

Characterization of diet and ingestion of anthropogenic debris by the green turtle (*Chelonia mydas*) in Ubatuba-SP and Florianópolis-SC, Brazil

Janaina Leite de Souza

Center for Nuclear Energy in Agriculture (CENA), University of São Paulo (USP), Brazil

E-mail: janaleite@usp.br



INTRODUCTION

The green turtle (*Chelonia mydas*) is characterized by an ontogenetic change in the use of food resources and habitats between its oceanic and neritic life stages. Although many researchers say that juveniles are preferentially herbivores, the diet of these animals is still not well understood due to their alimentary plasticity. Because each individual has specific nutritional needs, and because the type of feed also depends on the foraging site, organisms of the same species may have a distinct diet in different locations around the globe.

Although the digestive tract content analysis method may provide valuable information about the recent diet of these animals, it presents limitations related to the overestimation, underestimation and accidental ingestion of food items.

Thus, the stable isotopes analyses have gained prominence as a complementary methodology. The carbon isotope ratio ($\delta^{13}\text{C}$) is used to differentiate dietary carbon sources (C3 or C4 pathways), while nitrogen isotope ratio ($\delta^{15}\text{N}$) determines the trophic level of an organism.

The foraging strategy of sea turtles also implies in a high risk of debris ingestion, mainly plastic waste. Populations in different locations go through population declines due to ingestion and entanglement in anthropogenic waste. The frequency of occurrence of debris intake differs between the sites and the amount of material ingested varies among individuals of the same species that inhabit the same areas, which shows that there is not a standard ingestion of the waste.

GOALS

1. To determine the diet of *C. mydas*

- by analyzing the contents of the digestive tract
- by the stable isotope analysis of carbon and nitrogen evaluating possible geographical and sexual variations;



2. To determine the debris found in the digestive tract of *C. mydas*, qualifying them into

- type of material (plastic, rubber, rope, fishline, etc)
- color

and quantifying and weighting them;

3. To compare the obtained results of diet and ingestion of debris by juveniles *C. mydas* found in Ubatuba-SP and Florianópolis-SC, Brazil.

MATERIAL AND METHODS

Analyses of the results:

1. DIGESTIVE TRACT CONTENTS

- Frequency of Occurrence (FO)
- Volume Percentage (V)
- Index of Relative Importance (IRI)

2. STABLE ISOTOPES OF CARBON AND NITROGEN

- MIXSIAR
- t-Student
- ANOVA

3. DEBRIS

- PERMANOVA (multivariate analysis)
- χ^2



Stable Isotopes

Debris and food items

Liver/ Epidermis/ Muscle/ Claw

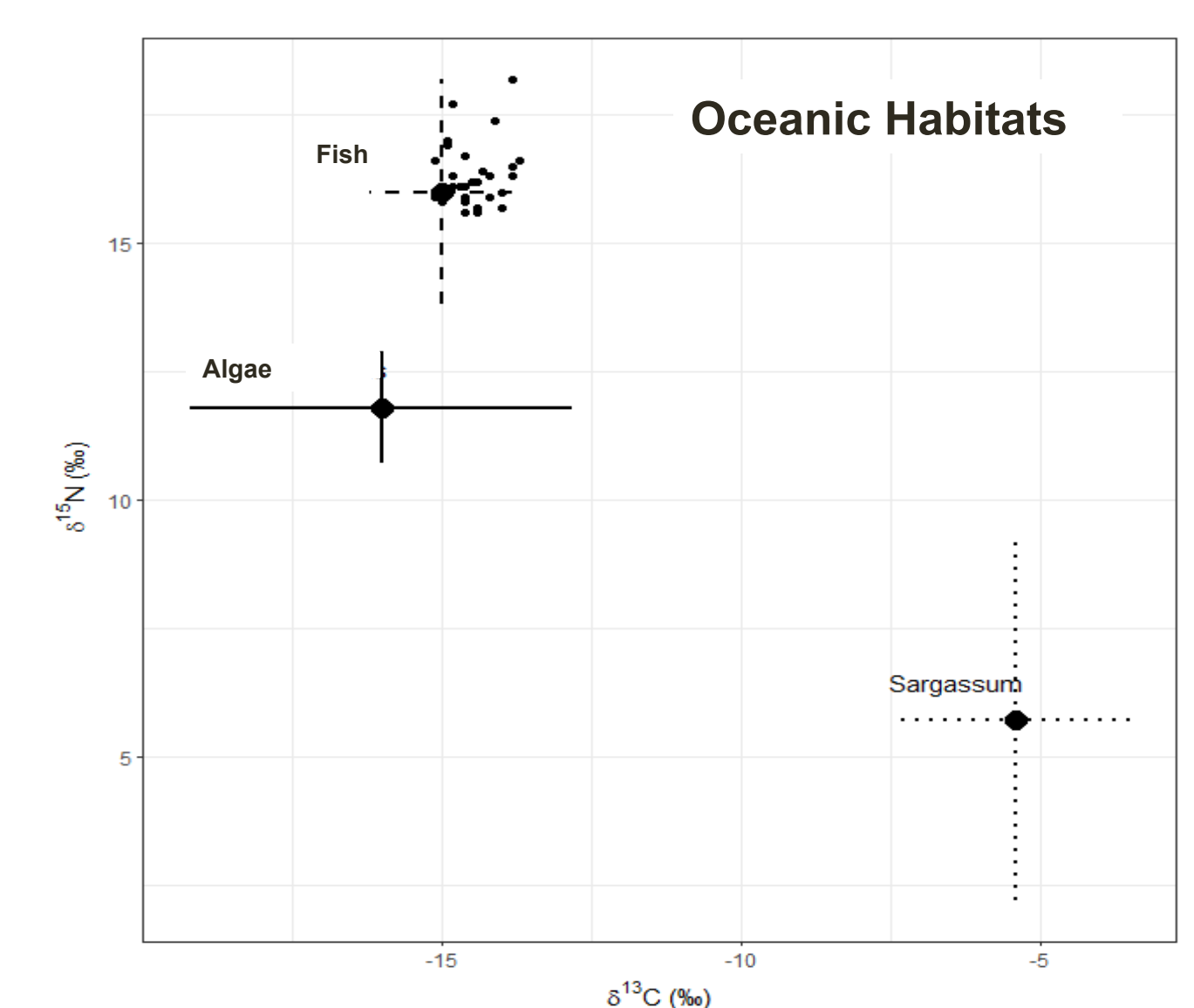
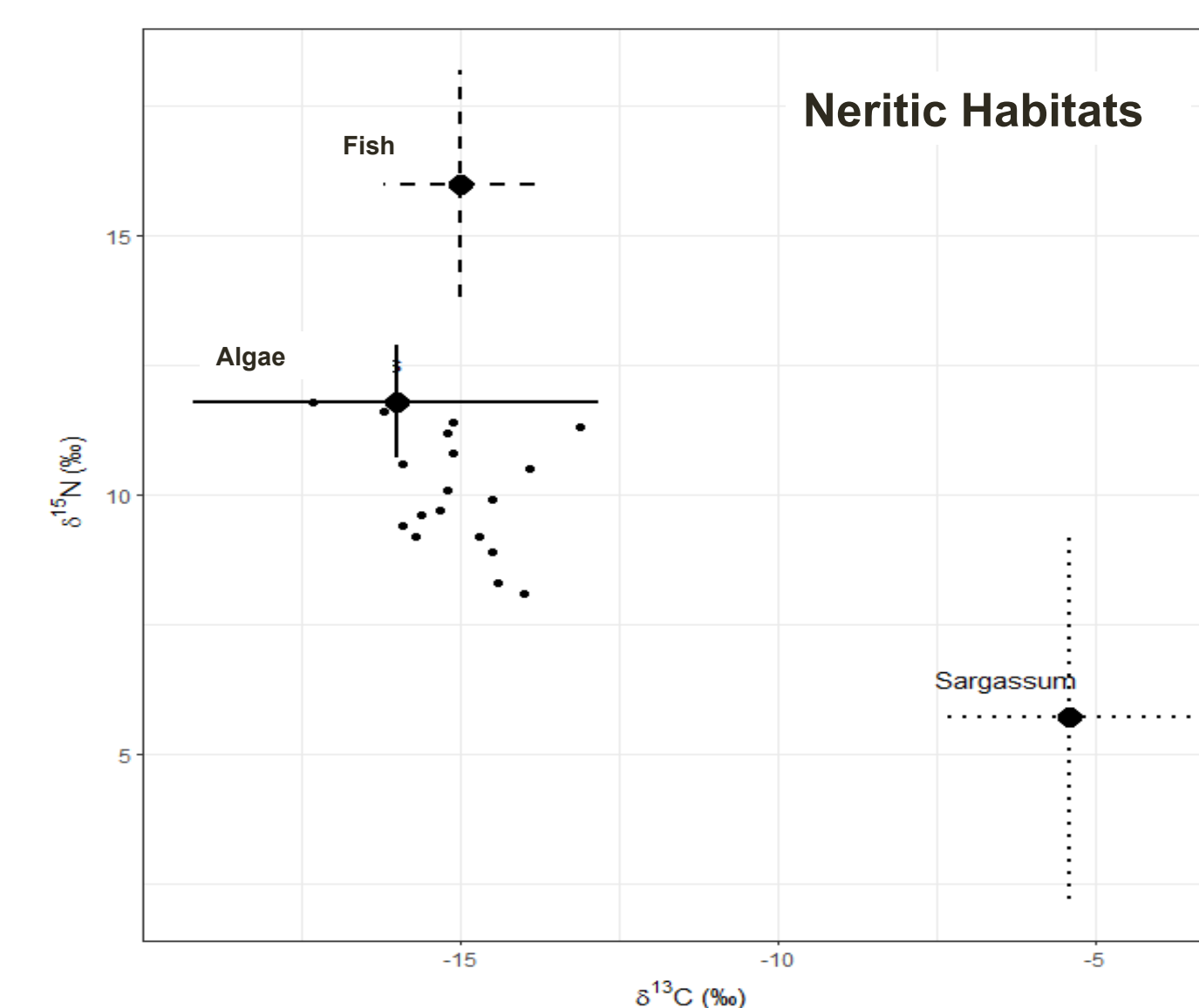


$\delta^{13}\text{C}$
 $\delta^{15}\text{N}$



PRELIMINARY RESULTS

STABLE ISOTOPES



DEBRIS

