

Australian Marine Mammal Centre Grants Program
Final Report
(subclause 9 and Schedule Item 5 of the Funding Agreement)

- **Project No.** 13/51
- **Title:** Whale sightings in South Australia: migration of data to internet platform and updating the State's database
- **Chief Investigators:** Dr Catherine Kemper and Robert Morris
- **Co-Investigators:** Alexis Tindall
- **Organisation:** South Australian Museum

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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 South Australian Museum manages the State's cetacean sightings database of opportunistic and survey records of live whales and dolphins, primarily in South Australian waters. Prior to the commencement of the AMMC grant, the 3500 accumulated records were held in an Access database that was not easily available for use by researchers, government and industry. AMMC funded the South Australian Museum to create a new database in a form that could be widely disseminated via the Atlas of Living Australia, add new sightings records to the database, digitise images associated with the records and promote the use of the information.

There are now 5000 records in the database, including 2300 images associated with about 600 sightings. About half are for Southern Right Whales but there are also records for other threatened species such as Blue Whales Humpback Whales. Survey data for Southern Right Whales dating back to the early 1990s have been uploaded and will soon be available for researchers studying the movements and biology of this endangered species.

The project created a new format for cetacean sightings databases that could act as a template for similar projects in other states. A rigorous approach was taken when verifying the data, especially in relation to location and species identification.

Cetacean specialists at the South Australian Museum were critical to the success of the project and the 'good' data it has made available.

Among the key findings of the project was the documentation that few sightings were available for the offshore region. It is recommended that future development of the database include soliciting records from people who encounter whales and dolphins offshore, e.g. fishers, industry exploration and wildlife observers.

Promotion of the project and its findings will be facilitated by small displays at the South Australian Museum and the South Australian Whale Centre in Victor Harbor. The Whale Centre has been instrumental in soliciting sighting records since the early 1990s and an important partner in the project.

A key recommendation is that the database be maintained and augmented. This will need support from a number of sources, including the Commonwealth and State governments and industry.

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.

Objective 1: migrate existing records

1. Total of 3660 records that were held in two Access databases (combined in September 2014) were given new registration numbers (CS1 – 3660, CS = Cetacean Sighting) after the data were 'cleaned' and verified.
 - a. Opportunistic sighting records in Access: 3500 records
 - b. BHP survey records in Access: ~ 180 records
 - c. Data cleaning involved deleting/merging/adding fields, spell checks, consistency checks. The software program Open Refine was used for this process.
2. Two new tabs for KE Emu designed specifically for cetacean sightings (Appendix 2)
 - a. the number of fields was reduced from 115 to 68 (Appendix 1)
 - b. All records were migrated into the KE EMU database already in use for specimen records at the Museum.

Objective 2: update records

Approximately 1300 CS records were added to cetacean sighting database. The AMMC application stated that we would update opportunistic records for 2010–2012 and enter several outstanding survey datasets.

1. A decision was made to include 2013 records to the opportunistic sightings, thus resulting in 4 years of new records
2. Data preparation and verification completed (~1150 records)
 - a. South Australian Whale Centre 2010–2013
 - b. Other incidental sightings 2010–2013
 - c. Surveys and records pre-2009 that had not been accounted for in the application
3. Record registration and entry into a format compatible with migration to KE EMU
 - a. All the above completed by March 2015

- b. ~80 records await species verification
- 4. NHT Spencer Gulf dolphin survey: the initial estimate of ~300 records was revised to 158. These have geolocation data but not descriptions of locations, have been processed and registered into the KE EMu.

Objective 3: solicit new records

There was insufficient time to contact all the groups listed on the application e.g. South Australian Whale Centre, Birds SA, Flinders University, Peter Gill and SARDI. About 805 of this objective was completed.

1. The 2013 records were obtained from the Whale Centre and have been processed (see above).
2. The Museum was given 181 records by SANTOS a number of years ago and these have been processed and registered.
3. The timing of the grant and hiring the Research Assistant did not allow the spotter training to take place.
4. Peter Gill made cetacean sightings available to SA Museum about 10 years ago. These will not be entered until approval is given.
5. Excellent records were obtained from a bird watching survey in the Great Australian Bight during 2012. These were verified and registered in KE EMu.
6. No approach has been made to the other organisations listed but if funding can be sourced this will be one of the priorities.

Objective 4: archive and digitise photographs

More images were located than noted in the application. Time constraints limited the number that could be digitised. Many of the images relate to sightings of Southern Right Whales.

1. Total of 2290 images, associated with 611 CS records, were electronically attached to the records available in the system (as of 12 March 2015)
 - a. 477 prints (hardcopy) digitised by volunteers. The images are associated with 120 CS records
 - b. 365 slides for 98 CS records from BHP Southern Right Whale surveys (1992–1993)
 - i. This step was delayed by a few weeks due to numerous errors found in the data
 - ii. BHP slides (1991) remain to be processed and scanned
 - c. 1448 electronic images for 393 CS records
 - i. Another 42 CS records with multiple images to be uploaded
 - ii. More images than initially estimated, thus this has not been completed
2. All images were catalogued using their newly-assigned CS numbers

Objective 5: provide data to external bodies – 50 % done

1. Total of 4898 records will be supplied to AMMC and ALA.
 - a. First load to ALA should occur in May with any successive changes updated automatically and periodically by SA Museum
 - b. The Museum is in contact with the AMMC to complete a Memorandum of Understanding before the data are transferred. There also needs to be agreement on the format of the data.

Objective 6: summarise information for promotion

1. Displays are being prepared for the SA Museum and the South Australian Whale Centre (SAWC). These will present key findings, potential uses of the database and

promote the need for ongoing support for the work of the SA Museum and SA Whale Centre. The displays are envisaged to be launched during June 2015 (SA Museum) and later in the year at the SA Whale Centre.

Key Findings and Achievements

1. The project has developed a template for a cetacean sightings database that can be utilised by other agencies. This will greatly enhance the application of the data for many purposes.
2. Combining opportunistic and survey data in a single database will lead to a better understanding of the distribution and relative abundance of cetaceans in southern Australian waters. Conservation of these protected species will be enhanced as a result.
3. Not surprisingly, the number of records increased with time (Appendix 5) as people become more aware of the need to report. The use of digital photography has enhanced species identification and made it easier to report sightings.
4. Southern Right Whales made up about half of the 5000 records in the database (Appendix 3). Other threatened species such as Humpback Whales (~250 records) and Blue Whales (22 records) also featured. Dolphins and their relatives were next most numerous (~1000 records).
5. Most of the sightings were made along the coast of South Australia (Appendix 4). There is an urgent need for offshore sightings to be reported because there is extensive exploration activity being undertaken at present and such data are needed for Environmental Impact Statements.
6. The inclusion of survey records was an important component of the project since the data have not been previously readily available.

3. Implications for Management

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

1. Sightings and strandings databases are important tools for managing marine mammals because they are the building blocks for understanding distribution and biology of species that are difficult to observe. Locally-maintained databases that are curated by specialists can contribute substantially to the bigger picture of Australian marine mammals. A key recommendation from the AMMC project is that the database be ongoing and that Commonwealth and State government and industry co-operate to ensure this happens.
2. Knowledge of offshore behaviour, distribution and species occurrence is limited. Offshore sightings should be solicited by both State and Commonwealth agencies and the data shared. Data should be made available through national databases such as the Atlas of Living Australia.
3. Southern Right Whale images and sightings data should be entered into the national matching database.

4. Other Benefits

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

1. The data made available through this project will contribute to knowledge of cetacean distribution in Australian waters.
2. The data and images for the threatened species will contribute to species recovery plans.

- Individual identification (i.e. matching) will be possible for some of the images made available by the project. This will lead to a better understanding of movements of Blue Whales, Humpback Whales and Southern Right Whales in Australian waters.

5. Problems Encountered (if any)

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

The Research Assistant was not employed until 30 June 2014, thus all steps were at least a month behind schedule. This was due to the difficulty in creating a new position in the Museum because of SA Government restrictions on employing new staff. However, data entry and preparation were more rapid than anticipated and the project remained largely on track.

KE EMu database design and migration was expected to be completed by August. The database creation (through KE EMu) and migration were delayed because they were combined with another project at the Museum, thus giving a substantial cost saving. Robert Morris left the Museum for a position in New Zealand in mid-2014. The project was fortunate to have Keith Maguire fill this role very competently.

The timing of the grant and employing the Research Assistant was not ideal in relation to the 'Whale Season' in South Australia so training was not provided for spotters during 2014. However, the Museum has trained spotters in the past and made material available to the Whale Centre. The trip to Victor Harbor to discuss a promotional display will be organised at a future date and funded from other sources.

The BHP survey data and images contained many errors that needed to be rectified and this took more time than anticipated (close to 4 weeks on full time). The records for 1992–1994 were completed but not that for 1991.

6. Communication

How will results be communicated to management
Through the AMMC and ALA, researchers and government and non-government agencies will be able to access the information and improve knowledge of cetaceans in Australia.
Stakeholder engagement feedback (plain English for feedback to stakeholders)
The South Australian Whale Centre has been pivotal in the project. Their on-line reporting system, developed with the help of the South Australian Museum some years ago, has resulted in many sightings becoming available for the Museum's database. Volunteers from the Whale Centre have been extremely helpful, especially in regards to sightings in the Victor Harbor area.
Regional offices of the SA Department of Environment, Water and Natural Resources have contributed sightings over many years. The data management branch has also assisted in correcting errors in a previous version of the database.
Students supported (if any)

NA
PhD Theses and dissertations (if any)
NA
Publications (other than theses and dissertations)
NA
Planned publications
In the future, a publication on South Australian Whales and Dolphins may be developed for which the mapped data can be included.
Presentations
Displays are being developed for the South Australian Museum and South Australian Whale Centre. Promotion of the project will also be made through the media.

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	Comments
Employ Research Assistant (RA)	May 2014	Jun 2014	See Section 5
Create observational database in KE EMu	July 2014	Aug 2014	See Section 5
Configure existing data to new fields	July 2014	Aug 2014	See Section 5
Migrate existing data to KE EMu	Aug 2014	Jan 2015	See Section 5
Liaison with SA Whale Centre re sightings training	Oct 2014	Not completed	The project started after the best time to train spotters. See section 5
Prepare and enter new sightings	Oct 2014	Dec 2014	There are more records than anticipated.
Archive and digitise hard copies of photographs and organise/archive digital images	Nov 2014	Ongoing (est. completion: May 2015)	There were many more digital images than expected because 2013 was included and some material was received after the application was submitted.
Prepare promotional material	Feb 2015	May 2015	Summaries of data have been prepared but the displays have not been developed.
Provide data to external bodies	Feb 2015	May 2015	Data will be sent to ALA in May 2015. Details of data transfer

			to AMMC are not finalised.
Prepare final report	April 2015	17 April 2015	

8. Financial Account of the Activity

Include reasons for any variation to the budget, underspends and difficulties

The financial acquittal and budget summary will be sent in May 2015.

Acknowledgement

This project would not have been successful without the efficiency and competency of Tomoyo Segawa (Research Assistant). Keith Maguire (SAM) is thanked for all the technical support in KE EMu database management and for transferring data to other organisations. David Stemmer (SAM) contributed with useful feedback on the new KE EMu sighting tabs. John Ling and D. J. Needham helped solve problems in BHP survey data. SAM volunteer, Jessie Treloar, was instrumental checking and fixing BHP records and image information. All the SAWC volunteers are thanked for providing years of sighting records and images, especially Elizabeth Steele-Collins. A special thanks to Nedra Haines (SAWC) for committing so much time to put together all sighting records submitted annually. The volunteers involved in digitising the images at the SAM are thanked for their contribution.

Signature of Chief Investigator	
Name	
Date	
Signature of Organisation Representative	
Name	
Date	

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Attachments

Appendix 1: Explanation of KE EMu fields

Appendix 2: KE EMu tabs screen shots

Appendix 3: List of species and number of records for each

Appendix 4: Map of all sightings and species

Appendix 5: Graph of annual counts of sightings records