

Detection dogs and DNA on the trail of endangered lizards

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Seamus, a trained detection dog, alerts his handler to the presence of scat. Credit: Mike Westphal, Bureau of Land Management

Detection dogs trained to sniff out the scat of an endangered lizard in California's San Joaquin Valley, combined with genetic species

identification, could represent a new noninvasive sampling technique for lizard conservation worldwide. That is according to a study published today from the University of California, Davis, in partnership with the nonprofit Working Dogs for Conservation, U.S. Geological Survey and the U.S. Bureau of Land Management.

Scientists have used trained conservation dogs to locate scat and collect DNA samples for everything from bears and foxes to gorillas and whales. But the technique had not been used for reptiles until this study, for which scientists developed a novel approach to identify the presence of the blunt-nosed [leopard lizard](#) in the Panoche Hills Recreation Area and Carrizo Plain National Monument, both managed by BLM.

They developed new methods to recover DNA from feces and genetically identify lizard species in the same area. The study, published in the *Journal of Wildlife Management*, is a proof of concept for a host of reptiles.

"So many reptilian species have been hit so hard," said lead author Mark Statham, an associate researcher with the Mammalian Ecology and Conservation Unit of the UC Davis School of Veterinary Medicine. "A large proportion of them are endangered or threatened. This is a really valuable way for people to be able to survey them."

No direct contact needed

Current methods for surveying lizard species typically rely on live capture or visual surveys. Scat sampling allows biologists to study elusive, rare or dangerous animals without the need for direct contact. In addition to informing about the presence, habitat and genetics of an animal, scat can also be analyzed to inform researchers about diet, hormones, parasites and other health factors.



The endangered blunt-nosed leopard lizard lives in the San Joaquin Valley of California. Credit: Jonathan Richmond



This composite photo shows a blunt-nosed leopard lizard, a detection dog on the trail of lizard scat, and genetic analyses work to identify the lizard species from fecal samples. Credit: Mark Statham/UC Davis

Using the new method, the authors genetically identified specific [species](#) for 78 percent of the 327 samples collected by dog-handler teams across

four years. Most (82 percent) of those identified were confirmed as being from blunt-nosed leopard [lizards](#).

To meet regulatory monitoring requirements, more research is needed to assess the viability of using [detection dogs](#) to recover usable DNA at larger scales. But the research highlights the broad potential this method holds for surveying and monitoring reptiles.

Provided by UC Davis

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