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Bats in the News - Surviving in the Desert

Deserts are especially harsh places to live. Yet many organisms thrive in these arid landscapes, largely because a range of adaptations provides a defense against the ravages of heat and scarce moisture. Bats are no exception. *ScienceDaily* reports that desert bats can change the makeup of their skin to reduce water loss.

Scientists at Ben-Gurion University in Israel told the online news site that this ability is crucial, since bats' large, naked wings, coupled with the energy required for flight, suggest very high rates of water loss by evaporation. The research findings were presented to the Society for Experimental Biology Annual Conference in Prague, Czech Republic.

The team, led by Agustí Muñoz-Garcia, found that the desert-dwelling Kuhl's pipistrelle (*Pipistrellus kuhlii*) loses about 20 percent less water than non-desert bat species, the website said.

"Control of energy expenditure and water loss is crucial for all terrestrial animals to survive and reproduce," the site quoted Muñoz-Garcia as saying. "This is particularly important for animals that live in deserts, where ambient temperatures are high, humidity is low and drinking water is scarce"

The findings may, *ScienceDaily* said, "provide significant insight into how bats might respond to a changing climate" in the future.

Muñoz-Garcia said an animal's total water loss consists of cutaneous losses (through the skin) plus respiratory losses from exhaling. Desert bats, he told *ScienceDaily*, conserve water by reducing cutaneous losses, which account for most of the water loss.

The scientists suggest that this is accomplished by adjusting the lipid (or fat) composition of the skin, a method that has been documented in other mammals and in birds. *ScienceDaily* reports that "Muñoz-Garcia and his team were the first to identify this [ability] in other species of bats, and aim to prove it in desert bats."

The next step is to examine other desert-bat species to confirm their findings and better understand this adaptive mechanism for reducing critical water loss.

"Our plan is to measure [rates of water loss in] at least eight species from different environments, so we can start building a database that can allow future comparisons," Muñoz-Garcia said.

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