

How rattlesnakes' scales help them sip rainwater from their bodies

January 8 2020



Credit: CC0 Public Domain

During storms in the southwestern U.S., some rattlesnakes drink rain droplets from scales on their backs. This unusual behavior could help them survive in a desert environment with infrequent rain. Now,

researchers have figured out how the nanotexture of scales from these snakes helps them use their bodies to harvest rain. They report their results in *ACS Omega*.

The western diamondback rattlesnake (*Crotalus atrox*) from southern Arizona and other areas of the U.S. Southwest has been seen emerging from its den to harvest rain, sleet and even snow. The [snake](#) flattens its body and often forms a tight coil, presumably to maximize the area for water-gathering. As rain droplets coalesce on its back, the slithery reptile sucks water from the scales. Gordon Schuett, Konrad Rykaczewski and colleagues wanted to take a closer look at rattlesnake scales to determine what makes these serpents so adept at harvesting precipitation.

The researchers compared the [surface wettability](#) and nanotexture of scales from the western diamondback rattlesnake and two other species of desert-dwelling snakes that do not show rain-harvesting behavior: the desert kingsnake and the Sonoran gopher snake. The team dropped water onto the snakes' backs, finding that the droplets beaded up, coalesced and stuck to the rattlesnake's scales, whereas they formed shallow puddles that often slipped off the other snakes' bodies. Scanning electron microscopy of rattlesnake scales revealed nanochannels that form a labyrinth-like network, but scales from the other two snakes did not show these same features. The [rattlesnake's](#) dorsal scales aid in water collection by providing a sticky, [hydrophobic surface](#) that "pins" [water droplets](#) to the surface, the researchers say.

More information: Akshay Phadnis et al, Role of Scale Wettability on Rain-Harvesting Behavior in a Desert-Dwelling Rattlesnake, *ACS Omega* (2019). [DOI: 10.1021/acsomega.9b02557](https://doi.org/10.1021/acsomega.9b02557)

Provided by American Chemical Society

Citation: How rattlesnakes' scales help them sip rainwater from their bodies (2020, January 8)
retrieved 25 April 2024 from

<https://phys.org/news/2020-01-rattlesnakes-scales-rainwater-bodies.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.