

COAST TO COAST: FIRST EVIDENCE FOR TRANSLOCATIONAL MOVEMENTS BY SCOTTISH BOTTLENOSE DOLPHINS (UK)

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The analysis of ranging patterns in cetaceans is crucial to our understanding of the ecology, dynamics, social structure and evolutionary trajectory of a population. Knowledge of individual patterns of space and habitat use may be used to identify residency and territoriality, for example, but can also provide important insights on the spatial and temporal distribution of available resources (Damuth 1981; Stevick *et al.* 2002). In the Moray Firth in northeast Scotland, two decades of bottlenose dolphin studies have led us to believe this population is very much isolated in the north-western North Sea region, with no evidence of exchange between animals in adjacent-studied groups on the west coast of Scotland or Ireland being found to date (Wilson & Grellier 2002; PT Stevick pers. comm.; O'Brien *et al.* in submission). However, in a recent effort to exchange photo-identification data between organisations working with the species in Scottish waters, the very first evidence for translocational movements of animals between the Moray Firth and the Inner Hebrides of the west coast of Scotland has been established.

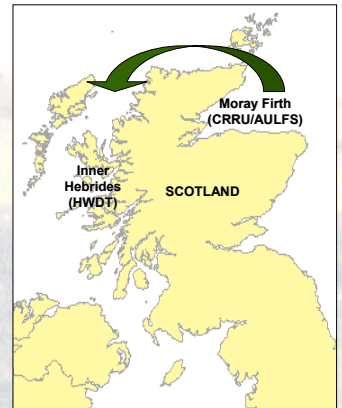
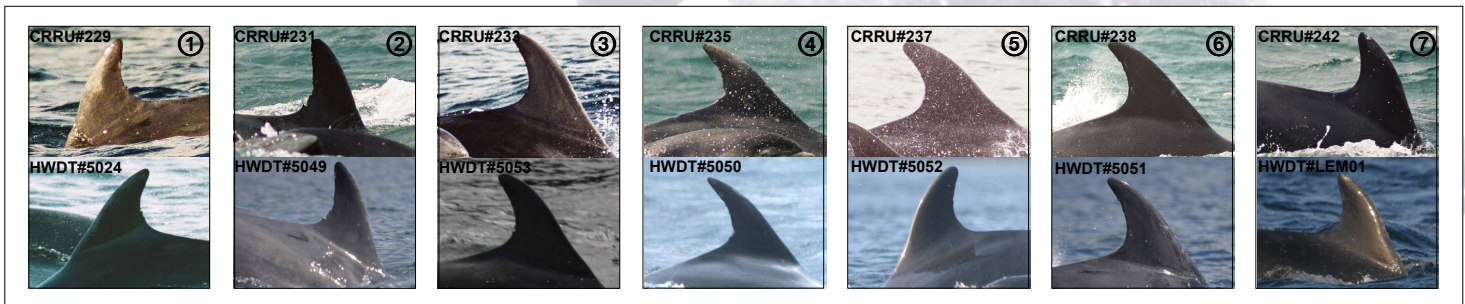


Fig. 1. Map of Scotland showing the position of the Moray Firth and the Inner Hebrides on the east and west coasts respectively. The arrow shows the most direct coastal route for bottlenose movements between the CRRU/AULFS and HWDT study sites.

The confirmation of matches between the two geographically-separate communities was made for 7 “marked” animals recorded along the southern coastline of the outer Moray Firth by the CRRU research team on 4 occasions in July 2001. These individuals were positively matched by AULFS with subsequent sightings by HWDT made in 2002, 2004 and 2005 around the Inner Hebridean islands of Mull and Skye, approximately 520 kilometres away by the most direct coastal route as measured using Map Source (Figure 1).

The dorsal fins of the 7 matched individuals are shown below, along with a description of the features used in their identification:

- ① CRRU#229 / HWDT#5024 – this dolphin has a sharply pointed dorsal fin with a prominent lower nick. The multiple scarring/abrasions on its fin and body and its solitary behaviour suggest it is a male, although no observations of the genital slits have been made to date (also photographed in 2006, 2007 and 2008 by HWDT and AULFS).
- ② CRRU#231 / HWDT#5049 – seen with a young calf in tow in 2001, this adult bottlenose exhibits a number of distinctive nicks and serrations along the trailing edge of its dorsal fin which assisted in its recapture.



- ③ CRRU#233 / HWDT#5053 – has a distinctly tall, leaning fin with a shallow upper nick and a prominent lower nick in the trailing edge of the dorsal fin. Identified with an older calf by CRRU in 2001 and with calves between 2002 and 2005 by HWDT.
- ④ CRRU#235 / HWDT#5050 – this adult female (confirmed from observations of the genital slits) has a very recognisable and individually distinctive dorsal fin shape with prominent multiple nicks. Seen with a new-born calf in July 2001.
- ⑤ CRRU#237 / HWDT#5052 – has a large, falcate dorsal fin with a prominent box-shaped nick in the mid-region of the trailing edge. Appeared to be with an older calf when first recorded in 2001.
- ⑥ CRRU#238 / HWDT#5051 – also with a tall, leaning dorsal fin, this individual has 2 prominent upper nicks which make it highly distinguishable. Observed with a calf in echelon position during all 4 encounters in July 2001 and between 2002 and 2005 by HWDT which suggests this animal is a female.
- ⑦ CRRU#242 / HWDT#LEM01 – this animal has an unusual dent in the anterior tip of the leading edge of its dorsal fin making it highly recapturable. Recorded with a calf in 2001 and between 2002 and 2005.

Whilst direct field-based studies of bottlenose dolphins in the Moray Firth indicate high levels of residency by individuals (Wilson *et al.* 1999; Culloch & Robinson 2008), the short-term duration of these studies (at around 20 years) provides a poor representation of distributions over longer time-scales. This, together with the low probability of identifying known individuals outside core study areas, subsequently reduces the chances of detecting movements of animals over long distances (PM Thompson pers. comm.). In this respect, the present findings clearly demonstrate the power of photo-identification as a monitoring tool for these long-lived mammals. It seems, in fact, that long-ranging movements of *Tursiops truncatus* within UK waters may actually be more common than previously thought (see also O'Brien *et al.* in submission), and further investigations of the dolphins described in this study have consequently revealed even greater ranges than those reported here, which must surely be significant in view of restricted Special Areas of Conservation for their ultimate protection. For example, recaptures of at least 3 of the individuals detailed in this study (i.e. CRRU#231, 233 and 238) have further been confirmed from as far afield as Galway and Cork in southern Ireland during 2007 and 2008 (JM O'Brien unpublished data) – an additional 830 km from Mull, and a new distance record for the species. It is also interesting to note that 6 out of the 7 identified bottlenoses making these movements are female. In the past few weeks, CRRU#231 has further been matched with an animal seen regularly in the mid 1990s from the coast of Cornwall in southwest England (Wood 1998). These findings evidently challenge our current understanding of the wide-scale population structure and dynamics of bottlenose dolphins in UK waters at this time, and as investigations continue, we hope to publish a more comprehensive account of these results in the very near future.