

New records of blue whales (*Balaenoptera musculus*) with evidence of possible feeding behaviour from the continental shelf slopes to the west of Ireland

DAVE WALL^{1,2}, IVAN O'KELLY³, PÁDRAIG WHOOLEY¹ AND PETER TYNDALL⁴

¹Irish Whale and Dolphin Group, Merchants Quay, Kilrush, County Clare, Ireland, ²Present address: Marine Biodiversity Research Group, Galway–Mayo Institute of Technology, Dublin Road, Galway, Ireland, ³77 Kincora Road, Clontarf, Dublin 3, Ireland, ⁴Bord Iascaigh Mhara, New Docks, Galway, Ireland.

On 15 and 17 September 2008 two sightings of blue whales were recorded (with photographic confirmation of species identity) on the continental shelf slopes to the west of Ireland. Blue whale sightings within the Irish Exclusive Economic Zone (200 nm limit) are extremely rare with only three reported sightings since the closure of the Irish/Norwegian whaling stations in 1922, none of which were confirmed by photo-identification. These new records are considered to be of two separate animals due to the distances between sightings and fluking behaviour being exhibited by only one of the animals. Evidence suggesting that these animals were feeding was collected during both sightings, with northern krill thought to be the prey species. Photographs taken on 15 September allowed for photo-identification comparison with the North Atlantic blue whale catalogue, however no match was found. Together these sightings may indicate a previously unrecorded feeding area for blue whales in the north-east Atlantic.

Keywords: new records, blue whales, *Balaenoptera musculus*, feeding behaviour, continental shelf slopes, west of Ireland

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Blue whale (*Balaenoptera musculus* Linnaeus, 1758) sightings in the north-east Atlantic are very rare outside the waters around the Azores and Iceland (Jongsård, 1955; Yochem & Leatherwood, 1985; Sigurjónsson & Gunnlaugsson, 1990). Historical whaling records indicated that they occurred at lower latitudes in the North Atlantic during the autumn and winter months and at higher latitudes in spring and summer (Reeves *et al.*, 2001). This seasonal trend in distribution has been corroborated by acoustic data collected by the SOSUS array, which indicated that blue whales occurred in deep water (200 m+) to the west of Ireland and Scotland, mainly between late September and the end of December but with detections of individual whales occurring in all months of the year (Charif & Clark, 2000).

There are a number of opinions on the nature of blue whale stocks in the North Atlantic. Analysis of whaling data and trends in sightings off the Icelandic coast led Sigurjónsson & Gunnlaugsson (1990) to the conclusion that blue whales occurred in 'relatively discrete feeding populations'. However, this view has been challenged by acoustic data from the SOSUS array (Clark, 1994), which indicated that blue whales may range over the entire North Atlantic Ocean basin and may therefore comprise a single panmictic population. Photo-identification studies have recorded individual animals moving between feeding grounds in the Gulf of

St Lawrence and those to the west of Greenland (Sears *et al.*, 1990), and between Iceland and Mauritania (Sears *et al.*, 2005). Surveys off the coasts of Norway and Svalbard in the 1990s yielded such low numbers of sightings of blue whales

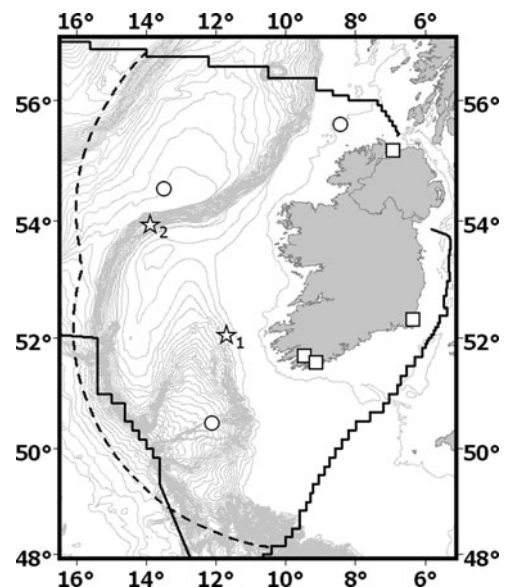


Fig. 1. Sightings (white circles) and strandings (white squares) of blue whales recorded within the Irish EEZ (dotted line) from 1800–present. White stars indicate location of blue whales photographed on 15 September 2008 (star 1) and 17 September 2008 (star 2). Solid line indicates Irish declared area. Grey lines indicate 100 m depth contour gradients. Records from Reid *et al.*, 2003; O'Cadhla *et al.*, 2004 and the IWDG Strandings Database.

Corresponding author:
D. Wall
Email: dave.wall@iwdg.ie

that it was suggested that a change had occurred in their distribution and migratory patterns in the eastern North Atlantic (Christensen *et al.*, 1992), however it cannot be excluded that the low sightings rate may have resulted from the depletion of the population by whaling.

Very little is known of the biology and distribution of blue whales within the Irish Exclusive Economic Zone (EEZ). It is known that blue whales occurred with some regularity off the west coast of Ireland early in the last century. Whaling records showed that the Arranmore Whaling Company landed 66 animals from 1908–1913 at the Iniskea Islands, County Mayo. A further 31 animals were landed by the Blacksod Whaling Company from 1910–1914 and 27 more were landed by the Akties Nordhavet/Blacksod Whaling Company from 1920–1922, both based at Blacksod Bay, County Mayo (Fairley, 1981). Five strandings of blue whales were recorded in Ireland between 1800 and 1957, predominantly from the south coast (Thompson, 1849–1856; Crouch, 1891; Scharff, 1900; Fairley, 1981; Berrow & Rogan, 1997). There have only been three reported sightings of *B. musculus* in Irish waters since 1922 with two unconfirmed

reports of sightings west of Donegal and from the Porcupine Seabight (Reid *et al.*, 2003) and a single animal reported from the Rockall Trough (west of Achill Island) in 2001 (O’Cadhla *et al.*, 2004) (Figure 1).

On 15 September 2008 during a pelagic tuna fishing charter on the north-east slopes of the Porcupine Sea Bight ($52^{\circ}05'N$ $11^{\circ}40'W$), a single blue whale was photographed feeding amongst a group of seven fin whales (*B. physalus*). This was one of several aggregations of large baleen whales along the Irish Shelf slopes reported by researchers, state agencies and seafarers to the Irish Whale and Dolphin Group (IWDG) during August and September 2008. The animal was initially thought to be a fin whale but was subsequently identified as a blue whale from photographs submitted to the IWDG sightings scheme (Figure 2). On 17 September 2008 during a cetacean survey on board the RV ‘Celtic Explorer’ a fluking whale was sighted and photographed (Figure 3) on the north-west slopes of the Porcupine Bank ($53^{\circ}58'N$ $13^{\circ}51'W$). It was observed for over an hour, diving for an average of ten minutes and surfacing five to six times between dives at intervals of 10–20 seconds. This is consistent with reported dive



Fig. 2. Blue whale BWIRL1 photographed on 15 September 2008. (Photograph: Ivan O’Kelly.)

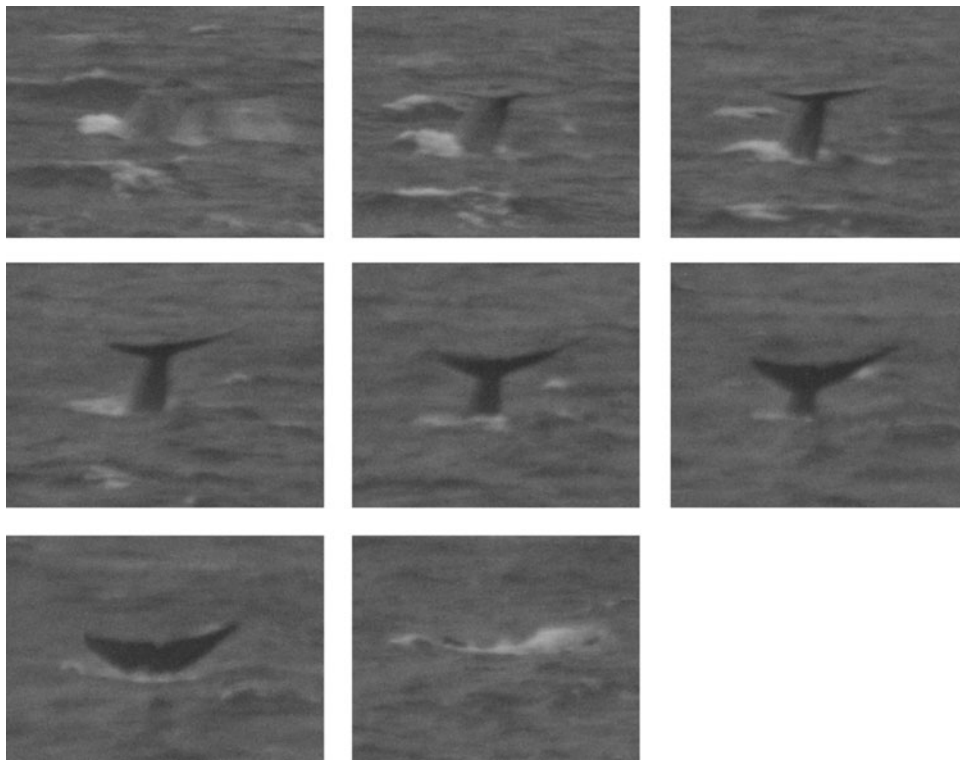


Fig. 3. Blue whale photographed fluking on 17 September 2008. (Photographs: Dave Wall.)

times observed in foraging blue whales (Croll *et al.*, 2001). A thick layer of plankton was observed at a depth of 50–120 m on the ship's sounder (Furuno FCV1200 L Echo Sounder) in the same area. It is considered likely that the two sightings represent two different animals, as the distance separating the sightings was 255 km and the whale on the 17 September was observed fluking (on three occasions), whereas the other was not. It has been suggested that in the region of 15–20% of North Atlantic blue whales lift and show their flukes when they dive and that it appears that this behaviour is associated with individual animals (COSEWIC, 2002).

These two records represent the first sightings of blue whales in Irish waters to be verified by photographic images. The photographs of the 15 September blue whale were good quality images of the animal's left side, including pigmentation patterns, with the dorsal fin and blowholes as reference points and therefore considered suitable for the purposes of photographic identification. This was the first blue whale to be photo-identified in Irish waters and was given the reference number BWIRL#1 in the IWDG photo-identification catalogue. Images of this animal (Figure 2) were sent for comparison with the North Atlantic Blue Whale Catalogue. However, no photographic match was found (R. Sears, Mingan Island Cetacean Study, personal communication). To address the question of whether blue whales off Ireland are part of the same or a separate population to those in the western North Atlantic, photo-identification and genetic analysis should be attempted on any other animals observed in this region.

A Bord Iascaigh Mhara (BIM, Irish Sea Fisheries Board) albacore tuna tagging survey, operating in the vicinity of whale aggregations on the eastern slopes of the Porcupine Seabight between 5 August and 24 September 2008, collected samples of krill upon which the tuna were feeding. The krill species was identified as northern krill (*Meganyctiphanes*

norvegica), which is one of the two euphausiid species that represent the preferred diet of blue whales in the North Atlantic (Roervik & Jonsgaard, 1981). The BIM team reported that the tuna and whales were in very close association (so much so that tuna trolling vessels were using the surfacing locations of whales to find and catch tuna), as they appeared to be feeding on the same prey. The BIM survey vessel also travelled through a distinct pink cloud in the water, which appeared to be whale faeces, beside where whales had just surfaced. Based on these facts it is considered that there was sufficient (though not conclusive) evidence to suggest that the blue (and fin) whales present in the area were feeding, with northern krill being the most likely prey species.

These records indicate a previously unrecorded feeding area for blue whales in the north-east Atlantic Ocean, although it may be transitory in nature. No large aggregations of feeding rorquals have been recorded on the slopes of the Porcupine Bank during two previous surveys in the same area undertaken by D.W. on the RV 'Celtic Explorer' in 2006 and 2007 (Wall, 2006, 2007). Skippers of tuna fishing vessels operating in the area in 2008 reported that they had not seen such aggregations of whales in previous years. Aggregations of northern krill are notoriously patchy and difficult to predict (Green *et al.*, 1992). It remains to be seen whether krill productivity in these areas will occur in sufficiently high volumes to sustain similar numbers of feeding whales in future years.

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Correspondence should be addressed to:

D. Wall
 Marine Biodiversity Research Group
 Galway–Mayo Institute of Technology
 Dublin Road, Galway, Ireland
 email: dave.wall@iwdg.ie