

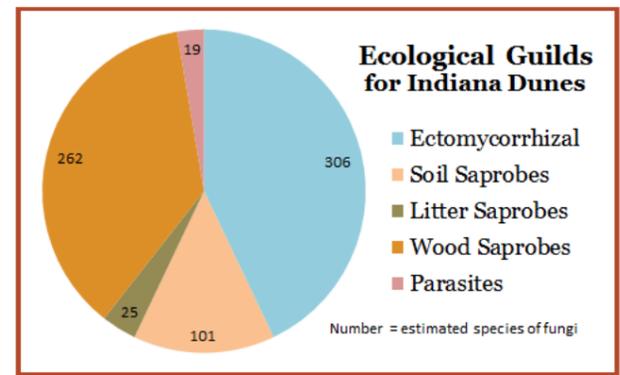
Diversity and Distribution of Mushrooms and Other Macrofungi of Indiana Dunes

Patrick R. Leacock, Field Museum of Natural History
 Gregory M. Mueller, Chicago Botanic Garden
 Peter G. Avis, Indiana University Northwest



The Indiana Dunes, with a rich variety of habitats along the south shore of Lake Michigan, supports a high diversity of plant species for its size. Our research shows that the diversity of macrofungi is equally high with over 700 identified species.

Oak woodlands and savannas are a conservation concern, and nitrogen pollution is considered a potential threat. Studies have shown that ectomycorrhizal fungi (those that form vital partnerships with trees) are particularly sensitive to nitrogen pollution. Our research uses 1) plot based community sampling that provides quantitative data on diversity and abundance, and 2) additional site surveys to document species diversity. Very few areas in North America have a long history of continued documentation for fungi.



Miller Woods
 110 species
 16 visits/7 years
 612 observations
 1 plot/9 visits/4 yrs



Inland Marsh
 48 species
 8 visits/5 years
 97 observations



Bailly Woods
 295 species
 55 visits/11 years
 7790 observations
 4 plots/43 visits/10 yrs



Cowles Bog Trail
 500 species
 137 visits/19 years
 7340 observations
 2 plots/70 visits/10 yrs



Indiana Dunes State Park
 177 species
 14 visits/9 years
 341 observations



Cowles Bog Trail is where local field research on fungi was started in 1994. Two 0.1 hectare plots were set up and visited frequently for ten years. This site has upland oak-dominated woodland at a younger successional stage on dunes near the lake, as well as yellow birch – red maple swamp and other wetlands. This area has the longest history of yearly visits in the Chicago Region. New records are found each year.



Amanita



Geastrum minimum



Tylopilus new species?



Amanita brunnescens



Hygrocybe marginata



Boletus parasiticus with Scleroderma citrinum

Bailly Woods: In 2003 we set up four plots a mile south in later stage oak-dominated woodland to test the effects of nitrogen deposition. Dr. Avis found that the monthly application of low levels of nitrogen decreased the diversity of ectomycorrhizal fungi on oak root tips by 20 percent. The same results were found at Swallow Cliff Woods, Cook County, Illinois.



Russula anomala



Tulostoma brumale



Leucocoprinus flavescens



Boletus frostii



Russula aeruginea



Astraeus hygrometricus

Inland Marsh (Tolleston Dunes Trail) has sand dunes and areas of flat sand. This was one of our locations for the National Geographic Bioblitz in May 2009. Only a small area of the site has been visited over the last several years. It warrants more thorough sampling. The sand flats have a surprising diversity of gasteroid fungi: earthstars, puffballs, stalked puffballs, and false puffballs.



Hydnellum aurantiacum



Tulostoma brumale



Russula barlae



Plicaturopsis crispa



Entoloma salmoneum
 Entoloma murrayi



Laccaria trullissata at Inland Marsh

Laccaria trullissata is a distinct sand-loving species found in dunes along the Great Lakes, Atlantic coast, and Gulf coast. At Inland Marsh it was first found in August 2008, then several were documented September 2009. It is typically with pine but at Inland Marsh it was near oak, aspen, and birch.



Sarcodontia



Scleroderma septentrionale



Lactarius chrysorrheus



Hydnum albidum



Ramariopsis kunzei

There are other sand-loving species found across the Indiana Dunes; some are unidentified, particularly Amanita species. Some of these dune associated species are also found in the connected dune systems of the Calumet Region in adjacent Illinois.