

An irruption of Great Shearwaters, *Ardenna gravis*, into South Australian and adjacent seas during April 2011

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Abstract

The Great Shearwater, Ardenna gravis, breeds on islands in the South Atlantic Ocean from September to May and migrates to the North Atlantic during the non-breeding season. The species is known to range widely from its breeding islands and it occurs in the south west Indian Ocean from September to May. There are reports of single birds in the eastern Pacific from Chile, California and Alaska, and ten or more records of single or sometimes two birds from Australian waters and the south-west Pacific.

This paper documents an irruption of at least 50 birds into Australian and New Zealand waters in late March and early April 2011. Possible causes for the irruption are considered, with an oil spill near the breeding islands in mid-March identified as a likely trigger.

INTRODUCTION

The Great Shearwater, *Ardenna gravis*, breeds on islands in the South Atlantic Ocean from September to May and migrates to the North Atlantic during the non-breeding season (Marchant and Higgins 1990). Its population is large, estimated by Brooke (2004) to be in the order of 15 million birds, with 5 million pairs breeding on the Tristan da Cunha group of islands and up to several million pairs on Gough Island. Smaller numbers also breed on Kidney Island and possibly elsewhere in the Falklands Group (BirdLife International 2015).

The species is known to range widely from its breeding islands and it occurs in the south west

Indian Ocean from September to May (Marchant and Higgins 1990). It is also prone to vagrancy with reports of single birds in the eastern Pacific from Chile, California and Alaska, and ten or more records from Australian waters and the south west Pacific (Gaskin, Shirihai and Wood 2006; Gaskin 2013/15). All of these records are of single, or at most two, birds including three prior records from South Australian waters (Marchant and Higgins 1990; Rogers 2009).

RECORDS OF GREAT SHEARWATER IN SOUTH AUSTRALIAN AND ADJACENT SEAS DURING APRIL 2011

On a pelagic trip that departed from Port MacDonnell, SA, at 0630 on 3 April 2011 we were extremely surprised to find a small group of Great Shearwaters at 38° 13S 141° 08'E. The sea depth was 110 m and sea temperature 12.8°C. Fifteen birds were at this location and when we stopped to berley with some fish scraps a group of seven birds was attracted to the stern of the boat.

Afterwards, we continued to see Great Shearwaters whilst moving further offshore to a usual berley point beyond the continental shelf at 38° 27'S 140° 38'E, where the sea depth was 1200 m and sea temperature 13.5°C. Great Shearwaters were also encountered at this location, where a maximum of 15 was counted at one time and a total count of at least 35 birds was made. Figures 1 and 2 illustrate some of these sightings. By this point we realised we were



Figure 1. Great Shearwater off Port MacDonnell 3 April 2011
Image Colin Rogers

witness to an unusual irruption of the species into South Australian waters.

The synoptic conditions (Figure 3) give no indication that the pelagic trip of 3 April 2011 should have been much different from other April trips off Port MacDonnell conducted over the previous ten years. Nevertheless, this trip turned out to be significantly different in that Great Shearwater was the most common shearwater seen throughout the day whilst, most unusually for the area, no Short-tailed, *A. tenuirostris*, or Flesh-footed Shearwaters, *A. carneipes*, were recorded.

Observers on a pelagic from Portland, Victoria, approximately 70 km to the east, also recorded Great Shearwaters on 3 April, with eight sightings and a maximum count of six (Lansley 2011).

In addition to the numbers of Great Shearwaters encountered off south east Australia on 3 April 2011, several were recorded to the east through to 1 May. One was sighted near St Helens, Tasmania on 6 April; one settled close to the boat on a pelagic off Sydney on 9 April (McGovern 2011); there were five sightings of single birds on a pelagic outing from St Helens, Tasmania on 10 April (May 2011a; 2011b); one was recorded off Port Fairy, Victoria, on 17 April (Crawford



Figure 2. Great Shearwaters resting behind the boat off Port MacDonnell 3 April 2011
Image Colin Rogers

2011); one landed near a boat off Swansea, NSW on 20 April (Roderick 2011); while another was recorded off Wollongong on 23 April (Haass 2011). Photographs of the birds seen on 9 and 23 April can be accessed at Hynson (2011). One was recorded on a pelagic trip off Portland on 1 May (SOSSA 2011).

Some Great Shearwaters were also recorded in New Zealand waters during April 2011. A single bird was seen off Kaikoura on the east coast of South Island on 1 April and possibly the same bird again on 3 April (Saville 2011). Miskelly *et al.* (2013) reported three sightings: one in the Foveaux Strait on 4 April; one 50 km south east of Puysegur Point on 14 April; and one 35 km south east of Dunedin on 19 April. All of these records are from the south of South Island. On 20 April one was recorded further north, off Auckland, North Island, on the Western Pacific Odyssey Voyage – Marilyn Browne (pers. comm.) and Morris (2011). Gaskin (2013/2015) noted that not all records have been submitted to or assessed by the New Zealand Appraisal Committee.

Furthermore, there are three records of Great Shearwater in south eastern Australian waters prior to the irruption recorded on 3 April. One was recorded off Eaglehawk Neck, Tasmania on 20 February; one was recorded off Eden, NSW, on 5 March and at least ten were recorded in seas off Portland and in Bass Strait on 31 March (SOSSA

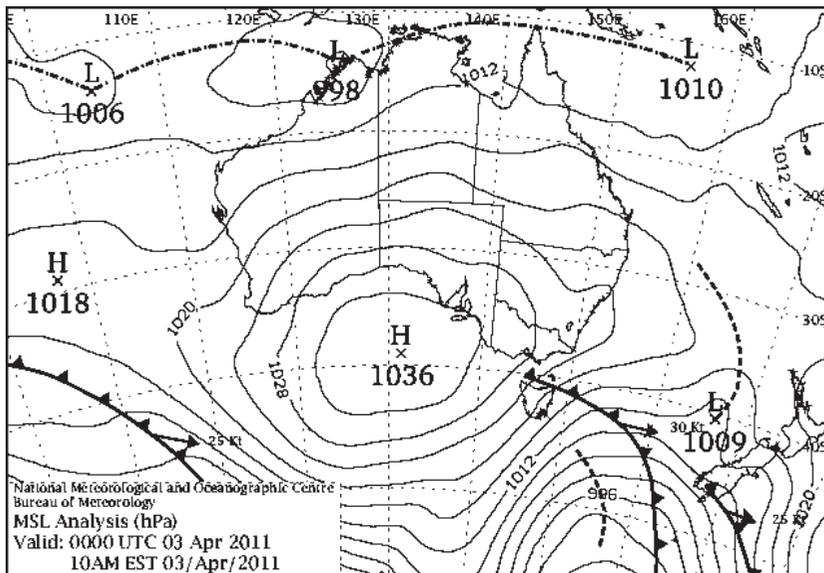


Figure 3. Synoptic situation off Port MacDonnell on 3 April 2011

Source: Australian Region Mean Sea Level Pressure Analysis Chart Archive for the date shown. www.bom.gov.au

2011, p. 2). The fact that at least ten birds were sighted on 31 March suggests that by late March something unusual was occurring.

DISCUSSION

Gaskin (2013/15) suggested Great Shearwaters could either move east to west across the Pacific or move west to east from the South Atlantic and south west Indian Oceans into Australian and New Zealand waters.

Nevertheless, while the records off Chile, California and Alaska, noted by Gaskin *et al.* (2006), indicate that some Great Shearwaters pass through the Straits of Magellan or around Cape Horn and then head north into the eastern Pacific Ocean, others are present in the south west Indian Ocean during September - May. Small numbers occur east to 65°, occasionally north to 34°S, and about the shelf of Iles Crozet (Marchant and Higgins 1990). Hence it is quite possible that some birds from the southern Indian or Atlantic Oceans moved from west to east with the weather systems into South Australian and adjacent waters. The question is: why were they

present in unusually large numbers in April 2011?

There seem to be three possible explanations: (1) unusual weather patterns; (2) collapse in food stocks near the breeding islands and; (3) a catastrophic event at the breeding islands.

To examine the case for unusual weather patterns Figure 4 takes a broader look at the synoptic situation in the southern Indian Ocean in the two weeks prior to the sightings of numbers of Great Shearwaters in South Australian and adjacent waters. On the basis of these maps it seems reasonable to conclude that a group of Great Shearwaters from the south west Indian Ocean could have been drifted eastwards in one or more of the low pressure systems as they moved into South Australian and adjacent seas during late March and early April. Nevertheless, there is nothing exceptional about these weather patterns that would account for an irruption of Great Shearwater, as opposed to individual vagrants, into South Australian waters. Something else must also have been at work.

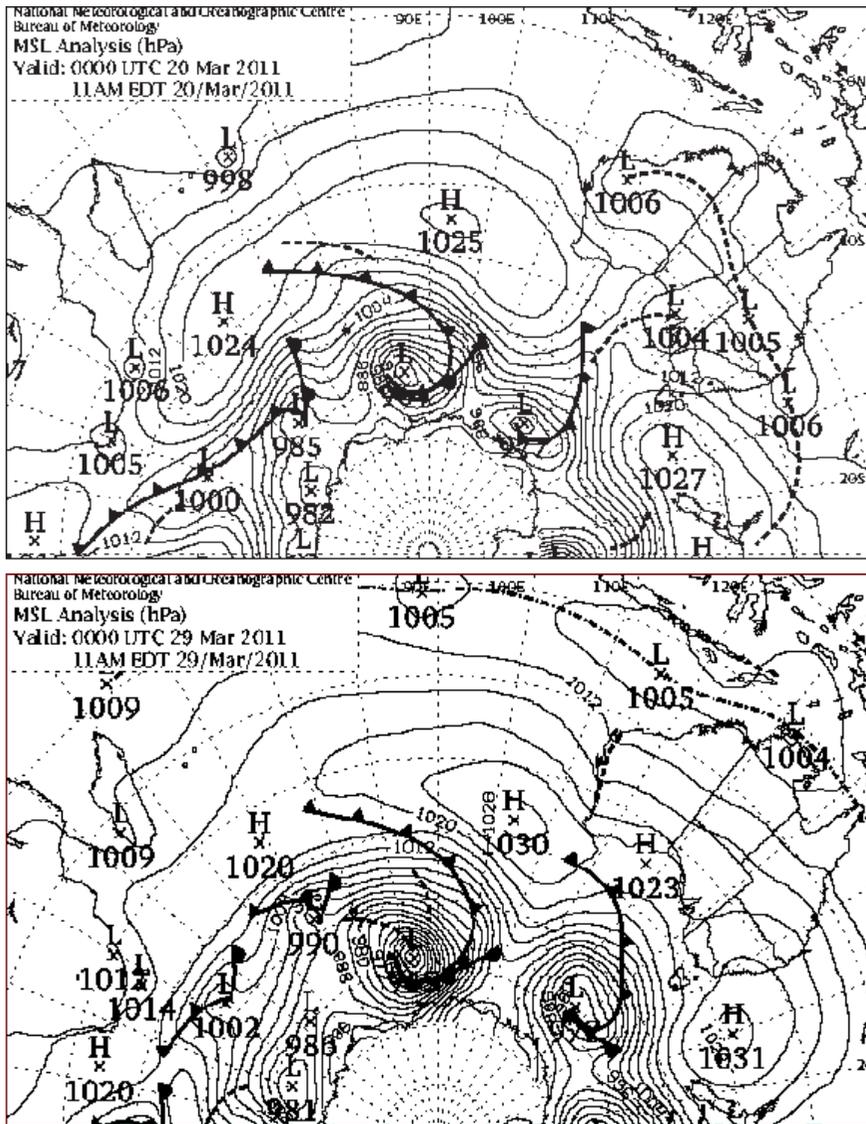


Figure 4. Weather systems in the Southern Indian Ocean on March 20 and March 29 prior to the appearance of Great Shearwaters in SA waters
 Source: Indian Ocean Mean Sea Level Pressure Manual Analysis Archive for the dates shown. www.bom.gov.au

The FAO (2014) reports no significant decline in fisheries catches for 2011 in the region of the south east Atlantic where Great Shearwater breed, so a catastrophic collapse in food stocks seems an unlikely cause of the irruption of Great Shearwater into Australian and New Zealand waters. Unfortunately, as SOSSA (2011) reports, there was indeed a catastrophic event at the breeding islands on 18 March 2011 that could have disrupted the food supply for Great Shearwater and other seabirds.

On that date the MS Olivia broke up on Nightingale Island, Tristan da Cunha group, spilling 1,500 tonnes of fuel oil into the ocean and onto the beaches on Nightingale and adjacent islands. The devastation to the seabird populations in the area was significant and this no doubt also impacted the feeding area for Great Shearwaters. In particular, larger numbers of Great Shearwaters feeding further south from the breeding islands than usual could then easily get caught up in the weather systems illustrated in

Figure 4. These weather systems are not unusual and small numbers of Great Shearwaters have taken them across the Indian Ocean in the past as indicated by prior records in Australian waters; the records of single birds off Eaglehawk Neck on 20 February and Eden on 5 March illustrate the point.

However, by 31 March Great Shearwaters were appearing off south eastern Australia in larger numbers that appear to have peaked on 3 April off Port MacDonnell, South Australia. Although no conclusive proof can be provided it does appear that the oil spill on Nightingale Island on 18 March was the proximate cause of the irruption of Great Shearwaters into South Australian waters. It is a plausible conjecture that contamination of the feeding areas by the oil spill on 18 March could have pushed an unusually large number of Great Shearwaters to feed ahead of the weather systems that led them to South Australian waters. In short, a route taken by the odd vagrant provided an escape route for a larger number of birds from the traditional but contaminated feeding grounds after 18 March.

CONCLUSIONS

Of the two routes suggested by Gaskin (2013/15) it seems most probable that the birds recorded off Port MacDonnell and Portland on 3 April approached from the south west with one or more of the weather systems that passed through South Australian waters in late March and early April.

Although there were records of single birds in south eastern Australian and New Zealand waters prior to April the irruption of Great Shearwaters into south eastern Australian waters occurred shortly after the catastrophic oil spill near Nightingale Island on 18 March. As the only known unusual event it is plausible to treat the oil spill as the proximate cause for the irruption of Great Shearwaters into South Australian waters shortly thereafter.

Fortunately, oil spills are rare events and the fact that no irruptions of Great Shearwater were recorded prior to 2011 and none have been recorded since points to this rare but disruptive event as the proximate cause of the irruption reported in this note.

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