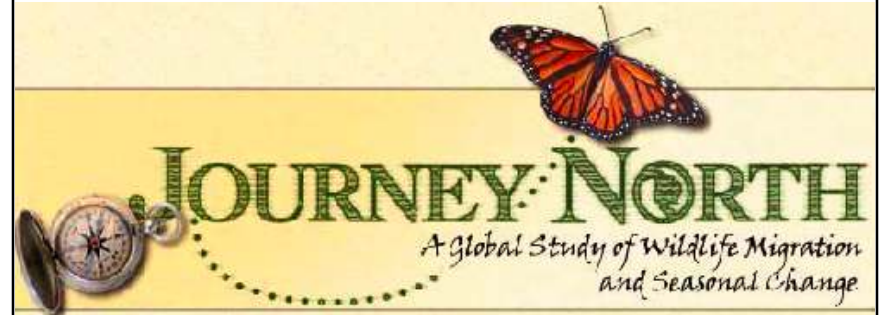




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## Who's Been Eating the Monarchs?

Monarchs and Their Predators in Mexico



by Elizabeth Howard

For a hungry predator, a monarch colony could be a jackpot. Monarch butterflies are full of stored fat. It's the energy they use to survive the winter. In a colony of *50 million butterflies* imagine how much fat there is. If you added the tiny amount of fat in each butterfly (140 mg) you would have about 1,500 pounds in that colony!

But there's a problem...

Monarchs contain poison! Monarchs eat milkweed when they are caterpillars. The milkweed contains a special chemical that is poisonous to many animals.



*Milkweed provides food for monarchs — and a poison that protects them from predators.*

1

The body of the adult monarch butterfly contains the same poison it ate as a caterpillar. Most is stored in the butterfly's cuticle (skin). These poisons give monarchs built-in protection from many predators.



*The food this monarch ate as a caterpillar will protect it against predators as an adult.*

2

But some animals can eat monarchs, and many are eaten during the winter in Mexico. The ground under a butterfly colony is peppered with butterfly wings at the end of the winter.

"In a typical year, we estimate that more than 15% of the entire overwintering population is killed by predators," says Dr. Bill Calvert.

Who ate the monarchs pictured below? Monarchs have three main enemies in Mexico—and you're about to meet them!



*These monarchs were eaten by predators.*

**Mice eat monarchs!** Mice are one of the monarch's three main predators. Mice feed at night. They eat butterflies that they find on the ground. The mice will eat living, dying, and recently dead butterflies. There are 4 species of mice in the sanctuary area, but only one species is known to feed heavily on monarchs. For some reason, the Black-eared mouse (*Peromyscus melanotis*) can eat monarchs without being hurt by the poison.



*"One mouse can eat about 37 monarchs a night," says Dr. Karen Oberhauser.*



**Orioles eat monarchs!** The black-backed oriole preys on monarchs. Why doesn't the poison hurt the oriole?

"The orioles actually avoid the toxins by not eating the cuticle (skin) where most of the toxins are stored," says Dr. Oberhauser.

The oriole uses its sharp beak to slice the cuticle open. Then it eats the fat inside.



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*Birds attack in the morning and evening, when the monarchs are too cold to fly.*

**Grosbeaks eat monarchs!** It's easy to tell when a grosbeak was the predator that ate a butterfly. The monarch's entire abdomen is missing. Why doesn't the poison hurt the oriole?

"The grosbeaks do eat the cuticle, but they prefer male monarchs who have fewer toxins," says Dr. Oberhauser. Males have 30% fewer toxins than do females, she explains.

There are 37 bird species in the region that eat insects. Yet only the oriole and grosbeak prey on the millions of monarchs that visit Mexico every winter. Their adaptations let them take advantage of this rich source of food.



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*This is the black-headed grosbeak.*