

Smart Stuff

with Twig Walkingstick

Q. Dear Twig: Why don't porcupines stick to things? All those pointy quills and all ...

A. First, the **quills** ("kwills") on a porcupine mostly point backward.

So when, for example, a porky climbs a tree, its quills don't aim forward and poke things by mistake. (Like branches. Tree trunks. The back ends of bears.)

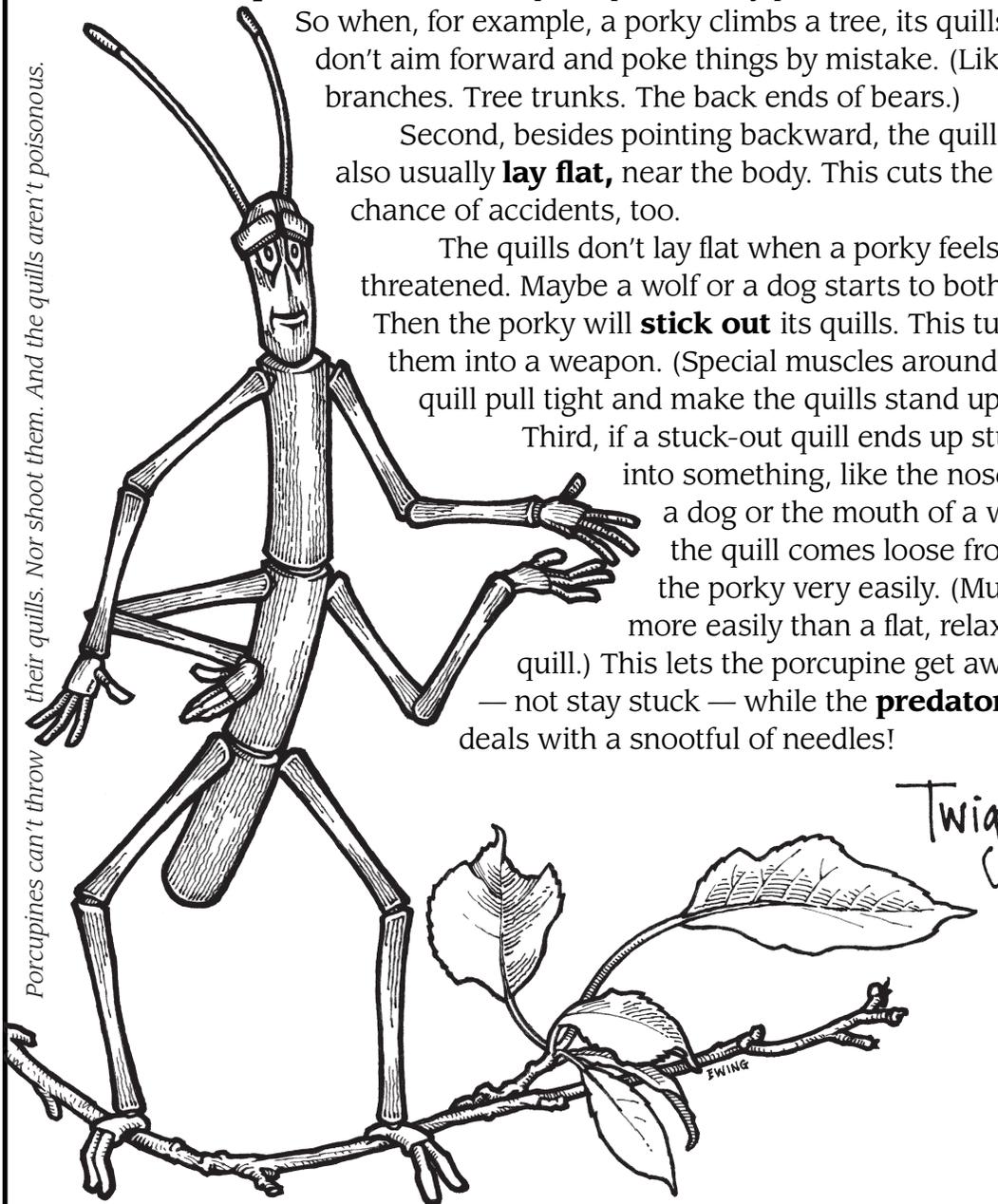
Second, besides pointing backward, the quills also usually **lay flat**, near the body. This cuts the chance of accidents, too.

The quills don't lay flat when a porky feels threatened. Maybe a wolf or a dog starts to bother it.

Then the porky will **stick out** its quills. This turns them into a weapon. (Special muscles around each quill pull tight and make the quills stand up.)

Third, if a stuck-out quill ends up stuck into something, like the nose of a dog or the mouth of a wolf, the quill comes loose from the porky very easily. (Much more easily than a flat, relaxed quill.) This lets the porcupine get away — not stay stuck — while the **predator** deals with a snootful of needles!

Porcupines can't throw their quills. Nor shoot them. And the quills aren't poisonous.



From your scientific friends at The Ohio State University — specifically, the Ohio Agricultural Research and Development Center (www.oardc.ohio-state.edu) and OSU Extension (extension.osu.edu).



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Notes: The quills of the North American porcupine are barbed, hollow, modified hairs. A porcupine has about 30,000 of them. Scientists call the muscles that make quills stand up "piloerectors," while a special quill-holding skin part called the "spool" lets stuck-out, poked-into-something quills pull loose much more easily than relaxed, unstuck ones do. Sources: "A Facilitated Release Mechanism for Quills of the North American Porcupine" by Uldis Roze, Queens College, New York, in *Journal of Mammalogy*, 2002; University of Michigan Museum of Zoology Animal Diversity Web, <http://animaldiversity.ummz.umich.edu>; and "Smart Weapons," also by Roze, in *Natural History*, 2006.

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