Macrofungi of the Chicago Region and the North American Mycological Association Voucher Program

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Field Museum of Natural History, Chicago
Documenting the fungi of North America with amateur organizations

Voucher Collection Project

Tricholoma focale

North American Mycological Association foray in Oregon 2004
Species Accumulation for 42 NAMA Forays with 2832 fungal names
Does not include lichens or slime molds

- Number of species at foray
- Number added to total
- Total species for all forays

This "curve" has not yet begun to level off. There are perhaps an estimated 10,000 macrofungi for North America.
Macrophungi of the Chicago Region, 1994 -- present

P.R. Leacock, G.M. Mueller, P.G. Avis, W.C. Gaswick, J.P. Schmit, J.F. Murphy
Chicago Wilderness region covers 24 counties of four states.

vPlants.org documents plants of this region.
Goals

- Document diversity and distribution of fungi across region and habitats
- Relate to human activities: woodland restoration; nitrogen deposition
- Plot data, community composition over time
0.1 ha plots
two or four / site

All macrofungi recorded in 40 quadrats per plot.
Four to six visits / year

Plot work at Marengo Ridge, 2011
Illinois Mycological Association

IMA forays have contributed over 1500 observations from 25 locations in the Chicago Region.

Forays give members firsthand experience with learning fungi.
118 years of herbarium collections

Collections
1876 -- 1993

Field Museum
Herbarium Database
http://tinyurl.com/fmbot

720 taxa
2,625 Collections
18 years of Field Museum research

Collections
1994 -- 2011

19 Plots
(9 in Cook Co.)

1100 taxa

20,325 Collections
Sites with plots
5 Swallow Cliff Woods
2 Cap Sauers Holdings
1 Green Lake Savanna
1 Powderhorn Prairie

Sites with more than 100 observations.
Some with help of the Illinois Mycological Association
### Major Sites in Cook County

<table>
<thead>
<tr>
<th>Cook County Site</th>
<th>plots</th>
<th>visits</th>
<th>years</th>
<th>observ.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swallow Cliff Woods</td>
<td>5</td>
<td>130</td>
<td>16</td>
<td>13,715</td>
</tr>
<tr>
<td>Cap Sauers Holdings</td>
<td>2</td>
<td>55</td>
<td>7</td>
<td>3,610</td>
</tr>
<tr>
<td>Green Lake Savanna</td>
<td>1</td>
<td>18</td>
<td>7</td>
<td>660</td>
</tr>
<tr>
<td>Powderhorn Prairie</td>
<td>1</td>
<td>12</td>
<td>4</td>
<td>437</td>
</tr>
<tr>
<td>Busse Forest</td>
<td>17</td>
<td></td>
<td>8</td>
<td>423</td>
</tr>
<tr>
<td>Deer Grove West</td>
<td>6</td>
<td></td>
<td>6</td>
<td>392</td>
</tr>
<tr>
<td>St. Mihiel Preserve</td>
<td>12</td>
<td></td>
<td>10</td>
<td>501</td>
</tr>
</tbody>
</table>

18 year Field Museum research period: 1994 – 2011
All Chicago Region sites and sources = 42,300 observations
More than half of species documented in the first 3 years. Total is over 230 species for ¼ acre.
Species Accumulation for the Region, 1 County, 1 Preserve, and 1/10 Hectare Plot
Macrofungi of Chicago (Does not include lichens or slime molds)

Number of identified species over the years.

- Chicago Region All
- Cook County All
- Swallow Cliff All
- Swallow Cliff Plot 4

Year of Study: 1994 to 2009
Estimated minimum numbers of named species of macro-fungi

• 1150 species for the Chicago Region
• 815 species for Cook County (11,280 colls.)
  • 140 unique to Cook County (in region)
• 700 species for Indiana Dunes (8,710 colls.)
  • 105 unique to Indiana Dunes (in region)
Acknowledgements

For support of our Chicago Region research (1994 – 2012):
Chicago Wilderness, Conservation Foundation
Forest Preserve District of Cook County
Forest Preserve District of Lake County
Illinois Department of Natural Resources
Illinois Nature Preserves Commission
Indiana Nature Preserves Commission
Jeff Metcalf Fellows Program, Univ. Chicago
MacArthur Foundation
McHenry County Conservation District
NASA Earth Science Education Program
National Park Service (Indiana Dunes)
National Science Foundation
Neuman Family Foundation

Research assistants, interns, volunteers, other colleagues, and the Illinois Mycological Association

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For support of vPlants: Institute of Museum and Library Services
Both projects

• All macrofungi collected. Identifications dependent on expertise of those present (NAMA often includes lichens, slime molds)

• Specimens in herbarium, F, available for taxonomic studies.

• Filemaker Pro database Win/Mac.
Chicago, 18 years

- Staff mycologist(s), full-time assistant, paid undergraduate summer interns, volunteers for field and herbarium work
- 2011, 2012 contract work (by PRL) with only volunteers

NAMA, 15 years

- Voucher committee, 3 or 4 graduate assistants, foray volunteers, professional and amateur mycologists
- Post-foray processing by PRL and volunteer.
Chicago, 18 years

- Fresh collections partially processed same day, many refrigerated over night and processed and dried the next day.
- Microscope work done at later time.

NAMA, 15 years

- Fresh collections not processed until identified. Then go to display tables for one or more days. Some lost to rot, mold, or disappear.
- Some checked microscopically at foray, rarely later.
**Chicago, 18 years**

- From the saved collections the rule is to accession the best specimen of each taxon per site per year to be put in herbarium.
- Have unaccessioned duplicate material.
- Have much unidentified material.

**NAMA, 15 years**

- Rule is one specimen of each taxon per foray to be vouchered and put in herbarium.
- Occasionally have duplicates from foray.
- Few missing vouchers but no unaccessioned material.
- Fewer unidentified vouchers.
<table>
<thead>
<tr>
<th>Chicago, 18 years</th>
<th>NAMA, 15 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Taxon concepts more uniform and can be back-corrected.</td>
<td>• Taxon concepts less uniform, sometimes competing.</td>
</tr>
<tr>
<td>• Location and habitat data well documented</td>
<td>• Location and habitat data often incomplete</td>
</tr>
<tr>
<td>• Long term study of one region</td>
<td>• Snap-shots of regions across USA, Canada</td>
</tr>
<tr>
<td>• Plot studies with statistical data</td>
<td></td>
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</tbody>
</table>
Chicago, 18 years

• ID of all macrofungi by a few workers is difficult. Unidentified material accumulates.

• Interest in having club members report observations of a set of distinctive taxa. Fruiting times have shifted.

NAMA, 15 years

• Those at foray determine what groups are identified. The rest is tentatively labeled or not vouchered.

• Desire better system for selecting and preserving vouchers. More workers also required.
Bottom Line

• herbarium material
  1876 - 1993
  118 years = 720 taxa = 2,400 collections

• prior species lists
  • 1961 - 1996
  • 32 yrs = 2530 taxa
  and ? ≥ 50 collections

Chicago, 18 years

• Full time; 6 month field season

• New = 20,300 colls.
  and > 1100 taxa

NAMA, 15 years

• One weekend per year plus processing

• New = 4300 colls.
  and > 1950 taxa