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

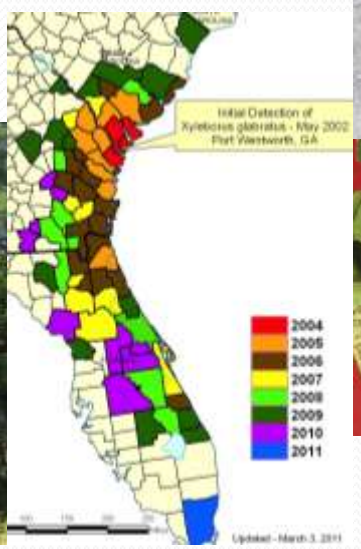
- How are species distributed in geographical and ecological space?
- What is the history of life on Earth?
- What factors lead to speciation, dispersal, and extinction?
- What are the impacts of climate change likely to be?
- What information is needed for effective conservation strategies?

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?



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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

The US
Long Term Ecological Research
Network

NSF

iDigBio

Linking Collections to Ecology

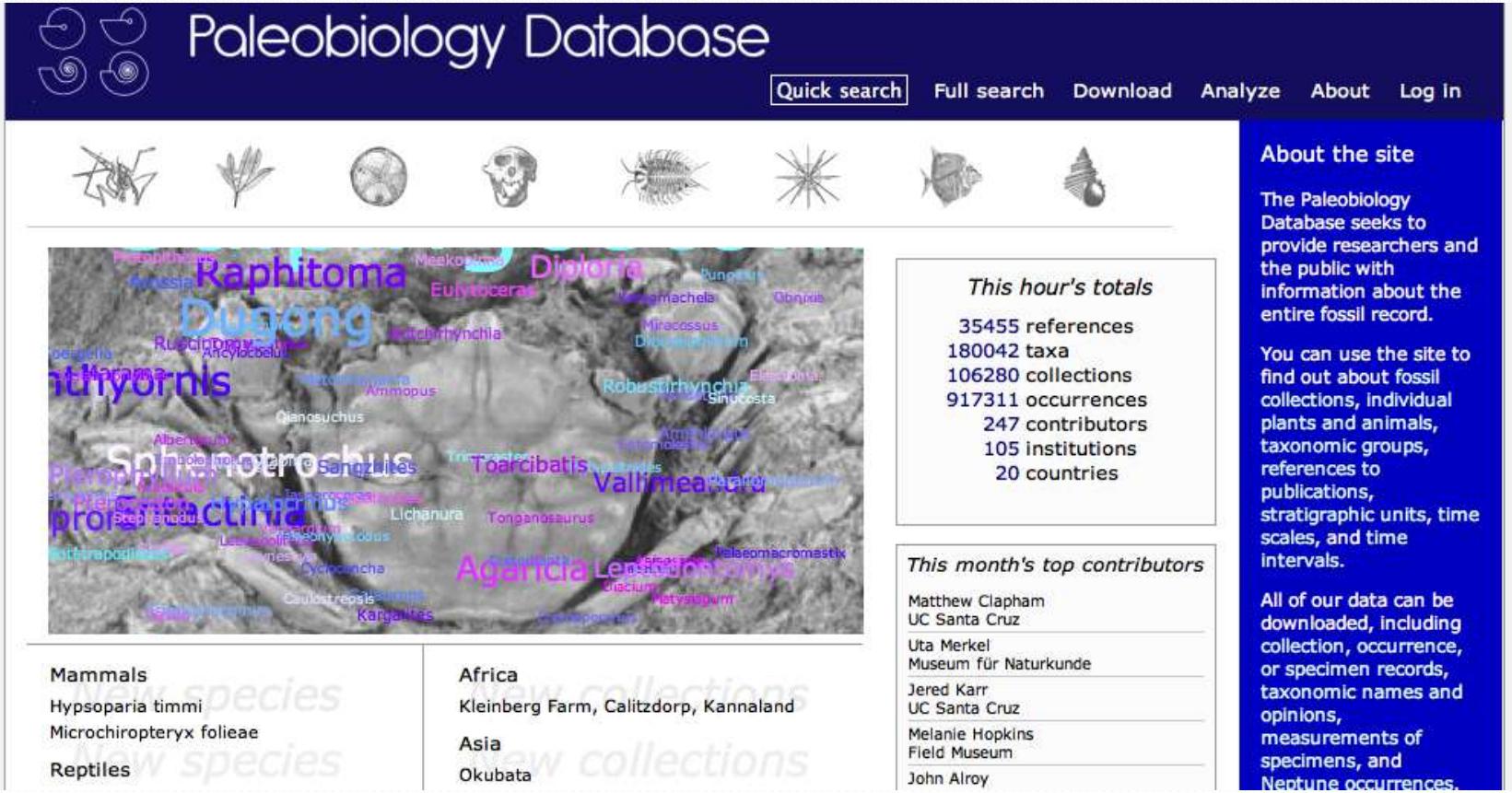
- Through NEON

National Ecological Observatory Network

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

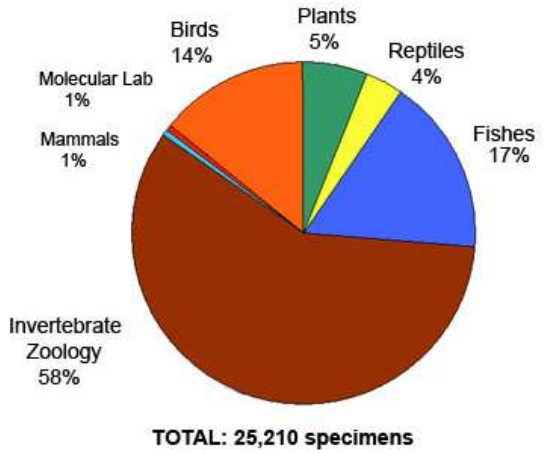
Linking Collections to Paleobiology

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



Linking Collections to Genomics

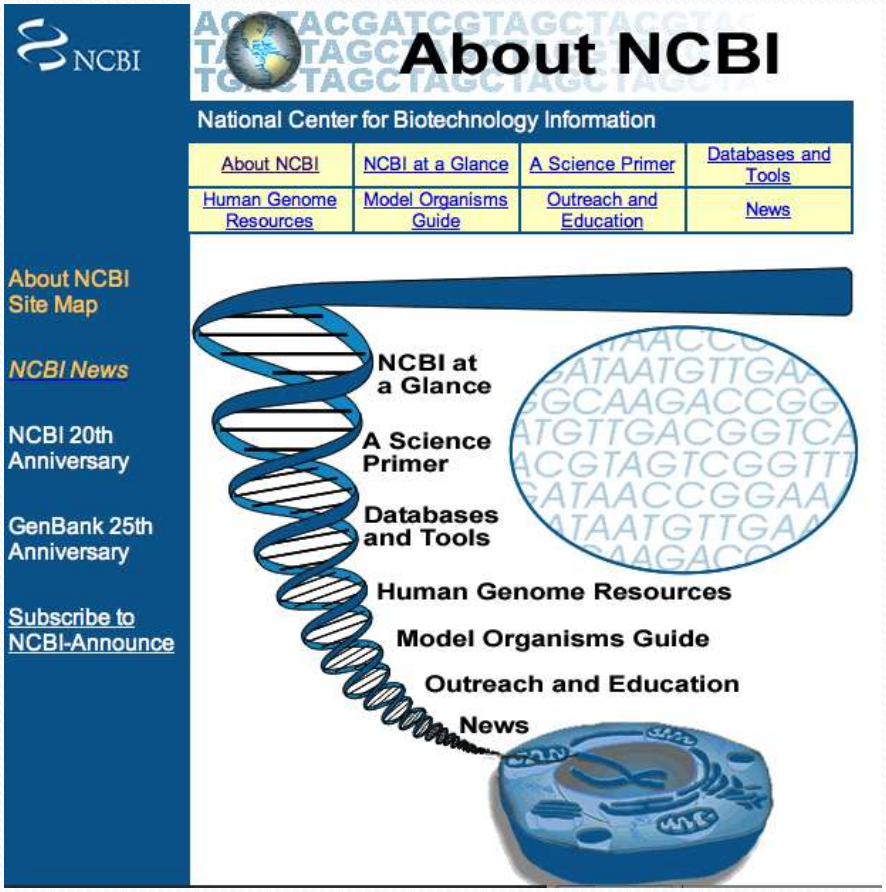
- National network of tissue and genetic resources

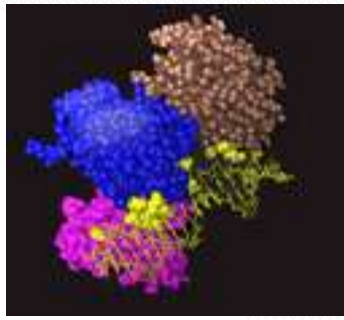


FLMNH GRR: the Genetic Resources Repository
Florida Museum of Natural History

Linking Collections to Genomics

- Extend HUB connections to genomics databases

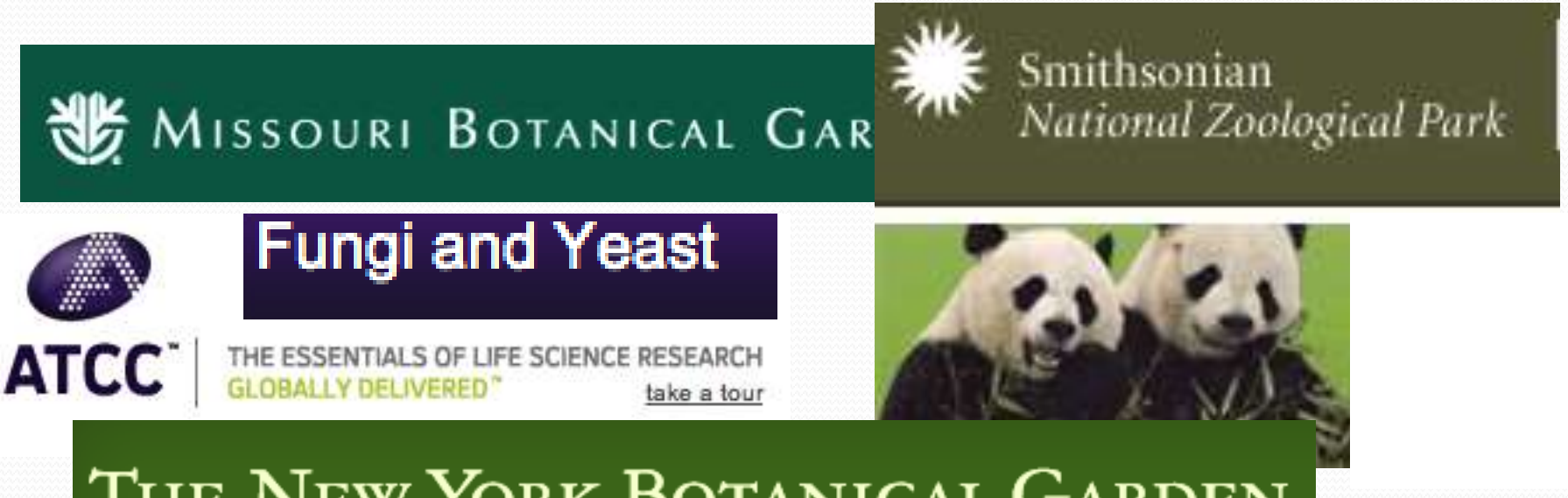




- Literature Databases
- Entrez Databases
- Nucleotide Databases
- Genome-Specific Resources
- Tools for Data Mining
- Tools for Sequence Analysis
- Tools for 3-D Structure Display and Similarity Searching
- Maps
- Collaborative Cancer Research
- FTP Download Sites
- Resource Statistics

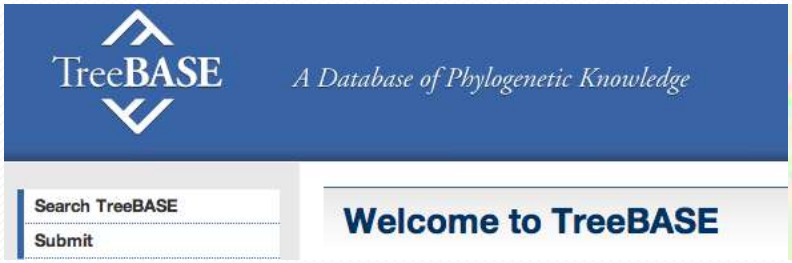
Linking to Living Collections

- Botanical gardens, zoos, culture collections



Interactions with Systematics Community and Beyond

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

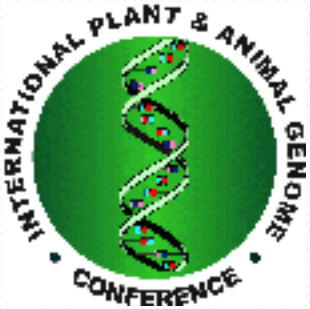


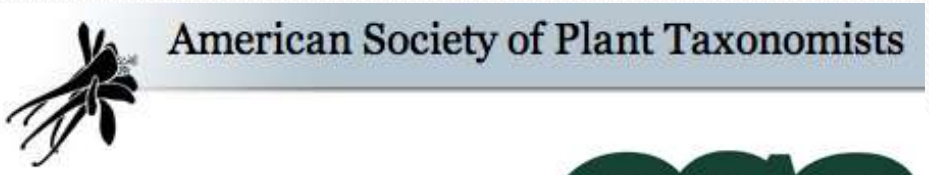
- Connect to databases outside systematics:

  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





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

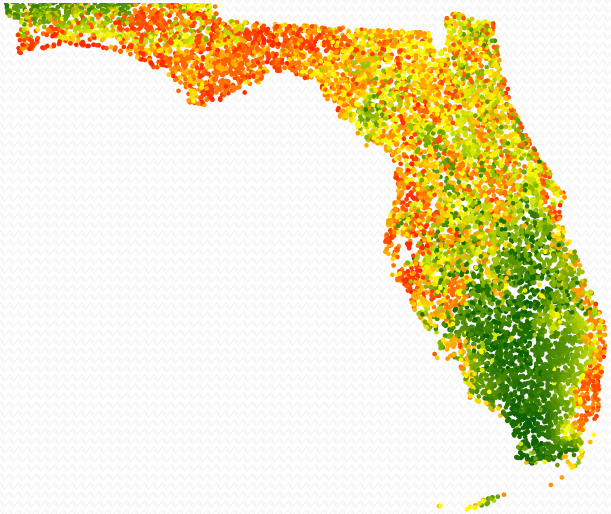
- Discussions with various data repositories:
  - TreeBASE
  - Dryad
  - NEON
  - GenBank
  - iPlant
- Workshop on Linked Data (with NESCent)

Plans for Year 2

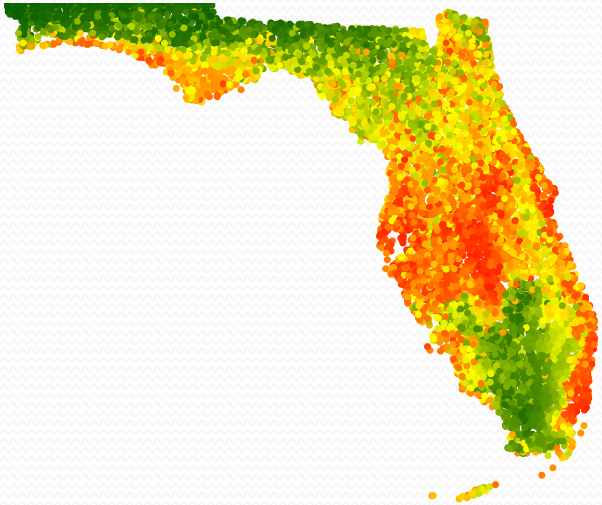
- Linked Data workshop (with NESCent)
- Foster additional workshops with research communities
- Symposia and training at national/regional meetings
  - Botany 2012 (Soltis and Mast)
  - American Society of Ichthyologists and Herpetologists (Page)
- Develop network of genetic and tissue collections
-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

Florida Plant Phylogeny:
Phylogenetic Diversity Under Climate Change

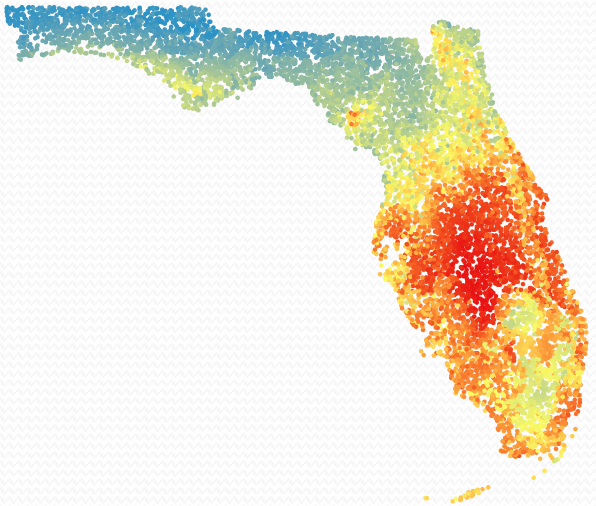
Vascular Plant Diversity in Florida



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

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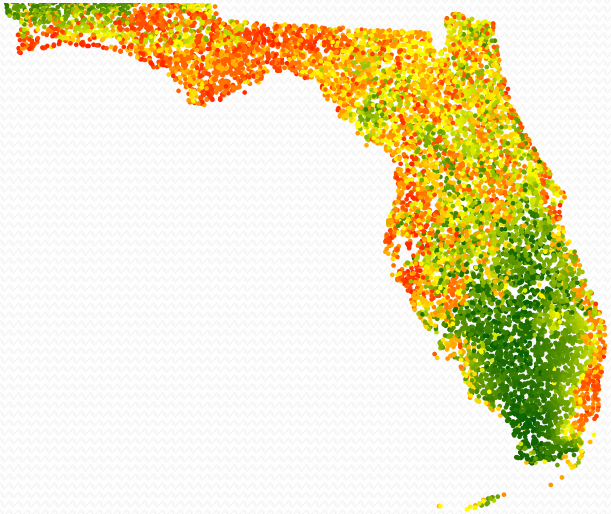
Phylogenetic Diversity Under Climate Change

Vascular Plant Diversity in Florida



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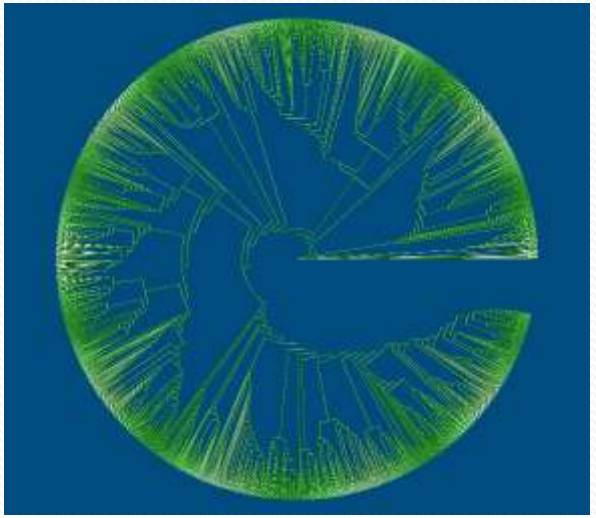


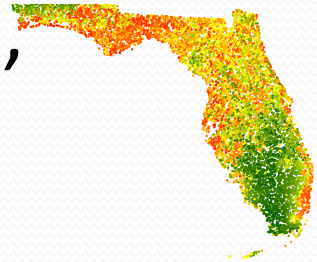
2609 species (of ~4200)
all included in phylogeny

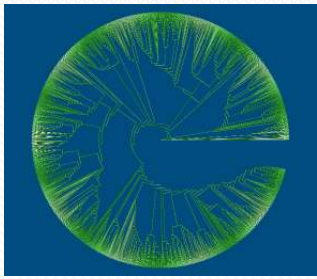
Phylogenetic tree, 2609 species
GenBank, new (1000 spp)

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*





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