OXFORD BROOKES UNIVERSITY

English Comprehension

The Squinting Bush Brown Butterfly

Scientists all over the world study butterflies for many different reasons and to learn about many different things. Scientists grow butterflies in carefully controlled environmental conditions (laboratories) to study them more much more closely. Find out about one type of butterfly that scientists study in the laboratory.

The Squinting Bush Brown butterfly (scientific name: *Bicyclus anynana*) is a small brown butterfly found in woodlands in eastern African countries such as Ethiopia, Kenya and Tanzania. The caterpillars eat different types of grasses, and the adult butterflies eat fruit that has fallen onto the ground. Male adults also have a specific type of feeding behaviour called 'mud puddling' where they gather on mud (or animal dug) to get nutrients. Scientists are not really sure why only males do mud puddling, and not females.

Like many other types of butterfly the squinting bush brown butterfly has eye-like patterns (spots) on its wings, these are called eyespots. There is evidence that these eyespots help to stop predators like birds or other insects (like mantids) from eating them. There are thought to be two main ways that eyespots may help to stop the butterfly from being eaten by predators;

1. the eyespots look similar to the eyes of an animal that might eat the predator. When the butterfly moves its wings these eyespots scare the predator, giving the butterfly time to fly away before it is eaten,

2. the eyespots are on the edges of the wings and it is thought that they attract the attention of the predator so that they attack the wings rather than the butterfly's body. Although the predator may damage the outer parts of the butterfly's wing, this damage does not necessarily stop the butterfly from being able to fly away and escape.

The eyespots of the squinting bush brown butterfly are of particular research interest to scientists. This is because the size of their eyespots, and the colour of their wings, change depending on the season. In the African wet season, there is a lot of vegetation around. Squinting bush brown butterflies flying during the wet season have large,

clearly visible eyespots on their wings. In the African dry season, there is less vegetation around. The squinting bush brown butterflies flying around during the dry season have much smaller, less obvious eyespots and wings that are duller in colour. This change in wing colour and eyespot size is thought to be an adaptation that helps the squinting bush brown butterfly to survive better in each of the seasons. In the wet season the large eyespots are thought to help the butterflies to be better protected against predators that might be hiding in the vegetation. In the dry season, when there is less vegetation around and the butterfly's environment is mostly brown in colour, small eyespots and dull-coloured wings are thought to help the butterflies hide better from predators – they are more camouflaged.

Many different types of insects can change their colour depending on the season. The squinting bush brown butterfly is used as a model organism to study changes in insect colour or wing patterns in different seasons in the lab. A model organism is a non-human animal (or plant) that is studied over many years to build-up lots of knowledge and scientific evidence about it. By studying the wing colour and eyespot size changes in the squinting bush brown butterfly, scientists think that they can better understand colour changes in other types of insect too. The squinting bush brown butterfly is helpful for research because, unlike some other insects, it is a bit easier to keep and grow in the laboratory. Scientists know what these butterflies likes to eat, they are small, grow quickly and do not need very much space to grow in the lab. This is helpful because scientists can build-up knowledge quickly and easily.

Glossary

Vegetation – plants	**Adaptation – change**	**Evidence - proof**

Image by Casper Breuker

Questions

1. Name two predators of the squinting bush brown butterfly

…….. 2 marks

2. What are eyespots?

……1 mark

3. What does the word “visible” in line 32 mean? Use a dictionary to help you.

……1 mark

4. How is the squinting bush brown butterfly adapted to its environment in Africa? Explain your answer.

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.....2 marks

5. Which adjective is used more than once in the text to describe the squinting bush brown butterfly?

…….....1 mark

6. Give two reasons why scientists think that the squinting bush brown butterfly is helpful for research.

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……..2 marks

7. What shortened form of the word “laboratory” is used in the text?

……..1 mark