

iDigBio Research Coordination and Scientific Community Outreach

Pam Soltis



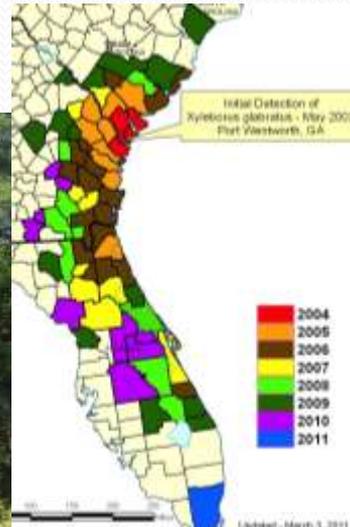
iDigBio External Advisory Board Meeting
2012 (Project Year 1)
Supported by NSF Award EF-1115210

Research Questions

- How are species distributed in geographical and ecological space?
- What is the history of life on Earth?
- What factors lead to speciation, dispersal, and extinction?
- What are the impacts of climate change likely to be?
- What information is needed for effective conservation strategies?

Invasive Species

- Where have they been introduced, and how quickly are they spreading?
- What is the pattern of spread, and do they covary with other taxa?
- What is the effect of climate change on the spread of invasives?



Research & Scientific Outreach

- Foster, encourage, enhance, enable research using collections data
 - Foster research in IT
- Integrate with various research communities
- Work with research communities to develop collections and research-related workshops and symposia at meetings
- Work with research communities to develop interfaces with data repositories, etc. to promote integrated research
- Coordinate these efforts with TCNs and PENs

Linking Collections to Ecology

- Through collections from LTERs



Linking Collections to Ecology

- Through NEON



National Ecological Observatory Network

- Biological monitoring at sites across USA; collections
- Baseline for changes in species distribution and abundance over time



Linking Collections to Paleobiology

- Paleobiology Database
 - (<http://paleodb.org/cgi-bin/bridge.pl>)

Paleobiology Database

Quick search Full search Download Analyze About Log in

About the site

The Paleobiology Database seeks to provide researchers and the public with information about the entire fossil record.

You can use the site to find out about fossil collections, individual plants and animals, taxonomic groups, references to publications, stratigraphic units, time scales, and time intervals.

All of our data can be downloaded, including collection, occurrence, or specimen records, taxonomic names and opinions, measurements of specimens, and Neptune occurrences.

This hour's totals

- 35455 references
- 180042 taxa
- 106280 collections
- 917311 occurrences
- 247 contributors
- 105 institutions
- 20 countries

This month's top contributors

- Matthew Clapham
UC Santa Cruz
- Uta Merkel
Museum für Naturkunde
- Jered Karr
UC Santa Cruz
- Melanie Hopkins
Field Museum
- John Alroy

Mammals

- Hypsoparia timmi
- Microchiropteryx foliaeae

Reptiles

Africa

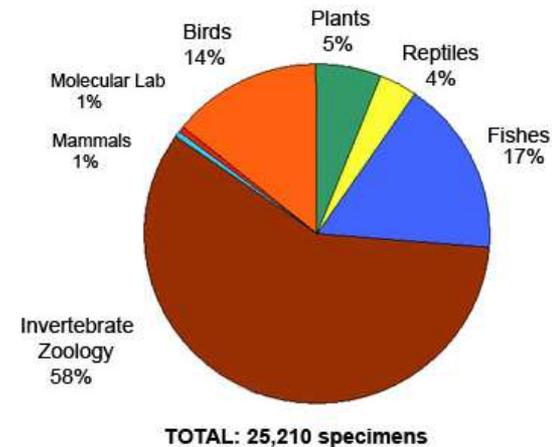
- Kleinberg Farm, Calitzdorp, Kannaland

Asia

- Okubata

Linking Collections to Genomics

- National network of tissue and genetic resources



FLMNH GRR: the Genetic Resources Repository
Florida Museum of Natural History



Linking Collections to Genomics

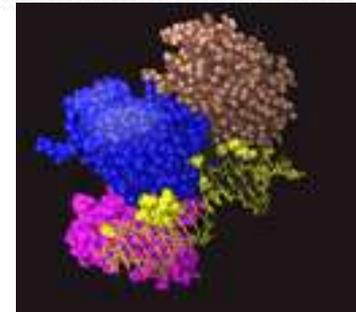
- Extend HUB connections to genomics databases

About NCBI
National Center for Biotechnology Information

About NCBI	NCBI at a Glance	A Science Primer	Databases and Tools
Human Genome Resources	Model Organisms Guide	Outreach and Education	News

NCBI at a Glance
A Science Primer
Databases and Tools
Human Genome Resources
Model Organisms Guide
Outreach and Education
News

- Literature Databases
- Entrez Databases
- Nucleotide Databases
- Genome-Specific Resources
- Tools for Data Mining
- Tools for Sequence Analysis
- Tools for 3-D Structure Display and Similarity Searching
- Maps
- Collaborative Cancer Research
- FTP Download Sites
- Resource Statistics



Linking to Living Collections

- Botanical gardens, zoos, culture collections

 MISSOURI BOTANICAL GARDEN

 Smithsonian
National Zoological Park



Fungi and Yeast

THE ESSENTIALS OF LIFE SCIENCE RESEARCH
GLOBALLY DELIVERED™

[take a tour](#)

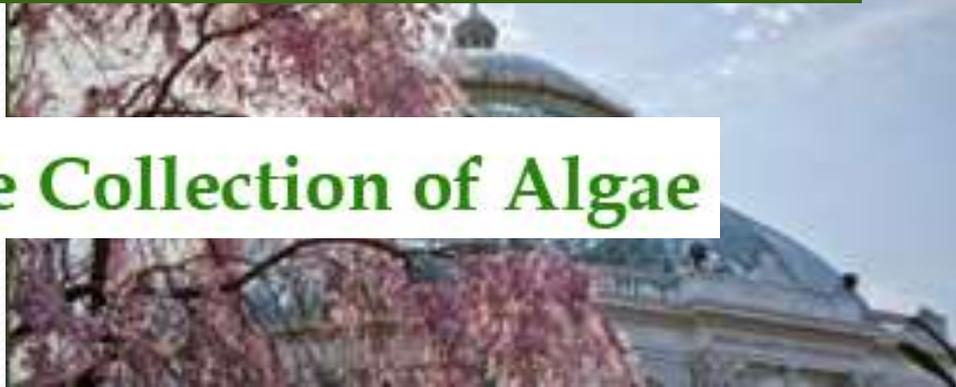


THE NEW YORK BOTANICAL GARDEN



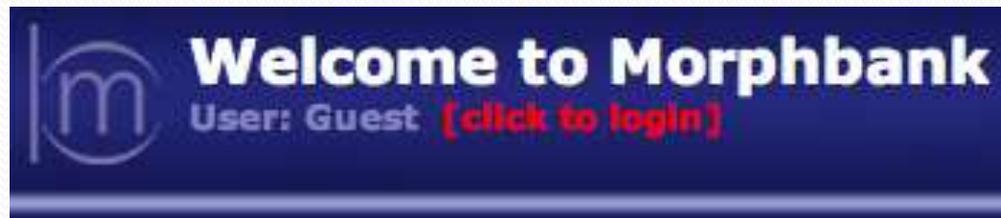
UTEX

The Culture Collection of Algae



Interactions with Systematics Community and Beyond

- Facilitate digitization efforts
- Coordinate with other databasing efforts in systematics



- Connect to databases outside systematics: ecology to genomics (NEON to GenBank)

Interactions Fostered Through...

- Discussions at national meetings of professional societies (systematics, ecology, evolution, genomics)
- Workshops to engage members of systematics community
- Workshops to engage members of different communities



American Society of Plant Taxonomists



Activities to Date

- Meetings/symposia with collections community
 - Botany 2011
 - BISON
 - TDWG
 - Society of Vertebrate Paleontology
 - Entomological Collections Network
 - iDigBio Summit
 - Paleocollections Workshop (B. MacFadden lead)
 - Botany 2012: Symposium and Workshop (A. Mast)
 - Participation at SPNHC 2012
- Plans underway for additional workshops

Activities to Date

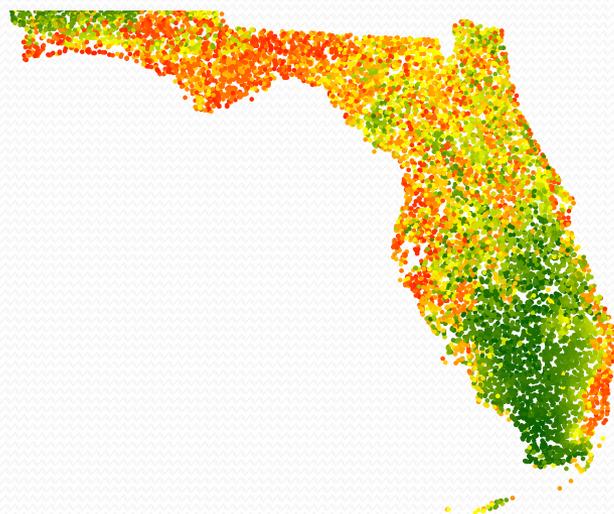
- Discussions with various data repositories:
 - TreeBASE
 - Dryad
 - NEON
 - GenBank
 - iPlant
- Workshop on Linked Data (with NESCent)

Plans for Year 2

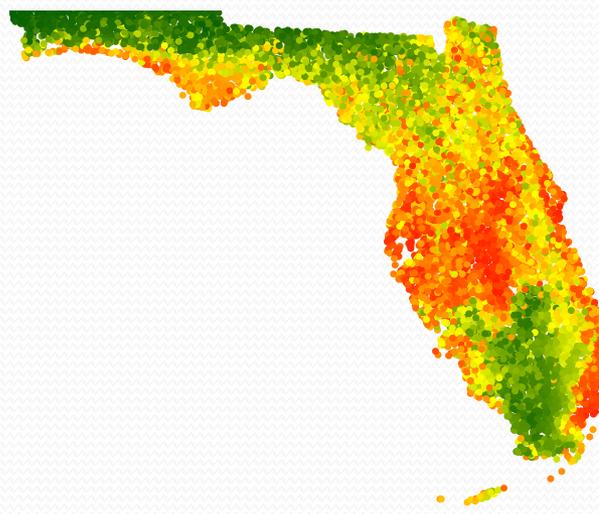
- Linked Data workshop (with NESCent)
- Foster additional workshops with research communities
- Symposia and training at national/regional meetings
 - Botany 2012 (Soltis and Mast)
 - American Society of Ichthyologists and Herpetologists (Page)
- Develop network of genetic and tissue collections
- Develop evaluation strategy (Ellis)
- Engage post-docs and students in research

Florida Plant Phylogeny: Phylogenetic Diversity Under Climate Change

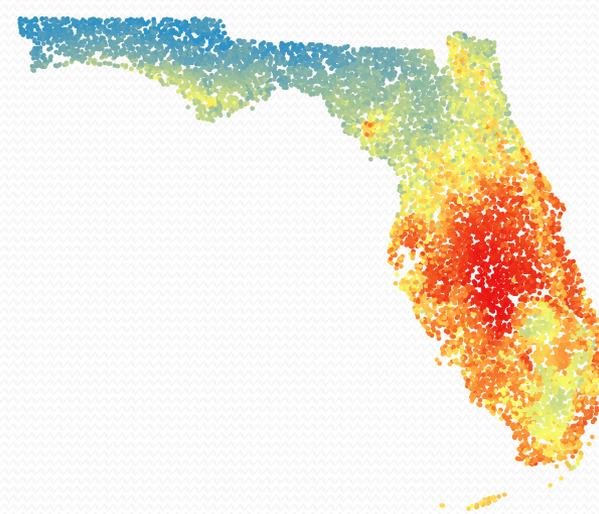
Vascular Plant Diversity in Florida



2609 species (of 4200)
all included in phylogeny



203 species
endemic to Florida

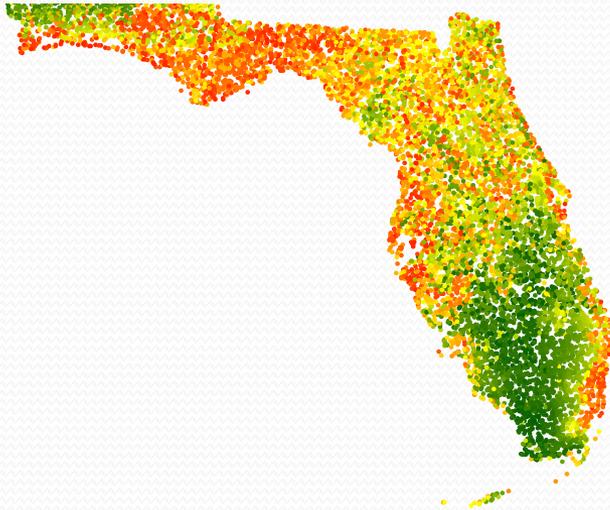


Ratio of endemics
to all species

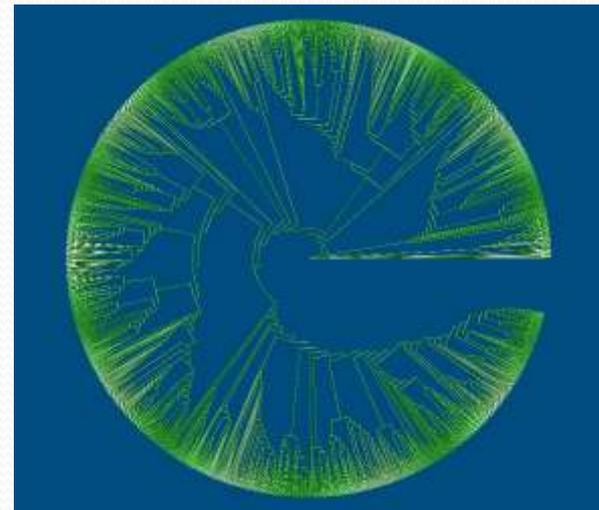
~200,000 location points; data from UF, FSU, USF, GBIF, FNAI

Florida Plant Phylogeny: Phylogenetic Diversity Under Climate Change

Vascular Plant Diversity in Florida



+



2609 species (of ~4200)
all included in phylogeny

Phylogenetic tree, 2609 species
GenBank, new (1000 spp)

Florida Plant Phylogeny:

Phylogenetic Diversity Under Climate Change

- Integrate distribution data, ecological data, climate models, phylogeny
 - How does species diversity compare to phylogenetic diversity?
 - How do species diversity and phylogenetic diversity change?
 - How do invasive species respond?
 - Integrate across clades
 - *Develop workflows to facilitate such studies*

