Clever Trick Allows Snake to Eat Toxic Prey

An ingenious evolutionary trick allows an Australian snake to dine on toxic frogs without getting poisoned, scientists have found.

The northern death adder lives in Australian floodplains and feeds on frogs, some of which have skin laced with potent poisons or coated with glue-like substances that trip up the snake's meal plans.

The adder is armed with [lethal venom](http://www.livescience.com/498-surprising-origin-venom-revealed.html) of its own, and for nonpoisonous frogs, the snake simply bites and swallows. But when dealing with dangerous frogs, the adder envenomates and then immediately releases its prey. It then waits for the frog to die, and for the toxins or glue in its skin to break down into benign chemical compounds, before feasting.

"The frog usually hops some distance before dying, but the snake can easily track the frog down using its forked tongue and sensitive olfactory system," said study team member Ben Phillips of the University of Sydney.

The snakes tailor their behavior for specific frogs. The Australian marbled frog, for example, produces a sticky goo that takes about 10 minutes to dry after the frog's death. The snake waits about 12 minutes after the initial bite before eating it.

Toxin in the skin of Dahl's aquatic frog requires 30 minutes to degrade, so the snake delays swallowing for about 40 minutes after the first bite.

How does the adder know how long to wait before digging in? That's the ingenious part. Frog toxin from the initial strike lingers in the snake's mouth in concentrations not high enough to kill it.

"So they seem to wait until they can't taste the toxin before attempting to eat the frog," Phillips told *LiveScience*. "Often they go and taste, then drop the prey before waiting a further five minutes or so and trying again."

Evolutionary theory predicts that the adder's tactic is foolproof: [Natural selection](http://www.livescience.com/474-controversy-evolution-works.html) stops operating after an individual's death, so the frogs will probably never evolve longer-lasting toxins in response to the clever snakes.

"The common assumption is that snakes are pretty stupid, and to them a frog is a frog," Phillips said. "But here we see a snake that effectively discriminates between frog species and then deals with each species in an appropriate manner."

Phillips added, "If dinner can kill you, you have to be careful."

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Questions

1. What is the name of the snake in the study?
2. Is the topic snake venomous?
3. What is the special “thing” the snake can do – that warranted the study?
4. Does the snake react the same to each type of prey?
5. How does the snake track its prey?
6. What is the current hypothesis regarding how snakes know when to eat their toxic prey?
7. What evolutionary theory is discussed in the article?