RARE MOMEMNTS IN REMOTE PLACES
Ambling through the Andean Amazon

By Larry Evans & Daniel Winkler

What mushrooms would you expect to find in the worlds most remote and intact ecosystem? Perhaps some familiar and fascinating genera like Amanita or Boletus, maybe a Russula? Sorry to disappoint you, but there are hardly any ectomycorrhizal species growing in the rainforest, most mushrooms are feeding on decaying biomass – like troops of colorful and gracile Marasmius or hosts of conks and leathery shelves. And why wait for your food source to die? Cordyceps fungi feed on insects while they are still moving! By now you probably have a hunch that you do not need to conjure up some fantastic rainbow colored fungal creatures that look like something out of a long wild photoshop session involving lots of caffeine. Yes, of course, some of these grow in the Amazon, and what's more someone has probably tried eating them used them to cure something or color their dull post-modern reality.

Do we ever find new mushrooms, and who did we name it after? Over the last 7 years, the Madidi Mushroom Study has collected, photographed, dried, and curated well over 1000 mushroom specimens. These represent only the specimens that survived the humid heat and ever present mycophagous insects and molds, attempts of being dried in the bread oven at Chalalan, bagged with mothballs and carried on someone's backpack to the Bolivian National Herbarium in La Paz, a few days hard travel uphill. Even more collections and photographs are "orphans" that bother the herbarium keepers with their absence of a reliable correlation between the collected biological material and the photographs. However thanks to the work of Danny Newman, and BNH staffers, the 2012 collections are now being properly curated, verified, and available for study through the BNH. Very few of the dozens of unique collections we have made ever make it to the stage of being formally described. In accordance with the Andes Protocol, which regulates the transfer of biological material, all specimens remain in Bolivia.

After finding more mushrooms parasitizing on insects during my first week of collecting in Bolivia than I had seen in my previous 20 years of collecting, I alerted Daniel Winkler, to the Amazonian abundance of this bizarre group of which he is researching in Tibet. He and I have since teamed up to lead tours to both the Bolivian and Ecuadorian Amazon Rainforest. It is amazing what can be found when we slow down a bit and look closer, black stalked-bright red pin head size fruiting bodies of *Ophiocordyceps australis* growing out of ants, white and orange *Cordyceps locustiphilia* growing out of colorful big locusts, *Akanthomyces* embalming a sphinx moth and growing weird antenna like structures to spread its conidiospores and the list goes on and on. The variety of insectivorous fungi in these two places overlaps, with the Ecuadorian jungle being even more diverse. The diversity, biochemistry, and value of these entomophagic fungi alone makes Madidi national park a gem of biodiversity worth preserving, and still it is currently threatened by oil development and a hydroelectric project.

Some of the amazing and curious fungi our Mushroaming group has uncovered includes sampling 3 species of the tree ear fungus, one of them, *Auricularia delicata*, with an intriguingly reticulated underside; for the first time we found a fleshy *Polyporus* that was stout in stature and seemed pressurized by its high moisture content. We marveled at *Polyporus* or *Favolus tenuiculus*, a common species throughout the neotropics that is eaten by the local people and called "chicken breast" mushroom (although it is a bit more leathery); and a few varieties of the oyster mushrooms that grow locally, including the beautiful pink Pleurotus djamor.

One story of medicinal mushrooms stands out, because it saved the life of our friend and guide Yovanni during a bout with dengue fever. *Pycnoporus sanguineus*, aka (*Trametes*) *cinnabarinum*, the Blood-red Bracket now recognized to be the same species found in Canada and Eurasia is saturated with intense brick-red orangeness throughout its cap, context, and pores. When brewed into a tea and taken orally this mushroom has the reputation for breaking a fever. Not only in South America, where some but not all ethnic groups utilize it, but in traditional North American and Chinese medicine as well. It strikes me that this fungus is never found in the primary rainforest, but only in areas around human civilization on downed wood. Same with the local black *Daldinia*, a relative of King Alfred's Cakes, which is used to counteract muscle cramps and hence also known as Cramp balls. My personal suspicion is that these fungi were transported by people during the original settling of these continents millennia before.

And of course there is an overwhelming diversity of fungal eye candy in the jungle. Notably, we encountered an amazing teal blue ascomycete growing in an undisturbed arroyo near Coroico, the colorful and stunningly structured, but minute *Favolaschia*, astonishing fruitings of coral-like Ramaria or Lentaria, purplish buttons of cute shiitake-like *Lentinus*, bright scarlet cups of *Cookeina* equipped with seductive eye lashes (*C. tricholoma*), and the eerie black branches, antlers and fingers of a host of Xylaria, some of them exuding red nectar, all growing out of fallen logs. But the visuals aren't the real miracles here. The real potential to develop fungi as a source of edible protein, to use fungi to decontaminate thousands of hectares lost to oil pollution, to develop medicines and tourism, to decompose plastics as the recent find of *Pestalotiopsis microspora* that made the news indicated and to provide alternative ways to produce paper pulp, all promise a cleaner, greener path to the future.

Daniel has a gallery of Amazon Mushroom photos on his Mushroaming.com webpages and Larry shares photos macro and microscopic images on his Fungaljungal.com. They are planning on returning to mushroam the Andean Amazon in early 2013.