NATURE'S LABORATORY

" *The snake flees from the man; the man flees from the snake,*
and the road remains empty. Thus does enmity waste opportunity."
-- African Proverb

Despite the important role they play in our environment, snakes are often misrepresented as slimy, malicious, and deadly. In fact, snakes are great neighbors to have. Snakes eat rodents, keeping their numbers at manageable numbers. And since rodents can carry diseases communicable to humans, diseases such as the bubonic plague, Lyme disease and hantavirus, it's not such a bad arrangement to leave snakes to their business.

Here in northern California, there are a number of native snake species. Perhaps one of the most common snakes found in the region is the gopher snake. Gopher snakes can grow up to 9 feet in length, but despite their size they are harmless to humans. Their cream colored bodies blotched with a brown or reddish brown are often mistaken for another snake species, the northern Pacific rattle snake. Rattlesnakes are the *only* venomous snake to be found in the North Valley. Unlike gopher snakes, rattle snakes are dangerous and they advertise as much. As their name suggests, a cluster of rattles crown their tail which, when shaken, warn unwary passersby of their presence.

With a little practice, even an amateur naturalist can discern at a distance the difference between a rattle snake and a gopher snake. The most obvious clue is the rattle – rattle snakes have one, gopher snakes don't. But if the snake is coiled or the tail is obscured, take a look at the snake's head. Rattle snakes are pit vipers, venomous snakes with a broad triangular head within which the venom is stored. This distinct arrowhead appearance to a pit viper's head is very different from the gently tapering heads of non-venomous snakes.

Although gopher snakes aren't venomous, they often act like rattle snakes to warn away predators, a type of behavior known as Batesian mimicry . Even though they lack a rattle, gopher snakes sometimes will rattle their tails in dry grass to emulate the sound of a disturbed rattle snake.

There are also a number of garter snakes throughout the north state including the common, western terrestrial, western aquatic, and giant garter snakes. Although these "giants" grow to only four feet in length, they are the largest of the garter snakes. The giant garter snake is native only to the floor of the Central Valley and is state and federally listed as threatened.

More elusive are the ringneck and night snakes. Ringneck snakes prefer moist habitats beneath bark, under stones and logs, or within rotting logs. They bear a characteristic yellow or orange band behind a darker olive head and their underbelly is a gradation toward the tail of yellow to orange to red. Ringnecks grow no larger than two and a half feet in length and prefer to dine on smaller snakes and frogs, lizards, slugs and worms. Night snakes are even smaller at about two feet in length. They range in color from a pale gray to brown, blotched with dark gray or brown markings along their back. This nocturnal snake dines on smaller snakes, lizards, frogs, and salamanders which it overpowers by injecting venom from enlarged teeth buried far back in its mouth.

The California kingsnake and the California mountain kingsnake are two more harmless residents common to our backyard. Both are characterized by banding, the former a dark brown or black snake with yellowish crossbands or stripes, the latter a black snake sporting stripes of white and red such that each band is interrupted by black (black-white-black-red-black-white…). The common kingsnake is a particularly good snake to have around because it eats other snakes, including venomous rattle snakes.

Other snakes you might find in the backyard include the rubber boa, the California whipsnake, the sharp-tailed snake, and the western yellow-bellied racer.

Believe it or not, snakes only use their nostrils to breath: to smell, they use their tongue! Their forked tongue flicks outward and picks up scent particles from the air, then deposits them in two depressions along the roof of their mouth. Since snakes lack legs, they move instead via waves of muscular contractions, the s-shaped slither characteristic of most snakes. The scales along their belly help them to grip the ground as they make their way.

Hands On*:* A great way to learn about snakes firsthand is to view them up close. That's often difficult out in nature, but Turtle Bay's summer snake exhibit provides a great opportunity to study California's snakes eye to eye. Bring a field guide and try to match the description of the snakes in the book to those in the displays. If some snakes (like the gopher and rattle snake) appear similar, inspect each one carefully and note the differences, up close and from afar. If you learn to identify them now, perhaps next time you won't be intimidated when you encounter a snake outdoors.

Batesian mimicry, when harmless species act or appear like dangerous ones, is common throughout the animal kingdom. Borrow a biology book from the library to learn how other animals use mimicry to protect themselves. Might there be other snakes that use this same strategy?

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