

Australian Marine Mammal Centre Grants Program

Final Report

- **Project No.** – 12/29
- **Title** - Assessment of Numbers and Distribution of Southern Right Whales in South-east Australia
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1. Project Summary

A clear, plain English summary of approximately 500 words outlining the work undertaken and any significant findings (for publication on the Department's web site). Include what was done, why and the key findings resulting in recommendations summarised from the sections below.

The long term goal of the three-year project is to obtain a population abundance estimate for southern right whales in south-east Australia and gain insights into possible emerging areas of importance in the region. The aim of year one of the project in 2013 was to conduct a single aerial survey of the region to;

- Test the methodology used in south-west Australia,
- Obtain an estimate of population size, and
- Determine the need for and design of a longer term survey plan for the region.

The Activity has tested the methodology and demonstrated the ability of the research team to effectively conduct a survey of the region to obtain a population abundance estimate and gather important information on distribution and movements. The Activity has achieved the project objectives.

An aerial survey of south-east Australia from Ceduna to Sydney and including Tasmania was successfully conducted over eight days in late August 2013. The survey track provided excellent coverage of the area originally proposed, with the exception of sections of Tasmania and Kangaroo Island where flights and/or survey effectiveness were compromised due to poor weather, poor visibility or lack of radio communications. Recommendations for minor modifications to the survey plan are provided to address these issues.

Seventy eight (78) southern right whales (including 17 cow:calf pairs) were detected during the survey and distinct aggregations were observed in South Australia, Victoria and New South Wales. Photo-identifications were obtained for 59 of 61 observed adult southern right whales, including 16 of 17 observed cow:calf pairs. All photo-identifications obtained during the Activity were compared against the South East Australian Southern Right Whale Photo-

Identification Catalogue (SEA SRW PIC). 91.5% of whales recorded during the survey were not previously known to the catalogue suggesting that the survey method used was successful at detecting whales. Five whales identified during the survey were matched to whales in the SEA SARW PIC. Some of these matches demonstrate interesting movement in the region both within and between-season.

Although this is only the first year of a proposed three-year project, a rough population estimate for the region is given. This was calculated using the method adopted by the IWC Scientific Committee in 2011, based on the number of breeding females observed over a consecutive three year period. In the absence of the complete three-year data-set, the investigators acknowledge this is a rough estimate and does not account for detectability bias. However, this is the first such estimate to be provided for the region and will be refined as the results of future surveys become available. Availability bias will also be addressed in future surveys.

The Activity has demonstrated that the south-west Australia survey methodology can be replicated in south-east Australia to obtain important information on the status of the southern right whale in south east Australia. Additional surveys are required to refine the methodology and abundance estimate for the region and obtain further information on distribution and movement of the species on the south east Australian wintering ground.

2. The Outcomes and Objectives – Key Findings

List the Project Objectives and address each one, noting the degree to which the objective was achieved through the research and issues that may have hampered its success. Describe the key findings as they relate to the objectives and the management questions identified in the initial application.

Testing methodology:

The south-east Australian long coastal survey commenced on 25 August and was completed on 1 September (flight log attached - Appendix 1). The flight was conducted in a single engine Cessna 182. The survey commenced at Ceduna on Day One, continuing in an easterly direction along the SA coast on Day Two and on to Colac in western Victoria on Day Three. The survey then headed south to Tasmania and around in an anti-clockwise direction to Launceston on Day Four. The survey was forced to leave the Tasmanian leg at Launceston on Day Five due to bad weather, which also caused delays upon return to Victoria. The survey continued along the Victorian coast and into NSW on Day Six and was completed on Day Seven at Sydney. Although there was a time gap in the survey of approximately one day, photo-identification results suggest no duplications in the count.

The survey was conducted by one pilot and two observers with a pilot change-over at Colac in Victoria prior to embarking on the Tasmanian leg. The survey was conducted at an average speed of 120 knots and average height of 1500 feet and with the exception of some remote areas of Tasmania where the aircraft was forced to periodically ascend to maintain scheduled regular radio communications. Reduced visibility was experienced along sections of surveyed coastline around Kangaroo Island due to sun glare. Visibility was also compromised in areas along the southern coast of Tasmania due to deep water and sedimentation, however, unlike weather and communications issues, these problems are largely unavoidable. Advice from a statistician will be sought regarding these issues and that of detectability bias for future surveys.

The completed survey track showing areas where difficulties were encountered is detailed on the attached map (Appendix 2). A live Google Earth map is also provided at;



SRW Survey Sep 2013 Balaenidae.kml

(right click kml file, → Packager Shell Object Object → Activate→ Open).

Approximately 40% of the Tasmanian coastline and 25% of Kangaroo Island were effectively un-surveyed. It is anticipated that this will be significantly improved in future surveys, in particular by making some adjustments to the survey plan to ensure a more complete circumnavigation of Tasmania.

Population estimate:

The survey detected a total of 78 southern right whales comprised of 61 adults and 17 calves. Distinct aggregations were observed at Encounter Bay South Australia, Logans Beach and east Gippsland Victoria and southern New South Wales. Sightings logs are provided (Appendix 3).

Figures of 201 and 189 are given as early population estimates, explained as follows;

- If the south-east Australian population is discrete, on the basis of the 2013 count a naïve assumption could be that we could expect breeding numbers to be much the same each year and our early projection for the overall population is 201 (17 x 3 x 3.94) i.e. the number of breeding females are assumed to be 17 each year, and using the factor of 3.94 to account for total population (as adopted by the IWC Scientific Committee in 2011*).
- If the south-east population was assumed to be contiguous with the WA population, and the same rough proportions of breeding females exist, a population estimate for the region of 189 is obtained. In WA the cow:calf counts for 2011, 2012, 2013 were 236, 220, and 246 respectively. Assuming the south-east Australian counts were roughly the same proportion they would be 16, 15 and 17 respectively, with a total 48. The total population, obtained by multiplying the adult female population by 3.94 would therefore be 189 as at the midpoint of the 3 year period i.e. in 2012.

We look forward to obtaining estimates with greater confidence in future as more data comes to hand.

Photo-identification matching results:

Photo-identifications were obtained for 59 southern right whales, including 16 nursing cows and one calf. All photo-identifications have been compared against SEA SRW PIC with a resulting 5 matches. Two matches involved breeding females previously observed at the same locations in different seasons. Three matches provide evidence of significant movements around the region both between and within season. Photo-ID matching results are provided (Appendix 4). Matches are detailed below;

Project ID	SEASRWPIC ID	Date	Location	Class	Match info	Previous sightings
SEA22	SE0929	270913	Little Dip SA	CC pair	Vic/Tas/SA	Western Victoria June 2009, Eastern Tasmania June 2013, Western SA August 2013
SEA26	SE0201	270813	Logans Beach Vic	Cc pair	Vic/Vic	Logans Beach regular
SEA37	SE1242	310813	Lake Tyers Vic	SAG	Tas/Vic	Eastern Tasmania 2012, Eastern Victoria 2013
SEA48	SE1011	310813	Bermagui	CC pair	NSW/NSW	First observed NSW Aug 2010

			NSW			
SEA58	SE1304	310813	Snapper Is NSW	SAG	Tas/NSW	Within season movement - Eastern Tasmania June 2013, Southern NSW August 2013.

Longer term survey plan:

Funding has been obtained for a repeat survey in 2014. The investigators will seek funding for a third year in 2015 to obtain a three year count of breeding females to account for the full cohort and allow a more accurate estimate of abundance.

It is recommended that future surveys be conducted in the sequence; Ceduna to Sydney followed immediately by Tasmania in the next available weather 'window'. Future surveys should also incorporate the use of a twin engine aircraft for the Tasmanian leg of the survey to provide additional safety for the crew in remote areas where radio communications were difficult to maintain.

*The rationale for the number 3.94 is given in the Report of the Workshop on the Assessment of Right Whales in the Journal of Cetacean Research and Management 14 (Suppl.) 437-462, Section 5, especially Table 2, footnote, on p 451.

3. Implications for Management

What are the key recommendations for management based on the findings.

The Activity has demonstrated the ability of the research team to effectively conduct a thorough and safe survey, obtain a population abundance estimate, and gather important information on whale movements and spatial distribution in the south-east Australian region. The information obtained from these surveys will help to provide a better understanding of the status of the population and identify possible emerging areas of importance.

4. Other Benefits

How has this project advanced the field of research? (e.g. scientific discoveries, new methodologies)

The Activity has obtained important information for the development of standardised long-term southern right whale population survey plan for the south-east Australian region.

5. Problems Encountered (if any)

Describe any major problems encountered during the Activity and how they were addressed.

An estimated 40% of the Tasmanian coastline and approx. 25% of Kangaroo Island was un-surveyed due to issues with weather and visibility. Recommended adjustments to the survey plan will address the majority of these issues.

Advice from a statistician will be sought regarding visibility issues inherent to the region and to account for detectability bias for future surveys.

6. Communication

How will results be communicated to management

Survey results were communicated to all relevant government agencies via regular email updates throughout the progress and at the completion of the survey.

<p>Summary information on survey results was provided to government agencies for possible media.</p> <p>The final report will also be made available to key stakeholders.</p> <p>Additionally in future:</p> <ul style="list-style-type: none"> • Face to face – National government meetings such as NMMAC, State Government round table • Publications – at the completion of three years • IWC – at the completion of three years or earlier • Media – media released by state government agencies following annual surveys
Stakeholder engagement feedback (plain English for feedback to stakeholders)
Students supported (if any)
N/A
PhD Theses and dissertations (if any)
N/A
Publications (other than theses and dissertations)
Planned publications
Presentations
Southern right whale workshop presentation SMM Biology Marine Mammals Conference Dunedin 2013

7. Project Outputs

A list of the actual outputs of the research including milestones, progress reports and data products such as models etc.	Proposed date of completion	Actual date of completion
One year survey as pilot for 3 year project	Nov 2013	1 Sept 2013
Three years long coastal surveys completed – dependent on further funding in 2014/2015	Nov 2015	
AMMC activity Final Report submitted 7 May 2014	7 May 2014	
Population abundance estimate for south-east Australia available– dependent on further funding in 2014/ 2015	June 2016	
Improved understanding of temporal distribution in SA / Vic – dependent on further funding in 2014/ 2015	June 2016	
Paper/s prepared for submission– dependent on further funding in 2014/ 2015	June 2017	
Population trend estimate available (provisional) – dependent on further funding		