Digitization for Conservation: A natural partnership

iDigBio Summit
October 27-28, 2014

Mary Klein,
External Advisory Board

Landscape Scale Change

Risks to species and ecosystems Importance of science as solution

Callophrys dumetorum (Coastal Green Hairstreak) G2
© 2008 Gary McDonald (CalPhoto)

Rachel Carson, author of *Silent Spring*
50th Anniversary in 2012

- Develop a national infrastructure

- Oversee implementation of standards and best practices for digitization

- Build and deploy customized cloud computing environment

- Recruit and train personnel

- Education and outreach

- Plan for long-term sustainability of the national digitization effort

iDigBio and NatureServe: natural partners

A network connecting science with conservation

"To protect something, you need to know what it is and where it is."

- Anonymous

Scientific Knowledge ▶ **Network Capacity** ▶ **Impact Decisions** ▶ **Reduced Threat** ▶ **Biodiversity Conservation**

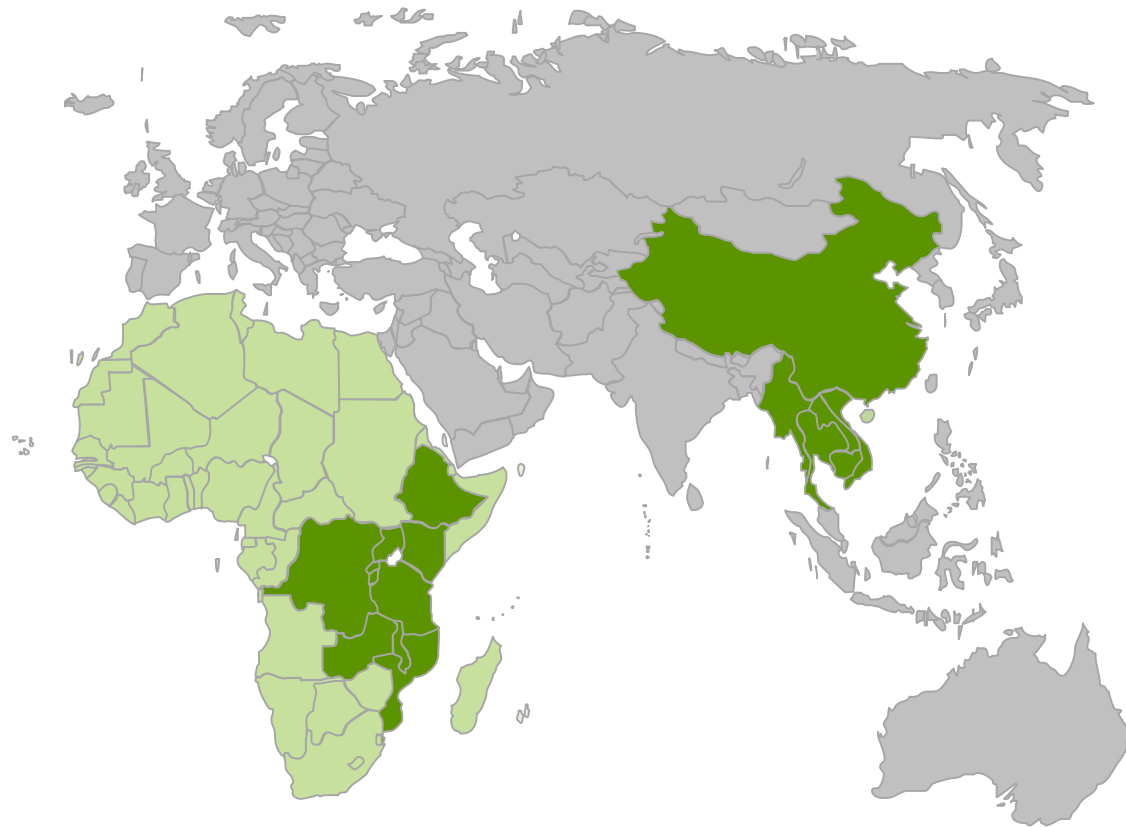NatureServe

Our Members

80+ biodiversity info centers

16 reside in universities

40 years of tracking **status and location** of species & ecosystem diversity
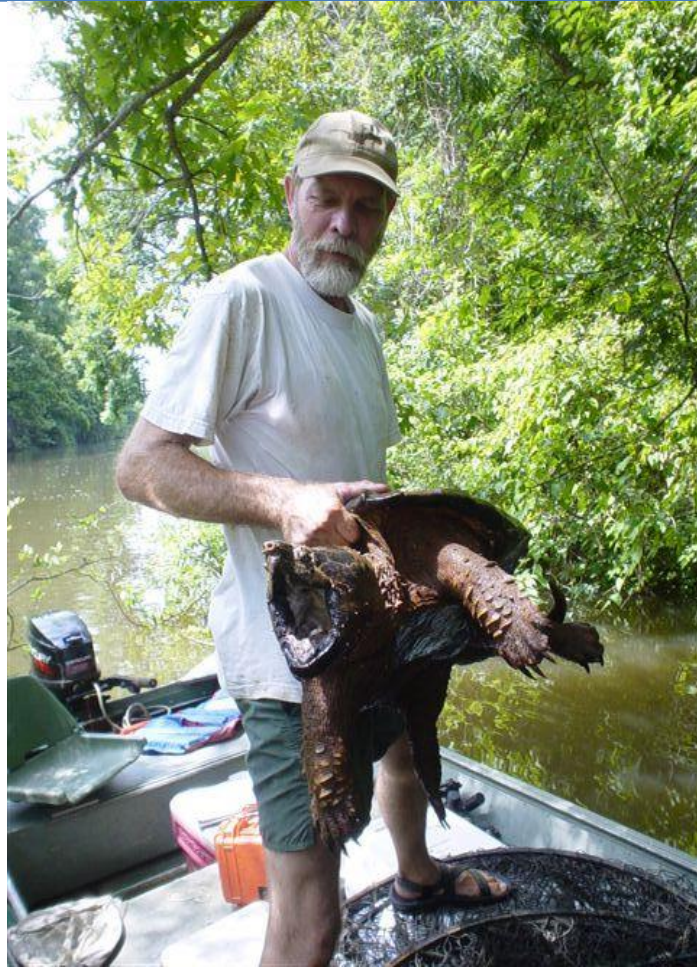
On-the-ground expertise

Global partners like Bat Conservation International and GBIF

Guiding conservation globally

NatureServe member network

Major NatureServe project areas

NatureServe vegetation mapping areas

"Boots on the Ground"

Alabama Natural Heritage Program

Photo by R. White

Florida Natural Areas Inventory

Approximately 1,100 records in iDigBio tagged as contributed by NatureServe members

Authoritative Sources: collections and publications

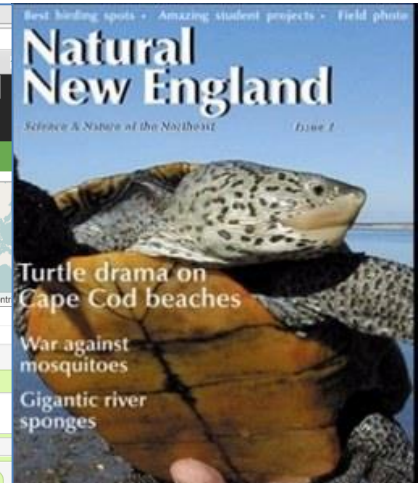Appx 17% of mapped populations in NatureServe database originated from specimens

New Sources: Citizen Science
Still needs to be authoritative

Herps of Texas

Five conservation information challenges:
1. Revisit old locations
2. Monitor changes along a gradient
3. Refine species distributions
4. Detect changes in distribution and/or abundance
5. Transcription of paper files

Biotics 5: Biodiversity Database

Observations are aggregated, polygons guide conservation action

Element Occurrence Point Data For All Tracked Species

Notes: Data for Delaware and animal data for Washington is not currently available.

NatureServe

Source: NatureServe Central Databases, July 2011.
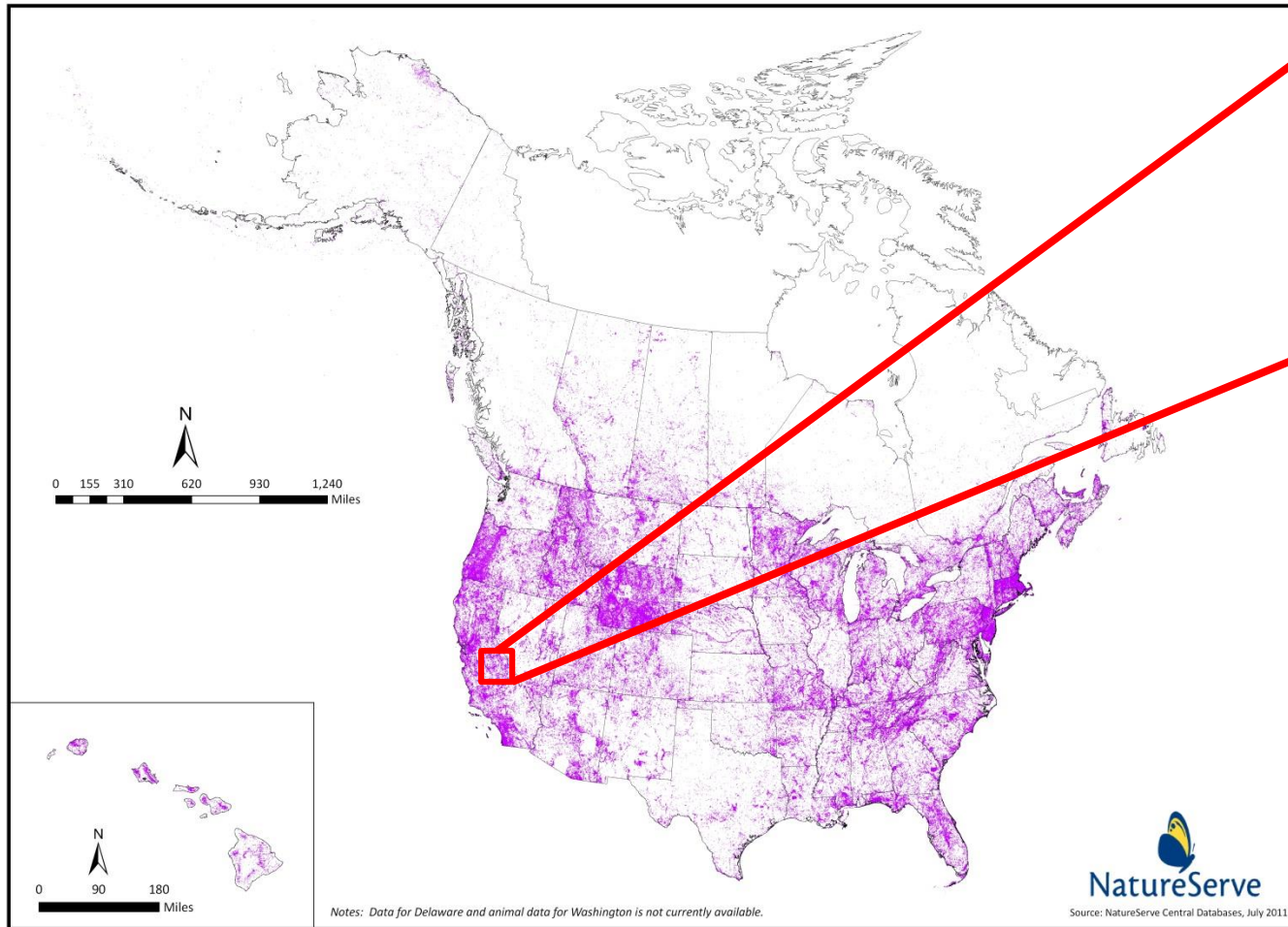
One-stop access to nearly 1 million mapped locations for at-risk species

Applications: distribution of endangered/endemic species
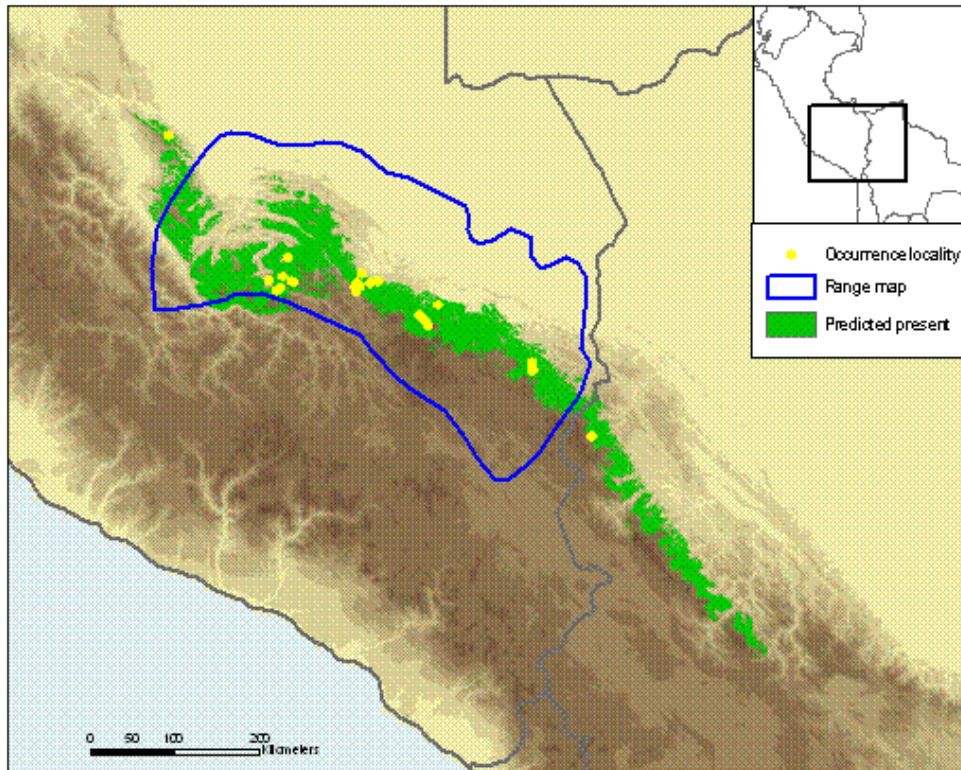
PDM results for a rare mammal in Peru and Bolivia: yellow points are known occurrences, green is the predicted occurrence, and the blue line is the original range map.
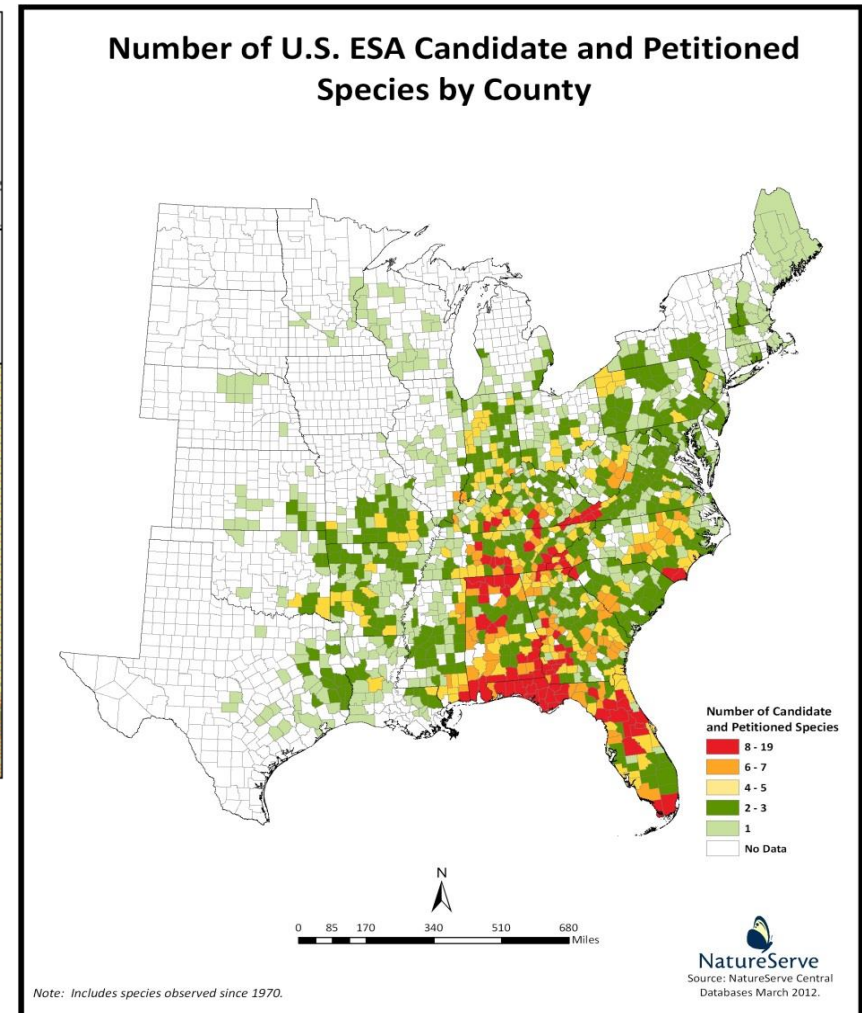
Applications: Proportion of U.S. Species at Risk

Bar chart showing proportion of U.S. species at risk by group:

- Freshwater Mussels
- Crayfish
- Amphibians
- Freshwater Fishes
- Flowering Plants
- Conifers
- Ferns
- Tiger Beetles
- Dragonflies/ Damselflies
- Reptiles
- Butterflies/ Skippers
- Mammals
- Birds

X-axis: 0%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%

Legend:
- Vulnerable (G3)
- Imperiled (G2)
- Critically Imperiled (G1)
- Presumed/Possibly Extinct (GX/GH)
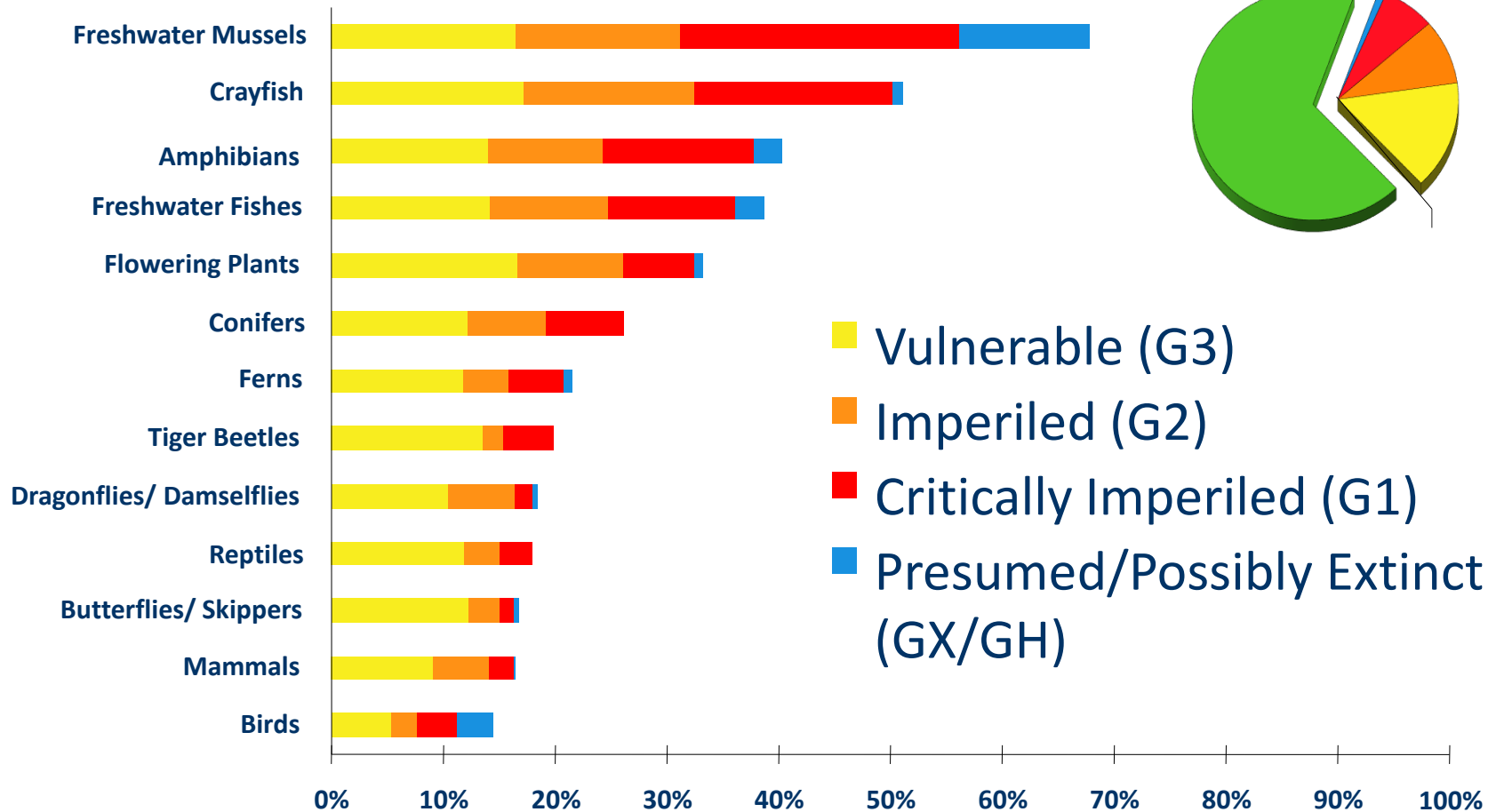
Applications: working with IUCN to document global patterns

Global Amphibian Assessment
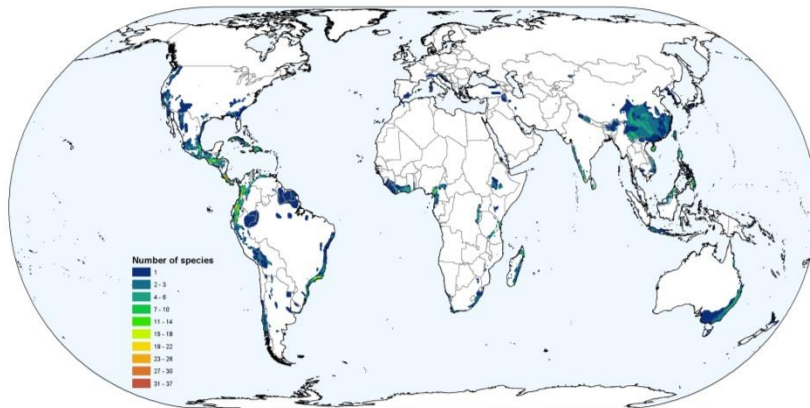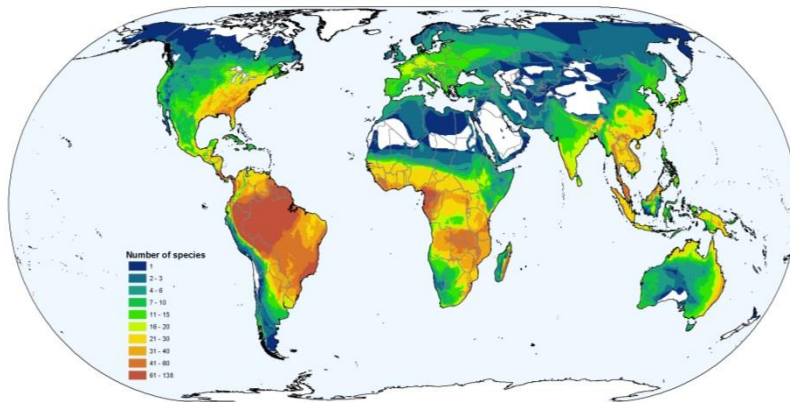
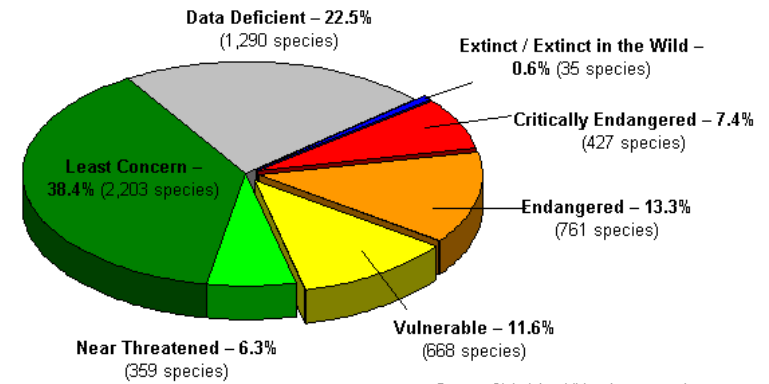### Summary of Red List Assessment for Amphibians

Data Deficient – 22.5% (1,290 species)

Extinct / Extinct in the Wild – 0.6% (35 species)

Critically Endangered – 7.4% (427 species)

Least Concern – 38.4% (2,203 species)

Endangered – 13.3% (761 species)

Vulnerable – 11.6% (668 species)
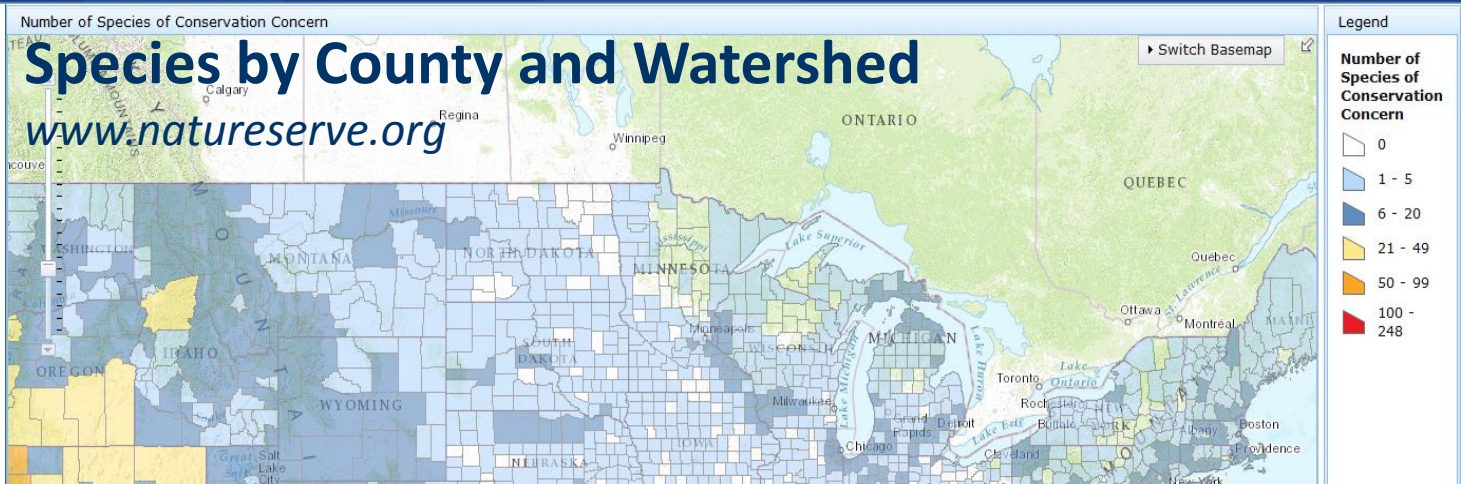
Near Threatened – 6.3% (359 species)

Source: Global Amphibian Assessment

Red-eyed leaf frog, Central America
Photo by Piotr Naskrecki

Applications: interactive maps and online tools

Species by County and Watershed

www.natureserve.org

www.landscope.org

How else can we collaborate to improve conservation outcomes?

- Share ideas and techniques for sustainability

- Share data with an emphasis on species at risk
  - Establish "terms of use" agreements
  - Attribution management

- Invest in enhancements info systems
  - Automatic notices of new records of interest
  - Taxonomic synchronization
  - Web services for automated data transfer

- Collaborative research
  - Refine species distributions
  - Document changes (range shifts, habitat loss, etc.....)

Parthenium tetraneuris (G3)

Partnerships are essential:
Information doesn't flow just one way!

Thank you!

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