



IN PURSUIT OF HYPOGEOUS MUSHROOMS

— TRUFFLES & FALSE TRUFFLES

by *Britt Bunyard*

It's quite likely that you are familiar with truffles already. They are the object of desire to many gastronomes and their pursuit rises to fever pitch about this time of the year, every year, in parts of Europe and the Pacific Northwest. Plucked from the soil, these ripe, fragrant (smelly to some), underground nodules are found on the roots of their symbiotic host tree. Experts know exactly when and where to look. The most sought after, most legendary species of truffles belong to the genus *Tuber*, mycorrhizal fungi in the class Ascomycota (also known as the Ascomycetes). There are other truffles as well. Two great sources for information on truffles are the Truffle Issue of FUNGI we published a few years back (vol. 1, no. 3), which covers truffles from all over the world, and the *Field Guide to North American Truffles* (Trappe et al., 2007).

No matter how knowledgeable of truffles you are, it's likely you're completely unfamiliar with false truffles. Members of this group of hypogeous (underground) Basidiomycetes are all but unknown by most, including the most ardent mycophiles.

To find truffles and false truffles,

knowledge of their tree hosts is helpful, but so is knowledge of what *they* play host to. Very often, you will find hypogeous fruitbodies by noticing another fungus—a parasite of the subterranean truffle—that forms a visible above ground mushroom-like sporocarp. Cool huh? Read on.

Focus on False Truffles

While truffles are the underground fruitbodies of certain ascomycetous fungi, false truffles analogously are the underground fruitbodies of basidiomycetous fungi. Some, including THE North American expert on truffles, James Trappe, consider all hypogeous fungal sporocarps to be truffles. It doesn't matter that much, as long as we know what we're talking about. Frankly, the fungus doesn't care one way or the other what we think.

As with truffles, false truffles are spore bearing and need to get their spores



Elaphocordyceps capitata parasitizing *Elaphomyces granulatus* (Deer Truffle) in eastern Pennsylvania. Note the very thick peridium in the close up. Photos courtesy S. Hamilton.

aboveground for dissemination. They typically produce strong odors to attract rodents and other mammals that dig them up, consume them, and spread their spores in their feces. (As is the case with truffles.) Those strong pheromonal odors are what drive humans to pursue truffles. While no false truffles are sought with the same fervor as their ascomycete doppelgangers, many are



Darvin DeShazer rakes soil beneath Douglas fir for *Rhizopogon* (right) false truffles in Sonoma County, CA. Photos, B. Bunyard.

indeed quite palatable (again, consult Trappe et al., 2007). Be forewarned that many are inedible; some even considered toxic. And it stands to reason: false truffles are underground fruitbodies of several groups of mushroom producing fungi (for review, see Bunyard, 2008). For example *Thaxterogaster* is a close relative of *Cortinarius* which is notorious for several quite toxic mushroom species, thus *Thaxterogaster* species are best avoided. *Macowanites* is more like a sequestrate mushroom (see image), a mushroom that's on its evolutionary way to becoming a false truffle; its relatives lie with the Russulas and it is considered edible but insipid. It occurs in the Pacific NW from Oregon, north through Alaska. If any false truffles are actively pursued, it's the genus *Rhizopogon*. Species of *Rhizopogon* are numerous, relatively easily found, and probably the best known of all false truffles (see images). Some are even considered palatable (Trappe et al., 2007), which seems reasonable—their closest relative are boletes of the genus *Suillus*.

False truffles (and true truffles) range across North America and are ectomycorrhizal with a wide assortment of trees. So, pretty much anywhere you have enough moisture for trees, it is likely you will find false truffles. Your best bet is to consult the *Field Guide to North American Truffles* then find a garden rake, pull back the duff from



Macowanites luteolus from Vancouver Island, British Columbia. Collected and displayed by Oluna Ceska. Photo, B. Bunyard.

beneath your tree and rake the soil down a couple of inches. Truffles and false truffles both will range from pea-sized to golf ball-sized to even larger for some Pacific NW truffles like *Leucangium*. Alternatively you can seek out fungal parasites. Probably the best known is

Elaphocordyceps (formerly *Cordyceps*) *capitata* which is an ascomycete parasite of the truffle *Elaphomyces*. (That's right: *Elaphomyces* are true truffles, so in this case it's asco-on-asco action!) *Elaphocordyceps capitata* appears as an upright club-shaped fruiting body with a distinct "head." The fruiting body will be attached to the truffle just below the soil surface or maybe even several inches deep. *Elaphomyces granulatus* (the Deer Truffle) is considered the most widely ranging of all truffles and occurs with a number of conifers and hardwoods from all across North America (especially common in the northern climes), according to Trappe et al. (2007). Notable features of the Deer Truffle are its very thick, leathery peridium (the outer "rind" of the truffle, see image) and its inner spore mass which is powdery upon maturity (none of these characteristics make it palatable on anyone's list). Its parasite is not commonly seen but fairly well known from the Northeast and Pacific Northwest. And if you do find one, with some careful digging, you'll add *two* species to your mushroom list!

References Cited

Bunyard, B.A. 2008. Truffles and false truffles: a primer. *Fungi* 1(3): 15-18.
 Trappe, M., F. Evans, and J. Trappe. 2007. *Field Guide to North American Truffles*. 10 Speed Press, Berkeley; 136 pp. 🐿