



# Symbiota: a specimen-based biodiversity portal platform

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National Science Foundation  
WHERE DISCOVERIES BEGIN

# Symbiota Software Project

- Open source
- Modular
- Framework architecture
- Virtual flora/fauna
- Specimen search engine
- Biodiversity inventories
- Identification keys



*Euscepes longisetis* Champion, 1905  
Go to [Species page](#) or [Data](#)  
Family: Curculionidae



Description

Champion, 1905.  
Oblong-ovate, black, the antennae ferruginous; thickly clothed with reddish-brown scales, which become blackish towards the anterior limit of the very large ochreous patch covering the apical declivity; the prothorax closely, and the elytra sparsely, setose, the setae on the latter long and erect, the legs also setose. Head densely punctate, the eyes widely separated; rostrum closely punctate. Prothorax convex, a little broader than long, somewhat rounded at the sides, bisinuate at the base; closely punctate. Elytra one-half wider than the prothorax, subparallel in their basal half, the humeri obtuse; senate-punctate, the interstices almost flat. Beneath rather sparsely punctate. Femora feebly dentate. Length 3 mm, breadth 1 mm. Habitat: Panama, Bugaba (Champion). One specimen. Very like *E. porcellus*, but with much longer setae on the elytra, the setae punctures rather fine.

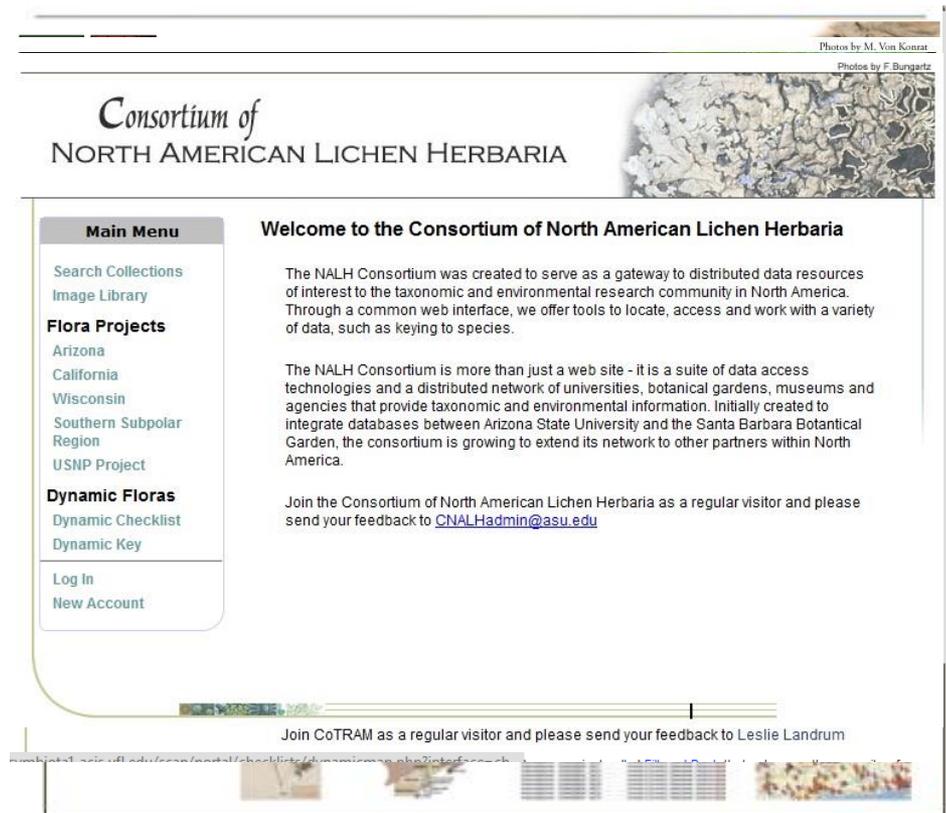
The screenshot shows the 'Intermountain Region Herbarium Network' website. It features a map of the region with various colored pins indicating specimen locations. On the left, there is a search and filter interface with options for 'Taxon' (All Species), 'Display/Reset Species List', and 'Display as: Scientific Name'. Below this are filters for 'Plant habit' (herb, shrub, tree, vine, grass-like, cactus-like / desert succulent, fern & allies, aquatic) and 'longevity' (annual or biennial, perennial). The main content area lists species counts and families: Aceraceae (Acer glabrum, Acer grandidentatum, Acer negundo, Acer platanoides), Amaranthaceae (Amaranthus albus, Amaranthus retrofractus), Amaryllidaceae (Allium acuminatum, Allium brandegei, Allium brevistylum, Allium oca, Allium geyeri, Allium textile), and Apiaceae (Angelica pinnata). At the bottom right, there is a legend for the map pins: red for *Cirsium arizonicum*, blue for *Cirsium arizonicum* var. *arizonicum*, and green for *Cirsium arizonicum* var. *bipinnatum*. There are also input fields for 'Latitude decimal' (eg. 34.57) and 'Longitude decimal' (eg. -112.38) and a link to 'Enter in D.M.S. format'.

# Need for Online Data Management

- Small collections
  - Limited resources
- Diverse data structures
- Data loss
  - Spreadsheet databases
- Browser-based data management
  - Platform independent
  - No special software installation
  - Centralized database support

# Scientific Community Portals

- Community-based biodiversity portals
- Distinct datasets
  - Taxonomic scope
  - Geographic scope
- Custom look & feel
  - CSS, config files



The screenshot shows the homepage of the Consortium of North American Lichen Herbaria. At the top right, there are two small photo credits: "Photos by M. Von Konrat" and "Photos by F. Bungartz". The main header features the text "Consortium of NORTH AMERICAN LICHEN HERBARIA" in a serif font, with a large, textured image of lichen to the right. Below the header is a "Main Menu" sidebar with the following items: "Search Collections", "Image Library", "Flora Projects" (with sub-items: Arizona, California, Wisconsin, Southern Subpolar Region, USNP Project), "Dynamic Floras" (with sub-items: Dynamic Checklist, Dynamic Key), "Log In", and "New Account". The main content area has a heading "Welcome to the Consortium of North American Lichen Herbaria" followed by two paragraphs of introductory text. The first paragraph states the consortium's purpose as a gateway to distributed data resources. The second paragraph describes it as a suite of data access technologies and a distributed network of institutions. At the bottom of the page, there is a footer with the text "Join CoTRAM as a regular visitor and please send your feedback to Leslie Landrum" and a row of small thumbnail images.

# SEINet Network

- Integrated Data
- Distributed Network
  - Great Plains
  - InterMountain
  - MABA
  - SEINet – AZ
  - SEINet – NM
  - SERNEC
  - VPlants



# Specimen Centric Model

- Baseline data
- Expert reviewed vouchers
- Verifiable
- Proof of occurrence
- Reproducible
- Millions of occurrence records



# Symbiota - Biodiversity CMS

- Read-only user interface
- Password Protected
  - Online Browser-based application
  - Platform independent
  - Globally accessible
  - No special software installation (free)
  - Make use of web services

The screenshot displays the Symbiota Biodiversity CMS interface, showing a data entry form for an occurrence record. The form is organized into several sections:

- Occurrence Data**: Includes fields for Catalog Number (1281888), Occurrence ID, Collector, Number, and Date. A "Dupes" button is present.
- Associated Collectors**: A field for entering associated collector names.
- Other Catalog Numbers**: A field for entering other catalog numbers.
- Latest Identification**: Includes fields for Scientific Name, Author, ID Number, Family, Identified by, and Date Identified.
- Locality**: Includes fields for Country, State/Province, County, and Municipality. A "Locality" field is also present. A checkbox for "Locality Security" is available.
- Latitude Longitude Uncertainty Datum Elevation in Meters Verbatim Elevation**: Fields for recording geographic coordinates and elevation data.
- Misc**: Includes fields for Habitat, Associated taxa, Description, and Notes.
- Curation**: Includes fields for Type Status, Disposition, Reproductive Condition, Establishment Means, Owner Code, Basis of Record (Preserved Specimen), and Language. A "Cultivated" checkbox is also present.
- Other**: A field for additional information.

# Data Entry: OCR

Occurrence Data    Determination History    Images    Admin

**Collector Info**

Catalog Number: 1281888    Occurrence ID:    Collector:    Number:    Date:    Dupes

Associated Collectors:    Other Catalog Numbers: +

**Latest Identification**

Scientific Name:    Author:    ID Qualifier:    Family:    Identified by:    Date Identified: +

**Locality**

Country:    State/Province:    County:    Municipality:    Locality:     Locality Security

Latitude:    Longitude:    Uncertainty:    Datum:    Elevation in Meters:    Verbatim Elevation: ft. +

**Misc**

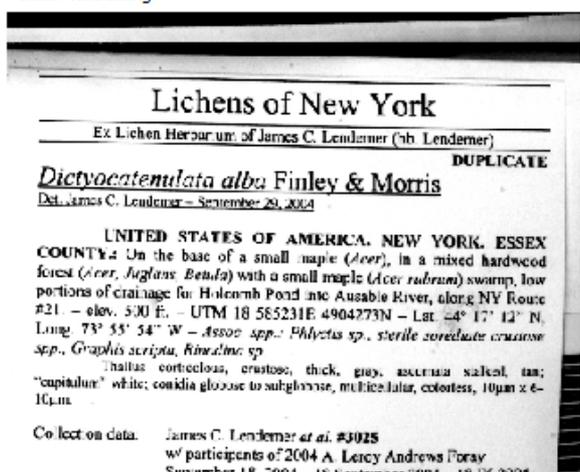
Habitat:    Associated Taxa:    Description:    Notes: +

**Curation**

Type Status:    Disposition:    Reproductive Condition:    Establishment Means:     Cultivated

Owner Code:    Basis of Record: Preserved Specimen    Language:    Other:

**Label Processing**



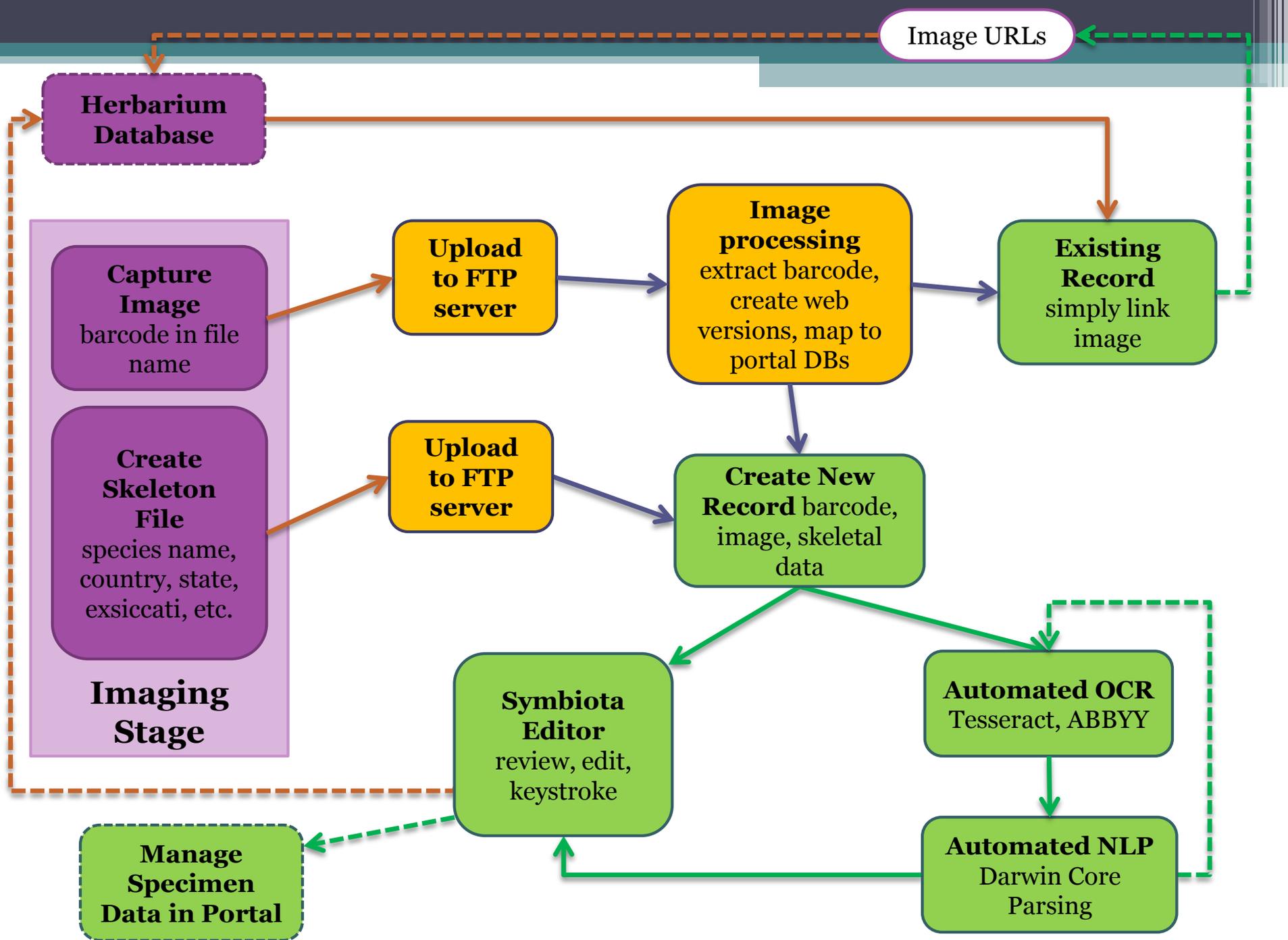
**Lichens of New York**  
Ex Lichen Herbarium of James C. Lendemer (hb. Lendemer)  
DUPLICATE  
*Dictyoacatenulata alba* Finley & Morris  
Det. James C. Lendemer - September 29, 2004

UNITED STATES OF AMERICA, NEW YORK, ESSEX COUNTY.: On the base of a small maple (*Acer*), in a mixed hardwood forest (*Acer*, *Juglans*, *Betula*) with a small maple (*Acer rubrum*) swamp, low portions of drainage for Holcomb Pond into Ausable River, along NY Route #21. - elev. 500 ft. - UTM 18 585231E 4904273N - Lat. 44° 17' 12" N, Long. 73° 55' 54" W - Assoc. spp.: *Phlyctis* sp., sterile *sorediate* crustose spp., *Graphis scripta*, *Rinodina* sp.    thallus corticelous, crustose, thick, grey, ascerous saccate, tan; "capitulum" white; conidia globose to subglobose, multiseptate, colorless, 10µm x 6-10µm

Collect on data: James C. Lendemer *et al.* #3025 w/ participants of 2004 A. Leroy Andrews Foray September 18, 2004 - 18 September 2004 - 18, IX, 2004

**OCR Image**    Image 2 of 2 ->>

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# Acknowledgments

- National Science Foundation
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- Sky Island Alliance
- National Park Service
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