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WHAT: A Smithsonian tropical science symposium:
“Will the Rainforests Survive? New Threats and Realities in the Tropical Extinction Crisis”

WHEN: Monday, Jan. 12
1 – 6:30 p.m.

WHERE: Smithsonian’s National Museum of Natural History, Baird Auditorium
10th Street and Constitution Avenue N.W.

TO ATTEND: Register at <http://si.edu/tec/>. Experts are available for advance interviews. High-resolution still and video images are available on request. The symposium will be Webcast at www.si.edu/tec.

Rainforests Regrowing: Impact on Extinction Rates Sparks Debate at Smithsonian Which animal and plant species will thrive in second-growth forests?

Satellite data and other research reveal that huge tracts of abandoned tropical forests that were once logged or farmed are regrowing, prompting a contentious debate among world scientists convening at the Smithsonian’s National Museum of Natural History Jan. 12.

At issue is the extent to which this regrowth might mitigate the loss of biodiversity.

Some researchers contend that this process has been inadequately factored into estimates of future species loss and that the biodiversity crisis has been overstated (the prevailing scientific prediction is that up to half of all species may be lost in our lifetimes).

Others contend that only 50 to 80 percent of plant species may return to logged or altered forests, and many animal species will not survive the transition.

Still others warn that the continuing rapid expansion of logging and mining roads makes forest access easier for commercial poachers and the hungry, with animals being hunted for exotic food, trophies, medicine and pets on levels that threaten the continued existence of many species.

They say that this increasingly massive harvest of animals, combined with the emergence of devastating wildlife diseases, habitat loss due to industrial scale development, climate change and other factors, is a recipe for catastrophic biodiversity collapse, despite encouraging evidence of rainforest regrowth in many places.

The need to shed light on these issues has prompted the Smithsonian to invite leading experts to present their ideas at a major symposium on the tropical extinction crisis, featuring eight researchers whose symposium papers will be published in a special volume of the US journal *Conservation Biology*.

Cristián Samper, director of the National Museum of Natural History, will preside at the event, co-chaired by William F. Laurance and S. Joseph Wright of the Panama-based Smithsonian Tropical Research Institute.

Laurance and Wright authored differing papers in academic journals that sparked much of the international scientific controversy.

“By bringing together the world’s foremost authorities on different aspects of rainforest science, we hope to achieve new insights into a situation with potentially profound implications for all species, ours included,” says Samper.

According to symposium presenter Greg Asner of the Washington-based Carnegie Institution, the tropics originally had almost 20 million square kilometers of rainforests. Today’s best available but rough estimates, based on a combination of satellite data and field research, show:

- 10 million square kilometers have been cleared of at least half their forest cover for human uses, including timber and agriculture
- 5 million square kilometers have been selectively logged, often with high-impact methods that leave forests degraded
- of the intact forest remaining, about 275,000 square kilometers—an area bigger than the UK—were clear-cut in just five years, from 2000 to 2005
- 350,000 square kilometers, or 1.7 percent of the original forested area, altered over several decades, are in some stage of regrowth today, most notably in south Asia and Latin America

According to Asner and others, deforestation is the most profound change underway in tropical rainforests, but land abandonment is the second most important trend, with the majority of the abandonment occurring in upland areas that offered marginal farming opportunities. Commonly, the inhabitants depart to pursue better income opportunities in lowlands and cities.

Moreover, the regrowth is relatively quick: The forest canopy closes after just 15 years; after 20 years, about half of the original biomass weight has grown back.

Wright notes that over 20 percent of all land within 10 degrees of the Equator now has protected status, and that the tropics have a percentage of protected land greater than North America, Europe or Japan.

He and colleague Helene C. Muller-Landau asserted in a 2006 study that “large areas of tropical forest cover will remain in 2030 and beyond.... We believe that the area covered by tropical forest will never fall to the exceedingly low levels that are often predicted and that extinction will threaten a smaller proportion of tropical forest species than previously predicted.”

Their position is based in part on U.N. predictions of growing urbanization and slower population growth. The abandoned areas will recover and tropical species spared, they contend.

However, according to Laurance, secondary and degraded forests will sustain only a fraction of existing animal species. He notes that birds and mammals are more vulnerable to the altered habitat than insects and other small organisms.

Forest destruction in years past was largely the result of land being cleared for small-scale farming, he adds. Today, however, trade globalization is fostering large-scale industrial agriculture, logging and mining, all accelerating forest destruction. The world now loses the equivalent of 50 football fields of old-growth forest every minute, he says.

“Rainforest regrowth is indeed occurring in regions but most old growth is destroyed. In biodiversity terms, this is akin to a barn door closing after the horses have escaped.”

Wright says the impact of climate change on biodiversity is his primary concern today. He notes that tropical rainforest areas, which have experienced steady year-round temperatures for millennia, are expected to experience a relatively greater variance from normal temperatures than any other world region—the poles included. And, he warns, the consequences for species in the tropics is relatively greater as well.

Other scientists say that making forest access easier through road building to support logging and mining has facilitated the decimation of species by hunters.

Symposium speaker Elizabeth Bennett, director of Hunting and Wildlife Trade for the New York-based Wildlife Conservation Society, says access for hunters to tens of thousands of square kilometers of virgin rainforests worldwide is being created annually and huge regions are being virtually drained of wildlife.

“Hunting has long been known as a primary cause of wildlife species depletion in tropical forests,” she says, adding that “logging companies frequently regard wild meat as a free subsidy to feed their workers.” The “empty forest syndrome” affecting much of Asia and Africa is spreading rapidly to other parts of the tropical forest world, she says.

Bennett notes the recent seizure of two shipments of scaly anteaters from Sumatra bound for China (where they are used to make soup)—14 tons seized in Sumatra and 23 tons seized in Vietnam, more than 7,000 animals in total. In Vietnam alone, 12 species of large animals have gone extinct, or virtually extinct, in the past 50 years mainly due to hunting, she says.

Disease can compound the impact of hunting. The Ebola virus, for example, has reduced gorilla populations in northwest Congo by up to 95 percent, chimpanzee populations by an estimated 83 percent and threatens great ape populations elsewhere in Central Africa. The chytrid fungus, meanwhile, has wiped out hundreds of amphibian species worldwide.

Says Bennett: “The implications of all this for loss of ecosystem function are still not fully understood, although many studies show that tropical forests depleted of large vertebrates experience reduced seed dispersal, altered patterns of tree recruitment and shifts in the relative abundances of species.

“The loss of top predators and other ‘keystone species’ has a disproportionate impact on ecosystems and can result in dramatic biodiversity changes.”

Other symposium speakers will describe related work:

- Thomas K. Rudel of Rutgers University will discuss the shift from small to industrial large-scale rainforest destruction and suggest new strategies for environmental protection, such as working in a more focused way with managers of large natural resource corporations operating in tropical countries. He would also like to see rapid growth of international programs that certify products produced under sustainable conditions in order to put consumer power better to work on behalf of tropical forests.
- Robin Chazdon of the University of Connecticut will discuss the need to develop biological corridors between remnants of old-growth forest and patches of younger forests and agro-forests, enhancing the role such landscapes could potentially play as arks to protect various species. She also advocates more research into the number, features and types of species that can successfully exist in forest patch landscapes. “If we can protect, expand and enhance forest cover in these altered landscapes,” Chazdon says, “the prognosis for conserving many forms of plant and animal life will improve in many regions.”