

Tree frogs chill out to collect precious water

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Research published in the October issue of *The American Naturalist* shows that Australian green tree frogs survive the dry season with the help of the same phenomenon that fogs up eyeglasses in the winter.

According to researchers from [Charles Darwin](#) University in Australia, tree [frogs](#) often plop themselves down outside on cool nights during the dry season in tropical Australia. When they return to their dens, [condensation](#) forms on their cold skin—just like it does on a pair of glasses when we come in from the cold. The researchers found that frogs absorb this moisture through their skin, which helps to keep them hydrated during periods of little or no rain.

Before this study, the frogs' dry-season excursions were a bit mysterious.

"Every once in a while, we would find frogs sitting on a stick under the open sky, on nights when it was so cold they could barely move," said Dr. Chris Tracy, who led the research. "It was a real puzzle."

Tracy and his colleagues thought this behavior might enable the frogs collect condensation, but the hypothesis had never been tested.

The researchers designed a series of experiments using real frog dens in eucalyptus trees and artificial ones made from PVC pipe. They wanted to see if the frogs could collect enough moisture through condensation to compensate for what they lost being in the cold. They found that a cold night out cost a frog as much as .07 grams of water. However, a frog could gain nearly .4 grams, or nearly 1 percent of its total body weight,

in water upon returning to the warm den.

The researchers also tested how well a frog's skin could absorb water, and found that as much as 60 percent of each water drop could be absorbed.

The results show that frogs can use condensation to hydrate themselves. And in a place as arid as the Australian savannahs during the dry season, where there is essentially no rain from June through August, every little bit counts.

"When there's no [water](#) available, even a small amount can mean the difference between surviving the dry season or not," Tracy said.

More information: Christopher R. Tracy, Nathalie Laurence, Keith A. Christian, "Condensation onto the Skin as a Means for Water Gain by Tree Frogs in Tropical Australia." *The American Naturalist* 178:4 (October 2011)

Provided by University of Chicago

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