



Abstract

Maternal instincts vary from species to species. How they care for their offspring depends on environmental and physical factors. Manatees in particular are some of the most gentle creatures on the planet and the way they care for their young is no different. For the purpose of this project, the maternal investment of manatees was observed. This was done by finding relative number of offspring and relative size of the offspring when it leaves. Other factors included diet and social interactions. The information gathered was put into logistic growth models as well as a maternal investment graph. Overall it was gathered that manatees maternal investment does not vary throughout the different species of manatees.

Introduction

Every species of animal comes from a mother and a father mixing. However, how the organisms handle parenting differ from species to species. Some organisms are parented by both parents or just one alone, sometimes by none at all. These types of qualities affect how the organism will grow and learn to be an adult. Maternal instincts are a vital factor in the case of some species. For the purpose of this project, the maternal instincts of manatees were observed.

Manatees usually travel alone, but mother and offspring stay close together until the calf is ready to go on without its mother. Manatees generally only have one offspring at a time but there are instances of twins occurring, in that case the mother exerts more to her offspring.

A few factors play into how maternal investment affects an offspring. For instance, are there predators that they have to be protected from? What types of food does the animal need for growth other than mother's milk?

In this study, these factors are observed further to see their affects maternal investment has.

Image 1: Florida Manatee



Methods

Four species of manatees were chosen to complete the study. To begin, the relative offspring size was measured for each. This was done by observing pictures of female manatees with their offspring. The relative offspring size is the size of the animal when it leaves the care of its mother. The relative number of offspring was also measured for each species. The RNO and ROS were used to create the Maternal Investment graph below. Along with the maternal investments, datasets including manatee predation and food consumption were also included within the study. The information used for the datasets were found within scientific research papers previously completed. The datasets were turned into the logistic regression graphs seen below.

Results

Figure 1: Manatee Predator (right) This graph shows the number of predators per species of manatee.

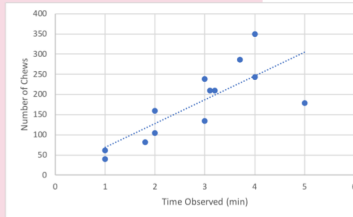
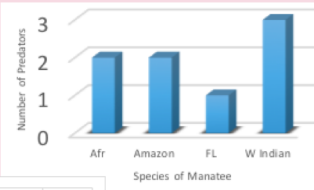
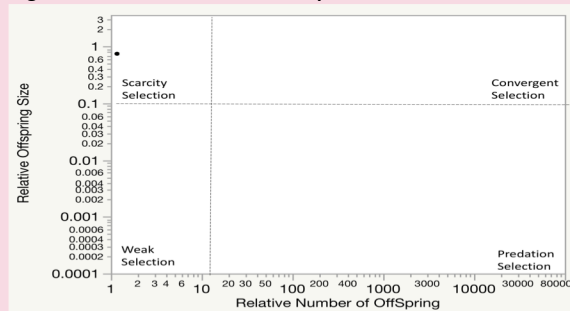


Figure 2: Amount of Time to Chew (left) This graph shows the time it took in a study for manatees to chew.

Figure 3: Maternal Investment Graph



For this graph, all four species had the same information, so their data is overlapping. Only one point appears.

Analysis

Table 1: Maternal Results of Manatee Species

	RNO	ROS
Amazonian Manatee	1	0.8
West Indian Manatee	1	0.8
African Manatee	1	0.8
Florida Manatee	1	0.8

The RNO number describes the relative number of offspring produced by the mother. The ROS number describes the size of the offspring when it leaves the mother's care.

Discussion & Conclusion

In this study, four species were observed. Relative number of offspring was looked at first, for manatees it's most common to see one calf. Relative size of the offspring was also observed, from observations it appears that manatees are almost fully grown when they leave mother's care. This information can be seen in Figure 3. They reach full sexual maturation between three and five years of age; however, they may continue growing in size for a few more years after that. Manatees can grow to be about 13 feet fully grown. It can be observed that manatees don't have many predators, given they live such a calm life. That doesn't mean they lack them. In such cases, predators include animals like crocodiles, alligators, sharks, or even jaguars. For the purpose of Figure 1, the number of predators per species of manatee was recorded. Figure 2 shows information from a study of the time and amount of chewing manatees take to consume their food. For the purpose of this study it can be seen that maternal investment of manatees does not vary and their simple lifestyles make for a simple life.

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