



## 27 years: the longest longevity and residency record for northern Indian Ocean blue whales

The blue whale population using the waters around Sri Lanka is little studied and considered a subpopulation of pygmy blue whales (*Balaenoptera musculus indica* Blyth, 1859) that largely remain in the waters of the northern Indian Ocean with a portion remaining resident around Sri Lanka throughout the year (Mikhalev, 1996; Branch *et al.*, 2007). Blue whales are the most commonly observed baleen whales in Sri Lankan waters (Afsal *et al.*, 2008; de Vos *et al.*, 2012). Not much is known about the survival and longevity of blue whales because limited data exists from the preferred method of age determination (ear plugs), but estimates range as high as 80–90 years (Yochem & Leatherwood, 1985). Using photo-identification of individual whales, it is possible to define feeding stocks, estimate life span and understand the movements of these elusive marine mammals (Dufault & Whitehead, 1998; Calambokidis *et al.*, 2001). Data from the Gulf of St. Lawrence and northeastern Pacific indicate that they live to at least 40 years of age (Sears & Perrin, 2009). This paper reports a re-sighting of an individually identified blue whale off the northeast coast of Sri Lanka, 27 years after the initial sighting, highlighting the importance of maintaining a long-term photo-identification catalogue.

Blue whales have been intermittently recorded and studied off Sri Lanka since 1985 (Alling & Payne, 1985; Alling *et al.*, 1991; Ilangakoon, 2005; de Vos *et al.*, 2012; de Vos *et al.*, 2013; de Vos *et al.*, 2014). The species is individually identifiable by the unique pattern of mottling found on each whale's body, as well as by distinctive scars on the body or tail flukes (Sears *et al.*, 1990). The image described in this paper was taken by the author on the 23<sup>rd</sup> of March 2011 during an opportunistic survey at Trincomalee off the northeastern coast of Sri Lanka (8°32.235' N, 81°22.823' E). The camera

used was a Canon Rebel xsi with a 75–200 mm lens. Once the individual whale was spotted, the left dorsal flank and tail fluke were photographed. The photographs were then compared with images in the existing Sri Lankan blue whale photo-identification catalogue maintained by 'The Sri Lankan Blue Whale Project' since 2008, which aims to maintain a long-term catalogue of whales using the waters around Sri Lanka. The image was also compared with photographs in Alling *et al.* (1991), for between season re-sightings.

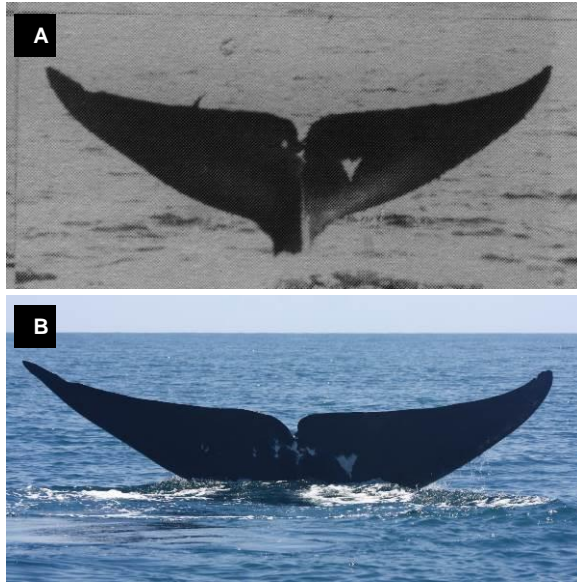
Comparison of the images from that sighting with other sources revealed a match to two sightings made by the *Tulip* expedition on 16<sup>th</sup> and 17<sup>th</sup> April 1984 (published in Alling *et al.*, 1991) at 8°35.9' N, 81°26.0' E and 8°35.7' N, 81°20.8' E respectively; the original image was unavailable, despite an extensive search.

**Description of matching features:** While the image taken in 2011 does not include the bottom third of the fluke, the two images can be matched on the basis of four characteristic markings:

- (1) A distinctive patch of anomalous pigmentation in the shape of a heart on the right side of the fluke (resulting in this individual being catalogued under the name 'Whalentine');
- (2) A shallow, semi-circular notch created by tissue removal in the top left side of the fluke;
- (3) A curved, wide notch (wide even at the base);
- (4) White scars in the centre of the fluke in both years with increased scarring evident in 2011.

The photographic match spans 27 years between the first sightings in 1984 and my observation in 2011 (Fig. 1); all three sightings were made within a small area of Trincomalee Canyon (Fig. 2). The distance between the two consecutive-day sightings in 1984 was 9.8 km. The second re-sighting in 2011 was approximately 7.4 km from the first sighting and 9.2 km from the first re-sighting. The blue whale documented here was recorded after a 27-year sighting interval within 10 km of the original 1984 sighting. While this does not provide any

information about the movement patterns over the intervening period, it establishes minimum longevity for the individual, and supports the hypothesis of local residency and site fidelity of these whales to specific feeding grounds.

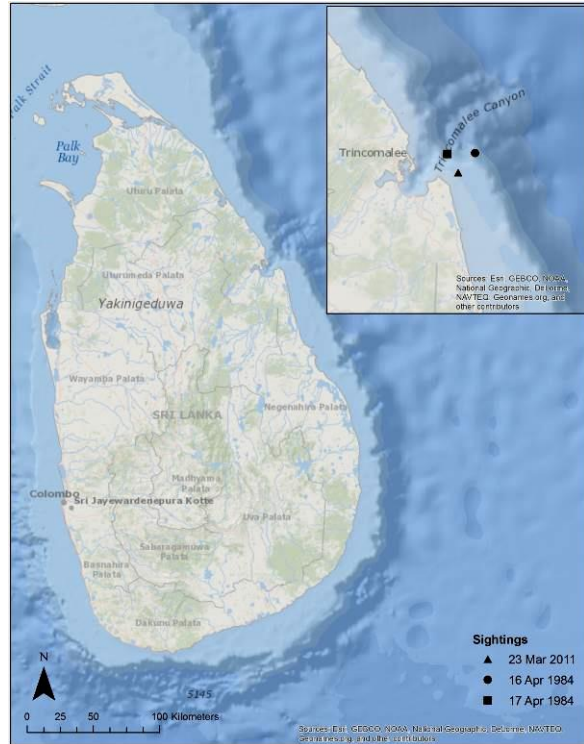


**Figure 1:** Photo-identification image of whale fluke taken in (A) April 1984 and published in Alling *et al.* (1991); (B) March 2011.

The distance travelled between the original sighting and first re-sighting in 1984 is comparable to the short within-season movements for blue whales documented by Olson (2009) in Antarctica, by Fiedler *et al.* (1998) and Mate *et al.* (1999) off California, and by de Vos (unpublished) in Sri Lanka. It also indicates that this individual showed some level of residency within a season, much like in other populations (Olson 2009). That blue whales can travel extensive distances between sightings was shown by Olson (2009), who reported an individually identified blue whale in Antarctica re-sighted at an interval of 12 years in locations 2,222 km apart. In contrast, the observations reported here involve a re-sighting made 27 years and 9.4 km apart in the northern Indian Ocean. This represents the longest recorded sighting interval and longevity record for this subpopulation, while also providing support for within- and between-season site fidelity.

Given the range of anthropogenic threats in the waters around Sri Lanka, specifically persistent threats such as ship-strike (de Vos *et al.*, 2013) and entanglement (de Vos *et al.*, in review), displays of site fidelity are a particular cause for concern for this population. The urgent need for protecting this population and

managing these threats is further emphasised by this record.



**Figure 2:** Sighting locations of ‘Whalentine’, a blue whale re-sighted in Sri Lankan waters after 27 years.

### Acknowledgements

The opportunistic survey that resulted in the re-sighting of ‘Whalentine’ was conducted during a short documentary shoot for Channel 7 Australia titled ‘Blue Heaven’ and as such, I acknowledge their contribution. This manuscript benefited from input from Robert L. Brownell Jr. who also worked tirelessly to try and unearth the misplaced original image of this whale. Finally, I wish to thank Kelly Newton for her help in producing the map of sightings and re-sightings. I would also like to thank Phil Clapham for his comments as the reviewer of this manuscript.

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Submitted: 15 April 2015, Accepted: 15 March 2016  
Section Editor: Phillip Clapham

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