NORTH AMERICAN MYCOLOGICAL ASSOCIATION – EDMONTON MYCOLOGICAL SOCIETY FORAY REPORT

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ABSTRACT

The Edmonton Mycological Society and the North American Mycological Association co-hosted a fungal foray from August 17-19, 2006, near Hinton, about 285 km west of Edmonton, AB, Canada. The foray locations fell within the Rocky Mountain foothills, which represents an ecotone between the Boreal Plain and Mountain Cordillera ecozones. About 140 professional and amateur mycologists gathered at the Hinton Forestry Training Centre and participated in 18 forays into the surrounding forests. These forests varied in elevation and plant community composition and fell within boundaries of the Foothills Model Forest, the West Fraser Mills Ltd. Forest Management Area, and national and provincial parks. Over 4,000 fungal specimens were collected, which represented 317 taxa (266 identified to species, the rest only to genus). In all, 279 specimens were accessioned at the Field Museum in Chicago, IL, USA, and serve as permanent records of the foray. Basidiomycetes were more commonly collected than ascomycetes (295 and 22 taxa, respectively). Members of the Tricholomataceae (54 species), Cortinariaceae (27 species), Russulaceae (26 species), Gomphaceae (13 species), and Hygrophoraceae (11 species) predominated the basidiomycetes, while members of the Cudoniaceae, Helvellaceae, Pyrenomataceae (each 3 species) Hypocreaceae, and Helotioaceae (each 2 species) predominated the ascomycetes. Within the basidiomycetes, species of *Cortinarius* (15 species), *Lactarius*, *Russula*, and *Tricholoma* (each 13 species), and *Hygrophorus* (9 species) were most common. Within the ascomycetes, species of *Helvella* (3 species) and *Hypomyces*, *Peziza*, and *Spathularia* (each 2 species) were most common. About half of the collected specimens were identified only to genus. The majority of fungi is saprobic and mycorrhizal in nature and is intricately involved in the decomposition of organic mater and the translocation of nutrients from the soil to growing vegetation in the forest stands. In addition, many of the species are edible and/or have medicinal properties. A small number of forest pathogens were collected as well. Of the 266 taxa identified to species, 122 represented new records for Alberta. An additional 64 species were known only from fewer than five previous collections. Over the course of the 3-day foray, nearly 800 person-hours were spent collecting fungi, which represents the largest single fungal collection event in the history of Alberta.

INTRODUCTION

The Kingdom Fungi has five divisions: the Chytridiomycota (chytrids), Zygomycota (sugar fungi), Glomeromycota, Ascomycota (sac fungi), and Basidiomycota (club fungi). This classification system is based on morphological and molecular characteristics, e.g., the spore-producing structures, if present, are some of the most useful characters for identifying fungi and taxonomic placement. From a taxonomic perspective, fungi are more closely related to animals than plants. Globally, about 85,000 species of fungi have been formally described to date; however, Hawksworth (1991) estimated that the total number of fungi may reach 1.5 million species gobally. Consequently, our current understanding of fungal species richness is severely limited, with only about 6% of fungi having been discovered.

The division Basidiomycota has about 30,000 described species, which is 35% of the described species of true Fungi (Kirk et al. 2001). The most conspicuous and familiar basidiomycetes are those that produce mushrooms, which are sexual reproductive structures; however, this division also includes yeasts (single-celled forms; Fell et al. 2001) and strictly asexual species. Basidiomycetes are found in virtually all terrestrial ecosystems, as well as freshwater and marine habitats (Kohlmeyer and Kohlmeyer 1979, Hibbett and Binder 2001), and perform a variety of roles ranging from being saprobes (decomposers of organic matter) to mutualists (mycorrhizal with plants) to pathogens of plants and animals.

The division Ascomycota accounts for about 63% of all described fungi. Most ascomycetes are microscopic in nature, reproduce only asexually, and are rarely seen. Among the ascomycetes, the morels (*Morchella* spp.) are likely the most well-known representatives, because they are choice edibles. This division also includes most of the fungi that combine with algae or bacteria to form lichens. Functionally, most ascomycetes are saprobic in nature.

The remaining three divisions, the Zygomycota, Glomeromycota, and Chytridiomycota, represent about 2% of all known fungi. The division Zygomycota contains about 1% of the described species of true Fungi (about 900 described species; Kirk et al. 2001). The most familiar representatives include the fast-growing molds that spoil foods with high sugar content, such as fruits and breads. Although these fungi are common in terrestrial and aquatic ecosystems, they are rarely noticed by humans because they are of microscopic size. Fewer than half of the species have been cultured and the majority of these are members of the Mucorales, a group that includes some of the fastest growing fungi. The division Glomeromycota currently comprises about 150 described species distributed among ten genera, most of which are defined primarily by spore morphology. These fungi are essential for terrestrial ecosystem function. Members of this group are exclusively mutualistic symbionts that form arbuscular mycorrhizal (AM) associations within the roots of the vast majority of herbaceous plants and tropical trees. Lastly, the oldest division of fungi, the Chytridiomycota, comprises about 1,000 described species, most of which inhabit aquatic habitats and are saprobes and pathogens. For example, chytrids have been linked to the recent decline in amphibians worldwide, causing a dermatophytic infection that ultimately kills the infected host (Berger et al. 1998). All chytrids are microscopic and reproduce only asexually.

From a functional perspective, fungi are some of the most important organisms on Earth, both in terms of their ecological and economic roles. First, the majority of fungi is saprobic in nature, i.e., they decompose organic matter and liberate nutrients, thereby making them available for growing plants. This is accomplished via a suite of extracellular enzymes capable of breaking down the simple and complex polymers that comprise all organic matter. Second, many fungi form mycorrhizal relationships with almost all plants on Earth (Smith and Read 1997). These fungi form characteristic structures on and/or in the roots of vascular plants and aid in the translocation of generally biounavailable nutrients from the soil solution to the roots of their plant hosts. This relationship allows plants to live in even the harshest environments, such as acidic peatlands and high altitude and latitude ecosystems. Third, fungi play significant roles in the medical (e.g., production of antibiotics, anticancer treatments, genetics and molecular research) and food industries (e.g., fermentation processes, edible mushrooms), in bioremediation efforts (e.g., flare pits, heavy metal mines), and as pathogens of humans (e.g., ringworms, athlete’s foot), plants (e.g., rusts, smuts, cankers), and animals (e.g., chytrids). Fungal communities have been examined in a variety of plant species in terrestrial (Heilmann-Clausen 2001, Lumley et al. 2001) and wetland (Tokumasu 1994, Thormann et al. 2001a) ecosystems, thereby contributing to host indices (Shaw 1973, Ginns 1986, Farr et al. n.d., Glawe n.d.). Other studies have examined the fungal richness in specific geographical regions (e.g., Lawrence and Hiratsuka 1972a, b, Redhead 1989) or ecosystems (Kernaghan and Harper 2001, Thormann and Rice 2007). Despite an every growing understanding of the fungal diversity of plants and ecosystems, new or long-term surveys always expand the species list of that plant or within an ecosystem. For example, Straatsma et al. (2001) found new species of mycorrhizal and saprobic fungi every year in the same sample plots over a 25-year period in a forest in Switzerland. Most species were transient and were collected only a few times over that period, while others occurred more regularly. They suggested that the number of species would undoubtedly increase if their survey was continued. Precipitation and temperature during the summer and early fall months appeared to influence fruitbody formation most prominently (Straatsma et al. 2001).

Numerous fungal surveys have been conducted in Alberta, with a particular emphasis on basidiomycetes. The surveys were conducted from varying substrata and ecosystems in national (e.g., Lawrence and Hiratsuka 1972a, b) and provincial parks (e.g., Richards and Murray 2002), in the southern (e.g., Thomas et al. 1960, Abbott and Currah 1989, Lumley et al. 2001, Thormann et al. 2001a) and northern boreal forests (e.g., Danielson 1984, Richards and Murray 2002), and the Rocky Mountains and its foothills(e.g., Hambleton and Currah 1997, Kernaghan et al. 1997, Kernaghan and Harper 2001). To date, the species richness of fungi in Alberta remains unknown, although preliminary data basing efforts have captured about 6,500 fungal records to date, which represent about 1,800different species (Edmonton Mycological Society unpubl.). The objectives of this foray were to (1) investigate the mycological species richness and (2) assess the roles of the fungi in the forest ecosystems in the Rocky Mountain foothills near Hinton, AB.

METHODS AND MATERIALS

<u>Foray locations</u>

Hinton lies in the Rocky Mountain foothills, which represent and ecotone of the Boreal Plains and Montane Cordillera ecozones (Environment Canada 2005). As such, the Hinton area is characterized by forests dominated by coniferous tree species, including white, black, and Engelmann spruces (*Picea glauca* (Moench) Voss, *P. mariana* (Mill.) B.S.P., and *P. engelmannii* Parry *ex* Engelm., respectively), lodgepole pine (*Pinus contorta* Dougl. *ex* Loud var. *latifolia* Engelm. *ex* S. Wats.), Douglas-fir (*Pseudotsuga menziesii* (Mirbel) Franco, and balsam fir (*Abies balsamea* (L.) P. Mill.), as well as deciduous trees species, including aspen and poplars (*Populus* spp.), willows (*Salix* spp.), and birch (*Betula* spp.). The terrain varies from a gentle rolling topography at the eastern-most foray site (Obed Lake Provincial Park) to one that is dominated by exposed rock faces and alpine meadows at the western-most foray sites (Cardinal Divide). The climate is characterized by long, cold, snowy winters and short, cool summers. The mean annual temperature is 3.7 ºC (mean monthly range from -8.9 ºC to +15.0 ºC) and the mean annual precipitation is 620 mm (Jasper East Gate Weather Station; Environment Canada 2004).

Eighteen foray sites were selected in and around Hinton, AB, Canada (Table 1). Of these, two sites were located in a national park (Jasper National Park), six sites were in located in provincial parks (W.A. Switzer Provincial Park, Obed Lake Provincial Park), and the remaining ten sites were located on crown lands in the Rocky Mountain foothills, all of which fall into the Foothills Model Forest and some of which fall into the West Fraser Mills Ltd. Forest Management Area. All sites were located within 85 km from Hinton and varied in their biophysical characteristics (Tables 1, 2).

<u>Collection of fungi</u>

Participants of the NAMA-EMS Foray signed up for specific forays and were transported in vans to the 18 foray locations. On average, there were 21 participants per foray (range 10-75), and each foray lasted for about 2 hrs. Foray leaders introduced each foray site to the participants, e.g., the major tree species and understory species at the site, before beginning the collection of fungi. As many different fungi as possible were collected by excising them carefully from the substrate, e.g., trees, logs, branches, mineral/organic soil, mosses, and placing them individually into wax paper bags. Only a small number of replicate specimens of the same species were collected. A collection data sheet was filled out for each specimen at the time of collection. Consequently, this survey concentrated on species richness rather than biodiversity, the latter being based on the number of species and evenness. Data sheet information included: genus, specific epithet, foray number or location, identifier's name, substrate (wood, litter, ground, mycorrhizal, specific host if known, and other), and the collector's name. Since foray participants dispersed throughout a foray site, multiple specimens of the same species were often collected and subsequently processed at the Forestry Training Centre in Hinton.

Identification and accessioning of fungi

Each specimen was removed from the wax paper bag and placed into a cardboard container along with the data sheet at the Forestry Training Centre following each foray. All specimens collected at each foray site were pre-sorted into families or genera before their identifications were confirmed or corrected by professional mycologists and expert amateurs. Identifications were based on morphological characters only. In many instances, staining with fungal-specific stains and light microscopy were used to identify specimens prior to accessioning.

Representative fungal specimens of interest were digitally photographed and accessioned in the Field Museum (F), Chicago, IL, USA, which is the herbarium where the North American Mycological Association deposits all of its voucher specimens. All voucher specimens were dried in a mushroom drier, carefully packaged, and sent to the Field Museum within two weeks following the foray. These specimens will be kept in perpetuity at the Field Museum and serve as an official permanent record of the foray. No fungal specimens were accessioned in Alberta mycological herbaria.

Authorities for all fungi and the two slime molds follow the Index Fungorum (2007). Ecological roles were based on Arora (1986). Common names were provided where available. The assessment of new records of fungi to Alberta is based on the data compiled in the Edmonton Mycological Society Fungi of Alberta data base (unpubl.).

RESULTS

Species richness and mycogeography

Over 4,000 fungal specimens were collected, which represented 317 taxa (a taxon (pl. taxa) represents a specimen of unspecified taxonomic position, e.g., identified to genus only; Table 3). Basidiomycetes were more commonly collected than ascomycetes (295 species, 93% of all identified species vs. 22 species, 7% of all identified species, respectively). Members of the Tricholomataceae (54 species, 17% of all species), Cortinariaceae (27 species, 8% of all species), Russulaceae (26 species, 8% of all species), Gomphaceae (13 taxa, 4% of all species), and Hygrophoraceae (11 species, 4% of all species) predominated the basidiomycetes, and accounted for 41% of all fungi identified to species. Within the basidiomycetes, members of *Cortinarius* (15 species), *Lactarius* (milk caps), *Russula*, and *Tricholoma* (13 species each), and *Hygrophorus* (waxy caps, 9 species) were most common. Members of these five genera represented 20% of all fungi identified to species. In addition to the identified taxa, nearly the same number of specimens remained identified only to genus. The largest number of specimens identified to only this taxonomic level belonged to the genera *Clitocybe*, *Cortinarius*, *Russula*, and *Suillus* (slippery jacks).

Members of the Cudoniaceae, Helvellaceae, Pyrenomataceae (3 species each), Hypocreaceae, and Helotioaceae (2 species each) predominated the ascomycetes, but accounted for only 4% of all fungi collected. Within the ascomycetes, species of *Helvella* (elfin saddles, 3 species) and *Hypomyces*, *Peziza* (cup mushrooms), and *Spathularia* (fairy fans, each 2 species) were most common, and accounted for 3% of all fungi identified to species.

Fuligo septica var. *septica* and *Lycogala epidendrum* (wolf's milk slime) were also collected; however, they are members of the Myxomycota, the slime molds, and not true fungi. Therefore, they will not be addressed further from hereon.

Of the 317 fungal taxa collected at the foray, 266 were identified to species or to a species affinity (denoted as "cf."). In cross-reference with the data base of the Edmonton Mycological Society (unpubl.), 122 fungi represented new records for Alberta, i.e., they have never been collected in Alberta prior to this foray (Table 4). Most prominently, there were ten species of *Cortinarius*, eight species each of *Lactarius* (milk caps) and *Ramaria* (coral fungi), seven species of *Mycena*, six species of *Pluteus* (deer mushrooms) and five species each of *Russula* and *Tricholoma*. Together, these seven genera were represented by 49 new species to Alberta. Additionally, 64 species were previously known only from five or fewer collections. Most prominently, there five uncommon species of *Russula* and four uncommon species of *Hygrophorus* (waxy caps; Table 4). The remaining 80 species were known from more than five previous collections in Alberta and were considered to be widespread.

Roles of fungi

The majority of fungi is saprobic (199 taxa) and mycorrhizal (111 taxa) in nature (Table 3). The dominant saprobic genera were *Clitocybe*, *Hypholoma*, *Marasmius*, *Mycena*, *Pluteus* (deer mushrooms), all polypores, *Ramaria* (coral fungi), and most of the ascomycetes. The dominant mycorrhizal genera were *Cortinarius*, *Hebeloma*, *Hygrophorus* (waxy caps), *Inocybe*, *Lactarius* (milk caps), *Russula*, *Suillus* (slippery jacks), and *Tricholoma*. *Helvella* (elfin saddles) and *Ramaria* (coral fungi) spp. are also suspected mycorrhizal taxa.

Numerous species lend themselves for human consumption, e.g., species of *Coprinus* (shaggy manes), *Hydnum* (tooth fungi), *Lactarius* (milk caps), *Lepista*, *Leccinum* (red tops), *Lycoperdon* (puffballs), and *Suillus* spp. (slippery jacks). Several fungi with medicinal properties, including species of *Fomes*, *Fomitopsis*, and *Ganoderma* (all polypores), were also collected on this foray. Lastly, a small number of plant pathogens (5 taxa, mostly *Pholiota* spp. and *Armillaria ostoyae*) and mycoparasites (all *Hypomyces* spp.) were encountered; the latter on parasitized *Russula* and *Lactarius* (milk caps) spp. (Table 3).

DISCUSSION

Species richness and mycogeography

The 317 taxa (Tables 3, 4) collected at this foray represent a significant contribution to our understanding of the fungal species richness and mycogeography in Alberta. This foray identified 122 new species in Alberta, and an additional 64 that had previously been known from less than five collections. The majority of these records is based on species of *Cortinarius*, *Hygrophorus*, *Lactarius*, *Mycena*, *Pluteus*, *Ramaria*, *Russula*, and *Tricholoma* (Table 4). We did not attempt to determine if any of the fungi identified in this foray represent new records to Canada or North America. In all, 279 specimens were accessioned in the Field Museum in Chicago (Table 5).

There are several explanations for this significant number of new species to Alberta. First, several of these genera are very complex, and their species pose substantial challenges to identifiers. For example, Index Fungorum (2007) indicates 4,326 different species, subspecies, and varieties for the genus *Cortinarius* alone; it is the largest genus of gilled mushrooms (Arora 1986). Similarly, the genus *Russula* lists 2,254 species, subspecies, and varieties. Needless to say, neither genus has that many different species. Their actual numbers may lie in the neighborhood of about 1,000 species of *Cortinarius*, many of which remain undescribed, and about 200 species of *Russula* (Arora 1986). Even though their fruiting bodies are recovered on almost every foray, their identification is highly problematic due to their morphological variation (*Russula* spp. range in colour from yellow to red to orange to green to white to brown and often the same species is characterized by substantial colour variation) and necessity for microscopic and/or molecular identification approaches. Consequently, members of these large and highly complex genera are often discarded or their identification remains at the genus level. The presence of expert mycologists at this foray contributed to the range expansion of many fungi, including members of the Cortinariaceae, Pluteaceae, and Russulaceae among others, into Alberta and a better understanding of their biogeography and biodiversity.

Second, the likelyhood that some of the fungi that represent new records to Alberta have been misidentified in previous foray is substantial. This is particularly true for species of *Mycena*, *Pluteus*, and *Hygrophorus*. These genera are characterized by small- to medium-statured fruiting bodies that can easily be confused with members of other genera. For example, members of the Hygrophoraceae (waxy caps), such as *Hygrophorus*, can be mistaken for members in the Tricholomataceae, particularly species of *Clitocybe*, *Laccaria*, *Marasmius*, *Mycena*, and *Omphalina* (Arora 1986), all of which are small- to medium-statured and have white spores. Careful microscopy work is often necessary to identify properly members of these morphologically similar genera.

Third, it is possible that these species truly have never been previously collected in Alberta. Straatsma et al. (2001) found new species of mycorrhizal and saprobic fungi every year in the same sample plots over a 25-year period in a Swiss forest. Most species were collected only a few times over that quarter-century period, while others occurred more regularly. They suggested that precipitation and temperature during the summer and early fall months appeared to influence fruitbody formation most prominently (Straatsma et al. 2001). The sporadic fruiting nature of many species of fungi may have contributed to the substantial proportion of new species to Alberta in this foray.

Fourth, habitat variation and sampling effort (about 800 person-hours) in this foray likely influenced species richness and the capture of novel species to Alberta. The 18 foray sites were located in the Boreal Plain and Montane Cordillera ecozones, each with its own biogeophysical characteristics (Environment Canada 2005). Collecting sites varied from the gentle rolling hills of Obed Lake Provincial Park dominated by black spruce and feathermosses to the alpine meadows of the Cardinal Divide dominated by low shrubs and grasses (Tables 1, 2). No previous foray has ever examined as varied a habitat range as this foray.

<u>Roles of fungi</u>

Saprobes – The majority of the fungi collected at this foray is saprobic in nature (111 taxa; Table 3) and is intricately involved in the decomposition of organic matter and thereby the liberation of nutrients into the soil solution. The dominant saprobic genera were *Clitocybe*, *Hypholoma*, *Marasmius*, *Mycena*, *Pluteus* (deer mushrooms), all polypores, *Ramaria* (coral fungi), and most of the ascomycetes (Table 3).

Decomposition is a complex process, which includes nearly all changes in organic matter that has undergone senescence or death (Brinson et al. 1981). Leaching of soluble organic matter precedes losses due to assimilation by microorganisms or removal by animals. Decomposition is completed with the loss of the physical structure and changes in the chemical constituents of the remaining organic matter. The rate of litter decomposition is affected by moisture, oxygen availability, temperature, acidity, and the nutrient status of ecosystems (Brinson et al. 1981, Gorham 1991, Thormann et al. 2001b). Fungi play fundamental roles in the decomposition processes of organic matter in all ecosystems and may be more important than bacteria, because of their extensive hyphal growth habit, faster growth rates, and ability to translocate nutrients through their hyphal network. From a mycological perspective, changes in litter quality, the water potential of the litter, temperature, and pH have been shown to affect fungal communities of various substrates (Lumley et al. 2001, Thormann et al. 2003, 2004). Macromolecules of plant origins comprise the primary substrate available for fungal decomposers in terrestrial ecosystems (Kjøller and Struwe 1992). Lignin, holocellulose, and cellulose are the dominant structural polymers in plant tissues (>80% of all C polymers; Swift et al. 1979). The decomposition of these macromolecules by fungi is accomplished via the synthesis of a diverse suite of extracellular enzymes, including cellulases, polyphenol oxidases, pectinases, and amylases among others (Deacon 1997). This enzyme cocktail is excreted into the environment and degrades the organic matter it contacts as it diffuses through the soil solution. Many fungi have the ability to degrade simple molecules, including starch; however, their ability to degrade complex structural polymers (e.g., cutin, suberin, "Klason lignin", true lignin, and tannins) is limited (Domsch et al. 1980) and has most often been ascribed to basidiomycetes and select groups of ascomcyetes.

Most of the saprobic fungi collected in this foray have a terrestrial habit, i.e., they grow on the soil. As such they are involved in the decomposition of leaves, small branches, bark, needles, roots, and tree trunks. For example, basidiomycete species of *Clitocybe*, *Hypholoma*, *Marasmius*, *Mycena*, and most of the ascomycetes (e.g., *Helvella* and *Peziza* spp.) are the preeminent decomposers of leaves and needles, and have a preference for simpler structural polymers, including starch, sugars, and pectin. Other saprobic basidiomycetes, such as *Ramaria* and *Pluteus* spp., are largely terrestrial as well, but they tend to grow on wood on the soil surface, fallen trees, or buried wood. In contrast, *Bjerkandera*, *Fomes*, *Fomitopsis*, *Ganoderma*, *Gleophyllum*, *Phellinus*, *Polyporus*, *Trametes*, and *Trichaptum* spp., all polypores, grow exclusively on tree trunks, fallen logs, and larger branches and are actively involved in the decomposition of wood. They generally are specialist in decomposing complex structural polymers, including lignin, tannins, and cellulosic polymers. Together, these fungi have the capability to decompose nearly all organic polymers in nature. The liberated nutrients and elements either diffuse freely through the soil solution and are assimilated by growing plants or microbes or are chemically bound to soil particles and remain biounavailable to plants; however, mycorrhizal fungi are capable of accessing these nutrients and elements and translocate them to their host plants.

Mycorrhizas – Mycorrhizal fungi, particularly ectomycorrhizal fungi with their conspicuous epigeous fruiting bodies, form a prominent component of most ecosystems. On this foray, 111 different mycorrhizal fungal taxa were collected on the 18 foray sites. The dominant mycorrhizal genera were *Cortinarius*, *Hebeloma*, *Hygrophorus* (waxy caps), *Inocybe*, *Lactarius* (milk caps), *Russula*, *Suillus* (slippery jacks), and *Tricholoma*. In addition, the ascomycete genus *Helvella* (elfin saddles) and the basidiomcyete genus *Ramaria* (coral fungi) are suspected mycorrhizal taxa; however, they may be more saprobic in nature (Table 3).

"Mycorrhiza" is Latin and literally means "fungus root" and was first used by the German forest pathologist Frank in 1885. Mycorrhizas are defined as "mostly mutualistic associations between fungi and the roots of higher plants, in which the fungus forms consistently recognizable and physically distinct structures without causing any perceivable negative effect" (Fernando 1995). This close association between plants and mycorrhizal fungi began over 460 million years ago (Remy et al. 1994) and it is crucial for the establishment and health of most plants. Research suggests that up to 95% of all land plants are mycorrhizal (Smith and Read 1997). Both partners benefit in this association. The fungus primarily obtains carbon in the form of sugars from the plant for growth, while the plant receives nutrients, water, and increased protection from other soil microbes from the mycorrhizal fungus in return. It has been shown that mycorrhizal fungi significantly increase the absorptive surface for nutrients in the soil by means of their extensive hyphal networks emanating from the colonized roots. In some trees, hyphae of ectomycorrhizal fungi constitute up to 80% of the entire absorptive surface area, underlining their importance.

There are three major types of mycorrhizal associations: (1) ectomycorrhizas, (2) endomycorrhizas, and (3) ectendomycorrhizas. Basidiomycetes represent by far the largest group of fungi involved in mycorrhizal associations, being the dominant ectomycorrhizal and the sole arbutoid, monotropoid, and orchid mycorrhizal fungi (Smith and Read 1997). Ectomycorrhizal fungi are characterized by the presence of mostly surficial (mantle) structures on host plant roots, although the Hartig Net, the area of nutrient exchange between the plant an the fungus, envelopes root cortical cells as well. Their fruiting bodies are often the most prominent fruiting bodies in forest ecosystems.

Glomeromycetes are the only group of fungi that form arbuscular mycorrhizal associations, a form of endomycorrhizas since almost all fungal structures involved in the nutrient exchange between the fungus and the plant (vesicles and arbuscules) are contained within host plant root cortical cells and there are very few root external fungal structures. These associations are by far the most widespread of any, with nearly 90% of all land plants having their roots colonized by these fungi (Smith and Read 1997). This dominance may be explained by the fact that glomeromycetes are much older than ascomycetes and basidiomycetes from an evolutionary perspective. Hence, they had more time to develop their associations with plants. An interesting mycorrhizal association exists between species of *Armillaria* (honey mushrooms) and orchids. While the fungus is a significant tree pathogen in Canada's boreal forest, it is absolutely essential for the survival of some orchid species. Lastly, many members of the Ericaceae grow in nutrient-poor and often acidic ecosystems (peatlands). Here, ericoid mycorrhizal fungi provide them with the nutrients and protection necessary to allow them to flourish under these harsh conditions.

The fungal families Cortinariaceae, Hygrophoraceae, Russulaceae, and Tricholomataceae are comprised of some of the largest and most complex fungal genera, e.g., *Cortinarius* and *Russula* (Index Fungorum 2007), many of which are comprised primarily of mycorrhizal fungi (Schalkwijk-Barendsen 1991, Bossenmaier 1997, Kernaghan et al. 1997, Kernaghan and Harper 2001). Most ectomycorrhizal fungi are generalists and are associated with various tree species, i.e., species of *Cortinarius*, *Hebeloma*, *Hygrophorus* (waxy caps), *Inocybe*, *Lactarius* (milk caps), *Russula*, *Suillus* (slippery jacks), and *Tricholoma* are associated with both coniferous and deciduous trees; however, a certain degree of specialization can be seen for some genera. For example, *Suillus* spp. are most often associated with *Pinus* spp. (pine), *Lactarius* spp. are most often associated with *Betula* (birch), *Salix* (willow), and *Populus* (aspen) spp., and *Hygrophorus* spp. are most often associated with *Picea* spp. (spruce) (Schalkwijk-Barendsen 1991, Bossenmaier 1997). At the species level, the degree of specialization becomes more apparent in some instances. For example, *Suillus grevillei* (tamarack jack, from foray 2) is only mycorrhizal with *Larix* spp. (larch or tamarack) and *Hygrophorus piceae* (spruce wax gill, from forays 1, 6, 7, and 11) is almost exclusively mycorrhizal with *Picea* spp. (spruce) (Schalkwijk-Barendsen 1991). This degree of specialization is uncommon though, as some *Suillus* spp., e.g., *Suillus umbonatus* (peaked suillus, from forays 1, 6, 12, and 15), are associated with various *Pinus* spp. (pine), or some *Lactarius* spp., e.g., *Lactarius uvidus* (purple-staining milk cap, from foray 10), are associated with various deciduous tree species, e.g., *Betula* (birch), *Populus* (aspen/poplar), and *Salix* (willow) (Arora 1986, Schalkwijk-Barendsen 1991). Similarly, most *Inocybe*, *Russula*, and *Tricholoma*, spp. are generalists and are associated with various tree deciduous and coniferous tree species.

Clearly, relationships between mycorrhizal fungi and plants are complex and variable. These fungi provide essential services to their plant hosts in exchange for sugars. These services include (1) the translocation of otherwise biounavailable N and P to their hosts, (2) the interconnection of several trees of the same genus or different genera and translocating nutrients from one tree to the next, and (3) protection of their hosts from soil pathogens. Without these fungi, most plants would not be able to become established, survive, and/or reproduce in an ecosystem (Smith and Read 1997).

Other – While the roles of saprobes and mycorrhizal fungi are paramount in all ecosystems, many of the fungi possess other noteworthy characteristics and properties. First, a substantial number of human edible mushrooms were collected. These were several *Agaricus* spp., *Chroogomphus vinicolor* (winepeg mushroom), *Clavariadelphus truncatus* (northern pestle), *Coprinus comatus* (shaggy mane), several *Gomphidius* spp., *Gomphus clavatus* (pig's ear), *Hydnum* spp. (tooth fungi), *Lactarius deliciosus* (delicious milk cap), several *Lepista* spp., *Leccinum* spp. (red tops), *Leucopaxillus giganteus* (giant leucopaxillus), *Lycoperdon* spp. (puffballs), *Lyophyllym decastes* (fried chicken muchroom), *Rozites caperatus* (gypsy mushroom), and several *Suillus* (slippery jacks), and *Tricholoma* spp. Most of these are commercially unavailable, despite being widespread throughout Alberta (Schalkwijk-Barendsen 1991, Bosenmaier 1997, Edmonton Mycological Society unpubl.). These and other edible mushrooms have great potential for northern communities as sources of alternate or additional income. Fungi are considered to be non-timber forest products along with berries, flowers, herbs, and other non-timber materials.

Second, several fungi with medicinal properties, including species of *Fomes*, *Fomitopsis*, *Ganoderma*, and *Phellinus* (all polypores), were also collected on this foray. There are currently more than 250 species that are known to have therapeutic properties based on accepted clinical research. One of the key results that has come out of both laboratory and human clinical studies conducted on fungi is that a number of compounds in fungi can stimulate immune function and inhibit tumor growth. In particular, polysaccharides (large, complex branched chain-like molecules built from many smaller units of sugar molecules) have been intensively studied since the 1950s. They have been shown to have anti-tumor and immuno-stimulating properties. For example, *Ganoderma applanatum* (artists' conk, from forays 3, 5, and 9; Table 3), a close relative of the famed far-east Asian Reishi mushroom *Ganoderma lucidum*, has been shown to have immuno-stimulating properties, it fights cancers, stops pain, eliminates indigestion, and reduces phlegm, and is an antibiotic and antiviral agent (Rogers 2006). Alternatively, *Fomitopsis pinicola* (red-belted conk, from forays 4, 5, 6, 9, 11, 13, and 15; Table 3) contains polysaccharides that have been shown to exhibit moderate tumour inhibiting and immune stimulating properties. Other work suggests benefit on liver enzymes, reduction of inflammation of the digestive system and increased resistance to disease. Various compounds exhibit activity against COX-1 and COX-2, and may be useful for arthritis and other inflammatory diseases. In addition, this polypore is rich in anti-histamine vegetable sterols and C_{14} to C_{18} fatty acids with moisturizing properties used in the cosmetic industry. It has also been used by the Cree as a styptic to stop bleeding (Rogers 2006). Both species are widespread throughout Alberta. Numerous other fungi have additional medicinal properties, but none are currently used in clinical trials in Canada to our knowledge.

Third, a small number of plant pathogens (5 taxa, mostly *Pholiota* spp.) and mycoparasites (all *Hypomyces* spp.) were collected as well; the latter from parasitized *Russula* and *Lactarius* (milk caps) spp. (Table 3). While this group of fungi occurred on a small scale, some of them can become serious threats to forest ecosystems. *Armillaria* (honey mushrooms) is one of the largest tree pathogens in Canada's forests, having a range of incidence frequency from 10% in dry forest stands to 80% in moist, mature conifer stands (Morrison 1981, Canadian Forest Service 2005). Coincidently, some honey mushrooms are mycorrhizal fungi of orchids, they are an excellent edible mushroom, they have medicinal properties, and they are bioluminescent.

The mycoparasite *Hypomyces* is a microscopic ascomycete that is an obligate parasite of species of *Russula* and *Lactarius* (among some additional species), i.e., they are only found growing on their hosts, causing a systemic infection and resulting in the mummification of host fruiting bodies. *Hypomyces* spp. are widespread, and their mummified hosts can be excellent edible mushrooms, such as *Hypomyces lactifluorum* (lobster mushroom). *Hypomyces* spp. pose no threats to plants.

CONCLUSIONS

Over 2,000 fungal specimens were collected at the North American Mycological Association foray in Hinton, AB, in August 2006. These specimens represented 317 different taxa, of which 266 were identified to species. An analysis of the mycogeography of these species indicated that 122 species represented new records for Alberta. An additional 64 species were known only from fewer than five previous collections. Overall, basidiomycetes were more commonly collected than ascomycetes (295 and 22 taxa, respectively). Within the basidiomycetes, species of *Cortinarius*, *Lactarius* (milkcaps), *Russula*, *Tricholoma*, and *Hygrophorus* (waxy caps) were most common. Within the ascomycetes, species of *Helvella* (elfin saddles), *Hypomyces*, *Peziza* (cup mushrooms), and *Spathularia* (fairy fans) were most common. From a functional perspective, the majority of fungi is saprobic and mycorrhizal in nature and is intricately involved in the decomposition of organic matter and the translocation of nutrients from the soil solution to growing vegetation. The results of this foray represent a significant contribution to our understanding of fungal species richness and mycogeography in Alberta in general and in the Rocky Mountain foothills specifically.

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Table 1: Foray locations near Hinton, Alberta, Canada.

Foray no.	Foray Name	Longitude, latitude, elevation
1	Miette Hot Springs, Jasper National Park, Alberta, Canada	117° 53' 10" W, 53° 11' 23" N; 1510 m a.s.l.
2	Trails of Hinton, Hinton, Alberta, Canada	117° 34' 06" W, 53° 23' 39" N; 1040 m a.s.l.
3	Athabasca Tower, W.A. Switzer Provincial Park, Alberta, Canada	117° 47' 11" W, 53° 24' 30" N; 1350-1460 m a.s.l.
4	Cache Percotte - South, near Hinton, Alberta, Canada	117° 32' 44" W, 53° 23' 20" N; 1250 m a.s.l.
5	Cold Creek, near Hinton, Alberta, Canada	117° 36' 31" W, 53° 20' 32" N; 1160 m a.s.l.
6	Powder Creek Trail, W.A. Switzer Provincial Park, Alberta, Canada	117° 48' 33" W, 53° 29' 10" N; 1160 m a.s.l.
7	Gregg Cabin, south of Hinton, Alberta, Canada	117° 24' 41" W, 53° 14' 14" N; 1250 m a.s.l.
8	Entrance Ranch, near Hinton, Alberta, Canada	117° 41' 38" W, 53° 22' 26" N; 1160 m a.s.l.
9	Black Cat Ranch Trail, Hinton, Alberta, Canada	117° 51' 35" W, 53° 22' 48" N; 1040 m a.s.l.
10	Mary Gregg Lake, W.A. Switzer Provincial Park, Alberta, Canada	117° 48' 39" W, 53° 32' 27" N; 1520 m a.s.l.
11	Winter Creek, W.A. Switzer Provincial Park, Alberta, Canada	117° 48' 59" W, 53° 30' 01" N; 1180 m a.s.l.
12	Obed Lake, Obed Lake Provincial Park	117° 08' 42" W, 53° 33' 05" N; 1040 m a.s.l.
13	Cache Percotte - North, near Hinton, Alberta, Canada	117° 32' 44" W, 53° 23' 20" N; 1300 m a.s.l.
14	Cardinal Divide - West	117° 18' 45" W, 52° 54' 42" N; 2000 m a.s.l.
15	Kelly’s Bathtub, W.A. Switzer Provincial Park, Alberta, Canada	117° 47' 37" W, 53° 28' 24" N; 1150 m a.s.l.
16	Athabasca Ranch Trail, near Hinton, Alberta, Canada	117° 35' 12" W, 53° 25' 51" N; 1150 m a.s.l.
17	Talbot Lake, Jasper National Park, Alberta, Canada	117° 59' 25" W, 53° 06' 47" N; 990 m a.s.l.
18	Cardinal Divide - East	117° 12' 05" W, 52° 53' 20" N; 2100 m a.s.l.

Table 2: Dominant tree species at the foray locations near Hinton, Alberta, Canada.

Foray no.	Foray Name	Dominant plants
1	Miette Hot Springs, Jasper National Park, Alberta, Canada	*Picea glauca*/*Populus tremuloides* mixedwood forest
2	Trails of Hinton, Hinton, Alberta, Canada	*Picea glauca*/*Populus tremuloides* mixedwood forest
3	Athabasca Tower, W.A. Switzer Provincial Park, Alberta, Canada	*Picea glauca* forest
4	Cache Percotte - South, near Hinton, Alberta, Canada	*Picea glauca* forest, moss ground layer
5	Cold Creek, near Hinton, Alberta, Canada	*Picea glauca*/*Populus tremuloides* mixedwood forest
6	Powder Creek Trail, W.A. Switzer Provincial Park, Alberta, Canada	*Picea glauca*/*Populus tremuloides* mixedwood forest, along creek
7	Gregg Cabin, south of Hinton, Alberta, Canada	*Pinus contorta* forest
8	Entrance Ranch, near Hinton, Alberta, Canada	*Picea glauca*/*Populus tremuloides* mixedwood forest
9	Black Cat Ranch Trail, Hinton, Alberta, Canada	*Populus balsamifera*/*Populus tremuloides* forest
10	Mary Gregg Lake, W.A. Switzer Provincial Park, Alberta, Canada	*Picea engelmannii* forest
11	Winter Creek, W.A. Switzer Provincial Park, Alberta, Canada	*Populus tremuloides* forest
12	Obed Lake, Obed Lake Provincial Park	*Picea mariana*/feather moss forest, ericaceous shrubs in understory
13	Cache Percotte - North, near Hinton, Alberta, Canada	*Picea glauca* forest
14	Cardinal Divide - West	krumholz stands in alpine zone
15	Kelly's Bathtub, W.A. Switzer Provincial Park, Alberta, Canada	*Picea glauca* forest, moss ground layer
16	Athabasca Ranch Trail, near Hinton, Alberta, Canada	*Picea glauca*/*Populus tremuloides* mixedwood forest
17	Talbot Lake, Jasper National Park, Alberta, Canada	*Picea*/*Pinus* forest, recently burned
18	Cardinal Divide - East	krumholz stands in alpine zone

Table 3: Fungi collected at the North American Mycological Association foray in Hinton, AB, Canada. See Table 1 for foray codes.

Taxonomic position		Fungal taxon	Role	Forays
Ascomycota				
Helotiales	Cudoniaceae	*Cudonia* cf. *circinans* (Pers.) Fr. *	S	4, 6, 15, 16
		Spathularia flavida Pers. *	S	6, 10, 15
		Spathulariopsis velutipes (Cooke & Farl. *ex* Cooke) Maas Geest. *	S	1
	Helotiaceae	*Bisporella citrina* (Batsch) Korf & S.E. Carp. *	S	3, 6, 9, 13, 16
		Chlorociboria aeruginascens (Nyl.) Kanouse *	S	5
	Incertae sedis	*Pachycudonia monticola* (Mains) S. Imai *	S	6
	Phacidiaceae	*Phacidium* sp. *	S	1
Hypocreales	Hypocreaceae	*Hypomyces lateritius* (Fr.) Tul. & C. Tul. on *Lactarius* sp. *	MP	9
		Hypomyces ochraceus (Pers.) Tul. & C. Tul. on *Russula* sp. *	MP	9, 11
		Hypomyces sp. *	MP	9
Microascales	*Incertae sedis*	*Sphaeronaemella helvellae* (P. Karst.) P. Karst. *	S	1
Pezizales	Discinaceae	*Gyromitra infula* (Schaeff.) Quél. *	S	3, 4, 5, 7, 11, 13, 15, 16
	Helvellaceae	*Helvella elastica* Bull. *	S, M?	6, 10, 13
		Helvella lacunosa Afzel. *	S, M?	1, 9
		Helvella silvicola (Beck *ex* Sacc.) Harmaja *	S, M?	5, 16
		Helvella sp.	S, M?	7
	Pezizaceae	*Peziza arvernensis* Boud. *	S	1, 10
		Peziza repanda sensu Karst. *fide* Sacc. *	S	3, 5, 8, 10, 15
		Peziza spp.	S	9, 15
	Pyronemataceae	*Geopyxis* cf. *carbonaria* (Alb. & Schwein.) Sacc. *	S	6, 8
		Otidea smithii Kanouse *	S	1
		Scutellinia scutellata (L.) Lambotte *	S	9, 15, 16
Basidiomycota				
Agaricales	Agaricaceae	*Agaricus silvicola* (Vittad.) Pk. *	S	5

	Agaricus cf. *bitorquis* (Quél.) Sacc. *	S	2
	Agaricus sp.	S	2
	Coprinus comatus (O.F. Müll.) Gray *	S	2, 3, 18
	Coprinus spp.	S	9
	Lepiota cristata (Bolton) P. Kumm. *	S	2
	Lepiota cf. *cortinarius* var. *cortinarius* J.E. Lange *	S	3
	Lepiota clypeolaria (Bull.) Quél. Group *	S	4
	Lepiota sp.	S	6
	Leucocoprinus brebissonii (Godey) Locq. *	S	6, 10
Bolbitiaceae	*Conocybe* sp.	S	5
	Hebeloma incarnatulum A.H. Sm. *	M	4
	Hebeloma senescens (Batsch) Berk. & Broome *	M	3, 5, 8, 11, 15, 16
	Hebeloma cf. *crustuliniforme* (Bull.) Quél. *	M	3
	Hebeloma cf. *mesophaeum* var. *mesophaeum* (Pers.) Fr.	M	12
	Hebeloma spp.	M	3, 8, 9, 11, 16, 18
	Panaeolus papilionaceus var. *parvisporus* Ew. Gerhardt *	S	9
	Panaeolus semiovatus var. *semiovatus* (Sowerby) S. Lundell & Nannf. *	S	9
	Panaeolus solidipes (Pk.) Sacc. *	S	1
	Panaeolus sp.	S	9
Clavariaceae	*Clavaria rosea* Fr. *	S	1
	Clavulinopsis corniculata (Schaeff.) Corner *	S	13
	Ramariopsis kunzei (Fr.) Corner *	S	4
Cortinariaceae	*Cortinarius alboviolaceus* (Pers.) Fr.	M	9
	Cortinarius croceus (Schaeff.) Gray *	M	7
	Cortinarius disjungendus P. Karst. *	M	6, 10
	Cortinarius semisanguineus (Fr.) Gillet *	M	7
	Cortinarius splendens Rob. Henry *	M	12
	Cortinarius traganus (Fr.) Fr.	M	7
	Cortinarius triumphans Fr. *	M	5
	Cortinarius trivialis J.E. Lange *	M	11, 16
	Cortinarius vibratilis (Fr.) Fr.	M	1, 3, 10, 12
	Cortinarius cf. *amoenolens* Rob. Henry *ex* P.D. Orton *	M	6
	Cortinarius cf. *betulinus* J. Favre *	M	12

	Cortinarius cf. *camphoratus* (Fr.) Fr. *	M	6
	Cortinarius cf. *elegantior* (Fr.) Fr. *	M	1
	Cortinarius cf. *limonius* (Fr.) Fr. *	M	6, 12
	Cortinarius cf. *vibratilis* (Fr.) Fr. *	M	1
	Cortinarius illibatus Fr. Group *	M	12
	Cortinarius cinnamomeus (L.) Fr. group	M	12
	Cortinarius multiformis (Fr.) Fr. group *	M	5, 8
	Cortinarius spp.	M	1, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18
	Crepidotus autochthonus J.E. Lange *	S	4, 16
	Crepidotus calolepis (Fr.) P. Karst. *	S	3, 4, 5, 6, 11, 13
	Crepidotus spp.	S	16
	Galerina hypnorum (Schrank) Kühner *	S	1
	Galerina spp.	S	6, 12, 14
	Gymnopilus penetrans (Fr.) Murrill *	S	7
	Gymnopilus cf. *penetrans* (Fr.) Murrill *	S	3
	Gymnopilus spp.	S	7, 15
	Inocybe geophylla var. *geophylla* (Pers.) P. Kumm. *	M	1
	Inocybe lanuginosa var. *lanuginosa* (Bull.) P. Kumm. *	M	1
	Inocybe splendens var. *splendens* R. Heim *	M	17
	Inocybe cf. *sororia* Kauffman *	M	3
	Inocybe cf. *terrigena* (Fr.) Kühner *	M	10
	Inocybe rimosa Britzelm. Group *	M	9
	Inocybe spp.	M	3, 6, 7, 10, 14, 15, 16, 18
	Rozites caperatus (Pers.) P. Karst. *	M	5, 7, 10
Entolomataceae	*Entoloma* sp.	S	9
	Leptonia sp. - *asprella gracilipes* group *	S	9, 12
Hydnangiaceae	*Laccaria amethystina* Cooke *	M	7
	Laccaria bicolor (Maire) P.D. Orton *	M	7, 10, 11
	Laccaria laccata (Scop.) Fr. *	M	1, 7
	Laccaria pumila Fayod *	M	1
	Laccaria spp.	M	7, 10
Hygrophoraceae	*Hygrocybe conica* (Scop.) P. Kumm. *	S	13

	Hygrophorus chrysodon (Batsch) Fr. *	M	5, 6, 13, 14
	Hygrophorus eburneus var. *eburneus* (Bull.) Fr. *	M	7
	Hygrophorus erubescens (Fr.) Fr. *	M	6, 9, 10
	Hygrophorus hypothejus (Fr.) Fr. *	M	1, 5, 7
	Hygrophorus odoratus A.H. Sm. & Hesler *	M	6
	Hygrophorus olivaceoalbus (Fr.) Fr. *	M	5
	Hygrophorus piceae Kühner *	M	1, 6, 7, 11
	Hygrophorus pudorinus (Fr.) Fr. *	M	12
	Hygrophorus russula (Schaeff.) Kauffman *	M	1
	Hygrophorus spp.	M	3, 7
Lycoperdaceae	*Bovista pila* Berk. & M.A. Curtis *	S	7, 12
	Lycoperdon perlatum Pers. *	S	3, 9
	Lycoperdon pyriforme Schaeff. *	S	3, 5, 6, 16
	Lycoperdon spp.	S	7, 13, 14, 15
Marasmiaceae	*Armillaria ostoyae* (Romagn.) Herink *	P	13
	Baeospora myosura (Fr.) Sing. *	S	5
	Baeospora myriadophylla (Pk.) Sing. *	S	9
	Flammulina velutipes (Curtis) Sing. *	S	9
	Marasmius capillaris Morgan	S	15
	Marasmius spp.	S	7, 10, 14
	Rhodocollybia maculata var. *maculata* (Alb. & Schwein.) Sing. *	S	6, 7
Nidulariaceae	*Crucibulum laeve* (Huds.) Kambly	S	18
	Cyathus sp.	S	17
Pleurotaceae	*Pleurotus* sp.	S	3
Pluteaceae	*Pluteus aurantiorugosus* (Trog) Sacc. *	S	16
	Pluteus cervinus var. *cervinus* P. Kumm. *	S	2, 5, 10, 16
	Pluteus ephebeus (Fr.) Gillet *	S	13, 15, 16
	Pluteus flavofuligineus G.F. Atk. *	S	11, 13
	Pluteus luteus (Redhead & B. Liu) *	S	13
	Pluteus romellii (Britzelm.) Lapl. *	S	2, 3, 5, 9, 16
	Pluteus salicinus (Pers.) P. Kumm. *	S	9
	Pluteus cf. *pellitus* (Pers.) P. Kumm. *	S	9
	Pluteus sp. nov. *	S	5

	Pluteus spp.	S	3, 9, 15
Psathyrellaceae	*Coprinellus truncorum* (Scop.) Redhead, Vilgalys & Moncalvo *	S	9
	Coprinopsis atramentaria (Bull.) Redhead, Vilgalys & Moncalvo *	S	7, 9
	Coprinopsis nivea (Pers.) Redhead, Vilgalys & Moncalvo	S	9
	Lacrymaria lacrymabunda (Bull.) Pat. *	S	3, 5
	Psathyrella cf. *multipedata* (Pk.) A.H. Sm. *	S	3
	Psathyrella spp.	S	1, 9
Strophariaceae	*Hypholoma capnoides* (Fr.) P. Kumm. *	S	7, 10
	Hypholoma fasciculare (Huds.) P. Kumm. *	S	6
	Hypholoma sublateritium (Schaeff.) Quél. *	S	3
	Hypholoma sp.	S	16
	Pholiota alnicola var. *alnicola* (Fr.) Sing. *	S	5, 6
	Pholiota populnea (Pers.) Kuyper & Tjall.-Beuk. *	P	9, 16
	Pholiota squarrosa (Weigel) P. Kumm. *	P	4, 5, 6, 9, 15, 16
	Pholiota cf. *spumosa* (Fr.) Sing. *	S	6, 15, 16
	Pholiota spp.	S	4, 10, 12, 15
	Stropharia alcis Kytöv. *	S	1
	Stropharia cf. *semiglobata* Batsch) Quél. *	S	6
	Stropharia sp.	S	3
Tricholomataceae	*Calocybe* cf. *ionides* (Bull.) Donk *	S	4
	Cantharellopsis prescotii (Weinm.) Kuyper *	S	12
	Cantharellula umbonata (J.F. Gmel.) Sing. *	S	7
	Catathelasma imperiale (Fr.) Sing. *	S	3, 18
	Clitocybe avellaneialba Murrill *	S	6
	Clitocybe clavipes (Pers.) P. Kumm. *	S	6, 7, 9
	Clitocybe dilatata (Pers.) P. Karst. *	S	3, 13
	Clitocybe maxima (Gaertn. & G. Mey.) P. Kumm. *	S	3, 4, 5, 6, 9, 11, 15
	Clitocybe odora (Bull.) P. Kumm. *	S	3, 6, 16
	Clitocybe phyllophila (Pers.) P. Kumm. *	S	11
	Clitocybe spp.	S	3, 6, 7, 12, 15
	Clitocybula familia (Pk.) Sing. *	S	3
	Collybia cookei (Bres.) J.D. Arnold	S	15
	Collybia tuberosa (Bull.) P. Kumm. *	S	1, 5

Collybia spp.	S	3
Cystoderma amianthinum (Scop.) Fayod *	S	1, 4, 6, 11, 12, 15
Cystoderma granulosum (Batsch) Fayod *	S	6
Cystoderma spp.	S	6, 12, 13, 15
Floccularia fusca (Mitchel & A.H. Sm.) Bon *	S	8
Gymnopus confluens (Pers.) Antonín, Halling & Noordel. *	S	1, 2, 3, 6, 16
Hypsizygus tessulatus (Bull.) Sing. *	S	5, 9, 16
Lepista irina (Fr.) H.E. Bigelow complex *	S	3, 6, 13
Lepista nuda (Bull.) Cooke *	S	3, 5, 9, 15, 16
Lepista spp.	S	3, 5, 8
Leucopaxillus giganteus (Sowerby) Sing. *	S	1, 9, 11, 15
Lyophyllum decastes (Fr.) Sing. *	S	3
Lyophyllum fumosum (Pers.) P.D. Orton *	S	2
Lyophyllum sp.	S	3
Melanoleuca cognata (Fr.) Konrad & Maubl. *	S	1, 5, 6, 13
Melanoleuca cf. *melaleuca* (Pers.) Murrill *	S	2, 4, 10
Melanoleuca spp.	S	6, 15, 16
Mycena acicula (Schaeff.) P. Kumm. *	S	5, 6, 10
Mycena adonis var. *adonis* (Bull.) Gray *	S	5
Mycena amabilissima Pk. *	S	1
Mycena flavoalba (Fr.) Quél. *	S	1
Mycena haematopus (Pers.) P. Kumm. *	S	13
Mycena overholtsii A.H. Sm. & Solheim *	S	1
Mycena pura (Pers.) P. Kumm. *	S	3, 6, 8, 13
Mycena rorida (Scop.) Quél. *	S	1
Mycena cf. *griseiconica* Kauffman *	S	1
Mycena spp.	S	6, 7, 9, 11, 12, 15
Omphalina ericetorum (Bull.) M. Lange *	S	7
Phyllotopsis nidulans (Pers.) Sing. *	S	5
Rickenella fibula (Bull.) Raithelh.	S	3
Tricholoma caligatum (Viv.) Ricken *	M	1
Tricholoma inamoenum (Fr.) Gillet *	M	1
Tricholoma equestre (L.) P. Kumm.	M	5, 7, 11

		Tricholoma robustum (Alb. & Schwein.) Ricken *	M	1, 5, 8
		Tricholoma myomyces (Pers.) J.E. Lange *	M	3, 8, 13
		Tricholoma platyphyllum Murrill *	M	13
		Tricholoma saponaceum var. *saponaceum* (Fr.) P. Kumm.	M	7
		Tricholoma sulphurescens Bres. *	M	4, 5, 16
		Tricholoma sulphureum var. *sulphureum* (Bull.) P. Kumm. *	M	10, 12
		Tricholoma vaccinum (Schaeff.) P. Kumm. *	M	1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16
		Tricholoma virgatum (Fr.) P. Kumm. *	M	1
		Tricholoma zelleri (D.E. Stuntz & A.H. Sm.) Ovrebo & Tylutki	M	8
		Tricholoma cf. *squarrulosum* Bres. *	M	3
		Tricholoma spp.	M	1, 3, 7, 8, 9, 10
		Tricholomopsis decora (Fr.) Sing. *	S	7, 10
		Tricholomopsis rutilans (Schaeff.) Sing. *	S	3, 4
		Xeromphalina campanella (Batsch) Maire *	S	2, 6, 16
		Xeromphalina cauticinalis (With.) Kühner & Maire *	S	1, 6, 11, 13
Auriculariales	Auriculariaceae	*Auricularia auricula-judae* (Fr.) Quél. *	S	6
Boletales	Boletaceae	*Boletus radicatus* Schwein.	S	9
		Leccinum areolatum A.H. Sm. & Thiers	M	9
		Leccinum boreale A.H. Sm., Thiers & Watling *	M	5, 15
		Leccinum insigne A.H. Sm., Thiers & Watling *	M	5, 9, 11, 16
		Leccinum snellii A.H. Sm., Thiers & Watling	M	9
		Leccinum cf. *insolens* var. *brunneomaculatum* A.H. Sm., Thiers & Watling *	M	6
		Leccinum cf. *scabrum* var. *scabrum* (Bull.) Gray *	M	9
		Leccinum spp.	M	7, 9
	Gomphidiaceae	*Chroogomphus vinicolor* (Pk.) O.K. Mill. *	M	1, 3, 4, 6, 10, 11, 13, 15
		Chroogomphus spp.	M	6, 7, 11
		Gomphidius glutinosus (Schaeff.) Fr. *	M	1, 3, 4, 5, 6, 8, 11, 13, 15, 16
		Gomphidius subroseus Kauffman	M	3
		Gomphidius spp.	M	3, 7
	Suillaceae	*Suillus brevipes* (Pk.) Kuntze *	M	1, 4, 6, 7, 10, 13, 15

		Suillus flavidus (Fr.) J. Presl *	M	6, 7, 10, 11, 15
		Suillus granulatus (L.) Roussel *	M	15
		Suillus grevillei (Klotzsch) Sing. *	M	2, 12
		Suillus viscidus (L.) Fr. *	M	2, 13
		Suillus subolivaceus A.H. Sm. & Thiers *	M	1
		Suillus tomentosus (Kauffman) Sing. *	M	1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 15, 16
		Suillus umbonatus E.A. Dick & Snell *	M	1, 6, 12, 15
		Suillus cf. *brevipes* var. *subgracilis* A.H. Sm. & Thiers *	M	1
		Suillus spp.	M	1, 6, 7, 10
Cantharellales	Cantharellaceae	*Pseudocraterellus sinuosus* (Fr.) Corner *	S	3, 5, 7, 11, 13
	Hydnaceae	*Hydnum repandum* L. *	S	2, 3, 10, 15
		Hydnum umbilicatum Pk. *	S	7
Dacrymycetales	Dacrymycetaceae	*Calocera cornea* (Batsch) Fr. *	S	15
		Dacrymyces chrysospermus Berk. & M.A. Curtis *	S	6, 13, 15
Exobasidiales	Exobasidiaceae	*Exobasidium* cf. *vaccinii* var. *japonicum* (Shirai) McNabb *	S	6
Hymenochaetales	Hymenochaetaceae	*Onnia tomentosa* (Fr.) P. Karst. *	S	3, 8, 13, 15, 16
		Phellinus pini (Brot.) Bondartsev & Sing. *	S	5, 7
		Phellinus tremulae (Bondartsev) Bondartsev & P.N. Borisov *	S	4, 8
Phallales	Geastraceae	*Geastrum fimbriatum* Tul. *	S	1
		Geastrum quadrifidum DC. *	S	1
		Geastrum saccatum Fr. *	S	13
		Geastrum triplex Jungh. *	S	11
	Gomphaceae	*Clavariadelphus sachalinensis* (S. Imai) Corner	S	1, 5, 6
		Clavariadelphus ligula (Schaeff.) Donk *	S	2, 6, 7, 12
		Clavariadelphus truncatus V.L. Wells & Kempton *	S	1, 4, 5, 6, 10, 13
		Clavariadelphus cf. *sachalinensis* (S. Imai) Corner *	S	6
		Clavaridelphus cf. *truncatus* V.L. Wells & Kempton *	S	6
		Gomphus clavatus (Pers.) Gray *	S	3, 7, 9
		Ramaria abietina (Pers.) Quél. *	S, M?	2
		Ramaria caulifloriformis (Leathers) Corner *	S, M?	14
		Ramaria gelatiniaurantia var. *gelatiniaurantia* Marr & D.E. Stuntz *	S, M?	6
		Ramaria rubripermanens Marr & D.E. Stuntz *	S, M?	7

		Ramaria sandaracina var. *sandaracina* Marr & D.E. Stuntz *	S, M?	4, 6
		Ramaria stricta var. *concolor* Corner *	S, M?	6
		Ramaria suecica (Fr.) Donk *	S, M?	4
		Ramaria testaceoflava (Bres.) Corner *	S, M?	1
		Ramaria cf. *leptoformosa* Marr & D.E. Stuntz *	S, M?	14
		Ramaria sp. *	S, M?	5, 6
		Ramaria sp. (subgenus *lentoramaria*) *	S, M?	5
Polyporales	Albatrellaceae	*Albatrellus* cf. *syringae* (Parmasto) Pouzar *	S	13
		Albatrellus sp.	S	8
	Fomitopsidaceae	*Fomitopsis cajanderi* (P. Karst.) Kotl. & Pouzar *	S	10
		Fomitopsis pinicola (Sw.) P. Karst. *	S	4, 5, 6, 9, 11, 13, 15
		Postia leucomallella (Fr.) Jülich	S	16
	Ganodermataceae	*Ganoderma applanatum* (Pers.) Pat. *	S	3, 5, 9
	Gloeophyllaceae	*Gloeophyllum odoratum* (Wulfen) Imazeki *	S	6
		Gloeophyllum sepiarium (Wulfen) P. Karst. *	S	1, 2, 4, 8, 11, 13, 16
	Hapalopilaceae	*Bjerkandera adusta* (Willd.) P. Karst. *	S	4, 8, 9, 16
		Spongipellis spumeus (Sowerby) Pat. *	S	9
	Polyporaceae	*Daedaleopsis confragosa* (Bolton) J. Schröt. *	S	2
		Polyporus badius Weinm. *	S	5, 9, 10
		Polyporus varius (Pers.) Fr. *	S	1, 3, 5, 9, 18
		Polyporus cf. *leptocephalus* (Jacq.) Fr. *	S	3
		Polyporus sp.	S	9
		Trametes pubescens (Schumach.) Pilát *	S	1, 3, 11
		Trichaptum abietinum (Dicks.) Ryvarden *	S	6, 8, 12, 13, 15
		Trichaptum subchartaceum (Murrill) Ryvarden *	S	9
		Tyromyces chioneus (Fr.) P. Karst. *	S	13
Russulales	Auriscalpiaceae	*Auriscalpium vulgare* Gray *	S	5, 10
		Lentinellus flabelliformis (Bolton) S. Ito *	S	15
	Hericiaceae	*Hericium coralloides* (Scop.) Pers. *	S	3, 4, 5, 9, 16
	Russulaceae	*Lactarius affinis* var. *viridilactis* (Kauffman) Hesler & A.H. Sm. *	M	18
		Lactarius deliciosus (L.) Gray *	M	3, 8
		Lactarius deterrimus Gröger *	M	1, 2, 3, 4, 6, 9, 11, 13, 15, 16, 18

		Lactarius glyciosmus(Fr.) Fr. *	M	18
		Lactarius repraesentaneus Britzelm. *	M	18
		Lactarius resimus (Fr.) Fr. *	M	11
		Lactarius rufus (Scop.) Fr. *	M	5, 7, 10
		Lactarius scrobiculatus (Scop.) Fr. *	M	3, 6, 8, 9, 12, 13
		Lactarius uvidus (Fr.) Fr. *	M	10
		Lactarius cf. *affinis* var. *affinis* Pk. *	M	6
		Lactarius cf. *hepaticus* Plowr.	M	10
		Lactarius cf. *kauffmanii* Hesler & A.H. Sm. *	M	6
		Lactarius cf. *resimus* (Fr.) Fr.	M	15
		Lactarius spp.	M	4, 6, 7, 8, 14, 15, 17
		Russula aurea Pers. *	M	9
		Russula brevipes Pk. *	M	10, 11
		Russula crassotunicata Sing. *	M	6
		Russula decolorans (Fr.) Fr. *	M	7
		Russula delica Fr. *	M	14
		Russula gracilis Burl. *	M	3
		Russula grisea (Batsch) Fr. *	M	3
		Russula lutea Vent. *	M	6
		Russula subfoetens Wm.G. Sm. *	M	10
		Russula virescens (Schaeff.) Fr. *	M	3
		Russula cf. *cascadensis* Shaffer *	M	1
		Russula cf. *foetens* (Pers.) Pers. *	M	10
		Russula cf. *integra* Quél. *	M	1
		Russula cf. *subfoetens* Wm.G. Sm. *	M	10
		Russula spp.	M	1, 3, 6, 7, 9, 10, 11, 12, 13, 15, 18
	Stereaceae	*Laxitextum bicolor* (Pers.) Lentz *	S	13
Telephorales	Bankeraceae	*Hydnellum caeruleum* (Hornem.) P. Karst. *	S	5
		Hydnellum peckii Banker	S	7
		Hydnellum suaveolens (Scop.) P. Karst. *	S	7
		Hydnellum spp.	S	7
		Sarcodon calvatus var. *calvatus* (K.A. Harrison) K.A. Harrison *	S	7

		Sarcodon scabrosus (Fr.) P. Karst. *	S	6
	Telephoraceae	*Thelephora caryophyllea* (Schaeff.) Pers. *	S	1, 6
Tremellales	Exidiaceae	*Guepinia helvelloides* (DC.) Fr. *	S	5
Uredinales	Coleosporiaceae	*Chrysomyxa* cf. *ledicola* Lagerh. *	P	3
	Phragmidiaceae	*Phragmidium* sp. on *Rosa acicularis* Lindl. *	P	2
Myxomycota **				
Physarales	Physaraceae	*Fuligo septica* var. *septica* (L.) F.H. Wigg. *	S	9
Liceales	Reticulariaceae	*Lycogala epidendrum* (J.C. Buxb. *ex* L.) Fr. *	S	1, 3, 5, 10, 11, 13

Note: M = mycorrhizal, M? = possibly mycorrhizal, MP = mycoparasitic, P = pathogenic, S = saprobic (decomposer), * = accessioned at the Chicago Field Museum, ** = slime molds (not true fungi).

Table 4: Commonness of fungi identified at the North American Mycological Association foray in Hinton, AB, Canada.

New record	less than 5 previously known records	5 and more previously known records
Agaricus cf. *bitorquis*	*Auricularia auricula-judae*	*Agaricus silvicola*
Baeospora myosura	*Auriscalpium vulgare*	*Armillaria ostoyae*
Boletus radicatus Schwein.	*Baeospora myriadophylla*	*Bisporella citrina*
Bovista pila	*Cantharellopsis prescotii*	*Bjerkandera adusta*
Calocera cornea	*Cantharellula umbonata*	*Catathelasma imperiale*
Calocybe cf. *ionides*	*Clavariadelphus sachalinensis*	*Chlorociboria aeruginascens*
Clavaria rosea	*Clavariadelphus truncatus*	*Chroogomphus vinicolor*
Clavariadelphus ligula	*Clitocybe avellaneialba*	*Chrysomyxa* cf. *ledicola*
Clavulinopsis corniculata	*Clitocybe clavipes*	*Clitocybe odora*
Clitocybe dilatata	*Clitocybe maxima*	*Coprinopsis atramentaria*
Clitocybula familia	*Clitocybe phyllophila*	*Coprinus comatus*
Collybia cookei	*Cortinarius cf. amoenolens*	*Cortinarius alboviolaceus*
Collybia tuberosa	*Cortinarius semisanguineus*	*Cortinarius disjungendus*
Coprinellus truncorum	*Cortinarius traganus*	*Cortinarius multiformis*
Coprinopsis nivea	*Crepidotus autochthonus*	*Cortinarius trivialis*
Cortinarius cf. *betulinus*	*Crucibulum laeve*	*Cystoderma amianthinum*
Cortinarius cf. *camphoratus*	*Galerina hypnorum*	*Dacrymyces chrysospermus*
Cortinarius cf. *elegantior*	*Geastrum quadrifidum*	*Daedaleopsis confragosa*
Cortinarius cf. *limonius*	*Geastrum saccatum*	*Fomitopsis cajanderi*
Cortinarius cinnamomeus	*Geastrum triplex*	*Fomitopsis pinicola*
Cortinarius croceus	*Guepinia helvelloides*	*Ganoderma applanatum*
Cortinarius illibatus group	*Gymnopilus penetrans*	*Gloeophyllum sepiarium*
Cortinarius splendens	*Hebeloma senescens*	*Gomphidius glutinosus*
Cortinarius triumphans	*Hydnellum peckii*	*Gomphus clavatus*
Cortinarius vibratilis	*Hydnellum suaveolens*	*Gyromitra infula*
Crepidotus calolepis	*Hygrocybe conica*	*Helvella elastica*

Crepidotus ellipsoideus
Cudonia cf. *circinans*
Cystoderma granulosum
Exobasidium cf. *vaccinii* var. *japonicum*
Flammulina velutipes
Floccularia fusca
Geastrum fimbriatum
Geopyxis cf. *carbonaria*
Gloeophyllum odoratum
Gomphidius subroseus
Gymnopus confluens
Hebeloma cf. *crustuliniforme*
Hebeloma cf. *mesophaeum* var. *mesophaeum*
Hebeloma incarnatulum
Hydnum umbilicatum
Hygrophorus odoratus
Hygrophorus russula
Hypholoma sublateritium
Hypomyces lateritius on *Lactarius* sp.
Hypomyces ochraceus on *Russula* sp.
Hypsizygus tessulatus
Inocybe cf. *sororia*
Inocybe cf. *terrigena*
Inocybe lanuginosa var. *lanuginosa*
Inocybe splendens var. *splendens*
Laccaria pumila
Lactarius affinis var. *viridilactis*
Lactarius cf. *affinis* var. *affinis*
Lactarius cf. *hepaticus*
Lactarius cf. *kauffmanii*
Lactarius cf. *resimus*
Lactarius cf. *torminosus* var. *torminosus*
Lactarius deterrimus
Hygrocybe persistens var. *persistens*
Hygrophorus eburneus var. *eburneus*
Hygrophorus hypothejus
Hygrophorus olivaceoalbus
Hygrophorus piceae
Hypholoma capnoides
Hypholoma fasciculare
Inocybe geophylla var. *geophylla*
Inocybe rimosa group
Laccaria bicolor
Lacrymaria lacrymabunda
Lactarius scrobiculatus
Lentinellus flabelliformis
Lepiota cristata
Lepista nuda
Onnia tomentosa
Panaeolus papilionaceus var. *parvisporus*
Panaeolus semiovatus var. *semiovatus*
Peziza arvernensis
Pholiota cf. *spumosa*
Pholiota populnea
Pluteus salicinus
Ramaria abietina
Rhodocollybia maculata var. *maculata*
Russula cf. *cascadensis*
Russula decolorans
Russula delica
Russula grisea
Russula lutea
Sphaeronaemella helvellae
Suillus granulatus
Suillus viscidus
Tricholoma caligatum
Helvella lacunosa
Helvella silvicola
Hericium coralloides
Hydnellum caeruleum
Hydnum repandum
Hygrophorus chrysodon
Hygrophorus erubescens
Hygrophorus pudorinus
Laccaria amethystina
Laccaria laccata
Lactarius deliciosus
Lactarius repraesentaneus
Lactarius rufus
Lactarius uvidus
Leccinum boreale
Leccinum cf. *scabrum* var. *scabrum*
Leccinum insigne
Leccinum snellii
Lepiota clypeolaria group
Leucopaxillus giganteus
Lycoperdon perlatum
Lycoperdon pyriforme
Lyophyllum decastes
Mycena pura
Omphalina ericetorum
Peziza repanda
Phellinus pini
Phellinus tremulae
Pholiota squarrosa
Phyllotopsis nidulans
Pluteus cervinus var. *cervinus*
Polyporus badius
Polyporus cf. *leptocephalus*

Lactarius glyciosmus
Laxitextum bicolor
Leccinum areolatum
Leccinum cf. *insolens* var. *brunneomaculatum*
Lepiota cf. *cortinarius* var. *cortinarius*
Lepista irina complex
Leptonia sp. - *asprella gracilipes* group
Leucocoprinus brebissonii
Lyophyllum fumosum
Marasmius capillaris
Melanoleuca cf. *melaleuca*
Melanoleuca cognata
Mycena acicula
Mycena adonis var. *adonis*
Mycena amabilissima
Mycena cf. griseiconica
Mycena flavoalba
Mycena overholtsii
Mycena rorida
Otidea smithii
Pachycudonia monticola
Panaeolus solidipes
Pholiota alnicola var. *alnicola*
Pluteus aurantiorugosus
Pluteus cf. *pellitus*
Pluteus ephebeus
Pluteus flavofuligineus
Pluteus luteus
Pluteus romellii
Postia leucomallella
Psathyrella cf. *multipedata*
Ramaria caulifloriformis
Ramaria cf. *leptoformosa*
Tricholoma platyphyllum
Tricholoma zelleri
Tricholomopsis decora
Tricholomopsis rutilans
Tyromyces chioneus
Polyporus varius
Pseudocraterellus sinuosus
Rozites caperatus
Russula brevipes
Russula subfoetens
Sarcodon scabrosus
Scutellinia scutellata
Spathularia flavida
Suillus brevipes
Suillus grevillei
Suillus tomentosus
Suillus umbonatus
Trametes pubescens
Trametes suaveolens
Trichaptum abietinum
Tricholoma equestre
Tricholoma myomyces
Tricholoma saponaceum var. *saponaceum*
Tricholoma vaccinum
Tricholoma virgatum
Xeromphalina campanella

Ramaria gelatiniaurantia var. *gelatiniaurantia*
Ramaria rubripermanens
Ramaria sandaracina var. *sandaracina*
Ramaria stricta var. *concolor*
Ramaria suecica
Ramaria testaceoflava
Ramariopsis kunzei
Rickenella fibula
Russula aurea
Russula cf. *integra*
Russula crassotunicata
Russula gracilis
Russula virescens
Sarcodon calvatus var. *calvatus*
Spathulariopsis velutipes
Spongipellis spumeus
Stropharia alcis
Stropharia cf. *semiglobata*
Suillus cf. *brevipes* var. *subgracilis*
Suillus flavidus
Suillus subolivaceus
Syzygospora sp.
Thelephora caryophyllea
Trichaptum subchartaceum
Tricholoma cf. *squarrulosum*
Tricholoma inamoenum
Tricholoma robustum
Tricholoma sulphurescens
Tricholoma sulphureum var. *sulphureum*
Xeromphalina cauticinalis

Table 5: Fungal specimens collected at the North American Mycological Assocation foray and accessioned in the Field Museum in Chicago.

Taxon	Voucher Number
Agaricus cf. *bitorquis*	NAMA 2006 - 063
Agaricus silvicola	NAMA 2006 - 119
Albatrellus cf. *syringae*	NAMA 2006 - 219
Armillaria ostoyae	NAMA 2006 - 231
Auricularia auricula-judea (as *Auricularia auricula*)	NAMA 2006 - 194
Auriscalpium vulgare	NAMA 2006 - 036
Baeospora myosura	NAMA 2006 - 139
Baeospora myriadophylla	NAMA 2006 - 002
Bisporella citrina	NAMA 2006 - 138
Bjerkandera adusta	NAMA 2006 - 099
Bovista pila	NAMA 2006 - 187
Calocera cornea	NAMA 2006 - 254
Calocybe cf. *ionides*	NAMA 2006 - 276
Cantharellopsis prescotii	NAMA 2006 - 264
Cantharellula umbonata	NAMA 2006 - 176
Catathelasma imperiale (as *Catathelasma imperialis*)	NAMA 2006 - 111
Chlorociboria aeruginascens (as *Chlorosplenium aerugenascins*)	NAMA 2006 - 125
Chroogomphus vinicolor	NAMA 2006 - 016
Chrysomyxa cf. *ledicola*	NAMA 2006 - 266
Clavaria rosea	NAMA 2006 - 001
Clavariadelphus aff. *sachalinensis*	NAMA 2006 - 147
Clavariadelphus cf. *truncatus* (as *Clavariadelphis* cf. *borealis*)	NAMA 2006 - 067
Clavariadelphus ligula	NAMA 2006 - 124
Clavariadelphus truncatus	NAMA 2006 - 031
Clavulinopsis corniculata	NAMA 2006 - 235
Clitocybe avellaneialba	NAMA 2006 - 098, 117
Clitocybe clavipes	NAMA 2006 - 177
Clitocybe dilatata	NAMA 2006 - 133
Clitocybe maxima	NAMA 2006 - 145
Clitocybe odora	NAMA 2006 - 102
Clitocybe phyllophila (as *Clitocybe cerussata*)	NAMA 2006 - 261
Clitodybe clavipis	NAMA 2006 - 033
Collybia familia	NAMA 2006 - 149
Collybia tuberosa	NAMA 2006 - 011, 117
Coprinellus truncorum (as *Coprinus micaceus*)	NAMA 2006 - 182
Coprinopsis atramentarius (as *Coprinus atramentarius*)	NAMA 2006 - 034
Coprinus comatus	NAMA 2006 - 066
Cortinarius cf. *amaenolus* (as *Cortinarius* cf. *anserinus*)	NAMA 2006 - 162
Cortinarius cf. *betulinus*	NAMA 2006 - 275

Cortinarius cf. *camphoratus*	NAMA 2006 - 271
Cortinarius cf. *elegantior*	NAMA 2006 - 191
Cortinarius cf. *limonius*	NAMA 2006 - 118
Cortinarius cf. *vibratilis*	NAMA 2006 - 032
Cortinarius croceus	NAMA 2006 - 241
Cortinarius desjungendus (as *Cortinarius brunneus*)	NAMA 2006 - 236
Cortinarius illibatus group	NAMA 2006 - 253
Cortinarius semisanguinius	NAMA 2006 - 157
Cortinarius sp. *multiformis* group	NAMA 2006 - 203
Cortinarius splendens	NAMA 2006 - 251
Cortinarius traganus	NAMA 2006 - 159
Cortinarius triumphans	NAMA 2006 - 074
Cortinarius trivialis	NAMA 2006 - 257
Crepidotus autochthonus (as *Crepidotus applanatus*)	NAMA 2006 - 095
Crepidotus calolepis	NAMA 2006 - 116
Crepidotus ellipsoideus	NAMA 2006 - 268
Cudonia cf. *circinans*	NAMA 2006 - 173
Cudonia monticola	NAMA 2006 - 021
Cystoderma amianthinum	NAMA 2006 - 064
Cystoderma granulosum	NAMA 2006 - 061
Dacrymyces chrysospermus (as *Dacrymyces palmatus*)	NAMA 2006 - 163, 246
Daedaleopsis confragosa	NAMA 2006 - 172
Exobasidium cf. *vaccinii* var. *japonicum* (as *Exobasidium* cf. *vaccinii*)	NAMA 2006 - 072
Flammulina velutipes	NAMA 2006 - 028
Floccularia fusca	NAMA 2006 - 127
Fomitopsis cajanderi	NAMA 2006 - 232
Fomitopsis pinicola	NAMA 2006 - 132
Fuligo septica var. *septica* (as *Fuligo septica*)	NAMA 2006 - 188
Galerina hypnorum	NAMA 2006 - 068
Ganoderma applanatum	NAMA 2006 - 171
Geastrum fimbriatum	NAMA 2006 - 114
Geastrum quadrifidum (as *Geastrum quadrifidus*)	NAMA 2006 - 109
Geastrum saccatum	NAMA 2006 - 226
Geastrum triplex	NAMA 2006 - 258
Geopyxis cf. *carbonaria*	NAMA 2006 - 208
Gloeophyllum odoratum	NAMA 2006 - 154
Gloeophyllum sepiarium	NAMA 2006 - 083
Gomphidius glutinosus (as *Gomphidius glutinosa*)	NAMA 2006 - 078
Gomphus clavatus	NAMA 2006 - 106
Guepinia helvelloides (as *Phlogiotis helvelloides*)	NAMA 2006 - 085
Gymnopilus cf. *penetrans*	NAMA 2006 - 192
Gymnopilus penetrans	NAMA 2006 - 202
Gymnopus confluens	NAMA 2006 - 013
Gyromitra infula	NAMA 2006 - 096
Hebeloma cf. *crustuliniforme*	NAMA 2006 - 166

Hebeloma senescens (as *Hebeloma sinapizans*)	NAMA 2006 - 024
Helvella elastica	NAMA 2006 - 019
Helvella lacunosa	NAMA 2006 - 009
Helvella silvicola (as *Otidea auricula*)	NAMA 2006 - 213
Hericium coralloides (004 and 014 as *Hericium ramosum*)	NAMA 2006 - 004, 014, 164
Hydnellum caeruleum	NAMA 2006 - 158
Hydnellum suaveolens	NAMA 2006 - 161
Hydnum repandum	NAMA 2006 - 051
Hydnum umbilicatum	NAMA 2006 - 224
Hygrocybe conica (as *Hygrocybe conicus*)	NAMA 2006 - 214
Hygrophorus cf. *piceae*	NAMA 2006 - 043
Hygrophorus chrysodon	NAMA 2006 - 087
Hygrophorus erubescens	NAMA 2006 - 053, 100
Hygrophorus hypothejus	NAMA 2006 - 069
Hygrophorus odoratus	NAMA 2006 - 199
Hygrophorus olivaceoalbus	NAMA 2006 - 084
Hygrophorus piceae	NAMA 2006 - 006
Hygrophorus pudorinus	NAMA 2006 - 245
Hygrophorus russula	NAMA 2006 - 143
Hypholoma capnoides	NAMA 2006 - 190
Hypholoma fasciculare	NAMA 2006 - 153
Hypholoma sublateritium	NAMA 2006 - 141
Hypomyces lateritius on *Lactarius* sp.	NAMA 2006 - 152
Hypomyces ochiaceus on *Russula* sp.	NAMA 2006 - 174
Hypomyces sp.	NAMA 2006 - 273
Hypsizygus tessulatus	NAMA 2006 - 146
Inocybe cf. *sororia*	NAMA 2006 - 195
Inocybe cf. *terrigina*	NAMA 2006 - 209
Inocybe geophylla var. *geophylla* (as *Inocybe geophylla*)	NAMA 2006 - 044, 075
Inocybe lanuginosa var. *lanuginosa* (as *Inocybe lanuginosa*)	NAMA 2006 - 175
Inocybe sp. *rimosa* group	NAMA 2006 - 200
Inocybe splendens var. *splendens*	NAMA 2006 - 259
Laccaria amethystina	NAMA 2006 - 277
Laccaria bicolor	NAMA 2006 - 131, 210
Laccaria laccata	NAMA 2006 - 108
Laccaria pumila	NAMA 2006 - 035
Lacrymaria lacrymabunda (as *Psathyrella velutina*)	NAMA 2006 - 142
Lactarius affinis var. *varidilactis*	NAMA 2006 - 274
Lactarius cf. *affinis* var. *affinis*	NAMA 2006 - 215
Lactarius cf. *kauffmanii*	NAMA 2006 - 240
Lactarius deterrimus	NAMA 2006 - 015
Lactarius glyciosmus	NAMA 2006 - 270
Lactarius repraesentaneus	NAMA 2006 - 269
Lactarius resimus	NAMA 2006 - 242
Lactarius rufus	NAMA 2006 – 30, 104

Lactarius scrobiculatus	NAMA 2006 - 120
Lactarius uvidus	NAMA 2006 - 185
Laxitextum bicolor	NAMA 2006 - 233
Leccinum boreale	NAMA 2006 - 265
Leccinum cf. *insolens* var. *brunneo-maculatum*	NAMA 2006 - 130
Leccinum cf. *scabrum* var. *scabrum* (as *Leccinum* cf. *scabrum*)	NAMA 2006 - 217
Leccinum insigne	NAMA 2006 - 079
Lentinellus flabelliformis (as *Lentinellus omphalodes*)	NAMA 2006 - 267
Lepiota cf. *cortinarius* var. *cortinarius* (as *Lepiota* cf. *cortinarius*)	NAMA 2006 - 278
Lepiota cristata	NAMA 2006 - 038
Lepiota sp. *clypeolaria* group	NAMA 2006 - 280
Lepista irina complex	NAMA 2006 - 023
Lepista nuda	NAMA 2006 - 272
Leptonia sp. *asprella-gracilipes* complex	NAMA 2006 - 256
Leucocoprinus brebbissonii (as *Lepiota felina*)	NAMA 2006 - 081
Leucopaxillus giganteus (229 as *Clitocybe gigantea*)	NAMA 2006 - 048, 229
Lycogala epidendrum	NAMA 2006 - 010, 901
Lycoperdon perlatum	NAMA 2006 - 128
Lycoperdon pyriforme	NAMA 2006 - 093, 198
Lyophyllum decastes	NAMA 2006 - 136
Lyophyllum fumosum	NAMA 2006 - 223
Melanoleuca cf. *melaleuca*	NAMA 2006 - 205
Melanoleuca cognata	NAMA 2006 - 018
Mycena acicula	NAMA 2006 - 144
Mycena adonis var. *adonis* (as *Mycena adonis*)	NAMA 2006 - 005
Mycena amabilissima	NAMA 2006 - 026
Mycena cf. *greiseiconica*	NAMA 2006 - 082
Mycena flavoalba	NAMA 2006 - 065
Mycena haematopus	NAMA 2006 - 239
Mycena overholtsii	NAMA 2006 - 113
Mycena pura	NAMA 2006 - 071
Mycena rorida	NAMA 2006 - 086
Omphalina ericetorum	NAMA 2006 - 212
Onnia tomentosa (092 as *Onnia tomentosus*, 170 as *Inonotus tomentosus*)	NAMA 2006 - 092, 170
Otidea smithii	NAMA 2006 - 080
Panaeolus papilionascens var. *parvisporus* (as *Paneolus campanulatus*)	NAMA 2006 - 183
Panaeolus semiovatus var. *semiovatus* (as *Panaeolus semiovatus*)	NAMA 2006 - 197
Panaeolus solidipes	NAMA 2006 - 045
Peziza arvernensis	NAMA 2006 - 060
Peziza repanda	NAMA 2006 - 207
Phacidium sp.	NAMA 2006 - 180
Phellinus pini	NAMA 2006 - 151
Phellinus tremulae	NAMA 2006 - 189
Pholiota alnicola var. *alnicola* (as *Pholiota flavida*)	NAMA 2006 - 097
Pholiota cf. *spumosa*	NAMA 2006 - 046

Pholiota populnea (as *Pholiota destruens*)	NAMA 2006 - 057
Pholiota squarrosa	NAMA 2006 - 008
Phragmidium sp.	NAMA 2006 - 279
Phyllotopsis nidulans	NAMA 2006 - 054
Pluteus aurantiorugosus (as *Pluteus leoninus*)	NAMA 2006 - 260
Pluteus cervinus var. *cervinus* (as *Pluteus cervinus*)	NAMA 2006 - 123
Pluteus cf. *pellitus*	NAMA 2006 - 022
Pluteus flavofuligineus	NAMA 2006 - 243
Pluteus luteus	NAMA 2006 - 249
Pluteus romellii (094 as *Pluteus lutescens*)	NAMA 2006 - 039, 094
Pluteus salicinus (as *Pluteus petasatus*)	NAMA 2006 - 201
Pluteus sp. nov.	NAMA 2006 - 150
Polyporus badius	NAMA 2006 - 126
Polyporus cf. *leptocephalus* (as *Polyporus* cf. *elegans*)	NAMA 2006 - 156
Polyporus varius	NAMA 2006 - 042, 137
Psathyrella cf. *multipedata*	NAMA 2006 - 196
Ramaria abietina	NAMA 2006 - 058
Ramaria caulifloriformis	NAMA 2006 - 220
Ramaria cf. *leptoformosa*	NAMA 2006 - 230
Ramaria gelantiniaurantia var. *gelantiniaurantia*	NAMA 2006 - 110
Ramaria rubripermanens	NAMA 2006 - 167
Ramaria sandaracina var. sandaracina	NAMA 2006 - 155
Ramaria sp. (subgenus *Lentoramaria*)	NAMA 2006 - 029, 184
Ramaria stricta var. *concolor* (as *Ramaria concolor*)	NAMA 2006 - 169
Ramaria suecica	NAMA 2006 - 263
Ramaria testaceoflava	NAMA 2006 - 041
Ramariopsis kunzii	NAMA 2006 - 090
Rhodocollybia maculata var. *maculata* (as *Rhodocollybia maculata*)	NAMA 2006 - 007, 178
Rozites caperatus (as *Rozites caperata*)	NAMA 2006 - 055
Russula aurea	NAMA 2006 - 255
Russula brevipes	NAMA 2006 - 247
Russula cf. *cascadensis*	NAMA 2006 - 047
Russula cf. *foetens*	NAMA 2006 - 252
Russula cf. *integra*	NAMA 2006 - 234
Russula crassotunicata	NAMA 2006 - 204
Russula decolorans	NAMA 2006 - 225
Russula delica	NAMA 2006 - 238
Russula gracilis	NAMA 2006 - 227
Russula grisea	NAMA 2006 - 168
Russula lutea	NAMA 2006 - 206
Russula subfoetens	NAMA 2006 - 027
Russula virescens	NAMA 2006 - 115
Sarcodon calvatum var. *calvatum* (as *Sarcodon calvatum* var. *odoratum*)	NAMA 2006 - 211
Sarcodon scabrosus	NAMA 2006 - 140
Scutellinia scutellata	NAMA 2006 - 186

Spathularia flavida	NAMA 2006 - 003
Spathularia velutipes	NAMA 2006 - 052
Sphaeronamella helvellae	NAMA 2006 - 250
Spongipellis spumeus	NAMA 2006 - 218
Stropharia alcis	NAMA 2006 - 012
Suillus brevipes	NAMA 2006 - 056
Suillus cf. *brevipes* var. *subgracilis*	NAMA 2006 - 076
Suillus flavidus	NAMA 2006 - 193
Suillus granulatus	NAMA 2006 - 262
Suillus grevillii	NAMA 2006 - 221
Suillus tomentosus	NAMA 2006 - 025
Suillus umbonatus	NAMA 2006 - 040
Suillus viscidus (as *Suillus laricinus*)	NAMA 2006 - 037
Syzygospora sp.	NAMA 2006 - 244
Thelephora caryophyllea	NAMA 2006 - 049
Thicholomopsis decora	NAMA 2006 - 050
Trametes pubescens	NAMA 2006 - 101
Trametes suaveolens	NAMA 2006 - 222
Trichaptum abietinum	NAMA 2006 - 216
Trichaptum subchartaceum	NAMA 2006 - 179
Tricholoma caligatum (as *Tricholoma caligata*)	NAMA 2006 - 073
Tricholoma cf. *inamoenum*	NAMA 2006 - 020, 148
Tricholoma cf. *squarrulosum* (as *Tricholoma* cf. *atrosquamosum*)	NAMA 2006 - 135
Tricholoma equestre (as *Tricholoma flavovirens*)	NAMA 2006 - 103, 248
Tricholoma myomyces (089 as *Tricholoma terreum*)	NAMA 2006 - 089, 129
Tricholoma platyphyllum (as *Tricholoma platyphylla*)	NAMA 2006 - 237
Tricholoma robustum (as *Tricholoma focale*)	NAMA 2006 - 077, 134
Tricholoma saponaceum var. *saponaceum* (as *Tricholoma saponaceum*)	NAMA 2006 - 112
Tricholoma sulphurescens	NAMA 2006 - 105
Tricholoma sulphureum var. *sulphureum* (as *Tricholoma sulphureum*)	NAMA 2006 - 088
Tricholoma vaccinum	NAMA 2006 - 062
Tricholoma virgatum	NAMA 2006 - 059
Tricholomopsis decora	NAMA 2006 - 181
Tricholomopsis rutilans	NAMA 2006 - 122
Tyromyces chioneus	NAMA 2006 - 228
Xeromphalina campanella	NAMA 2006 - 070
Xeromphalina cauticinalis	NAMA 2006 - 017, 165