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Opportunistic Feeding of an Adult Humpback Whale (*Megaptera novaeangliae*) Migrating Along the Coast of Southeastern Queensland, Australia

Karen A. Stockin[1] and Elizabeth A. Burgess[2]

[1]*Coastal-Marine Research Group, Institute of Natural Resources, Massey University, Private Bag 102 904, North Shore MSC, Auckland, New Zealand*
[2]*Tangalooma Marine Education and Research Centre, P.O. Box 1200, Eagle Farm Queensland 4009, Australia*

Abstract

In the austral winter of July 2004, off southeastern Queensland, Australia, we observed apparent feeding by an adult humpback whale (*Megaptera novaeangliae*) in association with Indo-Pacific bottlenose dolphins (*Tursiops aduncus*). This is the first documented case of an adult humpback whale from the southern hemisphere Group V stock feeding along the migratory corridor. This observation also represents the first published record of a humpback whale feeding in association with Indo-Pacific bottlenose dolphins.

Key Words: humpback whale, *Megaptera novaeangliae*, Indo-Pacific bottlenose dolphin, *Tursiops aduncus*, opportunistic feeding, migration, Australia

Introduction

Like most species of mysticetes, humpback whales (*Megaptera novaeangliae*) undertake annual migrations from high latitude feeding areas to low latitude breeding areas. Between June and November each year, humpback whales travel along the east coast of Australia (Paterson & Paterson, 1989) during their annual migration between the feeding grounds off Antarctica (Bryden, 1978; Chittleborough, 1959) and the breeding grounds off the Great Barrier Reef (Paterson & Paterson, 1989; Simmons & Marsh, 1986). Waters adjacent to Cape Moreton (27° 02' S, 153° 28' E) off southeastern Queensland, are part of the migration route for so-called Area V (130° E-170° W) humpback whales during the austral winter months (Paterson, 1991). Herein, we report an opportunistic observation of apparent feeding involving an adult humpback whale and a group of Indo-Pacific bottlenose dolphins (*Tursiops aduncus*) during this migration.

Materials and Methods

Observations were made from the *M.V. Tangalooma Jet*, a 40 m jet-propelled commercial whale-watching catamaran, which conducts tours from Moreton Island, focusing primarily on humpback whales during their migration. Data presented are the result of an observation made by the authors during opportunistic whale watching. Photographs were taken using a Nikon D100 digital SLR and a Nikon ED AF 70-300 mm lens.

Results

On 5 July 2004, observations were made of apparent feeding by a humpback whale and a group of adult Indo-Pacific bottlenose dolphins. At 1250 h, three humpbacks were encountered within 200 m of each other during their northern migration towards the breeding grounds. They were approximately 1.5 km off Cape Moreton, the northeastern headland of Moreton Island. At 1310 h, a group of approximately 50 to 60 Indo-Pacific bottlenose dolphins were observed heading east towards the whale watch vessel. They were identified as Indo-Pacific bottlenose dolphins based on a long rostrum and overall morphology. The dolphins initially appeared as a single group, travelling "line abreast" (Neumann & Orams, 2003, p. 143), on course towards the travelling whales. Within approximately 200 m of the vessel, the dolphins divided into two groups, with one subgroup of approximately 30 to 40 animals turning away to the northwest of the whales and the vessel. The remaining subgroup of approximately 15 to 20 adult dolphins passed within 5 m of the bow of the vessel. At 1316 h, this subgroup began to engage in active foraging behaviour; high-speed pursuits by individual dolphins (as defined in Neumann & Orams, 2003) were noted on several occasions, and successful prey capture by dolphins was observed in two instances. "Carouseling" (Neumann & Orams, 2003) and "kerplunking" (Connor et al.,

2000; Nowacek, 1999) also were observed. The prey was not identified to species, but clearly was a type of small schooling baitfish, approximately 12 cm in length.

At 1327 h, one of the humpback whales adjusted course to the northeast and separated from the other two whales, which remained within 300 m of each other as they continued to travel in a north northeast direction. The solitary whale of unknown gender was estimated to be approximately 14 m in length compared to the whale watch vessel. This whale then approached the subgroup of dolphins. The dolphins were foraging and were continuously observed in close association with a prey "baitball," which was clearly visible at the water surface. At 1330 h, in water of 23 m depth, and at a location 27° 02' S and 153° 28' E, the whale entered the immediate vicinity of the dolphins (Figure 1) and was observed rolling laterally through the fish baitball in the centre of foraging dolphins.

Evidence of the whale feeding included clear expansion of the ventral pleats (Figure 2) and subsequent contraction, its partially open mouth closing just under the surface of the water, and baitfish breaking the surface near the whale. The whale continued travelling in close proximity (i.e., within two whale body lengths; see Figure 1) to the dolphins for a further 11 min after the described observation. Although no further baitballs were observed, it cannot be dismissed that the whale continued to feed on loose aggregations of the baitfish because the dolphins continued to forage during this period. From this time forward, the distance between the whale and the dolphins could not be closely observed because the whale watch vessel began to depart the area; subsequently, the encounter terminated at 1342 h. No photo-identification was possible because the whale did not fluke up at any point during the encounter.

Figure 1. Humpback whale observed in close association with foraging Indo-Pacific bottlenose dolphin off Cape Moreton, southeastern Queensland, in July 2004 (Photograph from K. A. Stockin)

Figure 2. View of expanding ventral throat pleats of a humpback whale feeding on baitfish off Cape Moreton, southeastern Queensland, in July 2004 (Photograph from K. A. Stockin)

Discussion

Although sightings of humpback whales in close proximity to bottlenose dolphins have been previously noted (e.g., Weller et al., 1996), they are not common and no previously published literature relates to interactions with Indo-Pacific bottlenose dolphins. Furthermore, feeding interactions between these two species have not been reported previously. It appeared as if the humpback whale detected the bottlenose dolphins actively foraging and subsequently fed from the same baitball. The Indo-Pacific bottlenose dolphins appeared to work cooperatively to concentrate a school of baitfish, which were clearly visible both at and just below the surface of the water throughout the observation period.

Few records of humpback whales feeding during their migration, or on the breeding grounds, exist (Baraff et al., 1991; Gendron & Urbán, 1993; Salden, 1989; Stone et al., 1987; Swingle et al., 1993). To date, observations relate only to the northern hemisphere, and have involved juvenile animals. In the low latitude waters of the southern hemisphere, it is believed that humpback whales do not generally feed during migration (Chittleborough, 1965; Dawbin, 1966). Dall & Dunstan (1957) recorded food present in only one of over 2,000 humpback whales examined at Tangalooma whaling station. Chittleborough (1965) suggested that humpback whales seldom find sufficiently dense swarms of plankton off the Australian coast to stimulate feeding but, instead, subsist on stored fat reserves. This subsistence period is clearly evident in the progressive decline in oil yields obtained from low latitude whaling stations.

This is the first documented evidence of opportunistic feeding by an adult humpback whale during the southern breeding migration. Despite the absence of vertical or subsurface

lunge-feeding (Baraff et al., 1991; Salden, 1989), bubble clouds (Hain et al., 1982; Jurasz & Jurasz, 1979; Weinrich et al., 1992), or defecation (Gendron & Urbán, 1993), apparently the whale was foraging, based on extended then contracted throat pleats, open mouth, and the presence of baitfish.

The diet of humpback whales in the northern hemisphere (Hain et al., 1982) typically consists of small schooling fish such as herring (*Clupea harengus*), capelin (*Mallotus villisus*), and sand lance (*Ammodytes* sp.), although humpback whales in the waters off southeastern Alaska are known to exhibit a more diverse diet (Sharpe, 2001). In the southern hemisphere, humpback whales feed predominantly on euphausiids (e.g., *Euphausia superba*, *E. spinifera*, and copepods, *Calanus propinquus*) (Winn & Reichley, 1985). During the observation reported here, it was apparent that the whale was feeding directly on baitfish and while the species could not be confirmed, our observations suggest they were most likely sardines (*Sardinops sagax*). This is consistent with reports of various species of pelagic baitfish shoaling close to the southern Queensland coastline, including sardine, round eye herring (*Etrumeus teres*), blue mackerel (*Scomber australasicus*), and yellowtail scad (*Trachurus novaezelandiae*) (J. Staunton-Smith, pers. comm.).

We make no claim that humpback whales regularly undertake opportunistic feeding during their journey along migratory corridors, or on breeding grounds. It is not possible to ascertain how frequently such opportunistic foraging occurs; however, if common, we would expect this behaviour to have been previously reported, given the observation efforts through dedicated research and frequent whale watching worldwide. Baraff et al. (1991) suggested that occasional opportunistic feeding may be a mechanism undertaken to offset any energy deficiency incurred through the winter. Length at sexual maturity for humpback whales in Australian waters is estimated to be 11.2 m and 11.7 m for males and females, respectively (Chittleborough, 1955a; Chittleborough, 1955b). The length of the whale in the present observation implies it was an adult and not a juvenile or subadult as documented in previous northern hemisphere examples (Baraff et al., 1991; Salden, 1989; Swingle et al., 1993). The significance of this remains unclear, although it suggests that this type of opportunistic behaviour may not be exclusive to immature animals.

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