# Fungi, Galls, Lichens, Prokaryotes and Protists of Elm Fork Preserve

These lists contain the oddballs that do not fit within the plant or animal categories. They include the other three kingdoms aside from Plantae and Animalia, as well as lichens and galls best examined as individual categories.

The **comments** column lists remarks in the following manner:

- <sup>1</sup>Interesting facts and natural history concerning the organism. Place of origin is also listed if it is an alien.
- <sup>2</sup> Edible, medicinal or other useful qualities of the organism for humans. The potential for poisoning or otherwise injuring humans is also listed here.
- <sup>3</sup>Ecological importance. The organisms interaction with the local ecology.
- <sup>4</sup>Identifying features are noted, especially differences between similar species.
- <sup>5</sup>Date sighted, location and observations such as quantity or stage of development are noted here. Some locations lend themselves to description ~ close proximity to a readily identifiable marker, such as a trail juncture or near a numbered tree sign. Other locations that are more difficult to define have been noted using numbers from the location map. Global Positioning System (GPS) coordinates are only included for those organisms that are unusual or rare and are likely to be observed again in the same place.
- <sup>6</sup> Synonyms; outdated or recently changed scientific names are inserted here.
- <sup>7</sup> Control measures. The date, method and reason for any selective elimination.
- <sup>8</sup> Intentional Introductions. The date, source and reason for any introductions.
- <sup>9</sup> Identification references. Species identifications were made by the author unless otherwise noted. Identifications were verified using the reference material cited.
- <sup>10</sup>Accession made. A notation is made if the organism was photographed, collected for pressing or a spore print was obtained.

## Kingdom Fungi

This kingdom includes organisms that, while resembling plants, are quite different from them in both form and function. Their cell walls are composed of chitin, a polysaccharide that is found in the exoskeletons of arthropods, but never in plants. This is a key distinguishing feature because fungi are saprophytes, drawing their nourishment through dissolving dead plant tissue. If the bodies of fungi were composed of cellulose, like those of plants, they would be dissolved by their own digestive enzymes.

#### Kingdom: Fungi > Division: Ascomycota

Scientific Name	Common Names	Comments
(O) Pezizales (F) Sarcoscyphaceae Sarcoscypha sp. or Aleuria sp. resembles S. coccinea	Cup Fungus, Red	<sup>4</sup> A similar genus is <i>Aleuria</i> . Species in this genus are usually bigger and floppier, but some of the smaller ones may be a match for this specimen. <sup>6</sup> <i>Sarcosypha coccinea</i> was formerly <i>Plectania coccinea</i> . <sup>9</sup> (Arora, 1991, p. 240), (Shuttleworth & Zim, 1967, p. 37) <sup>10</sup> 26 Oct 04 - Photo of small red cup on dead wood.

#### Kingdom: Fungi > Division: Basidiomycota

Scientific Name	Common Names	Comments
(O) Agaricales (F) Coprinaceae	Shaggy Mane	<ul> <li><sup>9</sup>(Arora, 1986, p.345), (Arora, 1991, p.133)</li> <li><sup>10</sup>7 May 07 - Three photos in all stages of development. Very plentiful</li> </ul>
Coprinus comatus		around the interpretive center on this day.
(O) Dacrymycetales	Calocera cornea	<sup>4</sup> This bright yellow member of the jelly fungi forms little structures ~1/2"
(F) Dacrymycetaceae		tall that extrude from the bark of fallen trees. The tops flare out into
Calocera cornea	ea ea	spatula-like shapes with wavy margins. Most often seen in winter or early spring (Metzler & Metzler, 1982, p. 282).
		<sup>10</sup> 26 Oct 04 ~ Photo of this beautiful, diminutive fungus on a fallen red oak
		on the main trail near the lightning struck cottonwood.

(O) Nidulariales  Cyathus stercoreus.	Birds' Nest Fungus	<sup>4</sup> These small, easily overlooked fungus are usually found on the ground, associated with well decayed dung. They are aptly named - looking just like tiny (1 cm wide) bird nests, complete with several charcoal-colored "eggs". <sup>9</sup> (Metzler & Metzler, 1982, p.294) <sup>10</sup> 26 Oct 04 - Two photos of birds nest fungus on the Cross Trail.
(O) Phallales (F) Geastraceae Geastrum sp.	Earth star	<sup>4</sup> Easily confused with <i>Astraeus</i> spp. <i>Astraeus</i> spp. are usually found on sandy soil and the central rounded sac splits open when ripe instead of having a pre-formed pore at the top as <i>Geastrum</i> spp. have (Metzler & Metzler, 1982, p.290 - <i>Geastrum</i> and p. 298 - <i>Astraeus</i> ). <sup>5</sup> 28 Oct 04 - Examined an old earth star beside the main trail on the southwest portion of the loop.
(O)Auriculariales (F) Auricularaceae Auricularia auricula	Wood Ear; Jelly Ear Fungus	<sup>2</sup> These hard to confuse members of the 'Jelly Fungi' are good to eat and generally common. A related species, <i>A. polytricha</i> (Cloud Ear), can be purchased dried at Asian markets for use in soups. <sup>9</sup> (Arora, 1991, p. 243) <sup>10</sup> 7 May 06- Two photos.
(O)Polyporales (F) Polyporaceae	Polypores Bracket Fungus; Shelf Fungus	<sup>4</sup> Polyporaceae is a very large family of fungi. Exact identification of its various genera often involves microscopic analysis. Some species have more conspicuous traits and can be easily identified. Polypores are exceedingly common, seen on every hike through the woods. <sup>9</sup> (Arora, 1991, p. 184) <sup>10</sup> 13 Dec 04 - Two photos of a large, black haired, woody polypore.
(O)Polyporales (F) Polyporaceae Schizophyllum commune	Polypore, Schizophyllum	<sup>4</sup> The distinctive caps of this species are white or gray and very shaggy in appearance. The undersurface appears to have hairy, paired gills. These are actually just folds of the spore-bearing surface, cleverly designed to look like a gilled fungus. <sup>9</sup> (Metzler & Metzler, 1982, p. 269) <sup>10</sup> 13 Dec 04 - Two photos showing upper and lower surfaces.

### Completely Unidentified Fungi

Scientific Name	Common Names	Comments
Fungus, unidentified	Fungus, unidentified	<sup>10</sup> 26 Oct 04 - Photo of short (4 cm tall), strongly branched white fungus under a log.

# Lichens

Lichens are the result of a symbiotic relationship between a fungus and algae. The fungus provides a structure and brings water to the algae. The algae are able to photosynthesize and provide sugars and starches to the fungus. Since the visible, structural portion consists of a fungus, information on these combined organisms may often be found in books on fungi.

### Kingdom: Fungi > Division: Ascomycota

Scientific Name	Common Names	Comments
Unidentified Lichen Bears close resemblance to Xanthoparmelia cumberlandia or Physcia aipolia	(gray, foliose lichen)	<sup>4</sup> After a long, thorough Internet search - <i>Xanthoparmelia cumberlandia</i> (Gyelnik) Hale matches the photo and all of the taxonomic details listed. Verification from other sources would be helpful. (http://mgd.nacse.org/cgi-bin/hyperSQL_gateway?view?/hyperSQL/lichenland/hsql/inside.final_ed.hsql?1?germsgetLichentwo(TO 125)?6765726d73?7061636b726174?6d676475736572?6e6f5f70617373776f7264)  Other lichen that are similar in general appearance include members of these genera: <i>Parmelia, Peltigera, Physcia, Platismatia</i> (= <i>Cetraria</i> ). <sup>9</sup> LichenLand from Oregon State University - http://mgd.nacse.org/hyperSQL/lichenland/index.html see also(Shuttleworth & Zim, 1967, pp. 93, 97) <sup>10</sup> 26 Oct O4 - Photo accession of lichen on bark.
Xanthoria sp.(?)	(orange, fruticose lichen)	<sup>4</sup> An Internet search pointed to some species of Xanthoria, but this is not a certain determination. <sup>9</sup> (Target lichen species for 6-zone air quality monitoring system in northwestern Washington and southwestern British Columbia, Fred M.

Rhoades, Western Washington University, Bellingham WA	
www.ac.wwu.edu/~fredr/ Lichen_table.htm - see X. polycarpa	
<sup>10</sup> 26 Oct 04- Small, yellow-orange lichens in the same photo accession as	
the foliose lichen listed above.	

# Kingdom Protista

This kingdom has a variety of strange organisms, many invisible to the naked eye. Protozoa such as Paramecium, Amoeba, euglenoids, dinoflagellates and diatoms are tiny organisms found in this kingdom. More visible are the slime molds and green algae that also fit here. The taxonomy within this Kingdom is rapidly changing and will take time to stabilize.

### Kingdom Protista > Phylum: Amoebozoa > Class: Myxomycota

Scientific Name	Common Names	Comments
(C) Myxomycota unidentified	Slime mold	<sup>1</sup> It is truly bizarre to witness an ooze, traveling snail-like of its own volition and against the pull of gravity as it makes its way slowly up a fallen branch. Slime molds have an animal-like plasmodium stage followed by a stationary fungus-like stage when fruiting bodies (sporangia) are produced and release spores (Shuttleworth & Zim, 1967, p. 28). These "Spores" hatch/germinate into small amoebae and the life cycle begins again. <sup>10</sup> 13 Dec 04 - Photo of what appears to be two species of slime mold in the fruiting stage in close association with each other. One has rusty redbrown spheres clustered on top of orange stalks and the other is comprised of sessile yellow spheres packed closely together. Maybe it is one species with a dimorphic fruiting body.
(sC) Myxogastria (O) Stemonitomycetes (F) Stemonitidae closely resembles Stemonitis spp.	Slime mold	<sup>9</sup> http://www.bluewillowpages.com/mushroomexpert/myxomycetes.html - Good website to get started investigating these curious organisms. <sup>10</sup> 26 Oct 04 - Great photo of Birds' nest fungus with a sizable population of brown cylinders on black stalks (sporangia) attached to the fungus and to the outside of a snail.

### Kingdom Bacteria

This kingdom includes the bacteria and cyanobacteria. Despite the fact that virtually all species in this kingdom are invisible without special equipment, it is important to include for two reasons: Many plant and animal pathogens create obvious and conclusive symptoms that lead to positive identification of the causitive species. Secondly, there is also within this kingdom a form species - Nostoc commune that is common in north central Texas. It is a cyanobacterium that is visible to the naked eye and curious to behold when it is wet.

Scientific Name	Common Names	Comments

### Galls

Plant galls are a curious phenomenon. They are composed of plant tissue that has been diverted from its original function (as in making a leaf, stem or flower) and coerced into forming a strange, inflated structure that becomes the dwelling for a gall insect. Not all galls are the work of insects - they may also occur in response to attack by a fungus, bacteria or virus. At first glance galls may appear to be the fruit of a tree. This is due to their extreme regularity in appearance. Not only are all of the galls of one type virtually identical, they are also host specific.

Affected Plant	Gall Name	Causitive Agent	Description of Gall & General Comments
Celtis laevigata	Hackberry	Psyllid -	<sup>4</sup> Small (7-9 mm in height), hard, flat-topped galls on the leaf blade. Often several galls on each affected leaf. <sup>5</sup> 26 Oct 04 - Common on hackberry trees throughout. <sup>9</sup> (McDermott, 1996)
(hackberry tree)	Nipple gall	( <i>Pachypsylla sp.</i> )	

Celtis laevigata (hackberry tree)	Hackberry Petiole gall	Psyllid - ( <i>Pachypsylla</i> <i>venusta</i> )	<sup>4</sup> Large, reniform (Kidney-shaped) gall from a swelling of the petiole at the base of a leaf. Present on virtually all hackberry trees in North Central Texas. <sup>5</sup> 26 Oct 04 - Common on hackberry trees throughout. <sup>9</sup> (Felt, 1965, p.232)
Cornus drummondii (rough-leaved dogwood)	Dogwood Clubgall	Dogwood Clubgall Midge ( <i>Resseliella</i> <i>clavula</i> )	<sup>10</sup> 15 June 06 - Two photos of the distinctive gall.
Crataegus spp. (hawthorne) Juniperus virginiana (eastern red cedar)	Cedar Apple Rust	Fungus - ( <i>Gymnosporangi</i> <i>um juniperi-</i> <i>virginianae</i> )	<sup>1</sup> Hawthorne trees are host to cedar apple rust, a disfiguring fungus with a two-stage life cycle that requires both hawthorns and cedar trees to survive. <sup>2</sup> Weird fun - If a living juniper gall is exposed to water, it will send out bright orange, cone-shaped, jelly-like projections. See (Milam, June 1996, p.3) for details. <sup>4</sup> Warty, convoluted, dark reddish-brown (sometimes nearly black) swelling on juniper stems. Variable in size depending on age. <sup>5</sup> 26 Oct 04 - Noted Crataegus specimen at south end of Cross Trail with a bad case of <i>Gymnosporangium</i> rust. <sup>9</sup> (Diggs, et.al.,1999, p. 203) (Fischer, 1956) <sup>10</sup> 28 Nov 06 - Photo of Crataegus stem heavily infected with rust. South perimeter of the preserve at 32.95387°N, -96.93470°W.
Quercus. shumardii (shumard oak)	Oak Apple Gall	Cynipid wasp	<sup>2</sup> The author loves to eat these when they are abundant, green and juicy in spring. The taste of the thin rind is like that of fresh grape leaves. <sup>4</sup> Large -3" diameter, Globose, thin shelled with a system of fibers radiating from the central kernel, green turning tan with age, on red oak, spring. <sup>9</sup> (Felt, 1965, p. 173) <sup>10</sup> 2006 - Photo by "Z" of a dried (brown) spongy oak apple gall with exit hole visible, resting in the palm of a hand.
Solidago gigantea and S. canadensis var. scabra	Goldenrod Ball Gall	Goldenrod Gall Fly ( <i>Eurosta</i> <i>solidaginis</i> )	<sup>4</sup> The shape of the gall is characteristic of the species of gall insect that forms it. Aside from the ball-shaped "ball gall", there is also an elliptical-shaped stem gall made by a gall moth ( <i>Gnorimoschema gallaesolidaginis</i> ), known appropriately enough as the "elliptical gall" and a "bunch gall" formed by a gall midge ( <i>Rhopalomyia solidaginis</i> ), that causes the top portion of the plant to swell and produce many branches in a bunch. <sup>6</sup> <i>Solidago altissima</i> is now known as <i>S. canadensis</i> var. <i>scabra</i> . <sup>9</sup> For further information from the Internet, see: <a href="http://www.facstaff.bucknell.edu/abrahmsn/solidago/main.html">http://www.facstaff.bucknell.edu/abrahmsn/solidago/main.html</a> <sup>10</sup> 2 Nov 06 - One photo of the round, ball sized swelling on the stem of a goldenrod. The goldenrod stand is located at the north end of the big pond.



#### 19 species identified/noted as of 31 December 2006

#### Reference

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Caution: Alteration of this electronic document destroys data integrity and voids all liability for species misidentification by the author.

Additions to this inventory are welcomed. Please be sure to include the following information on any submissions: The person's name that is making the identification, as well as the date, time, location, evidence used for identification (photos, spore prints, etc) and any reference used in the identifications. Submit lists to Royce Milam at <a href="wyldvision@aol.com">wyldvision@aol.com</a>

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