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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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seened AT *gmail* DOT *com*,

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COVER

Russula emetica.

Not. Probably *R. montana*. Read why inside.

No voucher, so remains unidentified. Photo from Voitk A: A little illustrated book of common mushrooms of Newfoundland and Labrador, written after 5-6 years of trying to match our finds to descriptions of mushrooms elsewhere. Subsequent years of forays have accumulated sufficient material, that now we can begin to describe our own species. Progress is slow, and many large lacunae remain—like *Russula*. Therefore I am grateful to Anna Bazzicalupo and friends for opening a small fenestella onto this huge genus. So far, we know only three species in the *R. emetica* complex in NL, none of them *R. emetica*; commonest is *R. montana*.

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CONTENT

Message from the Editor

The Happy Valley-Goose Bay foray is over, as seems to be the peak mushroom season. The Foray Report issue will be out before year end. Meanwhile, a few autumnal blooms from the mushroom world in this somewhat fuzzy Halloween bouquet.

First of all, the final word (for now) on our *Russula emetica* complex. The review is too restricted to speak for the province yet, but at least we have some preliminary data to build on.

Another update is about the lichen survey on serpentinized rock, peridotite. Newfoundland has some of the biggest peridotite fields in the world, yet is one of the few places where such surveys have not been published. Very few organisms are able to live on this substrate, and those that seem to specialize are uncommon elsewhere, therefore not well known. Michele Piercey-Normore is leading a survey of each of our big peridotite fields, one a year, to gather this data.

The availability of the FNL collection on MyCoPortal (MCP) is announced. MCP is a very powerful tool, accessible to researchers and the general public alike. Go and try it out, play with it a bit. To make data about all herbarial collections available and accessible online is a fantastic concept. I have used MyCoPortal to great advantage and with significant time savings on several occasions. But, as with most things idealistic, at times the reality may fall a bit short of the dream. This does not invalidate the information, but lessens its potential usefulness. We examined our own data and discovered a well-known truth: the information we get out is only as good as the information put in. FNL already altered its record keeping in response to this discovery, to provide more accurate information in the future.

Clearly, the accuracy of MCP as a tool rests in our hands: to make it the best possible, we need to be very meticulous about the data we keep and send in. From a scientific point of view, the stock of our Database Team has just risen substantially within our organization.

There is more to mushrooming than mushrooming.

Happy mushrooming!

The Russula emetica complex in NL — preliminary report

Anna Bazzicalupo, Mary Berbee, Hayden Wood, Maria Voitk, Andrus Voitk

Photo: Michael Burzynski

Everybody knows *Russula emetica*: a small (cap diameter usually <6 cm), bright red *Russula* with a white stem about equal in length to the cap diameter, and a hot, acrid taste (title banner). Many other small red members of the genus (after all, russula means red) are often included in the *Russula emetica*, complex by error or intent, which do not necessarily belong to the *R. emetica* phylogenetic clade (Fig. 1). A multitude of names and descriptions of species with similar characters have cropped up over years and continents. It becomes confusing to determine which of these competing names to apply to your find, which to deprecate as synonyms, or whether you may have something totally new and undescribed.

At Foray Newfoundland & Labrador (FNL), most such mushrooms were identified as *R. emetica*, with *R. aquosa* reserved for the occasional pale-capped specimen, until a soil study[1] revealed that the commonest member of the complex for which DNA was recovered from our soil matched GenBank deposits identified as *R. griseascens*.[2] The resulting interest in the complex resulted in a reassignment of most specimens to that taxon and the tentative identification of an additional species, *R. silvestris* (Singer) Reumaux, based on microscopic morphology.[3]

We compared sequences from one season's collections of Newfoundland species to known reference sequences, and present these findings here as a very preliminary report.

Materials and methods

In the 2015 season an attempt was made to collect as many examples of the emetica complex as possible. Collecting, harvesting and preserving gills were done by MV, identification, photography, microscopy and overall coordination by AV, and sequencing and phylogenetic analysis by AB, HW and MB. Collection was done during the FNL foray as well as immediately before and after. Voucher specimens were archived by AV and FNL. We extracted genomic DNA from the specimens using Qiagen's DNeasy Plant Mini Kit following the instructions manual. The ITS region was amplified using PuReTaq Ready-To-Go PCR Beads (GE Healthcare Life Sciences) with primers ITS1F and ITS4. Sequencing was performed at the Innovation Centre at McGill University and Génome Québec and The University of BC Nucleic Acid Protein Service Unit. Sequences were deposited in GenBank, and sequenced specimens deposited in the National Museum in Ottawa (DAOM)—see Table 1.

Table 1. Sequences created for this study from NL specimens and the type of *R. montana*.

GenBank #	Accession #	Collection #	Name	Yr	Location
	MICH12231		R. montana	1975	USA, CO
KX579797	DAOM 740070	15.09.06.av03	R. montana	2015	CANADA, NL
KX579799	no voucher left	15.09.06.av05	R. montana	2015	CANADA, NL
KX579801	no voucher left	GM15A-018	R. montana	2015	CANADA, NL
KX579802	DAOM 740071	GM15A-129	R. montana	2015	CANADA, NL
KX579798	DAOM 740072	15.09.06.av04	R. silvestris	2015	CANADA, NL
KX579800	DAOM 740073	15.09.08.av01	R. silvestris	2015	CANADA, NL
KX579806	DAOM 740074	15.10.04.av04	R. aquosa	2015	CANADA, NL
KX579807	DAOM 740075	15.10.04.av05	R. aquosa	2015	CANADA, NL
KX579803	DAOM 740076	GM15c-061	R. velenovskyi	2015	CANADA, NL
KX579804	DAOM 740077	GM15D-089	R. sp. "Woo 50"	2015	CANADA, NL
KX579805	DAOM 740078	GM15c-086	R. peckii	2015	CANADA, NL

Results

A total of 18 specimens assumed to fit the emetica complex were collected and processed, 8 from the foray and 10 outside. Amplifiable sequences were successfully recovered from 11. These were identified by matching to named deposits in GenBank or UNITe. Six species were identified: *R. griseascens* (=*R. montana*, see below) (4), *R. aquosa* (2), *R. silvestris* (2), and one each of *R. velenovskyi*, *R.* sp. "Woo 50", and *R. peckii*. No collection of *R. emetica* was found.

Morphologically, the first three fit the general description of the complex given above, and fell into that clade (Fig. 1). The caps of all begin globose, expand to planar, developing a central depression with or without a small central umbo. Cap colour for all varies from deep to light pinkish red on occasion, and often the disc area becomes lighter with some yellowish tones. Differentiating characters were noted

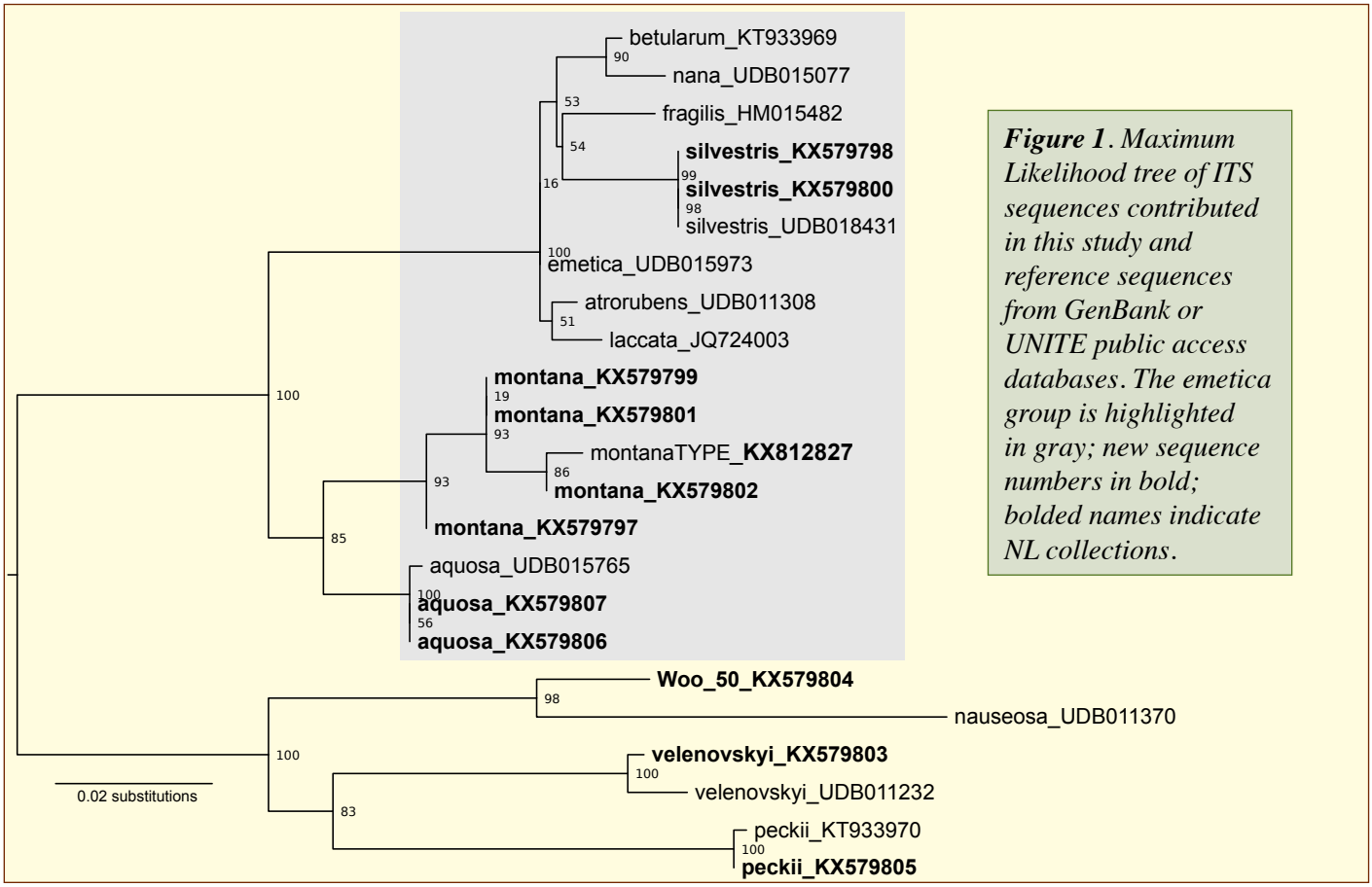

***Figure 1**. Maximum Likelihood tree of ITS sequences contributed in this study and reference sequences from GenBank or UNITE public access databases. The emetica group is highlighted in gray; new sequence numbers in bold; bolded names indicate NL collections.*

***Figure 2**. Composite of photos of the sequenced collections. Most photos taken merely to record the collection, not demonstrate useful characters of the species. However, they do give an idea of the variability in colour, and where full stem is present, stem/cap diameter ratio is seen. A, B & E show both in situ and inside voucher photos, illustrating the role of lighting in colour. A–D:* Russula montana. *Note the variation of deep red to light pinkish-rose, with paler yellowish shades appearing. E:* Russula silvestris. *Note colour range similar to that of* R. montana. *F & G:* Russula aquosa. *Addition of blue tones produce a faint purplish hue to the cap. H: Somewhat dry* R. velenovskyi, *missing most of the stem. I:* Russula *sp. "Woo 50". Note very faint purple tinge and dusky disc area. AB and MB are studying the collection of Ben Woo, a mushroom enthusiast, who became an expert in the genus* Russula. *Many of his collections are given code names, until they can be identified. This is one species that we seem to share in common with the Pacific Coast. J:* Russula peckii, *a very common species in this province, and not generally thought to be a species of the emetica complex. Because it was a small specimen and AV overlooked the faint pink blush on its stem, it was included in this survey. Note that the stem is about twice the length of the cap diameter, different from species in the emetica complex. Photos C, D, H, I, J by Roger Smith.*

between the three species: the cap of *R. aquosa* was distinctly purplish red, whereas the other two lacked blue hues in their bright red caps (Figure 2). Of those other two, the average spore size of *R. silvestris* was larger than that of the other species (Figure 3).

The three species that did not conform to the general description of the complex, all had a stem length significantly greater than cap diameter, and lacked the hot taste. On closer examination, the characteristic red stem of *R. peckii* was very faintly seen in the collected specimen, as were the characteristic saw-toothed gill edges; a pink to red flush of the stem is also described for *R. velenovskyi*, although not observed (probably because the base of the stem was not collected). In addition, the caps of *R. velenovskyi* often turn a warm brown colour (not observed in the collected specimen). The red of *R.* sp. "Woo 50" had a very faintly purplish hue and its disc area was duskier, rather than the same or lighter, as seen on occasion for most of the others. From other collections, we know that the cap colour of this species can be quite variable. Microscopically, except for *R. silvestris*, all were indistinguishable from each other by spore shape or size. Although variation in spore ornamentation was noted, as was a variable proportion and shape of cystidia, these characters did not seem to be consistent discriminators between species, at least with the low numbers studied.

Discussion

This preliminary review supports the findings of the soil sampling study by Tedersoo,[1] which suggested that: *R. emetica* does not grow in Newfoundland, and that our commonest member of the emetica complex is *R. griseascens* (= *R. montana*).

This experience also shows the importance of defining the group under study. Collecting all small, red russulas as examples of the *R. emetica* group brought in several similar species that are not considered part of the complex. Differences in cap-stem proportion were not appreciated and a very faint pink flush of the stem was missed in two species. A hot taste was assumed without tasting, when other characters suggested a species in the emetica complex, thus including three non-acrid species.

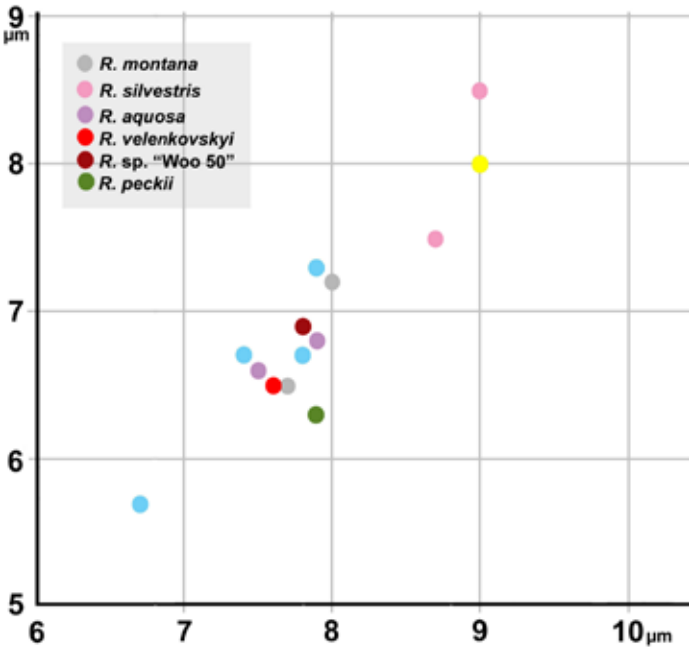

***Figure 3**. Average spore sizes for the sequenced specimens. Yellow dot indicates average spore size for* R. hydrophila, *as reported in the protologue.[4] This suggests that* R. hydrophila *is not conspecific with* R. griseascens, *but might be with* R. silvestris. *Blue markers indicate average spore sizes of four specimens from which DNA could not be extracted. Three fall in with the mixture of other species, but one has an unusually small average spore size. Few russulas have spores this small;* R. vesca *is reportedly one. To our knowledge that species is not native to NL. Spores vary considerably in size, so that matching ranges can be confusing. However, where differences exist, they can usually be shown using average spore sizes. Unless there is great uniformity, a minimum of 20 spores need be measured for a reliable average. In our opinion, average spore size yields a more consistent and reproducible character than description of spore ornamentation or shape and number of cystidia.*

How representative are our findings for the province?

It must be stressed that these observations are very preliminary. We have sampled a very small number of collections in a relatively short time, over a very limited area. The current three species are unlikely to cover the only species of the complex in the province. The early part of the season remains unsampled, so that species with an early fruiting season will not be captured.

Most of our province's ecoregions remain uncensused. As an obvious example, in our large tundra regions we have identified *R. nana* (title banner). Experience with other species complexes has revealed the existence of different species of a complex in different regions. It is not unreasonable to suspect that a wider census will uncover additional species, including *R. nana*.

Small numbers may give an inaccurate picture of the distribution and relative frequency of these species. In addition, the small numbers may suggest unwarranted meaning to observed characters, while obscuring other characters that could prove useful in identification. In other words, greater numbers may bring out subtle differences, not evident here, or they may show that characters thought to be significant differentiators are not unique to any species.

That said, for the moment this is all we have to go on, and until the availability of better data, this is our best information.

How reliable are our identifications (the names)?

To explore this question, let us first consider *Russula griseascens* (Bon & Gaugué) Marti. DNA of our specimens matched that of two GenBank deposits identified as *R. griseascens*. We have not matched the DNA to the 1984 type specimen, and the possibility exists that the GenBank identification may be in error. Until the type specimen is sequenced or a retypification made, to claim that ours is the same species as described by Bon & Gaugué is insecure.

An example of the problems cropping up over time is the current synonymisation of *R. griseascens* with *R. hydrophila*. The latter was described first by Hornicek.[4] Studying both species, Reumaux and colleagues later concluded that they were the same,[5] making the names synonyms and giving priority to the earlier name. But Hornicek's original description of *R. hydrophila*[4] stated that its average spore size was in the range we have measured for *R. silvestris* (Figure 3). This casts some doubt on its synonymy with *R. griseascens*. Either the spore size difference is wrong, or it is meaningless as a differentiating character. Or the identification of our collection as *R. griseascens* is erroneous, or Reumaux' identification of *R. hydrophila* was wrong, or… and so forth. Our opinion is that given the larger spores of *R. hydrophila*, it is not a synonym for our *R. griseascens* (and that in GenBank), but clearly type material should be analysed, before we can definitively conclude what is what. Until then, we are only guessing what these species are (or accepting somebody else's guess).

Fortunately, in this instance we have managed to avoid the problem. In other work, as yet unpublished, AB & MB have documented genetic identity between GenBank's *R. griseascens* (and, therefore, our specimens) and the type specimen of *R. montana* described by Shaffer* (Fig. 1).[6] Although both names,

"montana" and "griseascens", were published in 1975, the latter was used at the variety level initially, and priority is given to the first name used at the species level. Therefore, the name, *R. montana*, based on a North American specimen, has priority over the European *R. griseascens*. If the GenBank identification of *R. griseascens* proves accurate, then that epithet becomes a later synonym for *R. montana*.

This solution may not be the end of the story. As the title banner shows, apart from the small size, the photo of our putative *R. nana* could well be that of *R. griseascens* (i.e. *R. montana*), a small red-capped *Russula* with a white stem that turns gray. The montane *R. nana* has been described from lowlands like spruce forests in Alaska, using a 97% match with GenBank deposits[8]—i.e., a boreal habitat not unlike that where our *R. montana* has been collected. Again, those identifications are not tied to the type of *R. nana*, or its alpine variety, *R. nana* var. *alpina*. To stabilize taxonomy of the complex, types need to be sequenced. Fig. 1 shows that *R. montana* is the only name we use that is matched to its type. Because species concepts often change over time and geography, it could be that none of the others match the species originally described with those names. Even *R. montana* may change, should it turn out that its DNA matches that of some species described earlier. In the interim, because the DNA of our species matches that of *R. montana*, at the moment this is the best name to apply to it.

Conclusions

1. *Russula emetica* probably does not exist in NL.
2.
    a. The correct name at this time for the commonest species in the emetica complex in NL is *R. montana*.
    b. This may change as more type studies of the complex become available.
3. Our additional 20-30 collections of species in the emetica complex s.l., collected over 13 years from a much wider distribution around the province, should be studied to provide a more representative and reliable picture of this complex in the province.

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* ***Robert Shaffer, not to be confused with the great German russulologist, Julius Schäffer, whose sad demise was chronicled in our earlier mushroom poisoning series.[8] Robert Shaffer was a distinguished American russulologist, professor of Fungal Taxonomy at the University of Michigan.***

Serpentine rock lichen survey —update 2016

Michele Piercey-Normore

Photo: Joe Brazil

Photo: Joe Brazil

Figure 1. *Collecting team 2016 and large peridotite boulder.*

Team 2016 included André Arsenault, Joe Brazil, Michael Burzinski, Claudia Hanel, Jennifer Hoffman, Anne Marceau, Andrus Voitk, Maria Voitk, and myself (Figure 1). This year we added the Blow Me Down Valley to last year's Tablelands in our effort to determine what species grow on peridotite and whether they are unique to peridotite or are present on other rocks in the area as well, but can tolerate the inimical peridotite conditions.

Small peridotite boulders along the Blow Me Down Valley trail were scattered among many non-peridotite (mainly gabbro) rocks and boulders, and heavy vegetation. Non-peridotite rocks often had a wide range of lichens. The trail weaved its way through black spruce, balsam fir and birch dominated forests, occasionally opening into exposed low vegetation. Contorted white pine trees—the oldest in Atlantic Canada—were present in the open sunny areas adding character to the forest (Figure 2). After a considerable walk through such landscape, the trail ascended into tuckamore, interspersed with small fields of peridotite rubble. Delighted, we began searching for lichens in the rubble with renewed energy.

This inhospitable rock from the Earth's mantle showed a similar absence of lichens as it did last year. Last year two lichens were predominant on peridotite, while others were very rare, usually on rock with mixed mineral content. This year, only one of those two peridotite lichens was common. Pending definitive identification, we call it the "ghost lichen" (title banner). The other, which we name the "bleeding lichen", could not be found. One other lichen with scattered light gray aeroles was present—perhaps a strained effort from a *Rhizocarpon* or *Diplotomma* to grasp a hold on the hostile substrate. Some of the larger boulders had larger veins of olivine and pyroxine throughout the boulder, which are not as hostile toward lichens as peridotite, and provided suitable surface for common lichens in the area. One boulder was almost entirely pyroxine and had some very common lichens including *Rhizocarpon geographicum*, *Parmelia sulcata*, and *Caloplaca holocarpa*. As last year, erratics, mostly granite deposited from scouring glaciers, stood out with many colourful lichens.

Interestingly, we found large boulders with small bones deposited on top, where birds may have perched to feed on their prey. These bird perches have guano, bird excrement with high levels of nitrogen and phosphorus. Species that typically like to grow on bird perches were also present here, despite the underlying peridotite (Figures 3 & 4).

This year's survey was done in only one day, a large part of which was spent getting to and from the peridotite fields. Still, we added 10 new species to the 71 from last year. We plan to sample other areas of peridotite in Newfoundland over the next few years to learn which lichens can grow in these inhospitable conditions. Meanwhile, definitive identification, including consultation by saxicolous crustose lichen specialists, is progressing apace. At the end we hope to produce a list of lichen species from our serpentinized rock fields, both on peridotite, and on other rocks.

Photo: Claudia Hanel

Figure 2. *Fleeting glimpse of the rare, old* Pinosaurus strobus.

Photo: Joe Brazil

Figure 3. Caloplaca *sp. on bird perch.*

Photo: Joe Brazil

Figure 4. Rusavskia elegans *on bird perch.*

Craterellus ignicolor

Andrus & Maria Voitk

In this province *Craterellus* means winter chanterelle, because we have only one species, *Craterellus tubaeformis*, **the** winter chanterelle. Well, almost. We have one other species of *Craterellus*, *C. lutescens*, found on our limestone barrens. For those of us interested in the diversity of species and how to identify them, it is a big thrill to know *C. lutescens* is there and then to find it and recognize it. Also, for those with an especial interest in our limestone barrens, this is exciting fare. But for those of us, whose prime interest in mushrooms is their edibility, this does not matter too much. Very few, if any, food foragers go to the limestone barrens to collect edibles, so to know of the existence of a similar species there is of little import. And should a forager become disoriented and end up in the limestone barrens, ability to tell the species apart does not matter much because both are equally edible and tasty.

Living close to the sea, we follow good seafaring practice and keep each foot in a different boat. On the one hand, we thoroughly enjoy having the winter chanterelle as a guest at our table, but on the other, we find pleasure in the diversity of species, and in discovering their differences. One of the most interesting things about different species is that they may look alike, but so often they have learned to make their living in totally different circumstances from that of their very similar relatives. While we struggle to find some minor detail in their appearance, we miss entirely the big and obvious—usually because obvious to the mushroom is not always obvious to us. We may stand in a coniferous forest and have no idea about the soil pH, but the mushrooms know. They do not ooh and aah about all the rare species on the limestone barrens, like Newfoundland naturalists. They just know what is what, and use it to their advantage: one species grows on calciferous soil, the other on acidic, and that's that.

We mentioned coniferous woods specifically, because both *C. tubaeformis* and *C. lutescens* are mycorrhizal with conifers, and, therefore, only found in coniferous forests. That works out well for us food foragers, because most of our forests are coniferous. But we do have birch forests as well, particularly around where we live, on the west coast of the Island. And, as everybody knows, there is no reason to look for winter chanterelles in a birch forest. Well, not entirely. On the mainland there is a species of *Craterellus* living solely in deciduous forests, *C. ignicolor*. We first met it in Nova Scotia during the second NS foray in 2010.

1 & 2. Craterellus tubaeformis. *The biggest of our three species—mature caps may exceed 7 cm across. Fertile surface relatively sharply ridged, usually turning grayish at maturity. Stem ≥ twice cap diameter, various shades of yellow, usually becoming brownish at maturity. May be ridged. Grows on acid soil in moist places of coniferous woods. Often in copious amounts in an area.*

3 & 4. Craterellus lutescens. *Smaller—caps seldom reach 6 cm across. Fertile surface shallow, blunt ridges, remains yellow. Stem ≥ twice cap diameter, yellow-orange, may be ridged or only partly fused with segmented cap. Grows on alkaline, calcareous soil, with conifers, usually not in huge numbers.*

For a more thorough discussion of C. tubaeformis, *see Cornish J:* Craterellus tubaeformis. Omphalina *4(2):17–19. 2013.*

Marvelled at it and promptly forgot it as something that does not grow here.

Wrong!

Recently, we went looking for something else in the closest birch forest to our house. Suddenly, there on the ground was our pretty friend from NS, *C. ignicolor*. Admittedly, a bit long in the tooth, but unmistakable.

Half a dozen key identification features:

1. lives with birch, not conifer,
2. small (cap not over 6 cm across),
3. short stem (≤ twice cap diameter),
4. develops characteristic small hole in centre of cap,
5. stem remains brilliant yellow until darkening beyond senescence,
6. fertile surface pinkish at maturity.

These woods were the closest to our house, woods that we have crissed and crossed every which way for 17 years, visiting at least once a week, all year long. To miss something as pretty as this in your own back yard, to walk past it without registering—unforgivable!

Craterellus ignicolor. *Top. Younger specimens, showing the colour inspiring its name [igni = flame (think ignite)]. See photo next page to appreciate how well camouflaged they look, if autumn leaves were not removed for the photo.*

Middle. A bit drier specimens. Caps yellowish, stem remains brilliant yellow and pink tones can be seen on the fertile surface. Equally pale yellow fallen birch leaves have been cleared for the photo.

Lower. Old specimens, dried and weathered. Caps brownish, but stems more orange than brownish, as seen with older C. tubaeformis. *Some leaves left to show resemblance.*

Visits were on different days, under different weather conditions. Although the colours differ, it was uncanny to note how similar in colour the fallen leaves were on each occasion. Once found, they were plentiful in small patches, but unless specifically looking for them, they went unnoticed by eyes over a meter above ground level—see photo next page.

Maybe this was the first time they fruited there? **Wrong!** Where do you think the photo in the title banner came from? We found it in AV's *C. tubaeformis* file, taken in the same birch woods. Date: September, 2000.! They've been here all along. We missed them and AV misidentified what he had on the first photo.

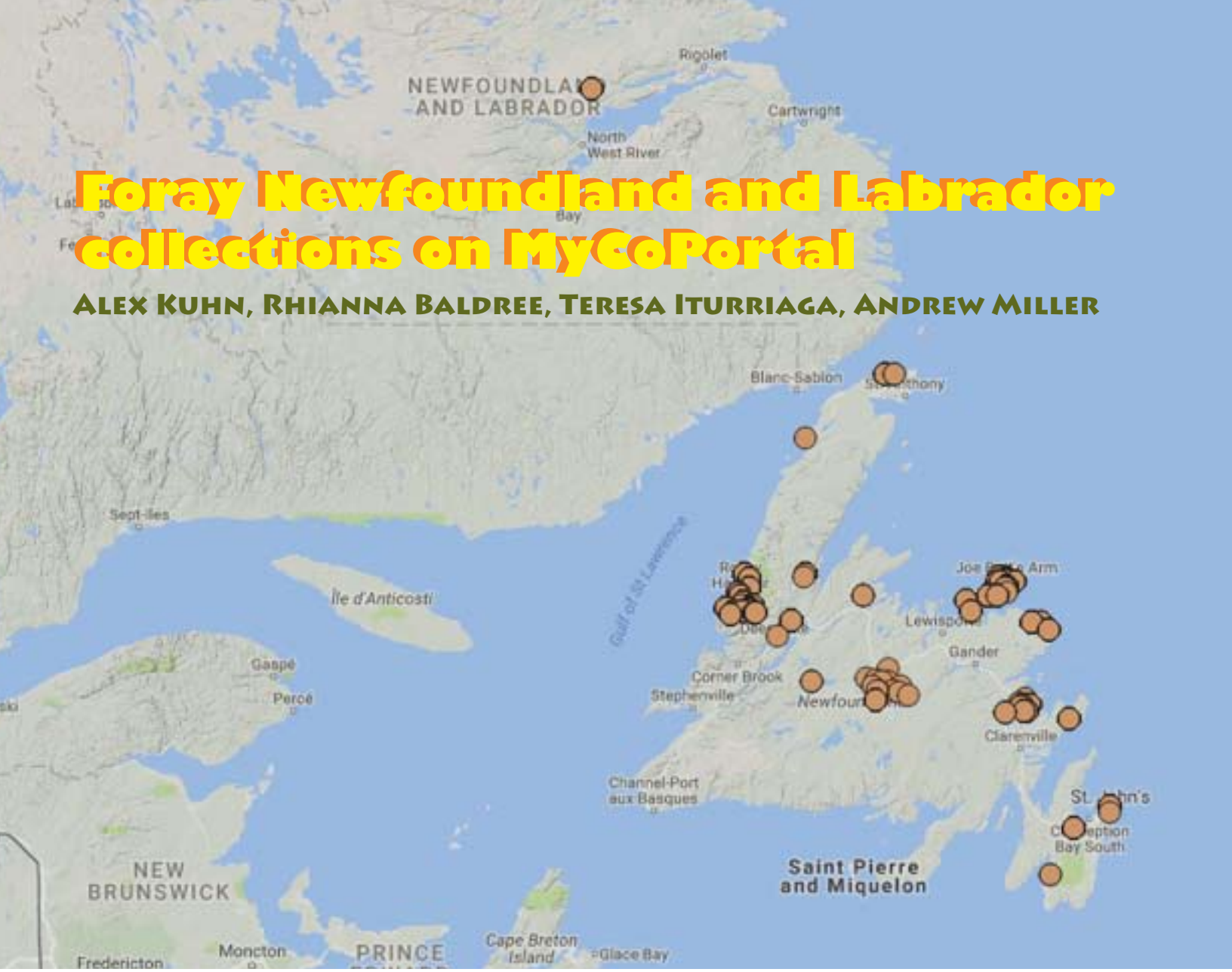
If they are as common as that in our own birchwoods, maybe, now that we know about them, we can find them? To test this, we returned several times over the next three weeks They were copious! We had warm dry autumn days, as well as wet rainy days. We saw fresh young mushrooms, all he way to old, dried ones. Even when almost all the yellow flame had gone out of them, they were still recognizable as totally different from our other *Craterellus* species. Interestingly, the fallen leaves among which they were so well hidden, also seemed to show a similar colour change. Often they mushrooms were totally hidden under fallen leaves, so that you had to know they were there, and wipe the leaves away to see them.

Welcome to our third species of *Craterellus*. For the naturalist, who gets enjoyment from the diversity of species—delightful epiphany! Maybe even of interest to the forager? But to scoop up all those little ones on the title banner just for one snack—I don't know…

Everything is interrelated. These birchwoods sprang up after elimination of the original coniferous forest from a combination of clear-cut logging and forest fires. Thus, flames provided a home for our flame-coloured chanterelle.

Foray Newfoundland and Labrador collections on MyCoPortal

Alex Kuhn, Rhianna Baldree, Teresa Iturriaga, Andrew Miller



Greetings from the Illinois Natural History Survey!

We should like to share an exciting project we are working on called the Microfungi Collections Consortium (MiCC). MiCC is an NSF-funded project that seeks to digitize microfungal specimens (e.g., bread molds, plant pathogens, powdery mildews, rusts, slime molds, and water molds) housed in collections across the United States and Canada. It is a collaborative effort among 38 US institutions. Specimen data of micro- and macrofungi generated through this project are made available online through the **Mycological Collections Portal** (MyCoPortal <www.mycoportal.org>). This data is freely accessible to both researchers and amateur mycologists alike, and we like to encourage everyone to get online and explore the collections!

We were very happy to hear that Foray Newfoundland & Labrador (FNL) was willing to share its data with us. After uploading five years of FNL collection data (2011 to 2015), our team georeferenced the records to add latitude/longitude coordinates, making it possible to map their location. MyCoPortal also has the ability to generate checklists of collections that may then be exported for personal use. With an average of over 400 collections per year (comprising 87% of MyCoPortal's total number of records from the province), it is clear that this is an important and incredibly successful effort in working to characterize the mycota of NL.

The data being generated is unique in that it is an aggregation of previously private collections, which is highly impactful for a number of

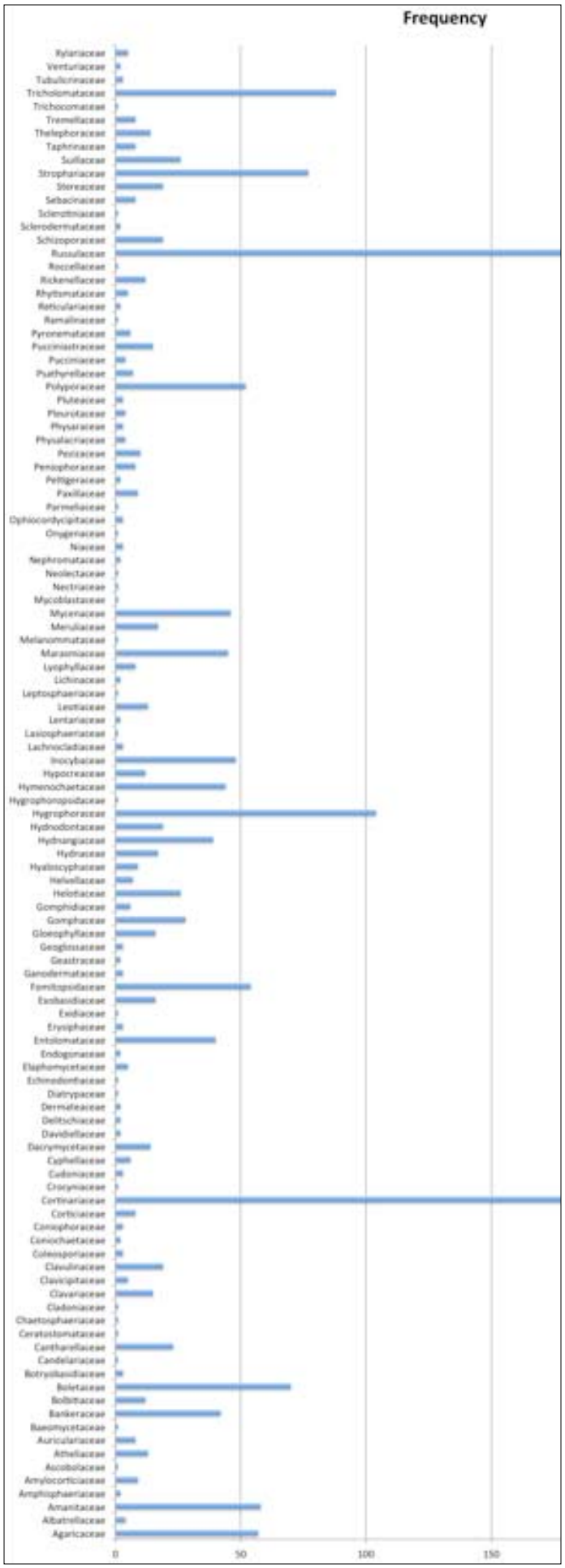
reasons. With the ability to perform searches across many collections, the process of locating and loaning specimens among institutions has become more efficient. With over 2.6 million fungal records, more robust analyses may be performed to begin to illustrate patterns of collection and, subsequently highlight geographic or taxonomic areas to focus on in future collecting. We may also be able to detect endemism or biodiversity hotspots, potentially track the spread of invasive or pathogenic species, or test the effects of climate change on range or phenology of fungal species.

As one of the first amateur mycology groups to send us its data, we are pleased to see your high standards for collecting, identifying, and recording appropriate specimen information (92% of your specimens are identified to species!). Your progressive attitude towards sharing data is exciting for us, as well. We sincerely hope you consider sending in future foray collections data to MyCoPortal to be included in your collection.

If any readers would like to discuss uploading their data to MyCoPortal, or have any questions on how to navigate the site, we can be reached at <help@mycoportal.com>. Updates and news regarding the project can also be found on our facebook page, Microfungi <www.facebook.com/microfungi.org> or at our website <www.microfungi.org>. We look forward to hearing from you!

Illustrations

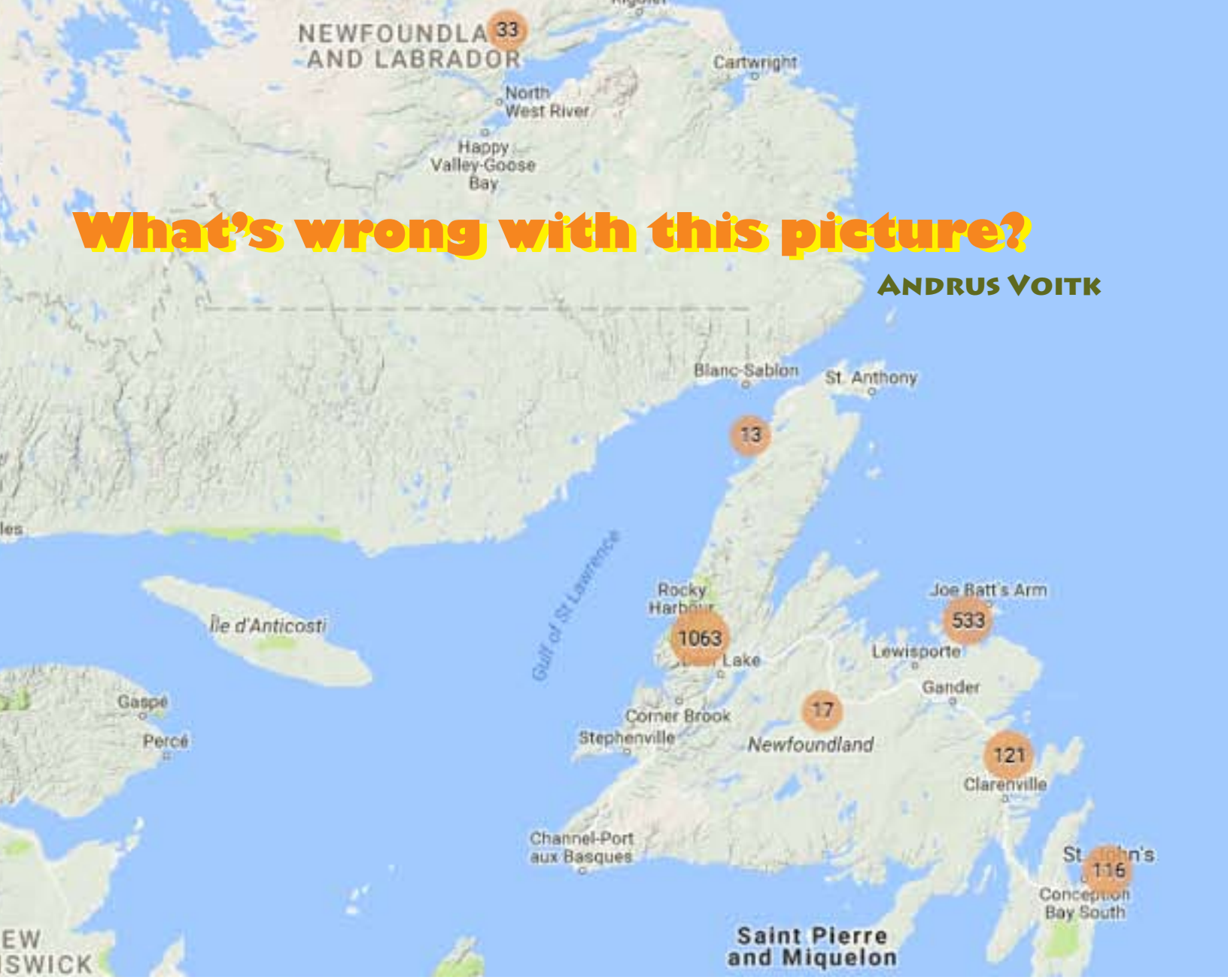
Title banner. *Each dot represents a single collection from the forays 2011–2015, in its geographic place. Because of scale and many collections at the same site, most dots overlap, and represent far more than a single collection. Location data extracted from FNL database information by MyCoPortal team. Clustering of dots is readily seen at the approximate sites of our forays or foray trails.*



Graph to the Right. *Frequency of species from fungal families collected 2011–2015. Cortinariaceae (the family to which genus* Cortinarius *belongs) is the most frequent, with over 260 collections, followed by Russulaceae (the family to which* Russula *and* Lactarius *belong) with nearly 250 collections, both off the chart. Gives you an idea of the groups we should concentrate on, if we want to know our mushrooms.*

What's wrong with this picture?

Andrus Voitk



FNL is on MyCoPortal. What does that mean? What is MyCoPortal?

Well, back in 2006 we found some *Ascocoryne turficola* and reported it as the first record for North America.[1] To make sure that nobody had collected it before, we scoured all books, foray lists and herbarium records we could find. As you can imagine, this is a lot of work. When we were done, there still remained the possibility that we had overlooked an obscure record someplace. It would have been a whole lot easier if all herbaria had a searchable web presence, but even then you would have to know how to find every herbarium's site.

BUT—what if all herbaria—big, small, private, public—were to register with one central registry, so that entry to that site would permit the search of all available collections?

That, friends, is MyCoPortal. How well it succeeds, depends on 1) how many institutions cooperate and 2) how accurate and complete the information is that they send in.

The how many institutions part is easy: the collection of the New York Botanical Gardens is on MyCoPortal, and now, also the collection of FNL. With such heavyweights setting the trend, can the Canadian National Mycological Museum (DAOM) be far behind?

How else could such data be used? For example, this year I wondered if a species grew on both sides of the Great Continental Divide. Colorado straddles the Divide, so maybe the collections of the Denver Botanical Gardens (DBG) would give the answer. How easy it was! All I had to do, was to look up the DBG collections of the target species on MyCoPortal. There they were, 13 collections, photos and all data, including locations. Within minutes I put the locations on the map and had my answer: the species grew on both sides of the Divide. Wonderful! I did not have to write a curator or await an answer. And now I knew exactly which species to request for further study.

Sounds wonderful, so what's wrong with the picture in the title banner? It shows the FNL collections from 2011–2015, sequestered into regions. The first thing to

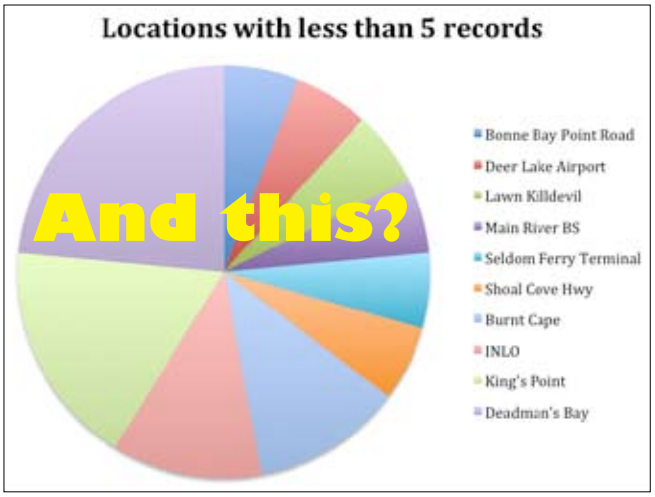
strike my eye was 33 collections from Labrador. We did not go to Labrador in those years and have no collections from there for that time period. I also noted only 13 collections from the Great Northern Peninsula. We collected there in 2012 with Gro Gulden, Jan-Otto Aarnæs and a small group, before our foray, and made 177 collections with 155 vouchers. Now you begin to get the picture: what's wrong with this picture is that it is wrong.

How can MyCoPortal be so inaccurate? Easy! Like all data depositories, it is only as accurate as the data supplied to it. The problem lies with what we send in. This is very good, because that means we can fix it, without need to wait for somebody else to do it.

To help, the MyCoPortal team georeferenced our collections from information we provided. Let us say a specimen was collected on Woods Trail, Sandy Point, or Ship Cove. How many Woods Trails, Sandy Points, or Ship Coves are in our province? A person in Champagne, Illinois, extracting this info from our database will accept the first site name the computer spits out, be it in Labrador or on the Island. Maybe even Nova Scotia.

This problem is easily corrected: enter map coordinates into the database. And, I am happy to report that when he saw these results, this is exactly what Chris Deduke, leader of our Database Team, decided to do, starting with our 2016 foray. Therefore, the review by MyCoPortal has already helped us provide better information: with proper coordinates anybody anywhere should be able to locate the collections accurately. Otherwise, georeferencing can only be done correctly by a local person familiar with the foray location and trails.

With nearly 20,000 records from the past 14 years, we may not be able to fix past data, but should have future data right. No foray has more than 10 trails, which are known beforehand. An approximate coordinate for each trail (trailhead, midpoint or some other arbitrary spot would be close enough) was programmed into the 2016 databasing software ahead of time, so that when the trail name was entered, its coordinates were automatically placed in another column. **The more complete and accurate information we provide, the more useful the data to others, no matter what their objective.**



How important is it to get the site right? In most cases, knowing a species is found in northeastern Canada, or specifically NL, is sufficient, and the exact location unimportant, so this information is still of great value. If, however, you were trying to identify a morel—they all look so alike—it would be a great help to know that it came from a site you know to be a limestone barren, because only one of our three species seems to prefer that habitat. Exact coordinates would help you. Many similar examples abound. For example, woodland or barrenland habitat differentiates two similar species of *Gymnopus*.[2] If you know exactly where all our *Cortinarius sanguineus* specimens were collected, and know the area, you would soon know that the species thrives in wet coniferous forest areas.[3] In other words, it is a big contribution to most investigators to know that certain species come from this province, but for detailed investigations, much more exactitude is required.

You have seen several ways that MyCoPortal information can be useful to the scientist. But MyCoPortal data is not only accessible to the scientist—it is open to all. If you want to know whether a species grows here (or somewhere else), you can find out from MyCoPortal. Or, suppose you wanted to organize an east coast mushrooming trip and wanted to avoid unproductive trails. From our data MyCoPortal can produce a list of foray trails you should avoid, trails that produced less than five collections in the past. Note that Deadman's Bay is on that list. Review of the FNL list for the visit shows 9 species. What happened? Well, closer review reveals that four collections were taken home in their entirety by a visitor (contrary to FNL policy), and are therefore not listed as collections in FNL hands. That leaves five, and possibly one was missed because of confusing database information.

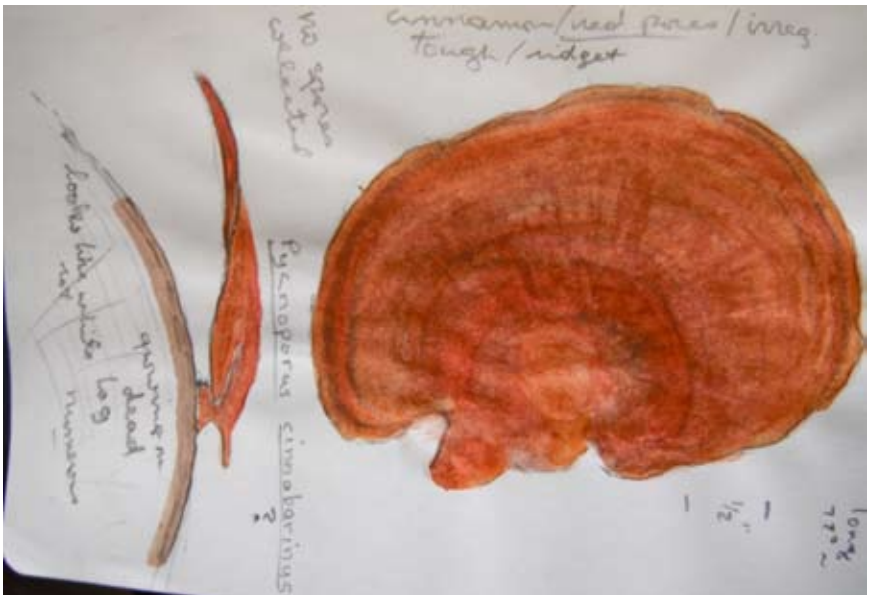
Same story again: MyCoPortal gives information only as accurate as that which is put in. If we fail to capture all collections, faulty information will make you decide an interesting site is unproductive, and give it a miss.

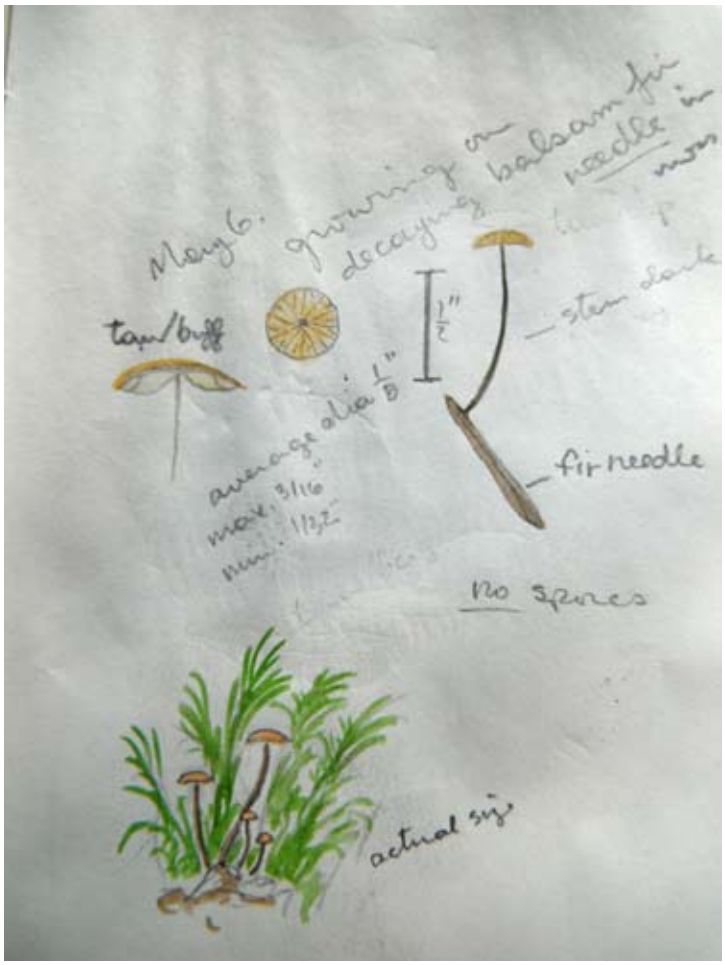
MyCoPortal is a powerful tool with many possible uses—we have only discussed a few of them here—but its accuracy, and, therefore, ultimate usefulness, rests in our hands.

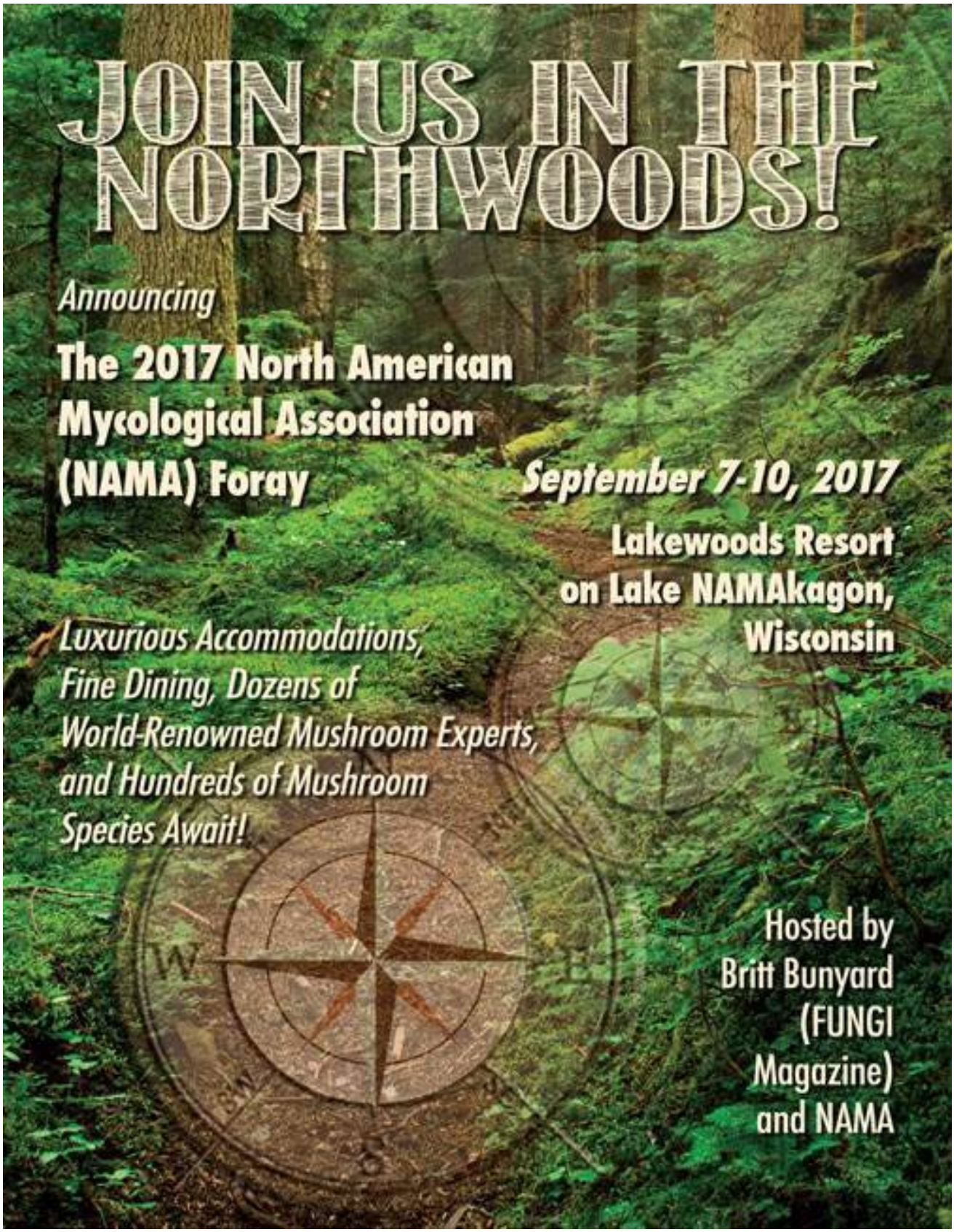
References

1. Bunyard BA, Wang Z, Malloch D, Clayden S, Voitk A: New North American records for *Ascocoryne turficola* (Ascomycota: Heliotales). FUNGI 1(2):23–31. 2008.
2. Petersen R, Voitk A: The species of *Gymnopus* in Newfoundland and Labrador. Omphalina 5(5):21–27. 2014.
3. Voitk A: The *Cortinarius sanguineus* of Newfoundland and Labrador is *Cortinarius sanguineus*. Omphalina 5(8):14–15.2014.

The Bishop's Sketchbook







Our friend and member of two past faculties, Britt Bunyard, Editor of FUNGI, asked us to spread the news: in 2017 he and FUNGI are hosting the annual NAMA foray.

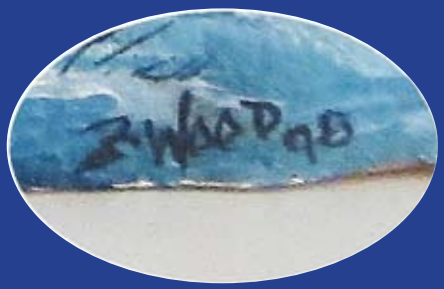
You'll have all those scientific names down pat, just back from our foray in the Bay of Islands, so if you want to visit Britt and take in the big show—make plans now!

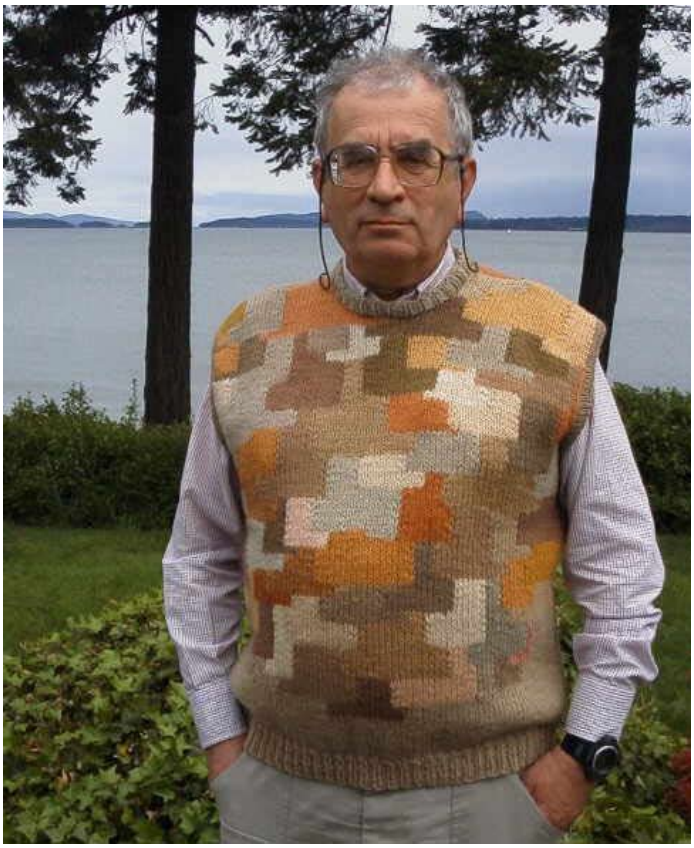
THE MAIL BAG

Thanks for the latest Omphalina, to which I would like to add an attribution for some artwork you published. On page 5, Figure 1 is identified as a "craft object" and I'm sure you would like to recognize the craft producer as the late Barbara Wood of Happy Valley-Goose Bay, whose paintings on artist's conks are well-known souvenir items from Labrador.

Mavis Penney

Ed note: Thank you for the precision, Mavis. The author meant no slight to Ms Wood, even if he did indicate a personal preference for artless *Ganoderma*. I looked at the photo, and was delighted to see Ms Wood's signature at the right lower corner of the conk: "B Wood 98". Thanks to your sharp eyes, we have it here in black and ~~white~~ blue.





Thanks for the kind words about the Mushrooms of Toronto booklet. In fairness I should point out the involvement and contribution of others, especially Jean Marc Moncalvo from the ROM. The booklet would never have been possible without the partnership with the ROM.

Pat Burchell

Ed note: Thank you for letting me know, Pat. I apologize, if in my haste to squeeze this notice in before press time, I left the impression of intentionally undervaluing contributors. Determining who had what role with this book is not easy. Authors are not listed on the cover or title page. Rather, at the back are two pages of acknowledgments, listing artists, partner organizations, photographers, and a 6-member group of "contributors"—no hint who planned, designed, wrote, or edited. Lacking room for the entire list—I tossed out half my editorial to free up space—I selected the two names likely to increase recognition among our intended readership. Erroneously, I said that they were two of four, and out of unthinking habit I used the word "written". I can only offer the excuse that I read about your book from the Mycelium received shortly before going to press. Looking it up, I liked it so much that I wanted to let our members know about it before our foray. Whatever the contribution of anybody associated with the production of this book—whether named in my short note, or not—every last one can take joy and justifiable pride in a fine product!

After seeing the resplendent Machiel Noordeloos in a mushroom dyed sweater, I humbly offer a pullover that Oluna knitted for her husband Adolf, in the winter 1999/2000. A white Merino blend wool was dyed with 16 different species of mushrooms (6 spp. *Cortinarius* subgen. *Dermocybe* and 1 sp. each from 9 other genera) and then knit after a Kaffe Fassett design. On the photo by Bryce Kendrick, submitted with his kind permission, the pullover is professionally presented by the renowned fashion model Adolf Ceska. It is ironic that the colourblind model cannot see some of its 42 colours. The photo found use in Kendrick's Fifth Kingdom, where, for unknown reasons, Ceska appears immediately after a bottle of BEANO.

Adolf Ceska

Ed note: After a successful poster of edible mushrooms, maybe FNL can work on one featuring fungal-related male haberdashery. More poster boys needed.

OUR PARTNER ORGANIZATIONS

People of Newfoundland and Labrador:

- Department of Environment and Conservation
  - Parks and Natural Areas Division
  - Wildlife Division
- Forestry and Agrifoods Agency
  - Center for Forest Science and Innovation

People of Canada, through

- Parks Canada
  - Terra Nova National Park
  - Gros Morne National Park

The Gros Morne Co-operating Association

Memorial University of Newfoundland

- St. John's Campus
- Grenfell Campus

Tuckamore Lodge

Quidi Vidi Brewing Company

FORAY NEWFOUNDLAND AND LABRADOR

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