

WHY ARE BUTTERFLIES FEELING SALTY?

Salt used to melt ice on winter roads can affect the development of butterflies.

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Sodium used to help make ice melt in winter can alter how the bodies of monarch butterflies develop.

Image from pixabay

In winter, when there is a lot of ice on the roads, gritter trucks are used to help melt this ice by spreading salt, making the roads safer to drive on. But scientists have found that the salt used in this process can have a knock-on effect on the butterflies that emerge the following summer.

The findings of a new study in Minnesota (USA) investigated the effect, using leaves from milkweeds growing near rural roads and leaves from milkweeds growing at least 100 metres away from a road. The leaves of milkweeds are a common food source for caterpillars.

The researchers fed the different leaves to two different groups of caterpillars. They had already noted that the leaves that had grown close to the road contained almost 30 times more sodium than leaves that had grown far away from the road.

Sodium is a mineral that is essential to animals, including humans. Often humans actually consume too much sodium in their diet, which can be a risk factor for cardiovascular disease. Animals, by **contrast**, often do not take in enough sodium, so often farmers and **conservationists** will put out 'salt licks' which animals can use to get enough sodium.

This study was led by Emilie Snell-Rood, an **ecologist** at the University of Minnesota. Caterpillars ate the milkweeds, then were left to spin a cocoon and emerge from as a butterfly. The researchers found that the male caterpillars who had been feeding on the leaves with high levels of sodium

from near the road developed larger muscles in their **thorax**, compared to male caterpillars who had been feeding on the lower sodium leaves from away from the road.

The female butterflies from the high sodium group also emerged with larger eyes, which scientists suggesting that this could be a sign of a larger brain. The researchers repeated the experiment using white cabbage butterflies, a different species of butterfly, and found the same results.

The researchers **speculated** some possible evolutionary advantages of these changes: the males with larger muscles may be able to fly faster or for longer than rivals, making them more likely to attract a mate. The females with larger eyes may also be able to spot danger more easily, which is another advantage.

However, the scientists warn that although these seem like they may be advantages for the butterflies, the long term effects of increased sodium are still unknown and could still be found to be useful, harmful or unimportant. Other researchers have tried similar experiments with even higher levels of sodium and many have reported higher numbers of the insects dying. This means there is likely to be a balance between having enough sodium to gain a survival advantage but not too much to kill off the butterfly!

Answer the following questions in full sentences:

1. What is this news story about?

2. What two species of butterfly were studied?

3. What effect does eating salt have on the butterflies?

4. Is it ethical to carry out experiments on animals like butterflies if they might die as a result?



5. Write down the meanings of any words **in bold** in the article.
