

Butterflies That Taste Bad

By Jack Myers • Illustrated by Meryl Henderson

Butterflies have always lived dangerously. As they fly around looking for flowers, there are always birds looking for butterflies. For most birds a butterfly is a tasty snack. Some kinds of butterflies have solved that problem in a neat way. The body of a monarch butterfly contains chemicals that make it taste bad—so bad that a bird may even vomit if it eats one. That’s a great protection for monarch butterflies because birds quickly learn not to eat them.



Raised on Milkweed

The second part of this story is about how monarch butterflies get that bad taste. Their eggs are laid on milkweed plants. Their caterpillars grow up eating milkweed, which contains some bitter chemicals. These are called cardiac glycosides because they cause vomiting and even heart failure in some animals.

These chemicals protect milkweed because horses, cows, and deer won’t eat them. But the monarch caterpillar can. Even when the caterpillar has grown up to be a butterfly, those bitter chemicals are still in its body. They protect the monarch in much the same way that they protect the milkweed plant.

Viceroy and Monarch

The third part of the story is about the viceroy butterfly. It looks very much like the monarch. But it lives on willows instead of milkweeds, so it doesn’t have a supply of those bitter milkweed chemicals in its food. Naturally, scientists have supposed that the viceroy was using a trick. Birds don’t eat the viceroy either, and scientists thought the reason was simply that the viceroy looks so much like the monarch.

Lots of animals in nature have come to look alike over thousands of years. They are called mimics. When they are studied, it always turns out that there is some special advantage in being a mimic. Some flies look like honeybees and even buzz around like bees. These flies can’t sting, but they are protected because they look like bees that can. The viceroy butterfly has also been considered a good example of a mimic. It seemed to be protected from being eaten by birds because it was a mimic of the bad-tasting monarch. But now there is one more part of the story. Two scientists studying butterflies wondered if viceroy butterflies are really bluffing. Do birds avoid eating them just because they look like monarchs?

Tasting Insects

The scientists did some feeding experiments to find out. They used red-wing blackbirds and three kinds of butterflies: monarchs, viceroys, and some swallow-tail butterflies. (The blackbirds often eat swallowtails.) The scientists



removed the wings and used only the bodies of the butterflies. That way, the birds couldn't see the wing colors.

So how did the taste test come out? The swallowtails "won." All the birds quickly gulped them down. And which ones lost? That was hard to tell. Fewer than half the monarchs were eaten, and even then very slowly, the way you eat something you don't like. But there were almost the same results for viceroys. The birds acted as if both the monarchs and viceroys just didn't taste good. Evidently, the viceroys have some way to get their own bad taste.

The results of the taste test were a surprise. The monarchs and viceroys are look-alike mimics all right. Their common color pattern advertises that they both have a bad taste. Viceroys and monarchs both taste bad, and they look very much alike. So it seems likely that both monarchs and viceroys are mimics that help protect each other.