





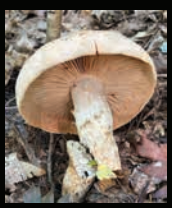








# The FunDiS Northeast Rare Fungi Challenge


FUNGAL DIVERSITY SURVEY

Fungal Diversity Survey (FunDiS)
Northeast North America
20 Target Fungi of 2022
Species Booklet

FUNGAL DIVERSITY SURVEY

**Our Vision:**

A world in which the fungal kingdom is fully documented, understood, appreciated, and protected.

**Our Mission:**

FunDiS protects biodiversity through the conservation of fungi and their habitats by increasing knowledge and public awareness of their diversity and distribution, equipping and engaging community scientists, and partnering with land managers, conservationists, and scientists.

## Northeast Rare Fungi Challenge

**Help us find and document rare, threatened, or under-documented fungal species in the Northeast of North America. Scientists and conservationists need more data on these fungi in order to protect them. Your high quality observations can make a difference!**

The FunDiS Northeast Rare Fungi Challenge range covers nine states (CT, MA, ME, NH, NJ, NY, PA, RI, VT) and six provinces (NB, NF, NS, ON; East of 80.5°W long, PE, QC).

### Creating an Observation

If you find a Northeast Rare Fungi Challenge species, it is important that you upload your observation to either iNaturalist or Mushroom Observer. Our Challenge will automatically register any observation ID'd as one of the target species. Consider creating other observations of nearby fungi and organisms in the same critical habitat. We encourage you to add all of your high quality mushroom observations to the FunDiS Biodiversity Database project on iNaturalist, which collects high quality observations of all macrofungi across North America for science and conservation.

Before digging up/removing your specimen, take photos of the mushroom in place and in its surrounding habitat. It is important to note nearby trees and plants. After taking field photos of your specimen in situ, gently unearth your specimen, making sure to dig up the base of the stipe (stem) and the bulb/volva/root if present. It is important to note any odor or chemical reactions.

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Don't forget to look for other fungi while you're in the field! Some rare fungi grow where other uncommon or rare species are present. This is especially true for fungi that only fruit every few years during heavy rainfall. Depending on the species, many of these rare fungi have very specific habitat and microhabitat requirements.



## Example Observation

For more information, please visit https://fundis.org/protect/northeast

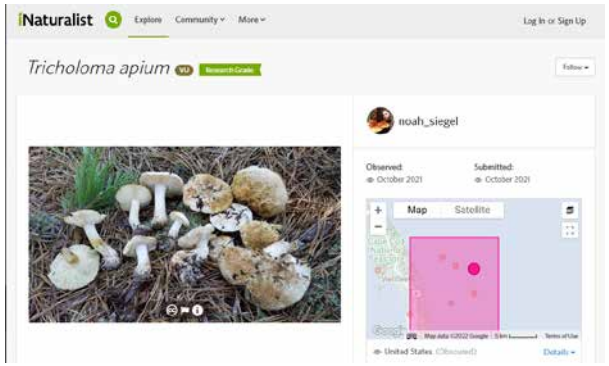




Photo: Noah Siegel


Photo: Rick Van de Poll

**Quick tips for high quality photo observations:**

- Photograph the specimen from multiple angles: top, side and underside (gills/pores).
- For some genera it is important to cut the whole specimen vertically and photograph.
- Photograph staining, bruising and oozing of cap, stipe, and gills, noting initial color and changes.
- Photograph multiple growth stages if available and in one image if possible.
- Stand back and photograph the habitat; include an image of bark and leaves if you cannot identify major trees or shrubs nearby.
- Size: photograph the mushroom with a FunDiS Field Data Slip, which has metric scales on two edges -- or with a ruler (6 inch rulers with metric scales are handy).

To learn more about how to create high quality observations and photographs, please visit fundis.org/protect/northeast.

## Land Permission

It is up to you to find out if access permission or collecting permits are required from the land owner and obtain them before going out. You don't need a collecting permit if you only take photographs and are not collecting fungi, but you might need an access permit.

In the Northeast, collecting mushrooms is allowed in National Forests with a permit. Permits can be obtained at the headquarters of the National Forest you're visiting, and are usually inexpensive or free. However, restrictions vary among the individual National Forests, so make sure to find out the specifics when picking up your permit. Provincial, State and County Parks generally do not allow mushroom picking, but regulations vary, so make sure to check your destination before you go out. If you intend to collect and voucher your specimen, PLEASE NOTE THAT WRITTEN PRIVATE PROPERTY PERMISSION IS REQUIRED!

## Collecting a Specimen

If you have land permission, and if you are able to dry your specimens, take home a collection (ideally 2-4 specimens of different maturity) and dry your specimens at low heat, preferably between 95 and 105 degrees F. If it is a very rare species we recommend only taking one specimen and leaving the other mushrooms to sporulate.

Once your specimens are dried (cracker dry), tagged, and bagged, send them to FunDiS for DNA sequencing. Send either a single mushroom for smaller mushrooms or a dime-sized piece of the hymenium (spore-bearing surface) for medium to large sized mushrooms. Samples should be packaged with some padding around them if they are particularly fragile. All specimens will need to be clearly marked with either an iNaturalist or Mushroom Observer number, and this number will be used to track specimens. FunDiS collects high quality specimens for DNA sequencing to help create valuable data for conservation science. Please email us at northeast_rare@fundis.org if you would like to send us Challenge specimens and we will provide you with a mailing address.

In addition to sending us samples for sequencing, we encourage you to send part of your collection to a herbarium/fungarium to allow researchers to conduct future study. Learn more about how to dry, tag, bag and send your specimen to fungaria at fundis.org/protect/northeast.

When collecting specimens, we encourage the use of Field Data Slips. Using a Field Data Slip allows the number on the slip to be associated with the specimen, simplifying organization when you are dealing with many specimens and images. Photographing the specimen with the slip also records the size of the specimen since each slip has rulers on two sides, which increases the scientific value of your collections. Once you upload your observations to iNaturalist or Mushroom Observer, there is a field on the Field Data Slip to add the new observation number. To learn more about Field Data Slips and download your own to print, please visit fundis.org/protect/northeast.

Caution: Never eat wild mushrooms without a confident identification! Contact Poison Control if you think you have eaten a poisonous mushroom: 1-800-222-1222

Contact us at: northeast_rare@fundis.org



## IUCN Fungal Redlist Assessment Process


| 2022 Northeast Rare 20 Species | Location | Status |
|---|---|---|
| ***Amanita ristichii*** (Tulloss) | NH, ME, and SE Canada | Vulnerable |
| ***Butyriboletus billieae*** (Both, Bessette & W.J. Neill) Safanov & Kudzma | MA, NY, NJ | Rare |
| ***Boletus purpureorubellus*** T.J. Baroni, Yetter, and Norar | Known in NJ, Mid-Atlantic | Rare |
| ***Caloboletus peckii*** (Frost) Vizzini | NH, VT, Appalachia | Rare |
| ***Hodophilus (=Camarophyllopsis) peckiana*** (Howe) Adamcik, Birkebak, & Looney | East U.S. and Canada | Data Deficient |
| ***Clavulinopsis appalachiensis*** (Coker) Corner | Appalachian mountains region to Pennsylvania | Rare |
| ***Dendrocollybia racemosa*** (Pers.) R.H. Petersen & Redhead | West Coast, Northeast (NH, ON) | Rare |
| ***Echinodontium ballouii*** (Banker) Gross | | Endangered |
| ***Entoloma flavoviride*** (Peck) | | Rare |
| ***Calliderma (Entoloma) indigoferum*** (Ellis) Largent | NJ, ME | Rare |
| ***Helvella palustris*** Peck | | Data Deficient |
| ***Hypocreopsis rhododendri*** Thaxter | East coast | Rare |
| ***Psathyrella epimyces*** (Pk.) A.H. Smith | SE Canada N. New England | Data Deficient |
| ***Pseudofistulina radicata*** (Schwein.) Burds. | PA, NY | Rare |
| ***Squamanita umbonata*** (Sumsteine) Bas | Northeastern U.S. | Rare |
| ***Tricholoma apium*** Jul. Schaff. | Northern U.S., NF | Vulnerable |
| ***Tricholoma grave*** Peck | New England, QC | Rare |
| ***Underwoodia columnaris*** Peck | NY | Rare |
| ***Volvariella surrecta*** (Knapp) Singer | NY, CT, PA | Rare |
| ***Wynnea sparassoides*** Pfister | NJ, MD, CT, OH, PA | Near Threatened |

Thank you for helping us document and protect fungi and their habitats across North America! Make sure to subscribe to our Funga Decoded eNewsletter at https://fundis.org/resources/email-list and follow us on social media.

# Sam's Amanita

## *Amanita ristichii* (Tulloss)

This is one of the most distinctive Amanitas in the Northeast! It is small to medium-sized, with a mostly smooth, dome-shaped cap and unmistakable pinkish gills when young; it has a weak, annular partial veil yet a large, saccate universal veil that surrounds a moderately swollen basal bulb.

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Published**

IUCN Fungal Red List Catagory: **Vulnerable**

**Threat:** Classified as Vulnerable by the IUCN, with an estimated total number of individuals < 2,000 worldwide.

Photo: Renée Lebeuf

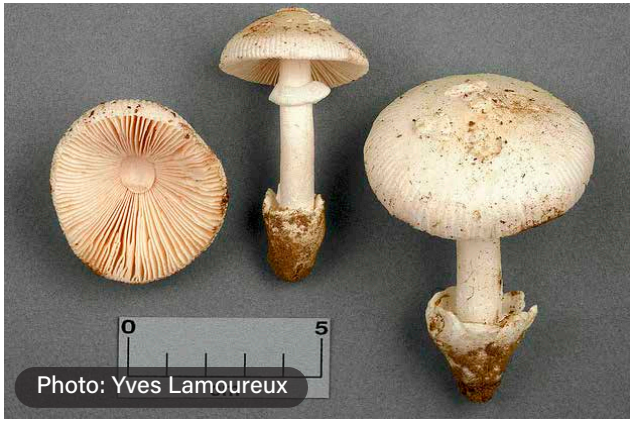



Photo: Yves Lamoureux

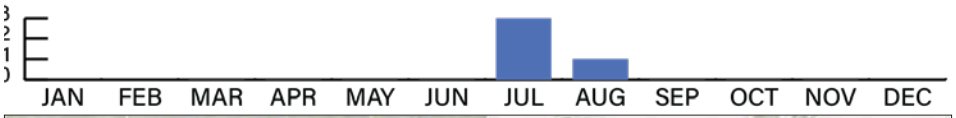
**Description**

This unmistakable fungus is on the small size for an Amanita, has pinkish gills that appear to be attached (instead of the normal free gills of an Amanita), and has a distinctly striate cap margin; microscopically it is largely two-spored.

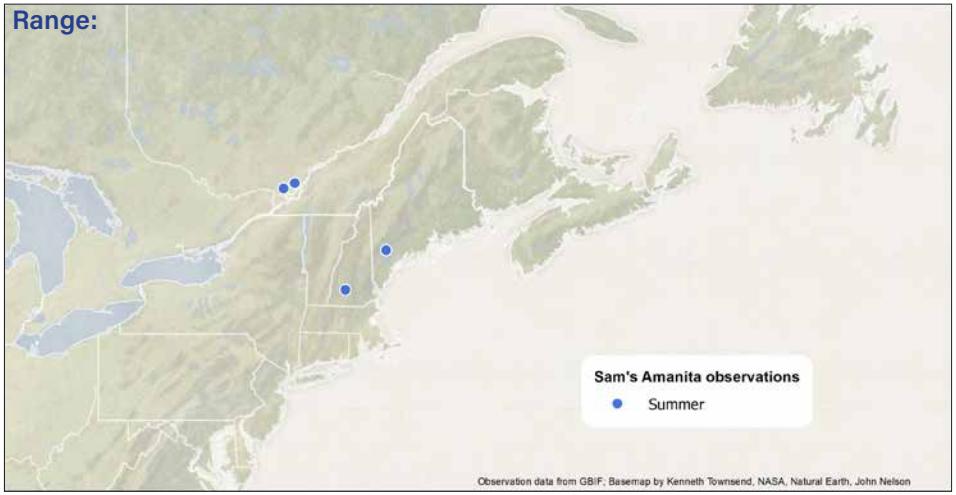
**What Else Could It Be?**

Most Amanitas that have striate cap margins in Section Vaginatae, lack pink gills and are exannulate; the bulbous base is also not very pronounced, unlike members of the Section Amanita.

**Seasonality:**




**Range:**




**Habitat, Phenology and Potential Range:** Sam's Amanita is mycorrhizal with a variety of trees, from eastern hemlock and red maple (Maine) to white pine (New Hampshire) to birch and poplar (Quebec). Occurrence records indicate a preference for sandy floodplains, which is one of the most threatened forest type in the Northeast. Found mid-July to September. Current records indicate 6 stations in Quebec, 3 in Maine and 2 in NH.

Photo: Rick Van de Poll

**Fun Fact:** Species is named for Samuel S. Ristich, mycologist par excellence, who found the species in Cumberland, ME in 1985 and sent it to Rod Tulloss who named it for his long time friend.

**Research Needs:** Phenology, Population and Trends

**More Information:**

http://iucn.ekoo.se/iucn/pecies/126302/
https://www.gbif.org/occurrence/1930006321
http://www.amanitaceae.org/?Amanita%20ristichii

# Billie's Bolete

## *Butyriboletus billieae* Both, Bessette & W.J. Neill

Billie's Bolete, named by Ernst Both for his wife Billie, is apparently restricted to sandy, pine-oak habitats of the coastal plain of New Jersey, New York, and Massachusetts. It is an unmistakably large but rare bolete with a dark purplish-brown cap, and a bright red stipe covered by yellow reticulate ridges.

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Not Proposed**

IUCN Fungal Red List Catagory: **Rare**

**Threat:** Named only recently, this species is confined to a regionally rare to uncommon habitat (pine barrens) that is under constant threat of development.

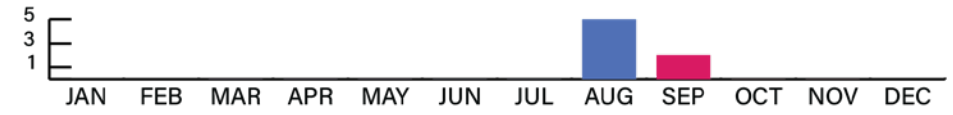
Photo: Sigrid Jakob

Photo: I.G. Safonov

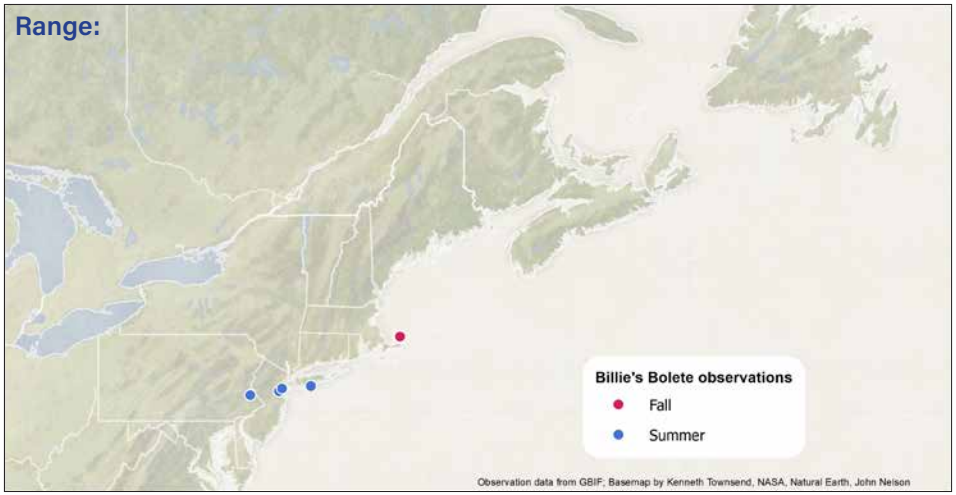
**Description**
Large grayish to purplish-brown caps that are dry to felted with an enrolled margin; bright yellow pores stain blue quickly upon injury, as does the yellow to (mostly) red stipe with distinct, yellowish reticulations from apex to base; stipe is bulbous, dry, and clavate, with a tapering base with whitish to reddish mycelium.

**What Else Could It Be?**
Butyriboletus brunneus has a paler brown cap with a pinkish hue, much smaller reticulations with a consistently yellow stalk apex; it also occurs in mixed mesic woods; Caloboletus calopus also has a paler cap and occurs in mixed oak woods, but has very bitter flesh unlike billieae, which is mild to sweet.

**Seasonality:**




**Range:**




**Habitat, Phenology and Potential Range:** Reported as occurring under oak (bear or scrub) and pitch pine in sandy, heath shrub habitats. Most records observed in August to September.

Photo: Sigrid Jakob

**Fun Fact:** Sigrid Jakob, who has the most records of this species, has collected it each of the last 4 years in August from New York state.

**Research Needs:** Geographic distribution, Phylogenetic analysis, Population and trends

**More Information:**

Bessette, A.R., Bessette, A.E., and Neill, W.J. 2001. Mushrooms of Cape Cod and the National Seashore.
Bessette, A.E., W.C. Roody, & A.R. Bessette. 2016. Boletes of Eastern North America. Syracuse: Syracuse University Press.

# Purplish-Red Bolete

## *Boletus purpureorubellus* T.J. Baroni, Yetter, and Norar

This odd reddish bolete is as unique as the swamp habitats it tends to inhabit; slimy and purplish-red, the medium-sized bolete might appear more like a Sullus than a Boletus, with a viscid-shiny cap, reddish furfuraceous stipe, and yellow mycelium at its base.

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Not Proposed**

IUCN Fungal Red List Catagory: **Rare**

**Threat:** In mossy swamps that may be subject to logging, water level fluctuations, etc.; also a potential decline due to loss of the AWC swamps.

Photo: I.G. Safonov

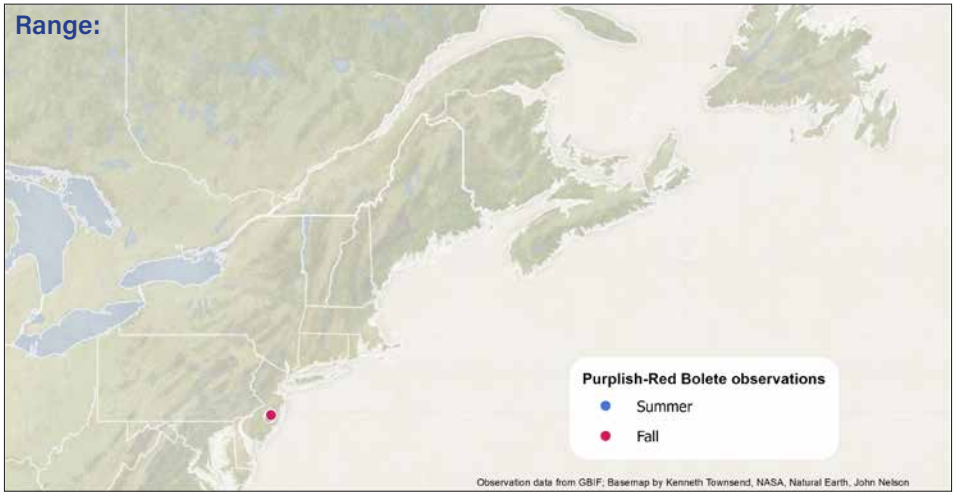
Photo: I.G. Safonov

**Description**
Reddish-purple, viscid cap with a narrow sterile margin; yellowish decurrent pores that quickly stain bluish-gray; equal, dry, yellow to reddish stipe that is yellowish at the apex and then yellowish at the base; flesh pale yellowish above and reddish below, slowly staining reddish; small spores 5 - 7.5 x 3 - 4 µ

**What Else Could It Be?**
Hortiboletus rubellus is larger, with a dry cap and larger spores; most swamp Suillus species have larger pores and spores and either viscid or annulate stipes.

**Seasonality:**


**Range:**




**Phenology and Potential Range:** Exact distribution limits yet to be established, recorded from TX, MI, GA, and NJ from August to October.

Photo: I.G. Safonov

**Habitat:** Forested swamps from Texas to Cape Cod, it has been recorded under loblolly pine, leatherwood, red maple, Atlantic white-cedar, and pitch pine.

**Fun Fact:** There are only five records for this species, with the only Northeastern records occurring in 2016, possibly due to the dry year.

**Research Needs:** Geographic distribution, Phenology, Population and trends

**More Information:**

Bessette, A.R., Bessette, A.E., and Neill, W.J. 2001. Mushrooms of Cape Cod and the National Seashore. Bessette, A.E., W.C. Roody, & A.R. Bessette. 2016. Boletes of Eastern North America. Syracuse: Syracuse University Press.

# Peck's Bolete

## *Caloboletus peckii* (Frost) Vizzini

This medium to large bolete is characterized by its dry, plush, pinkish-red cap, whitish to pale yellow flesh that stains finally blue, and heavily reticulate, yellowish to reddish stalk; very few collections have been made of this species in spite of its wide range that includes the eastern U.S. and Canada as well as Japan.

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Not Proposed**

IUCN Fungal Red List Catagory: **Rare**

**Threat:** Possible threat due to the loss of American Chestnut; only scattered records in the 20th and 21st centuries.

Photo: I.G. Safonov

Photo: I.G. Safonov

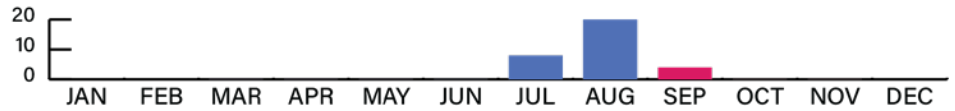
### Description

Large grayish to purplish-brown caps that are dry to felted with an enrolled margin; bright yellow pores stain blue quickly upon injury, as does the yellow to (mostly) red stipe with distinct, yellowish reticulations from apex to base; stipe is bulbous, dry, and clavate, with a tapering base with whitish to reddish mycelium.

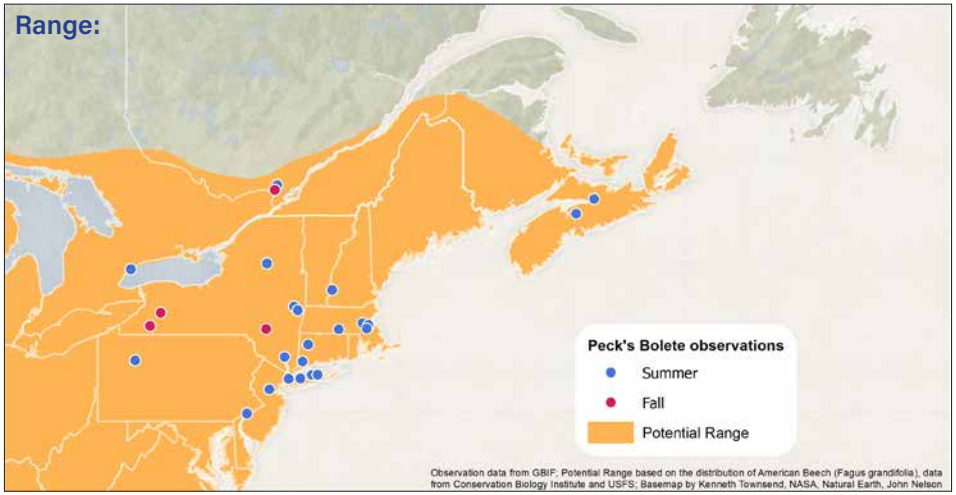
### What Else Could It Be?

Butyriboletus brunneus has a paler brown cap with a pinkish hue, much smaller reticulations with a consistently yellow stalk apex; it also occurs in mixed mesic woods; Caloboletus calopus also has a paler cap and occurs in mixed oak woods, but has very bitter flesh unlike billieae, which is mild to sweet.

### Seasonality:




### Range:




**Habitat, Phenology and Potential Range:** Found under beech or oak in mesic woods. Original collection in August; more recent collections also include July.

Photo: Rick Van de Poll

**Fun Fact:** Also known as Butyriboletus peckii, the 'butyri' prefix refers to members of that group having a 'buttery feel' to the cap; 'calo' simply means beautiful in latin.

**Research Needs:** Geographic distribution, Phenology, Population and trends, Habitat preference

**More Information:**

Peck, C.H. 1878. Report of the Botanist (1875). Annual Report on the New York State Museum of Natural History. 29:29-82

Smith, A.H., and H.D. Thiers. 1971. The Boletes of Michigan. Ann Arbor: University of Michigan Press

Bessette, A.E., W.C. Roody, & A.R. Bessette. 2016. Boletes of Eastern North America. Syracuse: Syracuse University Press.

http://iucn.ekoo.se/iucn/species/223743/

# Peck's False Waxy Cap

*Hodophilus (=Camarophyllopsis) peckiana*
(Howe) Adamcik, Birkebak, & Looney

Hodophilus peckianus is a rare mushroom that is associated with forested hardwood swamps. It is a small, odiferous waxy-cap type mushroom that occurs in somewhat enriched, moist soils under hardwoods. Although there are few collections (+/-12), they are very widely scattered. The habitat is subjected to disturbance (e.g. windthrow). The assessment of this species is based on its rarity, soil acidification, and continuing wetland habitat loss.

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Priliminary Assessed**

IUCN Fungal Red List Catagory: **Data Deficient**

**Threat:** Unknown. Possible loss from lack of old growth structure (i.e. large tree wind-throw mounds)

Photo: Rick Van de Poll

## Description

It is a small, brownish mushroom with strongly descending gills, that differs from most small waxy caps by not having bright colors or a waxy appearance. The caps are usually less than 3/4 inch wide and dark to medium brownish; the gills are pale gray to whitish, smell like "bad breath," and the stalk is brown, equal, and fairly tough. This waxy cap grows in small groups in moist to sub - hydric soil that is rich with well-decomposed humus near or at the edge of wetlands. It has been found on slightly enriched mineral mounds that have occurred as a result of windthrown trees.

Photo: Rick Van de Poll

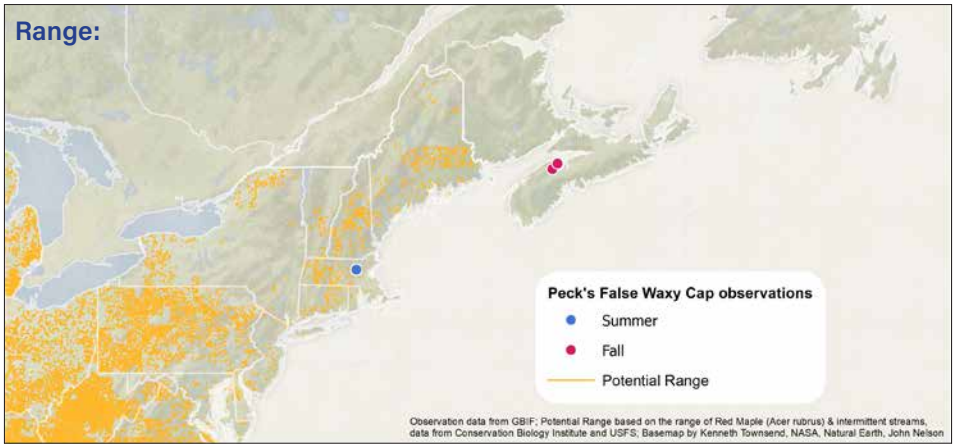
## What Else Could It Be?

A close ally in the 'foetens' group of waxy caps, Hodophilus (= Camarophyllus) hymenocephalus looks very similar but has dark to pale brown gills with no white or gray tint. It also has a distinctly uniform layer of cap cells that end in slightly swollen tips (i.e. a hymeniform layer).



## Seasonality:


## Range:




**Phenology and Potential Range:** It is known from central New York, Massachusetts, Michigan, and New Hampshire, with southeastern U.S. records from North Carolina and Florida likely a different species.

Photo: Rick Van de Poll

**Habitat:** The mushroom likes moist soil in mid to late summer in mixed hardwood-softwood forests. The most recent collections have come from mature woodlands near intermittent streams and seeps under red maple. The brown caps make them hard to see, but once found there will likely be several in a small group. Keep your eyes peeled for the faint violaceous tint to the gills!

**Research Needs:** Geographic distribution, Phenology, Population and trends, Habitat preference, Threats. Exact distributional limits are unknown and need to be further documented. A recent p.c. from Joshua Birkebak was as follows: "As for Hodophilus peckianus, the type didn't sequence but was definitely distinct from any of the other foetens group we collected in NA. We do have good morphology for it though and are just waiting to find it again. None of the historical collections we examine from NC or TN were actually this species so it may be restricted to the Northeast."

**More Information:**

Hesler, L.R., and A.H. Smith. 1963. North American Species of Hygrophorus. Knoxville: University of Tennessee Press.
Van de Poll, R.. 2015. Camarophyllopsis peckiana The IUCN Red List of Threatened Species 2016: http://iucn.ekoo.se/iucn/species/372064/

# Appalachian Spindle Coral

## *Clavulinopsis appalachiensis* (Coker) Corner

You can just as easily step on this mushroom as see it! It is a small, pale-colored club set against a darker, leafless soil background in damp drainageways, mixed mesic woods and on rotten logs. The clubs are pale pinkish-brown to yellowish-brown, typically unbranched, and somewhat rugose in appearance. There is usually a strong color break between the yellow to ochraceous stem and the pale creamy hymenial portion. It is apparently widespread but rarely collected, especially in the northern part of its range.

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Under Assessment**

IUCN Fungal Red List Catagory: **Rare**

**Threat:** Threat is identified as soil acidification from acid rain run-off.

Photo: Garrett Taylor

Photo: Garrett Taylor

### Description

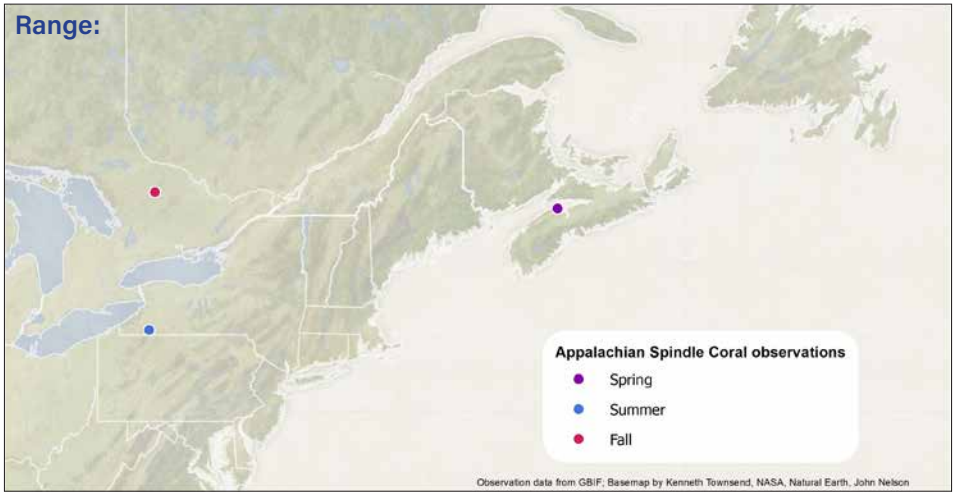
This diminutive club species is mostly unbranched, 3 - 12 cms tall by 1 - 5 mms wide. Clubs are lemon yellow to ochre below and pale creamy yellowish or pinkish-brown above. Spores are globose to subglobose and 6 - 7.5 µ in size. Coker noted the lack of clamp connections in the subhymenial hyphae, which is unusual for the genus.

### What Else Could It Be?

Other species of Clavulinopsis have small to large clamp connections in the context, different colors, and/or different spores. C. umbrinella is also pale but is typically branched and lacks the yellowish base. C. aurantio-cinabarina can be a pale clear orange, but has smaller spores and evident clamp connections.

### Seasonality:


### Range:




**Phenology and Potential Range:** Occurs from the southern Appalachians to Ontario to Nova Scotia and scattered places in between; most recent records from western New York in August.

**Habitat:** Mixed mesic woods in leaf litter and mold, also in leaf-bare intermittent drainageways and on very rotten hardwood logs.

Photo: Rick Van de Poll

**Fun Fact:** Mixed mesic woods in leaf litter and mold, also in leaf-bare intermittent drainageways and on very rotten hardwood logs. Occurs from the southern Appalachians to Ontario to Nova Scotia and scattered places in between; most recent records from western New York in August.

**Research Needs:** Geographic distribution, Phenology, Population and trends, Threats

**More Information:**

Coker, William Chambers. 1923 The Clavarias of the United States and Canada, Chapel Hill: University of North Carolina Press.
Petersen, Ronald H. 1968. The Genus Clavulinopsis in North America. New York and London: Hafner Publishing Company.
https://www.inaturalist.org/observations/31157503
https://www.inaturalist.org/observations/15755704

# Branched Shanklet

*Dendrocollybia racemosa* (Pers.) R.H. Petersen & Redhead

Reminiscent of the 15th century Italian fresco that had the Tree of Life depicted as a multi-branched mushroom, Dendrocollybia receives its name from the fact that the mushroom has branches! Otherwise looking like a small, white-spored Collybia, the anamorph (Tilachlidiopsis) arises from a decomposing mushroom (esp. Lactarius and Russula), and sends out lateral branches that bear conidiospores. At its maximum growth it terminates the fruiting body with a teleomorphic, gilled cap. Known previously from only the Pacific Northwest and Scandinavia, a 2011 collection from New Hampshire has put it squarely in the Northeast!

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Not Proposed**

IUCN Fungal Red List Catagory: **Rare**

**Threat:** Extremely rare by virtue of only two collections in eastern North America.

Photo: Alan Rockefeller

Photo: Christian Schwarz

## Description

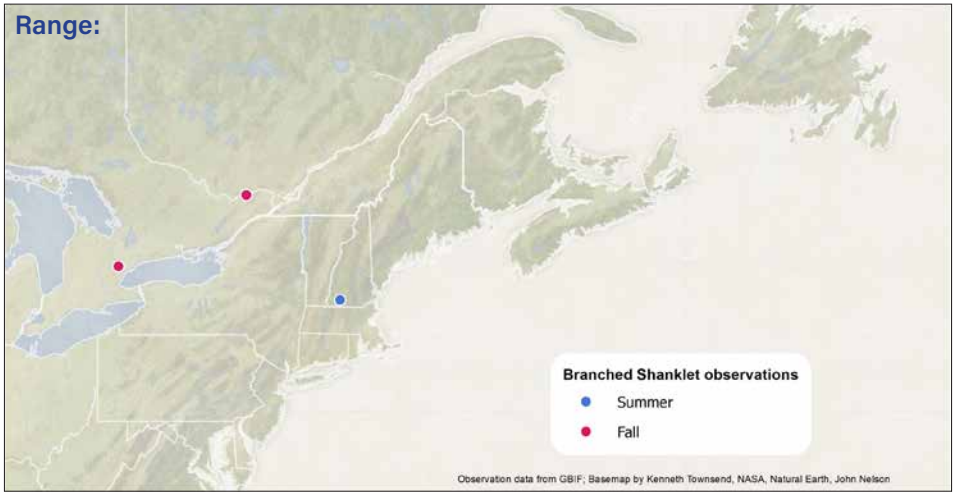
This unmistakable fungus has side branches on the main stem that terminate in small, globular gray conidiophores, making it look like an elongate cluster of grapes. There can be as many as two dozen side branches, which gives it a 'fuzzy' appearance from afar. The 10 - 15 cms high fruit body ends in a small, convex, gray cap with whitish gills that produce typical, hyaline, ellipsoid spores.

## What Else Could It Be?

Given the practically unique shape to this small to medium-sized mushroom, it cannot be mistaken for anything else in the Northeast (as far as we know). In the West Coast, the very similar D. pycnoramella has also been identified as being quite rare (NT on the IUCN Red List).

**Seasonality:**


**Range:**




**Habitat, Phenology and Potential Range:** On old decomposing mushrooms, mostly known from Lactarius and Russula (in Europe); only two observations in Eastern N.A., one from mixed woods and one from beech woods. The two records are for August 27 (NH), September 16 (ON), and October 8 (ON)

Photo: Rick Van de Poll

**Fun Fact:** The latin word 'racemus' means cluster of grapes!

**Research Needs:** Geographic distribution, Phenology, Population and trends, Habitat preference especially host association, Threats

**More Information:**

Hughes, Karen.W., R.H. Petersen, J.E. Johnson, J. Moncalvo, R. Vilgalys, S.A. Redhead, T. Thomas, and L.L. McGhee. 2001. Infragenic phylogeny of Collybia s. str. based on sequences of ribosomal ITS and LSU region. Mycol. Res. 105 (2): 164-172.
https://en.wikipedia.org/wiki/Dendrocollybia
https://www.inaturalist.org/observations/61321415
http://www.inaturalist.org/observations/3548059

# Atlantic White-Cedar Conk

## *Echinodontium ballouii* (Banker) Gross

In May 1908, William Hosea Ballou found an unusual fungus in a Forked River, NJ Atlantic white-cedar swamp and sent the specimens to Howard Banker at the NY Botanical Garden, who named the new species as Echinodontium ballouii due to its spiny-toothed hymenium. Nearly 100 years later in 2006, Bill Neill and Larry Millman rediscovered this fungus in a cedar swamp in New Hampshire. Its unmistakable and obligate occurrence on Chamaecyparis thyoides makes it decidedly unique.

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Published**

IUCN Fungal Red List Catagory: **Endangered**

**Threat:** The extant population is only known from one Atlantic white-cedar swamp in New Hampshire. Searches for the species between 1960 and 2015 have been unsuccessful.

Photo: Tom Murray

Photo: Tom Murray

### Description

A perennial polypore-like fungus in the Russulales with five other members worldwide, this species occurs as small shelves on the underside of Atlantic White-Cedar branches both in the axils of limbs and along its basal undersides. Averaging from 5 - 15 cms in length per fruit body, the upper surface is dark brownish-black with a lighter growing edge; the underside (hymenium) is yellowish to pinkish-brown with .5 - 2.0 cms long 'teeth' that are confluent and occasionally dadaelioid. Annular extension of basal contextual hyphae proliferate into new layers of dentate hymenia, therefore most individuals found have been several years old and exhibit annular, polypore-like growth segments.

### Seasonality:


### Range:

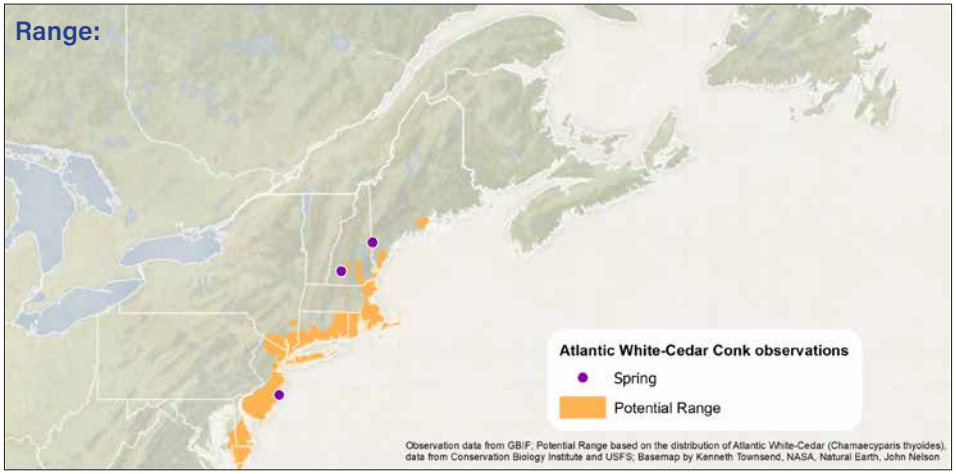



Photo: Rick Van de Poll

### Habitat, Phenology and Potential Range:

Inhabits the axils of Atlantic White-Cedar branches 40 - 50 feet up in older trees. Only 15 - 20 such sites are estimated for the historic and extant stations for the species. Although a year-round species, the presence in well-inundated cedar swamps suggest a winter survey when surface water is frozen and better visibility looking up into the canopy is possible.

**Research Needs:** Phylogenetic analysis, Population and trends

### What Else Could It Be?

No other hydnate, perennial conk is known to occur on Chamaecyparis thyoides; Datronia, Phellinus, Royoporia, and other small, dark conks are truly poroid although they may become dadaeloid and pseudo-dentate in age; none are known to occur on the host species, however.

### More Information:

Millman, L., and Neill, W. 2007. A REAL American Ivory-billed Woodpecker, A long-extinct mushroom emerges in the dead of winter. Mushroom Magazine Fall 2007 Issue 97 Vol. 25 No.4
https://www.mushroomthejournal.com/a-real-american-ivory-billed-woodpecker/
http://iucn.ekoo.se/iucn/species/330283/

# Yellowish-Green Entoloma

## *Entoloma flavoviride* (Peck)

This small swamp-lover will not only challenge the observer by being in a mucky substrate, it will also challenge the collector when trying to pick and retain a specimen! This fragile yellowish-green, conical-capped Entoloma fits the generalized description of being a 'Pouzarella' by having conspicuous hairs on the cap and a fibrillose stalk. It is also similar to other pink-spored members of the family by having angular spores and lageniform cheilocystidia, which are worth the effort to view under a microscope!

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Not Proposed**

IUCN Fungal Red List Catagory: **Rare**

**Threat:** This rare mushroom has less than a dozen recent records, all of which are from Canada, yet occurs in habitats that are common across the northern US.

Photo: Garrett Taylor

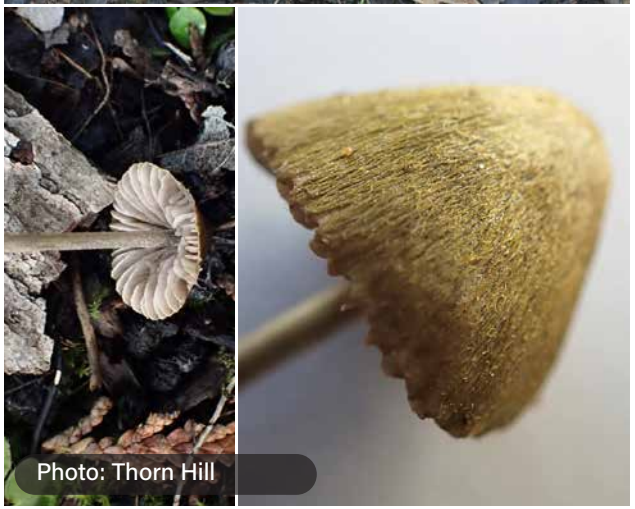


Photo: Thorn Hill

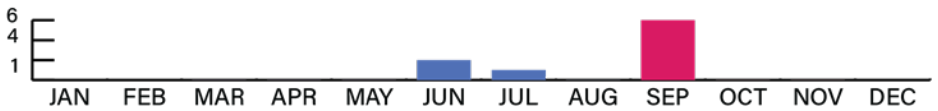
**Description**

Caps yellowish-green, with a darker disc, radially covered with matted fibrils that extend to the margin, somewhat translucent when fresh; gills adnexed, subdistant, pale yellowish-brown, turning to dark pinkish-brown in age; stem 3 - 7 cms long by 1 - 3.5 mms broad, whitish, fibrillose, mostly equal, somewhat translucent, with whitish mycelium at base; odor "soapy or fishy".

**What Else Could It Be?**

Inocephalus luteus lacks the fibrillose cap and has a darker, yellowish stalk; other Pouzarellas are grayish to brownish; other Entolomas typically lack the conical, hairy cap.

**Seasonality:**

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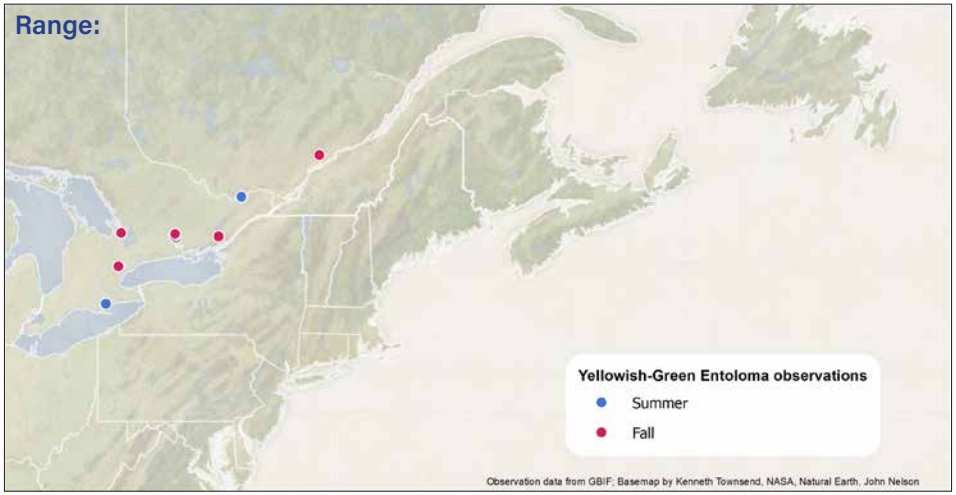



**Phenology and Potential Range:** Records range from June to September, with the most in mid-September; to be looked for in Ontario & Quebec and the northern tier states

Photo: Rick Van de Poll

**Habitat:** Wet, mucky soils in low-lying swamps in association with red maple, American elm, ash, and other hardwoods.

**Fun Fact:** Spores in lateral view are 5 to 7-angled according to Tim Baroni, a renowned Entolomatologist who authored a recent field guide for the Northeast.

**Research Needs:** Geographic distribution, Phenology, Population and trends, Habitat preference

**More Information:**

Baroni, Timothy JH. 2017. Mushrooms of the Northeastern United States and Eastern Canada. Portland, OR: Timber Press. pp 150.
https://www.mycoquebec.org/bas.php?post=Entoloma&l=r&nom=Entoloma%20flavoviride%20/%20Entolome%20jaune%20verd%C3%A2tre&tag=Entoloma%20flavoviride&gro=19

# Indigo Blue Entoloma

## *Calliderma (Entoloma) indigoferum* (Ellis) Largent

A rare, Russula-like mushroom of Atlantic White-Cedar swamps of New Jersey, this pink-spored mushroom has enjoyed recent notoriety with a substantial record of fruiting. With just one collection when named in 1879, it went for over 130 years before it was re-discovered in 2013 by Tim Baroni in Ocean County. This unmistakable bluish mushroom is unlike almost all other Entolomas in N.A., and until this past year was only known from New Jersey. With a new possible record from Maine, its well-known affinity for Chamaecyparis thyoides may now be in question.

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Not Proposed**

IUCN Fungal Red List Catagory: **Rare**

**Threat:** While common in select habitats at the right time of year, this species presents a substantial concern due to the loss of Atlantic White-Cedar swamps on the Eastcoast.

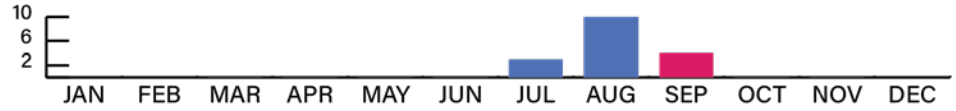
Photo: Tu Davis

Photo: Christian Schwarz

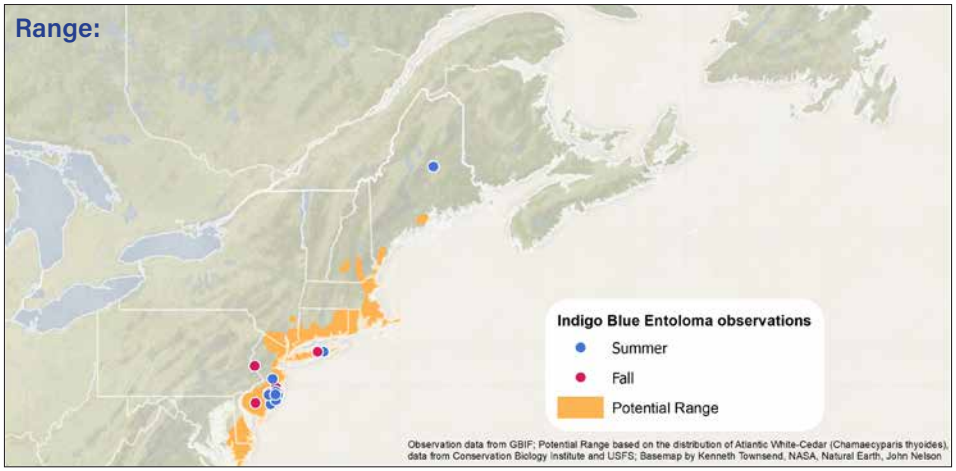
**Description**
Calliderma indigoferum is a medium-sized mushroom with a hemispheric to broadly convex, dry to lubricous, deep indigo blue cap that is slightly wrinkled radially but otherwise smooth; the cap soon fades to bluish-gray with a darker disc; the gills are broad, close to subdistant, and whitish when young, but soon turning pinkish to flesh color in age; the stem is nearly concolorous with the cap when young, but soon pale bluish-gray to gray, equal to slightly enlarged at the base.

**Fun Fact:** The original collection by J.B. Ellis includes specimens that were distributed among 13 fungaria (Herbaria) across the United States.

**Seasonality:**




**Range:**




**Phenology and Potential Range:**
All but one record is from the New Jersey Pine Barrens in Atlantic White-Cedar Swamps in either August or September (one record in July)

Photo: Anne Bekker

**Habitat:** J.B. Ellis described his first collection as being "in deep swamps of Cupressus (= Chamaecyparis) thyoides." Based now on over 100 records, this appears to be the predominant habitat of occurrence, although soil under pitch pine has also been reported. Most records (and photos) indicate that they are mostly found in Sphagnum moss.

**Research Needs:** Phenology, Population and trends

**What Else Could It Be?**
No other Entoloma in the Northeast is as bright indigo blue when young; other look-alike agarics such as Russula are white-spored; no other Calliderma species occur in North America.

**More Information:**
William Alphonso Murrill. 1917. (AGARICALES); AGARICACEAE (pars); AGARICEAE (pars). North American flora. vol 10(2). New York Botanical Garden, New York, NY
Ellis, N. Amer. Fungi 302, https://mycoportal.org/portal/collections/exsiccati/index.php?omenid=7147

# Swamp Elfin Saddle

## *Helvella palustris* Peck

This tiny, easily overlooked mushroom requires a willingness to get wet feet, look hard for an otherwise obscure, dark and small mushroom among mosses and liverworts. Helvella is a fairly widespread genus in the Northeast, with H. macropus, H. sulcata, and H. crispa being found in similar mossy, rotten wood habitats. H. palustris is apparently confined to swamps, however, and is unique in its very dark grayish coloration throughout.

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Proposed**

IUCN Fungal Red List Catagory: **Data Deficient**

**Threat:** Extremely rare and easily overlooked.

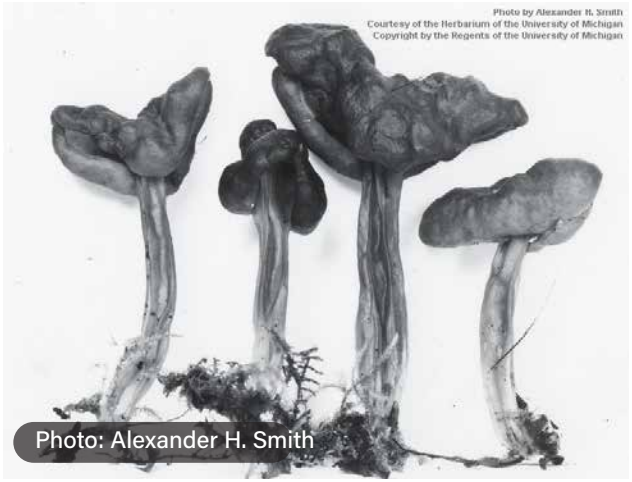


Photo: Alexander H. Smith


Photo: Irene W.

**Description**
(From Peck): "Pileus irregular, at first blackish and slightly adnate, then grayish-brown or mouse-colored and free, rugose beneath; stem equal, slender, sulcate-costate, colored like the pileus, the costae thin, subacute; asci cylindrical; spores broadly elliptical, .00065 in. to .0008 in. long, .0005 in. broad containing a single large nucleus; paraphyses thickened above, brown. Plant 1 in. to 2 in. high, pileus 6 lines to 12 lines broad, stem about 2 lines thick. Among mosses and liverworts in swamps."

**Fun Fact:** "palustris" means 'of swamps or marshes' and refers to the preferred habitat for this species.

**Seasonality:**


**Range:**

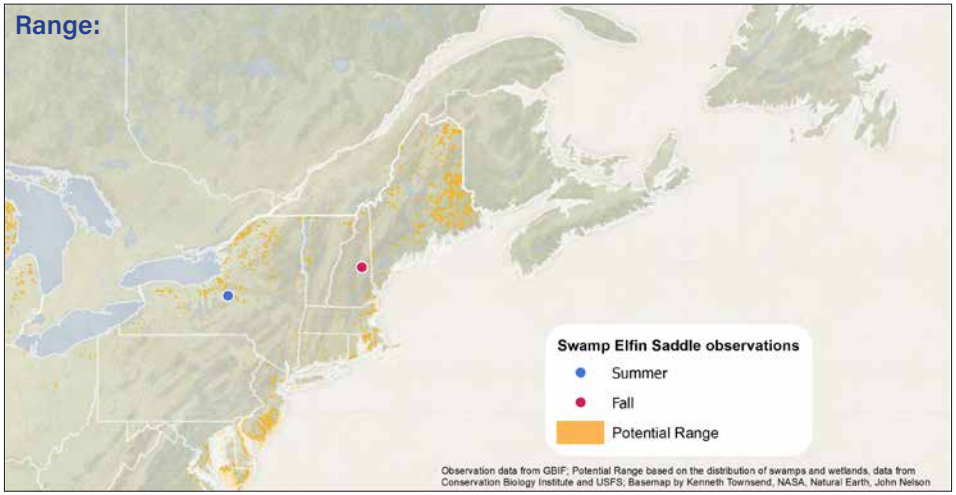




Photo: Rick Van de Poll

**Phenology and Potential Range:** Records in the Northeast are from August and September, but in Michigan from late July to early October; all U.S. records are from swamps.

**Habitat:** In mixed, forested swamps, usually in moss on rotten logs or organic humus.

**Research Needs:** Geographic distribution, Phenology, Population and trends, Habitat preference i.e. what type(s) of swamps, Threats

**What Else Could It Be?**
(From Peck): This species is related to H. sulcata, from which it differs in its more slender and darker-colored stem, its less firm and more free pileus and its darker-colored paraphyses. In the dried specimens the upper surface of the pileus has assumed a blackish color, but the lower surface has retained very nearly its normal hue. The dark-colored slender stem readily separates this species from all others with costate or lacunose-costate stems.

**More Information:**
Peck, C.H. 1880. Report of the Botanist (1879). Annual Report of the New York State Museum of Natural History. 33:11-49

# Hazel Fingers

## *Hypocreopsis rhododendri* Thaxter

Do these brown fingers grow in the Northeast or do they not? Known from rhododendron thickets in the Smoky Mountains, and from old hazel coppices along the Atlantic Coast of Great Britain and mainland Europe, it does not seem likely, and yet, there is a record from Maine where it grew on lilacs. Now it is up to you to go out and look for these lichen-like growths on living or dead branches of various shrubs in cool, humid places.

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Under Assessment**

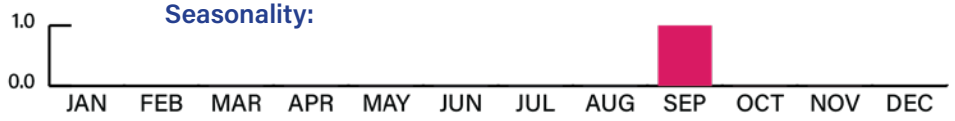
IUCN Fungal Red List Catagory: **Rare**

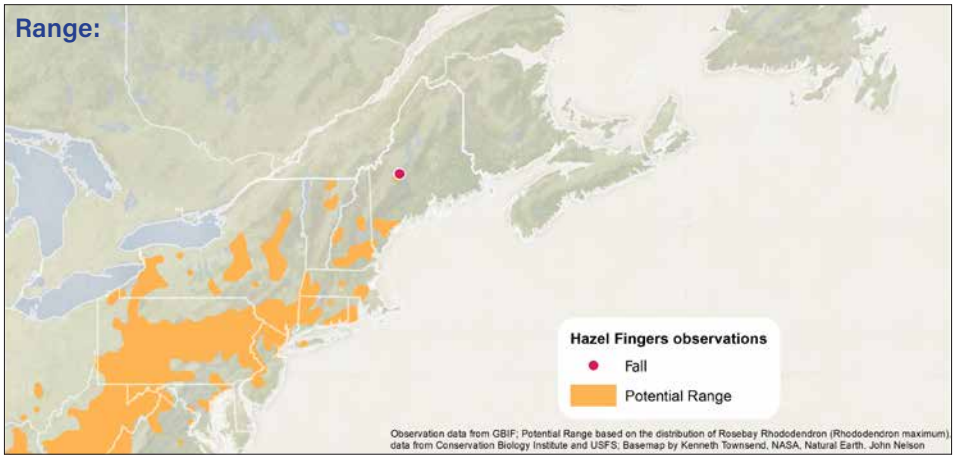
**Threat:** Rarely collected in spite of it growing on a common host, the 'Glue Crust.'

Photo: Billy Fullwood

Photo: @exmoorkate

**Description**
Thick orange-brown to tan fingers radiating out from a central point, creeping over branches: that is Hypocreopsis rhododendri. On thick branches, the whole mushroom can grow up to 4–5 inches wide and a quarter inch thick. These fingers harbor a large number of tiny flask-shaped fruit bodies that are sunk into the surface. The little pin pricks that you can see with a hand lens show the openings of these fruit bodies. That is where the spores are ejected into the world.




**Phenology and Potential Range:** Rhododendron fingers grow on Rhododendron branches along creeks and rivulets, and is known from the Smoky Mountains. The one possible find in the Northeast is from Maine, and on lilacs. It is most obvious from summer to late autumn but may overwinter as blackened fingers and then regrow in the second year.

Photo: Rick Van de Poll

**What Else Could It Be?**
Hazel fingers and Willow gloves look extremely similar, and both could occur in the Northeast of North America. They differ in their habitat (on Rhododendron or on Willow), and their spores look quite different. There are no records of Willow gloves from the Northeast yet.

**Habitat:** These fungal fingers were named by Thaxter for growing on Rhododendron, but at the lonely site in the Northeast they were found growing on lilac!

**Research Needs:** Population and trends, Threats

**Fun Fact:** Hypocreopsis rhododendri probably parasitizes the crust fungus Hydnoporia diffissa (=Pseudochaete or Hymenochaete agglutinans) in North America, but this has not been investigated yet; its host in Europe is the close relative H. corrugata. The host might not be visible at the same time as its parasite.

**More Information:**
Peck, C.H. 1880. Report of the Botanist (1879). Annual Report of the New York State Museum of Natural History. 33:11-49

# Parasitic Psathyrella

## *Psathyrella epimyces* (Pk.) A.H. Smith

Even people who spend most of the summer and fall in the woods have never seen this very rare species in the flesh. It fruits irregularly, on a common host, the Shaggy Mane (which does not look anything like a Shaggy Mane anymore). What triggers its fruiting, does it only occur in a specific forest type, or does it need a cold winter followed by an early sudden warm spring? All questions we would love to get answers to. It is not known south of Pennsylvania, though Shaggy Manes occur nearly worldwide; so why don't we see more of it?

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Not Proposed**

IUCN Fungal Red List Catagory: **Data Deficient**

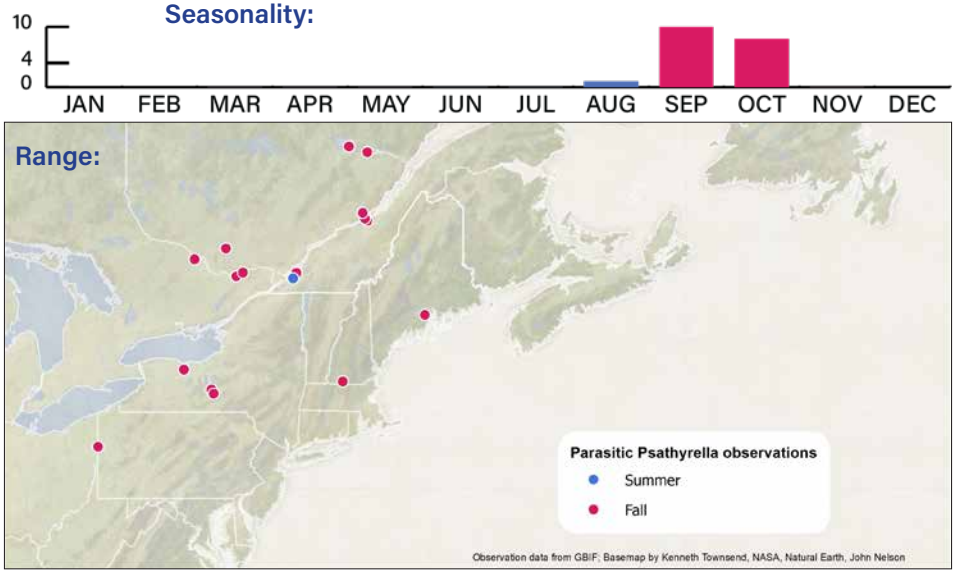
**Threat:** Unknown.

Photo: Johnathan Mack

Photo: @myco-walt

**Description**

This medium-sized, pale, dingy-colored mushroom with dark gills and blackish spores looks unremarkable. What makes it distinct, however, is that is grows in clusters on top of Shaggy Mane mushrooms that don't look anything like their normal self. Instead of upright columns, the Inky Caps are clumped up, and shaped like a fungal ottoman sporting an otherwise rather ordinary Psathyrella. The Psathyrella has a cap up to 2 inches wide, standing up to 3 inches high on its stem. The cap starts out white, ends up a bit dirty looking, is a bit silky fibrous and the margin is hung with remnants of the fibrous veil.




**Phenology and Potential Range:** The host, Shaggy Mane, is common in all kinds of habitats, and can be found on city streets, in urban parks, and along dirt roads in forests. Only rarely is it parasitized by the Parasitic Psathyrella, and it is not clear when and where this happens. Records of the Parasitic Psathyrella are from July to October, and it is known from Pennsylvania northwards and as far west as Minnesota and Wisconsin with some records from British Columbia (!) and one non-confirmed sighting in the Netherlands (yes, in Europe).

Photo: Rick Van de Poll

**More Information:**

Agaricus epimyces Peck, Annual Report on the New York State Museum of Natural History 35: 133 (1884)
Psathyrella epimyces (Peck) A.H. Sm., Memoirs of the New York Botanical Garden 24: 60 (1972)
http://www.plantpath.cornell.edu/CUPpages/Atkinson/Gall-S-epimyces.html [the host is erroneously called Coprinopsis atramentaria, it is in fact Coprinus comatus]

**What Else Could It Be?**

The only other silky-capped white mushroom growing on other mushrooms is the Piggy back mushroom (Volvariella surrecta), which grows on big Clitocybe mushrooms; it has pink gills and spores, a cup at the bottom of the stem, and the cap is clearly radially fibrillose with a silky sheen to it. Both species are participants in this rare species challenge!

**Habitat:** Restricted to fresh clusters of Shaggy Mane mushrooms.

**Research Needs:** Geographic distribution, Phenology, Population and trends, Threats

# Rooting Tube-Pore Polypore

## *Pseudofistulina radicata* (Schwein.) Burds.

What does it take for a mushroom to evolve a long rooting process that arises from rotten wood and humus? Not unlike Rooting Collybia, this species appears to be most common at the base of old rotten trees (hardwoods in this case), yet has only evolved among these conditions in Central and Eastern North America. Although large and unmistakable, this fungus is rarely collected in the Northeast with less than 10 records in the last 50 years. With all of the hardwoods in the Northeast, why is it so rare?

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Not Proposed**

IUCN Fungal Red List Catagory: **Rare**

**Threat:** Under-collected in spite of being fairly large and easily distinguishable, likely having declined because of the loss of American chestnut.

Photo: John Plischke

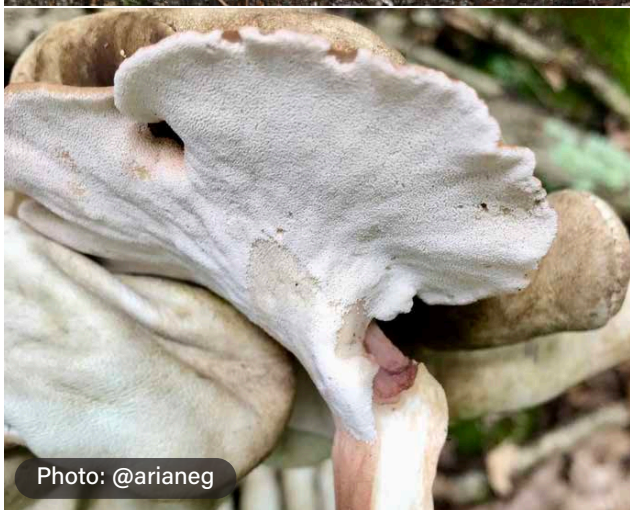
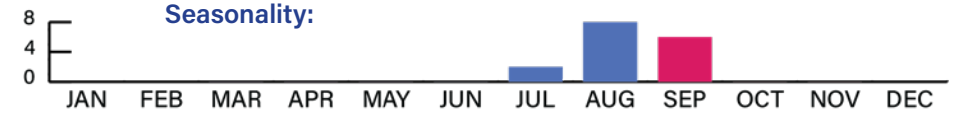
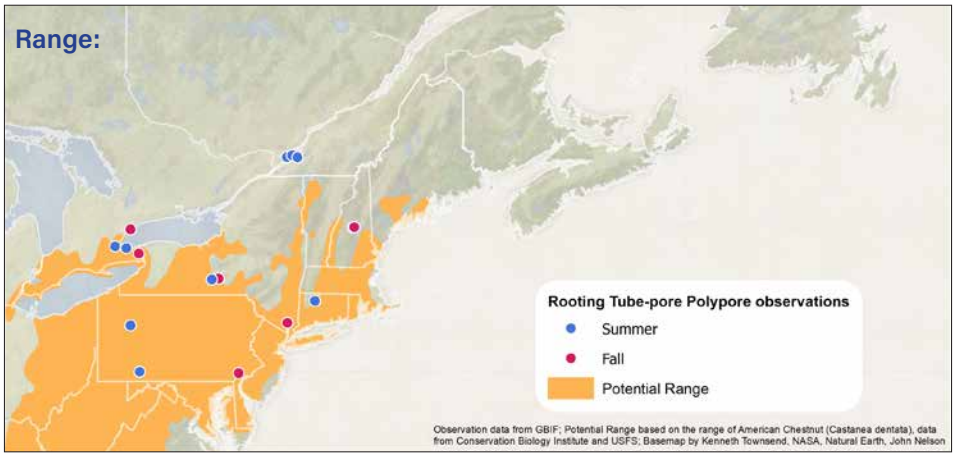


Photo: @arianeg

**Description**
Medium to large mushroom sometimes exceeding 25 cms (12 inches) tall, the fruiting bodies occur singly, clustered, or even branching from a common base that is buried partly within the ground or rotten wood; caps are pale to medium 'snuff' brown, convex to flat or slightly upturned in age, with pallid, very fine pores beneath; pallid to pale brown stalks are eccentric or lateral to the cap, to 1 cm or more at the apex and tapering to a very fine basal tip.

**Research Needs:**
Population and trends, Threats




**Phenology and Potential Range:** Rooting Polypore has been collected from late July to late September across the eastrn United States and south into Mexico, Guatemala, Nicaragua, Honduras and Panama. Northeast records include PA, NY, CT., MA, NH, and QC.

Photo: @arianeg

**What Else Could It Be?**
The true Fistulina (hepatica) is usually quite reddish with larger pores that are either free or easily separable when peeled back; Umbrella polypore (Polyporus umbellatus) has many caps arising from a single base, is much more fleshy, and is usually tinted grayish-brown.

**Habitat:** Known only from the dead and rotten stumps of Quercus (oaks) and Castanea (chestnut), sometimes arising from the ground.

**More Information:**
Gilbertson, R.L., and L. Ryvarden. 1987. North American Polypores. Vol. I & II. Oslo: Fungiflora.
Pseudofistulina radicata (Schwein.) Burds., Journal of the Elisha Mitchell Scientific Society 87: 242 (1971)
Fistulina radicata (Schwein.) Schwein., Transactions of the American Philosophical Society 4 (2): 161 (1832)
Boletus radicatus Schwein., Schriften der Naturforschenden Gesellschaft zu Leipzig 1: 100 (1822)

**Fun Fact:**
This species has had no less than six different scientific names in 20 years, which as it is currently accepted, Pseudofistulina radicata, refers to its long, radicating stalk.

# Fibercap Strangler

## *Squamanita umbonata* (Sumsteine) Bas

Squamanita is perhaps one of the most fascinating and puzzling groups of club fungi on the planet! First discovered in the early 20th century, the genus has been variously assigned to Vaginata, Amanita, Cystoderma, Tricholoma, Lepiota, and Dissoderma. After Cornelius Bas accurately interpreted Alexander Smith's collection of a "Cystoderma" as a mycoparasite named Squamanita, it was later discovered that this genus not only parasitizes one or two other gilled mushrooms, it appears that it causes the production of asexual chlamydospores in the host.

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Not Proposed**

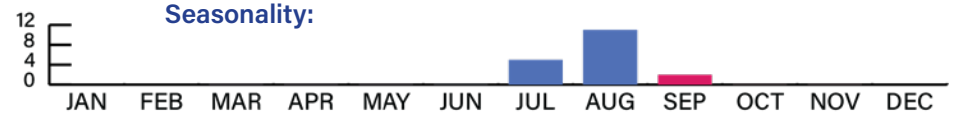
IUCN Fungal Red List Catagory: **Rare**

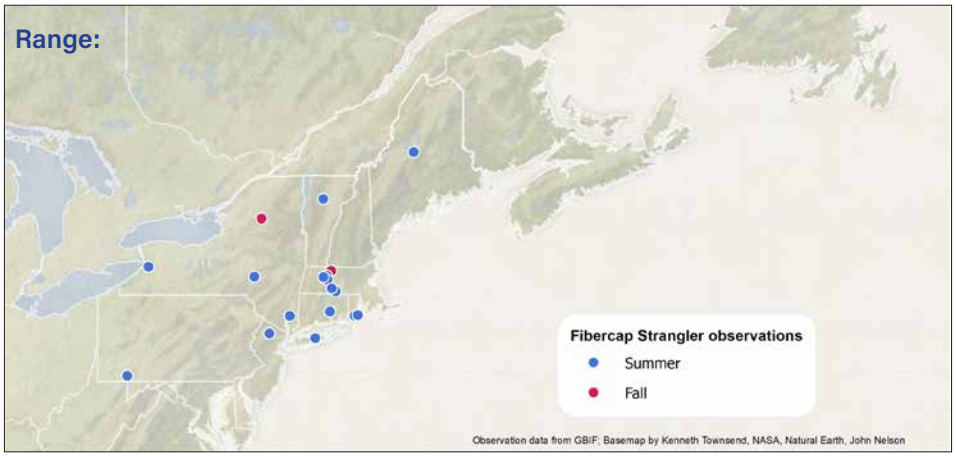
**Threat:** Rare with few recent collections, especially in the Northeast, and apparently a complex of several closely related species, so more collections are needed!

Photo: Sigrid Jakob

Photo: Sigrid Jakob

**Description**
A medium-sized mushroom with a streaked or scaly, medium brownish and white cap with an obtusely to sharply pointed umbo, fairly close whitish gills that are slightly attached to free, and an equal, whitish stalk with a prominent, superior veil. The lower stalk is variously scaly, brownish, and partly deformed as it arises from its parasitized host; the keynote feature is the underground mass of mycelial tissue, which is the deformed host mushroom




**Habitat, Phenology and Potential Range:** Squamanita umbonata (sensu lato) has been collected from July to September in mesic soil under hardwoods or mixed woods where its parasitized host grows.

Photo: Rick Van de Poll

**Fun Fact:** On the basis of recent DNA research on the genus, Dr. Irja Saar and Dr. Greg Thorn are describing several new species, at least two of which have been referred to 'Squamanita umbonata' in the Northeast. For example, the species depicted (above) is now known as S. sumstinei, named after Dr. David Ross Sumstine, a mycologist who first described the species in the U.S. as 'Vaginata umbonata' in 1914.

**What Else Could It Be?**
The above-ground part is reminiscent of a Tricholoma (e.g T. caligatum), but the upward-pointing stalk scales and swollen, subterranean base (cecidium) is unmistakable.

**Research Needs:** Geographic distribution, Phenology, Phylogenetic analysis, Population and trends

**More Information:**
Squamanita umbonata (Sumst.) Bas, Persoonia 3: 334 (1965)
"Squamanita contortipes, the Rosetta Stone of a mycoparasitic agaric genus.", by S.A. Redhead, J.F. Ammirati, G.R. Walker, L.L. Norvell, and M.B. Puccio.

# Celery Trich

## *Tricholoma apium* Jul. Schaff.

This rare mushroom has a widespread distribution from western North America to Europe and Russia. Here in the Northeast, it is likely overlooked largely because it looks very much like other common Tricholomas, yet has an unmistakable odor of celery! Some varieties have been described as smelling more like curry (think Lactarius helvus or L. camphoratus), and others like red hots! With such notoriety from the West to Europe, we need to determine if it is as rare in the East as it is elsewhere!

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Published**

IUCN Fungal Red List Catagory: **Vulnerable**

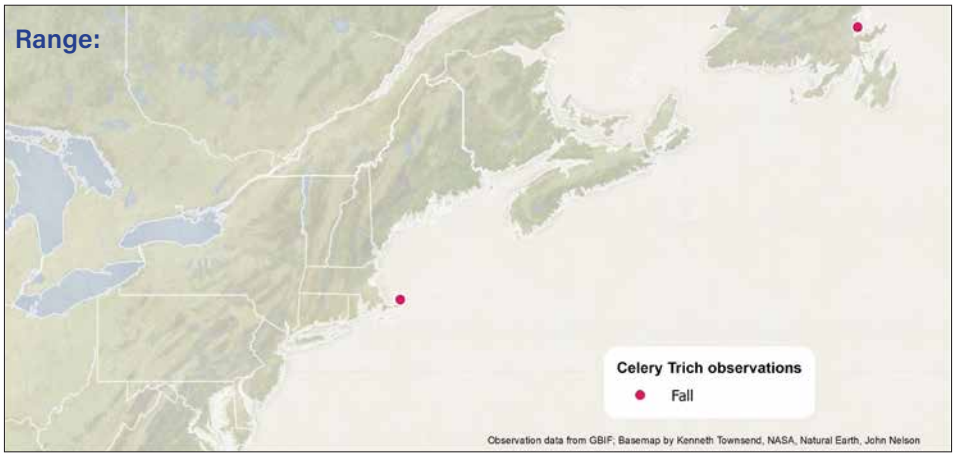
**Threat:** Listed as Vulnerable.

Photo: Drew Parker

Photo: Noah Siegel

**Description**
This medium to large Tricholoma is true to its name by being fibrillose throughout, with matted whitish to brownish fibers on the cap that cracks in age, and bands of whitish to brown fibers on the equal to somewhat clavate stalk. The margin is inrolled even into maturity, the gills are adnexed-sinuate, pale whitish to yellowish and eroded in age; the stalk often has floccose scales that are whitish and stain slightly reddish-brown. Although this describes several look-alike species, none have the odor of this mushroom!

**Fun Fact:** The epithet 'apium' means celery in latin and refers to its strong odor.


**Phenology and Potential Range:** West Coast and European records list occurrences from late July to December in coniferous woods; our small list of Northeast records are from late September to October.

Photo: Rick Van de Poll

**What Else Could It Be?**
Tricholoma imbricatum can have similar colors and a cracked cap, but does not have the same odor; T. sulphurescens is similarly light colored and floccose-fibrillose when young, but has a farinaceous to coal-tar odor and yellows in age; T. columbetta is similarly pale when young but farinaceous in taste and odor; finally, T. serratifolium has more of a gray tint, lacks the celery odor and is less fibrillose.

**Habitat:** In soil under conifers, including hemlock, Douglas-fir, red pine, pitch pine, and norway spruce; typically occurs in groups or small clusters.

**Research Needs:** Geographic distribution, Phenology, Population and trends, Habitat preference, Threats

**More Information:**

Brandrud T.-E. (2015). "Tricholoma apium". The IUCN Red List of Threatened Species (2015). doi:10.2305/IUCN.UK.2015-4.RLTS.T79515478A79515482.en.
Bessette, Alan, Arlene R.Bessette, William Roody, & Steven A. Trudell. 2013. Tricholomas of North America, A Mushroom Field Guide. Austin: University of Texas press. pp. 177, 186
Tricholoma apium Jul. Schäff., Zeitschrift für Pilzkunde: 65 (1925)

# Heavy Trich

## *Tricholoma grave* Peck

This mushroom has only been collected a couple of dozen times since its initial type collection by Charles Horton Peck in 1893 on Long Island. All but a handful of the collections are from the Northeastern U.S. and Canada. 2021 appears to have been a 'resurrection year' for this fungus, as it has been collected as many times this year (8) as has been collected since 1916! Given its obvious size and weight (grave means 'heavy'), and extremely foul odor, it would have likely been noticed among the thousands of species collected in the Northeast this past century. CAN YOU HELP US UNDERSTAND WHY??

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Under Assessment**

IUCN Fungal Red List Catagory: **Rare**

**Threat:** Listed as Under Assessment.

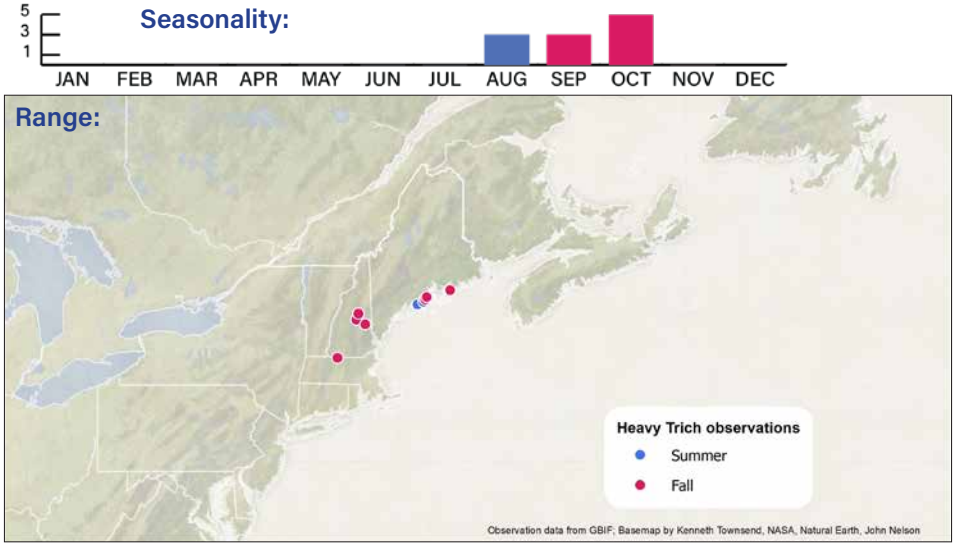
Photo: Rick Van de Poll

Photo: Rick Van de Poll

### Description

Like most Tricholomas, it is white spored and has adnexed gills. Unlike most Tricholomas, it has very broad, widely spaced gills. Its colors range from pale tannish brown to rich peachy brown. It can be smooth to slightly scaly on the cap with a darker disc. The most remarkable feature, however, is its very foul odor! T. grave will look like an emergent potato when it first comes up! The unfolding margin will be slightly involute, but will soon expand into a somewhat wavy and even edge. The attenuating stalk, foul odor, and robust nature of this mushroom are diagnostic.

**Fun Fact:** This mushroom is so dense that it will actually be visible on the ground after the snow has melted away!




**Phenology and Potential Range:** The Heavy Trich has been recorded from northern Quebec to central New York to southern New Jersey. It has been recorded to occur with oak, hemlock, beech, and pine in mixed woods. It appears that it can be locally uncommon since many records have occurred within a few miles of each other.

Photo: Rick Van de Poll

### What Else Could It Be?

There are a number of large Tricholomas in the Eastern U.S. and Canada but none typically get so large and have an overall peachy brown color. Tricholoma zelleri and T. focale have distinct ring zones on the stalk and generally darker colors. Russula compacta and some Lactarius spp. may appear similar at first glance, but their brittle flesh is quite different than the fibrous flesh of this Tricholoma. Leucopaxillus has adnate to decurrent gills that are much closer, as do Clitocybe and Melanoleuca. Plus, don't forget to smell it!

**Habitat:** The Heavy Trich is known to occur in fairly young to mature mixed woods with oak, hemlock, beech, and pine. It does not seem to be mycorrhizally tied to any particular species of tree, and may in fact, only occur in younger mixed woods that are in an aggrading state, much like some of our rare orchids. Soil requirements are acidic to sub-acidic loamy sands to sandy loams, which are well-drained but moist.

**Research Needs:** Geographic distribution, Phenology especially what weather conditions trigger a 'good year', Population and trends, Habitat preference, Threats.

**More Information:**

Baroni, Timothy J. 2017. Mushrooms of the Northeastern United States and Eastern Canada. Portland, OR: Timber Press. pp. 105

Bessette, Alan, Arlene R.Bessette, William Roody, & Steven A. Trudell. 2013. Tricholomas of North America, A Mushroom Field Guide. Austin: University of Texas press. pp. 177, 186

# Fluted Stalk Fungus

## *Underwoodia columnaris* Peck

With the look of an elfin saddle without the saddle part Underwoodia columnaris is really an oddity among the mushrooms. It has been found only a few times in the more than 130 years of it being recognized, and not much is known about it, not how it lives (is it saprotrophic?) nor what forest type it likes best.
It even does not have a common name! (The one given is made up!)

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Not Proposed**
IUCN Fungal Red List Catagory: **Rare**
**Threat:** Unknown.

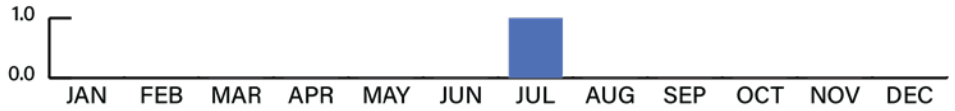

Photo: Rodger Heidt


Photo: Rodger Heidt

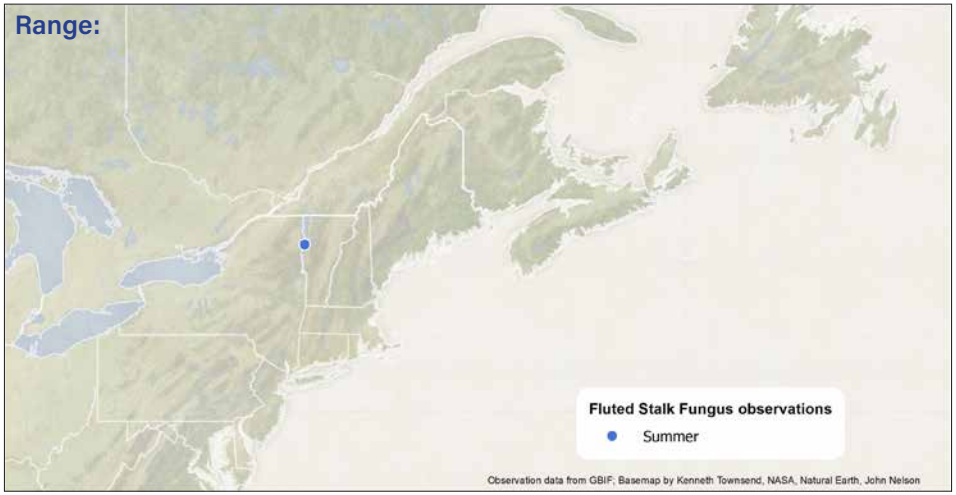
**Description**
The white columns of Underwoodia often grow in clusters and turn a bit brownish when they age. The surface is grooved lengthwise and actually covered with the tissue that forms the spores. They stand up to 4 inches high, and are at most an inch in diameter; they are narrow at the top, and there the column can look a bit ragged or un-finished as if someone has taken a bite out of it.

**Fun Fact:** As a false morel, Underwoodia appears to be 'capless,' however, spores are borne on the surface of the apparent stem.

**Seasonality:**




**Range:**




**Phenology and Potential Range:** Underwoodia has been found occasionally, from Manitoba to Virginia, and from Michigan to New York and Vermont, but recent finds are spotty and years apart. Which types of forest it frequents is not known yet, although it has been found under hardwoods and in mixed woods.


Photo: Rick Van de Poll

**What Else Could It Be?**
The white elfin saddle, Helvella crispa, which actually is a close relative, looks a bit like it, but it has a white convoluted cap on top of the stem and the spores are formed on the cap, not on the stem as in Underwoodia. The Abortive Entoloma (Entoloma abortivum) forms a white blob, and not a distinct, grooved stem-like Underwoodia.

**Habitat:** On soil under hardwoods or in mixed woods.

**Research Needs:** Phenology, Population and trends, Habitat preference, Threats

**More Information:**
Underwoodia columnaris Peck, Annual Report on the New York State Museum of Natural History 43: 78 (1890)
Lincoff, G. 1981. The Audubon Society Field Guide to North American Mushrooms. New York: Alfred Knopf.

# Piggyback Pinkgill

## *Volvariella surrecta* (Knapp) Singer

A mushroom growing out of another mushroom, balancing with its cup on top of the cap of a big Clitocybe: that is the Piggyback Pinkgill. Rarely encountered, but its hosts are not rare at all. One wonders under which conditions or in which forest type this mushroom can attack its host, and whether there is a pattern to its occurrence. Another unknown is its true identity: is it the same as its European namesake?

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Not Proposed**

IUCN Fungal Red List Catagory: **Rare**

**Threat:** Unknown.

Photo: Tom Bigelow

Photo: Matt Pulk

**Description**

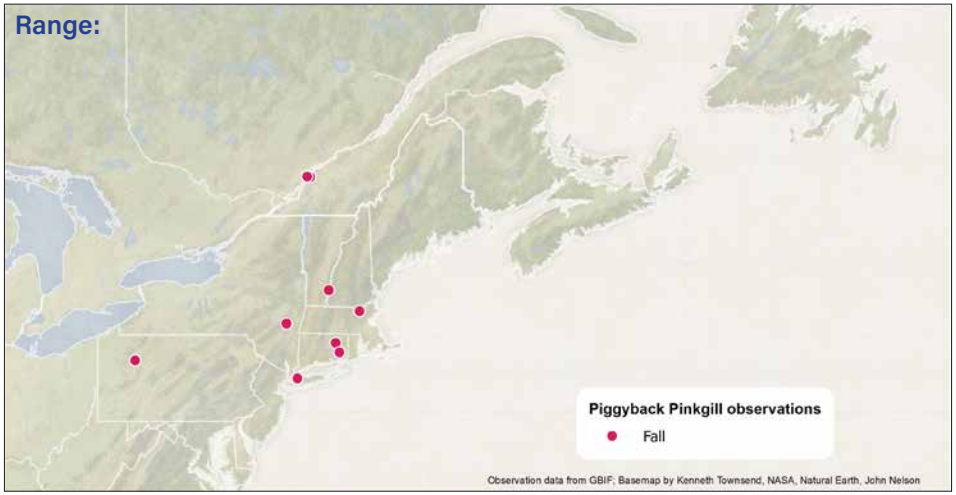
This mushroom has a white silky domed cap that is up to 2 inches wide, with crowded gills that turn pink when the spores mature, and a white stem 1–3 inches tall growing out of the white basal cup (volva in technical terms). Very young ones look like small white balls stuck on the cap of a Clitocybe.

**What Else Could It Be?**

The Parasitic Psathyrella also grows on mushrooms, but its host is a Shaggy Mane mushroom that has been turned into an amorphous clump. The parasite looks a bit like the Piggyback Pinkgill, but has blackish spores and gills, and lacks the cup at the base of the stem. Both species participate in this Northeast rare species challenge!

**Seasonality:**


**Range:**




**Phenology and Potential Range:** This Pinkgill species grows piggyback on Clitocybe mushrooms; Clitocybe robusta and C. nebularis (Cloudy clitocybe) have been seen sporting the Pinkgills. The host fruit bodies look a bit different than their non-infected neighbors, but they are still recognizable as Clitocybes. The hosts are not rare, and occur throughout the Northeast in all kinds of forests during the summer and fall.

Photo: Garrett Taylor

**Habitat:** This species will occur wherever its host species grow, which includes mixed mesic forests of the Northeast, particularly those with deep leaf litter and humus soil layers.

**Fun Fact:** 'surrecta' means to rise, referring to this mushroom's ability to rise up above the ground by piggybacking on another!

**Research Needs:** Geographic distribution, Phenology, Phylogenetic analysis, Population and trends, Habitat preference, Threats

**More Information:**

Volvaria surrecta (Knapp) Ramsb., Transactions of the British Mycological Society 25 (3): 328 (1942)
Volvariella surrecta (Knapp) Singer, Lilloa 22: 401 (1951)

# Stalked Cauliflower Fungus

## *Wynnea sparassoides* Pfister

There are few mushrooms that are famous for their rarity, yet the Stalked Cauliflower Fungus is one! Widely known among Northeast mycologists as a rare species - only a handful have ever seen one let alone collected one - this unmistakable fungus presents a unique shape as a 'stalked brain!' The overall pale to dark brownish coloration and deeply rooting stalk will separate this from anything else, and its tennis ball to softball size makes it fairly visible for our avid mushroom collector community.

For a full species description please visit https://fundis.org/protect/northeast

Assessment Status: **Preliminary Assessed**

IUCN Fungal Red List Catagory: **Near Threatened**

**Threat:** extremely rare and listed as 'Near Threatened' by the IUCN; only 5 good records for the Northeast since 1977 when it was first described.

Photo: Zaac

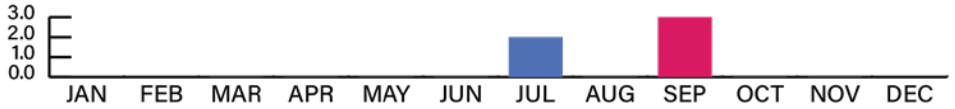
Photo: Adam Borin

**Description**

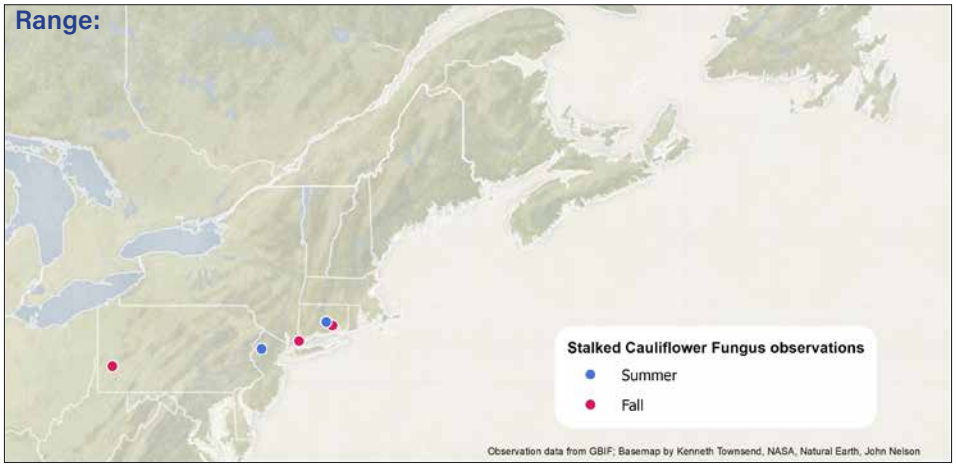
A 2 - 4" high mass of convoluted, brain-like tissue sits atop a 3 - 6" long, tapering rooting stalk, all of which is pale brownish to start and darkens in age, with some reddish-brown overtones as it dries out; the round to oblong mass of fertile tissue is made up of numerous, clustered apothecia where large elliptical spores are shot off. The base is typically rooted deep in hardwood leaf litter and the mushroom is typically well-camouflaged and hidden in the litter unless dug up by rodents!

**Fun Fact:** "sparassoides" means 'like Sparassis,' which refers to its closest look-alike, the Cauliflower Fungus; also, KOH will yield a magenta red reaction on the fertile flesh!

**Seasonality:**




**Range:**




**Phenology and Potential Range:** All known observations of Wynnea sparrasoides have occurred between mid-July and the end of September; records are scattered from North Carolina to Ohio to Connecticut, with nothing north of 41.5 degrees latitude. Habitat is hardwoods or mixed, mesic to sub-hydric woods in deep leaf litter, often near streams.

Photo: Alex Barnard

**What Else Could It Be?**

The Cauliflower Fungus (Sparassis crispa, etc.) has open, leaf-like folds and 'petals' that are fertile on the undersides; morels are more conically shaped and lack the long rooting process at the base.

**Habitat:** Bueg, Bessette and Bessette lists its occurrence as "solitary on soil under leaf litter," a fairly innocuous description that befits about a thousand different northeastern fungi. What its real association is with certain soil types and other fungi is unknown.

**Research Needs:** Geographic distribution, Phenology, Population and trends, Habitat preference, Threats

**More Information:**

Beug, Michael, Alan Bessette, and Arleen Bessette. 2014. Ascomycete Fungi of North America, a Reference Guide. Austin: University of Texas Press.
Wynnea sparassoides Pfister, Mycologia 71 (1): 153 (1979)

# Fungal Diversity Survey

## Northeast Rare Fungi Challenge

## 2022 Target Species

- northeast_rare@fundis.org
- fundis.org/protect/northeast
- www.inaturalist.org/projects/
  fundis-rare-fungi-challenge-northeast