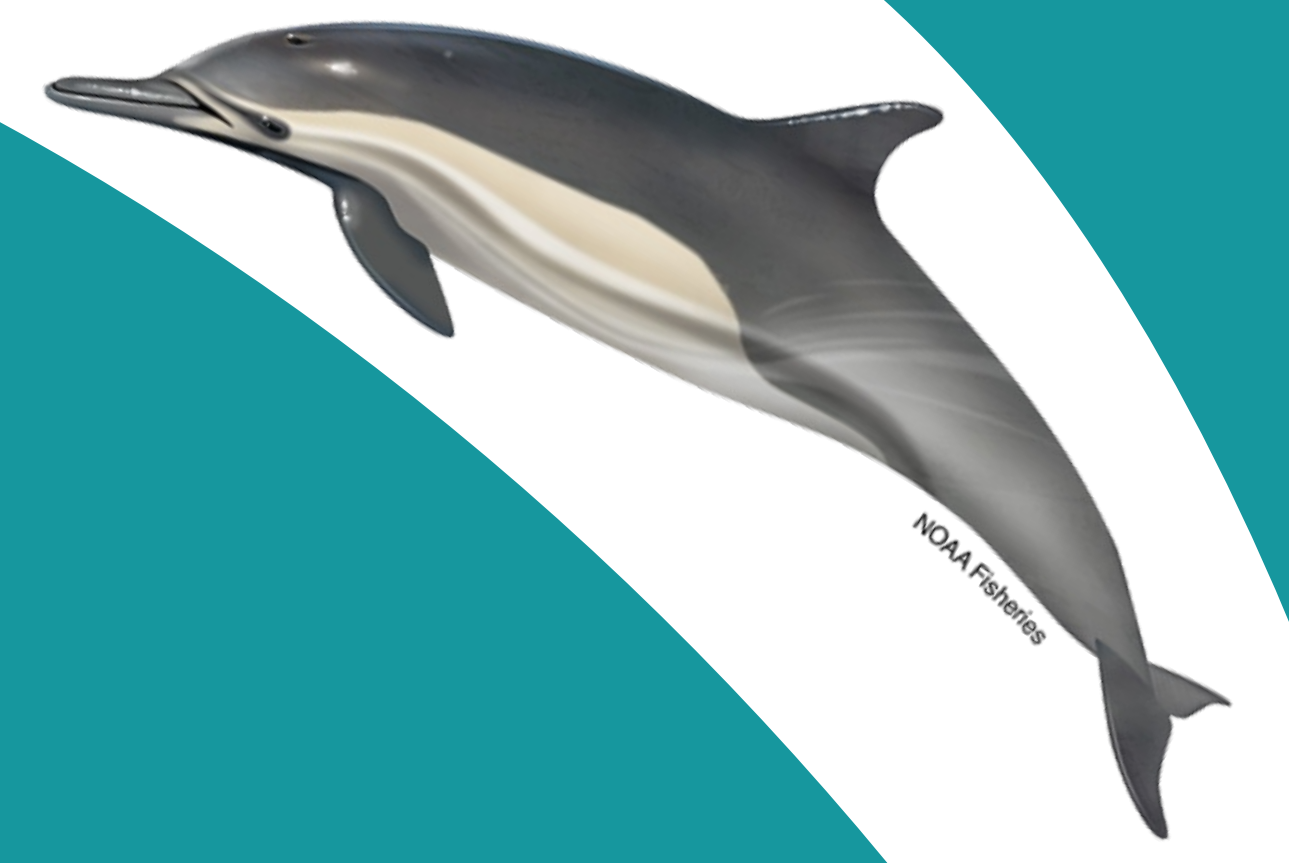


Foraging ecology of the Common dolphin (*Delphinus delphis*) in the western North Atlantic



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Introduction

- Common dolphins have historically been found in one continuous population in the offshore waters of the western North Atlantic
- Warmer water temperatures have allowed an expansion of their range into inshore waters within the last 15 years
- No comprehensive study on offshore vs. inshore Common dolphin diet has been conducted in the western North Atlantic

Research Questions

- What prey items are the most important to Common dolphin diet in the western North Atlantic?
- Do differences in habitat, inshore vs. offshore, result in differences in Common dolphin foraging ecology?
- Are the Common dolphins in the western North Atlantic region opportunistic or specialist feeders?

Methods – Sample Collection

Stomach Sample Collection

- 36 stomach samples were obtained over a period of 28 years (1993-2021) from bycaught dolphins via the Northeast Fisheries Observer Program
- The stomach samples were removed from bycaught specimens via necropsy and stored at the Northeast Fisheries Science Center

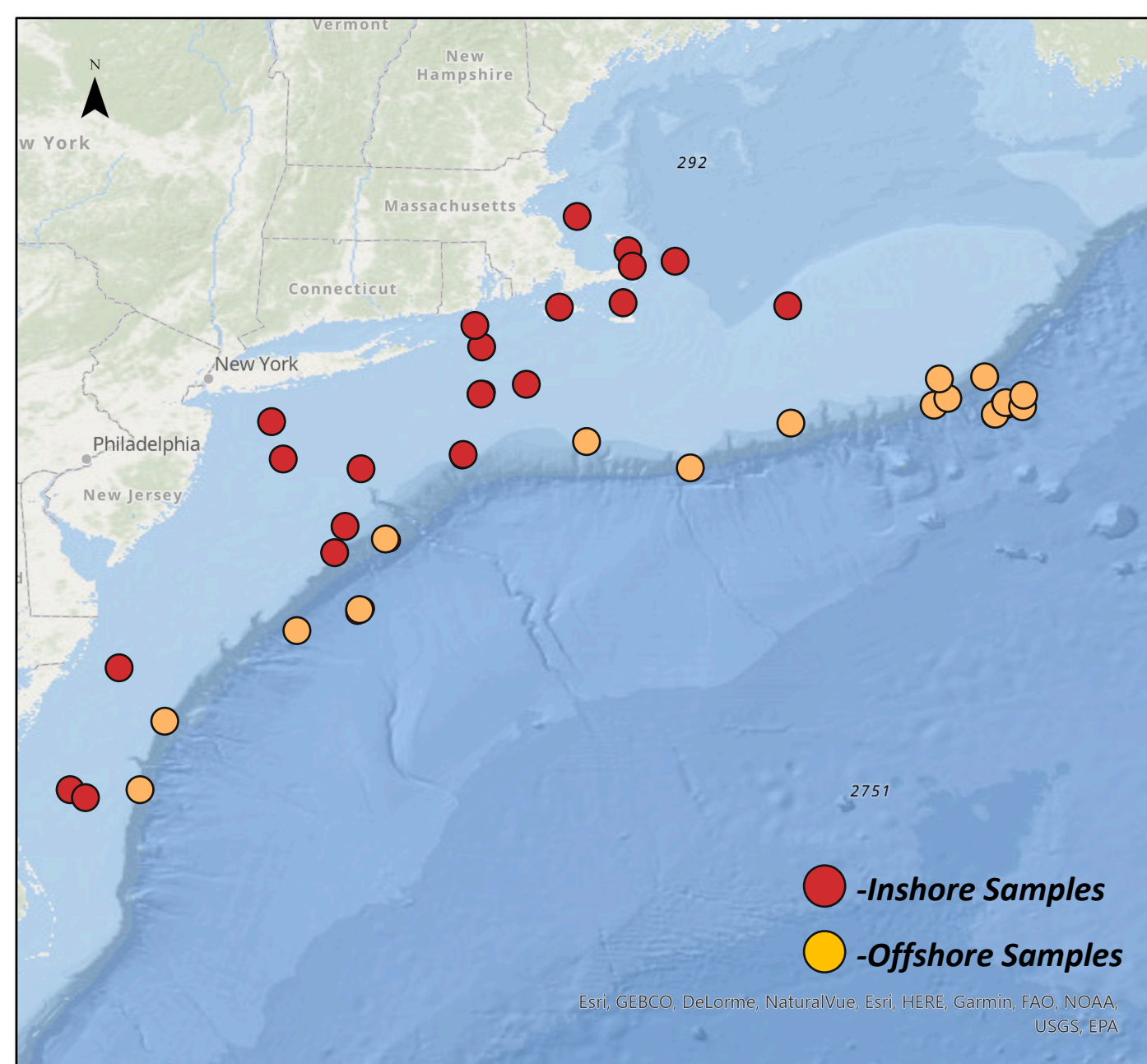
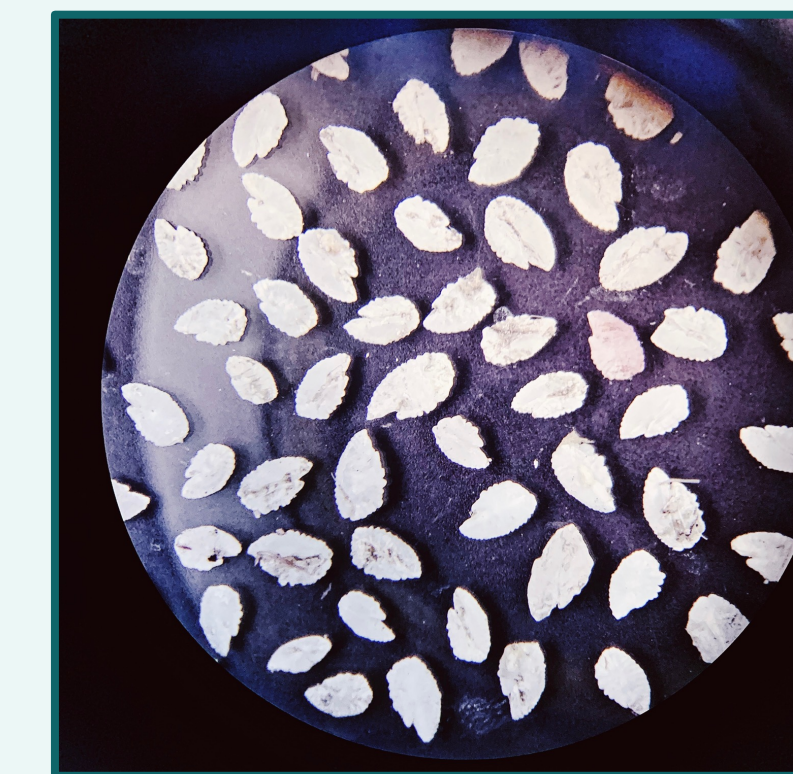


Figure 1. Locations where bycaught Common dolphins stomach samples were collected. Stomach samples were categorized as inshore (n=20) or offshore (n=16) due to collection location

Methods – Stomach Content Analysis

Hard Part Analysis of Samples

- Stomach samples were opened, decanted, and filtered to collect the otoliths, squid beaks, and whole prey items used in hard part analysis
- Analysis of sorted otoliths and squid beaks through microscopy enabled prey identification
- The MNI (minimum number of individuals) was calculated for each sample and allowed for an estimate of the number of individual prey from the # of otoliths and squid beaks collected
- The % frequency of occurrence was used to determine the percentage that a certain species was present within a group of samples



Fish Otoliths



Squid Beaks



Whole Prey

Calculating MNI

- MNI for Fish: $\text{Number of Otoliths} / 2 = \text{MNI}$
- MNI for Squid: $\text{Number of Squid Beaks} = \text{MNI}$

Results – Inshore vs. Offshore MNI

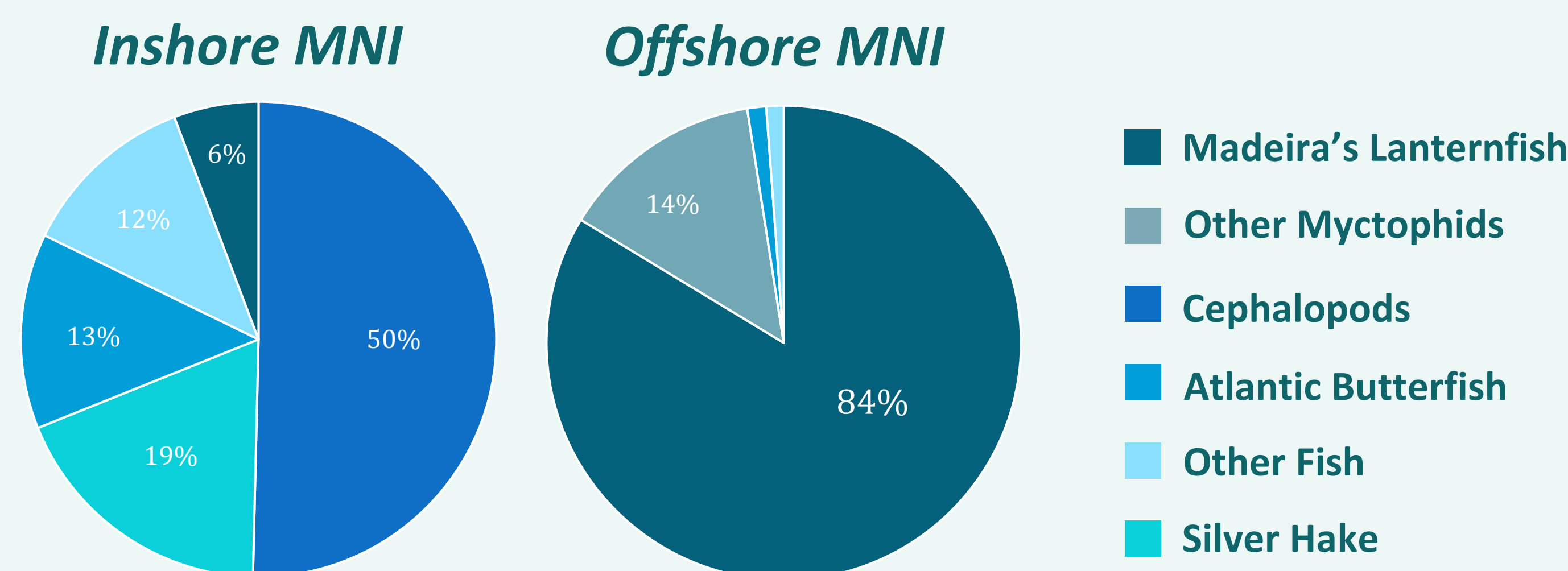


Figure 2. Pie charts comparing the MNI for important prey species between inshore and offshore locations. In the inshore group cephalopods made up 50% of prey individuals, while the other 50% was comprised of Silver Hake, Atlantic butterfish, and other species of fish. In the offshore group myctophids accounted for 97% of all prey

Results – % Frequency of Occurrence

Inshore Samples

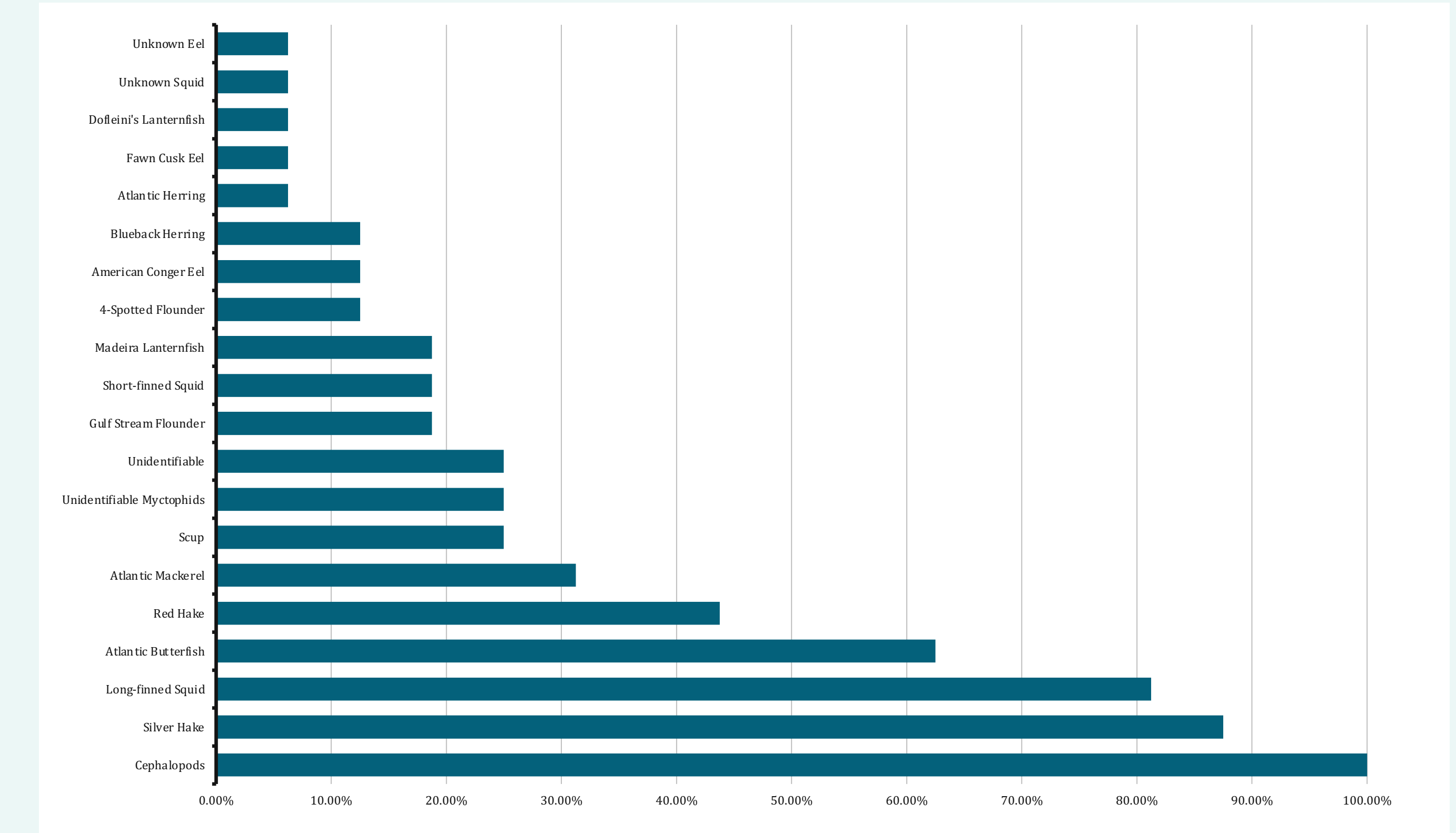


Figure 3. Bar chart showing the % frequency of occurrence for the 17 prey species found in the inshore samples. Cephalopods, Silver Hake, Atlantic butterfish, and Red Hake had the highest frequency of occurrence

Offshore Samples

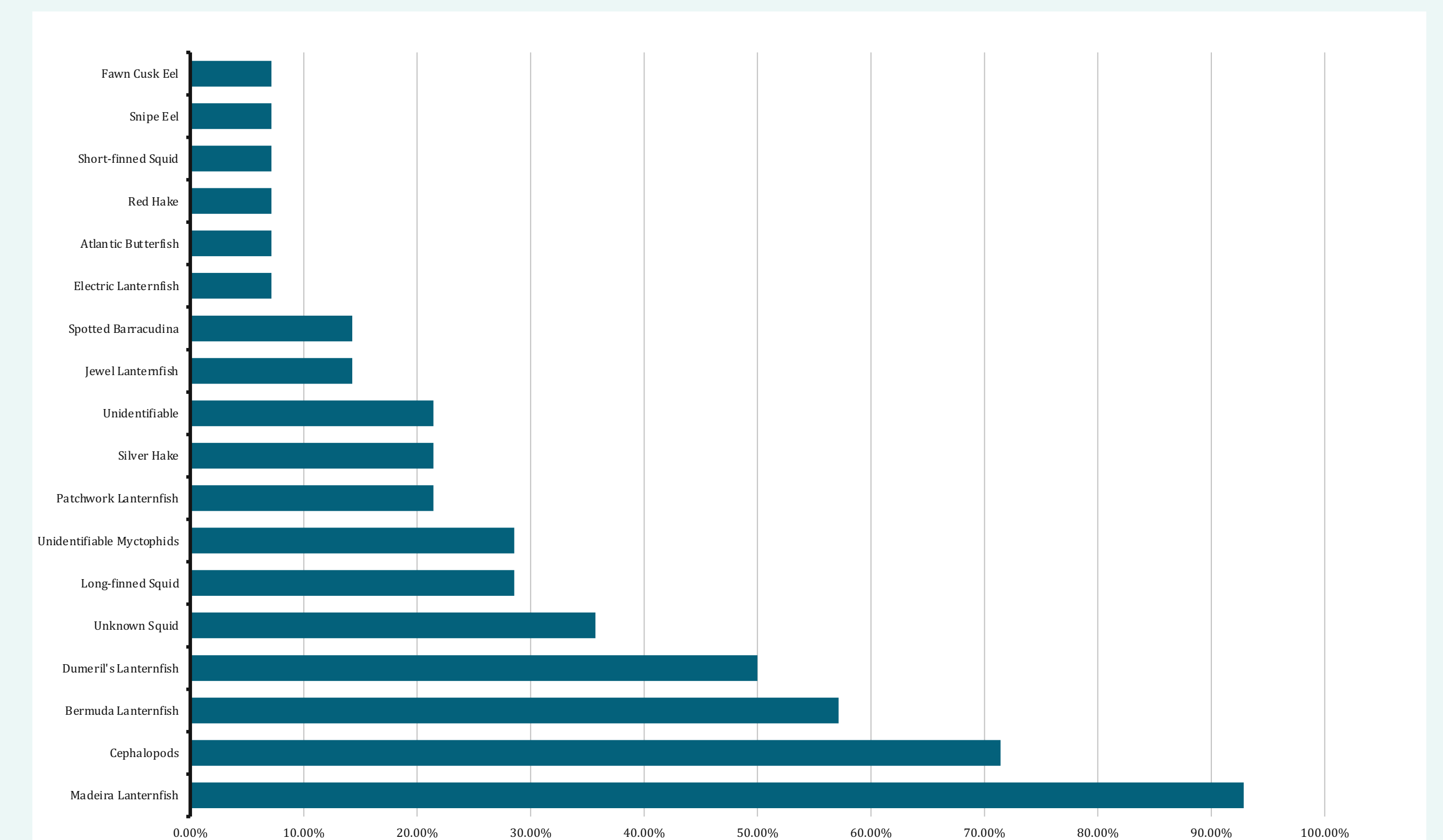


Figure 4. Bar chart showing the % frequency of occurrence for the 15 prey species found in the offshore samples. A variety of myctophid species (Madeira's, Bermuda, Dumeril's) and cephalopods had the highest frequency of occurrence

Conclusions

The significant difference in foraging ecology between offshore and inshore locations and the large variety of prey consumed suggests that Common dolphins are opportunistic predators. Their foraging ecology is dictated by the regional composition of abundant prey species. Important prey items in the western North Atlantic include schooling animals like myctophids and cephalopods, and bottom dwelling species like Silver Hake.

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