

Australian Marine Mammal Centre

Final Report

(subclause 9 and Schedule Item 5 of the Funding Agreement)

- Project No. –
- Title - Australian Southern Right Whale Photo-identification Catalogue: Phase One – Design development
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- Organisation – Skadia Pty Ltd

Activity Period –

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1. Activity Summary

A clear summary of approximately 500 words outlining the work undertaken and any significant findings (for publication on the Department's web site)

Australia has significant holdings of southern right whale photo-identification data spanning four decades and covering large areas of the species' Australian range. These data allow individual whales to be traced over long temporal and spatial scales, providing a means of investigating, among other things, population biology, life history, movements and abundance. Australian photo-identification data are held in disparate datasets, but are most powerfully used in combination with one another. The desirability of moving towards functional integration has been recognised for some time, and this project was established to design a data management system for that purpose.

The Australian Southern Right Whale Photo-identification Catalogue: Phase One – Design development project represents Phase 1 of a two-phase approach to development of an integrated photo-identification cataloguing system. The technical architecture and curation/administration aspects have been addressed in Phase 1, with system build and data migration to occur in Phase 2 (subject to future funding). The benefits of an integrated cataloguing system include provision of more complete and comprehensive data and potential for more powerful analysis to address a wider range of research and management questions.

The Catalogue Design project comprised three inter-linked elements:

1) Scoping: Existing systems were investigated in order to build on prior experience with curation of similar data. Several global systems were investigated, in particular the work of the New England Aquarium which developed a photo-identification data management system for North Atlantic right whales, along with the work of the Provincetown Centre for Coastal Studies, a major contributor to the North Atlantic Right Whale Catalogue. Discussions and

information sharing ensuing from these interactions shaped parts of the project's outputs.

2) Consultation: Strong participation from researchers and managers with a close interest and/or investment in southern right whale photo-identification data was integral to the project's success and essential to support data contribution over the long-term. The project was structured with a strong focus on participatory consultation with the stakeholder group, which comprises individuals from universities, museums, state and commonwealth government departments and private sector consulting. Input was received at project inception, during background research and scoping, and during technical design and catalogue establishment planning. Discussions at a Catalogue Development Workshop were particularly valuable; a clear purpose and functions for the catalogue were specified, data content and sharing were considered in detail, the geographic scope was expanded to include New Zealand, and the catalogue was designated as the Australasian Right Whale Photo-Identification Catalogue (ARWPIC).

3) Development of catalogue framework: This element of the project set out the recommended design and structure for ARWPIC. It resulted in the development of two documents. The ARWPIC Technical Outline sets out system architecture, data content and structures, data contribution work flow, validation and integrity, types of users and anticipated requirements for types of access and use levels. The ARWPIC Establishment Outline addresses overall administrative requirements to support catalogue implementation and details work flows, a curation model and principles for data sharing agreements. The two documents provide the framework for ARWPIC system build and full implementation in Phase 2.

Please refer to the ARWPIC Technical Outline and the ARWPIC Establishment Outline for further details of the Catalogue Development project and its outputs.

2. The Outcomes/Objectives

List of the Project Objectives

The project was designed to be run over two phases. The broad aim of Phase 1 was to build on the existing general agreement amongst stakeholders that a national photo-identification catalogue is required, work with stakeholders to specify the elements and data structures of a national catalogue in a technical development outline as well as the proposed arrangements for hosting and ongoing management, and produce a catalogue establishment outline.

The specific objectives of Phase 1 were:

- Investigate Australian data storage, management and usage requirements
- Scope existing relevant global systems and system elements and consider applicability in relation to Australian requirements
- Conduct consultation with major regional catalogue holders and potential national catalogue users to obtain input to the structure, form and ongoing management arrangements of a national catalogue
- Investigate and where possible obtain agreements for data contribution and sharing
- Develop technical brief for catalogue structuring and programming
- Write plan for catalogue establishment and management

The broad aim of Phase 2 is to use the technical development brief and catalogue establishment plan prepared in Phase 1, to program, implement, and populate with existing data, a fully functioning national photo-identification catalogue and conduct complete

Australia-wide matching

The degree to which the Activity has achieved each of the objectives

All of the above objectives for Phase 1 have been met. With respect to dot point 4, data contribution and sharing agreements were investigated, general principles discussed with stakeholders and detailed in the ARWPIC Establishment Outline, and in-principle agreement reached amongst stakeholders on the data content of ARWPIC. Finalising data contribution/sharing agreements per se will be most appropriately done in Phase 2 when the system is finalised.

Tangible outputs of this work are the ARWPIC Technical Outline and the ARWPIC Establishment Outline attached, as well as successful consultation and completion of a Catalogue Development Workshop.

Following is a more detailed description of the activities undertaken to achieve the objectives:

Scoping and Research:

To investigate best practice for right whale catalogue design and management, the authors undertook to examine existing global systems for right whale photo-identification data management. This was done via email, phone and face to face interviews with catalogue designers, managers and users in New Zealand, South America, South Africa and North America.

The authors travelled to Boston in mid-February 2011 to meet with designers and managers of the North Atlantic Right Whale Catalogue and its data management system, DIGITS, based at the New England Aquarium (NEAQ) in Boston and spent two full days with the DIGITS system designer. They spent additional time in separate meetings with four other staff at NEAQ responsible for administering data flow management, data use requests and data sharing agreements. The authors also undertook to visit the nearby Cape Cod Provincetown Centre for Coastal Studies (PCCS), a major long-term contributor to the NARWC. There they met with data contributors from the Rescue Operations, Right Whale Aerial Surveillance and Habitat Studies Programs as well as the Director of the Humpback Whale studies Program and manager of the multi-contributor North Atlantic Humpback Whale photo-identification catalogue.

A number of other data management and computer-assisted matching systems were also investigated during the scoping phase of the project, including the Southern Hemisphere Blue Whale Catalogue; BigFish data management system for southern right whales; Hiby-Lovell matching system for southern right whales and Darwin 2.0 dolphin fin computer-assisted matching.

The combined results of all scoping and research work was collated along with results of preliminary consultations with Australian data holders, and synthesised in the formation of agenda documents (Appendix 1) to support a Catalogue Development Workshop held with Australasian stakeholders in early April. Background scoping and research findings were also used extensively in shaping all aspects of the technical and establishment outline documents – tangible outputs of this project.

Stakeholder Collaboration:

Consultation with all potential Australian stakeholders in the project was initiated at the earliest possible stage, prior to submission of the AMMC grant application in January 2010. Soon after funding was announced a process of more formal consultation was commenced

with the development of a Consultation Plan which was circulated to stakeholders in January 2011 (a list of stakeholders is provided with the Consultation Plan as an appendix to the ARWPIC Establishment Outline).

Following scoping, stakeholders were again contacted by phone and email seeking ideas and input on technical and administration aspects of catalogue design. Workshop supporting documents were then circulated to all stakeholders. This provided the opportunity for participants to consider information gathered by the authors during their scoping and research investigations, and ensured that they were fully informed and focussed at the workshop. Stakeholders were also invited to have input into the workshop agenda.

The Catalogue Development Workshop was held in early April 2011. All except two of the listed stakeholders attended the workshop. Those that were unable to attend were provided with opportunities to have separate face to face discussion with the authors and were provided with all workshop documentation for comment/input.

Outputs:

There are three tangible outputs from the project:

- 1) Scoping, research and consultation around the most appropriate design for an Australasian right whale photo-identification catalogue (now known as ARWPIC) and a Catalogue Development Workshop
- 2) The ARWPIC Technical Outline (attached)
- 3) The ARWPIC Establishment Outline (attached).

The outlines are stand-alone but related documents designed to be used as guidance documents for the full technical specification and build and the establishment arrangements for ARWPIC during Phase 2.

3. Appropriateness

The appropriateness of the approaches used in the development and implementation of the Activity

The approaches used in development and implementation of the Activity were appropriate.

Given the substantial financial and personal investment, and the diverse range of approaches used in the collation of existing Australian regional and project-based right whale photo-identification catalogues, consultation with existing Australasian catalogue stakeholders was seen by the authors as central to the success of this project. Thus a highly collaborative approach was taken throughout this critically important design phase - Phase 1. This approach facilitated input and contribution from all interested parties. The project effectively leveraged previous experience in the development of similar systems, with the time spent with the developers of the North Atlantic Right Whale Catalogue proving to be particularly valuable as it contributed to shaping ideas and approaches for ARWPIC. Detailed information was generously shared with the ARWPIC project by the NARWC, in particular Phillip Hamilton. We recommend that interaction and discussions with the NARWC developers continue in Phase 2 as relevant.

The structuring of project deliverables into two documents; administrative (Establishment Outline) and technical (Technical Outline) ensured the provision of easily accessible tangible

outputs containing relevant specific information required for the progression of the project in Phase 2.

4. Effectiveness

The degree to which the Activity has effectively met its stated objectives

The project effectively met its stated objectives.

As outlined above (section 3), the approaches to the project were appropriate and resulted in the objectives being met (section 2). The collaborative approach used by the authors during Phase 1 proved to be most successful. Scoping, research and consultation work conducted in the early stages of Phase 1 culminated with a Catalogue Development Workshop held with stakeholders in Melbourne in April 2011. During facilitated discussions at the workshop, the stakeholder group worked through a series of elements and agreement was reached on key aspects of technical and administrative design. These were reviewed by all stakeholders following the workshop and used to form the basis of the ARWPIC Technical and Establishment outline documents.