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Progress on Southern Hemisphere Blue  
Whale Catalogue: Period June 2014-May  
2015

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INTERNATIONAL  
WHALING COMMISSION

# **Progress on Southern Hemisphere Blue Whale Catalogue: Period June 2014-May 2015**

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## **INTRODUCTION**

The Southern Hemisphere Blue Whale Catalogue (SHBWC) is an international collaborative effort to facilitate cross-regional comparison of blue whale photo-identification catalogues. In 2006 the Scientific Committee of the International Whaling Commission (IWC, 2007) agreed to initiate an in-depth assessment of Southern Hemisphere blue whales and in 2008, the Committee endorsed a proposal to establish a central web-based catalogue of blue whale identification photographs (IWC, 2009).

The SHBWC holds photo-identification catalogues of researchers from major areas off Antarctica, Australia, New Zealand, Eastern South Pacific and the Eastern Tropical Pacific. Comparisons between catalogues off Chile found one match over ten years (Galletti Vernazzani & Cabrera, 2011). Progress on comparisons between the eastern South Pacific Ocean, Eastern Tropical Pacific Ocean (ETP) and Southern Ocean have been reported at the 2012 and 2013 IWC Scientific Committee meeting with no matches found to date (Galletti Vernazzani and Olson, 2012, 2013).

In 2012, the Committee encouraged contributions of regional catalogues not yet in the SHBWC, in reference to eastern and western Australia (IWC, 2013), and in 2013 the Committee had recommended that all relevant data holders submit their photos to the catalogue and decided to focus in finalizing the uploading of catalogues with no additional comparisons planned (IWC, 2014). Last year, major contributions from Australian researchers were received and comparisons between Australian catalogues were scheduled for 2014-2015. The Committee also focused its discussion on aspects of quality control and matching processes by both the contributing institutions and the SHBWC and established an intersessional email correspondence group to further develop and reinforce SHBWC protocols (IWC, 2015).

The present report summarizes progress made between June 2014 to May 2015 on the work of the SHBWC.

## **UPLOADING OF CATALOGUES**

Individual blue whales are identifiable from unique patterns of mottling on both sides of the body near the dorsal fin (Sears *et al.*, 1990) and in some cases, permanent scars can be used to identify or confirm individuals.

The catalogue is a specially designed web-based platform that allows for online simultaneous upload and comparisons of catalogues from different areas (IWC, 2009).

Catalogues currently maintained at the SHBWC include waters off Antarctica, Chile, Peru, Ecuador-Galapagos, Eastern Tropical Pacific, southeastern Australia, western Australia, Timor Leste, New Zealand, Southern Africa, Madagascar and Sri Lanka. A total of 1101 blue whales currently comprised the catalogue, that account for 791 right side photo-identifications, 792 left side and 27 flukes (Table 1). Some corrections have been made since last IWC SC meeting based on results from matching process and are further discussed below.

Last year, several catalogues from Australia and Antarctica region were uploaded. No new photo-identification have been uploaded in 2015 until date. Efforts were focused on matching process. To date, most of the catalogues have been fully uploaded. Only a few have yet to initiate uploading photo-ID or are still in the process of uploading.

Two research groups joined the catalogue since last IWC SC meeting with photo-identifications from South Africa and Madagascar as well as from Australia and Antarctica. These catalogues are in the process of uploading their data.

In addition and following 2014 recommendations, catalogues curated by CCC off Chile as well as the catalogues curated by AAD and IWC SOWER off Antarctica will be updated during 2015.

## **MATCHING PROGRESS**

Last year, two duplicated individuals were detected on one of the catalogue holders from Australia. Internal matching process was conducted within this group's catalogue before continuing with regional comparisons. 24 out of 148 individuals were resighted at least one time and therefore corresponded to duplicated individuals. Three of them were resighted three times, one four times and one five times. 16 individuals were seen within the same season and 11 individuals were resighted between years with two of them seen on three different years.

After internal matching was finalized, the catalogue was amended accordingly and regional comparisons among Australia/New Zealand/Indonesia started. Currently, almost 75% of left side comparisons have been completed. Right side comparisons will begin after left side comparisons are finished. Preliminary results of matching process have detected one recapture between AAD and BWS from photo-identifications taken off Boney Upwelling.

It is important to note that two duplicated individuals were detected on other group's catalogue. Therefore it should also be recommended that internal matching process is conducted for this group.

## **INTERSESSIONAL EMAIL CORRESPONDENCE GROUP**

During the implementation process of the SHBWC, some challenges and new requirements were identified. To address them, in 2014 the IWC Scientific Committee established an Intersessional Email Correspondence Group to further develop and reinforce SHBWC protocols and ensure clear communication of the terms of reference of the catalogue to current, pending and future contributors.

The group discussed a number of topics that include: 1.- uploading catalogues, 2.- internal consolidation of catalogues and duplicated individuals, 3.- matching process, 4.- opportunistic contributors, 5.- role of regional coordinators, 6.- software improvements and IWC data requirements. The group also developed a draft proposal on protocols and procedures of the SHBWC to be considered, amended and adopted by IWC Scientific Committee. Details on the intersessional email correspondence group discussions, recommendations and proposals are given in Galletti Vernazzani *et al.* (2015).

## **SOFTWARE IMPROVEMENTS**

Over the years, the software has been continually modified, in order to improve its interface; attend the needs encountered while using it; and include data requirements requested by IWC.

Currently major improvements are being developed. These should be implemented on a gradual scale, after testing protocols are finalized. These improvements include:

- Re-programme the interface to upload images. The JAVA language (derived from initial adaptation of the software provided by Mangan Island Cetacean Study) was updated and several steps need to be conducted manually to upload pictures. However, some contributors have recently reported problems to upload images. Therefore this software improvement is considered to have the highest priority now.
- Update the software language version to improve security and stability aspects.

- Inclusions of tools to adjust contrast and brightness.
- Improvement of reporting systems, including the generation of a life history matrix for individuals.
- Improvement of tools to edit information on database.
- Inclusion of additional information on whaleID record such as location (lat/long), sex and availability of biopsy.
- Other minor details.

Last year a group uploaded images from two different regions in one region by mistake. Groups have little time to upload their catalogues and there is the risk to lost valuable information if the data is deleted. Therefore, administrative tools have been developed and included on the software to manually edit the label of the region in the whaleID record. The group's catalogue was amended accordingly to separate both areas. In addition, the intersessional email correspondence group has suggested including some specific section to the guidelines and protocol in order to avoid similar problems in the future (Galletti Vernazzani *et al.* 2015).

## **REVIEW OF WORK PLAN AND FUTURE STEPS**

Activities and time table planned for 2014-2016 under the research proposal approved by IWC in 2014 were:

- 2014/2015: Comparisons among catalogues from Australia/ New Zealand/ Indonesia regions
- 2014/2015: Update of photo-identification catalogues from Antarctica and South America and start matching process within ETP/Antarctica/SouthPacific.
- June 2015: Update report to IWC
- 2015/2016: Finalize comparisons within ETP/Antarctica/SouthPacific.
- 2015/2016: Start matching process between ETP/Antarctica/SouthPacific and Australia/ New Zealand/ Indonesia.
- June 2016: Final report to IWC.

All these activities has been conducted so far without delay and it is expected full compliance with time table during 2015/2016 and therefore financial implications for these activities (£ 18.300 for 2016) do not require modifications, unless further work is requested.

It is important to note that matching process between ETP/Antarctica/SouthPacific and Australia/ New Zealand/ Indonesia, is planned to begin on 2015/2016 but it is likely it will be finalized for the period 2016/2017 or later, depending on the number of new individuals on the SHBWC.

In addition to the work planned, internal matching within one group's catalogue was conducted in 2014-2015 to ensure there were no duplicated individuals. However, duplicated individuals have been also detected on a second group's catalogue, therefore it should be considered to conduct internal matching of this catalogue - either during this contract period or afterwards - according to priorities identified by SHBWC.

Finally, further photo-identifications catalogues are expected to be uploaded in 2015 by new researcher groups from Australia, New Zealand and South Africa. It may be advisable that no comparisons are considered for these upcoming catalogues until they are fully uploaded and postpone matching process until the next contract period (2016-2017). It is important to highlight that there may be delays in the uploading of catalogues that could delay current matching process of other catalogues. Also, the time frame to perform comparisons for these regions will increase depending on the number of individuals included in each catalogue. This could be difficult to estimate beforehand.

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REGION	Group	Quantity			Area
		Fluke	Left Side	Right Side	
South America	IWC SOWER CHILE	0	14	9	Chile
	CCC	0	288	299	Chile
	<b>Subtotal</b>	<b>0</b>	<b>302</b>	<b>308</b>	
ETP	NOAA	0	60	53	Peru, Ecuador, ETP
	<b>Subtotal</b>	<b>0</b>	<b>60</b>	<b>53</b>	
Indonesia-Australian-NewZealand	BWS	4	84	81	Southeastern Australia
	WWR <sup>1</sup>	0	30	23	Timor Leste - Australia
	CWR <sup>1</sup>	23	83	89	Western Australia
	AAD	0	38	37	Southeastern Australia / New Zealand
	OSU <sup>2</sup>	0	0	0	New Zealand
	Asha de Vos <sup>2</sup>	0	0	0	Sri Lanka
	MARVEL <sup>2</sup>	0	0	0	Australia
	<b>Subtotal</b>	<b>27</b>	<b>235</b>	<b>230</b>	
South Africa-Madagascar	MRI <sup>2</sup>	0	0	0	South Africa-Madagascar
	<b>Subtotal</b>	<b>0</b>	<b>0</b>	<b>0</b>	
Southern Ocean	AAD	0	37	43	Antarctica
	IWC SOWER	0	158	157	Antarctica
	MRI <sup>2</sup>	0	0	0	Antarctica
	<b>Subtotal</b>	<b>0</b>	<b>195</b>	<b>200</b>	
	<b>TOTAL</b>	<b>27</b>	<b>792</b>	<b>791</b>	

<sup>1</sup>Catalogues still in the process of uploading

<sup>2</sup>Catalogues that have not started uploading

**Table 1 – Summary of photographic collection of blue whale catalogues under the SHBWC**