



Choose Your Top Poison

By Carl Zimmer | April 21, 2009 12:46 pm

Yesterday I **wrote** about how conservation biologists are debating the value of moving species to protect them from climate-change-driven extinction. As a follow-up (or an antidote), check out **“Blood for no oil: Our obsession with climate change is killing off animals left and right.”** in *Slate*.

Brendan Borrell, biologist turned journalist, argues that climate change poses a genuine threat to biodiversity, but “it does not come close to the immediate, irreparable damage caused by the destruction of habitat.” Good old chainsaws are still the big danger, he argues, because two-thirds of the world’s biodiversity is in the tropics, where deforestation is happening fast and the effects of climate change may not be as dramatic as they’ll be closer to the poles.

I **wrote** about similar skepticism in 2007 in an article for *Science*. Some critics point out that we have yet to discover some of the important factors in how species respond to shifting climates. Borrell also points out that one of the most famous examples of an extinction caused by climate change—the golden toad of Costa Rica—looks now as if it may have had other manmade causes (see this **study**, for example). And in trying to cope with the dangers of climate change, Borrell observes that we’ve already seen some disasters. The feel-good desire for biofuels is driving a catastrophic loss of rainforest in Indonesia for palm oil plantations. And, as I point out in **my piece** yesterday in *Yale Environment 360*, moving species to save them from climate change driven extinction could, theoretically at least, turn them into dangerous invasives.

That being said, I think Borrell’s argument is thin. Maybe he didn’t have enough room to make his full argument in a slender *Slate* piece. But the evidence he lays out doesn’t justify his big claims.

Borrell claims, for example, that the most dire projections about extinctions from global warming should not be trusted because they came from studies that ignored the tropics, which are home to so much biodiversity. But it’s not as if there was some sort of anti-tropics malice involved; it’s just a historical fact that the most careful studies of range shifts due to climate have been done in places like England and the United States. And the same researchers who issued those warnings went on to look at climate change in the world’s biodiversity hotspots, many of which are in the tropics. They **concluded** that “estimated global-warming-induced rates of species extinctions in tropical hotspots in some cases exceeded those due to deforestation, supporting suggestions that **global warming is one of the most serious threats to the planet’s biodiversity.**” Borrell may not like this study, but he shouldn’t act as if it doesn’t even exist.

To make the case for a minor risk from climate change, Borrell cites a 2007 study that indicates that birds will suffer many more extinctions from the destruction of habitat than climate change. It’s certainly an important study from leading experts. But it was not the last word on the subject. For example, in 2008 researchers developed a model for bird extinctions that took into account

the elevation at which the birds live. (A warmer climate may push some species upslope.) **They concluded** that climate may hit birds (including tropical birds) hard. They warn of 400 to 550 extinctions and 2150 additional species put at risk of extinction by 2100.

Stuart Pimm, a conservation biologist at Duke University, reviewed both these bird studies in a piece called “Climate Change or Habitat Loss — Which Will Kill More Species?” He **concluded**, “Large numbers of species, thus-far largely unaffected by human actions, are in danger of extinction from climate change.”

There are actually a lot of other potential threats that global warming poses to biodiversity. For example, the carbon dioxide we’re pumping into the air is also acidifying the oceans. Coral reefs may be **endangered** as a result—along with the vast biodiversity they shelter. But Borrell doesn’t even mention these factors.

After trying (unsuccessfully, I think) to downplay the risk of climate change, Borrell then fails to persuade me that concerns about climate change are actually *causing* extinctions. While the palm oil plantations have been **disastrous**, it’s not fair to imply that conservation biologists who worry about climate change were responsible for them. I have yet to encounter somebody who says that we don’t have to worry about deforestation and need to push all conservation efforts into dealing with climate change. And Borrell doesn’t present any examples.

Deforestation is clearly harming biodiversity right now, and there’s a fair amount of evidence that global warming will have an important effect too in decades to come, although there’s lots of uncertainty about just how big a role it will have. And the two forces will not be working independently: climate change may make some species more vulnerable to the loss of their habitat, and vice versa. What’s more, there may be some solutions that address both threats at the same time, such as **creating networks of preserves**. Not only do endangered species get the habitat where they are now; they potentially get a way to move to better habitat if the climate makes their current one unsuitable.

Casting debates about extinctions in simple either-or terms may be good for attracting web traffic, but nature is more complex. And our solutions should be too.

Update 4/27: Brendan is back from South Africa and has left a lengthy—and well-considered—**comment** below. Definitely check it out. I still have **some problems** with his argument, but it’s so much more satisfying to discuss these issues with somebody who takes the scientific research seriously than someone who **just wants to quote-mine**.

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