

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

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- **Project No.** – 2011/10
- **Title** - Workshop to facilitate the development of an Australian humpback whale fluke catalogue
- **Chief Investigator** – Dr Daniel Burns, Dr Eric Kniest, Dr Lyndon Brooks & Prof. Peter Harrison
- **Organisation** – Southern Cross University

**Activity Period** – 21 November 2011 to 7 June 2012

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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)

A two-day workshop to bring together humpback whale researchers from around Australia was held from 13-14 December 2011 at the Gold Coast campus of Southern Cross University. The major aim of this workshop was to initiate the development and planning of an Australian humpback whale fluke catalogue. Following pre-workshop consultation with all stakeholders, D. Burns prepared agenda papers for each workshop session. These papers were sent to participants prior to the workshop to facilitate discussions and aid in the decision making process.

During the workshop, participants agreed on the following outline to develop an Australian humpback whale photo-identification database:

Purpose: The purpose of creating a mechanism to facilitate access to and sharing of humpback whale photo-identification data is to enhance collaborative research and management initiatives.

Research Questions: A list of research topics was identified, to be refined at a later date into more detailed research questions. Funding will then be sought to answer specific questions.

Database overview: A humpback whale photo-identification catalogue, consisting of separate database and matching system components, should be developed and housed at the Australian Antarctic Division. Ideally the development process would be in parallel with the existing process to create a southern right whale database.

Database System: The humpback whale database should provide open access to: i) identification photograph, ii) date and iii) data-owner /contact for each sighting record. Other associated data for each sighting would be accessed through data sharing agreements and protocols.

Matching System: A common matching system should be adopted for use within the database. Some

workshop participants are already using the *Fluke Matcher* (FM) software, whereas other participants indicated that further refinement and evaluation of FM is required before they could endorse it, with a view to adopting FM as a common matching system if issues of concern can be addressed. A watching brief should also be kept on emerging advancements (in particular pattern recognition) that may provide an alternative.

Database model: Data integrity, quality control and cost to develop and maintain a database were considered and consensus was reached to adopt a consortium model over-arching a curator/curator-team model to manage the database. This may take the form of a curator-type model during the initial phase of database development, moving to a consortium model to maintain the database once established.

Intellectual Property protection: Intellectual property would be protected through data contribution and data access agreements.

Funding requirements: Efficiencies would be gained if the key components of the humpback whale database could be developed in parallel with the existing process to create a southern right whale database at AAD. The group recommended that AMMC and the SRW developers consider those aspects of the database common to both southern right whales and humpback whales and develop those aspects first if possible. A representative of the humpback whale group will apply to be on the steering committee for the SRW database development if possible.

Throughout the Activity Period, Dr Eric Kniest has also performed upgrades to the *Fluke Matcher* software, including:

- Creation of a new feature to allow users to display all sightings data and images of each whale in the database.
- The way file and folder names are stored and used within the FM database have been changed to increase cross platform capabilities and allow data storage across different platforms, as well as to allow the user to rename image files.
- Investigation of methods for decreasing data entry time is ongoing, including development and testing of automatic measurement of minor control points, trailing edge, V-notch, and features (spots, lines etc.).
- A new feature has been added so that FM provides a recommended search range for each search depending on the image quality and fluke characteristics of the target fluke.
- Development of an import function to allow data to be imported from Excel spreadsheets and other databases is currently underway.

## 2. The Outcomes/Objectives

### List of the Project Objectives

1. To identify priority research questions to be addressed by reconciling currently disparate datasets
2. To assess the utility and applicability of the computerised matching software *Fluke Matcher* as a tool to facilitate data exchange and analysis for broad, large-scale collaborative photo-identification studies
3. To evaluate data management system options, including related technical and intellectual property issues, and agree on a preferred system
4. To assess funding requirements for system set-up and ongoing storage, exchange and analysis of data
5. To identify strategies to ensure efficient, productive, broad and ongoing collaboration between researchers and other stakeholders into the future

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

1. The need for collaboration was acknowledged and a spreadsheet summarising the details of data sets owned by each workshop participant was created (see attached). A list of research topics was identified at the workshop, to be refined at a later date into more detailed research questions. The group also acknowledged the need to conduct power analyses on their collective data to identify appropriate and achievable outcomes. Funding may then be sought to answer specific questions.
2. Discussions at the workshop regarding participants' experiences with *Fluke Matcher* and its suitability as a common matching system resulted in differing points of view. The group agreed that they were not yet in a position to endorse FM or any other system as the common matching platform until further evaluations could be undertaken. The majority of the group gave strong endorsement to the continued evaluation and development of FM, with a view to adopting it as a common matching system if issues of concern can be addressed, noting reservations from two participants. The FM developers agreed to seek feedback from users and conduct further evaluations and upgrades to the software and communicate these to the group. The group also agreed to keep a watching brief on other emerging technologies as alternative options for a common matching system.
3. Agreement was reached on preferred systems for data management and intellectual property protection within the database. These systems would require refinement and further detail as the database is developed.
4. A funding model was agreed upon by the group, with acknowledgement that the most efficient way forward would be to work in conjunction with the existing process to develop a southern right whale database at AAD. The group suggested that initial development and population of the humpback whale database would require a curator / curator team model, with a view to moving to a consortium model once the database is up and running to reduce ongoing costs.
5. The need to collaborate was acknowledged by all workshop participants, with agreement that the creation of a national database would provide a mechanism for data sharing that has not previously existed for humpback whale researchers in Australia. It was acknowledged that, although a few large collaborative projects have been undertaken by humpback whale researchers in the past, the lack of a mechanism to easily exchange and standardise data has been one of the major obstacles to ongoing, productive collaborations. The creation of a national database with online accessibility would substantially increase access to and standardisation of data within the research community, as well as allowing public access at a later date as the database develops.

### 3. Appropriateness

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

The best way to engage the Australian humpback whale photo-identification research community and facilitate the development of a national database was to bring together all of the stakeholders to meet in person. Holding a workshop to facilitate discussions and come to agreements about the development of a national database was therefore the most appropriate approach to take. The Chief Investigators went to substantial lengths to invite all known major data holders to attend the workshop, and the list of participants included all major catalogue holders accordingly. An independent facilitator was also utilised to chair the workshop, ensuring discussions stayed on track and remained impartial. Both pre- and post-workshop consultations were also utilised to ensure all stakeholders had input into the agenda and direction of the discussions, and were prepared for the workshop prior to its commencement.

### 4. Effectiveness

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

The objectives of the project were successfully met. The workshop was well attended and included all of the major humpback whale photo-identification catalogue holders from around Australia. Workshop participants agreed on the need to develop a national database to facilitate collaboration, as well as on the broad structure, funding, logistics and data management requirements to move the process forward efficiently.

### 5. Communication

**How results will be communicated to management**

The workshop report was submitted to the AMMC in April 2012. The Chief Investigators have also communicated with both management authorities and workshop participants on an ongoing basis since the workshop to update on developments. A web page has been created and is awaiting approval on the SCU Marine Ecology Research Centre website (<http://www.scu.edu.au/research/whales/index.php/21/>) to acknowledge AMMC as the funding source and communicate the outcomes of the workshop to management authorities, the research community, and the general public. The latest upgraded version of the *Fluke Matcher* software is also now available from the FM website (<http://www.scu.edu.au/research/whales/fluke-matcher/index.php/3/>).

**6. Financial Account of the Activity**

This project was successfully completed within-budget. A full financial account of the project will be provided once an external audit has been conducted.

Signature of Chief Investigator	
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Date	02 / 07 /2012
Signature of Organisation Representative	
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Date	5 July 2012

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