

2-26-2009

Two Salamanders Gone Extinct In Guatemala, But New Species Pop Up Elsewhere

LADB Staff

Follow this and additional works at: <https://digitalrepository.unm.edu/noticen>

Recommended Citation

LADB Staff. "Two Salamanders Gone Extinct In Guatemala, But New Species Pop Up Elsewhere." (2009).
<https://digitalrepository.unm.edu/noticen/9682>

This Article is brought to you for free and open access by the Latin America Digital Beat (LADB) at UNM Digital Repository. It has been accepted for inclusion in NotiCen by an authorized administrator of UNM Digital Repository. For more information, please contact amywinter@unm.edu.

Two Salamanders Gone Extinct In Guatemala, But New Species Pop Up Elsewhere

by LADB Staff

Category/Department: Region

Published: Thursday, February 26, 2009

New research from University of California (UC) at Berkeley biologists has documented a decline in salamander populations in Guatemala. The finding indicates that the better-known drop in frog populations worldwide extends through the amphibian world to include salamanders. But even as they dwindle, previously unknown species are showing up at the other end of the isthmus. UC biologists compared recent population surveys of the creatures with counts done between 1969 and 1978 on the skirts of Tajumulco volcano in Western Guatemala's San Marcos department. At 4,223 meters, Tajumulco is the highest mountain in the country. Altitude could prove important in the analysis of what has happened to these animals. Study leader David Wake said that two of the three species that were most common 40 years ago, *Pseudoeur brunata* and *Pseudoeur goebeli*, are completely gone. The third is extremely difficult to find. "There have been hints before. People went places and couldn't find salamanders. But this is the first time we've really had, with a very large solid database, this kind of evidence." Wake is a professor of integrative biology and herpetology curator at UC Berkeley's Museum of Vertebrate Zoology. Wake said that the variety of causes of decline in frogs pesticides, predatory fish, and Chytrid fungus (see NotiCen, (2006-01-19) do not account for the decline of these salamanders, because the missing species' habitat tends to be in narrow bands of altitude. That would implicate global warming pushing the animals higher in altitude where the environment is less suitable for them. "We are losing some of these treasures of high-elevation and mid-elevation cloud forests in Central America. It is very worrying because it implies there are severe environmental problems," he said. A correlate of this proposition is that declaring habitat as a protected zone, or national park, or otherwise designating an area off limits to incursion of one kind or another will not help. Global warming responds only to laws of physics, insofar as there are any. As animals move ever higher to escape the warming, said Wake, they encounter conditions that they cannot cope with. "The ones that were already high up have taken the hit," he added. And even if conditions are propitious, there is a limit to how high they can go. Herpetologist and fellow researcher Ted Papenfuss said that, at Cerro San Felipe in Oaxaca, Mexico, species living at 2,800 meters to 3,000 meters, including the salamander *Pseudoeurycea smithi*, have virtually disappeared. "It may be that those species have been pushed right off the tops of the mountains," he said. He used to find hundreds of *Pseudoeurycea* in a few hours. Now he finds one or two individuals in a decade. As a practical matter, they are gone. Lest it be imagined these animals are nothing more than a pixel in the panorama of biodiversity, Wake reminds, "They probably were the commonest vertebrates. In North American forests, it has been documented that salamanders are not only the commonest vertebrate but by biomass have the greatest weight in the ecosystem. You can't remove something like that without a profound effect on the ecosystem." Indeed, species that fed on the salamanders have also declined. The researchers also suspect local warming, caused by specific human activity in the vicinity of the animal's habitat. They have observed that the decline in salamanders is in part the result of their being terrestrial, not using arboreal bromeliads for refuge. Without the protected, moist microenvironment the bromeliads provide, the study reasons, these would be the species more likely to respond to climate change.

They note, however, that eventually the conditions could worsen to the point that the arboreal salamanders would also be doomed. Pesticides, while not the most likely cause of the declines, have not been ruled out. The current study cites a January 2007 study by Frank Wania of the University of Toronto, which finds that chemicals, especially endosulfan and chlorothalonil used in lowlands, are carried up to higher elevations where they precipitate out as rain in the cooler air. The highest volcano in Guatemala is ideal for this kind of up drafting. For now, it is all somewhat speculative for Wake and company. The study reiterates, "Until the forces causing these declines are identified...an effective conservation strategy cannot be devised. Protecting habitat, although important, is insufficient to conserve populations of many of these species." New species seen But as is sometimes cheerfully said, when one door closes another opens. And so it is that, as the two salamanders at the northern end of the isthmus are pushed off the tops of the mountains into the void, at the southern end, a different team of biologists celebrates the discovery of ten amphibians, all new to science. Among them are a spiky-skinned, orange-legged rain frog, three poison-dart frogs, and three glass frogs. One can see right through these glass frogs and observe their internal organs. And there was a salamander, one of the *bolitoglossa* variety, the arboreal kind, not the terrestrial, and a ballistic-tongued one like those recently discovered in Costa Rica (see NotiCen, 2008-01-10). These creatures were among 60 species of amphibians, 20 reptiles, and about 120 birds that turned up on a recent Rapid Assessment Program (RAP) expedition to the Taracuna region of the Darien, near the Panama border on the Colombian side. This area is part of one of the most diverse amphibian communities on the planet. Colombia currently counts 754 species identified on its territory. Of the new amphibians, the glass frogs are of the *Nymphargus*, *Cochranella*, and *Centrolene* genera. The dart frogs are *Dendrobatidae*, *Colostethus*, *Ranitomeya*, and *Anomaloglossus*, and there were two rain frogs, both *Pristimantis*. The research team included herpetologists from Conservation International (CI) in Colombia, ornithologists from Ecotropico Foundation, and locals from the Embera indigenous community of Eyakera. The scientists were surprised to find another *bolitoglossa*, *taylori*, which has never before been seen outside Central America. Also not previously seen in the area was the rain frog *Pristimantis pirrensis*. Jose Vicente Rodriquez-Mahecha, scientific director of CI, was particularly happy about the new amphibians because of their extreme environmental sensitivity. He told reporters, "Without a doubt this region is a true Noah's Ark. The high number of new amphibian species found is a sign of hope, even with the serious threat of extinction that this animal group faces in many other regions of the country and the world." The area is recognized for its high degree of endemism and also as a bridge for exchange of flora and fauna between North and South America. The area has been hit with destructive human impact. There has been logging, cattle ranching, crop cultivation, hunting, and mining. Habitat has been fragmented. There has been 25%-30% deforestation and stripping of natural vegetation. The rich results of the CI survey are expected to contribute to the drive to declare a new protected area with provisions for securing the land rights of the indigenous inhabitants with a reserve, and the development of management plans. But protected areas are not enough.

-- End --