Marine Biodiversity Hub

National Environmental Science Programme

Project A7 -
Monitoring Population Dynamics of 'Western' Right Whales off Southern Australia 2018-2020

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Progress Report on activities for 2018

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Milestone 5 – Research Plan v4 (2018)

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Important Disclaimer

Contents

List of Tables

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, 18-23 August, 2018. A total of 1095 animals were sighted, including 381 calves; 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 2018 survey, the comparable counts are 789 individuals of which 279 were cows accompanied by calves of the year. From 6005 photographic images obtained, 456 have been selected for computer -assisted 'matching' with those (some 9000 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 2019.

1. INTRODUCTION

Southern right whales were reduced almost to extinction by 19th 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 the aerial survey of the 'western' subpopulation between Cape Leeuwin and Ceduna in August 2018, the fourth in a series of six funded since 2015 through NESP. A final report is due in March 2019.

2. PROJECT SUMMARY

Now endangered under the EPBC Act, unsustainable whaling during the 19th and 20th centuries reduced southern right whales to a few hundred animals. They now seem to be recovering slowly in most areas. Since 1993 annual aerial surveys between Cape Leeuwin (WA) and Ceduna (SA) have provided counts and photo-identification data for Australia's south-western population aggregating close inshore during calving and nursing; counts are a near-census of the population and allow estimation of abundance and trend together with life history information. Collection of these data is 'high priority' in the Australian EPBC Act Recovery Plan (Conservation Management Plan). To add to this long term dataset, an aerial survey between Cape Leeuwin to Ceduna, with an additional leg between Augusta and Perth up the west coast, was undertaken successfully between 18th and 27th August 2018.

Extraction of count data was undertaken, as planned, by the 30th October. Trend analysis has been undertaken and will be reported in detail in the final report due on 30 March 2019.

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, an aerial survey was undertaken within *ca* one nautical mile of the coast, from a high wing, single engine aircraft based in 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 obtained of animals observed within the search area. Photographs were 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

5.1 Aerial survey

Over six 'searching' days, 18-23 August 2018, during 39.1 flying hours, there were sightings of 1095 whales, including 381 calves of the year, between Perth WA and Ceduna SA. Additionally 17 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 2018 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.

5.2 Photography

From 6005 images obtained on the 2018 flight, 456 have been selected for 'matching' with those (some 9000 images) already available in the catalogue.

5.3 Databasing

Sightings for the 2018 survey will be added to the sightings database, which at present totals 3860 sheets of which 3273 relates to the period 1993-2017.

Table 1. Right whale aerial survey C. Leeuwin WA-Ceduna SA, 2018. Summary of results.

Flight	Date	Leg	Whale sightings								Weather[1]	Flying hrs
			Right whales				Other large whales[2]					
			A[3]	C	Y	T	A	C	Y	T		
Outward legs, From Albany	18/08/2018	1. Albany-Esperance*	140	79	0	219	8	3	0	11	05/10	2.4
	19-08	2. Esperance-Caiguna*	181	106	0	287	0	0	0	0	10/15	3.2
	20-08	3. Caiguna-Nullarbor (excl Head of Bight)*	49	7	0	56	0	0	0	0	10	5
	20-08	4. Nullarbor-Ceduna (incl Head of Bight)	134	91	0	225	0	0	0	0	05	2.5
Total Outward		**1-4. Albany-Ceduna**	**504**	**283**	**0**	**787**	**8**	**3**	**0**	**11**		**18.6**
Inward legs from Ceduna	21-08	5. Ceduna-Nullarbor (incl Head of Bight)*	140	87	0	227	0	0	0	0	10	3.2
	21-08	6. Nullarbor-Caiguna (excl Head of Bight)	39	4	0	43	1	0	0	1	05/10	4.3
	22-08	7. Caiguna-Esperance	0	0	0	0	0	0	0	0	20	3
	22-08	8. Esperance-Albany	0	0	0	0	0	0	0	0	25	3
	23-08	9. Albany –Augusta	26	6	0	32	5	0	0	5	06	2.8
Total Inward		**5-9. Ceduna-Augusta**	**205**	**97**	**0**	**302**	**6**	**0**	**0**	**6**		**16.3**
Additional legs	23-08	10. Augusta-Perth (Jandakot)	5	1	0	6	0	0	0	0	06	2
	23-08	11. Jandakot-Albany	0	0	0	0	0	0	0	0		2.1
Total 2018	**5 days**	**8 legs**	**714**	**381**	**0**	**1095**	**14**	**3**	**0**	**17**	**05/10**	**39**

[1] as indicated by wind speed, knots
[2] all humpbacks; no other large whales recorded
[3] 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

Year	a. All animals	b. Unaccompanied animals	c. Cow/calf pairs
1993	167	47	60
1994	191	95	48
1995	267	139	64
1996	233	123	55
1997	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
2017	847	241	303
2018	789	231	279

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