

The habits of Mosquitoes



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ABSTRACT

A group of students want to study mosquitoes and their larvae. They hypothesised that colour may affect how frequently mosquitoes land on an object and that CO₂ may cause mosquitoes to swarm since they are usually attracted to animals which all respire, releasing CO₂. They found that mosquitoes landed on darker colors the most frequently and although they swarmed about a human hand, high levels of CO₂ did not cause them to swarm. The team hope to study other habits which may be useful in helping reduce mosquito populations.

Introduction

We often work in the fields as part of biology club. In the summer, many mosquitoes breed and we are bitten all over by them. We want to reduce mosquitoes in our school, so we started researching their habits.

Methods and Results

Observation of mosquitoes and mosquito larvae

Larva of the mosquito

Mosquito larvae breathe on the surface of the water with their respiratory organs at the end of the abdomen.^[1] The larvae dive quickly into the water when they sense shadows on the water. There is a crouching mosquito in a pupa's head.

Mosquitoes

As shown in Figure 1, mosquitoes raise their hind legs like antenna. Perhaps, these are used as



Figure 1: Picture of a mosquito [Available from: <http://office.microsoft.com/ja-jp>]

sensory organs. These insects can rest on the ceiling or vertical place made of glass perhaps because they have fine hairs on their legs. When the glass is knocked from inside, they do not seem to react.

Reaction to color

Method

We made five paper cylinders of different colours (black, blue, red, white, and yellow), and put them in the breeding box. We counted mosquitoes on the cylinder, four times, for five minutes.

Results

As shown in the [Table 1], mosquitoes have a tendency to gather around dark colors, especially black.

A response to carbon dioxide

Methods and Results

We measured concentration of CO₂ using a Datalogger in the breeding box. The concentration at the beginning of the experiment was 350 ppm. We observed the movement of the mosquitoes for five minutes, while measuring carbon dioxide concentration under conditions of (1)~(3).

The results are shown in Table 2. What makes mosquitoes get close to mankind and other animals may have something to do with the materials except CO₂.

Conclusion

We could get to know the habits of mosquitoes

About the Authors

Nana Asakura, Oishi Kenta, Suzuki Aki, Kato Asuka and Taniguchi Keina are a group of students who attended the Anglo-Japanese Science Conference at St. Paul's boys school London in March this year. They all attend Jishukan Senior High School and study Biology. The team have gone on to study the breeding of mosquitos in winter but are finding it a challenge since it is very difficult to collect mosquitoes and mosquito larvae in winter as their lives are short.

Table 1: A table showing the number of mosquitoes landing on the different coloured cylinders in 5 minutes

Color	black	blue	red	white	yellow
Total number of mosquitoes at the times of counting in five minutes	26	4	15	0	2

Table 2: A table showing mosquito behaviour with variations in CO₂ in the environment

Prerequisite	The highest density of CO ₂	Result
We put our hand into the box	400 ppm	Mosquitoes swarmed within a minute
We blew CO ₂ into the box	700 ppm	Mosquitoes did not swarm
We made CO ₂ (HCl and CaCO ₃) in the box	600 ppm	Mosquitoes did not swarm

and mosquito larva. We want to find out a cause of making mosquitoes swarm because it would be convenient to lure mosquitoes in order to catch them. From our results, it seems CO₂ does not attract mosquitoes but human hands do. Darker colors are landed on more frequently than lighter ones.

We want to know why mosquitoes resting on glass do not go away when we knock on the outside of the glass.

We are going to make studies of breeding mosquitoes even in winter to see the effects of cold on breeding.

Reference

1. Araki O. Science of mosquito (interesting science), Nikkan industry newspaper company, 2007.