

## Prey of humpback dolphins (*Sousa plumbea*) stranded in eastern Cape Province, South Africa

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### Summary

The feeding habits of humpback dolphins (*Sousa* spp.) are poorly known. In this study we examine the stomach contents of the few dolphins stranded in the eastern Cape Province between 1980 and the present. The fish and cephalopod species retrieved from the stomachs of the dolphins are common inhabitants of inshore waters of eastern Cape Province. Although some overlap occurs between the prey species taken by bottlenose dolphins (*Tursiops truncatus*) from the same area, the latter feeds upon a variety of food resources whereas humpback dolphins favour estuarine associated prey. The occurrence of both squid and milk in the stomach of a two year old humpback dolphin suggests a long mother and calf association in this species. Results from this study will be useful in comparisons with the diets of free-ranging *Sousa* along the coast of South Africa.

### Introduction

Humpback dolphins (*Sousa* spp.) are small dolphins occurring in coastal waters of West Africa, and the Indian and western Pacific oceans. The entire genus is in need of taxonomic revision. In this paper we refer to the species occurring off southern Africa as *Sousa plumbea* (Cuvier, 1829), following Ross (1984) and Ross *et al.* (in press), but recognize that its relationship with *Sousa chinensis* (Osbeck, 1765) needs to be clarified.

The feeding habits of humpback dolphins are poorly known. Reports of feeding of *Sousa teuszii* and *S. chinensis* are few and summarized in Ross (1984). Corkeron *et al.* (1990) documented the association between Indo-Pacific humpback dolphins

and shrimp boats in Moreton Bay, Australia. In South Africa, Saayman & Tayler (1979) observed groups of *Sousa plumbea* feeding around reefs in Plettenberg Bay, where they appear to be resident year round. Ross (1984) also made similar observations and noted that humpback dolphins in Algoa Bay appeared to feed near reefs along rocky coastal areas. There are only two studies that have examined stomach contents of humpback dolphins in South Africa, and both report on animals from the province of Natal. Cockcroft & Ross (1983) presented a preliminary analysis of the feeding of *Sousa plumbea* accidentally caught in anti-shark nets, and Ross (1984) analyzed the stomach contents of a stranded dolphin from Mtunzini Beach, on the northern coast of Natal. In the present study we provide information on the prey of humpback dolphins stranded along the eastern Cape Province.

### Methods

Humpback dolphins rarely strand, and from beach patrols carried out from January 1980 to the present, only three carcasses have been found. One of these was a 105-cm long male neonate with visible umbilical scar and, consequently, its stomach was not examined. The remaining two, a 269-cm long male (PEM N1160), stranded on 22 May 1985 at Skoenmakerskop near Port Elizabeth (34°02'S, 25°31'E), and a 163-cm long female (PEM N1252), stranded on 15 November 1985 at Jeffrey's Bay (34°04'S, 24°57'E), had food remains in their stomachs and comprise the present note. Fish otoliths and cephalopod beaks retrieved from the stomachs were identified using the prey-identification collection established at the Port Elizabeth Museum (Cockcroft & Ross, 1990). Common and scientific names of fishes are those proposed by Smith & Heemstra (1986). Back-calculation

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of the length and weight of prey species was done after methodology outlined in Cockcroft & Ross (1990).

### Results

The following prey items were retrieved from the stomach of specimen PEM N1160: one spotted grunter (*Pomadasyss commersonii*), reconstituted fork length (RFL) = 157.5 mm, reconstituted weight (RW) = 176 g, 12 blue hottentots (*Pachymetopon aneum*), mean RFL = 153 mm (SD = 41.3), mean RW = 71 g (SD = 61.8); one *Rhabdosargus* sp.; four unidentified seabreams (Sparidae); one mackerel (*Scomberomorus japonicus*), RFL = 355 mm, RW = 207 g; one unidentified teleost; one squid (*Loligo* cf. *L. reynoldi*), reconstituted mantle length (RML) = 196 mm, RW = 207 g (values calculated from a generalized regression for loliginids); and one octopus (*Octopus* sp.), RML = 36 mm, RW = 21 g (values calculated from a generalized regression for octopods).

Three pairs of squid beaks from *Loligo* cf. *L. reynoldi*, RML = 170 mm, RW = 150 g, and milk remains were found in the stomach of specimen PEM N1252.

### Discussion

Most of the otoliths retrieved from the stomach of one of the dolphins were eroded to some degree. This may suggest that this dolphin had not fed for some time prior to stranding and/or some accumulation of prey item remains in the stomach took place. The data presented here, therefore, do not imply that all species found were taken in a single meal, but should reflect, to some degree, the prey spectrum taken by humpback dolphins in this area.

The fish (*P. commersonii* and *S. japonicus*) and cephalopod (*Loligo* cf. *L. reynoldi*, *Octopus* sp.) species retrieved from the stomachs of the dolphins are common inhabitants of inshore waters of eastern Cape Province, often being associated with brackish waters of estuaries (van der Elst, 1981). The *P. aneum* found in the stomach of PEM N1160 were all small, with RFL of the largest being 262 mm. Although adults of this species inhabit deep water reefs of this coast, the juveniles taken by PEM N1160 feed in and inhabit shallower reefs (Buxton & Clarke, 1986). *S. japonicus* is an epipelagic, shoaling fish species generally occurring in waters 250–300 m deep (Smith & Heemstra, 1986), but may occasionally be found in shallower waters (van der Elst, 1981).

The prey species found in stranded humpback dolphins from eastern Cape are inshore, demersal species, similar to the type of prey recorded for incidentally captured dolphins in Natal, some 1000 km further north (Cockcroft & Ross, 1983;

Ross, 1984). Prey species composition, however, differ between humpback and bottlenose dolphins (*Tursiops truncatus*), although some overlap in diet occurs. Thus, *Sousa* favours estuarine associated prey (Cockcroft & Ross, 1983) whereas *Tursiops* feeds upon a variety of food resources, including benthic reef and sand-bottom prey as well as pelagic shoaling fish and cephalopods and deep-water fish (Cockcroft & Ross, 1990).

The occurrence of both squid and milk in the stomach of PEM N1252 is interesting. Dentinal growth layer group (GLG) counts in the teeth of this dolphin show that it was over two years of age, assuming a deposition rate of one GLG per year (Cockcroft, unpublished data). This supports the view of a long mother and calf association in this species (Cockcroft, 1989). Although no age estimate is available for specimen PEM N1160, this male was physically mature and sperm were found in its epididymis. Neritic cephalopods (e.g., *Loligo* cf. *L. reynoldi*) were important prey for both dolphins and prey size average between 150 and 200 mm in both cases.

Limited genetic data (Smith & Cockcroft, unpublished data) associated with some evidence of residency of humpback dolphins in Natal (Cockcroft, 1990) and the eastern Cape (Saayman *et al.*, 1972; Ross, 1984) suggest that the dolphins in these areas may be different stocks. As the annual catch of humpback dolphins in shark nets is some 4% of the estimated population, there is concern that captures may significantly deplete the Natal stock of this species (Cockcroft, 1989; 1990). Results from this study will be useful in comparisons with the diets of free-ranging *Sousa* from Natal (Cockcroft *et al.*, in preparation<sup>1</sup>) to investigate geographical variations in the diets, as well as differences between stranded and incidentally caught dolphins.

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