

# Sixth mass extinction is here, researcher declares

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There is no longer any doubt: We are entering a mass extinction that threatens humanity's existence.

That is the bad news at the center of a new study by a group of scientists including Paul Ehrlich, the Bing Professor of Population Studies in biology and a senior fellow at the Stanford Woods Institute for the Environment. Ehrlich and his co-authors call for fast action to conserve threatened [species](#), populations and habitat, but warn that the window of opportunity is rapidly closing.

"[The study] shows without any significant doubt that we are now entering the sixth great [mass extinction event](#)," Ehrlich said.

Although most well known for his positions on human population, Ehrlich has done extensive work on extinctions going back to his 1981 book, *Extinction: The Causes and Consequences of the Disappearance of Species*. He has long tied his work on coevolution, on racial, gender and economic justice, and on nuclear winter with the issue of wildlife populations and [species loss](#).

There is general agreement among scientists that [extinction](#) rates have reached levels unparalleled since the dinosaurs died out 66 million years ago. However, some have challenged the theory, believing earlier estimates rested on assumptions that overestimated the crisis.

The new study, published in the journal *Science Advances*, shows that

even with extremely conservative estimates, species are disappearing up to about 100 times faster than the normal rate between mass extinctions, known as the background rate.

"If it is allowed to continue, life would take many millions of years to recover, and our species itself would likely disappear early on," said lead author Gerardo Ceballos of the Universidad Autónoma de México.

## **Conservative approach**

Using fossil records and extinction counts from a range of records, the researchers compared a highly conservative estimate of current extinctions with a background rate estimate twice as high as those widely used in previous analyses. This way, they brought the two estimates - current extinction rate and average background or going-on-all-the-time extinction rate - as close to each other as possible.

Focusing on vertebrates, the group for which the most reliable modern and fossil data exist, the researchers asked whether even the lowest estimates of the difference between background and contemporary [extinction rates](#) still justify the conclusion that people are precipitating "a global spasm of biodiversity loss." The answer: a definitive yes.

"We emphasize that our calculations very likely underestimate the severity of the extinction crisis, because our aim was to place a realistic lower bound on humanity's impact on biodiversity," the researchers write.

To history's steady drumbeat, a human population growing in numbers, per capita consumption and economic inequity has altered or destroyed natural habitats. The long list of impacts includes:

- Land clearing for farming, logging and settlement

- Introduction of invasive species
- Carbon emissions that drive climate change and ocean acidification
- Toxins that alter and poison ecosystems

Now, the specter of extinction hangs over about 41 percent of all amphibian species and 26 percent of all mammals, according to the International Union for Conservation of Nature, which maintains an authoritative list of threatened and extinct species.

"There are examples of species all over the world that are essentially the walking dead," Ehrlich said.

As species disappear, so do crucial ecosystem services such as honeybees' crop pollination and wetlands' water purification. At the current rate of species loss, people will lose many biodiversity benefits within three generations, the study's authors write. "We are sawing off the limb that we are sitting on," Ehrlich said.

## Hope for the future

Despite the gloomy outlook, there is a meaningful way forward, according to Ehrlich and his colleagues. "Avoiding a true sixth [mass extinction](#) will require rapid, greatly intensified efforts to conserve already [threatened species](#), and to alleviate pressures on their populations - notably habitat loss, over-exploitation for economic gain and climate change," the study's authors write.

In the meantime, the researchers hope their work will inform conservation efforts, the maintenance of ecosystem services and public policy.

**More information:** Accelerated modern human-induced species

losses: Entering the sixth mass extinction, *Science Advances*,  
[advances.sciencemag.org/content/1/5/e1400253](https://advances.sciencemag.org/content/1/5/e1400253)

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