



Excess UV radiation found deadly to amphibian species

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WASHINGTON (AP) -- In a study suggesting that a thinning ozone layer is already damaging the environment, zoologists for the first time show that excessive ultraviolet rays from natural sunlight can kill amphibians.



A deformed frog

Embryos of the long-toed salamander in the lakes of the Cascade mountain range are being killed or deformed by ultraviolet rays from natural sunlight, Oregon State University researchers report in a study published Tuesday

Salamanders shielded from UVB are able to reproduce normally in the lakes where the animals historically have thrived, said [Andrew Blaustein](#), leader of the Oregon State team.

"We were stunned by our findings," said Blaustein. "This is proof that excess UVB radiation in nature can cause death and deformity in this species."



[CNN's Sharon Collins reports](#)

A report on the study was published today in the Proceedings of the National Academy of Sciences.

Other scientists said the study sharpens concern about the thinning of the natural ozone layer of the

atmosphere that normally shields the Earth from high levels of UVB. Studies have shown that the ozone layer has been eroded by industrial chemicals, principally chlorofluorocarbons used in refrigeration.

Most such chemicals are being phased out or have been banned worldwide, but the chemicals from earlier years remain in the atmosphere and continue to affect the ozone layer. Among the effects is the so-called ozone hole that forms annually over the

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Antarctic, but similar thinning has been detected over North America.

Blaustein said the findings strongly support the theory that increased solar UVB has played a role in the worldwide decline of a number of amphibian species. Most of these animals reproduce by laying eggs in jelly-like masses in shallow water where they can be affected by solar UVB radiation.

Scientists internationally have reported a sharp decline in the numbers of frogs, toads and salamanders in many locations and a number of explanations have been proposed.

First precise study of UVB in nature



Most of the salamander embryos exposed to sunlight died or were born deformed

Although earlier studies in laboratories have shown that UVB can cause genetic damage and death for some amphibians, the Oregon State University work is the first to precisely measure the effects of UVB in a comparative study in nature.

"This is something we should be concerned about," said Dennis B. Fenn, chief of biological resources at the U.S. Geological Survey.

"UVB is one of the theoretical causes of the worldwide decline of amphibian species. We had better start taking it very seriously."

Gary Ankley, an Environmental Protection Agency scientist, said the Oregon State study "is a serious thing," but he cautioned that the result applies to only one animal species and does not prove that UVB is the cause for the all of the declines of frogs, toads and salamanders.

Ankley said there could be a combination of factors, including water pollution, to explain why some of the amphibian species are declining.

"It would be simplistic to blame all of the declines on one factor at this time," he said.

In the Oregon State study, egg masses of some long-toed salamanders in lakes were shielded with UVB filters, while other egg masses were left exposed. All other factors were the same, said Blaustein, with many of the comparative groups of eggs side by side in the same lake.

Blaustein said that 85 percent of the embryos in the exposed eggs

died. Of the 15 percent that hatched successfully, all but four individual animals were deformed.

Among the eggs shielded from UVB, there was a 98 percent hatch rate and virtually all of the animals were normal, said Blaustein.

"The point is that these were not artificially elevated levels of UVB in a laboratory," he said in an interview. "These were natural levels of sunlight in their natural habitat. The only difference between the two groups was the amount of ultraviolet light."

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