

The effect of omotehama environment on incubation of Loggerhead sea turtles



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ABSTRACT

Loggerhead Sea Turtles are a currently endangered species. This team wanted to investigate whether environmental changes such as temperature variations affected their breeding rates. The team studied 29 breeding places for a year and calculated the hatching rate with temperature. They found that the best temperature to lay and hatch eggs is 24 to 33°C. And they concluded that if the temperature in their local beach were to change, this would affect the turtle population.

Introduction

Omotehama is a beach in the south of Central Aichi in Japan. It is 57 km long, and is one of Japan's sea turtle laying grounds. Loggerhead Sea Turtles live in subtropical and temperate seas around the world and they come to the beach to lay eggs from May to August. They have T.D.S. (temperature-dependent sex determination) as they become female, if the sand temperature is less than 29°C, and male, if the temperature is more than 29°C.^[1] Therefore, we think that the relationship between turtles and temperature is strong. We began this study to research the Omotehama environment and the biology of Loggerhead Sea Turtles.

Materials and Methods

Temperature examination

We measured two places each 20, 40, and 60 cm from the surface with Temperature Data Logger.

Hatch examination

We dug up the already-hatched nests and checked the number of the remaining husks and unhatched eggs, after which, we calculated the hatching rate. We researched 29 places between 2009 and 2010.

Results and Discussion

This chart [Figure 1] shows the average air and sand temperature and the quantity of laying in a month.

Hatching and the sand temperature

The best temperature to lay and hatch eggs is 24 to 33°C. During July and August, there was a lot of laying, and the sand temperature was maintained at about 24 to 33°C.

The air temperature and sand temperature

Omotehama is good for keeping warm. According to the air and sand temperature graph, although

the sand temperature was changed by the air temperature, the sand maintained about 24 to 33°C.

Conclusion

Temperature is important for Loggerhead Sea Turtles to lay eggs and hatch. There is a possibility that the beach environment will change under the influence of global warming. If this is the case, we think turtles may also be affected. In the future, we would also like to research about the effect of the plants that live in Omotehama and humidity in the sand on Loggerhead Sea Turtles.

Acknowledgment

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About the Authors

Haruka Ogura belongs to her school science club. She enjoys reading books and listening to music such as the Beatles. She is interested in Biology and is considering a career in it.

Yumi Sato is currently interested in Biotechnology. She would like to be a scientist and help to solve environmental problems.

Erika Kodama's favorite subject is Biology and she hopes to study abroad. In her spare time, she likes watching movies and listening to music.

Natsuki Sugiura's favorite subject is English. She is interested in world culture and hopes to travel the world.

Tomohiko Sato is currently studying Genetic engineering and Ocean engineering. He has a great interest in Marine Biology and is especially interested in studying seaweed and its potential medical applications. His hobbies include growing plants and reading comics.

Shota Inoue is also studying Biology, hopes to travel world-wide, and enjoys reading.

Mami Shibata hopes to become a scientist and is studying Maths, Chemistry, Biology and English. Her hobbies are reading books and listening to music.

Ryuto Kimura enjoys Organic Chemistry and hopes to be a scientist and work abroad. He plays the clarinet, guitar, and piano.

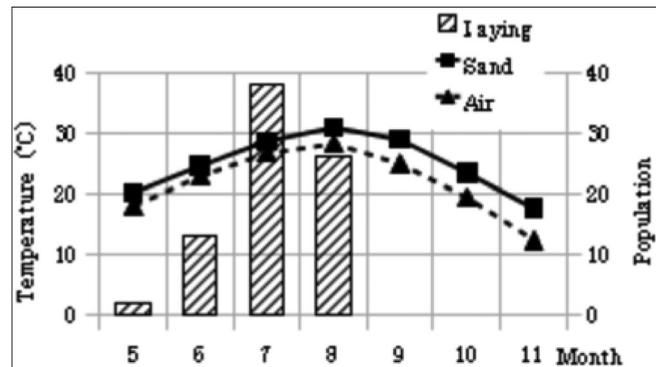


Figure 1: Graph showing the effect of temperature on the population of turtles over time

Reference

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