



**Marine
Biodiversity
Hub**

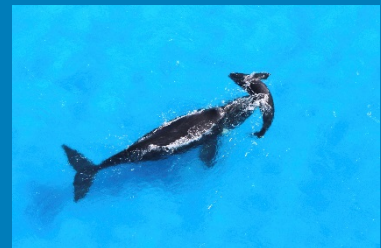
National Environmental Science Programme

Project A7 - Monitoring Population Dynamics of 'Western' Right Whales off Southern Australia 2015-2018

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Research Plan Rpv2
Progress Report on activities for 2016

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Contents

- Executive Summary 1**
- 1. Project summary 2**
- 2. Aims 2**
- 3. Approach 3**
- 4. Results 4**
 - Aerial Survey 4*
 - Photography 5*
 - Databasing 5*

EXECUTIVE SUMMARY

To continue an annual series of aerial surveys off the southern Australian coast between Cape Leeuwin WA and Ceduna SA since 1993, an aerial survey was undertaken over three days, 24-29 August 2016. Because of bad weather, and for the first time in the annual series since 1993, only 'outward' flying legs were possible. For comparison with previous results, counts were obtained of 628 individuals including 228 calves of the year. From 4305 photographic images obtained, 323 have been selected for computer-assisted 'matching' with those (some 7000 images of over 2000 individuals) already available in the catalogue, and 197 data sightings sheets have been added to the sightings database, currently totalling 3741 sightings sheets.

Full details, including trend analysis since 1993, current population size, and distribution information, will be included in the Final Report due on 30 March 2017.

INTRODUCTION

Southern right whales were reduced almost to extinction by 19th Century whaling, throughout the southern hemisphere but including off Australia. There have been signs of recovery off the southern Australian coast, particularly off WA and western SA (the 'western subpopulation'), particularly since the mid-1970s, given cessation of whaling on the species. Since 1976 aerial surveys have been undertaken annually to determine numbers and population trend and obtain individual identifying photographs, at first along the WA south coast from Cape Leeuwin east as far as Twilight Cove, but from 1993 extending into SA waters to as far as Ceduna, giving evidence of intra- and inter-season coastal movement. Further east around the Australian coast there has been little sign of recovery in number; a working hypothesis assumes separation between two subpopulations – 'western' and 'eastern'. This report summarises the results so far of a planned aerial survey between Cape Leeuwin and Ceduna in August/September 2016. A final report is due in March 2017. Funding is available for at least a further annual flight in 2017 with progress and final reports to follow in December 2017 and March 2018, respectively.

1. PROJECT SUMMARY

Aerial Survey, Cape Leeuwin-Ceduna, with an additional leg Perth- Augusta down the west coast, was undertaken between 24 and 29 August.

Extraction of count data was undertaken, as planned, by 30 October. Preliminary analysis has been undertaken, but given the relatively low count in 2015, and somewhat higher count in 2016, completed analysis will be included in the final report due on 30 March 2017.

2. AIMS

- a) continue collection of the dataset, i.e. counts and photographs, of southern right whales, assumed to be from the 'western' Australian subpopulation, from the southern coast between C Leeuwin WA and Ceduna SA, as in each year since 1993. Obtain estimates of population trend since 1993, and current population size.
- b) continue 'matching' photographs of head callosities obtained on the flights using a computer-assisted system against those (2000+ individuals) in the existing identification catalogue. Obtain information on current and past distribution and, in due course, biological parameters such as age at first parturition and calving rate.
- c) continue databasing existing information on sightings, linked to animals already identified.

3. APPROACH

As in previous years survey was to be undertaken from a high wing, single engine aircraft based on Albany WA, over ca 39 hours, for four-five flying days. When whales are sighted, a count is made and individuals are circled for photography, and the GPS sighting position is recorded, as latitude and longitude. For individual identification, clear photographic images of the head callosity pattern and/or other identifying characteristics are required.

As in previous years, direct counts were to be obtained of animals observed within the search area. Photographs were to be obtained of as many animals as possible but with emphasis on cows with calves. The search area includes virtually all the area to which 'western' right whales resort in winter/spring, close to the coast, in particular for females to give birth, generally at three-year intervals.

As in previous years, the maximum count on the flight was to be compared with results since 1993 to obtain estimates of a) population trend and b) current population size.

Population size is currently obtained using a simple model based on the numbers of cow/calf pairs sighted. Given the relative paucity of animals that visit the remainder of the southern Australian coast, the 'western' population recorded between C Leeuwin and Ceduna is considered to represent the majority of the 'Australian' population.

Photographs from the flights are added to the 'WA' catalogue for computer-assisted 'matching' with those already available from WA and elsewhere, including the Antarctic. Sightings information is added to the existing sightings database which relates detailed sightings information to individuals already identified photographically.

4. RESULTS

Aerial Survey

Over 3 'searching' days, 24-26 August 2016, and over 5 'searching' legs, during 33.7 flying hours, there were sightings of 628 whales including 228 calves of the year between Perth WA and Ceduna SA (Table 1).

For the first year in the current series, i.e. since 1993, only 'outward' flights were possible between Albany and Ceduna, although legs between Perth and Albany via Augusta were flown successfully on 29 August, with sightings of three c/c pairs and one adult between Augusta and Albany. In previous years 'inward' flights i.e. return between Ceduna and Albany have been possible, and the maximum counts for each individual leg, 'outwards' or 'inwards', have been taken for comparison year by year.

This year, given the prevailing very poor weather conditions, with a series of low pressure systems sweeping across southern Australia and forecast to continue for some weeks, the decision was made to attempt at least one complete 'outward' set of flights – Albany to Ceduna – taking advantage of a relatively short 'high' pressure system forecast for around 24-26 August. Two further considerations affected that decision:

1. The availability of the pilot who had other commitments from around 5 September (an experienced substitute was available, but preference was given to the current pilot, Jenny Schmidt, who has more than 10 years' experience of the flights).
2. Some concerns expressed by those observing right whales at Head of Bight, SA (HOB) (the major 'western' animal breeding area) who observed a reduction in numbers of cow/calf pairs this year following a record high count (of 81 c/c pairs) on August 16th. Following a large swell and bad weather from August 18-19 the HOB count dropped to 59 c/c pairs on the 20th and remained at around 60 pairs for some days thereafter (pers commn Claire Charlton, 24/08/16). In those circumstances it seemed advisable to undertake the flights as soon as possible after the beginning of the allocated window (August 15).

In the circumstances, with the 'outward' legs successfully completed in relatively good conditions (4-15 knots) on 24-26 August, but with very poor weather forecast for the foreseeable future, the decision was made to fly overland to Perth, via Nullarbor, Forrest and Kalgoorlie on 27/28 August. That allowed the legs Perth/Augusta/Albany to be undertaken successfully (in winds of 10-20 knots) on 29 August, but negated any possibility of completing the planned 'inward' legs Ceduna/Albany.

In four days, 24-29 August 2016, over 5 'flying' legs, during 37.70 flying hrs, there were sightings of 628 whales including 228 calves of the year (Table 1). As described above, survey was only possible on 'outward' legs. For comparison with previous years, the comparable count was as above, i.e. 628 including 228 calves (Table 2). The counts were higher than in 2015, for which the lowest count was recorded since 2007.

Trend analysis of the annual data since 1993, an estimate of current population size, and information on distribution, will be included in the Final Report due on 30 March 2016.

Photography

From 4305 images obtained on the 2016 flight, 323 have been selected for 'matching' with those (some 7000 images) already available in the catalogue.

Databasing

For 2016, 197 data sightings sheets have been added to the sightings database, currently totalling 3741 sheets.

Table 1. Right whale aerial survey C. Leeuwin WA-Ceduna SA, 2016. Summary of results

Flight	Date	Leg	Whale sightings								Weather ¹	Flying hrs-mins
			Right whales				Other large whales ²					
			A ³	C	Y	T	A	C	Y	T		
Outward legs, from Albany	24/08	1. Albany-Esperance	100	62	0	162	4	3	0	7	04/15	4.8
"	25/08	2a. Esperance-Caiguna	164	82	0	246	0	0	0	0	6/15	7.5
"	25/08	2b. Caiguna-Caiguna incl Twilight Cove	15	5	0	20	0	0	0	0		
"	26/08	3. Caiguna-Nullarbor incl Head of Bight	111	72	0	183	0 ⁴	0	0	0	05/10/ 10/05	7.4
	26/08	4. Nullarbor-Ceduna	6	4	0	10	0	0	0	0		
<i>Total Outward</i>		<i>1-4. Albany-Ceduna</i>	<i>396</i>	<i>225</i>	<i>0</i>	<i>621</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>		<i>17.7</i>
Overland ⁵	27/08	Ceduna-Nullarbor-Forrest-Kalgoorlie									05/25/30/25	8.7
	28/08	Kalgoorlie-Jandakot (Perth)										
Additional legs	29/08	5a. Perth-Augusta -	0	0	0	0	0	0	0	0	10/20	4.8
		5b. Augusta-Albany	4	3	0	7	0	0	0	0		
<i>Total additional</i>		<i>9, 10. Perth-Augusta-Albany</i>	<i>4</i>	<i>3</i>	<i>0</i>	<i>7</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>10/20</i>	<i>4.8</i>
Total 2016	3 days⁶	5 legs	400	228	0	628 incl 228 calves	4	3	0	7		37.7
Total 2015 (outward + Perth-Augusta-Albany)	4 days	5 legs	403	84	0	487 incl 84 calves	6	1		7 incl 1 calf		33.7

¹ as indicated by wind speed, knots

² all humpbacks; no other large whales recorded

³ A=adult, C=calf, Y='yearling', T=total

⁴ One dead whale reported

⁵ No 'inward' legs were possible, see text.

⁶ For the 3 days on which searching was possible. The total period of the survey was 6 days

Table 2. Right whale aerial survey, C. Leeuwin WA-Ceduna SA, 1993-2016. Comparable numbers seen.

Year	a. All animals	b. 'Unaccompanied' animals	c. Cow/calf pairs
1993	167	47	60
1994	191	95	48
1995	267	139	64
1996⁷	233	123	55
1997¹	254	148	53
1998	342	120	111
1999	325	157	84
2000	259	113	73
2001	447	163	142
2002	377	163	107
2003	273	85	94
2004	356	142	107
2005	591	237	177
2006	427	127	150
2007	286	172	57
2008	702	230	236
2009	782	294	244
2010	519	251	134
2011	657	185	236
2012	715	275	220
2013	706	214	246
2014	623	159	232
2015	462	268	97
2016	628	172	228

⁷ Probable undercounts (see Bannister 1998, 2002)



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