectoral bands, whitish bellies and barred undertail coverts. The darkest immatures appeared uniformly sooty on the underparts, except for a dirty whitish area around the throat and cheeks; barring on the flanks was usually evident despite the otherwise dusky color of the underparts All of the young birds showed a silvery flash at the base of the primaries on the underwing, while the upperwing was entirely dark save for two gleaming white primary shafts. Some had broad, irregular whitish spots on the uppertail coverts All but the darkest individuals, regardless of age, showed the distinctive blackish trailing edge to the wing caused by the juxtaposition of the blackish flight feathers with the pale gray wing coverts

Almost all of the jaegers showed some evidence of molt of the remiges and upperwing coverts. The most "ragged" individuals appeared to be growing 4-5 of the inner primaries and 2-3 of the secondaries, and were missing many upperwing coverts such that a horizontal whitish stripe, or series of blotches, was visible across the upperwing surface At least five adults had completely replaced the primaries, but none had acquired the alternate body feathering, nor had any fully grown the central rectrices. These observations largely agree with the summary provided in Cramp and Simmons (1983), which indicates that adults complete remex molt by March while one-year-old birds do not complete this process until June.

Polymorphism

Of the seven adults which were most clearly seen, one was as dark as the dark-

est *parasiticus* ever observed in the field or in museum collections by the author, but was nonetheless identifiable as *longicaudus* on the basis of direct size comparison to others in more typical plumage. Of the immatures, however, at least 30% had entirely dark underparts. Bent (1963, p. 24) states ". . . there seem to be two quite distinct types of coloration in the juvenal plumages . . . in the Long-tailed Jaeger, which is not persistent into the older plumages" and also quotes A.L.V. Manniche in saying that ". . . the pale variety seems to occur somewhat more frequently than the dark." Observations during these periods suggest that the dark birds remain dark for at least their first year of life. The scarcity of specimens of dark adults in museum collections implies that dark immatures become lighter through subsequent molts.

Figure 2: Adult Long-tailed Jaeger, basic plumage.

Winter range

Current evidence (Cramp and Simmons 1983) suggests that the major Atlantic winter range of Long-tailed Jaegers is off southwestern Africa and also off southeastern South America. There is little evidence that Long-tailed Jaegers winter in any numbers in either the Pacific or Indian Oceans, although Jehl (1974) hypothesized that they might winter off the coast of Peru, but Brown (1981) found none there during a winter survey. There are a few records from New Zealand (Bartle 1983) and Australia (Barton 1978). Since the species occurs regularly off the coasts of western North America (A.O.U. 1983) and Japan (Wild Bird Society of Japan 1982) during migration, it seems very likely that a major wintering area within the Pacific remains undiscovered.

Lambert (1980) reported many flocks of Long-tailed Jaegers, mostly immatures, during September-April off the west coast of Southwest Africa between 17°-32° S, the highest concentrations (up to 220/day) of which were within a limited area roughly 45 miles offshore from the southern coast of Namibia (25°-27° S) near the continental slope. Summerhayes *et al.* (1972) found high densities of many species of marine birds in that same area during a winter survey which they attributed to upwelling associated with the Benguela Current both close to shore and also in the vicinity of the continental slope.

Figure 3: Dark adult Long-tailed Jaeger. Note the fresh primaries.

Figure 4: Immature Long-tailed Jaeger. Note replacement of all but outermost primaries.

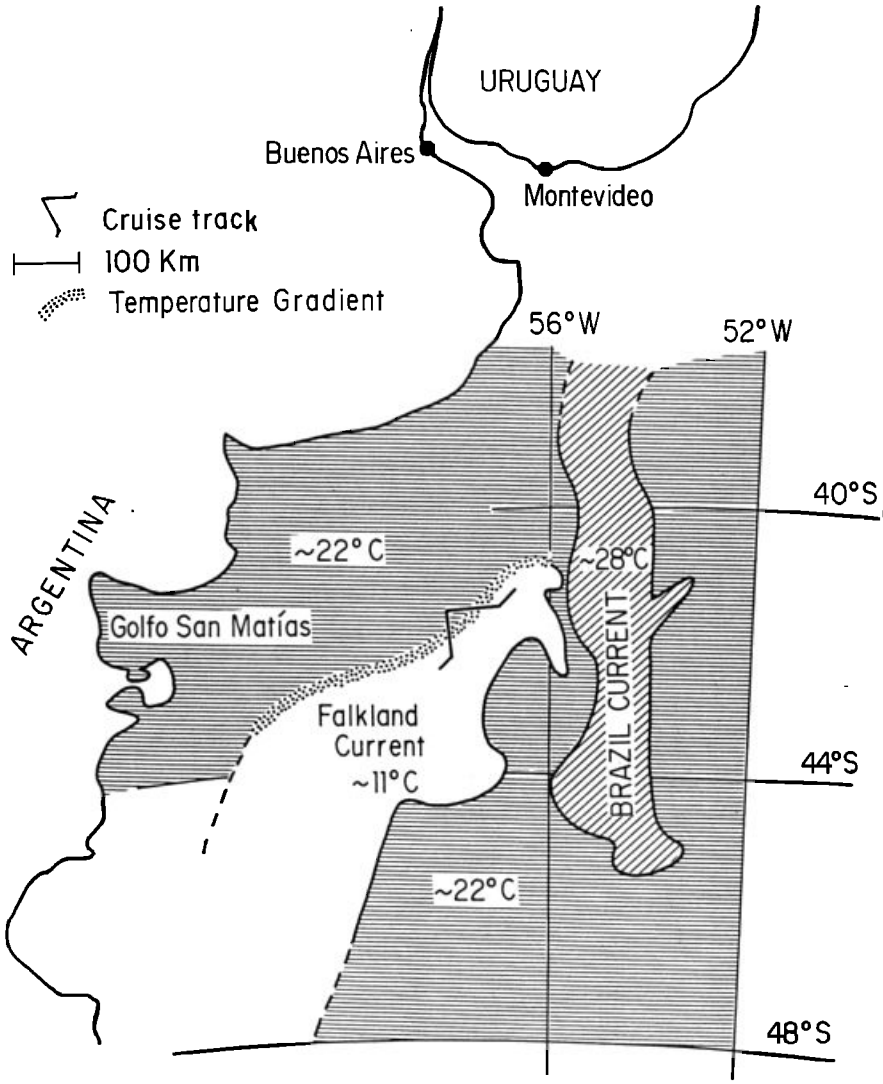

Figure 5: Surface water temperatures and major currents as revealed by infra-red satellite imagery. "V"-shaped line represents position of cross-front transects illustrated in Figures 6 and 7.

Off South America, the picture is much less clear. Wetmore (1926) described a southward migration of Long-tailed and Parasitic jaegers along the beach at Cabo San Antonio, Argentina, when he counted 1200 jaegers (94% *longicaudus*) November 4-7, 1920. His observations were made during and after a major storm, which suggests that the birds had been displaced from a more pelagic migration route. Previous offshore observations of Long-tailed Jaegers in the southwest Atlantic Ocean have been sporadic and have usually involved five birds or fewer (Escalante 1970, Tickell and Woods 1972, Harris and Hansen 1974, Brown *et al.* 1975). Both Cooke and Mills (1972) and Beck (*in* Murphy 1936, p. 1037), however, reported flocks of jaegers which may have contained Long-tailed Jaegers, off the coast of Argentina during the boreal winter.

Oceanography

The Long-tailed Jaegers observed in 1983-1985 were most numerous along the interface between the northward flowing Falkland Current and the warmer, less saline water over the Argentine continental shelf (Fig. 5). In 1984, the officers of the *USCGC Polar Sea* were requested to steer a "V" shaped course designed to cross the steepest temperature gradient (= "front") between the Falkland Current and the Patagonian Shelf water in order to more closely investigate the relationship between jaeger distribution and the location of the front (Fig. 5). On each of the two "legs" of the V-shaped transect, we dropped a series of expendable bathythermographs in order to pinpoint the location of the front (Figs. 6, 7). We found that the front coincided with the steepest portion of the continental slope, and that the Long-tailed Jaegers were clustered both at the front and also some 20 miles to the east over deep water.

Many species of marine birds are known to be attracted to the vicinity of shelfbreak fronts and to the boundaries of major surface currents. For example, Brown (1980) showed that Red Phalaropes (*Phalaropus fulicaria*) were concentrated along the edge of the Labrador Current during migration; Powers and Brown (1981) found similar concentrations of Red Phalaropes at the shelf break off New England during spring; Ainley and Jacobs (1981) found Adelie Penguins (*Pygoscelis adeliae*) attracted to a shelfbreak front in the Ross Sea, Antarctica, and Schneider (1982) and Kinder *et al.* (1983) have both shown that murres (*Uria*, sp.), shearwaters and other birds congregate at fronts.

The attraction of these frontal zones to seabirds could be due to several different factors. The most likely of these is the mechanical accumulation of plankton at convergent fronts, such as this one, which results in much higher plankton densities near fronts than elsewhere (Pingree *et al.* 1974, Fournier 1978). Other factors that might account for the clustering of Long-tailed Jaegers at the edge of the Falkland Current include: 1) increased productivity in that region due to upwelling of nutrients in the frontal zone; 2) the presence of certain potential prey animals, such as squids or lanternfish, which are known to be especially abundant in waters over continental slopes; and 3) the possibility that plankton density is uniformly higher within the cold Falkland Current waters than over the shelf waters, and that the jaegers aggregate when they first encounter these waters near the front.

The major difficulty in determining the relative importance of each of these factors to the distribution of Long-tailed Jaegers is that we do not know what they eat while at sea during the non-breeding season. In order to answer these questions, we need to examine stomach contents of

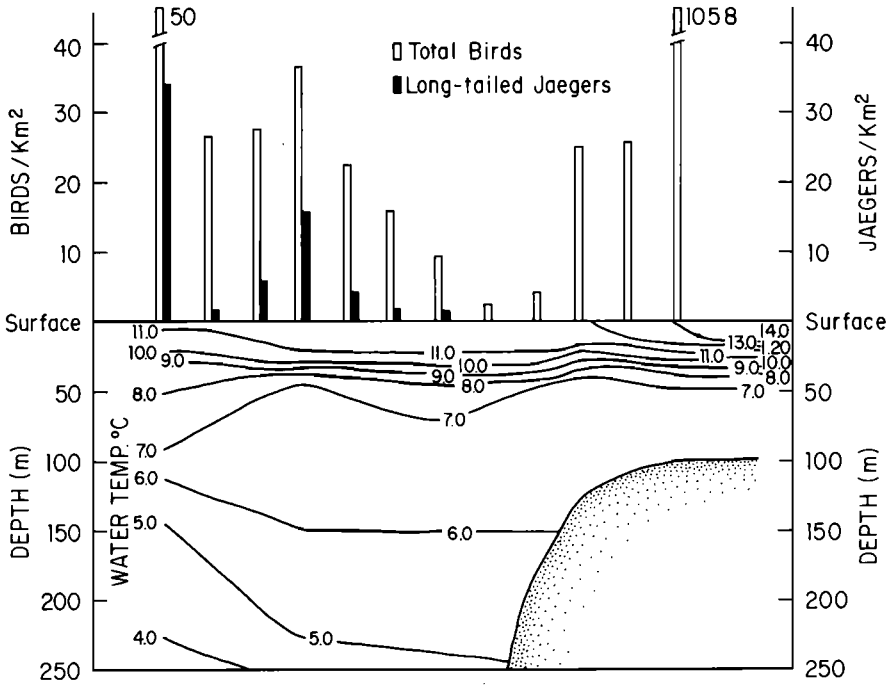

Figure 6: Long-tailed Jaeger and total bird abundance in relation to ocean temperature profile. Each bar represents ten minutes of counting, and entire transect is approximately 30 nautical miles long. Front is indicated by intersection of isothermals with surface. Transect heading north.

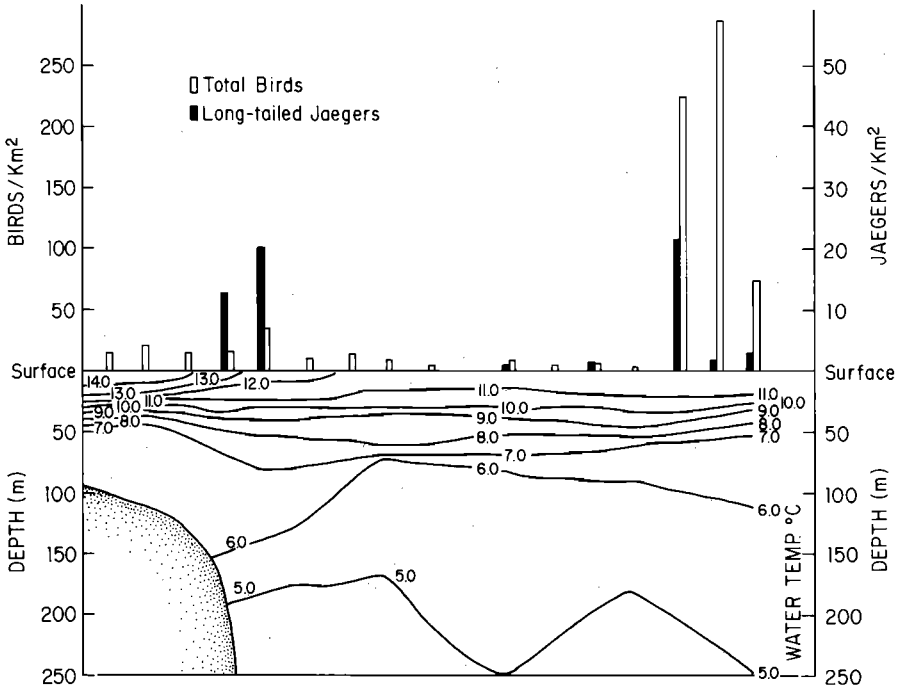

Figure 7: Same as Figure 6, but transect heading east. Total distance equals 40 miles.

the jaegers, and then collect plankton samples concurrently with bird observations to determine whether patches of jaegers coincide with patches of jaeger food at or near the front.

If this association between Long-tailed Jaegers and shelf-break fronts proves correct, then it may help to explain the exclusively offshore distribution of this species as compared to that of either Parasitic or Pomarine jaegers. Parasitic Jaegers in winter depend largely upon the food they steal from small gulls and terns, which are confined to inshore waters (Furness 1983). Pomarine Jaegers seem the most generalized of the three species during the non-breeding season, as they kleptoparasitize, catch their own food, and also scavenge around fishing trawlers (Cramp and Simmons 1983, p 656). For these reasons, we should expect an offshore distribution of Long-tailed, an inshore distribution of Parasitic and a broad distribution of Pomarine Jaegers. This pattern seems generally true off eastern North America (Brown *et al* 1975, Powers 1983), off eastern South America (this paper, Murphy 1936), off southwest Africa (Lambert 1971, 1980), off western North America (Garrett and Dunn 1980), off Japan (Wild Bird Society of Japan 1982) and off western Europe (Cramp and Simmons 1983).

As most of the jaegers that Lambert (1980) and I saw were immatures, a substantial number of adults must winter elsewhere. Off South America, the interface between the Brazil and Falkland Currents, where the temperature gradient is steeper than along the western boundary of the Falkland Current, would seem a likely location to search for the adults in winter.

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——Department of Ecology and Evolutionary Biology, University of California, Irvine, California 92717