



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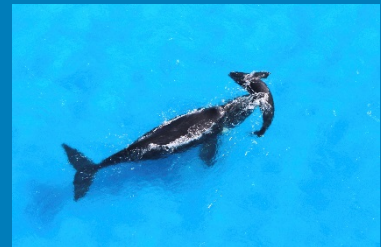
# Project A7 - Monitoring Population Dynamics of 'Western' Right Whales off Southern Australia 2015-2018

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Progress Report on activities for 2017

*30 December 2017*

*Milestone 4 – Research Plan v3 (2017)*



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## EXECUTIVE SUMMARY

To continue an annual series of aerial surveys off the southern Australian coast between Cape Leeuwin WA and Ceduna SA since 1993, a survey was undertaken over five days, 23-27 August, 2017. A total of 1546 animals was sighted, including 506 calves and 4 'yearlings'; these include double counts, given that each flying leg is covered twice, 'outward' and 'inward'. For comparison with previous years' results, maximum counts for each leg are taken; for the 2017 survey, the comparable counts are 780 individuals of which 294 were cows accompanied by calves of the year. From 5603 photographic images obtained, 487 have been selected for computer-assisted 'matching' with those (some 8000 images of over 2000 individuals) already available in the catalogue.

Full details, including trend analysis since 1993, current population size, and distribution information, will be included in the Final Report due on 30 March 2018.

# 1. INTRODUCTION

Southern right whales were reduced almost to extinction by 19<sup>th</sup> Century whaling, throughout the southern hemisphere and including off Australia. Since the mid-1970s, given cessation of whaling on the species, there have been signs of recovery of that part of the population that migrates to the southern Australian coast each year – particularly cows to give birth at approximately three-year intervals, especially off WA and western SA (the ‘western subpopulation’). 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, given 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 of the ‘western’ subpopulation between Cape Leeuwin and Ceduna in August/September 2017, the third in a series of three funded since 2015 through NESP. A final report is due in March 2018. A proposal for a further three years’ survey, i.e. from 2018-2020, has recently been funded by NESP.

## 2. PROJECT SUMMARY

Aerial Survey, Cape Leeuwin-Ceduna, with an additional leg Augusta-Perth up the west coast, was undertaken successfully between 23 and 27 August 2017.

Extraction of count data was undertaken, as planned, by 30 October. Trend analysis has been undertaken, to be reported in detail in the final report due on 30 March 2018.

## 3. 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.

## 4. APPROACH

As in previous years survey was to be undertaken within ca one nautical mile of the coast, 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 (obtained from the maximum count on each 'leg', 'outwards' or 'inwards') 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' subpopulation 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.

## 5. RESULTS

### *Aerial Survey*

Over five 'searching' days, 23-27 August 2017, during 38.5 flying hours, there were sightings of 1546 whales, including 506 calves of the year and 4 yearlings, between Perth WA and Ceduna SA. Additionally 13 humpback whales, including three calves, were recorded (Table 1). The figures are of all sightings recorded. For comparison with counts from previous years, only the maximum counts for each leg, 'outwards' or 'inwards', are included; the relevant figures for 2017 are 780, including 192 'unaccompanied' adults and 294 cow/calf pairs (Table 2).

Trend analysis of the comparable 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 2018.

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 5603 images obtained on the 2017 flight, 487 have been selected for 'matching' with those (some 8000 images) already available in the catalogue.

### *Databasing*

Sightings for the 2017 survey are currently being added to the sightings database, which at present totals 3708 sheets.



**Table 1. Right whale aerial survey C. Leeuwin WA-Ceduna SA, 2017. Summary of results.**

Flight	Date	Leg	Whale sightings								Weather <sup>1</sup>	Flying hrs
			Right whales				Other large whales <sup>2</sup>					
			A <sup>3</sup>	C	Y	T	A	C	Y	T		
Outward legs, from Albany	23/08 /17	1. Albany-Bremer Bay*	117	77	0	194	4	2	0	6	07/06	3.9
	23/08	2. Bremer Bay-Esperance*	0	0	0	0	0	0	0	0	00/00	6.7
“	24/08	3. Esperance-Caiguna	220	101	2	323	0	0	0	0		
“	24/08	4a. Caiguna-Nullarbor (incl Head of Bight)	127	57	0	184	0	0	0	0	08	6.45
	25/08	4b. Nullarbor-Point Bell (=Ceduna)	35	17	0	52	0	0	0	0		
<i>Total Outward</i>		<i>1-4. Albany-Pt Bell (Ceduna)</i>	<i>499</i>	<i>252</i>	<i>2</i>	<i>753</i>	<i>4</i>	<i>2</i>	<i>0</i>	<i>6</i>		<i>17.05</i>
Inward legs from Point Bell (Ceduna)	25/08	5. Point Bell-Nullarbor (incl Head of Bight)*	123	95	0	218	0	0	0	0	08	2.25
	25/08	6. Nullarbor-Caiguna (excl Head of Bight)*	76	12	0	88	0	0	0	0	10	3.7
	26/08	7. Caiguna-Esperance*	227	119	1	347	0	0	0	0	8	4.7
	26/08	8. Esperance-Albany	91	26	1	118	0	0	0	0	10	3.7
	27/08	9. Albany – Augusta*	19	2	0	21	1	1	0	2	12	2.17
<i>Total Inward</i>			<i>536</i>	<i>254</i>	<i>2</i>	<i>792</i>	<i>1</i>	<i>1</i>	<i>0</i>	<i>2</i>		<i>16.52</i>
<i>Additional legs</i>	27/08	10. Augusta-Perth (Jandakot)	1	0	0	1	5	0	0	5	12/18	2.63
	27/08	11. Jandakot-Albany	-	-	-	-	-	-	-	-	12/08	2.3
												21.45
<b>Total 2017</b>	<b>5 days</b>	<b>11 legs</b>	<b>1036</b>	<b>506</b>	<b>4</b>	<b>1546 incl 506 calves, 4 yearlings</b>	<b>10</b>	<b>3</b>	<b>0</b>	<b>13 incl 3 calves</b>		<b>38.5</b>

<sup>1</sup> as indicated by wind speed, knots

<sup>2</sup> all humpbacks; no other large whales recorded

<sup>3</sup> A=adult, C=calf, Y='yearling', T=total

\*legs with maximum numbers used in mapping and calculating trend, i.e. in Table 2

**Table 2. Right whale aerial survey C. Leeuwin WA-  
Ceduna SA. Comparable sightings since 1993**

<b>Year</b>	<b>a. All animals</b>	<b>b. 'Unaccompanied' animals</b>	<b>c. Cow/calf pairs</b>
<b>1993</b>	167	47	60
<b>1994</b>	191	95	48
<b>1995</b>	267	139	64
<b>1996<sup>4</sup></b>	233	123	55
<b>1997<sup>1</sup></b>	254	148	53
<b>1998</b>	342	120	111
<b>1999</b>	325	157	84
<b>2000</b>	259	113	73
<b>2001</b>	447	163	142
<b>2002</b>	377	163	107
<b>2003</b>	273	85	94
<b>2004</b>	356	142	107
<b>2005</b>	591	237	177
<b>2006</b>	427	127	150
<b>2007</b>	286	172	57
<b>2008</b>	702	230	236
<b>2009</b>	782	294	244
<b>2010</b>	519	251	134
<b>2011</b>	657	185	236
<b>2012</b>	715	275	220
<b>2013</b>	706	214	246
<b>2014</b>	623	159	232
<b>2015</b>	462	268	97
<b>2016</b>	628	172	228
<b>2017</b>	847	241	303

<sup>4</sup> Probable undercounts (see Bannister 1998, 2002)



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