



# Project Goal

*To build an enduring alliance of the U.S. herbaria whose collections document the past 150 years of research on macrofungi that will digitize and share specimen data in support of a wide range of scientific and educational objectives*







# Advancing Digitization of Biological Collections (ADBC)

The screenshot shows the NSF website with the following elements:

- Header:** NSF logo with the tagline "WHERE DISCOVERIES BEGIN". A search bar and a "QUICK LINKS" button are on the right.
- Navigation:** A dark blue bar with links: HOME, FUNDING, AWARDS, DISCOVERIES, NEWS, PUBLICATIONS, STATISTICS, ABOUT NSF, FASTLANE.
- Left Sidebar:**
  - News:** A "News" section with a "NEWS" graphic and a list of links: News From the Field, For the News Media, Special Reports, Research Overviews, NSF-Wide Investments, Speeches & Lectures, NSF Current Newsletter, Multimedia Gallery, News Archive.
  - News by Research Area:** A list of research areas: Arctic & Antarctic, Astronomy & Space, Biology, Chemistry & Materials, Computing, Earth & Environment, Education.
- Main Content:**
  - Press Release 12-082:** "NSF Awards Second Round of Grants to Advance Digitization of Biological Collections".
  - Text:** "Funding will shed light on current 'dark data,' and integrate genetic, organismal, ecological information--past and present".
  - Image 1:** A photograph of visitors looking at insect specimens in trays at the Hasbrouck Insect Collection.
  - Image 2:** A photograph of a researcher at a computer workstation.
  - Image 3:** A photograph of a Marasmius fungus.
- Right Sidebar:** "Email" and "Print" icons, and a "Credit and Larger Version" link for the Marasmius image.
- Bottom:** A date stamp "May 1, 2012" and a "Credit and Larger Version" link for the insect collection image.



# Biological Collections in the Limelight

## 2006—2009:

- Federal agencies charged with accounting for collections to a congressional subcommittee
- NSF surveys the non-federal collections survey; results indicated strong interest in digitization
- NSF strategic plan calls for transformation the frontiers of science, emphasizing the seamless integration of research and education as well as the close coupling of research infrastructure and discovery.

## 2010:

- Focus group establishes Strategic plan
- ADBC is born!



A Strategic Plan for Establishing a Network  
Integrated Biocollections Alliance

tion, curatorial methods, and field protocols. Digitiz



# What Groups are included in Macrofungi?

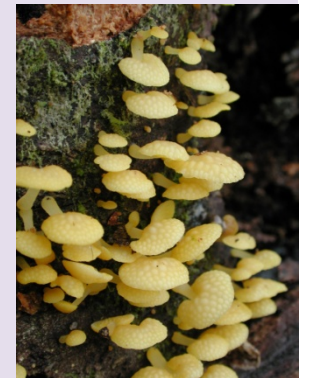




# Enable innovative research on macrofungi

Hypotheses that can be tested:

- The more we know about macrofungal biodiversity, the more we will understand interrelationships of organisms past and current ecosystems
- Fruiting times of macrofungi will be altered by climate change, and this alteration will have consequences for fungi and associated organisms
- Fungal species of interest or concern for ecosystem and human welfare can be identified and tracked with the aid of herbarium records



# Project Activities

- Digitize specimens and ancillary data
- Disseminate data through the Mycology Collections Portal
- Partner with the citizen mycology community in for research and education
- Raise awareness about fungi in students and the general public
- Collaborate with other projects

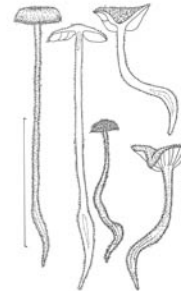
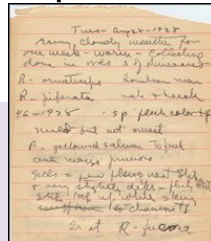
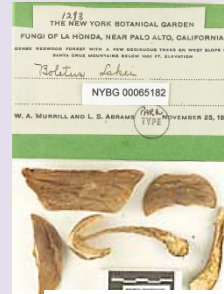
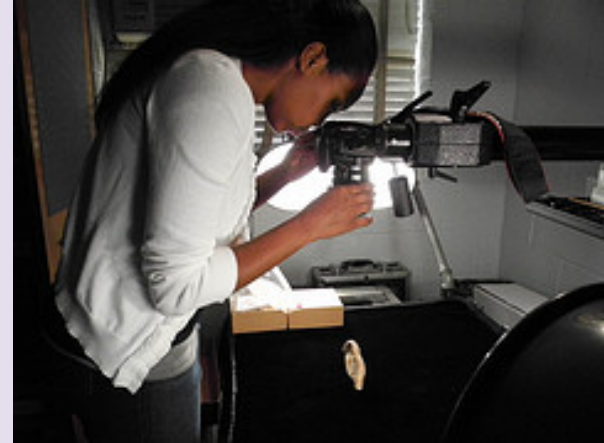




# Digitize Specimen Data, Fieldnotes, Photographs

## Data to be digitized:

- 700,000 specimen records (combined with 600,000 previously digitized specimens for a total of 1.3 million)
- 70,000 specimen images
- 144,260 photographs of living fungi (represented in specimen collections)
- 26,092 fieldbook pages
- 355,220 field notes, spore prints



# Digitization Strategy

## Participating Institutions:

- Create preliminary records
- Image
  - Specimen labels
  - Selected specimens
  - Photographs and drawings
  - Field notes, field books
- Create field book records

## Record Creation Center (NYBG)

- Provides training and support
- Completes records to a georeferenceable level

## MyCoPortal:

- Link specimen data to photographs, field notes
- Expose data for editing, augmentation
- Create projects using data

Digitize Labels,  
photographs, notes and  
fieldbooks

```
graph TD; A[Digitize Labels, photographs, notes and fieldbooks] --> B[Complete Specimen Records]; B --> C[Compile, edit and augment data];
```

Complete  
Specimen Records

Compile, edit  
and augment data



# Disseminate Data through the Mycology Collections Portal











## MYCOLOGY COLLECTIONS PORTAL


Home > Collections

### Select Collections to be Searched

Specimens & Observations | Specimens | Observations

Select/Deselect all Collections

	<input type="checkbox"/> Davis & Elkins College Herbarium (DEWV)
	<input type="checkbox"/> Gilbertson Mycological Herbarium (University of Arizona) (ARIZ)
	<input type="checkbox"/> Illinois Natural History Survey (University of Illinois) (ILLS)
	<input type="checkbox"/> Intermountain Herbarium (Utah State University) (UTC)
	<input type="checkbox"/> New York Botanical Garden (NY)
	<input type="checkbox"/> Sam Mitchel Herbarium of Fungi (Denver Botanic Garden) (DBG)
	<input type="checkbox"/> University of Michigan Herbarium (MICH)
	<input type="checkbox"/> University of Tennessee Fungal Herbarium (TENN)
	<input type="checkbox"/> University of Washington Herbarium (WTU)
	<input type="checkbox"/> General Observation and Personal Collections (MyCoPortal)



**As of June 2012:**  
278,639 occurrence records supplied by 9 different data providers have been integrated into MyCoPortal.

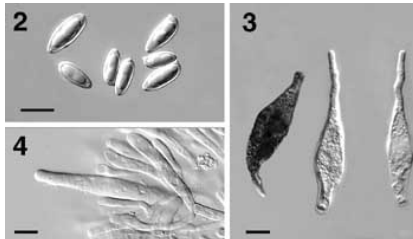
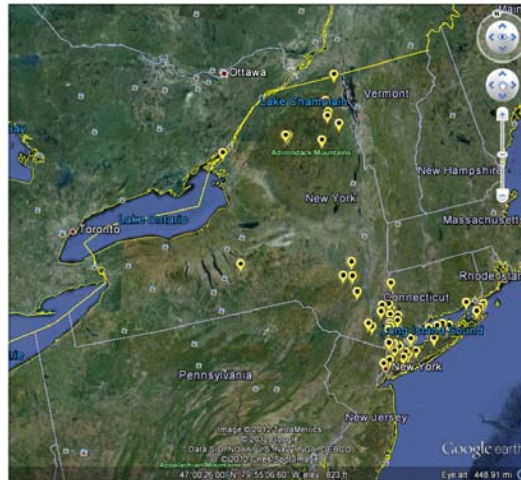
<http://mycoportal.org/portal/index.php>

# Provide tools for online projects and publications

<http://mycoportal.org/portal/index.php>

Tools available for all users:

- Create checklists
- Create a flora project (keys, descriptions, maps, illustrations)



**MYCOLOGY COLLECTIONS PORTAL**

Home > *Mycology of North America: History* > Taxa described by Charles Horton Peck

**Taxa described by Charles Horton Peck** *CAMES*

Authors: [More Details](#)

**Species List**

Families: 144  
Genera: 301  
Species: 2444 (species rank)  
Total Taxa: 2480 (including ssp. and var.)  
Page 1 of 5: 1|2|3|4|5

**Options:**

Search:

Common Names  Synonyms

**Filter:**

Original Checklist

Common Names  
 Display as Images  
 Notes & Vouchers  
 Taxon Authors

**Family Incertae Sedis**

- Acalytopora populi*
- Azornostium Roscosium*
- Ascidium obtusum*
- Ascidium arisacanthi*
- Ascidium auriculatum*
- Ascidium lobatum*
- Ascidium bipedunculatum*
- Ascidium brandegei*
- Ascidium guerinianum*
- Ascidium parvifolium*
- Ascidium gilvum*
- Ascidium gracilipes*
- Ascidium hemisphaericum*
- Ascidium hydrophyllum*

**MYCOLOGY COLLECTIONS PORTAL**

Home > *Mycology of North America: Regions* > California

**California** *CAMES*

Authors: Darwin DeGhazal, Michael Wood, and Fred Stevens  
[More Details](#)

**Species List**

Families: 124  
Genera: 407  
Species: 2433 (species rank)  
Total Taxa: 2480 (including ssp. and var.)  
Page 1 of 5: 1|2|3|4|5

**Options:**

Search:

Common Names  Synonyms

**Filter:**

Original Checklist

Common Names  
 Display as Images  
 Notes & Vouchers  
 Taxon Authors

**Family Incertae Sedis**

- Cotylinis diaphana*
- Neosporidia caudata*
- Phlogispora indivisibilis*
- Plicataria nivea*
- Podophacidiium xanthomelani*
- Selcicaria pulcherrima*
- Tremella bicolor*

**AGARICACEAE**

- Agaricus alboluteus*
- Agaricus albipes*
- Agaricus arvensis*
- Agaricus arvensis*
- Agaricus augustus*
- Agaricus benesii*
- Agaricus bernardii*
- Agaricus bisporus*
- Agaricus heteroglossus*
- Agaricus collinatus*
- Agaricus campestris*



# Partnership with the Citizen Mycology community

## Citizen mycologists conduct public outreach about fungi

- forays, fungus fairs, lectures, poison control
- document local mycota through publications, websites and herbaria



## Role for citizen mycologists in the MaCC Project:

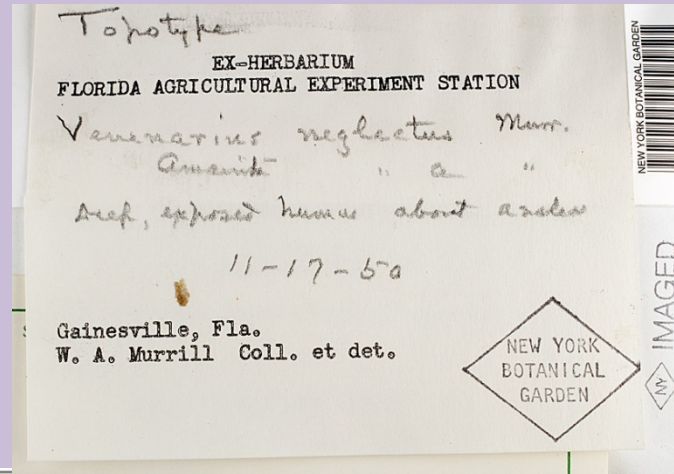
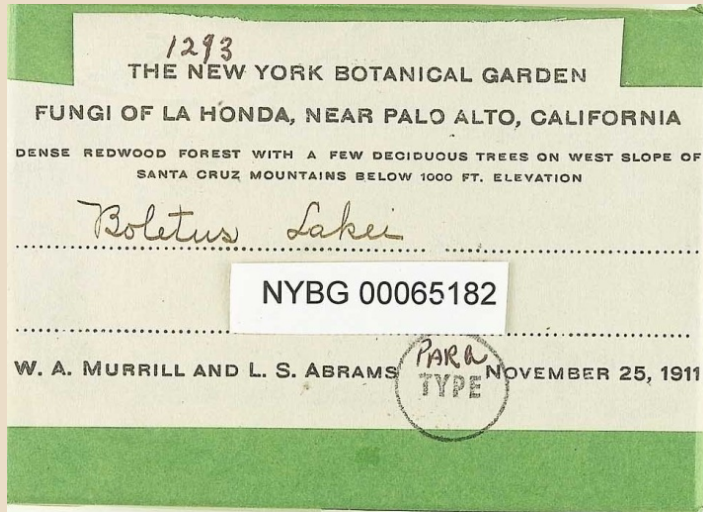
- Serve on project advisory board
- Edit and augment specimen records
- Use Portal functions to document findings
- Create content for crowdsourcing application designed to attract new members to their organizations.



**North American Mycological Association**

*To promote, pursue and advance the science of mycology*

# Enlist volunteers to complete and improve data



## New York Botanical Garden

**Taxon:** *Boletus lakei* Murrill  
**Family:** Boletaceae  
**Type Status:** type  
**Collector:** W. A. Murrill 1293  
**Collection Date:** 25 November 1911  
**Additional Collectors:** L. S. Abrams  
**Locality:** United States of America, California, La Honda  
**Elevation:** 305-305 meters (1000-1000ft)  
**Habitat:** Dense redwood forest with a few deciduous trees on west slope of Santa Cruz Mountains

**Catalog Number:** 00065182

General Data Usage Policy

For additional information on this specimen, please contact: Barbara Thiers (bthiers@nybg.org)

**Probable coordinates:**  
**37.317597,-122.27642**



## New York Botanical Garden

**Taxon:** *Amanita neglecta* Murrill  
**Family:** Pluteaceae  
**Determiner:** W. A. Murrill  
**Type Status:** type  
**Collector:** W. A. Murrill  
**Collection Date:** 17 November 1950  
**Locality:** United States of America, Florida,  
**Habitat:** Deep, exposed humus about azaleas  
**Notes:** Ex-Herbarium Florida Agricultural Experiment Station

**Catalog Number:** 00618007

General Data Usage Policy

For additional information on this specimen, please contact: Barbara Thiers (bthiers@nybg.org)

User Input

**Habitat:** deep, exposed humus about azaleas  
**Date:** 17 November 1950



# Collaborate with Vizzuality to Develop Crowdsourcing Application

Vizzuality has developed several very successful crowd sourcing projects.

Vizzuality has already been working with the Citizen Scientist Alliance to develop an application for transcription/completion of specimen data.

Objective of collaboration between Vizzuality and MaCC is crowd sourcing to complete, edit and augment specimen label data and provide a gateway to educational content about fungi

The collage displays four distinct crowdsourcing projects:


- OldWeather:** A screenshot showing a map of the Atlantic Ocean with a ship, the Queen Elisabeth, and a data entry interface for its voyage from Lisbon to Cuba in 1921. The interface includes a progress bar for '42% completed' and a 'Follow this vessel' button.
- NEEMO MISSION:** A screenshot of a NASA mission interface featuring a circular radar-like display with labels for 'GORGON', 'CORAL HEAD', 'BARREL SPONGES', and 'OTHER'.
- Red List Geospatial Tool:** A screenshot of a map interface for the species *Puma concolor* (unmoved), showing various locations like 'La Salle', 'Calcrest', and 'Platteville' with colored overlays.
- Endangered Languages:** A screenshot of a world map showing the distribution of endangered languages, with a prominent '61' in the Southeast Asian region and labels for countries like Myanmar, Laos, Thailand, and Cambodia.

# Old Weather

Old Weather is a ZOO NIVERSE project ...just like THE MILKY WAY PROJECT

oldWeather

HOME VESSELS TUTORIAL TRANSCRIBE ABOUT BLOG FORUM GET STARTED




**HMS Moorhen**  
Active: China  
97% COMPLETE  
rh121 is the Captain and 515 volunteers are following this vessel  
Jump Aboard

**Old Weather: Our Weather's Past, the Climate's Future**

### Introduction

Help scientists recover worldwide weather observations made by Royal Navy ships around the time of World War I. These transcriptions will contribute to climate model projections and improve a database of weather extremes. Historians will use your work to track past ship movements and the stories of the people on board.



1. Follow vessels
2. Digitise pages
3. Get promoted

### Project Statistics

Old Weather transcriptions so far


**28,499** VOLUNTEER TRANSCRIBERS

1,081,085 PAGES DONE

294 SHIPS COMPLETE

### Why Scientists Need You

Scientists explain why your contributions are vital, and what they're doing with your results behind the scenes. [More Information](#)



- Using old weather observations to predict the climate's future.
- Learn about our logbooks and the people that kept them.
- How the data from logs is used to build climate models.


**TRANSCRIBE**  
Help us find the weather measurements to build a climate model.

**VESSELS**  
Discover the ships these logbooks came from and how the data is contributing to our knowledge.

**WHO WE ARE**  
Find out about some of the people behind the project and how they will be using the data you are finding.

### More Zooniverse

**SOLAR STORMWATCH**





# Raise Awareness of Macrofungi in High School and College Students

- College students will:
  - Gain employment (60,000 hours of student labor required for this project),
  - Gain knowledge of fungi through field trips, lectures and demonstrations by P.I.s
  - Develop interpretive content related to fungi using social media
  - Will have opportunity to attend macrofungi-oriented meetings (professional and citizen mycology)
- Project will fund two workshops for high school biology teachers
  - First workshop to be held at North Carolina State University
  - Second workshop to be held in conjunction with Mycological Society of America annual meeting in 2014



# Link Data to Other Projects

- Home Institutions
- Other networks
  - iDigBio
  - GBIF
  - PNW, SEINET, etc.

THE NEW YORK  
BOTANICAL GARDEN

International Plant Science Center  
The C. V. Starr Virtual Herbarium



NORTH AMERICAN  
MYCOFLORA PROJECT



- Links to other Projects
  - Encyclopedia of Life
  - Mushroom Observer
  - Worldwide Macrofungi Collections Portal?

Consortium of Pacific Northwest Herbaria  
Providing access to specimen data and digital resources from herbaria throughout Pacific Northwest North America

MUSHROOM  
OBSERVER

HERBARIUM  
UNIVERSITY OF MICHIGAN

Southwest Environmental Information Network

SEINet





# Contribute to the National Collections Digitization Initiative



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Google™ Custom Search

Search

[Log In](#) | [Sign Up](#)

[Home](#) [Specimen Records](#) [Media Records](#) [Tutorial](#)



## iDigBio Specimen Portal Technology Preview 2012

iDigBio's technology preview is the first release of a semi-annual release cycle for a specimen portal that will eventually contain over 1 billion vouchered specimen records. This technology preview contains sample datasets provided by [Morphbank](#) and the [Florida Museum of Natural History](#), some of which is research quality specimen data. These datasets allow iDigBio to share its development efforts with the community for feedback and guidance. You can access the technology preview here: [portal.iDigBio.org](http://portal.iDigBio.org)

## Upcoming Events

Updated: Digitizing Plant Collections Workshop  
Monday, September 17, 2012 (All day)

Public Participation in Digitization of Biodiversity Specimens Workshop  
Friday, September 28, 2012 (All day)

iDigBio's first Train-the-Trainers Georeferencing Workshop  
Monday, October 8, 2012 (All day)

[more events >>](#)

## Blog Archives

Public Participation in Digitization of Biodiversity Specimens Workshop  
Post date: Wed, 2012-06-20 14:14

Digitization Workflow Workshop Report

## The Latest from the iDigBio Blog

[Meet Corinna Gries, PI and head of the North American Lichens and Bryophytes TCN](#)  
Monday, July 9, 2012 - 14:28

- Standards and best practices for incorporation of ancillary data
- New techniques for semi-automated record creation
- Partnership with the citizen mycological community

# MaCC and NAMP



## NORTH AMERICAN MYCOFLORA PROJECT

*Without a sequenced specimen, it's a rumor*

[HOME](#) | [GLOSSARY](#)

How the Macc Project Can Support the North American Mycoflora Project:

- Provide collections and ancillary data for characterizing taxa
- Provide a repository for newly gathered data
- Gap analysis for geographic, taxonomic coverage
- Has capacity to store descriptions and keys and link these to specimens



# Project Participants

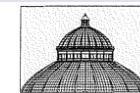
Lead P. I.s: Barbara Thiers & Roy Halling

## Principal Investigators:

- Joseph Ammirati
- Elizabeth Arnold
- Richard Baird
- Timothy Baroni
- Scott Bates
- Meredith Blackwell
- Thomas Bruns
- Priscila Chaverri
- Marc Cubeta
- Dennis Desjardin
- Vera Evenson
- Ronald Hartman
- Kathie Hodge
- Karen Hughes
- Melissa Islam
- Timothy James
- Jennifer S Kluse
- Robert Lücking
- Lorinda Leonardi
- Juan Luis Mata
- Andrew Methven
- Andrew Miller
- Brent Mishler
- Clark Ovrebo
- Ronald Petersen
- Donald Pfister
- Nishanta Rajakaruna
- Patricia Rogers
- Lawrence Schmidt
- Michaela Schmull
- Matthew Smith
- Dorothy Smullen
- John Taylor
- Rytas Vilgalys
- Alan Weakley
- James White
- Thomas Wiebolt
- Alexander Weir

## Advisory Committee:

- Robert Guralnick
- David Hibbett
- Gary Lincoff
- Gregory Mueller
- David Rose
- Walter Sturgeon
- Nathan Wilson



THE NEW YORK BOTANICAL GARDEN