Australian Marine Mammal Centre

Final Report

Project Title: The establishment and administration of the Australasian Right Whale Photo-Identification Catalogue

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Activity Period: 21 March 2013 to 30 April 2014

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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 and New Zealand have significant holdings of southern right whale photo-identification data spanning four decades and covering large areas of the species' Australasian range. These data allow individual whales to be traced through time and space, providing a means of investigating, among other things, population biology, life history, movements, abundance, and responses to climate variability. The Australasian Right Whale Photo-Identification Catalogue (ARWPIC) is a centralised repository for data about individually identified southern right whales, accessed via an online portal. It was developed in response to a need for functional integration of disparate Australasian photo-identification datasets, which are most powerfully used in combination. ARWPIC provides researchers with tools for processing, managing and sharing data. It also serves as a framework for integrated analyses of previously isolated datasets, and will be a valuable tool for collaborative research and management to advance the conservation of southern right whales. Through the ARWPIC portal the public can access comprehensive resight histories for identified whales, match images of individual whales to a catalogue of known whales using the BigFish CodeCompare matching system, and export data under a CC BY-NC-SA licence. Engaging and informing the public is an important benefit of ARWPIC as southern right whales come close to shore during their calving season and often evoke strong public and media interest.

2. Objectives

List of the Project Objectives
The project objectives were to: (a) build the ARWPIC, a single online catalogue to assimilate southern right whale photo-identification data, with a computer-assisted matching system based on BigFish, which assists the

matching of photographed individuals

(b) develop text for a Data Contribution Agreement and a Data User Agreement for ARWPIC

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

Both objective (a) and (b) were fully completed. The ARWPIC application was delivered to AMMC on 30 April 2014.

3. Appropriateness

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

The approaches to the project were appropriate and the following activities were completed in accordance with the project methodology outlined in the grant application, part 7:

7.1. Project and project management framework

Contracting with the department and the terms of access to pre-existing IP in BigFish for use in the ARWPIC project were finalised in March 2013. The application developer was engaged on the project from March 2013 to April 2014. The project Steering Committee was formed in April 2013, and met twice during the project, with additional inter-sessional contact. Communication between the project team and departmental personnel was ongoing throughout the project on an as needed basis, and was greatly assisted by the Department's representative James Cusick. Funder-recipient communications were efficient and helpful throughout.

Project management software was used to track progress against schedule, and costs against work done. Weekly project team meetings were held to discuss progress during the previous week and upcoming work for the next week, with meeting minutes archived. This was in addition to contact on day-to-day application development matters. In addition to weekly phone meetings, the project team met in person four times in order to progress the project and plan and discuss technical detail; in March 2013, May 2013, September/October 2013, and February 2014. A budget management and tracking system was in place throughout.

7.2 Consultative process

The'key stakeholders involved in the project' were formally consulted at four points: a) when the user interface was designed; b) to test the data upload functionality; c) to test the ARWPIC trial release (full functionality); and d) during drafting of data contribution and data use agreement text. On each occasion stakeholders were contacted by email and/or telephone. At point c) above, the most critical testing phase, one of the project team was on-call to support stakeholder testing for a two week period. In addition to formal consultation points, ad hoc engagement was carried out as required over the life of the project. Reflecting new entrants to the community, three additional stakeholders were added to consultations during the project.

Of the 16 key stakeholders all but one provided feedback during the development of ARWPIC. Comments and suggestions were logged, and actions in response were also logged. These have been archived. We consider that the southern right whale research and management community has been thoroughly consulted and engaged with over a three year period about the functionality and design of ARWPIC.

7.3. Develop ARWPIC application

A thorough brief for ARWPIC application development was written based on the ARWPIC Technical and Establishment Outlines. The application developer worked to that brief, and application development was completed as follows:

A. Development environment: The development environment was established using PHP and MySQL. The code supports both Oracle and MySQL databases, and was deployed as MySQL, as agreed with the funder. A hosting environment allowing for staged releases to the development team and for user trials was established. Pivotal Tracker was used as the application development management system and contained detailed tasks and timelines. BugHerd was used to manage user stories and track bugs. Some 550 individual stories, issues and bug fixes were tracked and resolved during the development process. An agile environment was implemented to allow for the re-prioritisation of tasks as development progressed.

B. Design database: A fully functional and compliant MySQL database was designed in accordance with the ARWPIC Technical Outline, with minor adjustments to account for evolving requirements as development progressed.

C. Design application User Interface: User interfaces were mocked-up using the Balsamiq software tool. Balsamiq allowed mock-ups to be developed and exchanged using an interactive PDF. This was very effective in providing a straightforward and readily accessible representation of intended functionality. It was used both for acquiring input from stakeholders and the steering committee, and in the project team's activities.

D. Develop Application

The main areas of application development were as follows:

1) Coded data processing functionality: Functionality to upload images and create Events and Sightings was completed, including drag and drop or file system selection of images to upload; press button image upload from queue; event and sighting creation; drag and drop image assignation to events and sightings; event and sightings data entry/editing functions and data validation filters; capability to link sightings; image viewing, editing, duplication and marking; image data entry and editing; data form and spreadsheet views; event import via excel spreadsheet; option to nominate an embargo period by event.
2) Translated BigFish computer-assisted matching code to ARWPIC application: The MS Access code-base for BigFish was translated to incorporate into ARWPIC computer-assisted matching using the common matching system agreed by stakeholders in Phase 1. This step included functionality to signal a match; review individual data and suggest updates; auto populate ID code field with match; select calf or adult catalogue; view high or low resolution images.
3) Coded cataloguing and curator functionality: Facilities to check and validate submitted data prior to inclusion in the catalogue proper was completed. This is an essential data integrity step. It included functionality to: validate a match efficiently; QAQC event and sightings data; reject data outright or return to contributor for further review; provide feedback to the contributor on rejected data; accept data and images into catalogue; edit data and images already in the catalogue; update contributor account as data moves through the validation queue; add validated data to relevant contributor's 'my dataset'. It also included functionality to allow the curator to active and de-active contributor accounts, manage account details, edit or replace text documents.
4) Coded data access: Various ways to access data were programmed. Filtering tools were programmed allowing for criteria or spatial based selection of records. A contributor can access and export all of their own data any time via their registered login. For access to other data, self-serve access is available for unembargoed data via a series of data agreement and export steps. Where an export request includes embargoed data, a summary is provided and a request generated to put contributor and user in contact.
5) Public facing web site: A web interface for public access to browse and search the catalogue, access resight history summaries, and match whales was developed. The restricted set of data agreed in Phase 1 is visible to the public. Unembargoed data can be downloaded from

the public website under a CC BY-NC-SA licence.

6) Administration: Administrator settings were established including, mail server options for sending email, language settings, error logging, file upload extensions allowed etc.

E. Stabilisation

The fully functional system was thoroughly tested with test data on different platforms and browsers.

F. Delivery

The final user trial period was undertaken during March 2014. Feedback was documented, evaluated and modifications made. The system was deployed to the AMMC on April 30 2014.

7.4 Data Contribution and Data Use Agreements

All key stakeholders were consulted between December 2013 and April 2014 during the development of draft Data Contribution and Data Use Agreements. The draft agreements establish an understanding of the rights and responsibilities of contributors and users. To reduce administration requirements, the agreements have been incorporated in the ARWPIC online registration and data export process. Please note that the agreement text is delivered in draft form and will require review and finalisation by AMMC to ensure fitness for purpose.

7.5 Forward planning

Consideration was given to implementation of ARWPIC beyond the current project. It was identified that a key stepping stone to uptake would be the migration of major datasets to the system. With a large repository of existing data, there would be added incentives for future contributions, and a solid basis for engagement with the catalogue by researchers, managers and the public. Discussions with data holders resulted in a grant proposal for migration of south-western Australian and Tasmania data being submitted to AMMC. This first step in populating the catalogue with existing data has been funded and will establish the catalogue proper for future contributions.

The likely low resource environment into which the system will be deployed was also considered as part of forward planning. It was identified that for sustainable implementation of the system it should be as self-serve as possible. In support of this objective, options to automate the execution of standard data contributor and user agreements were implemented. The system was developed such that curator functions can be devolved to one or a number of people via the curator log-in.

4. Effectiveness

The degree to which the Activity has effectively met its stated objectives
The project exceeded delivery requirements. The project was delivered two weeks ahead of schedule, with functionality that exceeded that outlined in the grant contract. It has resulted in a fully functional system meeting grant requirements being deployed to the AMMC ready to accept data. The stated objectives were met effectively.

5. Financial Account of the Activity

The project budget was fully expended. Please refer to the financial statements for details.