

LARGE AGGREGATIONS AND EVENING RAFTS OF POMARINE JAEGERS *Stercorarius pomarinus* AT APOLLO BAY, VICTORIA, AUSTRALIA

PETER MENKHORST¹, CHRISTOPHER McINERNY² and ANDREW ISLES³

¹Department of Sustainability and Environment, PO Box 500, East Melbourne, Victoria 3002

E-mail: peter.menkhorst@dse.vic.gov.au

²Division of Biochemistry and Molecular Biology, Institute of Biomedical and Life Sciences, University of Glasgow, Glasgow, Scotland G12 8QQ UK. E-mail: C.McInerny@bio.gla.ac.uk

³PO Box 2305, Prahran, Victoria 3181

Received: 31 March 2006

Observations, during three summers, of regular resting aggregations of Pomarine Jaegers *Stercorarius pomarinus* on inshore waters of western Victoria are described. The aggregations occur in the evening during both calm and rough conditions and sometimes during the afternoon during rough conditions. The numbers of birds involved (up to 450 in January 2003 and 150 in January 2005) are an order of magnitude larger than any previously reported group of Pomarine Jaegers in Bass Strait, and three to four times larger than the largest numbers previously reported in Australian waters. Their regularity, diurnal pattern and size, make these resting aggregations unlike any previously reported behaviours of jaegers (genus *Stercorarius*).

INTRODUCTION

In Australia, the Pomarine Jaeger *Stercorarius pomarinus* occurs mostly offshore over the continental shelf and shelf break (Storr 1964; Milledge 1977; Wood 1989; Reid *et al.* 2002), although birds have been recorded inshore, and small numbers occasionally enter large bays including Port Phillip Bay (Emison *et al.* 1987; Norman 1992), Sydney Harbour and Gulf St Vincent (Higgins and Davies 1996). It is considered to be a rare summer migrant to the waters of Bass Strait, a broad area of continental shelf waters, mostly between 50 and 100 metres deep, between the Australian mainland and Tasmania, where it is present from late October to early May (Simpson 1972; Emison *et al.* 1987; Higgins and Davies 1996; Norman *et al.* 1996; M. Carter, pers. comm.). For example, during 21 boat transects over three years, each of 145 kilometres length and extending up to 25 kilometres offshore from the central Victorian coast, Norman (1992) recorded no Pomarine Jaegers. During 30 similar transects in the same years within Port Phillip Bay, only two individual Pomarine Jaegers were observed (one in March and one in April) (Norman 1992).

Pomarine Jaegers regularly occur in larger numbers in offshore waters off central New South Wales (Milledge 1977; Wood 1989; Reid *et al.* 2002), where their occurrence has been linked to the presence of fishing fleets (Milledge 1977) and to the rise in water temperatures associated with the strongest flow of the East Australian Current (Barton 1982). Groups of 80–100 have been reported and most aggregations of more than ten were in March–April, suggesting congregation prior to migration (Barton 1982; Reid *et al.* 2002).

Numbers of Pomarine Jaegers present in southern Australian waters seem to fluctuate from year to year (M. Carter, pers. comm.), possibly reflecting variations in breeding success associated with fluctuations in populations

of their principal food, microtine rodents (voles and lemmings), at their sub-arctic breeding grounds (Olsen and Larsson 1997). However, there have been no reports of aggregations from Bass Strait. Here we provide details of observations made over three summers in the Apollo Bay area.

METHODS

The occurrence of evening rafts of Pomarine Jaegers totalling several hundred birds at Apollo Bay was first noted by Christopher McInerny (CM) between 2 and 9 January 2003. Initially, his observations were treated with a degree of scepticism by Victorian seabird enthusiasts. However, his extensive field experience of this species in Scotland and elsewhere meant that the reports were not dismissed entirely. Independent observations by Peter Menkhurst (PM) and Andrew Isles (AI) in January 2005 corroborated the earlier observations. The following summer more structured observations were made by PM and AI during December and January.

Observations began independently as incidental scanning of inshore waters using a tripod-mounted spotting scope from the balcony of two seaside houses; one on the northern edge of Apollo Bay township (CM), the other at Marengo, four kilometres to the south (PM and AI). The Apollo Bay vantage point overlooked most of the Bay, a sweeping open embayment with an easterly aspect on the west coast of Victoria. The Marengo vantage point faced south-east over open waters of Bass Strait between Hayley and Swell Points (Fig. 1). Subsequently, observations were made from several vantage points along eight kilometres of coast between Skenes Creek and Marengo, and from a sailing vessel in Apollo Bay. The coast in this region is sheltered from the prevailing south-westerly and north-westerly winds by the Otway Ranges and Cape Otway, 18 kilometres to the south-west. West of Cape Otway, the coast mostly faces south-west or south.

Jaeger identification was based on a combination of size, behaviour and plumage characters: the birds were larger and had longer, broader wings than Short-tailed Shearwaters; when not chasing other birds, their flight was direct and powerful with rather shallow wingbeats; the white wing flashes were broad and extended across all primaries; a few individuals had the broad twisted tail streamers diagnostic of the species; and immatures had bold black barring across the pale rump. Following close views of individuals in January 2006, from both the shore and a boat, including one bird which had retained its full tail streamers, and

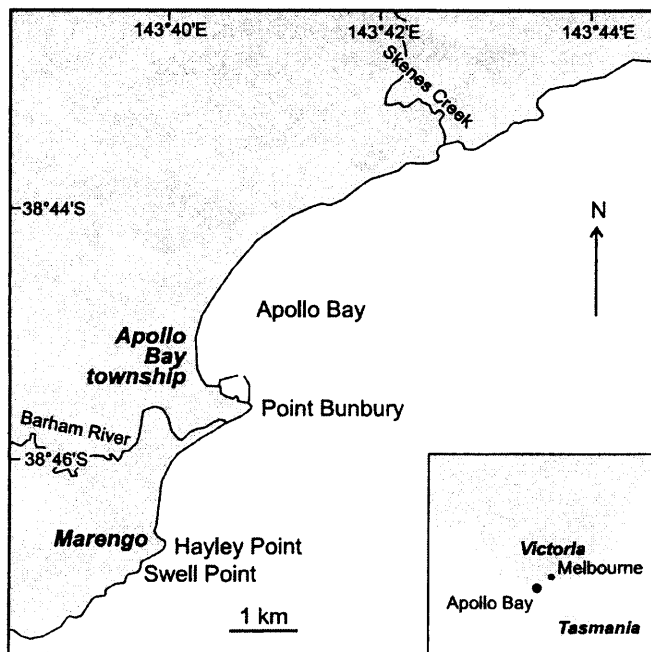


Figure 1. Coastline between Skenes Creek and Marengo, Victoria showing localities mentioned in the text.

was otherwise similar in size, appearance and behaviour to the others, PM and AI concur with CM that the evening rafts appeared to be composed almost entirely of Pomarine Jaegers.

RESULTS

Apollo Bay, 2–9 January 2003

Each evening between 1800 and 2000 hours (eastern summer time) jaegers, in groups of two to three, occasionally up to ten, were seen flying into the Bay from the north-east and south-west. Many of the groups were flying high and were visible above the horizon, while other groups came in low over the water. All flew directly and with intent to the same offshore area each evening, and coalesced into flocks of 50–100 jaegers sitting on the water about one kilometre offshore. On one evening there were estimated to be 450 jaegers in six flocks of 50–100 birds, although on other evenings 200–300 were seen. The flocks were largely settled, with birds quite tightly packed, but occasionally an established flock was disturbed by new arrivals; the birds lifting up briefly, before quickly settling again. The birds were watched until light failed, with the clear impression that they roosted in the bay overnight, although this was not confirmed, as at dawn on three days no birds were seen. Possibly the flocks had departed shortly before dawn to resume offshore feeding. Weather conditions during this observation period were mild, with light variable winds and sunny days. Most birds were in dark, immature-type plumage with 20–30 per cent in adult plumage.

Marengo, 8–9 January 2005

On 8 January a strong south-westerly wind brought many Short-tailed Shearwaters *Puffinus tenuirostris*, Australasian Gannets *Morus serrator* and albatross *Diomedea* spp. close to shore at Marengo. In the early afternoon, a raft of 25 Pomarine Jaegers was noted about 800 metres offshore.

Later, a second group of about 22 Pomarine Jaegers was found resting on the surface near groups of floating Australasian Gannets and Shy Albatross *D. cauta*. Between 1800 and 1900 hours many of the jaegers moved off in small groups, and numbers could be seen flying well offshore amongst foraging gannets, shearwaters and Crested Terns *Sterna bergii*. There was a constant, low-level turnover in the rafts as single birds or small groups flew out to sea, or arrived from further offshore. On several occasions in the late afternoon small groups were observed flying north towards Apollo Bay. No aggregations of jaegers were observed the following day when the wind had dropped, but groups could again be seen well offshore flying among gannets and shearwaters.

Apollo Bay, 25–26 January 2005

On both afternoons until dark PM observed seabirds in Apollo Bay from the end of the outer breakwater at Point Bunbury, the southern end of the Bay. Both days were hot, the first with a light north-west wind (offshore), the second day with a gale force north-westerly wind before a blustery south-west change brought rain, thunder and lightning between 1745 and 1845 hrs.

On 25 January jaegers in singles and small groups were apparent amongst the feeding gannets, shearwaters and terns offshore. Occasional jaegers flew into the Bay but no aggregations were noted until 1845 hrs when one bird was observed to join a group of 18 sitting on the water perhaps 1.5 kilometres north of the breakwater. Further individuals or small groups regularly joined or departed from this roosting flock over the following 1.5 hours when it became too dark to continue observations.

On 26 January only a few jaegers were observed before the wind changed. At 1910 hours, after the rain had passed, a large raft of Pomarine Jaegers was again found in the middle of Apollo Bay. Over the next 50 minutes, several counts indicated the raft consisted of about 120 individuals. The glassy sea conditions meant the counts could be reasonably accurate, although only part of the flock was visible at any one time because of the low swell. The birds were too distant to estimate the proportions of adults and immatures. Observations stopped when blustery winds and rain made viewing conditions unrewarding.

As in previous observations, small groups or singles were observed to leave this raft and fly out to sea where gannets, terns and shearwaters were feeding, so the total number of jaegers would have been considerably more than 120.

Apollo Bay-Skenes Creek, 11–17 December 2005

In December 2005 jaegers were less commonly observed and no evening aggregations were found until the fifth day of observations when a group of six jaegers was observed to alight on the water well to the north-east of Apollo Bay. On 16 December, with a blustery north-westerly wind blowing, evening observations were concentrated to the north-east of Apollo Bay from several vantage points along the Great Ocean Road. At 2025 hours, from a point one kilometre south-west of Skenes Creek, a raft of at least 60 Pomarine Jaegers was located (counted when they took flight for a short period before settling on the water again).

The following evening a similar flock was observed about 500 metres south-west of the outlet of Skenes Creek and only 500 metres offshore. At 2030 hours the raft was estimated to include 65 birds. On returning to Apollo Bay a second raft of about 30 birds was found at 2045 hours about 1.5 kilometres offshore. It was soon joined by a flock of 14 jaegers that flew in from the south-west. In the fading light some of these jaegers were chasing some of the groups of Crested Terns that were flying south along the coast. There was a minimum of 110 birds in these two rafts and possibly up to 150.

During the December observations there were no shearwaters visible from the shore and the few observed feeding attempts by the jaegers involved attempted kleptoparasitism of Crested Terns.

Apollo Bay-Skenes Creek, 11–15 January 2006

Between 1830 and 2030 hours on 12 January, PM and AI made observations from a sailing vessel that tracked east until outside Apollo Bay then north until within 800 metres of the shore north-east of Skenes Creek and back along the coast to Apollo Bay boat harbour. A few jaegers were observed offshore, and all were identified as Pomarine Jaegers. Closer to shore large numbers of Crested Terns were feeding and groups of Pomarine Jaegers accompanied them. At any time up to eight jaegers were visible from the boat but they did not approach the vessel and many actively avoided it. Even floating birds departed when the vessel was no closer than about 80 metres. The ratio of dark to light phase Pomarine Jaegers was estimated to be 3:2, but some of the dark individuals were likely to have been in immature plumage. Only one bird was obviously juvenile but the choppy conditions and poor light did not allow close observation of plumage. Feeding behaviour consisted entirely of harassing Crested Terns but only a few attempts caused the tern to regurgitate. Several small groups of jaegers were seen sitting on the water but no large rafts were found. No aggregations of jaegers were found during evening observations between 11 and 14 January 2006.

DISCUSSION

The 2005–06 observations provided independent corroboration to those of CM in 2003, and replicated most features of the 2003 observations, although total numbers of jaegers and of evening rafts were lower. The numbers of individuals observed (up to 450) are the largest aggregations of Pomarine Jaegers yet reported from Australian waters and are an order of magnitude larger than any groups previously reported from Bass Strait (Higgins and Davies 1996; Reid *et al.* 2002).

While Pomarine Jaegers have previously been observed resting on the sea in Australian waters (Storr 1964; Milledge 1977; Barton 1982; Wood 1989), including during strong winds and after feeding, our observations differ in the numbers of birds involved, the regularity and diurnal pattern of these aggregations, and that they occurred close inshore in sheltered waters. The timing of the observations in December and January precludes the possibility that they represent pre-migration gatherings (as Barton (1982) believed for groups he observed over the continental shelf

break off southern New South Wales), because Pomarine Jaegers do not leave Australian waters until after March (Higgins and Davies 1996; Reid *et al.* 2002).

Off Sydney, Pomarine Jaegers feed more often from the surface of the water than by stealing food, feeding mostly on offal from fishing boats (Milledge 1977), usually by contact dipping or surface seizing (Wood 1989). They are known to feed while sitting on the surface, and will dive to retrieve food (Barton 1982; Higgins and Davies 1996). Our observations provided no evidence that the jaegers in the rafts reported here were feeding, although, due to the distant views, this possibility cannot be ruled out entirely. Rather, we concluded that the rafts were comprised of resting birds that had been feeding further offshore and which had gathered to roost overnight. Barton (1982) reported parties of up to 15 Pomarine Jaegers resting on the surface after feeding over the continental shelf break off southern New South Wales.

Before the December 2005 and January 2006 observations, we had the impression that the Pomarine Jaegers mostly fed well offshore amongst flocks of shearwaters and gannets. They were regularly observed attacking shearwaters but were too distant for us estimate the success rates of these attacks. Barton (1982) noted that peak numbers of Pomarine Jaegers off southern New South Wales coincided with the annual peak in numbers of the Wedge-tailed Shearwater *Puffinus pacificus*. During the December 2005 and January 2006 observations, shearwaters were less apparent than in the previous observation periods, when flocks were readily observed offshore, and the jaegers were also less visible. Those that were observed were mostly foraging closer to shore amongst flocks of Crested Terns which they frequently chased and harassed, but with limited (estimated 10%) success. Crested Terns are common in Apollo Bay and nearby waters with flocks of 100–200 birds commonly resting on Little Henty Reef at Marengo or on the sandspit at the mouth of the Barham River (pers. obs.).

In the past, Pomarine Jaegers were thought to be pelagic and usually solitary on their wintering grounds (Cramp and Simmons 1983). However, of the *Stercorarius* skuas, Pomarine Jaegers are the most prone to form large flocks during both spring and autumn migrations in the northern hemisphere (Davenport 1992; Fox and Aspinall 1987; Griffin and McInerney 2001), and large winter flocks of up to 500 birds have been noted off West Africa between Senegal and the Gulf of Guinea, and hundreds off Venezuela (Root 1988; Baillon and Dubois 1991).

The possibility that these evening rafts are a regular feature at Apollo Bay seems plausible given our observations extended over three summers, but needs further investigation because there appear to be no reports of large roosting aggregations of Pomarine Jaegers in any coastal waters anywhere in the world (Cramp and Simmons 1983; Furness 1987; Olsen and Larsson 1997). Further, while it seems unlikely that formation of roosting rafts by over-wintering Pomarine Jaegers is confined to the Apollo Bay area, it is possible that the relatively sheltered waters of Apollo Bay attract jaegers that have spent the daylight hours foraging over a wide area of Bass Strait. Certainly,

there are few sheltered waters to the west of Cape Otway and jaegers foraging there might find it profitable to commute to the more sheltered waters east of the Cape to rest between foraging bouts.

We encourage observers to be alert for evening rafts of jaegers in wintering areas worldwide, so that the context of this previously unreported behaviour can be elucidated.

ACKNOWLEDGMENTS

We thank Mike Carter for encouragement to pursue this project, and him, Peter Dann, and Ian Norman for improving an earlier draft. Professor Bob Furness provided helpful advice on jaeger behaviour. Peter Deppeler of Sea Spirit Yacht Charters, Apollo Bay, took PM and AI on an evening cruise in search of jaegers. Ian Andrews kindly found time in his busy schedule to prepare Figure 1.

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