

Unsexed c2.1m. Live stranded and died 26 September 2003, Ballyconneely, Co Galway (L6245). S. Kettlewell.

Unsexed c1.3m. Found dead 18 December 2003, Duncannon Strand, Co Wexford (S7307). M. Doyle.

Scoliosis in bottlenose dolphins *Tursiops truncatus* (Montagu) in Ireland and Britain

A world-wide review of vertebral column malformities in delphinids has recently been published (Berghan, J. & Visser, I. N. 2000 *Aquatic Mammals* 26(10): 17-25). Similar malformities have recently been observed in bottlenose dolphins *Tursiops truncatus* off the coasts of Cos Clare and Galway which are now described together with a review of published and unpublished observations from Ireland and Britain.

A young bottlenose dolphin with a spinal abnormality was seen in the Shannon Estuary in August 2001 (Geoff Magee pers. comm.). On 4 August 2002, SB came across what may have been the same dolphin in the Shannon Estuary off Kilstiffin Bank (52° 34'N, 9° 45'W). It was estimated to be less than 2.5m in length (from comparison with the 5.4m boat) and was pale in colour suggesting it was a juvenile (<2 years of age) and still dependent on its mother for nutrition (Thompson, P. & Wilson, B. 1996 *Bottlenose dolphins*. Worldlife Library Series. Colin Baxter Photography Ltd, Grantown-on-Spey). It approached to within 1m of the boat providing excellent views and the opportunity to obtain video footage. It was obvious that it had a spinal deformity that affected its ability to swim and surface. The dolphin's spine was bent upwards and to the left, immediately posterior to its dorsal fin. A number of deep creases could be observed running from behind the dorsal fin down the dolphin's flank and onto its belly, demonstrating how deep was the malformity. This dolphin has not been reported since September 2002.

On 29 June 2005, a bottlenose dolphin with a spinal deformity was observed and photographed off English Rock, south of Garumna Island, on the north shore of Galway Bay (53° 13'N, 9° 39'W) by JO'B. This dolphin was approximately 3-3.5m in length and thought to be older than the one previously described, due to its uniform dark grey colour. It was observed in a group of between 10-12 adults and was only marginally smaller than the others present, thus it is likely to be an immature or small adult, and nutritionally independent. The dolphin swam within 5m of the boat and a clear view was obtained of the dolphin's malformity. Posterior to the dorsal fin the dolphin's spine rose into a very pronounced hump. This individual did not appear to have any difficulties swimming or keeping up with the group.

Two different bottlenose dolphins with apparent spinal deformities were observed on more than one occasion near Killary Harbour, Co Galway (53° 37'N, 9° 54'W) during 2001 and 2002 (Simon Ingram pers. comm.). A malformed dolphin has also been observed in a group of three dolphins, travelling past salmon fish cages in Mannin Bay, Co Galway (53° 28'N, 10° 05'W) on 25 and 30 May 2005 (Saul Joyce pers. comm.) approximately 40km from Killary Harbour. The group included what appeared to be an adult and calf. The malformed dolphin was a little smaller than the adult but was a much paler colour and had no difficulty keeping up with the other dolphins. It is likely that these observations all refer to the same dolphin and it is also probable that this is the same dolphin as that observed in Galway Bay.

Although probably not uncommon, malformities such as those described here have not been reported before in Ireland. A recent review (Berghan & Visser 2000 *op.cit.*) would classify the spinal deformities described in Ireland as kyphoscoliosis (backward and lateral curvature of the vertebral column).

The only published records of spinal deformities from Britain are from the Moray Firth, Scotland where four bottlenose dolphins were reported with conformational deformities during the period July 1989 to March 1993 (Wilson, B., Thompson, P. M. & Hammond, P. S. 1997 *Ambio* 26(4): 243-247). These deformities occurred both in front of and behind the dorsal fin resulting in animals being "humpbacked" or having kinked tail stocks. There are however a number of unpublished records from Britain.

A living bottlenose dolphin with vertebral deformities has been frequently observed along the south-west coasts of England. It was first observed in October 1991 as a neonate with a severe deformity of its spine, resulting in the dorsal fin becoming bent through nearly 90° (Nick Tregenza pers. comm.). Two stranded bottlenose dolphins (a female calf measuring 165cm in length in 1993; and an adult female in 1998) with scoliosis have been recovered from the Moray Firth, north-east Scotland. The latter was only 260cm in length, which compares with a normal adult length of 320-330cm, demonstrating the amount of curvature of the spine (Bob Reid pers. comm.). Scoliosis has been observed in bottlenose dolphins stranded in separate incidences in the Thames (Paul Jepson pers. comm.). One with mild spondylosis (spinal osteoarthritis leading to partial or complete bony fusion) in 1999 and a case of mild kyphoscoliosis in 2001.

Vertebral column malformities have been associated with a diverse range of causative factors. Physical abnormalities in belugas *Delphinapterus leucas* (Pallas) from the St Lawrence Estuary, Canada, were tentatively linked to high levels of organochlorines found in their tissues. Stress or exertion is also considered a potential causative factor along with spondylodiscitis as a result of a bacterial infection (Berghan & Visser 2000 *op.cit.*). Congenital malformities have also been reported and are the most likely cause in those described here (Paul Jepson pers. comm.). They are likely to be hereditary and genetic studies may be revealing, although samples would be difficult to obtain.

The longevity of malformed dolphins is largely unknown. The dolphin off south-west England was first reported as a neonate in 1991 and is now adult. It was still observed up to 2003 with a visible twist to the spine. In the Moray Firth study, calves, sub-adults and adults were observed with deformities. A bottlenose dolphin in Sarasota Bay, Florida with scoliosis in the caudal peduncle region has been observed for the last 20 years (Berghan & Visser 2000 *op.cit.*) but longevity is probably determined by the severity of the malformity. Given the severity of the scoliosis in the Shannon Estuary dolphin it is unlikely this dolphin survived weaning; however the dolphin reported from Galway Bay might have survived for a number of years.

We encourage observers to report incidences of vertebral column malformities in dolphins in Ireland so as to determine the extent of this condition. Records of malformed dolphins could give an insight into the movements of bottlenose dolphins as they are relatively easily recognised individuals.

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Simon Berrow

Shannon Dolphin and Wildlife Foundation, Merchants Quay, Kilrush, Co Clare

Joanne O'Brien

School of Science, Galway-Mayo Institute of Technology, Dublin Road, Galway