DIURNAL BEHAVIOUR OF BOTTLENOSE DOLPHINS, *TURSIOPS TRUNCATUS*, IN CARDIGAN BAY, WEST WALES (2001-2007)

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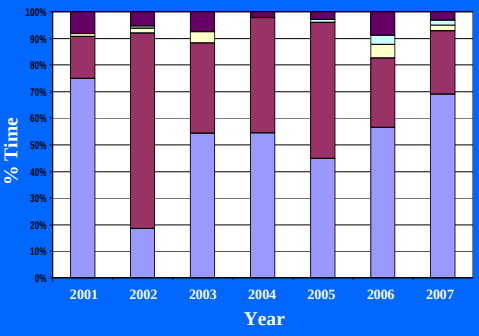

Figure 1: The behavioural budget/ year.

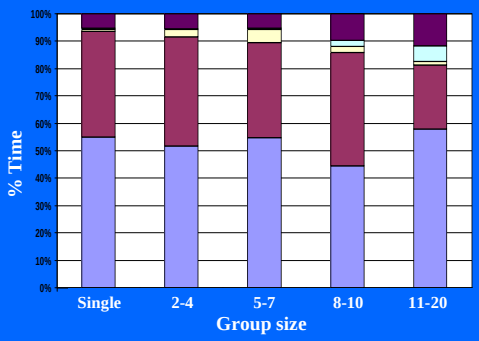

Figure 2: The behavioural budget according to group size.

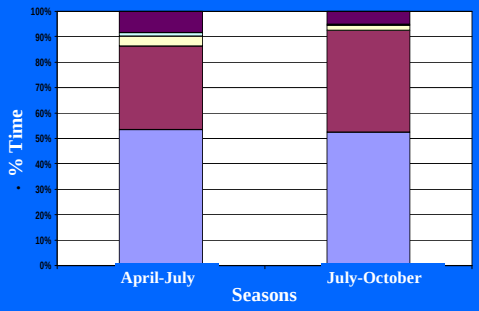

Figure 3: The behavioural budget through the study seasons.

Feeding | Traveling | Resting | Other | Socializing

Introduction

The diurnal behavioural budget of bottlenose dolphins (*Tursiops truncatus*) was investigated in Cardigan Bay, West Wales with special attention paid to the Cardigan Bay and Pen Llyn a'r Sarnau Special Areas of Conservation (SAC), areas set up to protect the dolphin population. Home ranges and core areas for specific behaviours were also investigated and analysed to understand whether the dolphin preferred particular areas of the bay for specific behaviours.

Materials and Methods

Boat-based visual surveys were conducted from April-October in 2001-2007, within Cardigan Bay with some focal animal follows during line-transect and *ad-libitum* surveys. The following behaviours were considered: traveling, feeding, socializing, resting, and others - such as bow-riding or leaping. The budget was then determined separately to determine changes between years (Fig. 1), group size (Fig. 2), and seasons (Fig. 3). The kernel ranges were also estimated using the Animal Movement extension in ArcView 3.3, so as to identify the 50% (core areas) and 95% (home ranges) Utilization Distribution (UD), within Cardigan Bay, and then compared between behaviours.

Results

•1,210 individual behavioural samples were collected in 2001-2007.

• During the study period, **traveling and feeding comprised over 90%** of the dolphins' diurnal budget, followed by others, resting and socializing.

• Groups consisting of **2-4 individuals spent more time feeding,** while groups greater than **11 individuals spent more time traveling and socializing**.

• The animals spent **more time feeding at the end of the study season** compared to the beginning of the season.

• Core areas for traveling included the peninsula around Abersoch, Tremadog Bay, the two southern sarns (sandbanks) and New Quay and Ynys Locktyn head- lands (Fig. 4).

• Three distinct core areas for feeding were found at New Quay and Ynys Lochtyn and around Abersoch (Fig. 5).

• No significant difference was found between the dolphin's behavioural budgets and year, group size or time of the season.

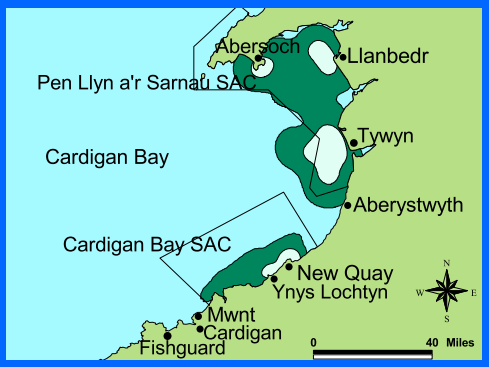

Figure 4: Home range (dark green) and core area (pale green) for traveling behaviours in Cardigan Bay.

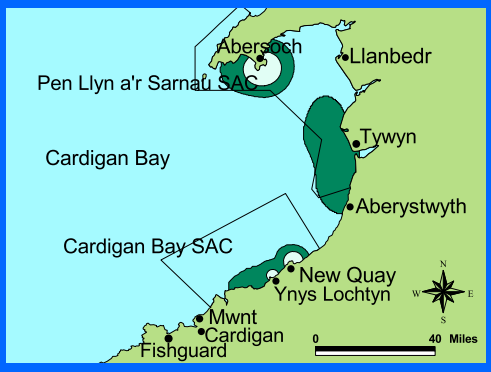

Figure 5: Home range (dark green) and core areas (pale green) for feeding behaviours in Cardigan Bay.

Discussion

• The constant percent of time spent traveling and feeding each year, with the exception of 2002, may suggest **year-round occurrence of prey** (Hansen and Defran, 1993).

• The **core area for feeding behaviours, New Quay, Ynys Lochtyn and Abersoch**, include protruding headlands which will tend to aggregate fish due to the fast currents and bottleneck effect around them reducing the energetic costs of foraging (Williams *et al.*, 1996). The regions between the core areas probably act as **'corridors'** along which the dolphins travel (Bearzi *et al*., 1995).

• Comparing these data with habitat features and prey distributions would provide a clearer picture of habitat use by the dolphins in Cardigan Bay.

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