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Diet ecology assessment of cetaceans and Mediterranean Monk seals stranded on Samos Island, Greece.

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ABSTRACT

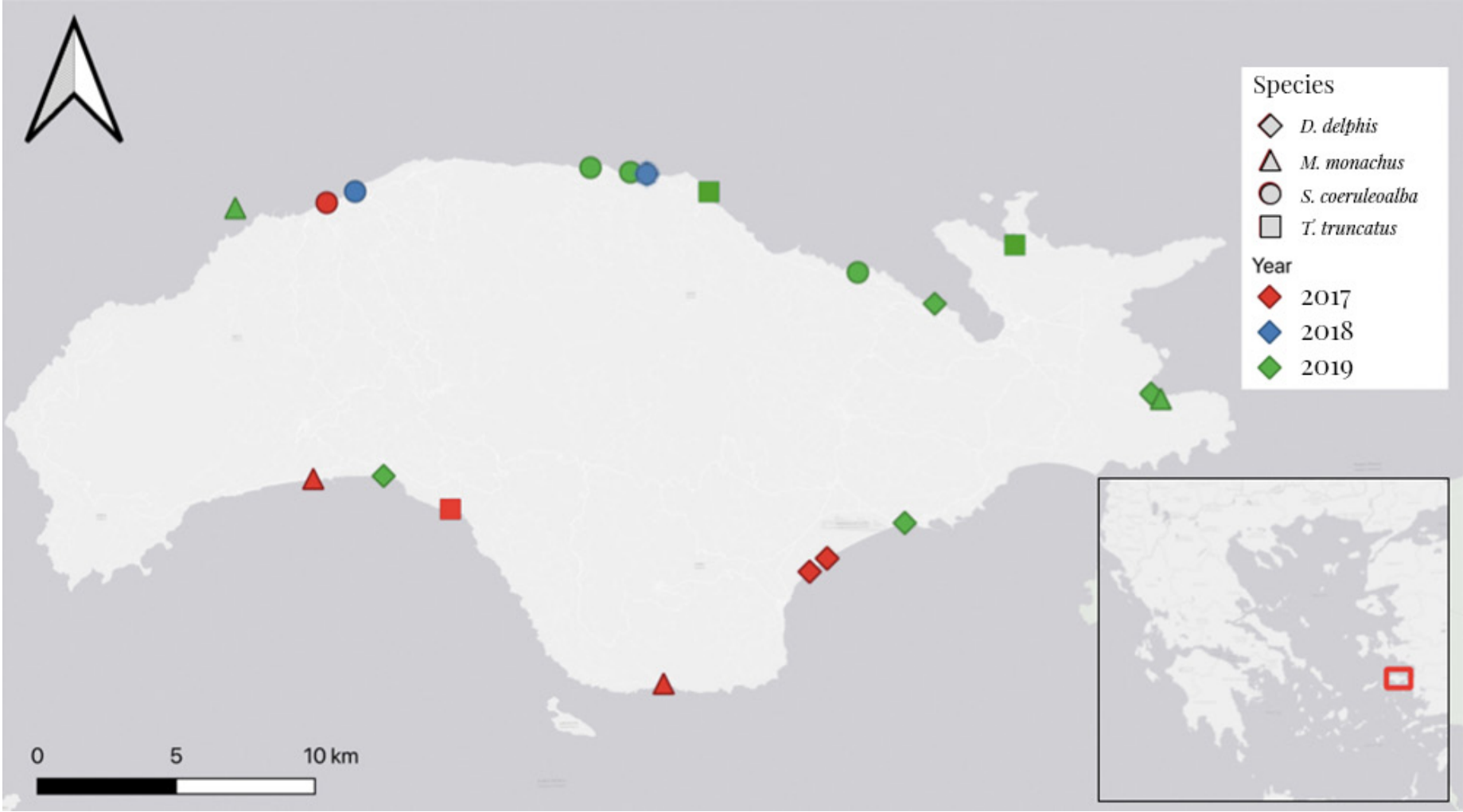
An assessment of the stomach content was performed for 15 dolphins (6 *Stenella coeruleoalba*, 3 *Tursiops truncatus* and 6 *Delphinus delphis*) and 4 *Monachus monachus* found stranded along the shore of Samos Island, Eastern Aegean Sea - Greece, between 2017 and 2019. Percentage by number (%N), percentage of occurrence (%O), percentage by weight (%W) and Index of Relative Importance (IRI) were used to **investigate the occurrence and relative importance of the prey** for the specimens when the categorisation of the stomach contents was possible. Despite some stomachs being found empty, the results of the study show a pelagic and demersal prey species composition for both cetaceans and *M. monachus*. Such research is crucial to empower **efficient conservation strategies** especially for those species like *M. monachus* and *D. delphis* which are facing a drastic decline caused by anthropogenic impacts in the Mediterranean Sea.

INTRODUCTION

Many contemporary investigations of cetacean prey employ Stomach Content Analysis (SCA) to address the position and behaviour of species within **trophic webs** as well as to investigate **ecosystem dynamics**¹. Few studies are focused on the marine mammals of the Aegean Sea^{2,3}.

The aim of this research is to conduct a **preliminary assessment** of the stomach content of cetaceans and Mediterranean monk seals stranded along the coastline of **Samos Island, Greece**.

METHODOLOGY



1. Study area
Figure 1: Stranding of marine mammals sampled along Samos coastline between 2017 and 2019.

2. Sample collection and analysis

Sampling was performed according to the international standardised protocol⁴. Organic stomach content was identified using a Mediterranean marine fauna guide⁵ and the online database Fishbase⁶. Other items such as marine litter were isolated, categorised and stored following the INDICIT protocol⁷.

3. Diet composition analysis

Stomach content was categorised and when the prey species identification was possible, percentage by number (%N), percentage of occurrence (%O), percentage by weight (%W) and Index of Relative Importance (IRI_i = (%Ni + %Wi) * %Oi)⁸ were determined. Weight of the prey was estimated based on existing literature⁹⁻¹³.

RESULTS

11 out of 19 stomachs were found full (2 *M. monachus*, 2 *T. truncatus*, 2 *D. delphis* and 5 *S. coeruleoalba*).

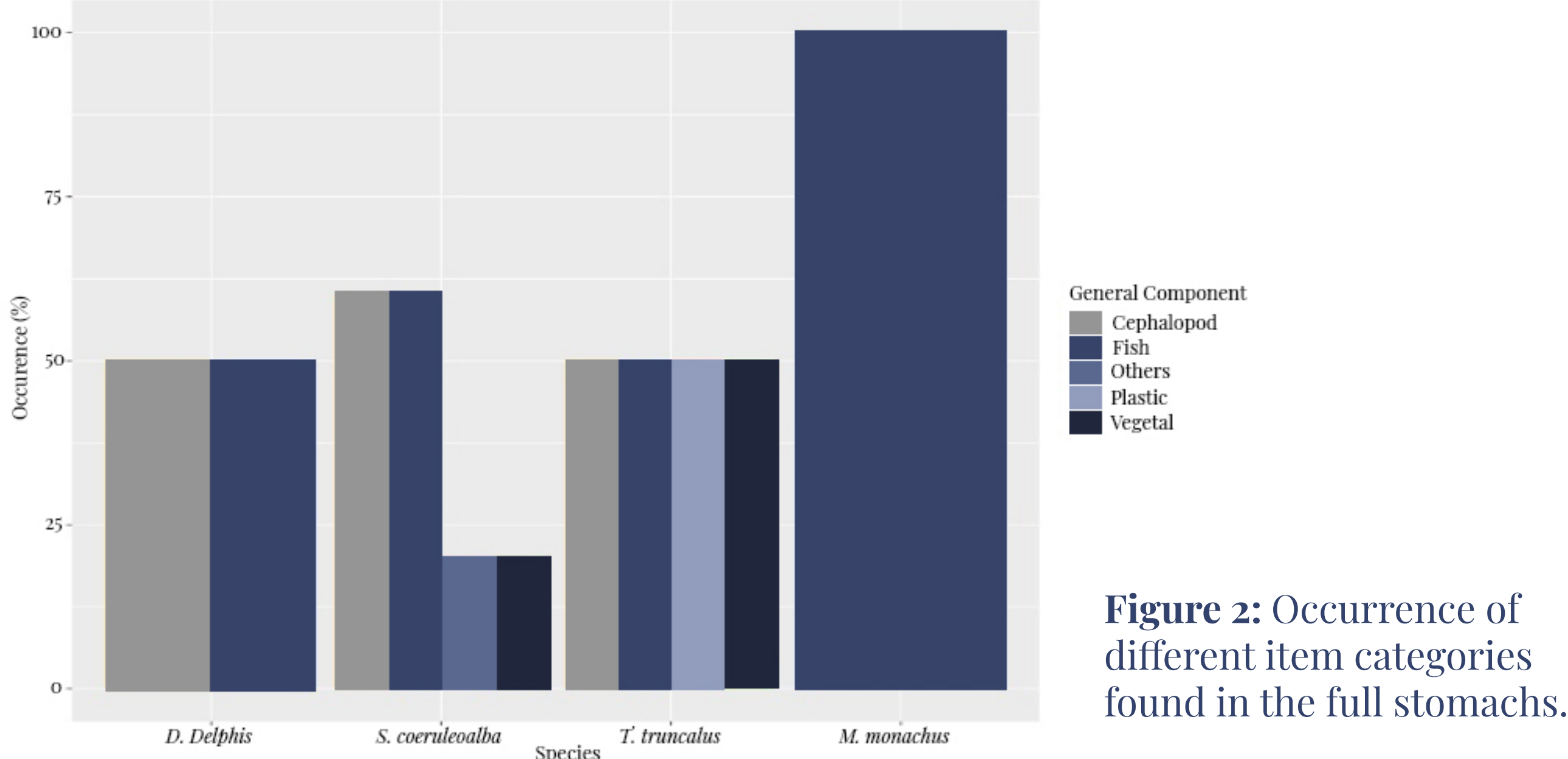


Figure 2: Occurrence of different item categories found in the full stomachs.

Species	Prey species	Family	N	%N	O	%O	W	%W	IRI
<i>Delphinus delphis</i>	<i>Heteroteuthis dispar</i>	Sepiolidae	3	37.5	1	50	5		
	Unidentified fish		5	62.5	1	50			
	Total		8	100	2	100			
<i>Stenella coeruleoalba</i>	<i>Heteroteuthis dispar</i>	Sepiolidae	7	30.4	1	20	5		
	<i>Abralia veranyi</i>	Enoploteuthidae	4	17.4	3	60	6		
	Unidentified fish		12	52.2	2	40			
	Total		23	100	5	100			
<i>Tursiops truncatus</i>	<i>Oblada melanura</i>	Sparidae	10	90.0	1	50	250	29.4	6016
	<i>Merluccius merluccius</i>	Merlucciidae	1	9.1	1	50	600	70.6	3984
	Total		11	100	2	100	850	100	10000
<i>Monachus monachus</i>	<i>Sphyræna sphyræna</i>	Sphyrænidae	3	50	1	50	5000	85.2	6758.9
	<i>Merluccius merluccius</i>	Merlucciidae	2	33.3	1	50	600	10.2	2177.7
	<i>Synodus saurus</i>	Synodotidae	1	16.7	1	50	270	4.6	1063.3
	Total		6	100	2	100	5870	100	10000

Table 1: Occurrence and relative importance of identified prey species: N = number of prey, %N = numerical percentage, O = occurrence, %O = frequency of occurrence, W = weight of prey (g), %W = percentage by weight, IRI = index of relative importance.

DISCUSSION & CONCLUSION

This preliminary assessment suggests that both fish and cephalopods are commonly consumed by dolphins with occasional recording of non-prey items, while *M. monachus* mainly feeds on fish.

The recording of demersal and pelagic prey species denotes the **variable diet and the feeding range of both cetaceans and *M. monachus***. A higher number of samples together with more specific analysis, such as stable isotope ratios, are required on stranded and alive individuals to have a broader assessment of diet ecology and feeding behaviour.

The stranded marine mammal species and their prey highlight the diversity of the **study area**, considered to be **data-deficient**. Local dietary assessments need improved tools and efforts to investigate the distribution range and the role of these species within the marine environment, including the interaction with important ecosystem services such as fisheries.

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