OMPHALINA

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Newsletter of FORAY NEWFOUNDLAND AND LABRADOR
Vol. VII, No 6
Aug. 26, 2016

FORAY NEWFOUNDLAND AND LABRADOR

is an amateur, volunteer-run, community, not-for-profit organization with a mission to organize enjoyable and informative amateur mushroom forays in Newfoundland and Labrador and disseminate the knowledge gained.

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OMPHALINA, *newsletter of Foray Newfoundland & Labrador, has no fixed schedule of publication, and no promise to appear again. Its primary purpose is to serve as a conduit of information to registrants of the upcoming foray and secondarily as a communications tool with members.*

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seened AT *gmail* DOT *com*,

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COVER

Fomitopsis ochracea, seen a few weeks ago on the Tranquility trail, Northwest River, Labrador—one of the trails for our upcoming foray. The little man will still be there, clutching his little welcome sign, but will have scorched feet if more tourists come around with matches or lighters. Story inside.

Photo: Lawrence Millman.

The white, green and blue for the cover are taken from the Labrador flag.

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CONTENT

Message from the Editor

As the hotfooted gent on the cover says,

WELCOME TO LABRADOR!

This is your last issue before the Foray. As always, we begin with Foray Matters: the president's exhortations, then Larry Millman's report of a trip at the end of July to Northwest River (a place we shall visit during the Foray) and Rigolet (a place we shall not visit). Thanks to Larry, you get a preview of the species that began to peek out at that time. By the time we get there, there should be plenty more. Like the *Amanita wellsii* shown in the title banner of the president's message, a very uncommon *Amanita*, but quite common around the base in Goose Bay.

If any of you remember Machiel Noordeloos from our 2005 foray, both at Gros Morne and Labrador, maybe you want to collect dye mushrooms for him. He particularly asked for species of *Cortinarius*, section *Dermocybe* (*C. cinnamomeus, croceus, malicorius, semisanguineus*, etc.), which are not found in his native land. See p. 19.

Sorry to squeeze two things onto this page, but I learned of the Toronto mushroom book after this issue was put to bed. I was so impressed with this book that I wanted to let you know before the foray, so that you could download it and maybe use it to help you with some of your finds. Therefore, rather than write a more formal review in a later issue, I decided to introduce the book a little less formally now. Even sacrificed half my editorial to do it! The curt and casual approach was dictated by circumstance, coupled with my enthusiasm, not a lack of respect.

See you in Goose!

andrus

Book review

Andrus Voitk

FREE!!! http://myctor.org/u2m

For those of you new to mushrooms, here is good news. If you like help with knowing mushrooms, here is a fantastic deal: **Mushrooms of Toronto** is available for download FREE from <http://myctor.org/u2m>. Published with full funding from the City of Toronto, the book is available free of charge to any citizen of Toronto from a City library, and free online to anybody, anywhere. It was written by four members of the Mycological Society of Toronto, including Pat Burchell and Tony Wright, who have participated in our forays in the past.

You may wonder what **Mushrooms of Toronto** might have to offer to you as a Newfoundlander and Labradorean. First, a good amount of solid information about mushrooms, with all kinds of bonuses thrown in. Then, a relatively small number (88, plus) of really common mushrooms to get you started. They are well discussed, with good illustrations and mention of lookalikes. About 20% of species featured are not found here, but the majority are common here as well. For the beginner, an excellent book to start. And an example to emulate for our cities and governments.

Try it! Tony will be in Goose Bay in Labrador, so if you use the book, tell him what you think and let him take thanks back to his collaborators.

FORAY MATTERS…

Photo: Maria Voitk

Foray 2016 at Happy Valley-Goose Bay!

We are only a couple weeks away from the Happy Valley-Goose Bay foray, and preparations are in high gear. We are pleased to see a few end-of-season registrants as the deadline approaches. There are still spaces, so if you have been undecided, you have time to act. I should like to take this chance to remind participants of a few things.

If you have attended a previous foray, please do not forget your foray cap and whistle. These are safety equipment that make it easier for us to keep track of everyone and reduce the risk of getting lost during field trips. If you are with us the first time, cap and whistle will be provided.

Remember to bring a range of clothing; this time of year can be warm or cold, dry or wet, so pack for flexibility.

Registration:

4:00 PM, Friday, September 9. Sign-up desk at the Birch Brook Nordic Ski Club lodge

(about half-way between Happy Valley and North West River—20 minutes' drive). There you will receive your registration program and other information.

Reception:

6:00 pm. Christian Youth Camp (directly across the road from the Ski Club).

Remember, there will be some copies of the new lichen book available at a good price. Unfortunately, Andrus Voitk's photo show will be postponed due to logistic reasons.

We are looking forward to seeing everyone in Goose Bay!

Michael Burzynski

THE LURE OF LABRADOR FUNGI

Lawrence Millman

I went to Labrador in late July, which is more than a month before the prime fungal fruiting season. Or I should say that it's more than a month before the prime fruiting season of large, mycorrhizally disposed agarics. Other species—the ones that interest me the most—do not observe a prime fruiting season any more than they observe prime time TV.

Jacques Cartier called Labrador "the land God gave to Cain." If Monsieur Cartier had been more specific with his insult, he might have called it "the boreal forest God gave to Cain." The village of Northwest River, where I started my investigation, has a large number of deciduous trees in its boreal forest habitat. The greater the tree variety, the greater the variety of fungi, and on the **Tranquility Trail**, I found mycenas, *Spinellus fusiger*, three species of *Laccaria*, *Trametes versicolor*, *Fomitopsis rosea*, a *Clitocybe*, some mollisias, and a solitary *Suillus placidus*. Did I pop up at the wrong time? the *Suillus* seemed to ask.

As befits Labrador, the heath shrub Labrador tea was everywhere, with the result that the most common fungus was *Chrysomyxa ledicola*, a rust that forms irregular spots on the plant's leaves. This basidiomycete's alternate host is spruce needles, which it famously covers with an orangish goo. On at least one occasion, in Alaska, that goo was thought to be of extraterrestrial origin.

On another part of the Tranquility Trail, I led a foray sponsored by the Labrador Interpretation Center, and our group soon found a *Fomitopsis ochracea* whose identity I confirmed by applying a lit match to its margin. The margin charred,

Figure 1

whereas it would have melted if the species had been *F. pinicola*. As you can see from the cover photo, I came close to burning the feet of the little man seated on the polypore, welcoming you to Labrador.

Speaking of polypores, I found quite a few *Ganoderma applanatum*, but literally every one of them had an indoor substrate. This was because they'd all been painted with local scenes (Figure 1), thus making them craft objects. While some of those objects were attractive, none seemed to me as attractive as a living *Ganoderma* still affixed to its tree.

From Goose Bay, I took the Northern Ranger ferry on a seven-hour journey to Rigolet, a small community at the head of Hamilton Inlet. I suspect my footsteps were the first mycological ones ever to tread in Rigolet or on the Rigolet boardwalk (title banner), which, at 9km, is probably the longest boardwalk in the world.

The boardwalk in question wound through an iconic spruce forest, and as I walked along it, I realized that I was visiting the *Lachnellula* capital of the world. Almost every broken spruce branch was decorated with this genteel yellow cup fungus. Did I say genteel? Well, what else would you call a delicate little ascomycete that engages in the business of soft rot with a minimum of fuss?

In Rigolet, many people smoke, so there's always the possibility of mistaking a cigarette stub for a cup fungus, an LBM, or a lichen apothecium. Or vice versa. At one point I mistook the tan, wrinkled cap of a *Lichenomphalia umbellifera* for a tan, wrinkled cigarette stub. But there was no mistaking the

Figure 2

Figure 3

Figure 4

numerous fruiting bodies of *Trichaptum abietinum* for cigarette stubs, because, due to a recent rain, their fertile surfaces were a blatant purple.

A local woman who made baskets out of marram grass (*Ammophila* sp.) told me that black spots on the grass made it impossible to use. The phrase black spots inspired me to head down to the shore and study the grass. There the spots were *Lophodermium arundinaceum*. That this unassuming asco is a pathogen did not keep me from including it on my inventory of Labrador fungi.

Like the area around Northwest River, the area around Rigolet boasted very few relatively large fleshy fungal entities—I found only a single, relatively large fleshy fungus, *Laccaria nobilis* (Figure 2), and one large metallic would-be fungus (Figure 3). The former species was probably a harbinger of the size and shape of things to come in September. For now, however, I was perfectly content with, for instance, a multitude of *Gloeophyllum sepiarium*, one of which (Figure 4) proudly announced to me, “I’m every bit as handsome as a *Russula* or a bolete…”

Species List, Labrador, July 19–July 29; 1 = Northwest River, 2 = Rigolet

Anomoporia cf. myceliosa, 2
Athelia spp., 1, 2
Cerrena unicolor, 1
Chlorociboria sp. (stain), 1
Chondrostereum purpureum, 1
Chrysomyxa ledicola (on Labrador tea leaves), 1, 2
Clitocybe spp., 1
Collybia spp., 1
Dacrymyces chrysospermus, 1, 2
Dacrymyces stillatus, 1, 2
Discula destructiva (on bunchberry leaves), 2
Entoloma cf. strictius, 1,2
Exidia recisa, 1
Fomitopsis ochracea, 1
Fomitopsis pinicola, 2
Fomitopsis rosea, 1
Galerina uncialis, 2
Ganoderma applanatum (in craft shops), 1
Gloeophyllum protractum, 1
Gloeophyllum sepiarium, 1, 2
Hygrocybe spp., 2
Inocybe spp., 1
Inonotus obliquus (canker), 1
Laccaria bicolor, 1, 2
Laccaria laccata, 1, 2
Laccaria proxima, 1
Laccaria nobilis (on Eskimo Island), 2

Lachnellula cf. arida, 2
Lachnellula agassizii, 2
Lachnellula calyciformis, 1, 2
Lachnellula spp., 2
Lachnum virgineum, 1
Lichenomphalia umbellifera, 2
Lophodermium arundinaceum (on marram grass), 2
Lophodermium spp. (on black spruce needles), 2
Loreleia postii, 2
Lycogala epidendrum (slime mold), 1
Lycoperdon cf. gemmatum, 1
Marasmius spp., 1,2
Mollisia cinerea, 1,2
Mollisia leucotricha, 1, 2
Mycena alcalina, 1, 2
Mycena spp., 1
Orbilia cf. delicatula, 2
Orbilia inflatula, 1, 2
Phellinus spp., 1
Plectania spp., 1
Rhizopus stolonifer (on pita bread in Northern Store), 2
Rhodocollybia butyracea, 1, 2
Rickenella fibula, 2
Spinellus fusiger, 1
Stereum complicatum, 1
Stereum rugosum, 1, 2
Stereum sanguinolentum, 1, 2
Suillus placidus, 1
Trametes versicolor, 1
Trichaptum abietinum, 1, 2
Tyromyces chioneus, 1, 2
Xeromphalina campanella, 1,2

Do slugs spread chaga?

Andrus Voitk, with help

As anybody who has read Omphalina knows, chaga (*Inonotus obliquus*) is fairly common around here, but its fruit body is a very rare sight. After years of tromping our birch woods, I finally saw the fruit bodies in the winter.[1] As with so many things, once noticed, they seemed to become more frequent.[2] My explanation for seeing them then, was that maybe I saw late fruiters, preserved by the frost. This theory accepts the observation that these fruit bodies are very ephemeral, quickly consumed by various invertebrates. Onset of frost may slow or eliminate the invertebrates, leaving the fruit body exposed for discovery, made easier by the absence of leaves.

The corollary to that story is that the invertebrates, rather than the wind or other agent, must be the vectors of spore spread. After all, if the spores were spread by the wind, wouldn't the fruit body have some better invertebrate disincentives, so it could release its spores in peace for some time? If somebody eats the fruit body almost immediately, then surely this same somebody must be the vector for the spread of spores. Hence, some attractant in the fruit body must be the mechanism to entice the invertebrates to the table, where they are recruited as vectors.

Britt Bunyard, known to most mushroom people because he was a member of the Foray Newfoundland & Labrador faculty in 2007 and 2010 (and to some as the editor of FUNGI), recently published an account of a beetle, *Orchesia cultriformis* (Figure 1), found eating the fruit body of *I. obliquus*.[3] On dissection, both adults and larva had their entrails full of chaga spores, the first report on this continent of a putative insect vector for chaga. But surely this beetle cannot do the job all alone? Who else helps it?

Figure 1. *The many faces of* Orchesia cultriformis, *a bark beetle found by Bunyard to eat chaga and its spores. The first known putative insect vector for chaga spores on this continent. Photo: Britt Bunyard.*

This year I found the first chaga fruit body during the regular season (title banner of successively closer photos). The fruit body had several gnawed out areas, most of the rest being covered by a healthy covering of slime. In some places the slime was spread in trails, as one sees with slugs, whereas in other areas it covered the pore mouths in wide sheets, as illustrated. Could this be from slugs?

The first reactions to enquiries about the possible source of the slime suggested that it was secreted by tree or fungus. The tree we can reject out of hand—it was dead, its top already broken off. As for the fungus, this seems equally unlikely. First, no descriptions of this fruit body make mention of a slime covering. More importantly, it would be a very stupid fungus, indeed, to go to all that trouble to make a big sheet of tubes to expel spores, only to cover them all up with a coating of slime! And as far as I know, chaga is not stupid. Could it really be slugs? Except for its extent in many areas, it certainly looks like slime left by a snail or slug. But how does it get in such sheets? And, although I have roamed the woods a lot and looked at many trees, I have not seen slugs crawl up a tree. If I have not seen it, it cannot be so, right?

Figure 2. Top. L: Lehmannia marginata, *in a tree on* Lobaria, *Blue Gulch, behind Pasadena.* ***R:*** L. marginata *in a tree, South Brook trails, Pasadena. The characteristic whitish stripe down the middle of the back is seen readily.* ***Middle:*** *A paver of* L. marginata *in a tree, eating* Lobaria *in Brigus Junction. Note pletiful slime all around.* ***Bottom****. Incredible photo of at least 25* L. marginata, *a veritable paver of slugs, in a tree, on a piece of carpet used to protect the* Betula cordata *against a clothes line. Note that the carpet and part of the tree are well covered with a sheet of slime.*

For more answers, I disturbed John Maunder in the midst of writing a book about the slugs of Newfoundland and Labrador. The first thing John told me was that we have a slug, *Lehmannia marginata*, which characteristically climbs trees. Not only that, but it is known from our area: John sent along a photo by Joe Brazil and one by Henry Mann of this creature in the Pasadena area (Figure 2) And, he went on to say, to explain sheets of slime is not at all difficult: one slug makes a trail, while a paver of slugs makes a sheet. [A paver is the asphalt-making machine that crawls slowly over the road, laying down a sheet of asphalt behind it (Figure 3). As most people know, paver is the proper collective noun to use when describing five or more slugs, laying down a sheet of slime behind them.] Do slugs come in pavers? Again, John provided photos, this time by Mac Pitcher, of pavers of the same *Lehmannia marginta* leaving remarkable sheets of slime over their food in two trees (Figure 2).

There you have it: a lot of strange things go on under the midnight sun. Should you have any doubt that slugs like chaga, you can always consult the final arbiter and authority, the internet. If you type in "slug and chaga", you will come to a site showing a photo of *Limax maximus* on a chaga fruit body <https://www.shroomery.org/forums/showflat.php/Number/16308950#16308950>.

Based on this weight of evidence, my guess is that the slime was indeed left by *Lehmannia marginata*, just one of many invertebrates attracted to fresh chaga fruit bodies. Apparently, just because I have not seen it, does not mean it does not exist. Likely the fungus releases some attractant, bringing in troops of diverse chagavores, who consume the fruit body in short order, making it such an uncommon find for us. With a nice bellyful of spores, they all leave the table burping, ready to spread the frass.

My thanks to John Maunder and the other people, with whom I spent enjoyable conversations on this subject. Many thanks also to nature photographers Joe Brazil, Henry Mann, Mac Pitcher and Urve Voitk for permission to use their photos.

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Figure 3. *Paver, Hwy 430, the Viking Trail.*

That should cover the subject.

A tale of two lichens

Jim Cornish

I have learned a few things as a naturalist. Whether I'm studying flora, fauna or fungi, I have discovered that appearances can be deceiving, that similarities are oftentimes superficial and that distinctions are frequently found only in the smallest of details. So when some photographs of the lichens *Dibaeis baeomyces* and *Icmadophila ericetorum* were posted to my Facebook page with inadvertently swapped identities, I saw a writing opportunity the teacher, writer and photographer in me could not pass up.

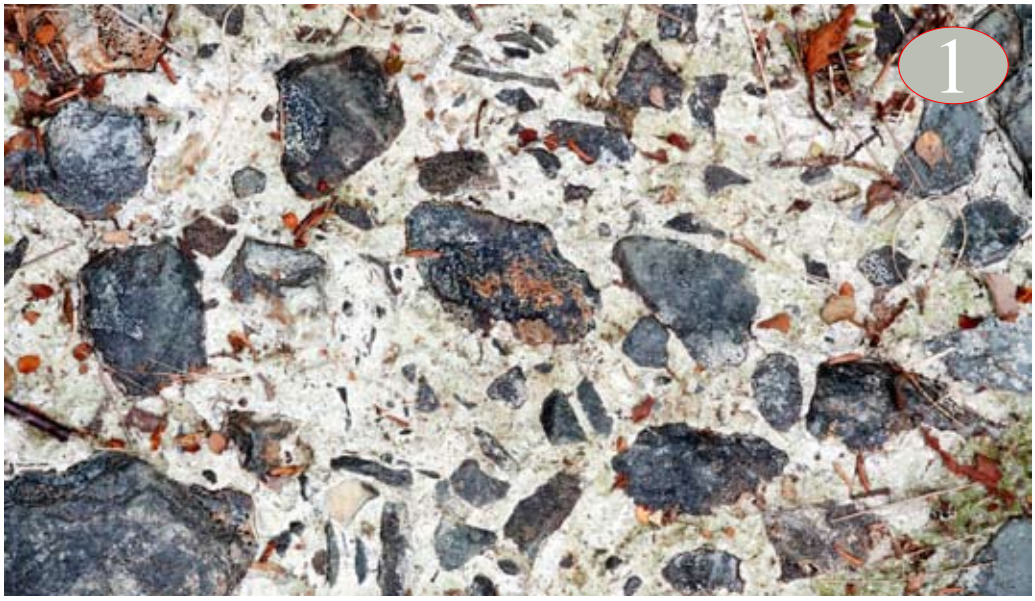
As you may already know, lichens are fungi with a unique lifestyle. Although they appear as singular entities, they are, in fact, dual organisms—a combination of a fungus (called the mycobiont) and a species of unicellular green or blue-green (or both) alga (called the photobiont). The fungus and alga coexist in a mutualistic relationship in which the fungus provides the alga with water and minerals and protects it from environmental stresses, while the alga relinquishes some of its photosynthesized sugars to the fungus for its growth and reproduction. Canadian lichenologists Trevor Goward may have described the relationship best: "Lichens are fungi that have discovered agriculture."

Fungi that are paired with a photobiont are called lichenized. As fungi, lichens are classified according to the mycobiont. But lichenized fungi are not a monophyletic group, because the mycobiont can be either an ascomycete or basidiomycete, albeit few are the latter. About 64,000 ascomycete species are known, of which about 18,000 are lichenized. Both *Dibaeis baeomyces* and *Icmadophila ericetorum* are ascomycetes.

Lichens are often pioneer species, the first macroscopic organisms colonizing exposed surfaces. Individual lichen species are often very fussy about their substrates and habitats. *Dibaeis baeomyces* prefers siliceous, clayey soils that are exposed to direct sunlight. It is commonly found along road banks, ditches and old gravel roads and trailways (Figure 1). If the soil is left undisturbed it will even grow on abandoned lots cleared of vegetation. *Icmadophila ericetorum,* on the other hand, prefers old, well decayed tree stumps and exposed roots

that have been stripped of their bark (Figure 2). The lichen also grows on tufts, and will aggressively overgrow moss as its thallus expands (Figure 3). *Icmadophila ericetorum* is less frequently found on soils, but some of the identification problems associated with these two lichens occur when they grow on similar substrates, if seen from a distance. On *Sphagnum* hummocks, *I. ericetorum* can be confused with the similar *Ochrolechia frigida*, and on decayed wood it is even possible to confuse it with squamulose lichens that frequently inhabit the same substrate.

Both *Dibaeis baeomyces* and *Icmadophila ericetorum* have continuous crustose thalli that look as if they were spray-painted on the substrate. The thalli are whitish in colour when dry (Figure 1) and pale grey-green when moist or wet (Figure 3). When occurring in large patches, both lichens tend to suppress the growth of other vegetation, such as mosses and other lichens. Since their light coloured thalli reflect sunlight, both lichens help to keep their respective substrates cool and moist, which aids soil development. The lower cortex of both species also extends slightly into the substrate, easily consolidating loose



material and creating a crust layer that prevents soil surface erosion. The differences in their thalli can be seen when examined close-up with a loupe (title banner). The thallus of *D. baeomyces* is coarsely granular, whereas that of *I. ericetorum* thicker, seemingly finer grained on wood than on tuft and soil.

Lichen reproductive structures differ depending on whether they are vegetative or sexual in nature. Vegetative structures include granules (soredia) that contain a little of both partners and coats the thallus like powder. Outgrowths on the upper cortex called isidia also contain some of both partners. Sexual reproductive structures arise from the fungus and are responsible for creating and releasing spores. The most common structure is the apothecium. Anatomically circular, disc, or cup-like in shape, apothecia often grow at the end of a short stalk or are attached directly to the thallus.

Both *Dibaeis baeomyces* and *Icmadophila ericetorum* have apothecia whose detailed characters are key to identification (title banner and Figure 4). The apothecia of *D. baeomyces* are largely bubble gum pink in colour, spherical, 1.5–4 mm in diameter and located on the tip of a 2–10 mm long light pink stalk. Some apothecia may appear collapsed or shrivelled, maybe because they are desiccated or remains of the previous year's growth. The apothecia of *I. ericetorum*, on the other hand, are pink to light orange in colour, flat discs or slightly convex cups about 1–4 mm in diameter with wavy whitish margins sometimes slightly enrolled. The apothecia may be attached to the thallus or grow on very short and barely visible stalks.

Lichens are probably the most ubiquitous, hardy and resilient forms of macroscopic terrestrial organisms on the planet. They are diverse and distributed from the tropics to the poles. Our two lichens differ in their distribution. *D. baeomyces* is circumpolar, restricted to the temperate zones. In North America, it is confined to the eastern portion of the continent stretching from Labrador to Georgia and west to the western flanks of the Appalachian Mountains. It is one of thirteen species in the *Dibaeis* genus. *Icmadophila ericetorum* has a much wider distribution, found in tropical, subtropical and temperate zones. In North America, *I. ericetorum* is essentially a northern temperate species, confined to Canada and in the US to Alaska, New England and the hinterland of several Great Lakes states. Of the six species of *Icmadophila, I. ericetorum* is the only one found in North America.

Most organisms have vernacular names, local or regional in origin, usually based on looks or uses. Fungi have fewer common names than most other forms of vegetation, but they are always interesting, and for many people, easier to remember than the scientific tongue twisters commonly found in guidebook. *Dibaeis baeomyces* is commonly called pink earth lichen. When its apothecia are abundant, the lichen turns the ground noticeably pink, even when viewed from a short distance away. *Icmadophila ericetorum* has several common names including candy lichen, peppermint drop lichen and spray paint lichen. But the most imaginative and memorable name is fairy puke or fairy vomit, names reportedly given the lichen by loggers who may have recognized what they were looking at and knew it wasn't theirs.

The many abandoned lots, walking trails and gravel roads that cut through our forests are prime habitats for *Dibaeis baeomyces* and *Icmadophila ericetorum*. So, when out walking, watch for these lichens, get down on all fours, have a close look and use the characters of the substrate and apothecia to identify them.

Mysterious mushrooms & intriguing insects

Britt Bunyard

Mysterious Mushrooms

Mushroomers are a dauntless bunch. Never mind the season may not be conducive to mushroom growth, the determined mycophile will eagerly head out to the nearest woods in search of anything fungal. Of course, we all have our standards of what is acceptable as a photographic subject or as food for the table. Sometimes we get lucky and our quarry serves nicely in both endeavors! Sometimes … not so much. There are times in the season, when the undaunted mushroomer, must drop the bar down pretty low. Winter is one of those times. Subfreezing temperatures are no excuse to stay at home; there will be mushrooms if you know where to look. (And remember the part about setting your standards pretty low.)

I've had the great fortune to travel to Newfoundland on two occasions, both times during mushroom season. And it was great; there were mushrooms everywhere. Winter, I am guessing, can be a much different affair. I have no doubt that during the lengthy winters on The Rock the serious mushroomer will likely examine every log for signs of the previous season's now-dried agaric; any formless colorless resupinate crust becomes the focus of thorough clinical and critical examination.

And so it was recently when I received and email query from Andrus Voitk. Oh, that part above, about dauntless mushroomers? Andrus takes it to the next level. He sent me several photographs that he'd taken on a mushroom outing during spring thaw. He must have been pretty desperate for something mushroomy, as the specimens he shot were nothing much to write home (or to a cross-border friend) about. Still … you never can tell where a really intriguing biological lesson could be learned.

The "mushroom" (I'm using the term loosely here) that initially caught the eye of Andrus was more like the remains of a ragged orange protrusion clinging to the side of a fallen birch log. As to its identity and what had happened to it, that was Mystery Number 1. He explained that at the other end of the log there was an obvious birch polypore (*Piptoporus betulinus*)—that ID was certain—but what's this weird lifeform clinging to a brown thing in the middle? Two lifeforms really: small pinkish looking bugs and larger black

Illustrations.

Above. *An irregular orange mass on a fallen birch log during spring thaw, somewhat mindful of a* Pycnoporellus *from a distance. On closer examination, clearly not a* Pycnoporellus, *but no clue to its identity.*

Below. *Further down the log a conk vaguely mindful of* Piptoporus betulinus, *except for the brown, coarsely irregular surface. Closer examination revealed critters in the cracks, shown magnified in the title banner and closing photo. Further down the log "normal" last year's* P. betulinus *conks could be seen, suggesting the identity of the fungus. The beetles are probably moving down the log, and likely abandoned the first conk after chewing most of it.*

bugs. Mystery Number 2. Further inspection led to the conclusion that both kinds of bugs seemed to be feeding on the brown thing. Might they, or their ilk, have destroyed a perfectly good *P. betulinus* to leave the orange remains we refer to as Mystery Number 1?

I told Andrus that his detective skills had already cracked the case, and, indeed, the ragged orange mess likely was what was left of one *Piptoporus* conk, but that I could provide a bit more information on those bugs. Although my interests have long been with mycophagous (mushroom feeding) flies, I do encounter mycophagous beetles all the time—and that's what these are: beetles. Rove beetles, to be more precise. And the smaller, pink individuals are immatures; they will grow up to be the more ferocious-looking dark ones pictured.

Intriguing Insects

Of course, we humans are not alone among animals in our pursuit of mushrooms as food. Many creatures are much more successful at finding and consuming mushrooms than we are; all sorts of animals can live eating mushrooms that would be too tough or downright toxic to us. ("Deadly amanitas?" Many species actually thrive on them!) Evolutionarily speaking, the invertebrates have excelled the most at mycophagy. And among the invertebrates, probably the most mushroom-feeding species will be found in the Classes Diptera (true flies) and Coleoptera (beetles). In general, flies are more commonly encountered feeding on soft-fleshed mushrooms like agarics and boletes; beetles, with their tougher mandibles, are more common feeders on the tougher, woody polypores—as is the case with the birch polypore, here. Some beetles are found on and inside

mushrooms, but may not actually be feeding on the mushroom; those are predacious and tear through mushrooms in search of mycophagous fly larvae ("worms" or "maggots").

But don't feel too badly for the defenseless mushrooms being gobbled up by those hungry bugs. Arthropods are well-known vectors of spores of all kinds of different fungi, including rusts, smuts, yeasts, and stinkhorns[1]—they are doing their mushroom hosts a service. A few (make that very few) studies have focussed specifically on polypores and insect vectors. Probably the first description of an important connection between beetles and the dissemination of polypore spores came in 1892.[2] There is recent confirmation that a number of invertebrates, who inhabit wood and bark, ingest and then pass viable mycelium and spores (termed "endozoochory") of polypores.[3] More recently, mycophagous Diptera and mycophagous coleopterans also were shown to pass viable mycelium and spores of polyporoid fungi.[4,5] A number of different arthropods ingest and pass viable spores of *Tomentella sublilacina*, a widespread resupinate mycorrhizal fungus.[6] The enigmatic (in so many ways!) polypore *Inonotus obliquus* (known as "chaga," and discussed in many previous editions of Omphalina) has a reproductive cycle that's been all but unknown until very recently;[7] new evidence suggests it is reliant on a beetle for spore dispersal.[8]

Andrus's intriguing insects are beetles in the family Staphylinidae, commonly called rove beetles. (They are unrelated to Karl Rove, the infamous advisor to George W. Bush, the 43rd president of the USA, although there is a resemblance. On second thought, Rove looks more like a canned ham wearing eyeglasses … but I digress.) Rove beetles are encountered in many habitats; most are predacious but several species are mycophagous and may even be active in the middle of winter if it's a mild day and a sunny spot. Staphylinid beetles are mostly harmless (unless of course you happen to be a small insect on their menu). They feature several curiosities. One is their very short wings. I've seen it written that they are incapable of flight due to their minute wings. That is completely untrue; I routinely see them fly out of my mushroom bag when I finally get around to opening it back home. Beetles, in general, are poor fliers, but staphylinids seem to do just fine with what little nature gave them. Another thing about rove beetles is their curious habit of rearing up their rear ends if threatened. You'd think they have a stinger back there. They don't. But it looks ominous and I've seen more than one human recoil from it. And if the posturing doesn't work, there are those formidable mandibles in the front end. They can give you a pretty sharp nip, which will get your attention if all else fails.

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Book review

Andrus Voitk

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1,217pp
2016
http://www.edizionicandusso.it/fungi_europaei/fungi_europaei_14.htm
€86.00

Before I launch into this "book review", let me hasten to say that I do not know enough about the genus *Hebeloma* to be a valid reviewer of how the authors handle this subject. If the accuracy of the content is at all related to the way the book was conceived and written, one may safely assume that the scientific quality of the content is impeccable, but for a valid judgement of that, you need to turn to opinion more expert than mine. However, I do know books, and wish to describe for you a most remarkable book. If you read the last issue of Omphalina, you already have an introduction to the genus *Hebeloma*, and, more importantly, to the work of two of the authors of this book, Ursula Eberhart and Henry Beker. Some readers have commented that they have not seen such an issue before, not in Omphalina, not elsewhere.

Well, the authors were true to character—I have not seen such a book before, either.

This is a big book. Measuring 17.5 x 24.5 x 6 cm, it weighs in at 2.9 kg (6 lb 6 oz). If you have lower motor neuron problems in your arms, as I do, just lifting the book is a feat. To give you an idea of what this means in *Hebeloma* terms, you would have to fill about two standard 12-bottle beer cases with fresh hebelomas to have 6-7 lbs of them. The difference is that since hebelomas are not considered edible—some are downright toxic—those two hebeloma-filled beer cases would be worthless. Filled with the original beer, the two cases might be worth around $60 (CAD); the book, purchased from the publisher costs €86.00, which is CAD 124.00 at the time I write this. If you have an interest in identifying and learning about mushrooms, specifically *Hebeloma*, the book will serve you longer than the four cases of beer that money would buy. This is a ridiculously low price for such a book.

The set up of the book is traditional, with a significant introductory part, reviewing what is a *Hebeloma* and the history of the genus. Characteristic microscopic features are discussed and illustrated in detail, since in this genus they form such an integral part of correct identification. Results of nuclear studies as they bear on the genus and its classification are outlined with several beautiful trees. The sections and subsections are explained and keys are provided for each. Then follows the floristic part, with thorough macro- and microscopic descriptions of all known European species, arranged by section and subsection. Each species has a reproduction of the original diagnosis or protologue (English translation, where required), a description of any neo- or lectotype, and then a description based on several specimens and collections. Descriptions include habitat and distribution, and figures are provided for

Figure 44.7 – *Hebeloma hiemale* HJB10724

Figure 44.8 – *Hebeloma hiemale* HJB10875, reproduced from Vesterholt (2005), p. 81

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distribution and phenology. Next comes a very helpful section discussing ecology and habitat keys: which species you might find in any specific environment. This is followed by an annotated list of Eurafrican names, before closing with the bibliography. The remaining book, just less than half, is made up by iconongraphy: the colour pictures. While it is unfortunate that these did not come together with their respective text, putting all colour printing together significantly lowers printing costs, making the ridiculously low price possible.

So far, a rather conventional set-up, you may think. What makes this book so special? Two factors, above all: 1) the exactitude, thoroughness and completeness of the work, and 2) it is solely based on personal observation and a huge accumulated database. Taking advantage of computer capabilities, a routine way of documenting information has made it searchable, so that any character may be investigated or quantified. This book brings together virtually all that is known about the genus in Europe, but not as the result of an attempt to collect and reproduce such knowledge from old tomes. Rather, it is the product of the authors' personal knowledge and experience with the genus after many years of dedicated personal study, beginning in the field and taken into the laboratory: in the course of this study, past knowledge has been accumulated and testede against repeated direct personal observation.

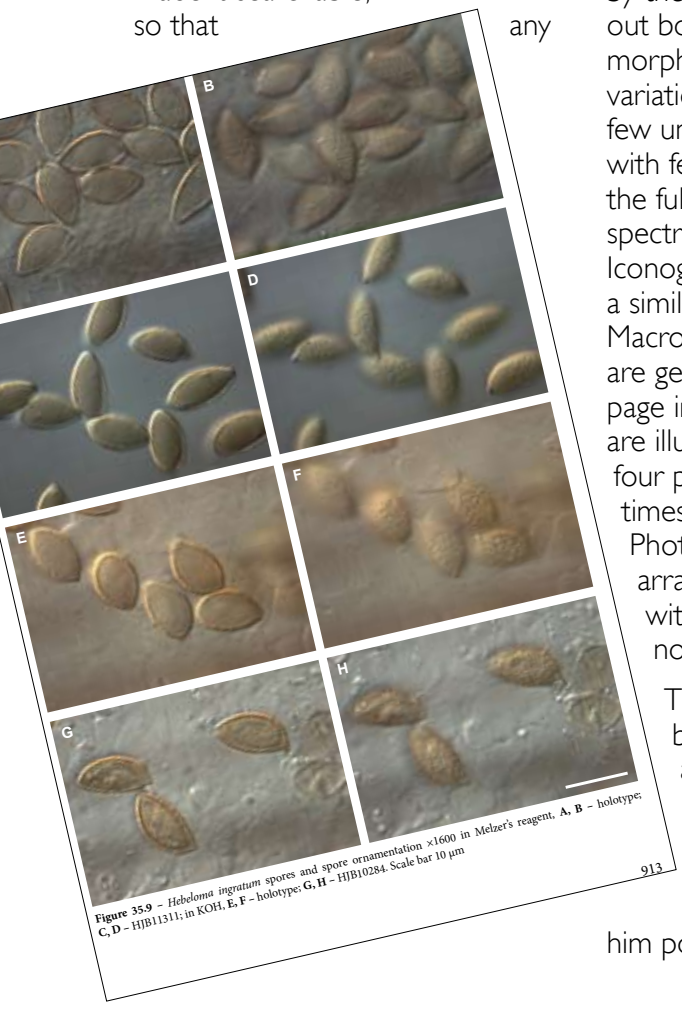

Figure 35.9 – *Hebeloma ingratum* spores and spore ornamentation ×1600 in Melzer's reagent, **A, B** – holotype; **C, D** – HJB11311; in KOH, **E, F** – holotype; **G, H** – HJB10284. Scale bar 10 µm

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The database on which these descriptions as well as the ranking are based numbers some 4,500 *Hebeloma* collections, all personally studied by the authors. Descriptions bring out both the typical morphology, as well as all variations. Only in a very few uncommon species with few collections, would the full morphological spectrum not be covered. Iconography follows a similar approach. Macroscopic illustrations are generous: one-half page in size; the majority are illustrated by at least four photos, some several times that number. Photomicrographs are arranged eight to a page, with four or more pages not being unusual.

The third author of the book is Jan Vesterholt, a noted student of the genus. His initial work laid the foundation, and the book is dedicated to him posthumously, with the cover illustration showing *Hebeloma vesterholtii*, so named to honour this colleague.

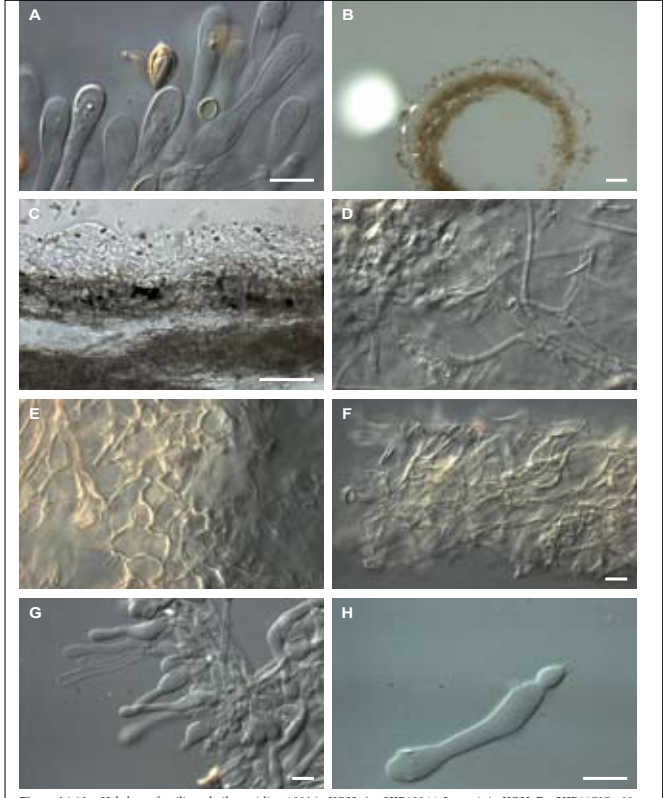

Figure 34.12 – *Hebeloma fragilipes* cheilocystidia ×1000 in KOH, **A** – HJB13344. Ixocutis in KOH, **B** – HJB11737 ×80; **C** – HJB11720 ×125; **D** – HJB11720 epicutis hyphae ×500; **E** – HJB11720 subcutis ×500; **F** – HJB11720 trama below subcutis ×500. Caulocystidia in KOH, **G** – HJB11720 ×500; **H** – HJB11720 ×1000. Scale bars 10 µm or 100 µm (B–C)

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Promotional photos, courtesy of publisher

Figure 77.10 – *Hebeloma vesterholtii* HJB12321

Figure 77.11 – *Hebeloma vesterholtii* HJB12331, reproduced from Beker & Eberhardt (2011)

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The Bishop's Sketchbook

OK, this last one is not a watercolour sketch. Nor is it a butterfly or moth. More like the *Trichaptum* described from Labrador by Larry Millman. Or something.

WANTED: Dye mushrooms

I recently got interested in dyeing wool with fungi, which resulted, among other things, in a nice sweater. Unfortunately, most of the more interesting species are rare in my country, with its limited natural resources. I wonder, therefore, whether there are people in NL doing dyeing who could help me acquire these dried fungi, such as lobster mushroom, *Hydnellum* species, and any *Cortinarius* from section *Dermocybe* (e.g. *C. semisanguineus*, et al.) I am of course prepared to pay for packaging and postage. Please contact me for address and details <m.noordeloos AT me DOT com>.

Machiel Noordeloos <www.paddenstoel.nl>
FNL Faculty, 2005

THE MAIL BAG

OR WHY THE PASSENGER PIGEONS ASSIGNED TO SERVE THE LAVISH CORPORATE AND EDITORIAL OFFICES OF OMPHALINA GET HERNIAS

Hebeloma!!! Nice contribution! Much appreciated.

Take care,

Joe Ammirati

What a great issue on *Hebeloma*!

Many thanks!

Adolf & Oluna Ceska

Really enjoyed the *Hebeloma* issue. Chris has just sent his prairie *Hebeloma* samples to Henry Beker, too.

Cheers,

Greg Thorn

Thank you again for OMPHALINA. The work on *Hebeloma* is really magnificent (I have the whole book).

There was one error on the page 21 of OMPHALINA.: [*Comments … This specimen was collected in 2000 by P. Kallio in Goose Bay, identified by Esteri Ohenoja*.] Paavo Kallio died 11.6.1992, and he was at Goose Bay in the year 1963. It must be my identification which was done in 2000 (the specimens are preserved in TUR).

Have a good foray at Goose Bay!

With best greetings

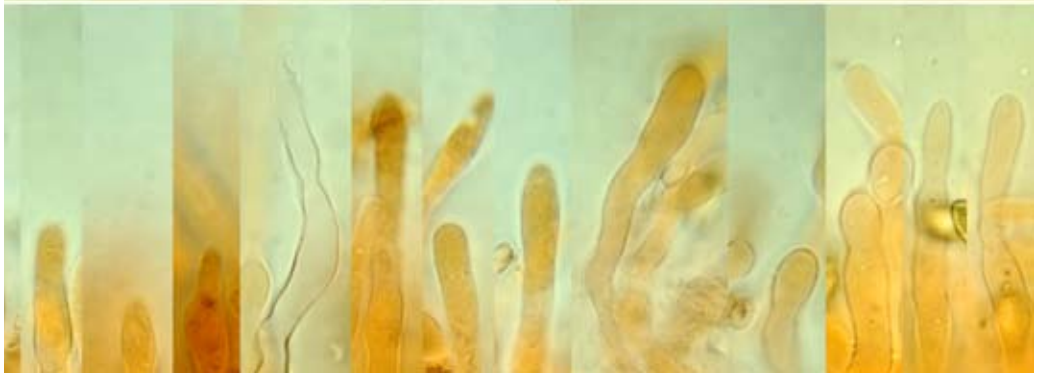
Esteri Ohenoja

Against my better judgment I accepted the *Hebeloma* Challenge.

Amanda and I are just starting to look through our collections and comparing them with the Newfoundland ones and we seem to have some interesting things. The attached files are of one of these. It seems really close to the one you have illustrated as "*Hebeloma* sp. sect. *Naviculospora*". Ours was from a coastal spruce-fir forest in an area with abundant summer fog. If you would like to compare this with your collection we could send some along. Macro-micro composite attached.

Anyhow, congratulations on the *Hebeloma* issue—it's already a classic at our place.

Dave Malloch



Ed notes:

Many thanks for your kind comments. It is very rewarding that our articles have spurred an interest and flurry of investigations. And, yes, Dave, it certainly looks like it might be the same entity. I hear that a sample is on its way to Henry. Great!

All these responses are from mycologists. My hope is that a similar interest can be stirred up in amateur breasts! The *Hebeloma* Challenge was really meant for he non-pro… Pick up the gauntlet!

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  - Wildlife Division
- Forestry and Agrifoods Agency
  - Center for Forest Science and Innovation

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The Gros Morne Co-operating Association

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