

# Population biology and conservation

Databases broad enough to be relevant

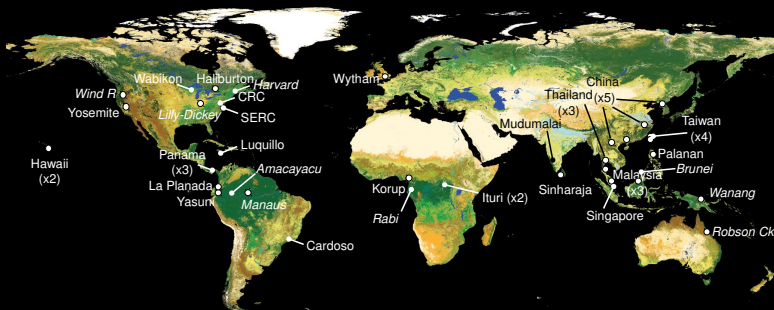
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Conservation – Campagna

# Center for Tropical Forest Science: Smithsonian & Harvard

SIGEO-CTFS: A network of forest censuses following common methods



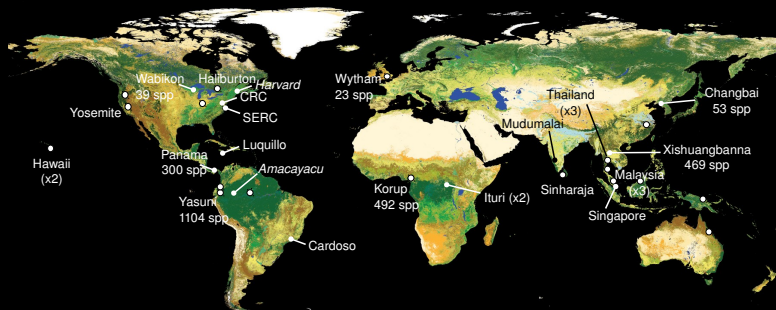
33 completed plots have data in a common database format on one of 4 servers

-- 3,802,654 trees (ie  $3.80 \times 10^6$ )

-- 9,073,531 measurements (ie  $9.07 \times 10^6$ ) in 89 plot censuses

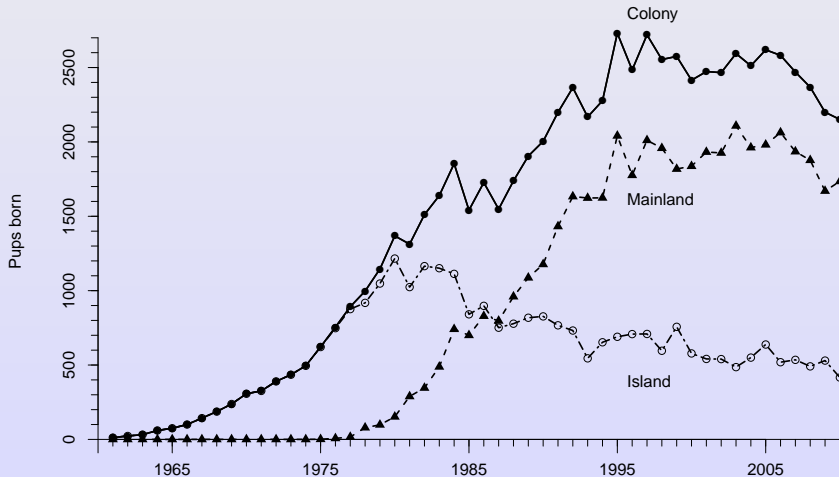
# Center for Tropical Forest Science: Smithsonian & Harvard

CTFS: A network of forest censuses following common methods



# N Elephant Seal Population Growth, Año Nuevo

Fig. 3



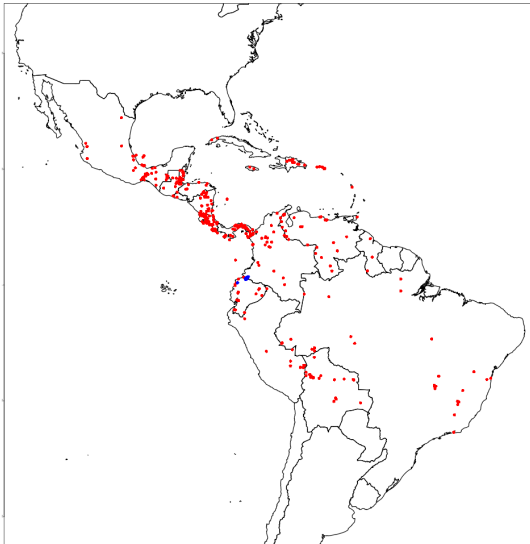
# Database of New World Plant Records

- 12 million occurrences in a single table
  - Abundances for a single species from a single plot
  - Herbarium specimens with locations (e.g. Missouri)
- 11.2 million occurrences in the Americas
- 6.6 million have precise coordinates
- The taxonomy challenge
  - 9.4 million records have a verifiable Latin binomial
  - 5.6 million have coordinates as well



*Faramea occidentalis*

# Large Gaps in Knowledge about Distributions



*Faramea* often abundant,  
whether a narrow endemic  
or widespread

*F. occidentalis*

*F. coffeoides*

# Conservation of Panama Canal Watershed

Articles

## The Status of the Panama Canal Watershed and Its Biodiversity at the Beginning of the 21st Century

RICHARD CONDIT, W. DOUGLAS ROBINSON, ROBERTO IBÁÑEZ, SALOMÓN AGUILAR, AMELIA SANJURJ, RAÚL MARTÍNEZ, ROBERT F. STALLARD, TOMÁS GARCÍA, GEORGE R. ANGEHR, LISA PETT, S. JOSEPH WRIGHT, TARA R. ROBINSON, AND STANLEY HECKADON

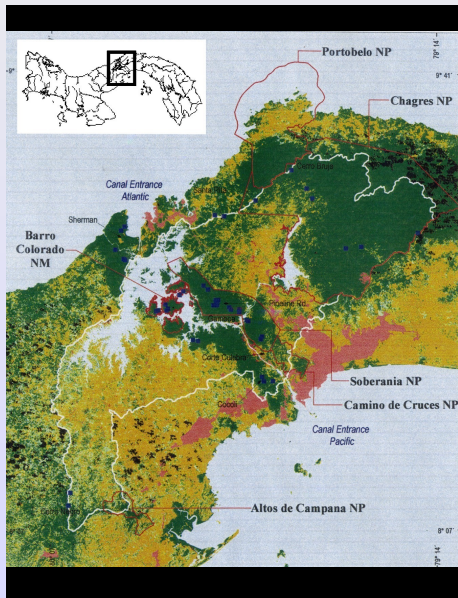
**P**anama is a small Central American country, but it operates a big canal and the world keeps an eye on developments there. Problems with the canal or ecological disasters in the watershed would attract a lot of attention. As Theodore Roosevelt planned, the Panama Canal is a major shipping corridor, transporting 37 ships a day and providing substantial income to the Panamanian government. Yet as Roosevelt could not have recognized—despite his interest in conservation—the canal sits in the center of one of the world's most biologically diverse areas (Myers et al. 2000). Southern Central America has more forest bird species than any other region in the world, except Amazonia and the northern and central Andes, each of which is vastly larger than southern Central America (Storer et al. 1996), and Panama has as many plant species per 10,000 km<sup>2</sup> as any region in the world, more than Amazonia or the Malay Peninsula (Rathlott et al. 1996). Roosevelt may have suspected, though, that forests are crucial for protecting the water supply of the Panama Canal and for maintaining the plant and animal communities. Fortunately, the year 2000 still found extensive forests around the canal, protected largely thanks to military and shipping interests, but it also found the watershed adjacent to a large and

LONG-TERM ECOLOGICAL STUDIES REVEAL A DIVERSE FLORA AND FAUNA NEAR THE PANAMA CANAL, HARBORED WITHIN A CORRIDOR OF FOREST STRETCHING FROM THE CARIBBEAN TO THE PACIFIC, BUT DEFORESTATION, LAND DEGRADATION, EROSION, AND OVERHUNTING REMAIN THREATS

expanding capital city. Maintaining the ecosystem integrity of the canal will pose a major challenge for conservation in the 21st century. Is urban and economic development compatible with a hydrologically functioning canal and conservation of an extremely diverse flora and fauna?

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# Conserving Rare or Key Species

North American lists are well documented

The rest of the world:

- Many species unknown

- Information on status unreliable to entirely absent

- Political barriers to combining data over wide areas