

Climate change may endanger monarch butterflies

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WASHINGTON (AP) -- Monarch butterflies, which journey hundreds of miles to spend the winter in a mountain forest in Mexico, may be endangered within 50 years because a changing climate could make their winter refuge too wet and cool.

A study published this week in the Proceedings of the National Academy of Sciences says climate models show that rainfall will increase significantly in the winter home of the monarchs as the planet warms during the next half-century.

This increased rainfall, combined with the persistent cold typical of the refuge area, could cause a massive die-off of the colorful migrating butterflies, said Karen Oberhauser, assistant professor at the University of Minnesota and the first author of the study.

An increased wetness in the winter refuge, a mountain fir forest west of Mexico City, will leave the butterflies with no place to spend the cold months, she said Monday.

"The conditions that monarchs need to survive the winter are not predicted to exist anywhere near the present overwintering sites," said Oberhauser.

Monarchs, which have bright reddish-brown, black-edged wings, are one of the most common North American butterflies. The insects each season reproduce several times in an area stretching from Texas to the Minnesota.

As fall approaches, the final generation of the season starts a heroic migration, flying from as far north as the Canadian border to mountain groves of Oyamel firs west of Mexico City. The trees provide shelter from rain and from temperatures that can dip below freezing.

In the spring, surviving monarchs fly north, stopping at fields of milkweed to lay eggs. Succeeding generations continue the northward migration until the cycle starts over in the fall.

Oberhauser said the monarchs have a narrow range of temperature and wetness tolerance during the winter. A combination of freezing temperatures and rain can be lethal.

"If it rains and the temperatures drop and ice crystals form, it will kill them," she said. These conditions occurred in January, 2002, and about 80 percent of the monarch population overwintering in Mexico died.

Based on computer modeling of global climate changes under way, Oberhauser said such conditions could begin to become common over the next 50 years in the monarchs' winter home.

Under these changing conditions, she said, one of three things could happen: the butterfly could become extinct; the insect could find another winter refuge; or the monarch could adapt somehow to the changing conditions. Oberhauser said no other area exists near the current refuge that could shelter the butterfly.



Increased wetness in the winter refuge would leave the butterflies with no place to spend the winter.

"I think the question is whether they will have the flexibility to survive," she said.

Climate experts predict that global temperatures will increase by a few degrees over the next century. This would cause more ocean evaporation, and would be expected to increase rainfall in many places including central Mexico.

Oberhauser said the plight of the monarch is an example of how the changing climate will put some animal species at great risk of extinction.

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