

QUEENSLAND'S STINKHORNS



Mutinus boninensis,
courtesy Megan Prance.

QUEENSLAND'S STINKHORNS

Vanessa Ryan¹ and Susan Nelles²

Queensland Mycological Society

¹PO Box 182, Indooroopilly Qld 4068, Australia, wyvern@bigpond.net.au;

²7 Tintagel Ct, Alexandra Hills Qld 4161, Australia, zefarella@icloud.com

Introduction

Stinkhorns come in an amazing variety of bizarre shapes and bright colors. Even though they look so very different from one another, they all have a few things in common. Like other fungi, the main stinkhorn organism looks like a mass of fine, pale-colored threads growing through mulch or leaf litter, or sometimes even manure. However, when a stinkhorn is ready to reproduce, it grows an “egg.”

On the outside, this egg looks like a puffball. It is usually whitish in color and has rootlets called rhizomorphs at the base. On the inside though, a stinkhorn egg is quite different from a puffball, consisting of two or three layers of a soft, jelly-like material. The brownish-colored inner layer is the spore-mass (the gleba) and the baby stinkhorn forms within or around this gleba. When it's ready, the egg splits apart and the mature

stinkhorn's fruiting body, the receptacle, emerges. The receptacle carries the thick, wet and slimy gleba with it out of the egg, exposing it to the air. The remains of the egg become a volva, which cups the base of the receptacle for the remainder of the fruiting body's life.

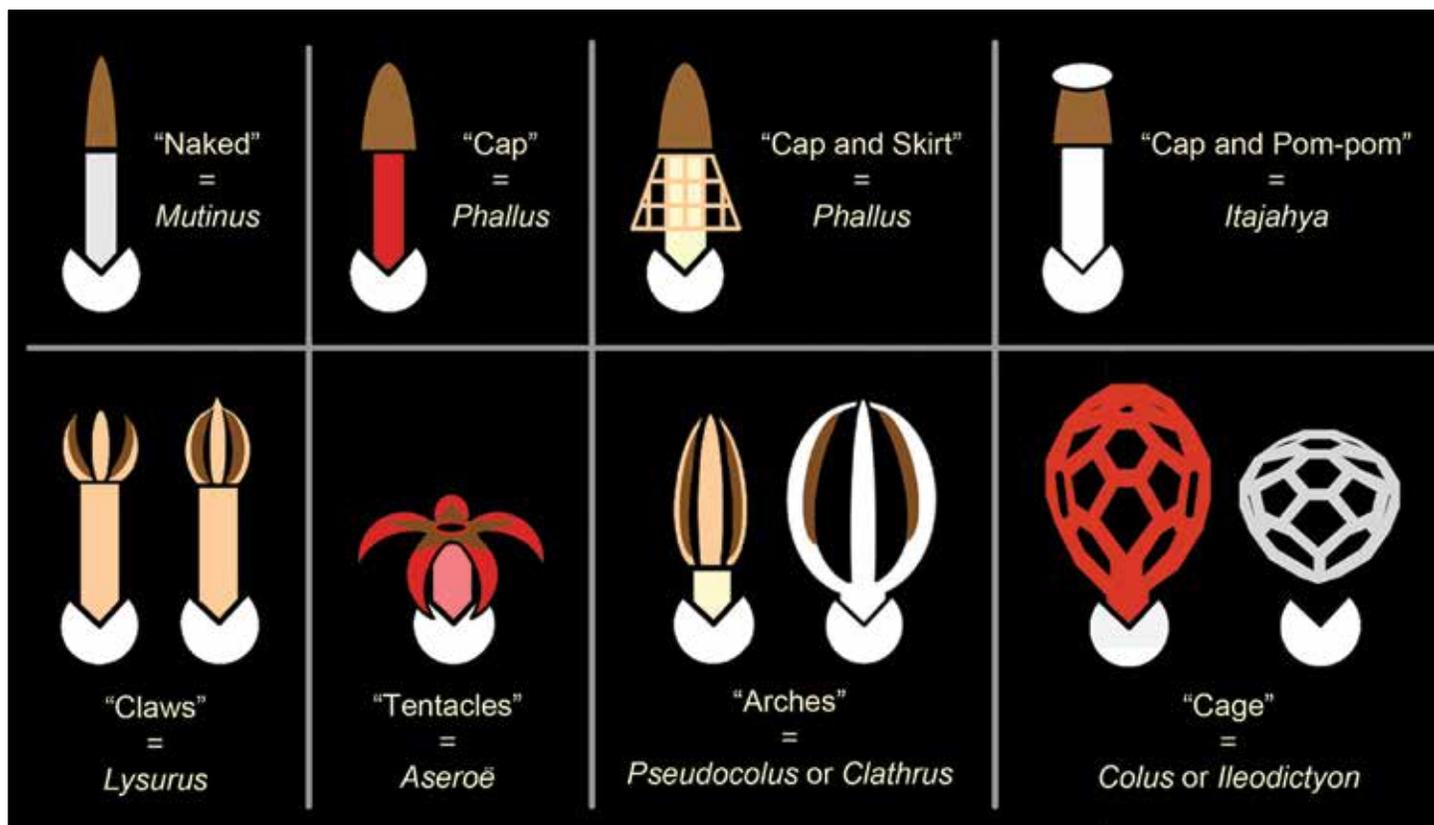
Different types of stinkhorn carry their gleba in different ways. Some carry it directly on their stipe, others carry it on a cap, while others still hold it in their “arms.” The gleba has a very strong smell—usually of rotting meat or feces—and so, it is this ripe, smelly gleba that gives the group its common name of “stink” horn. The origin of the “horn” part of the name is also quite obvious when you see a *Phallus* species ...

The smell of the gleba and the bright color of the receptacle attracts insects, usually flies. The gleba sticks to the flies' bodies, much like a flower's pollen sticks to bees, to be carried away and eventually dispersed. The flies also eat

the gleba and with it the fungus spores. The spores aren't digested, but are passed in the fly's excrement. So, the insects disperse the fungus spores in this second way, along with some fertilizer to possibly help them grow.

Stinkhorn spores all look pretty much the same—fairly cylindrical with a smooth surface. Some scientists think that this is so the spores can pass quickly and easily through an insect's gut. In comparison, the spores of other gasteromycetes, which might rely on wind for dispersion, are usually round and covered with spines to help them catch the air.

Most stinkhorns can be classified in the two main families of the order Phallales. These are the Phallaceae, which are the simple phallic-shaped stinkhorn species; and the Clathraceae, the “cage” stinkhorns, also known as the stinkhorns with “arms.” However, some authors do not recognize Clathraceae as



Simple stinkhorn shapes, courtesy Vanessa Ryan.



Phallus rubicundus, courtesy
John Van de Geyn.



Phallus indusiatus, courtesy Paul Vallier.

Phallus indusiatus egg, courtesy Paul Vallier.



Phallus indusiatus, courtesy Paul Vallier.

a valid family and place those stinkhorns with Phallaceae. For the convenience of description we are using the two families here.

The state of Queensland in Australia currently has 19 known species of stinkhorn. The following will help you to identify them.

Phallaceae

Even though they have a considerable variation in color and size, the Phallaceae stinkhorns are unmistakable by their basic phallic shape. They occur throughout the year in Queensland, singly or in groups, and you can often smell them before you see them. In Queensland, we have three genera from this family: *Mutinus*, *Phallus*, and *Itajahya*.

1. The “naked” species

Mutinus species are small, slender stinkhorns. The gleba seems to be a continuation of the stipe and this spore mass extends up to cover the tapered, conical top. There is not enough reliable information to give a description of *M. boninensis*, *M. borneensis*, and *M. curtus* which are said to have been found in Queensland.

2. Species with a “cap”

All three *Phallus* species have a pileus—the cap which at first has the slimy, smelly gleba, or spore mass on it. *Phallus rubicundus* has a bright red cap and stipe.

3. Species with a “cap” and a “veil”

Phallus indusiatus and *P. multicolor* also have an indusium—a net-like veil which hangs like a skirt around the stipe and



Phallus multicolor, courtesy Paul Vallier.



Phallus multicolor, courtesy John Van de Geyn.

falls away as it matures. You can tell the two species apart by their color.

4. One species has a “pom pom” on its cap

Itajahya galericulata—the cap has a “wig-like” appearance and often appears black after the gleba is gone. Remnants of the volva sometimes remain attached to the cap. On top of the cap is a fluffy white ruffle or pom-pom like structure called the calyptra. It is comprised of fine, white lamellate plates.

Clathraceae

Some of the Clathraceae look like real monsters! They have to be some of the strangest-looking fungi there are. However, you can use their weird shapes to help identify them fairly easily. As with the Phallaceae, there are four basic shapes to remember.

1. “Claws”

The first shape is a longish stipe topped by some short and upright arms that look a little like claws. These claw-like arms might be standing free from each other, or they might be curved inwards and joined together at the tips, forming a “lantern” shape. One of the common names for this sort of stinkhorn is, actually, the “lantern fungus.” We have three species of “clawed” stinkhorns in Queensland and they all belong to the genus *Lysurus*: *L. cruciatus*, *L. gardneri*, and *L. mokusin*.

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Lysurus mokusin and fly,
courtesy John Van de Geyn.

Itajahya galericulata,
courtesy Dianne Clarke.



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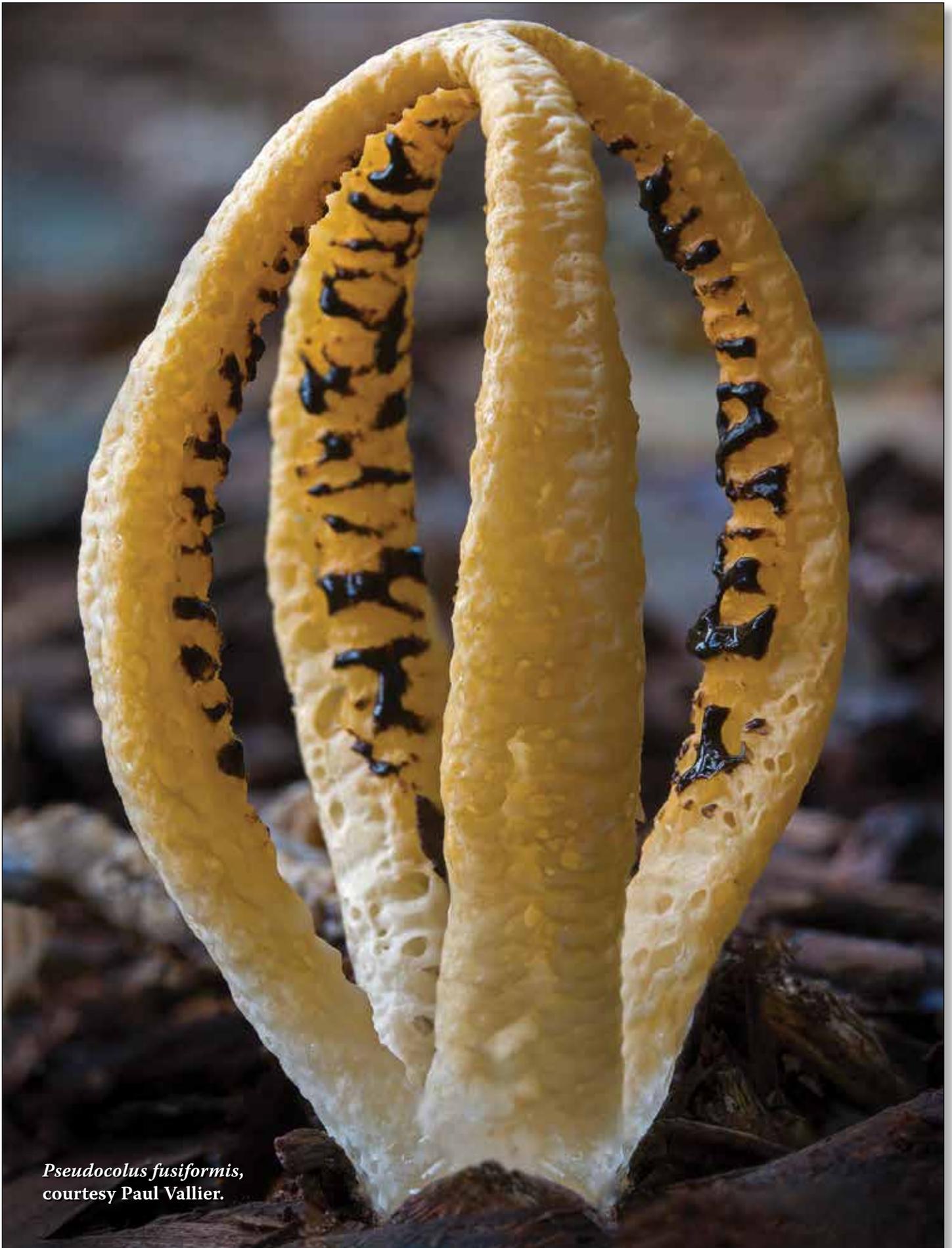
Lysurus mokusin eggs,
courtesy John Van de Geyn.



Lysurus mokusin,
courtesy John Van de Geyn.



Aseroë rubra,
courtesy John Van de Geyn.



Pseudocolus fusiformis,
courtesy Paul Vallier.

Clathrus sp., courtesy
Vanessa Ryan.



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2. “Tentacles”

The second shape to remember is, we think, a natural progression from the first. The stipe is shorter and the arms are longer—they now look like tentacles. The arms spread out horizontally from the stipe like the rays of a star. The arms might also be forked—one “tentacle” splitting into two. We have only one genus in Queensland that fits this shape: *Aseroë*. These are the “starfish fungi” and, with their outspread, long tapering arms, they really do look a lot like starfish. We have two species of *Aseroë*: *A. arachnoidea* and *A. rubra*. You can tell the two apart by their color and,

more importantly, whether or not the arms are forked.

3. “Arches”

This third shape is, again, a natural progression from the first and second shapes. The long arms of these fungi are joined together at the tips, forming large arches. In Queensland, we have two genera with this shape. The first genus is *Pseudocolus*. We have two species in Queensland: *Pseudocolus fusiformis* and *P. garciae* and, again, the species can be told apart by their color. Queensland’s second “arched” stinkhorn has not yet been formally described. It is a white-colored *Clathrus* species, similar to *Pseudocolus* in appearance but the arms

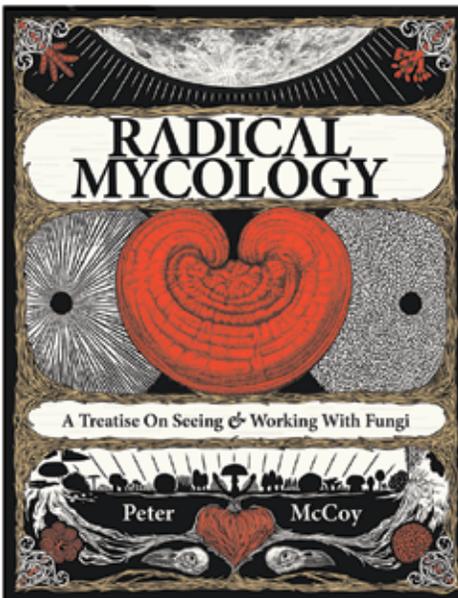
may also branch a little.

4. “Cages”

The fourth and final shape to remember is the most complicated. Where there may be some branching of the arms in our third shape, these fungi have taken it to the extreme. Their arms branch and join repeatedly to form a complicated clathrate or “lattice-like” structure. It is this group from which the Clathraceae originally took their name. They are commonly known as the “cage” fungi. Queensland has two genera of cage fungi. The first of these genera is *Colus*. These fungi come in a range of bright colors, from a yellowy-orange or pink, through to a rich red. They have a short

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Ileodictyon gracile, courtesy Michael Jefferies.



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Colus pusillus, courtesy
Lyndon Kurth.

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stipe, sometimes hidden by the volva. Queensland is home to two species, *Colus hirudinosus* and *C. pusillus*. The species can be told apart by the size of their apex meshes.

If you find a white-colored cage fungus, you have found an *Ileodictyon*. This is our second genus of cage fungi. There are only two described species of *Ileodictyon* in the world and Queensland is lucky to have both of them: *I. cibarium* and *I. gracile*. *Ileodictyon* species usually don't have a stipe and can come free from the volva when fully expanded.

Conclusion

Queensland is fortunate in that it has quite an array of stinkhorn species. They come in many different shapes and colors, but they all grow from an egg and they all carry a smelly and slimy gleba on an exposed surface.

According to The Dictionary of the

Fungi (Kirk et al, 2011), there are 21 genera and 77 species of stinkhorns worldwide. As with many other kinds of fungi, not much is known about stinkhorns and there are probably many more species out there that haven't yet been described.

Some stinkhorn species have been introduced to other countries through the importation of mulch and compost. We need to be aware of how quickly and easily these species can become naturalized. Also, some other states of Australia have stinkhorn species that haven't yet been officially recorded in Queensland. They might be here, we just haven't found them yet.

So, the next time you collect a stinkhorn, please try to record as many details of the fresh specimen as you can. Shape, size, color and internal structure (tubes or cells?) are all important things to note down. And, you never know, as with the recent discovery of the white

Clathrus, you might even have the luck to find a new species!

Reference Cited

Kirk, P.M., P.F. Cannon, D.W. Minter, and J.A. Stalpers (eds.). 2011. *Ainsworth & Bisby's Dictionary of the Fungi*. 10th ed. Croydon, UK: CABI International; 771 pp.

Additional information

The Queensland Mycological Society's website has a key, stinkhorn poster and species descriptions that you can download for free.

Stinkhorn key: <http://qldfungi.org.au/resources-2/fungi-keys/fungi-key-queenslands-stinkhorns>

Poster: <http://qldfungi.org.au/wp-content/uploads/References/Downloads/Queensland-Stinkhorns-Poster-2017-A3.pdf>

Species descriptions: <http://qldfungi.org.au/wp-content/uploads/References/Downloads/Stinkhorn-Species-Descriptions-2017.pdf> 📄

Colus pusillus, courtesy
Wayne Boatwright.

