

Look But Don't Lick!

GRADES K-2

NOTES FOR EDUCATORS

Have students read the article "Look but Don't Lick!" Have them write notes in the large right-hand margin. For example, they could underline key passages, paraphrase important information, or write down questions that they have.

If it is not possible to create color handouts, use a computer projector to display the reading so that students can see the colorful frog photos. You may also have them color their black and white copies to match the actual colors.

Ask:

- What does it mean for an animal to be poisonous? (*A: An animal is poisonous if its body contains a substance that is harmful or fatal to other animals.*)
- How does being poisonous help the frogs in this article survive? (*A: Predators will not eat an animal that is poisonous to them. The frogs signal that they are poisonous by their bright colors, which warn predators not to eat them. The frogs can be active during the day and do not need to hide because they are not in danger of being eaten.*)

They can work in pairs, small groups, or as a class. During discussion, remind students to use evidence from the text to explain their thinking, and to use specific examples.

As a class, have students create a concept map about golden poison frogs, using information from the reading to illustrate what they learned.

After they have created their concept maps, go back to the list that the class generated before reading and decide as a group which words on the list relate the best to the frogs that they read about. Circle or highlight those words for later reference.

SUPPORTS FOR DIVERSE LEARNERS: Student Reading

- "Chunking" the reading can help keep them from becoming overwhelmed by the length of the text. Present them with only a few sentences or a single paragraph to read and discuss before moving on to the next "chunk."
- Provide "wait-time" for students after you ask a question. This will allow time for students to search for textual evidence or to more clearly formulate their thinking before they speak.

Common Core State Standards:

W.K-2.2, W.K-2.8
RI.K-2.1, RI.K-2.2, RI.K-2.4, RI.K-2.7, RI.K-2.10

New York State Science Core Curriculum:

LE 3.1a

Next Generation Science Standards:

PE 1-LS1-2
DCI LS1.A: Structure and Function
All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.

Student Reading

Look But Don't Lick!

In the 1970s and early 1980s, Museum scientists made a few trips each year to the Colombian rain forest. They were interested in tiny, brightly colored frogs that could be spotted dotting the plants and rocky streams of the jungle.



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Dendrobates tinctorius
(blue poison frog)

Size: 1 to 1.75 inches

Range and habitat: forests in northern South America

Frog Fact: Some blue poison frog "morphs" combine white, black, yellow-and, of course, brilliant blue.

Although they're beautiful, many of these Central and South American frogs are also very poisonous. The visiting scientists noticed that people who live in the Colombian rain forest – the Emberá – used the poisons that ooze out of the frogs to make their blowgun darts deadly. They rubbed dart tips along the animals' backs to transfer the toxins to their weapons, and hunted for animals using the poisoned darts.

The Emberá used three frog species to poison their darts. One of these species was a bright yellow or sometimes orange frog that the scientists had not seen before. Over several years, they collected hundreds of this new-to-science species. The frogs were about two inches long, larger than any other species of poison frog.



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Phyllobates terribilis
(golden poison frog)

Size: About 2 inches

Range and habitat: tropical rainforests in Colombia

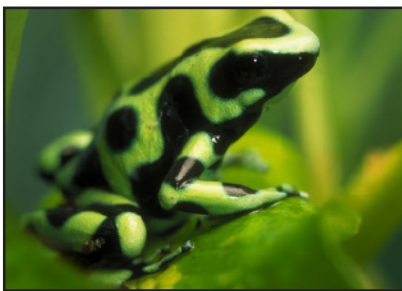
Frog Fact: The most poisonous dendrobatid, golden poison frogs are also excellent "tongue hunters," rarely missing a strike.

The scientists found that these frogs were also 20 times more toxic than any other kind of frog. Each of them oozed enough poison to kill up to 10 people. The scientists gave this frog species a frightening name: *Phyllobates terribilis*. The common name for the species is less scary: the golden poison frog.

Warning Colors

Many small animals in the rainforest are nocturnal, which means active at night. This may help them avoid predators that are active and hunting during the day. But poison frogs are diurnal instead, which means active during the day. You'd think predators like snakes, birds or other hungry animals could easily spot one in the forest where it lives.

As it happens, however, powerful colors and patterns are often used in the natural world to tell hungry predators to stay back. The bright colors advertise that species – from butterflies to berries – are not tasty, and perhaps are even poisonous.



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Dendrobates auratus
(green and black poison frog)

Size: 1 to 2 inches

Range and habitat: rain forests and plantations, Nicaragua to Colombia

Frog Fact: Like most dendrobatids, green and black poison frogs are diurnal and are active all day long.

Getting the Poison

How do these frogs get their poison? It actually comes from their diets!

Recent studies have found that insects like certain mites, ants, beetles, and millipedes in the frogs' diets contain chemicals that the frogs can turn into poisons after eating them.

In captivity, poison frogs' natural foods are easily replaced by non-toxic foods. They are fed different types of live fruit flies, crickets and beetles, because the frogs need to see the prey moving in order to catch it. These insects don't contain the same chemicals that are found in the frogs' wild prey, so the frogs can't produce poison.



© AMNH

Dendrobates leucomelas
(bumble bee poison frog)

Size: 1 to 1.5 inches

Range and habitat: western Venezuela to Guyana

Frog Fact: Native to dry forests, this species often hides away until the rains come, after which it ventures forth to forage.

This article first appeared in the Fall 2013 issue of Rotunda, the member magazine of the American Museum of Natural History.

Sample Concept Map for "Look But Don't Lick!"

