

**Speaker for  
October 17  
MSSF Meeting**



**Dr. Joaquin Cifuentes**

Joaquin is the curator of the FCME Herbarium at the School of Sciences of the National University (UNAM) of Mexico City and heads the university's Comparative Biology Department. He has been teaching botany and mycology courses for over 25 years. During that time, he has published 36 papers on taxonomy and systematics of macromycetes, put together a collection of 20,000 fungi from Central and Southern Mexico. Recently, he has been taking an inventory of the macrofungi in the Reserva de la Biosfera de la Mariposa Monarca (the Monarch Butterfly Reserve) in Michoacan, Mexico. He has also done major fungi studies in the tropical areas of Campeche and Belize. Since 2002, he has been a field leader and technical presenter for Mexican Mushroom Tours in Tlaxcala and the Copper Canyon.

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# *Mycena News*

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## **MycoDigest: Mushrooms in the Waves**

Else Vellinga

For showy mushrooms, woods are the best places to go – you will find colourful fruitbodies, in all kinds of shapes and sizes on the ground, on trees and on dead wood. The underwater world compensates for its lack of mushrooms by producing beautiful fish, corals, sea slugs, squirts, jelly fish (no fungi), and more than the eye can behold.

You wouldn't look for mushrooms in a tide-pool, would you? However, even in the sea, there are fungi. They may be nothing like the showy terrestrial ones, but nevertheless, there are lots of different groups. Ascomycetes (the group to which Morels and elfin saddles belong) are the great majority, but around ten are basidiomycetes (like the terrestrial chanterelles, boletes, amanitas and conks). What do these marine basidiomycete species look like? One is a smut fungus parasitizing an underwater plant, (a short introduction to smuts appeared in the November 2004 *Mycena News*). Another, *Mycocrea dilseae* parasitizes the blades of the red alga *Dilsea carnea*. The other eight basidiomycete species grow on wood, twigs and planks, bits of mangroves, or on hair.

They're small – very small; most of them do not reach one mm in diameter. *Nia vibrissa* is the giant among them, with fruitbodies up to almost a quarter inch. Most form closed, rounded fruitbodies, with the spores inside, so they do not get washed away prematurely by the sea. The fruitbodies are often hairy, a nice way of coping with the frictions of waves and the exposure to different temperatures, and salinities in a subtidal environment.

Only *Digitispora* has its spore-bearing cells, the basidia, exposed to the waves. But, its spores are extremely well adapted to transport by water, they are thin and consist of four branches in three dimensions. Apparently, this makes it easier for the spores to adhere to a substrate where they can germinate and live their saprotrophic lives. Many aquatic fungi have similar spores. The spores of *Mycocrea* are thin, and extremely long – they range from 105 to 118 µm which makes them longer than any other species of basidiomycete (for comparison, spores of your store-bought portobellos, *Agaricus bisporus*, are 6.5-8.0 µm). They are slightly boomerang shaped, with a shallow angle between the two ends.

The spores of *Nia* species are little barrels with four long sticks protruding, but *Limnopordon* has ellipsoid spores without appendages. And it looks like the spores of *Halocypha* are still actively shot off from the basidia, though this mechanism has been lost in the other species. It is the same mechanism found on the gills of normal mushrooms (and within the pores of a bolete) that catapults the spores into free space where they can fall and be carried off in air currents. Puffballs and false truffles, where

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*MycoDigest* is a section of the *Mycena News* dedicated to the scientific review of recent mycological information.

# Programs for Beginners Being Continued With Slide Shows and Member Presentations

Tom Sasaki

We plan to continue the NAMA Slide Programs that started last year showing the popular mushrooms classified under the different spore colorings. In addition, we hope to intersperse these with special programs presented by some of our knowledgeable members. Watch for the announcements in the schedule section of the *Mycena News*.

These programs are held on the third Tuesday of each month preceding the general meeting, at 6:30 pm. The programs will be geared towards the beginners but everyone is welcome to attend.

At the October session we will repeat the slide program "Introduction to Fall Mushrooms" shown last year. In November, we will continue the series on mushrooms by spore coloring with "Gilled Mushrooms IV: Purple Brown to Black Spored." It discusses *Agaricus*, *Stropharia*, *Psilocybe*, *Coprinus*, *Panaeolus*, *Chroogomphus* and more. There will be no beginners' meeting in December but will start again in January.

## New Hospitality Committee

In the not so recent past, the MSSF had a Hospitality Chair. The council has decided to resurrect this office to facilitate outreach to visitors and new members. The MSSF is an inclusive organization and wants everyone to feel welcome. Thinking this was a great idea, I volunteered to run for this Chair, and was voted on the council at the September board meeting. So if you would like to be on this committee and meet interesting people, if you are fun-loving, gregarious or just interested, please contact Liana Hain at [liana.hain@ucsf.edu](mailto:liana.hain@ucsf.edu) or (831) 227-4588 as soon as possible. We will be meeting in October to formulate a welcome strategy.

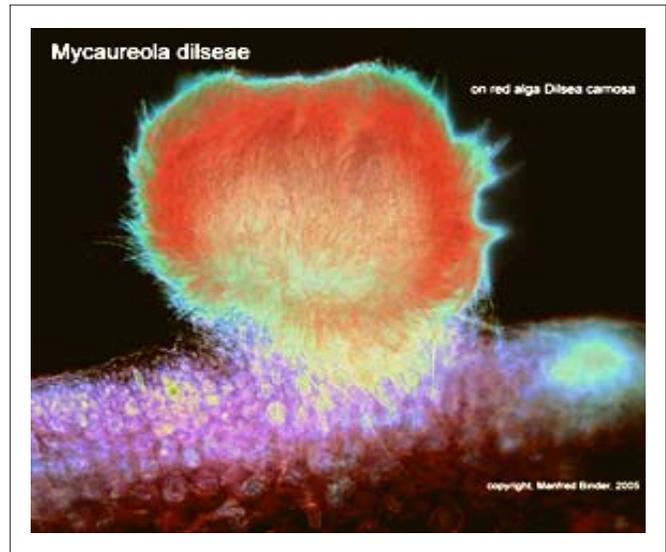
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*Mycaureola dilseae*

the spores are formed inside the mushroom, have lost this mechanism and the spores either get into the air by puffing or escape by being eaten by small rodents.

Classifying the tiny fruitbodies of marine fungi posed quite a challenge to those who discovered them. For instance, *M. dilseae* was first thought to be an Ascomycete, because of its flask-shaped fruitbodies with the opening on top. *Nia*'s spores were interpreted as conidia, thought to have been formed not on basidia, but budded off. It was ten years after its original description before it was shown that it has basidia and that it is a basidiomycete. This proved to be a general pattern – many of these fungi changed placements in a major way. It was quite a different situation than the splitting up and refining we are used to in terrestrial mushroom genera, where *Boletus chrysenteron* moves back and forth from *Xerocomus* to *Boletus*. No, here the changes were between ascomycetes and basidiomycetes.

As is apparent, the shape of their fruitbodies is no indication of how these fungi relate to their terrestrial counterparts. It is the same with puffballs – all the fruitbodies look quite similar, comprising a sac filled with spores, which are adapted to air transport (with thick, brown, hydrophobic spiny walls). Yet some puffballs are boletes (*Astraeus*, *Scleroderma* and *Pisolithus*), others are *Agaricus*-relatives (*Lycoperdon*, *Bovista*, *Calvatia* etc., *Tulostoma*, *Battarrea*), while earth stars form a separate group related to *Gomphus* and to the stinkhorns. Where morphology is at a loss, molecules pick up the story. The relationships of the marine fungi are now revealed by comparing their DNA sequences with DNA from known species.

In this way, Binder and his co-workers figured out where five of these marine fungi belong (they also included one very rare fresh-water mushroom – one that not only grows under water, but likes that water to be ice cold).

Interestingly, they found that several of the species mentioned above (*viz. Nia vibrissa*, *Halocyphina villosa* and *Calathella*

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*mangrovei*) group together with terrestrial wood-dwelling species with reduced fruitbodies, the so-called cyphelloid species. The fruitbodies of these mushrooms resemble little cups, with the basidia on the inside surface, and a hairy exterior. *Lachnella* species are examples of this group and representatives occur quite commonly on dead stems and small branches – I find them on the old stems of the ivy in our front yard in Berkeley.

*Mycareola dilseae*, a parasite of a red alga, is related to a different group of white spored species, formerly classified with the *Tricholomataceae*, that includes honey fungi, velvet shanks and the cone-inhabiting *Strobilurus trullisatus*. *Mycareola* forms an independent lineage of reduced, cyphelloid fruitbodies. Once again nature has re-invented the same thing, but always slightly different, as befits the different origins. Like a painter painting the same scene first with water colours, then with oils.

In general these fungi are widespread – distribution patterns running along coasts of both the Atlantic Ocean and the Pacific Ocean are quite common. Some like it a bit hotter than others. And of course, *Mycareola* is restricted to the area where its host grows – that red alga is restricted to the area from the Baltic to Portugal.

Most species grow on submerged wood but you go fishing for one with horse hair for bait! In other words, the marine world, though much poorer in species, still offers a wide variety of fungal ecological adaptations to marvel at!

Further reading:

Binder, M., D.S. Hibbett, Z. Wang & W.F. Farnham, 2006. Evolutionary relationships of *Mycareola dilseae* (Agaricales), a basidiomycete pathogen of a subtidal rhodophyte. *American Journal of Botany* 93: 547-556.

Hyde, K.D. & S.B. Pointing (eds), 2000. *Marine mycology: a practical approach*. Fungal diversity series 1. Fungal Diversity Press, Hong Kong, China.

Kohlmeyer, J. & E. Kohlmeyer, 1979. *Marine mycology: the higher fungi*. Academic Press, New York.



*Nia vibrissa*

**Calendar**

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and special events. Under 12 1/2 price (w/ adult), under 5 free. Register online at [www.mssf.org/mendo](http://www.mssf.org/mendo), or mail check with contact info to MSSF c/o Randall Museum 199 Museum Way SF, CA 94114. Info: 415-457-7662 or 707-829-2063.

**Tuesday, November 21. Beginners Program: NAMA Slide Program.** 6:30-7:30 p.m., on “Gilled Mushrooms IV: Purple-Brown to Black Spored” prepared by Dr. Michael Beug. The program discusses *Agaricus*, *Stropharia*, *Psilocybe*, *Coprinus*, *Panaeolus*, *Chroogomphus* and more.

**Friday-Sunday, November 24-26, (Thanksgiving Weekend): David Arora’s Annual Mendocino Mushroom Foray.** Three days of mushroom hunts, ID, cooking demos, and lectures by Arora and special guests. \$160 per person, includes lodging in heated cabins and most meals. All experience levels welcome. For more info or to register, contact [maxfun@cruzio.net](mailto:maxfun@cruzio.net) or 707-884-3457.

**Saturday-Sunday, December 2-3. MSSF Annual Fungus Fair. Oakland Museum.** Stay tuned for more details.

## Upcoming Forays

### Yuba Pass Foray:

On October 21-22 Hugh Smith and Norm Andresen will be co-leading the Annual Yuba Pass Foray. We will meet at Chapman creek campground, at 9:00 am and drive to several locations to find a wide range of mushrooms. Depending on the weather, we have found: russulas, albatrellus, suillus, matsutakes, white chanterelles, the giant ganoderma oregonensis, some types of boletes, gomphus, and many others. There will be a potluck on Saturday night, camping at Chapmen Creek campground or Wild Plum further west on Highway 49. Contact Norm at [n.andresen@comcast.net](mailto:n.andresen@comcast.net) for information.

### Mendocino Foray:

This year’s new and improved MSSF Mendocino Woodlands Foray will take place on the weekend of November 10-12, at the Mendocino Woodlands camp, in the mushroom-rich hills above the town of Mendocino (northern Calif.). Dr. Dennis Desjardin will be the foray mycologist, and will do a presentation Saturday night. He will be assisted at the specimen tables by Norm Andresen and Mykweb’s Mike Wood. Taylor Lockwood will present a special selection of mushroom visuals. Planned classes include mushroom dye, paper-making, identification, photography, a mushroom kit making session, and shopping for mushrooms on E-bay! Also planned are a kid’s foray and art class. Fee of \$140 includes lodging, meals, and all forays, classes, and events. Special rate of \$90 with offsite lodging. Kids under 13 half price (w/ adult), under 5 free. Register online at [www.mssf.org/mendo](http://www.mssf.org/mendo), or send check with names and contact info to: MSSF c/o Randall Museum 199 Museum Way SF, CA 94114. Questions? E-mail to [mendo@mssf.org](mailto:mendo@mssf.org), or call 415-457-7662 / 707-829-2063.