CEPHALOPOD PREY OF CUVIER'S BEAKED WHALE, *ZIPHIUS CAVIROSTRIS*, FROM THE ADRIATIC SEA

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INTRODUCTION

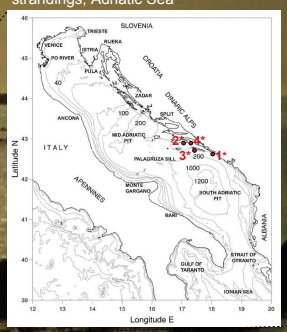
Cuvier's beaked whale is a deep-diving species with cosmopolitan distribution in all oceans except the Arctic and Antarctic waters. Little information exists on distribution and ecology of this species in the Adriatic Sea, a long narrow bay of the Mediterrranean Sea (Figure 1), but there are indications that this area could represent an important habitat in the Mediterranean. There have been records of sightings and strandings in the deeper southern part of the Adriatic (between 200 and 1200 meters deep), but there are no reports about the possible feeding in this area.

A large amount of the Cuvier's beaked whale mortality has been attributed to the ingestion of plastic, which underlines the need of investigating its feeding ecology and mitigating the theats associated with feeding.

MATERIALS AND METHODS

Figure 1. Possition of the Adriatic Sea in the Mediterranean

Figure 2. Z.cavirostris strandings, Adriatic Sea

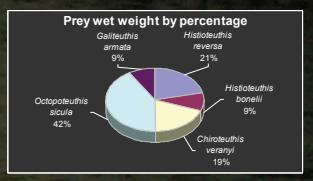


The carcasses of beaked whales stranded along Croatian Adriatic coast between 1990 and 2008 have been examined and four individuals were both morphologically and genetically identified as the Cuvier's beaked whale. The stomach contents have been examined and the prey items assigned to species using the published keys and reference collections. The regression equasions have been used to calculate the cephalopod prey lenght and weight based on lover rostral lenght (LRL) measures of lower beaks. According to the cephalopod depth dependent assemblages in the Adriatic and eastern Mediterranean sea we found the foraging depth of the last feeding events.

RESULTS AND DISCUSSION

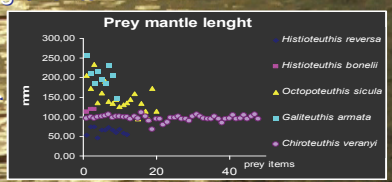
Four Cuvier's beaked whales were stranded along the eastern Adriatic coast during the investigated period (Fig. 2): a young female, died due to stomach opstipationcaused by plastic (1*), two adult males (2*&3*), and one juvenile male (4*). The female was staying in the close to shore, shallow waters (2m deep) before dying: the plastic opstipating the stomach was of recent Croatian origin, showing the whale attempted feeding in the Adriatic, and the rest of the stomach was empty. The carcass of one adult male was in very bad condition and no stomach remains were found, and the juvenile animal had no content in the stomach, and was probably still feeding on milk. In the other adult male (3*) we found cepahlopod remains corresponding to 94 prey items. Seven cephalopod species were identified. Five species accounted for 98%of wet weight (11 kg) (Fig. 3).

Figure 3.



The prey species, their estimated lenght and small size differences in *Chiroteuthis veranyi* (Fig.4) the most common prey, suggest that the whale was feeding on the slope and between 600 and 1200 meters.In the Adriatic Sea this includes only the relatively small southernmost area. Deep-water squid assemblages, some previously unknown in the Adriatic Sea, have been described recently: even though two of the prey species are not listed in the Adriatic fauna, it could be due to the scarce deep water research in the area.

Figure 4.



We conclude that

1) Cuvier's beaked whale (3*) was recently feeding in the Mediterranean Sea, but was also foraging in the Adriatic Sea as the dominant prey species are the most abundant deep-sea Teuthida in the Adriatic.

2) As the young female (2*) was also trying to feed in the Adriatic Sea, it is concluded that the southern Adriatic Sea, > 600 meters deep, is probably a feeding area of the Cuvier's beaked whale.

3) There is no competition with the fisheries in the targeted prey species, and the ingestion of plastic debris is probably the main threat related to feeding ecology of this species in the Adriatic Sea. The Adriatic is a closed sea with high anthropogenic pressure and better plastic waste management is needed in Adtiatic countries to enable undisturbed feeding of the Cuvier's beaked whale in this area.

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