

Blue Planet 25

September 8, 2017

The problem with fragments



SPLINTERS OF THE AMAZON

Decades after Thomas Lovejoy isolated fragments of the Brazilian rainforest in a grand experiment, researchers are building on his legacy around the world.

BY
JEFF TOLLEFSON

Ecologist Thomas Lovejoy tucks his trousers into his socks with a casual warning about chiggers and then hikes off into the Amazon jungle. Shaded by a tall canopy and dense with ferns and underbrush, the old-growth forest looks healthy, but Lovejoy knows better. Three decades ago, the surrounding forest was mowed

generation of 'fragmentologists', who are working around the world to understand the cascade of ecological impacts that follow human development. Most notably, in early April, an international team started chopping down trees in Borneo as part of an nearly £6-million (US\$9-million) experiment that replicates and extends the Brazilian one.

promote the preservation of extensive areas of intact forest. "It's the most important ecological experiment ever done," says Stuart Pimm, a conservation ecologist at Duke University in Durham, North Carolina, who has collaborated on the project. "We knew that small and isolated was bad, but we needed to know how bad."



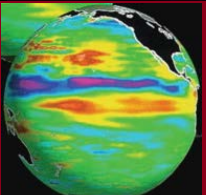


Fragments of different sizes

Pimm, S. L. 1998. The forest fragment classic. *Nature* 393:23.







100 Ha. fragments lose half of forest interior bird species in less than 15 years



Image © 2016 DigitalGlobe

402 m









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Global Soil Biodiversity Atlas, 2016





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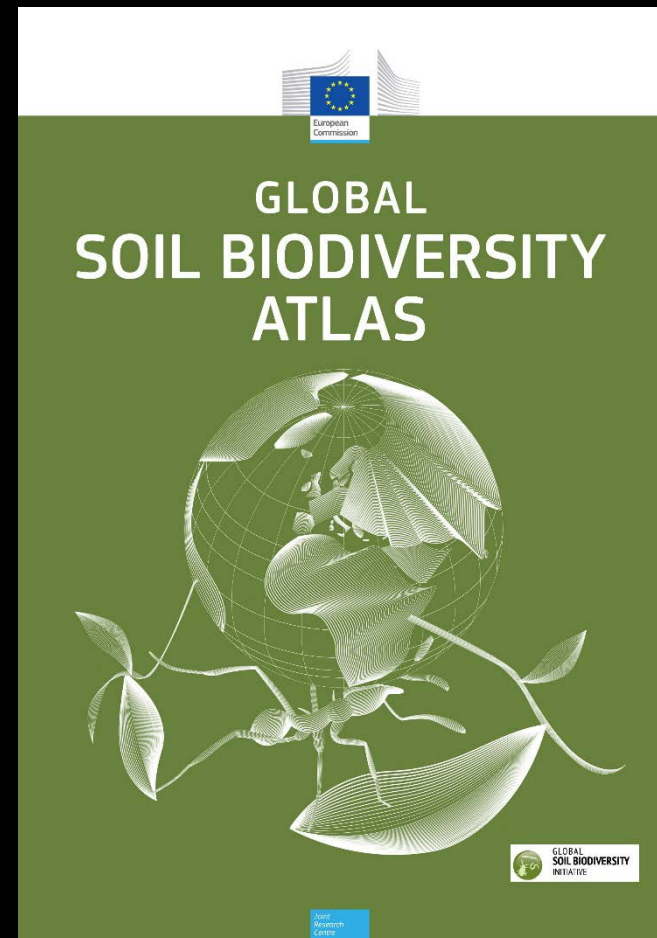
>33K downloads



4.3Million views

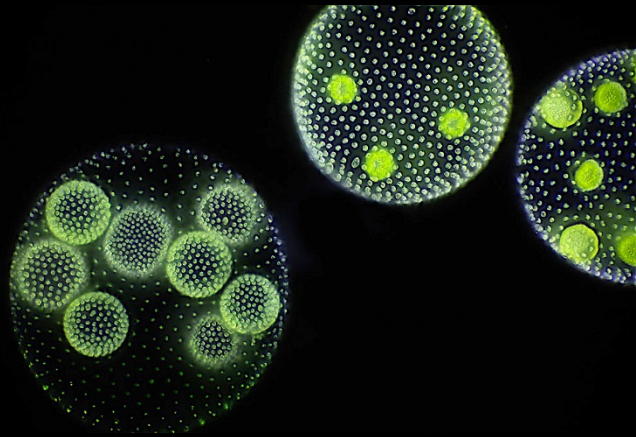


>125M social media views



Freshwater Biodiversity

Volvox



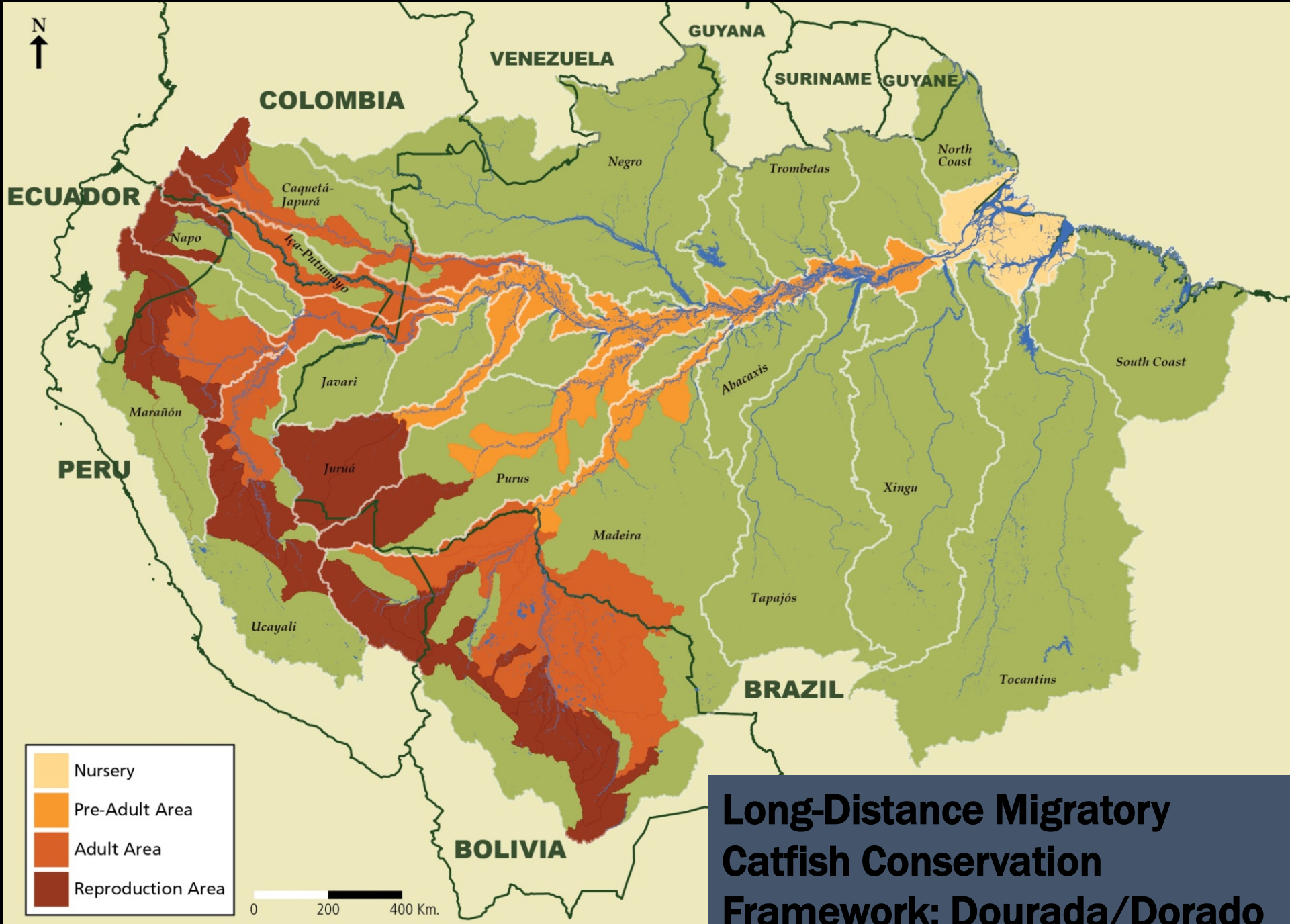


Largest Management Scale: Long-Distance Migratory Catfish



A. Piramutaba/Piramutón
C. Babão/Mota Flemosa

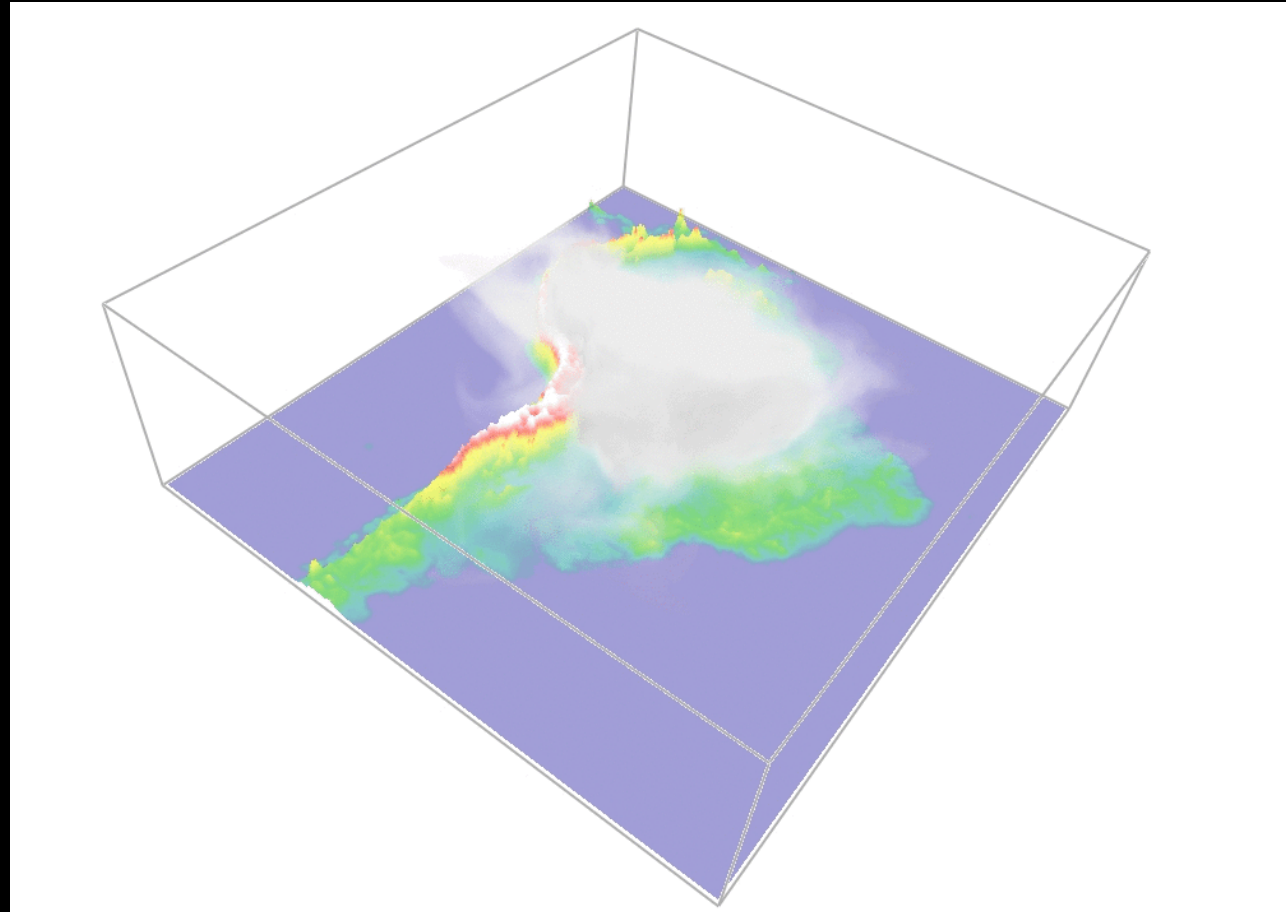
B. Dourada/Dorado
D. Zebra/Zungaro Alianza



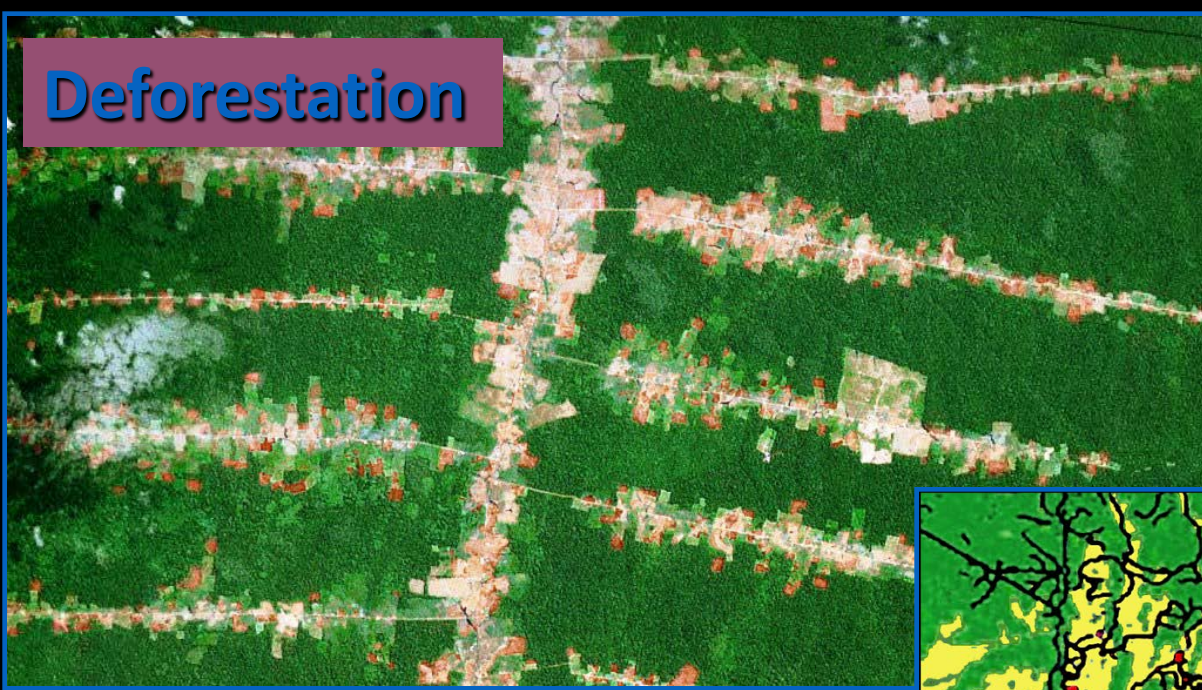
**Long-Distance Migratory
Catfish Conservation
Framework: Dourada/Dorado**

Using the tracers, we can quantify the amount of water vapor that originates in the Amazon and travels through the continent.

2006-01-01 to 2006-01-10

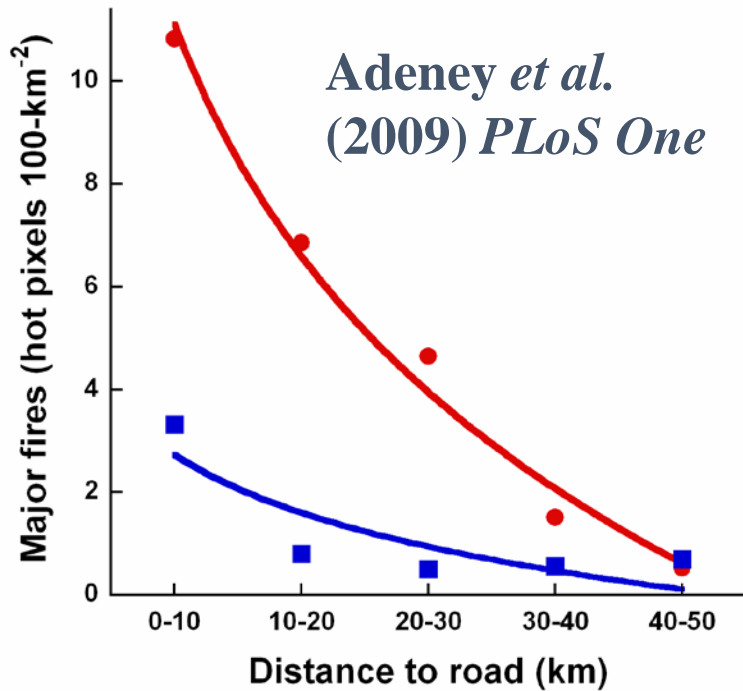
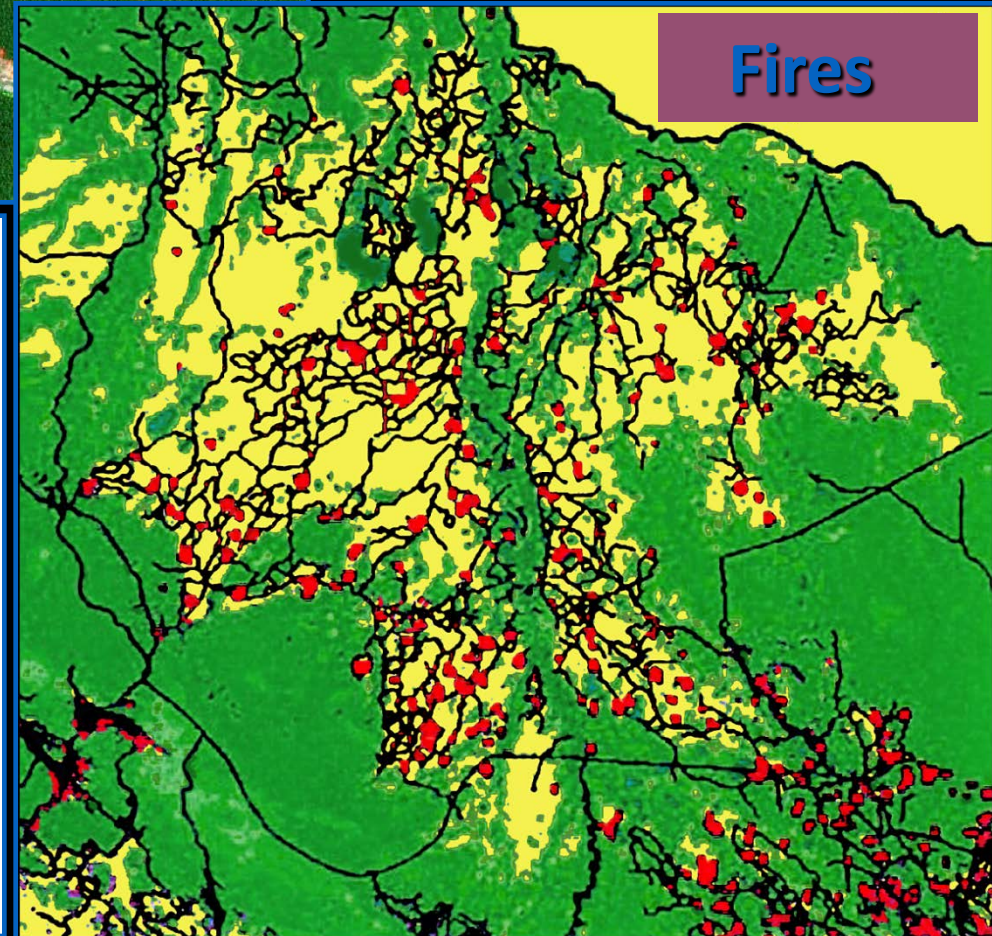


Deforestation



Pandora's Box Effect

Fires



.....
**Diclofenac residues as the
cause of vulture population
decline in Pakistan**

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Muhammad Arshad⁶, Shahid Mahmood⁶, Ahmad Ali⁶
& Aleem Ahmed Khan⁶**

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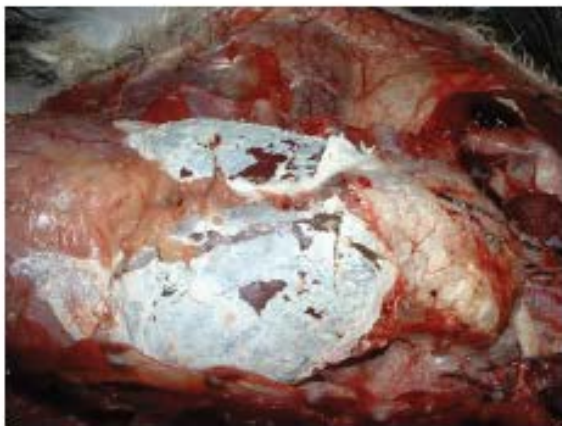
²The Peregrine Fund, 5668 West Flying Hawk Lane, Boise, Idaho 83709, USA

³USGS-National Wildlife Health Center, 6006 Schroeder Road, Madison,
Wisconsin 53711-6223, USA

⁴Center for Reproduction of Endangered Species, Zoological Society of San Diego,
PO Box 120551, San Diego, California 92112, USA

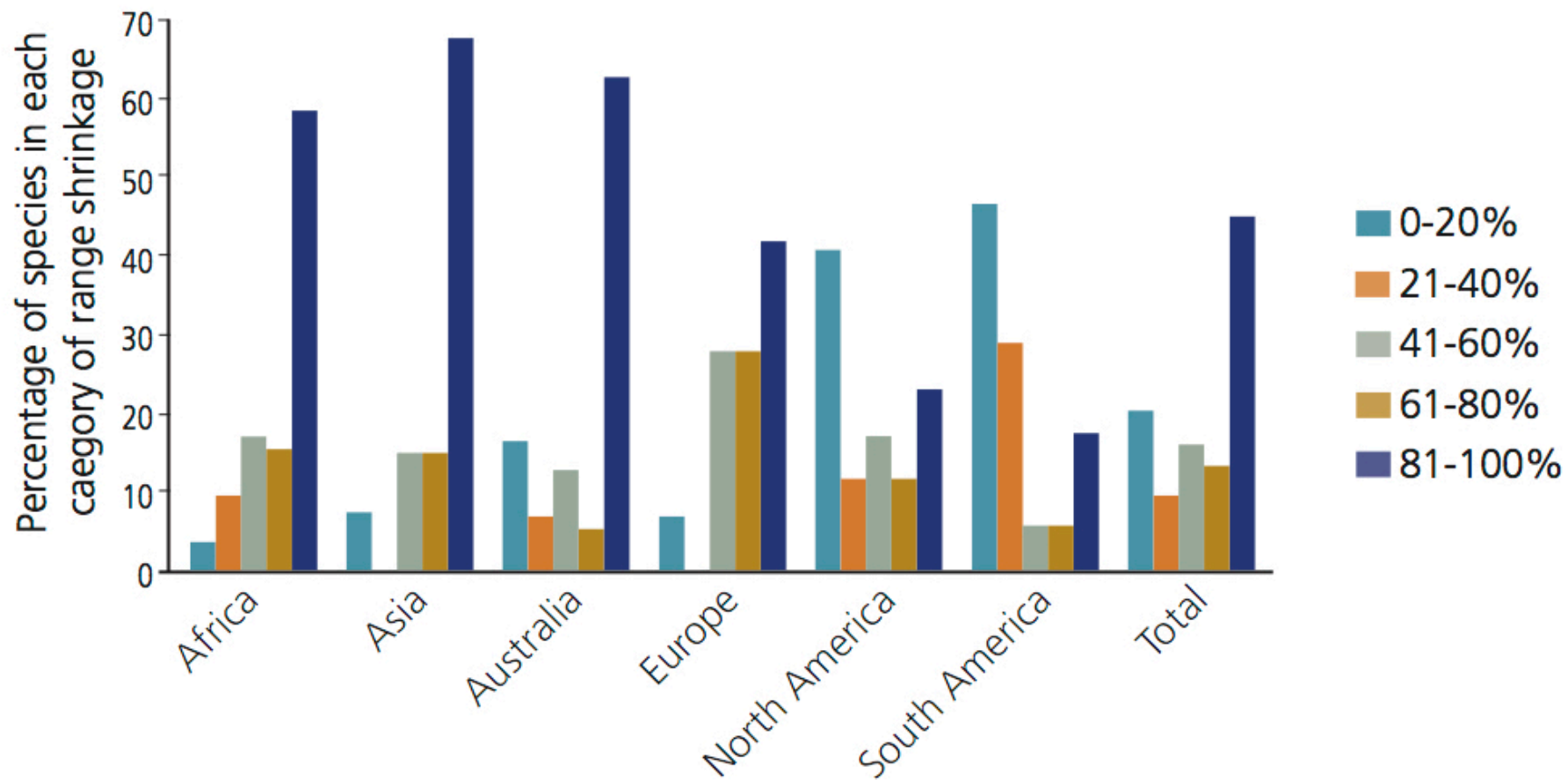
⁵California Animal Health and Food Safety Laboratory System-Fresno Branch,
University of California at Davis, 2789 S. Orange Avenue, Fresno,
California 93725, USA

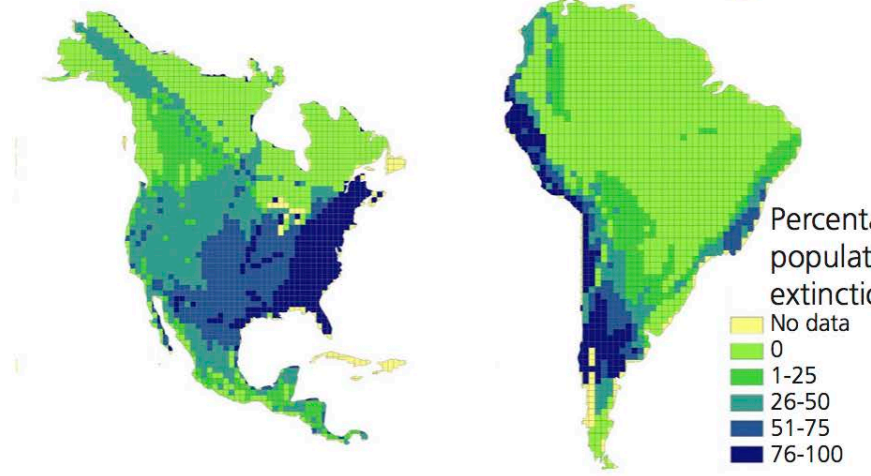
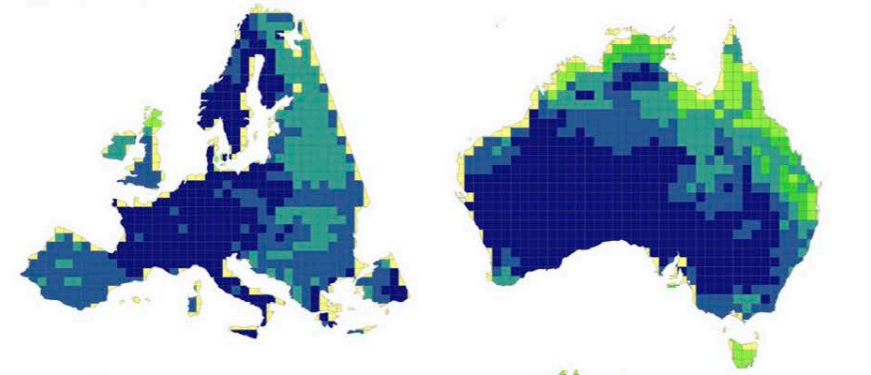
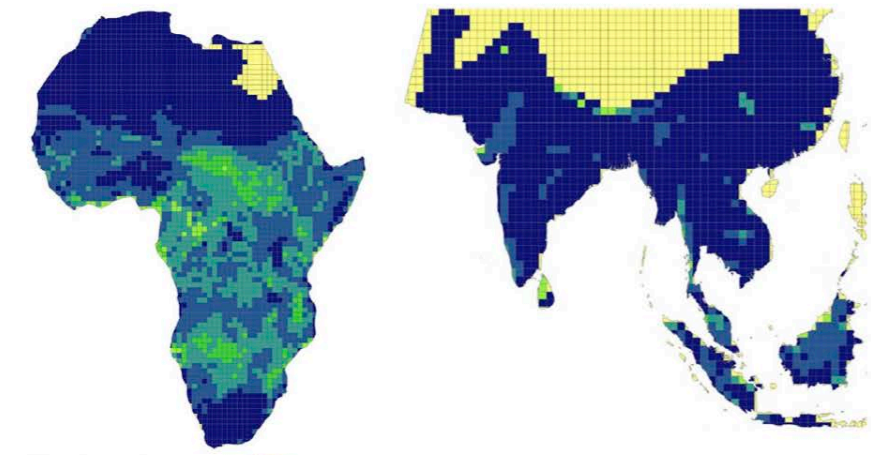
⁶Zoology Division, Institute of Pure and Applied Biology, Bahauddin Zakariya
University, Multan, Pakistan



White-rumped vulture (*Gyps
bengalensis*)





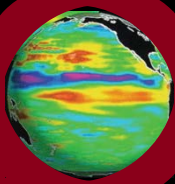


Percentage
population
extinctions

- No data
- 0
- 1-25
- 26-50
- 51-75
- 76-100







Elevated night time temperatures magnify bark beetle impact

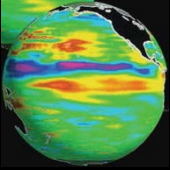
The Washington Post

Wednesday, March 1, 2006

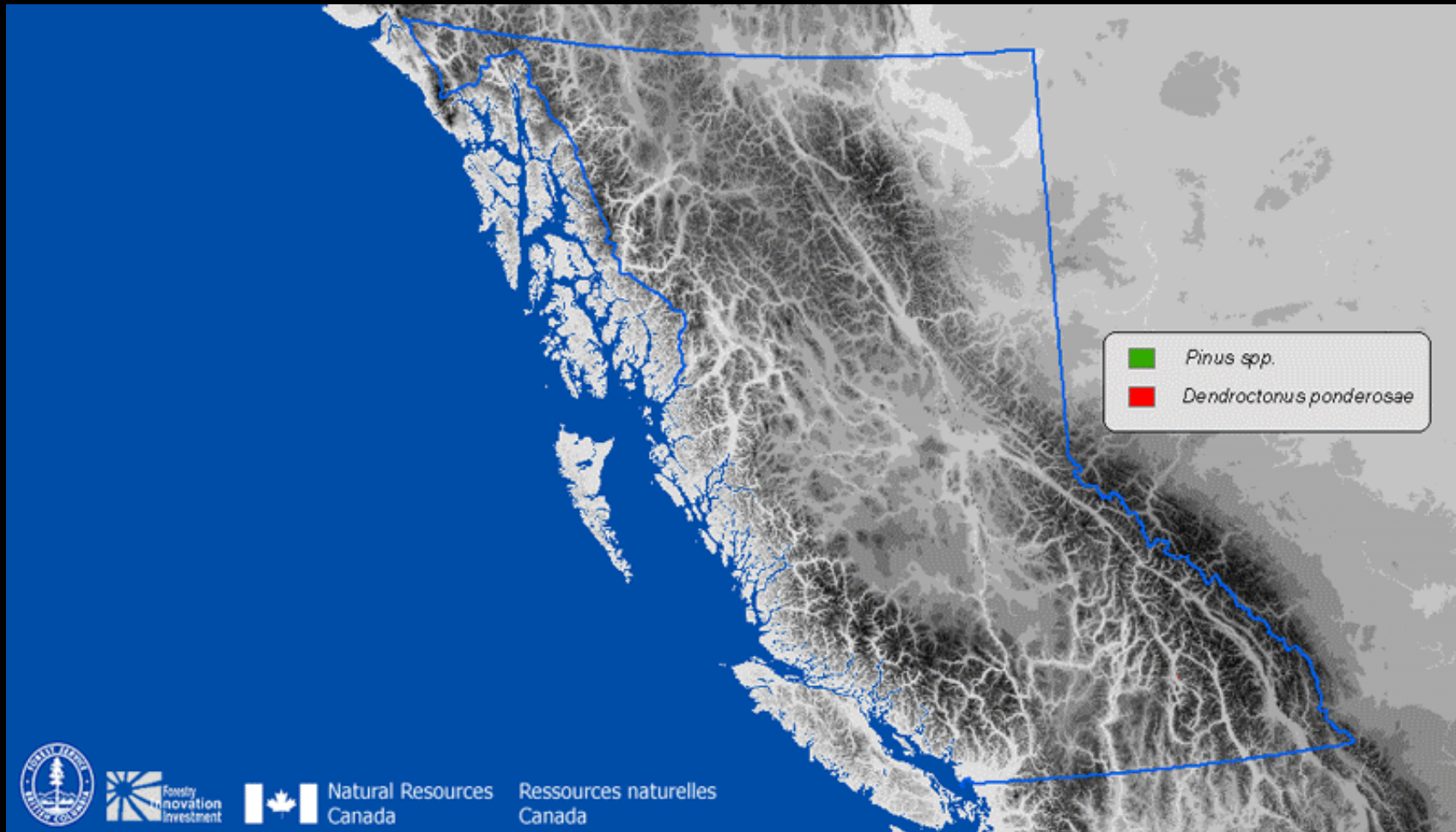
'Rapid Warming' Spreads Havoc in Canada's Forests

QUESNEL, B.C. -- Millions of acres of Canada's lush green forests are turning red in spasms of death. A voracious beetle, whose population has exploded with the warming climate, is killing more trees than wildfires or logging.





Mountain Pine Beetle outbreaks (1959-2002)



Courtesy of Mike Bradley, Canfor Corporation



A PROPOSED BIOLOGICAL MEASURE OF STREAM CONDITIONS,
BASED ON A SURVEY OF THE CONESTOGA BASIN,
LANCASTER COUNTY, PENNSYLVANIA *

BY RUTH PATRICK

Curator of Entomology, The Academy of Natural Sciences of Philadelphia

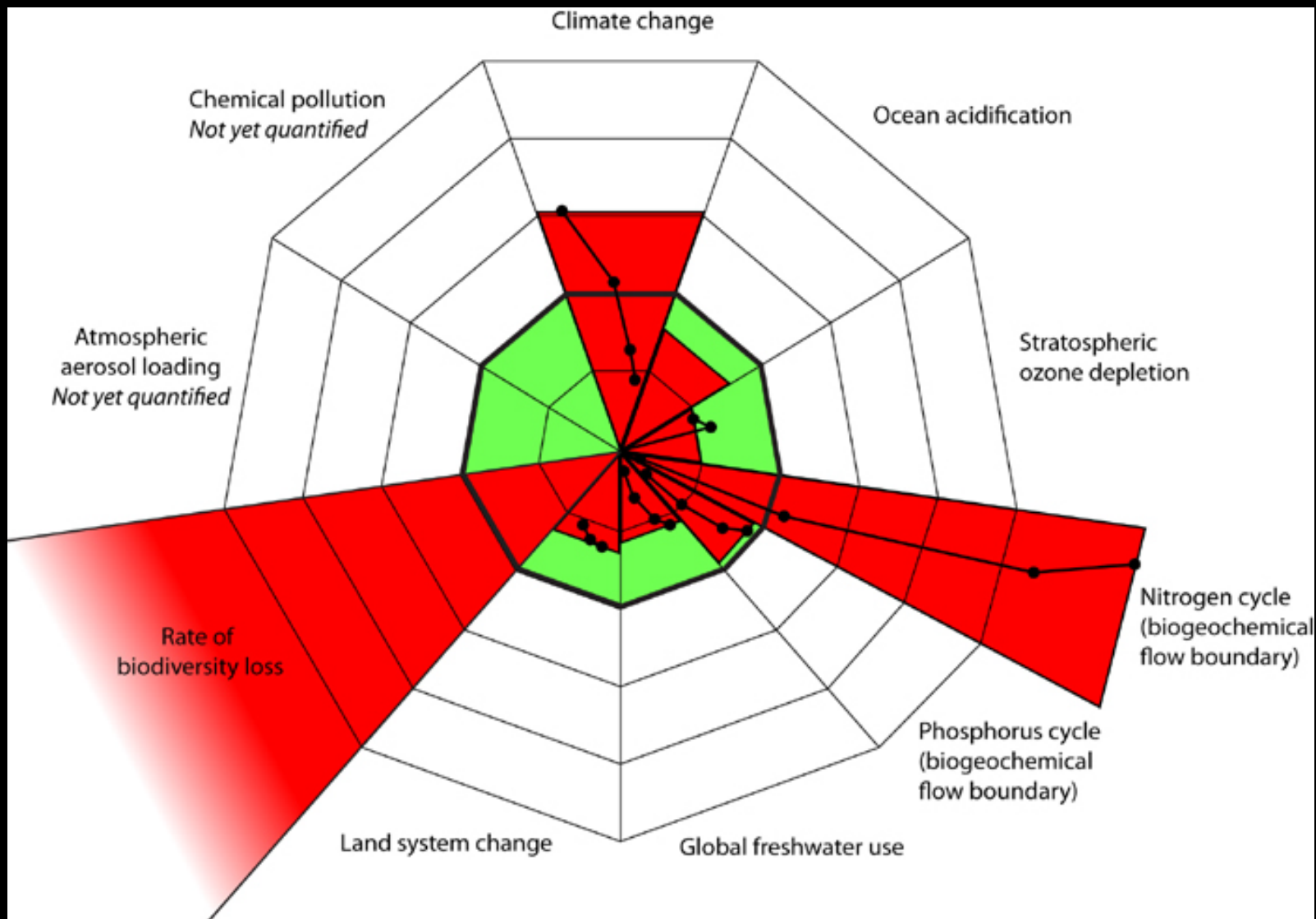
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Planetary Boundaries



Source: Rockström, J. et al. 2009