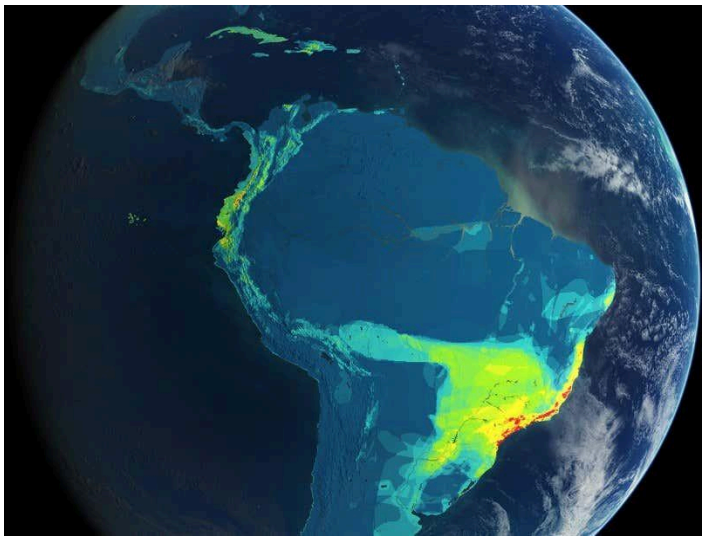
We are killing species at 1000 times the natural rate

By Peter Aldhous on May 29, 2014



Birds from Brazil: let get more threatened species in the red zone. (Image: Clinton Jenkins)

First the bad news. Humans are driving species to extinction at around 1000 times the natural rate, at the top of the range of an earlier estimate. We also don't know how many species we can afford to lose.

Now the good news. Armed with your smartphone, you can help conservationists save them.

The new estimate of the global rate of extinction comes from Stuart Pimm of Duke University in Durham, North Carolina, and colleagues. It updates a calculation Pimm's team released in 1995, that human activities were driving species out of existence at 100 to 1000 times the background rate (*Science*, doi.org/fq2sfs).

It turns out that Pimm's earlier calculations both underestimated the rate at which species are now disappearing, and overestimated the background rate over the past 10 to 20 million years.

Gone gone gone

The Red List assessments of endangered species, conducted by the International Union for Conservation of Nature (IUCN), are key to Pimm's analysis. They have evolved from patchy lists of threatened species into comprehensive surveys of animal groups and regions.

“Twenty years ago we simply didn’t have the breadth of underlying data with 70,000 species assessments in hand,” says team member Thomas Brooks of the IUCN in Gland, Switzerland.

By studying animals’ DNA, biologists have also created family trees for many groups of animals, allowing them to calculate when new species emerged. On average, it seems each vertebrate species gives rise to a new species once every 10 million years.

It’s hard to measure the natural rate of extinction, but there is a workaround. Before we started destroying habitats, new species seem to have been appearing faster than old ones disappeared. That means the natural extinction rate cannot be higher than the rate at which they were forming, says Pimm.

For the most part, the higher estimate of the modern extinction rate is not caused by any acceleration in extinctions since 1995. One exception is an increase in threats to amphibians, partly due to the global spread of the killer chytrid fungus.

Save everything

The big unknown is what the high current extinction rate means for the health of entire ecosystems. Some researchers have suggested “sustainable” targets for species’ loss, but there’s still no scientific way to predict at what point cumulative extinctions cause an ecosystem to collapse. “People who say that are pulling numbers out of the air,” says Pimm.

Still, it seems unlikely that extinctions running at 1000 times the background rate can be sustained for long. “You can be sure that there will be a price to be paid,” says Brooks.

Pimm’s team has also compiled detailed global maps of biodiversity, showing the numbers of threatened species and total species richness in a global grid consisting of squares 10 kilometres across.

Such maps can help conservationists decide what to do.

For instance, Pimm and his colleague Clinton Jenkins of the Institute for Ecological Research in Nazaré Paulista, Brazil, noticed high numbers of threatened species on Brazil’s Atlantic coast. Local forests were being cleared for cattle ranching. So they are working with a Brazilian group, the Golden Lion Tamarin Association, to buy land and reconnect isolated forest fragments.

But conservationists need more data, and you can help, through projects like iNaturalist. Users share photos of the creatures they see via iPhone and Android apps, and experts identify them. “Right now, someone is posting an observation about every 30 seconds,” says co-director Scott Loarie of the California Academy of Sciences in San Francisco.

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