

# Marine Environment & Ecology



## Review of the distribution of crested terns, little penguins, short-tailed shearwaters and flesh-footed shearwaters in the South-west Marine Region off South Australia



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**June 2010**

**Report to the Department of the Environment, Water, Heritage  
and the Arts**



Government  
of South Australia



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## **1. EXECUTIVE SUMMARY**

This report reviews data from the Department of Environment, Water, Heritage and the Arts on the distribution of crested terns, little penguins, short-tailed shearwaters and flesh-footed shearwaters in South Australia. This report provides amendments to the DEWHA maps of the distributions of these species in the South-west Marine Region. Where appropriate, the report includes caveats to the data, to give users an indication of how the colony locations and foraging distributions were determined (eg surveys, literature reviews, satellite tracking).

## **2. INTRODUCTION**

During September 2008, the South Australian Research and Development Institute (SARDI) provided the Department of Environment, Water, Heritage and the Arts (DEWHA) with information on biologically important areas (breeding colonies and at-sea distributions) for seabirds in the South-west Marine Region. In South Australia, the South-west marine region extends from the eastern end of Kangaroo Is to the border with Western Australia. The information provided by SARDI was digitised by DEWHA and provided back to SARDI in a package that also contained copies of the original, hand-drawn maps and attribute information.

The DEWHA intend to publish some of the information in the Draft South-west Marine Bioregional Plan (refer DEWHA 2008) and to make the information available on the Department's species information database, which is publicly available. In addition, DEWHA intend to make the information available to assist other parties involved in marine planning including state governments and non-government agencies.

## **3. AIMS AND OBJECTIVES**

This report details the locations of breeding sites and at-sea distributions of crested terns, little penguins, short-tailed shearwaters and flesh-footed shearwaters in South Australia.

The aims of this report are to:

- Review DEWHA data on the distribution of crested terns, little penguins, short-tailed shearwaters and flesh-footed shearwaters in South Australia;
- Correct the DEWHA maps of the distribution of crested terns, little penguins, short-tailed shearwaters and flesh-footed shearwaters in South Australia and the associated attribute tables;
- Review and correct caveats that should be included with the data to give users an indication of how the colony locations and foraging distributions were determined (eg surveys, literature reviews, and satellite tracking).

#### **4. MATERIALS AND METHODS**

South Australian Research and Development Institute (SARDI) staff reviewed the maps on the distribution of seabirds in South Australia, which were provided by DEWHA. This review was based on published data known to the authors, as well as the authors own unpublished data. The authors did not search for additional published or unpublished data. Amendments to the data provided by DEWHA are provided below.

The maps provided by DEWHA contained caveats, which related to the reliability of the data (eg, whether the data were obtained via satellite tracking, surveys, literature reviews). These data were reviewed and amended as required. Coordinates are given in latitude-longitude (decimal degrees, datum WGS84).

#### **5. RESULTS AND DISCUSSION**

##### **5.1 Crested tern breeding sites and at-sea distribution**

Data on the distribution of crested tern colonies and the at-sea distribution of crested terns in South Australia were provided by DEWHA. These data contained counts of breeding pairs of crested terns at a single site, Troubridge Island, reflecting the lack of data on this species. Copley (1996) summarised count data from some sites, but the sizes of many populations have increased or decreased at many sites since then (Goldsworthy and Page unpublished data). Copley (1996) noted the need for several improvements to the South Australian seabird database, including surveys of islands off the west coast of Eyre Peninsula.

McLeay (2009) attached GPS tags to adult crested terns that were provisioning a chick, to monitor their at-sea distribution from Troubridge Is. Crested terns typically commuted to foraging grounds that were < 40 km from the colony where their travel speeds slowed, presumably because they were searching for prey. These data support the 40 km seawards “donut”, which indicates the “likely area for provisioning young” around each crested tern colony in the maps provided by DEWHA.

The review of the data provided by DEWHA indicated that: 1) DEWHA did not have a complete list of the known breeding sites for crested terns in South Australia; 2) some of the crested tern breeding sites provided by DEWHA were in the wrong location. Corrections are summarised below.

Additional breeding sites:

- Rocky North Is. (-34.2584,135.2711) is a breeding site for crested terns (colony counts not made, Goldsworthy and Page unpublished data). This site should also have a “donut” of shading, to indicate that it is a “likely area for provisioning young”.
- Liguanea Is. (-35.0012,135.6245) is a breeding site for many thousand crested terns (Goldsworthy and Page unpublished data). This site should also have a “donut” of shading, to indicate that it is a “likely area for provisioning young”.
- Baudin Rocks (-37.0858, 139.7239) is a breeding site for <1000 pairs of crested terns (Goldsworthy and Page unpublished data). This site should also have a “donut” of shading, to indicate that it is a “likely area for provisioning young”. Note, this island is in the South-east Marine Region, but its “donut” of shading may extend into the South-west Marine Region.

Corrections to maps:

- Cap Is. (-33.9450, 135.1179). The DEWHA maps have Cap Is. labelled as Rocky Is. This site should also have a “donut” of shading, to indicate that it is a “likely area for provisioning young”.
- Lilliput Is. (near Franklin Is., off Ceduna) is the only island in the Franklins Group of islands (including Blefuscu Is.) that is a breeding site, and supports ~1000 crested terns (Shaughnessy 2007). The DEWHA maps currently have this site listed as “Franklin Islands (Lilliput?)”. This site already has a “donut” of shading, to indicate that it is a “likely area for provisioning young”.
- Daly Head Is. is a breeding site for ~2000 pairs of crested terns (McLeay unpublished data). It is marked on the DEWHA maps as “Daly Head Island”, but when the maps were constructed in 2008, crested terns were not using the island. This site should also have a “donut” of shading, to indicate that it is a “likely area for provisioning young”.



## **5.2 Little penguin breeding sites and at-sea distribution**

Data on the distribution of little penguin colonies and the at-sea distribution of little penguins in SA were provided by DEWHA. Copley (1996) summarised count data of little penguins at some sites, but they noted a high degree of uncertainty in their estimates and the sizes of many populations have decreased in recent years (eg Page et al. 2005, Bool et al. 2007). Copley (1996) noted the need for several improvements to the SA seabird database, including surveys of islands off the west coast of Eyre Peninsula.

Bool et al. (2007) and Wiebkin et al. (unpublished data) attached satellite transmitters to adult little penguins that were provisioning chicks, to monitor their at-sea distribution from Granite Is., West Is., Troubridge Is., Pearson Is., Reevesby Is., Olive Is. and Kangaroo Is. At most sites, adults commuted to foraging grounds that were < 40 km from their colonies and at most sites, adults used foraging grounds where the water depth was < 20 metres. These data support the foraging distribution maps provided by DEWHA, which indicate the “likely area for provisioning young” around each little penguin colony.

The DEWHA map describing “Olive Island breeding colony and foraging areas” has an incorrect legend. The colours that indicate the “Little Penguin – known area for provisioning young” and the “Little Penguin – known foraging area” should be reversed.

The maps indicating “Little penguin likely to occur” and “major breeding colonies and foraging areas” are reasonable estimates of the at-sea distribution of little penguins in South Australia (note spelling mistake in “Busby Islet”). The definition of “major colony” may have to be reconsidered for Granite Is and West Is, given recent declines in these populations (Bool et al. 2007).

The review of the data provided by DEWHA indicated that: 1) DEWHA did not have a complete list of the known breeding sites for little penguins in SA; 2) some of the little penguin breeding sites provided by DEWHA were in the wrong location. Corrections are summarised below.

#### Corrections to maps:

- Busby Islet off Kingscote is a breeding site. Kingscote is also a breeding site, and this colony extends east and west of Kingscote for 2–3 kilometres (Wiebkin unpublished data).
- Little penguins breed at Penneshaw (many kilometres of coastline) and Moncrief Bay (eastern end of Kangaroo Is.). The “known area for provisioning young” for these two colonies has recently been shown to be bounded to the north by a line extended across the bottom of St Vincent Gulf at the latitude of Troubridge Is. and to the east by the Pages Is. and to the West by the colony itself (ie no penguins travelled westward) (Wiebkin et al. unpublished data).
- Pearson Is. “known breeding site” should be recorded as a single location (Wiebkin unpublished data). Currently recorded as two “key sites” and one “breeding colony (SPRAT)”.
- Lewis Is. (-34.9556, 136.0151) should be recorded as a breeding site (Goldsworthy and Page unpublished data).
- Little Waldegrave Is. should be called “West Waldegrave Is.” in all maps.
- Lilliput Is., Blefuscu Is. and Franklin Is., off Ceduna are breeding sites for little penguins. The DEWHA maps currently have this site listed as “Franklin Islands”. This site already has a “donut” of red shading, to indicate that it is a “likely area for provisioning young”.
- North Islet (-35.1178, 136.4728), which is just to the north of Wedge Is in southern Spencer Gulf, should be included as a breeding colony (Goldsworthy and Page unpublished data).

### **5.3 Short-tailed shearwater breeding sites and at-sea distribution**

Data on the distribution of short-tailed shearwater colonies and the at-sea distribution of short-tailed shearwaters in SA were provided by DEWHA. Copley (1996) summarised count data of short-tailed shearwaters at some sites, but they noted a high degree of uncertainty in their estimates. Copley (1996) noted the need for several improvements to the SA seabird database, including surveys of islands off the west coast of Eyre Peninsula.

Einoder and Goldsworthy (2005), Einoder (2010) and Einoder et al. (unpublished data) attached satellite transmitters to adult shearwaters that were provisioning chicks, to monitor their at-sea distribution from Althorpe Is and St Peter Is. On “short foraging trips”, birds foraged over continental shelf waters up to 70km from their colonies, whereas on “long foraging trips” birds foraged as far South as the Antarctic ice front. These data support the foraging distribution maps provided by DEWHA, which indicate the “likely area for provisioning young” around each short-tailed shearwater colony.

The review of the data provided by DEWHA indicated that: 1) DEWHA did not have a complete list of the known breeding sites for short-tailed shearwaters in SA; 2) some of the short-tailed shearwater breeding sites provided by DEWHA were in the wrong location. Corrections are summarised below.

Corrections to maps:

- Albatross Is., off the southern end of Thistle Is., is not a current breeding site for short-tailed shearwaters (Goldsworthy and Page, unpublished data).
- The eastern island (-35.2265, 136.0806) in the North Neptune group of islands is not a current breeding colony for short-tailed shearwaters (Goldsworthy and Page, unpublished data).
- “North Island” on the DEWHA maps, off the northern end of Wedge Is, should be called “North Islet”.
- West Waldegrave Is. should be listed as a breeding colony (Shaughnessy and Dennis 2008).
- Perforated Is., to the northeast of the Hummocks Is., should be listed as a breeding colony (Goldsworthy and Page, unpublished data).
- Pearson Is. (green dot) is not a current breeding colony for short-tailed shearwaters (Goldsworthy and Page, unpublished data).

- Dorothee Is. (purple dot) is not a current breeding colony for short-tailed shearwaters (Goldsworthy and Page, unpublished data).
- Flinders Reef (green dot) is not a current breeding colony for short-tailed shearwaters (Goldsworthy and Page, unpublished data).
- The breeding status of short-tailed shearwaters is not known on the two small islands to the north and southeast of St Peter Is.
- Gliddon Reef (green dot) is not a current breeding colony for short-tailed shearwaters (Goldsworthy and Page, unpublished data).
- Breakwater Is. (green dot -32.3164, 133.5289) is not a current breeding colony for short-tailed shearwaters (Goldsworthy and Page, unpublished data).
- Goalen Rocks (green dot) is not a current breeding colony for short-tailed shearwaters (Goldsworthy and Page, unpublished data).
- Only the big Purdie Is. (-32.2701, 133.2291) is a breeding colony for short-tailed shearwaters (Goldsworthy and Page, unpublished data).
- The breeding status of short-tailed shearwaters is not known on the small Lacy Islands.

#### **5.4 Flesh-footed shearwater breeding sites**

Data on the distribution of flesh-footed shearwater colonies were provided by DEWHA. No maps were provided on the at-sea distribution of flesh-footed shearwaters.

The review of the data provided by DEWHA indicated that one of the flesh-footed shearwater breeding sites provided by DEWHA was incorrect. Corrections are summarised below.

Corrections to maps:

- Albatross Is., off the southern end of Thistle Is., is not a current breeding site for flesh-footed shearwaters (Goldsworthy and Page, unpublished data).

## **6. OTHER COMMON SPECIES OF SEABIRD IN THE REGION**

In addition to the species listed above, seven species of seabird occur in large numbers and breed in the South-west Marine Region (Copley 1996). This report does not review their breeding locations nor foraging distributions, but they are listed below:

- White-faced storm petrel;
- Black-faced and pied cormorants;
- Silver gull and pacific gull;
- Caspian and fairy terns.

In addition to the species listed above, there are eleven species of seabird that are common off South Australia but do not breed in the South-west Marine Region (Copley 1996). This report does not review their foraging distributions, but they are listed below:

- Shy, black-browed and yellow-nosed albatrosses;
- Cape and northern giant petrels;
- Slender-billed, Antarctic and fairy prions;
- Fluttering and Hutton's shearwaters;
- Australasian gannet.

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