

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



Liberating data - essential to create knowledge

- 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



Our Members

80+ biodiversity info
centers

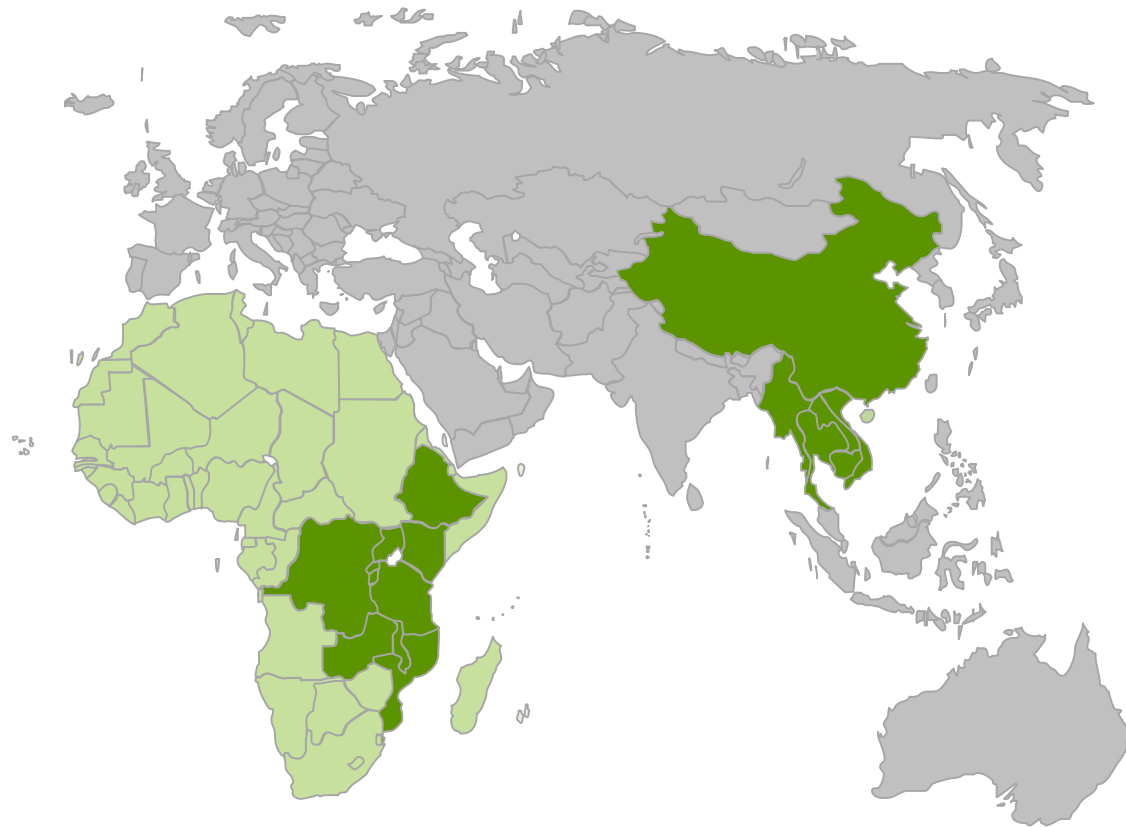
16 reside in universities




40 years of tracking **status
and location** of species &
ecosystem diversity

On-the-ground expertise

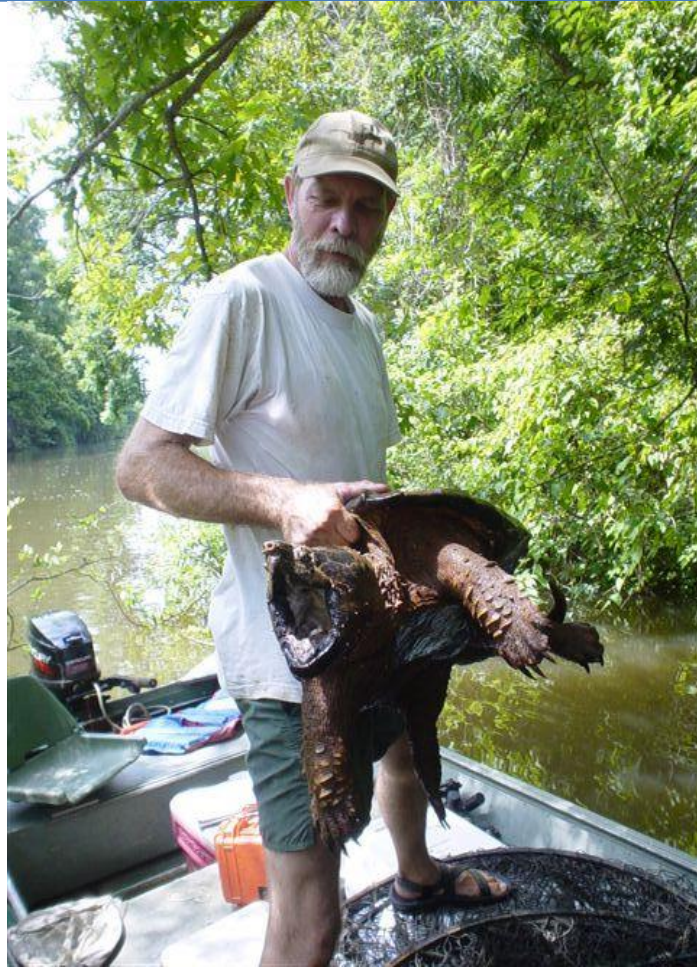
Global partners like Bat
Conservation International
and GBIF

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



iDigBio Portal
<https://www.idigbio.org/portal/search>

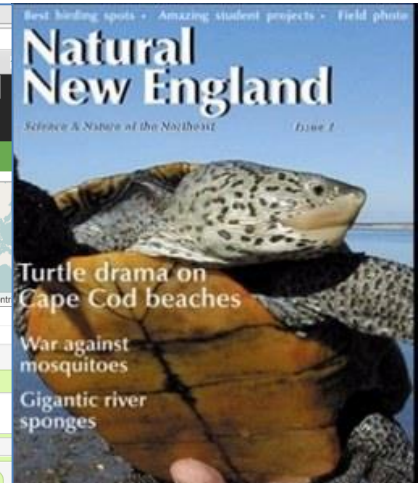
iDigBio
 Integrated Digitized Biocollections

Search Records
 Query: Contains text natural herit

Full Text Search
 natural heritage

Current Results
 Records: 11
 Approx. Download Time: 0hrs 0mins 10secs

Advanced Search
 Phylum: dwc:phylum
 Class: dwc:class
 Family: dwc:family
 Scientific Name: dwc:scientificName
 Country: dwc:country
 State/Province: dwc:stateProvince
 Collector: dwc:recordedBy
 Institution Name: dwc:institutionName



Terrestrial Buffer Zones and Wetland Conservation: A Case Study of Freshwater Turtles in a Carolina Bay

VINCENT J. BURKE AND J. WHITEHEAD GIBBONS
 Southeastern Biological Laboratory, University of Georgia, Doraville, GA, 30093, U.S.A.

Abstract: Because freshwater wetlands often support diverse and species-rich assemblages, wetland loss is a primary concern in biological conservation. It is, however, unclear precisely why wetlands are declining, despite recent efforts to restore them. We used geographic information system analyses to test the hypothesis that wetland loss is related to the loss of terrestrial buffer zones. We used data from 1980 to 2000 to test the hypothesis that wetland loss is related to the loss of terrestrial buffer zones. We found that wetland loss was significantly related to the loss of terrestrial buffer zones. We found that wetland loss was significantly related to the loss of terrestrial buffer zones. We found that wetland loss was significantly related to the loss of terrestrial buffer zones.

Introduction: Reports that most terrestrial wetlands in the United States have been converted to residential property are...

HerpNet

Search Results

HerpNetCode	CollectorCode	CatalogNumber	HerpNetCat	ScientificName	Family	PreparationType	Tissue	Latitude	Longitude	CoordinateSystem	HerpNetID
SMU	MEP	789-0402	1	Trionyx colubrinus	Coleonydidae			34.8403	-108.042	WGS84	1000000
SMU	MEP	789-0411	1	Trionyx colubrinus	Coleonydidae			34.8403	-108.042	WGS84	1000000
SMU	MEP	789-0410	1	Chrysemys picta	Testudinidae			42.28277	-107.70138	WGS84	1000000
SMU	MEP	789-0409	1	Chrysemys picta	Testudinidae			42.28277	-107.70138	WGS84	1000000
SMU	H	1552		Phrynosoma munit	Phrynosomatidae	specimen					
SMU	H	1549		Trionyx elegans	Coleonydidae	specimen					
SMU	H	1548		Trionyx elegans	Coleonydidae	specimen					
SMU	H	1547		Trionyx elegans	Coleonydidae	specimen					
SMU	H	1546		Trionyx elegans	Coleonydidae	specimen					
SMU	H	1545		Trionyx elegans	Coleonydidae	specimen					
SMU	H	1544		Trionyx elegans	Coleonydidae	specimen					
SMU	H	1543		Trionyx elegans	Coleonydidae	specimen					
SMU	H	1542		Trionyx elegans	Coleonydidae	specimen					
SMU	H	1541		Trionyx elegans	Coleonydidae	specimen					



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

BIOTICS5 NatureServe Record Management Map Data Exchange Queries and Reports Configuration

Logged in as **rlb** • Personal Settings • Log out

Subnational Element Tracking - Plant

Global Scientific Name: *Mimulus glabratu* var. *michiganensis* Classification Status: Standard Global Rank: G5T1
Subnational Scientific Name: *Mimulus michiganensis* Nation: United States National Rank: N1
Classification Code: PDSCR Subnation: Michigan Subnational Rank: S1

Related Record Menu

Identifiers/Concepts

Subnation: Michigan

Subnational Scientific Name

Scientific Name: *Mimulus michiganensis*
Author Name: (Pennell) Posto & Prather

Primary Name Reference: J03POS01MIUS Posto, A. L. and L. A. Prather. 2003. 1
Mimulus michiganensis (comb. Et stat. nov.: Script

Taxonomy Comments :

View: Global Element

Common Names

Subnational Common Name: Michigan monkey flower
Language: Please select a value
Accepted By Ecology:

Other Subnational Common Name

Other Sub Common Name

Synonyms

Subnational Synonyms

<input type="checkbox"/>	Scientific Name	
<input type="checkbox"/>	<i>Mimulus glabratu</i> var. <i>michiganensis</i>	(Pennell) Fassett

Element References

[Help Documentation](#) • [Contact Support](#) • [Biotics 5.4 / Mich](#)

BIOTICS5 NatureServe Record Management Map Data Exchange Queries and Reports Configuration

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Map Resources

Map Resources

- Element Occurrences
 - EO Outlines
 - EO Shapes
 - EO Centroids
 - Animal Assemblage
 - Vertebrate Animal
 - Invertebrate Animal
 - Nonvascular Plant
 - Vascular Plant
 - Other (Botanical)
 - Alga/Fungus
 - Communities/Ecological Systems
- Source Features
- Managed Areas
- Conservation Sites
- WATERSHED
- COUNTY
- Basemap: National Geographic

Switch Basemap

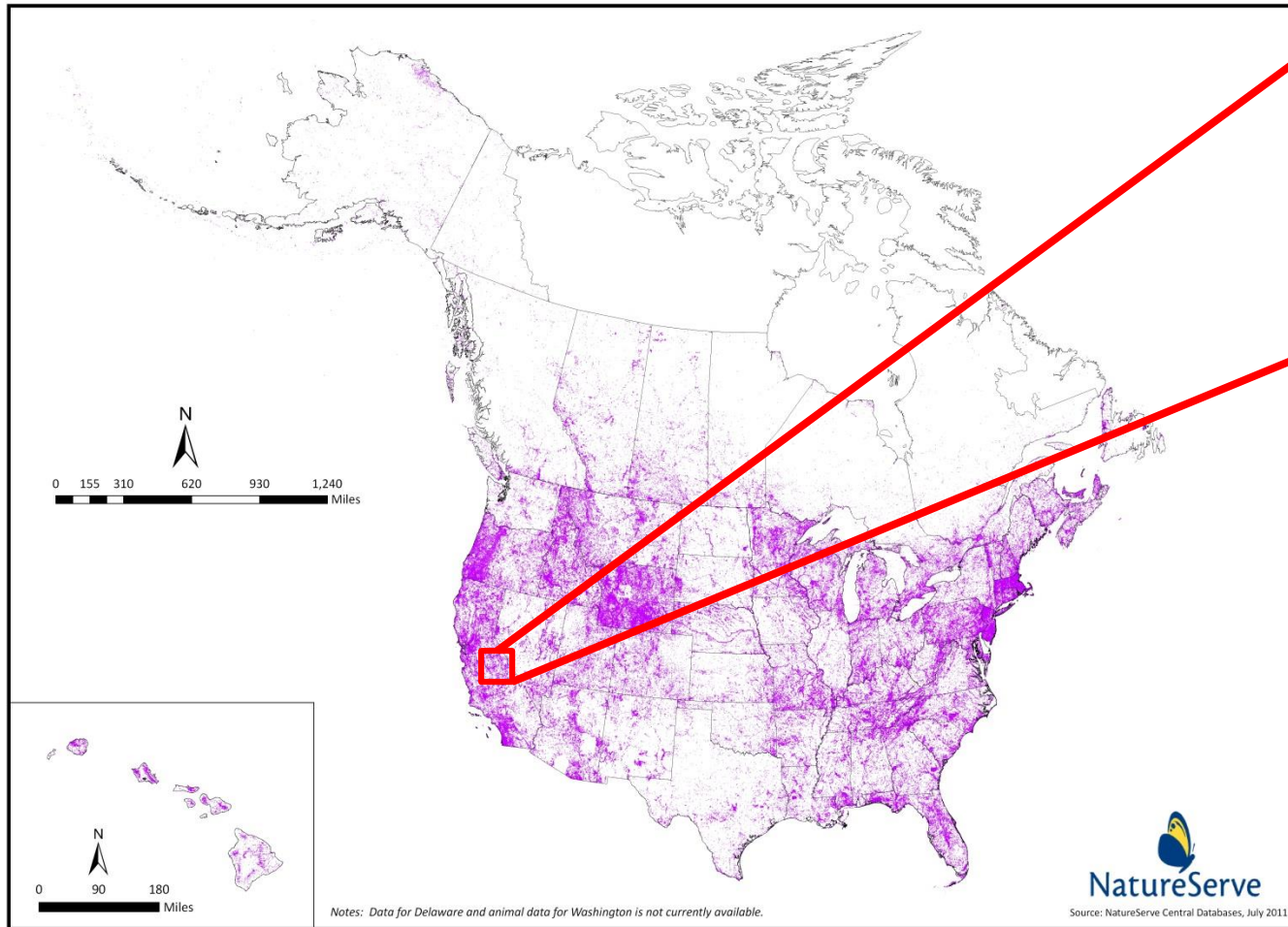
- Imagery
- Imagery with Labels
- Streets
- Topographic
- Terrain with Labels
- Light Gray Canvas
- National Geographic
- Oceans

40km Scale: 1:2,311,162
Longitude: -86.55555555555555
Latitude: 46.8603

[Help Documentation](#) • [Contact Support](#) • [Biotics 5.4 / Michigan](#) • [Terms and Conditions](#) • [NatureServe](#)

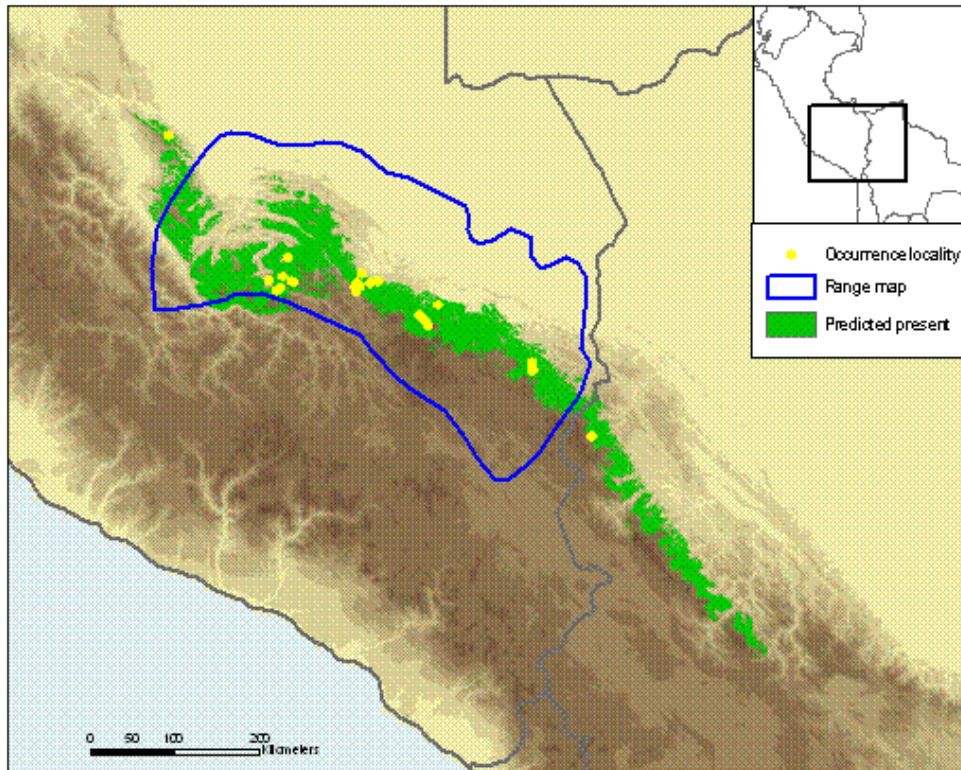
Observations are aggregated, polygons guide conservation action

Element Occurrence Point Data For All Tracked Species

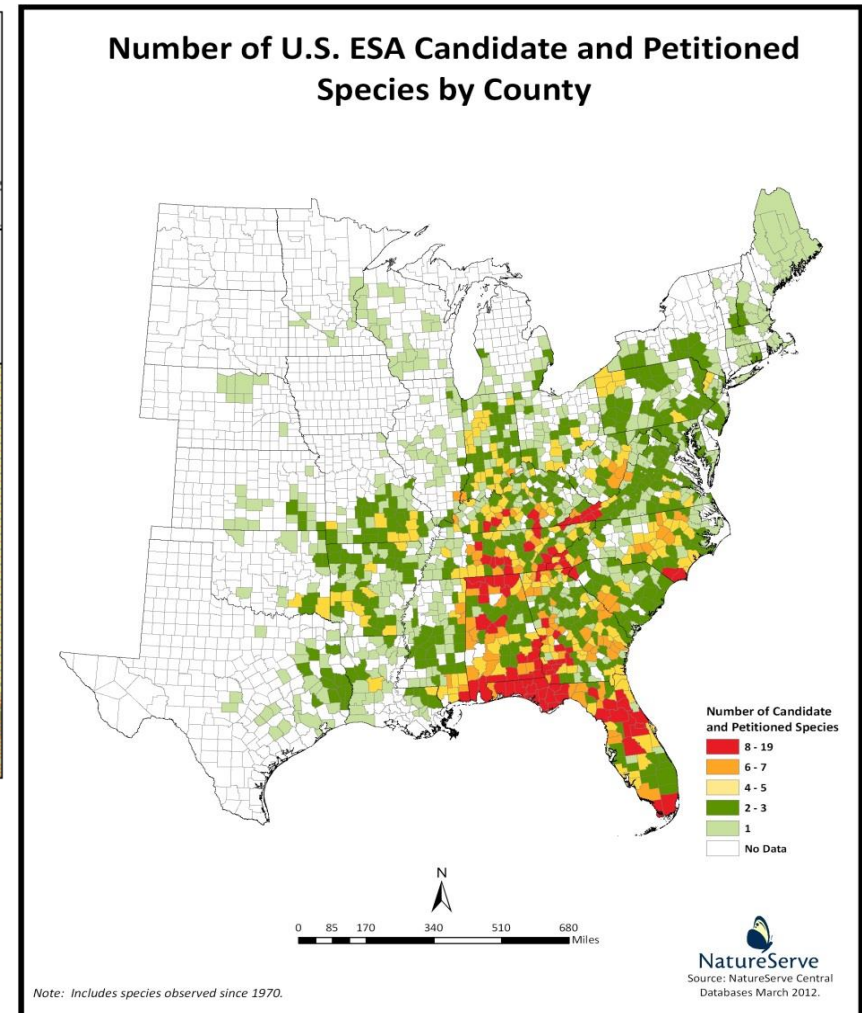


**One-stop access
to nearly 1
million mapped
locations for at-
risk species**

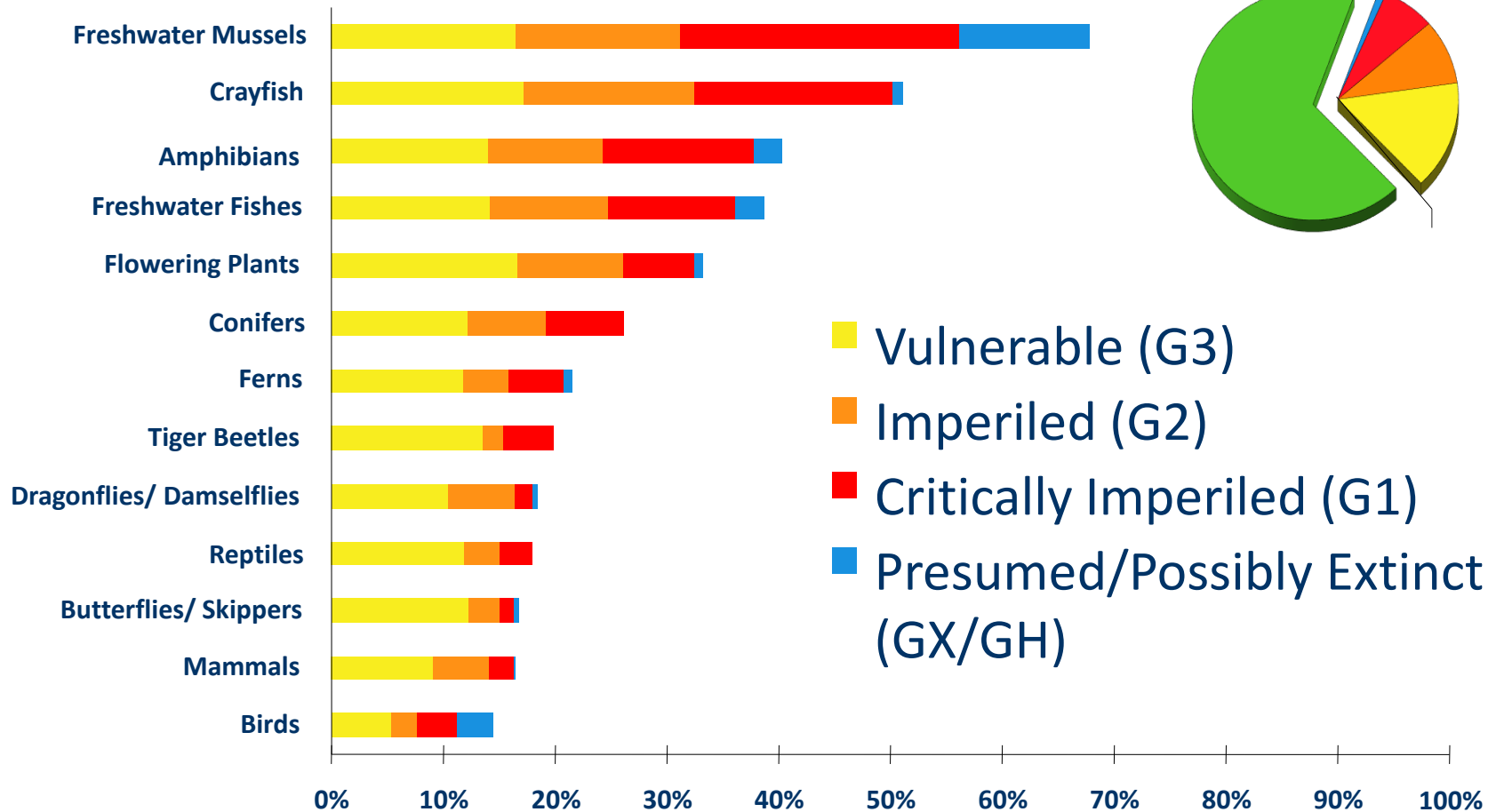
Applications: distribution of endangered/endemic species



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.

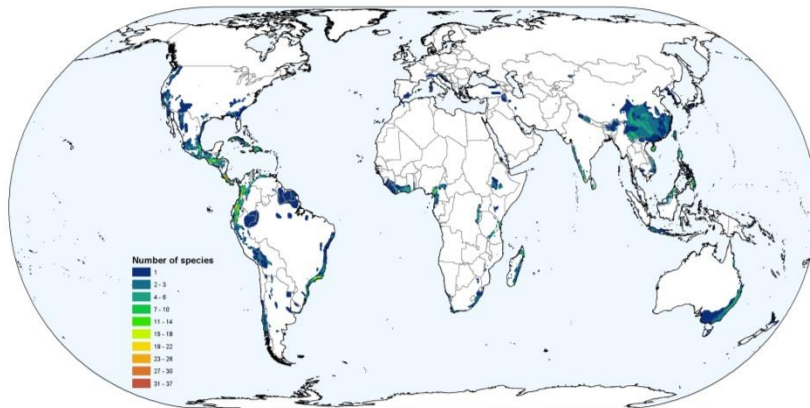
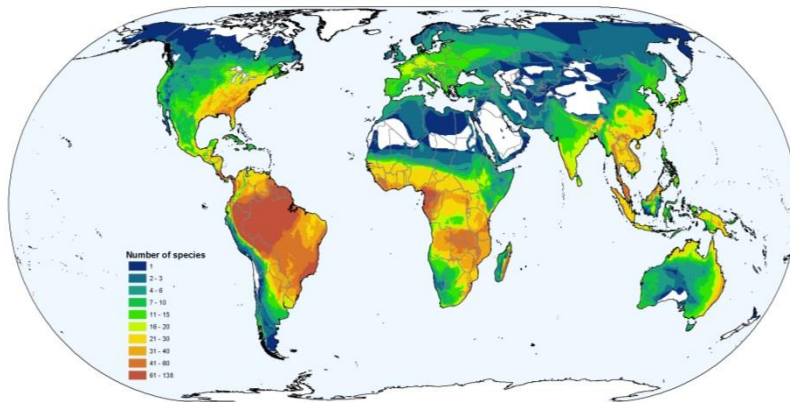


Applications: Proportion of U.S. Species at Risk

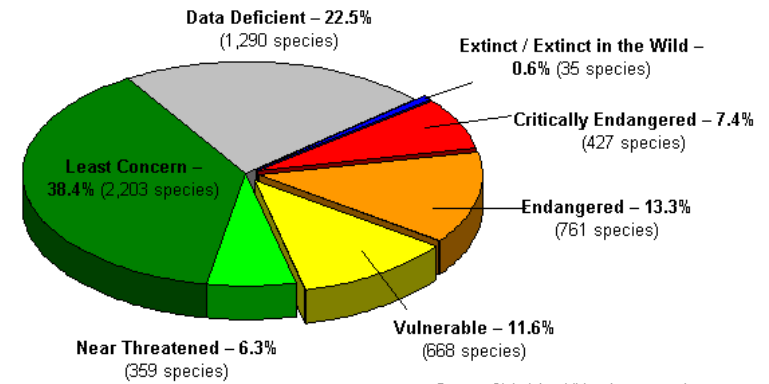


Applications: working with IUCN to document global patterns

Global Amphibian Assessment



Summary of Red List Assessment for Amphibians

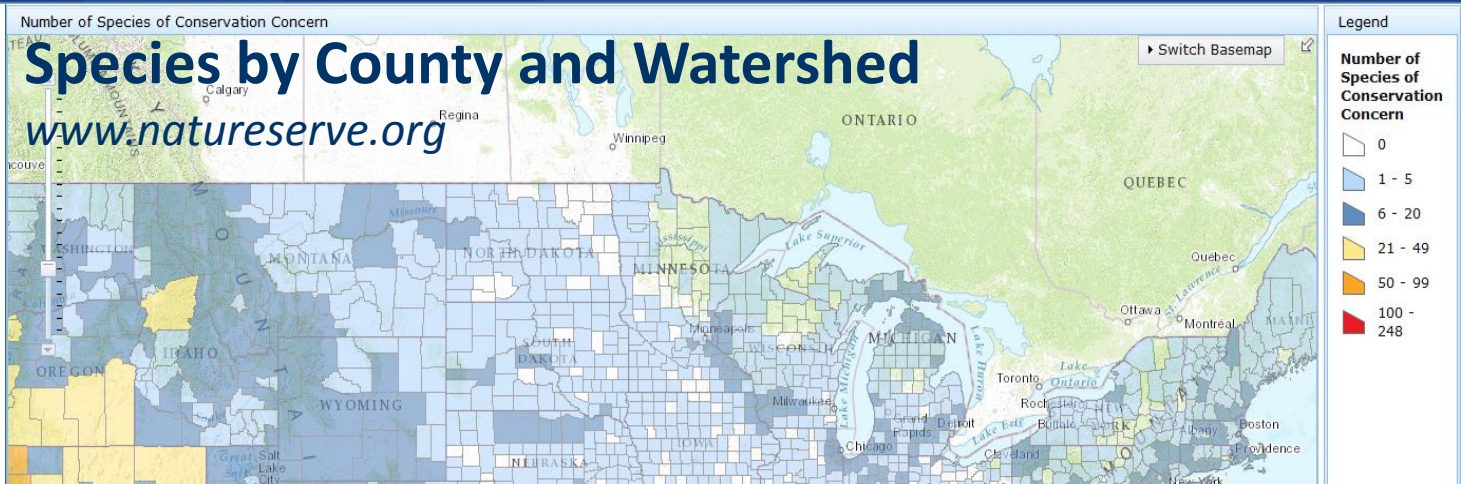


Source: Global Amphibian Assessment



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

Applications: interactive maps and online tools



County Details

County Name: Uintah
State: Utah

Number of Species of Conservation Concern: 33

¹ U.S. ESA Listed, Proposed, Candidate and NatureServe Imperiled (G1-G2) S

Species Occurring in County

Scientific Name ²	Common Name	Major Group	NatureServe Global Status
Aquilegia grahamii	Graham's Columbine	Flowering Plants	G1: Critically Imperiled
Astragalus hamiltonii	Hamilton's Milkvetch	Flowering Plants	G1: Critically Imperiled
Carex curatorum	Kaibab Sedge	Flowering Plants	G2: Imperiled
Centrocercus urophasianus	Greater Sage-Grouse	Birds	G3: Vulnerable
Charadrius montanus	Mountain Plover	Birds	G3: Vulnerable
Cirsium murdockii	Murdock's Thistle	Flowering Plants	G2: Imperiled

NatureServe
Data last updated November 2012

www.landscape.org

Feature Details

Number of Species of Conservation Concern: 36

U.S. ESA Listed, Proposed, Candidate and NatureServe Imperiled (G1-G2) Species

Scientific Name	Common Name	Major Group	Global Status	U.S. ESA Status
Arabis georgiana	Georgia Rockcress	Flowering Plants	G1	C
Coccinella	Cobblestone Tiger	Tiger Beetles	G2	

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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.....)



DENVER BOTANIC
GARDENS



Parthenium tetraeneuris (G3)

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



Thank you!

Mary_Klein@NatureServe.org

@Mary_L_Klein

www.linkedin.com/in/marykleinceo