

Short Note

The First Confirmed Successful Refloat of a Stranded Bottlenose Dolphin (*Tursiops truncatus*) in Ireland and Subsequent Resighting with a Neonate

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Common bottlenose dolphins (*Tursiops truncatus*) are found throughout temperate and tropical waters of the world between 60° N and 50° S of the equator including the Mediterranean Sea (Reynolds et al., 2000). They are widespread and abundant in Irish waters (Ingram et al., 2001), which contain some of the highest concentrations of this species in Europe (Evans, 1992). Photo-identification has greatly advanced studies utilising the identification of individuals for estimating population size (Berrow et al., 2012), site fidelity (Kerr et al., 2005), social structure (Wells et al., 1987), and population dynamics (Wells & Scott, 1990). Photo-identification has been used in Irish waters to track the movements of resident dolphins (Ryan et al., 2010; Berrow et al., 2012) and highly mobile coastal bottlenose dolphins within Ireland (O'Brien et al., 2009), but also between Ireland and the UK (Robinson et al., 2012). In the Shannon Estuary, on the west coast of Ireland, a long-term study of resident individuals has been ongoing since 1993 (Berrow et al., 1996), with a total of 220 individuals identified to date.

The Irish Whale and Dolphin Group (IWDG) coordinate an all Ireland cetacean sighting and stranding scheme that has been in operation since 1991 (www.iwdg.ie). They have established a network of dedicated IWDG observers and volunteers who can respond to stranding events quickly. Live-stranding events occur occasionally in Ireland, with a total of 199 occurring between 1995 and 2012, comprising 8.5% of all stranding events and involving 384 individuals of 16 confirmed species (IWDG Database, accessed November 2012). Two species—common (*Delphinus delphis*) and striped (*Stenella coeruleoalba*) dolphins—account for 50% of all live-stranding events. Refloating attempts

were undertaken for 38 (19%) of these live-stranding events, with only two events deemed successful based on the fact that no similar stranding occurred in and around the area after the event (IWDG Database, accessed November 2012). However, the fate of these individuals that were returned remains unknown. The cause of live strandings in each case was not determined, but individuals may have incurred injury during the event, and the rate of survival after refloating remains undetermined. Pelagic or offshore species often strand in good nutritive condition, with no apparent visible traumas such as wounds or lesions; whereas live-stranded coastal species are generally diseased or in poor physical condition (IWDG, 2009).

The Lower River Shannon (Shannon Estuary) on the west of Ireland is one of the most important areas for bottlenose dolphins in Europe and is designated as a Special Area of Conservation (SAC) for the species under the European Union Habitats Directive. They are present in the estuary throughout the year where they calve and nurse their young (Berrow et al., 1996). Herein we describe a successful refloating of a live-stranded bottlenose dolphin and subsequent tracking of the individual and its dependent calf, using photo-identification, over a period of 482 d. This was the first recorded live-stranding event of a bottlenose dolphin in this SAC.

At 0745 h on 1 June 2012, the IWDG and the National Parks and Wildlife Service (NPWS) received a report of a live-stranded bottlenose dolphin at Hannon's Strand, Co. Kerry, located on the southern shore of the Lower River Shannon SAC (Figure 1). Local IWDG and NPWS personnel attended the scene and found an adult female bottlenose dolphin in a shallow (*ca.* 10 cm deep) channel on a sandy beach, facing towards the water, 6 m from

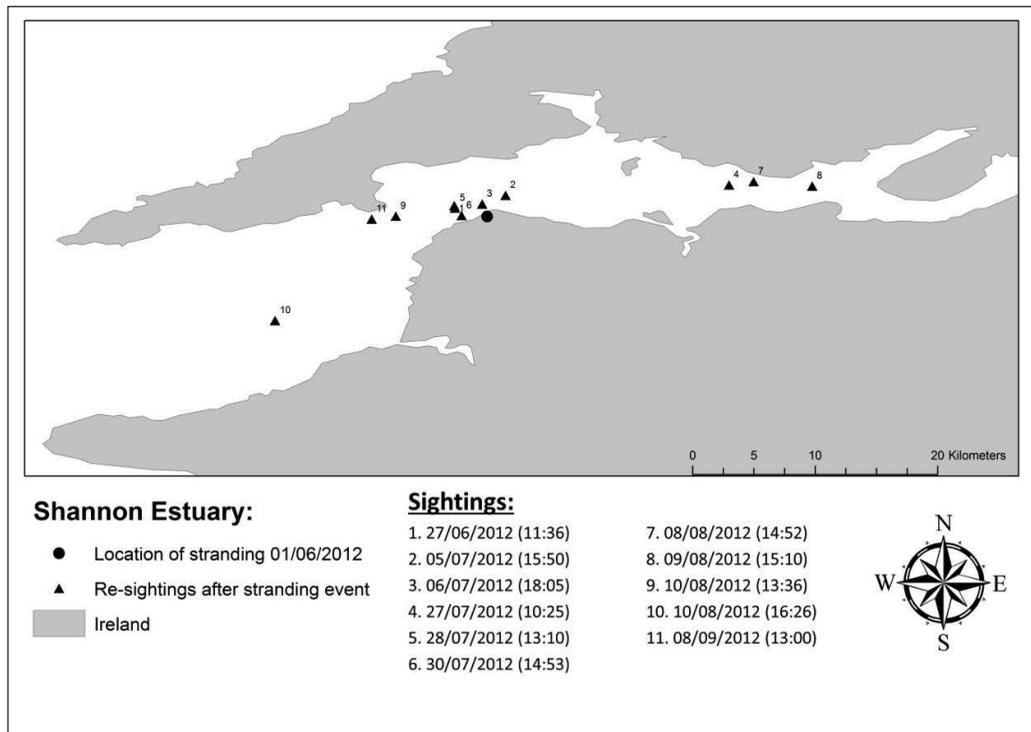


Figure 1. Locations of stranded bottlenose dolphin (*Tursiops truncatus*) (black circle) and subsequent resightings of the same individual from tour boats operating in the Shannon Estuary (black triangles)

the waterline with the tide receding. Given the rate at which the tide was receding and the position of the animal on the beach, it was estimated the individual stranded approximately 45 min prior to discovery. The bottlenose dolphin regurgitated fresh salmon (*Salmo salar*) muscle and bones, indicating it had recently been feeding. Visually, there were no external injuries, and the bottlenose dolphin seemed to be in good physical condition. The breathing rate was initially 8 breaths/min but decreased to 2 breaths/min, 1 h after wet towels were used to cool the animal. The length of the animal was measured (3.5 m) and close-up images of the dorsal fin were recorded to enable future identification of the individual. There were no nicks or notches present on the trailing edge of the dorsal fin. The most prominent identifiable features were four clear tooth rakes down the centre of the right-hand side of her dorsal fin (Figure 3). The IWDG began to mobilize the nearest flotation pontoons to the site, but a farm tractor with an open transport box (box measuring 3 m × 1.3 m × 1 m) was accessed locally and allowed for a faster response (Figure 2). This transport box was attached to the rear of the tractor and could be manoeuvred hydraulically. The transport box was lowered into the sand and pushed beneath the stranded bottlenose dolphin. The bottlenose dolphin was lifted and transported to

the water, and then lowered and directed by hand to the open sea. It was observed swimming powerfully and unaided until disappearing from sight approximately 300 m from where researchers had found it stranded 70 min prior.

The Shannon Dolphin and Wildlife Foundation (SDWF) has managed a bottlenose dolphin photo-identification catalogue from the Shannon Estuary since 1993, carrying out surveys between May and October largely from dolphin-watching tour boats. Images of the stranded individual were subsequently matched with an individual in the catalogue, which was first identified from a tour boat in June 2011. As researchers were carrying out daily photo-identification surveys from the tour boats over the summer period, routine comparisons were carried out to determine if the stranded individual had survived.

On 27 June 2012, a group of nine individuals (which included three mother/calf pairs) were encountered 2 km from the stranding site at Beal Point, Co. Kerry. The stranded individual was recorded within this group, identified by the four deep tooth rakes on the right-hand side of its dorsal fin. These marks were new since the 2011 record, but other markings on the dorsal fin and back allowed for a definite identification. Subsequently, the same individual was recorded on 10 occasions between June and September 2012.



Figure 2. Farm tractor with an open transport box measuring 3 m × 1.3 m × 1 m used to transport the bottlenose dolphin back into the sea



Figure 3. Images of the stranded individual's dorsal fin (with four tooth rakes clearly visible on the right-hand side of the fin) from the stranding event on 1 June 2012 and the first resighting on 27 June 2012, 26 d after the stranding event

The furthest distance it was recorded from the stranding site was 14 km upriver in an easterly direction (Figure 1). Additionally, for all encounters, at least one known mother/calf pair was present in the group. On 8 September 2012, the stranded individual showed a very strong association with a newborn calf. This calf had not been previously recorded in images of any mother/calf pairs, despite most calves possessing identifiable features on their dorsal fins and bodies. Although she had previously been recorded in the presence of mother/calf pairs, she never showed strong association with calves as they were always present with their respective mothers. During the 2013 field season, the stranded individual was resighted with the same calf on 18 occasions between May and September, strongly suggesting it was her calf.

To our knowledge, this is the first occasion a successful repatriation attempt of a live-stranded

bottlenose dolphin was confirmed using non-invasive methods (i.e., photo-identification) after the event. The bottlenose dolphin was monitored in association with other individuals up to 482 d after the stranding event. This individual may have live-stranded due to navigational error rather than as a result of injury or illness and, as such, was considered to have been a good candidate for a rescue attempt.

This event has a significant and positive impact on a number of levels. First, the stranded female proved to be actively feeding on salmon close to the time of the event as she regurgitated fresh salmon while trapped on the sand. In the absence of dietary records for bottlenose dolphins in the Shannon Estuary SAC, this suggests that salmon is a part of their diet at this time of the year. Second, the use of photo-identification, a non-invasive technique, was again proven to be a valuable method for tracking

and monitoring survival of a stranded individual (Visser & Fertl, 2000).

The Shannon Estuary bottlenose dolphins comprise a reproductively isolated population (Mirimin et al., 2011) with an apparently small home range of only 24 km from the boundaries of the SAC as determined through photo-identification (Ryan & Berrow, 2013). Furthermore, none of the Shannon Estuary residents have ever been recorded in association with their coastal more transient counterparts that have been recorded around the Irish coast and as far as UK waters (O'Brien et al., 2009; Robinson et al., 2012). Given this, the loss of a single sexually mature adult female, especially one pregnant with a viable calf, could have a significant negative impact on this population.

A management plan for bottlenose dolphins is not currently in place in the Shannon Estuary SAC, even though it is only one of two SACs in Ireland for this species. The provision of resources for strandings and attempts to refloat live cetaceans are often met with scepticism, but our results show that refloating of live bottlenose dolphins can be successful and, in instances similar to this, should be attempted. The quick response and successful refloat is testament to the widespread distribution of the observer network established by the IWDG stranding scheme.

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