

# Potomac Sporophore



June 2010

Volume No. 25

Issue No. 2

Summer Edition

The Potomac Sporophore is published quarterly by the Mycological Association of Washington (MAW)

Website: <http://mawdc.org>

## **BOARD OF DIRECTORS**

**Ray LaSala**, President  
202-332-8727  
[president@mawdc.org](mailto:president@mawdc.org)

**Daniel Barizo**, Vice President  
301-332-7112  
[vicepresident@mawdc.org](mailto:vicepresident@mawdc.org)

**Jennifer Depalma**  
Acting Secretary  
[mawsecretary@mawdc.org](mailto:mawsecretary@mawdc.org)

**Bill Drehmann**, Treasurer  
301-585-8240  
[treasurer@mawdc.org](mailto:treasurer@mawdc.org)

**Jon Ellifritz**, Programs  
301-422-7517  
[programs@mawdc.org](mailto:programs@mawdc.org)

**Mitch Fournet**, Forays  
301-768-6788  
[forays@mawdc.org](mailto:forays@mawdc.org)

**Connie Durnan**, Memberships  
202-362-1420  
[memberships@mawdc.org](mailto:memberships@mawdc.org)

**John Harper**, Culinary  
301-589-2830  
[culinary@mawdc.org](mailto:culinary@mawdc.org)

**Bruce Boyer**, NAMA Liaison  
703-863-9633  
[namatrustee@mawdc.org](mailto:namatrustee@mawdc.org)

**William Needham**, Editor  
410-884-9127  
[newsletter@mawdc.org](mailto:newsletter@mawdc.org)

## **2010 Scheduled Events**

**NOTICE: Meeting location for July and August has changed**

**Kensington Public Library**  
**July and August**

Located at 4201 Knowles Avenue.  
phone number 240 773-9515

**Chevy Chase Public Library**  
**September - December**

Located at 8005 Connecticut Avenue  
phone number 240 773-9590.

All monthly meetings start at 7PM and include a brief review by each of the MAW board members and a summary of monthly events and mushroom finds by the President. The program starts at about 8PM. Light refreshments are available as well as an occasionally mushroom dish prepared by a member

**July 6 - Mushroom ID Workshop**

**August 3 - Mushroom ID Practice**

**August 12-14** - The 2010 NAMA annual foray will be hosted by the Colorado Mycological Society at the YMCA of the Rockies' Snow Mountain Ranch.

**September 7 - TBD**

**September 24 - 27** Regional Foray Wildacres, North Carolina. Contact Bruce Boyer for details.

**October 2** Multiple forays for the Mushroom Fair at Brookside Gardens

**October 3** - The Annual MAW Mushroom Fair

**October 5** - Annual MAW's Wild Mushroom Culinary Event.

**October 8-10** - Annual **Camp Sequanota** Foray - see below

**November 9** - Nominations for MAW Board for 2011.

**December 7** - Election for MAW Board for 2011.

**From the MAW President**  
MAW Enters the 21<sup>st</sup> Century

I joined MAW in 1981, long before the Age of the Internet. Since then, we've made a number of advances in the information technology we use.

If you haven't yet noticed, our MAWDC.org website now provides information about meetings and forays, rendering obsolete the telephone announcement line we used to maintain but have chosen to

discontinue, thereby saving the burden and cost of maintaining it. We've also begun posting materials for Tasting Meetings as a more efficient means of distribution than just handing them out at the door. We've even begun making our *Potomac Sporophore* newsletter available on the website; but we've not given serious consideration to eliminating distribution of it by mail as a cost-cutting measure—at least not yet.

MAW also communicates with its members through several other channels. We send emails to members based on distribution lists maintained by the Membership Chair, emails to members and nonmembers regarding forays using a list maintained by the Foray Chair, and emails to members and nonmembers regarding programs and other MAW activities using a list maintained by the Program Chair. Using these various distribution lists can be haphazard.

We've had a basic means of communicating information about mushrooms via the [MAW-Mail@yahoogroups.com](mailto:MAW-Mail@yahoogroups.com) email address for several years now, and it seems to have attracted quite a following. I'm not sure how many subscribers to MAW-mail are actually members of MAW, but to some extent it doesn't matter because MAW-mail is actually not operated by MAW itself. However, MAW-mail merely serves as an email “party line” for its subscribers and does not have true administrative capabilities.

MAW recently tried publicizing activities using a web service called Meetup.com. The primary purpose of Meetup.com is to help organize real in-person interactions. It is not

intended to create a virtual community. Earlier this spring, MAW used Meetup.com to reach out to members of a group called Slow Food DC by publicizing and even registering participants for one of our morel forays and our Spring Wild Foods Tasting Meeting. The results of this experiment were impressive. We connected with many new people who not participated in those events but also joined MAW as a result. It's apparent to me that there are a lot more people in the Washington area who are interested in mushrooming than we've been getting through to and that Meetup.com can enable us to reach out to those people very effectively.

This sudden influx of newcomers and change in way of doing business is more than a little scary to some old-timers in the club, myself included. Will MAW be taken over by people who are more interested in social networking than they are in mushrooms? Will those who are either not skilled in using computers or merely disinclined to get involved with social networking be cut off from information about activities or be pushed aside by the newcomers brought into MAW by Meetup.com? These are legitimate concerns.

I am committed to preserving the interests of our current membership while we evaluate the applicability of this new approach to our operations. You can expect to hear more about using Meetup.com in the coming months. I encourage each of you to be receptive to the possibility that new ways of doing things might further improve MAW, and I certainly am interested in your thoughts on this matter.

- Ray LaSala

## **Camp Sequanota Joint Foray**

The annual Camp Sequanota foray weekend, begun in 1988 by MAW, will this year be co-sponsored by MAW and the Western Pennsylvania Mushroom Club (WPMC), and has been endorsed by the North American Mycological Association (NAMA). Participants must be or become members of one of the co-sponsoring clubs or NAMA to register.

The foray will take place Columbus Day weekend, from Friday, October 8, to Sunday, October 10, at Camp Sequanota, located near Jennerstown in the Laurel Highlands of western Pennsylvania.

We'll have two excellent guest mycologists, WPMC's John Plischke III and Noah Siegel of Royalston, Massachusetts. For more details about the accommodations at Camp Sequanota, the backgrounds of our two guest mycologists, and the kinds of activities you can expect for the weekend, including forays Friday afternoon, Saturday morning and afternoon, and maybe Sunday morning, as well as programs Friday and Saturday evenings, visit MAW's website at [www.mawdc.org](http://www.mawdc.org), or contact Jon Ellifritz at (301)422-7517.

The full foray weekend includes two nights' accommodations, linen service, and six meals, from Friday evening dinner through Sunday lunch. Double-occupancy participants pay only \$135, and those who opt for a room to themselves, \$174.50. Those who just want to come for the day, all day Saturday, including three meals, forays, wild mushroom dishes with dinner (depending on quantities of choice

edibles!), and the evening programs, will pay only \$48.25. (The cost for children 3 to 10, occupying a room with their parents, is \$46.50, and if they're just there for Saturday, \$10.75.) A late fee applies for registrations received after Sep 3.

Registration forms can be found on the two clubs' websites, [www.wpamushroomclub.org](http://www.wpamushroomclub.org) and [www.mawdc.org](http://www.mawdc.org). If you're unable to access the sites or can't print out the form, contact foray registrar Connie Durnan (MAW's Membership Chair) at [czdurnan@msn.com](mailto:czdurnan@msn.com), by phone at (202) 362-1420, or by regular mail at 4509 Windom Place, NW, Washington, DC 20016, and ask that she mail you a form.

## **Feature Article**

### **GOLDEN HARVEST**

This article is a condensed version of the article Golden Harvest, dated May 26, 2006. (See Archives at [www.mawdc.org](http://www.mawdc.org) for original article). One of the best edible wild mushrooms of mid-summer in the eastern United States is the "golden chanterelle". It is quite distinctive because of its orange color, graceful trumpet-like shape and fragrance similar to that of apricots.

There are two related species referred to as the Golden Harvest. *Cantharellus cibarius*, the true "golden chanterelle," and *Cantharellus lateritius*, often called the "smooth chanterelle" in field guides. Most of the so-called "golden chanterelles" found in the greater Washington area are actually smooth chanterelles, but the distinction is irrelevant from a culinary point of view because they look and taste the same when cooked.

*C. lateritius* can usually be distinguished by its visible features. It tends to have a deeper orange color than *C. cibarius*. It grows to a typical height of 3 to 4 inches with a cap width of up to 6 inches. Its color is typically apricot-orange. The easiest way to tell *C. lateritius* from *C. cibarius* is by inspecting the underside of its cap. Both species have fleshy, decurrent ridges that extend all the way down from the cap margin to the stalk and then continue part way down in a smooth curve, so that the mushroom is shaped like the bell of a trumpet. The *C. lateritius* has shallow, blunt ridges on the underside of its cap. The *C. cibarius* has narrower and more pronounced ridges.

One non-edible species found in the Eastern United States that may be confused with the smooth chanterelle is the jack o' lantern. This mushroom can be distinguished from chanterelles by its gills, smell, and size. It has a pumpkin-orange color. Its taxonomic name is *Omphalotus illudens*. It is quite toxic when eaten and can cause severe gastrointestinal upset including vomiting and diarrhea. It grows in dense clusters on trees, roots or stumps. The gills of the jack o' lantern are closely spaced, thin and sharp-edged, and can easily be pulled away from the underside of the cap. In contrast, the ridges on the underside of a smooth chanterelle are shallow, blunt, and can not be easily pulled off. The jack o' lantern tends to be much larger than the smooth chanterelle when mature.

Smooth chanterelles will fruit abundantly given the proper combination of moisture, temperature and habitat. They are easy to spot on the forest floor in summer because of

their bright orange color. They grow out of the soil, not from wood, and are individually scattered in patches that look as though they had been casually strewn there by someone; but sometimes they will sprout in dense clumps of three or four. While they may encircle trees, they do not emerge from the base of the trunk or the roots.

The best places to find smooth Chanterelles in the greater Washington area are along stream banks, gullies, ravines and drainage areas. Chanterelles can be found in large quantities on slopes above streams, and other times they may be more plentiful along flood plains. They can sometimes be found at sites that can hold water even when it has not rained for a week. Healthy looking ferns are one indication of such places.

Chanterelles can grow in a wide variety of soils; from sandy loam to clay. They can be found in areas with little undergrowth or in areas with moss, ferns, and other wetland vegetation. However, they grow best in well-drained, somewhat acid soils with low nitrogen content. They are usually found in soils which are somewhat pliable and those that can hold some moisture.

More plentiful crops of smooth chanterelles will occur in forests populated by oak and beech hardwoods. While no one knows for sure which trees they associate with, oaks seem to be the best bet. However, beech trees are often found growing in the vicinity of *C. lateritius*. The *C. cibarius* is more likely to be found in woods with pine trees.

The amount of humidity, rainfall, and

sunlight are important factors of chanterelle growth. In order for the fungus to grow, the mycelium needs moisture over an extended period. Moisture is crucial for an abundant fruiting. They like good thunderstorms and hot, muggy weather. Fruiting sometimes occurs two or three days after rainfall; at other times it may seem to actually occur during the rain. After picking chanterelles in a particular area, if it rains again, you can often go back to the same area and pick them again.

In this part of the country smooth chanterelles usually begin to fruit in the middle of June and can last beyond September, but most often they fruit from late June to the end of August. The peak fruiting season occurs during the hottest and most humid part of the year from mid-July to mid-August. Chanterelles usually begin to fruit in the greater Washington area a few days before fruiting in higher or more northerly locations.

Fruiting usually occurs at approximately the same sites and times each year, but it can be delayed at specific sites during periods of drought. Therefore, chanterelle spots can provide good yields in years with abundant rain, but there may be little or no fruiting in those same spots during major droughts.

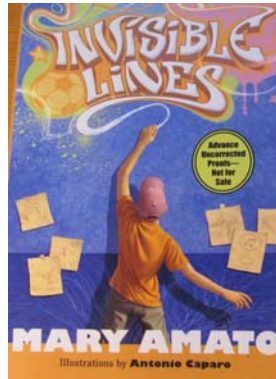
Refer to the original article for a good explanation on how to find smooth chanterelles in the greater Washington area. A number of smooth chanterelles are found in flood plains of streams, and some times on hillside drainage areas.

Because of the carrot-like flavor of Chanterelles, they can be prepared in many dishes. Smooth chanterelles

keep very well when frozen, but it is important to pre-cook them first to stop enzymatic activity. After cooling them, put them and their juice in plastic bags; then freeze them for future use.

- Larry Goldschmidt

## **Book Review**



Mary Amato's newest book, Invisible Lines, illustrated by Antonio Caparo, is sure to become a classic for readers of all ages.

The story centers around Trevor Musgrove. Trevor, his mother and younger brother and sister move into a housing project and Trevor enters a new school. The other characters in the book are varied and developed very clearly. Some are well-to-do and live very different life styles from the single adult families in the projects. Some are star athletes, some are team players, some are artists and all are facing the challenges of growing up, going to school, and trying to figure out who they are.

In a series of short, almost cinematic chapters, Trevor must deal with a series of realistic challenges of entering a new school, making new friends and 'not' friends, being short of money for just about everything, taking care of young siblings, and

engaging with an oddball, but interesting, science teacher whose major interest is fungi.

Facts and concepts about fungi are neatly incorporated into the story. The teacher of advanced science class Trevor is accidentally assigned to uses fungi to introduce the scientific method to the students; and, because in having to keep a notebook of findings and ideas, Trevor must identify the invisible lines, like fungal mycelium, that run through and connect everyone together.

-Bruce Eberle

## **Editorial Mushrooms with Sherry**

### THE CHICKEN MUSHROOM

The chicken mushroom gives one a thrilling surprise. To see, suddenly, its golden flash in the woods causes the heart to leap up, as the poet said. But the chicken mushroom can also be a cause of some chagrin since, often, when one reaches it, it is past its eating time.

This time expiration almost never happens with the morel or the hen-of-the-woods, and the oyster can be often be eaten even when it looks like it might be spent. The only other Fab 5 that might disappoint in a way that is worth mentioning is the chanterelle-with its worms, but one has to be neglectful of his patch for that to happen. But, then, the chicken appears from late spring into the fall, so one always has another chance.

Some people have written that the chicken reappears on the same tree in subsequent years, and it might, but in my experience you are more likely to be disappointed if you rely on another appearance of this hide and seek mushroom- its appearance is certainly not as reliable as the hen-of-the-woods. I think one can say that

the chicken mushroom is most unpredictable and that is a reason for it allure. (There is one way of helping the chicken to appear again: Gently cut its edges and be careful not to disturb its mycelium; it might not only grow at its edges again but it has a better chance of reappearing the next year).

There are things that you can say in chicken's favor-aside from the delight in its appearance and its delectability: one can find a most healthy and moist specimen on a day when there's been no rain for weeks and when the sun has been bold and relentless. On such days you can find this mushroom on the ground or on a log, growing resplendently; but then, Paul Stamets says that the chicken mushroom does not fare well when it has actually been rained upon, so finding it on a hot and sweltering day seems to be the best time to find it.

And you can find chicken on an old rotting log that you have passed for years without a thought, sometimes the kind of log that is covered with that reddish fiber that can be scooped out with your fingers, or on a standing tree that has been bleached bare with age. The chicken's unexpected appearance on such logs or on such bare-boned trees, which have never before given a hint of a chicken, makes one wonder: why here and why now and why on this log or tree-one of the great conundrums of mushroom science.

Not everyone likes the chicken mushroom. Waldemar Poppe came to like it only in recent years. He found it in Germany but he didn't find that others in that land looked for it. Shernoff reports that the European chicken mushroom is not a delectable, though that opinion is not shared by everyone.

Few people are allergic to chicken

and one has to be careful about eating the chicken that grows on our west coast, especially those associated with evergreen trees. Nevertheless, chicken is rated as a choice mushroom.

Some mycologists have listed five species of the chicken mushroom but I have found only two in the MAW area- *Laetiporus sulphureus* and *L. cincinnatus*. The latter was recognized as a separate species in the 1990's. Both of these chicken mushrooms can grow on or about both living and dead trees. Both are polypores and are often associated with the oak tree.

There are differences: *Sulphureus* has a yellow bottom (pore surface), while *cincinnatus* has a whitish one. *L. cincinnatus* appears earlier in the year but the appearance of both overlap considerably. *L. cincinnatus* grows as a rosette, on the ground, though I have found it up on a stump- it may have a pinkish tinge on its surface when it first appears, or even a whitish hue, but it will turn more yellow as it ages.

When you see a chicken that is strung out over the length of a log or an upright tree, it is usually the sulphur shelf-another name for *L. sulphureus*. The sulphur shelf can appear with layered fronds attached to the side of a standing tree. On a fallen log, its buds can sweep across the surface of a log, looking like a row of plump shoe horns.

The peripatetic Tom Volk says that one can eat the entire *L. cincinnatus*, especially when it is young and he thinks it's better tasting than the sulphur shelf, which hardens towards its center, leaving only the outer parts of its fronds edible.

The chicken mushroom is a brown-rot mushroom, which means that, like all brown rotters, it consumes the cellulose cells of the tree. Since

cellulose cells provide flexibility to a tree, their destruction makes it possible for a high wind to snap the affected tree in half.

Once you see a chicken mushroom on a living tree, you know the tree is a goner, though it may take years for the tree to die- this mushroom can hollow out the heartwood of a tree and yet the tree can continue to live for years. And this mushroom can continue it's dining after the tree has been used for lumber, as it did on some of those wooden ships that the British navy sailed.

Everyone seems to think that this mushroom tastes like chicken, hence the name, but I am more certain that when it is uncooked it peels just like a cooked chicken breast.

Most cooks that fuss over cooking mushrooms say that you can substitute chicken polypore for any dish that calls for a clucking chicken. If you need to preserve the chicken mushroom, cook it and freeze it-don't dry it. When you want to eat it, heat it without defrosting it-it works better that way. - Jim Sherry

#### CHIMERAS

We were on our way to foray  
We were feeling pretty good  
When we spotted something yellow  
In a little roadside wood.

We pondered and we wondered  
What might that something be  
That was hiding in the open,  
That was there for us to see.

We turned as we wondered  
And driving to the spot  
We hoped that we would gather  
The chicken that we sought.

We blinded on the wording  
Of those cardboard posted signs  
And brushed aside the cutters

On those little grasping vines.

We came to the clearing  
Where we hoped that there might be  
A Sulphureus chicken  
That was growing on the tree.

Then a cloud came floating by  
And stole our yellow prize  
And showed us what we really knew  
But wouldn't realize.

We were on our way to foray  
We were feeling pretty good  
When we spotted something yellow  
In another little wood.

-Jim Sherry

## Fungus Notebook



**Common Name: Destroying Angel,** Death angel, - The common names are mixed metaphors for a pallid, angelic beauty whose virulent toxins are usually characterized as 'deadly poisonous' in field guides.

**Scientific Name: Amanita bisporigera** - The generic name is taken directly from the Greek word *amanitai*, which may refer to Mount Amanus in northern Syria; the use of *Amanita* is attributed to Claudius Galenus (better known as Galen), the noted Greek physician, who, according to Charles McIlvane in *1,000 American Fungi*, used the term to describe 'edible fungi.' The specific name indicates that it has only two spores on each of its basidia in contrast to the standard

four spores of the basidiomycete. Virtually indistinguishable from *Amanita virosa* and *Amanita verna*.

The Destroying Angel is one of few fungi that is more universally known by its common name rather than its scientific name. Three distinct characteristic features define the archetype. First and foremost is the volva, a cuplike structure at the base of and surrounding the stalk or stipe; the volva is frequently hypogaeal and can then only be detected by removing the soil to allow inspection. The volva is the bottom part of the universal veil, which is an ovate membrane that envelops the mushroom during the subterranean growth phase. With the epigeal extension of the stipe to expose the cap and gills of the fruiting body for spore dispersal, the universal veil tears around its circumference. The volva is the lower part of the "egg-shell" that remains attached to the bottom of the stipe. The second most important feature is the absolute whiteness of the pileus or cap, the stipe and the gills. The whiteness is described by Bill Russell in his *Field Guide to Wild Mushrooms of Pennsylvania and the Mid-Atlantic* as having a "strange luminous aura that draws the eye" that is "easily visible from one hundred feet away with its serene, sinister, angelic radiance." The last feature is less prominent but serves to confirm the identification through a more detailed, closer examination. The cap is completely smooth, usually described as 'glabrous' and 'viscid when wet' in field guides. This is to distinguish it from most of the other species in the *Amanita* genus that have warty patches of the universal veil on the cap.

The species that fit the Destroying

Angel description are *A. bisporigera*, *A. virosa* and *A. verna* in eastern North America and *A. ocreata* in western North America. The three eastern variants are distinguished according to the nature of their spores, their reaction to potassium hydroxide (KOH), and/or their subtle nuances in terms of size and time of fruiting. Most basidiomycete or gilled mushrooms produce four reproductive basidiospores on the their namesake structure, the basidium. While it is certainly true that only *A. bisporigera* differs from this is having only two basidiospores, *Amanita* expert Rod Tulloss has evinced that there is a noted tendency for two-spored basidia to become four-spored over the course of a single growing season. So even if you could do a spore count, which requires high magnification equipment in a workbench environment, it would not necessarily be conclusive. In general, *A. bisporigera* is somewhat smaller and *A. verna* is somewhat more slender than *A. virosa* and that both appear earlier in the season. It may be reasonably concluded that distinguishing the three eastern variants according to their physical and temporal appearance is not practical.

The confusion of the three eastern Destroying Angel species is due to a number of factors, of which the mischaracterization of *A. verna* is the most notable. *A. verna* is sometimes called Spring Destroying Angel because it is purported to fruit earlier in the year. The species name *verna* is from the Latin *vernus*, meaning 'belonging to the spring' to reflect this association. It is also known as Fool's Mushroom, perhaps because spring is noted for lighthearted vernal foolery; however, it is more likely that the

association is another way of characterizing the deceptive appearance that fools the unwitting mycophagist into eating a deadly toadstool. *A. verna* was first described in France and is primarily a European species. It is not unlikely that an early French colonist found a similar mushroom in North America and came to the incorrect conclusion that it was *A. verna*. The most conclusive species test is the application of potassium hydroxide (KOH), as *A. verna* is different from the other two species in that it purportedly does not turn yellow. However, studies carried out in France by a number of different mycologists found that all of the *A. verna* specimens collected stained yellow, just like *A. virosa* and *A. bisporigera*. It is probable that all of the North American Destroying Angel mushrooms variants are actually *A. bisporigera*. Those misidentified as *A. verna* are due to the original confusion with the European species. Those misidentified as *A. virosa* are due to the observed transition of the two-spored *A. bisporigera* into a four-spored *A. bisporigera* and not a new species. The variation in yellow staining due to the KOH reaction is therefore likely a matter of variance in the chemicals in the mushroom that produce the color and not in a species difference.

The reason that it is important to know and recognize the taxonomy of the Destroying Angel is that it is one of the most deadly mushrooms known, or, as eloquently stated by Nicholas Money in *Mr. Bloomfield's Garden* "misused as a cooking ingredient, its alabaster flesh has wiped out whole families." The toxic chemicals are called amatoxins (from the generic name *Amanita*),

which are small protein molecules made up of eight amino acids in a ring called a cyclopeptide with a molecular weight of about 900. There are at least eight amatoxins each identified;  $\alpha$ -amanitin is the one with fatal result. The destructive mechanism involves RNA polymerase, which is necessary for the production of messenger RNA, the key to protein synthesis as it carries the code from the DNA. The ultimate result is a cessation of cell metabolism and cell death. As the process involves the inability of the cells to grow, it is the cells that have high turnover rates that are most affected by the poison: the gastrointestinal mucosa cells of the stomach; the hepatocytes of the liver; and the renal tubular cells of the kidneys. The liver is most at risk because the hepatocytes that absorb  $\alpha$ -amanitins are excreted with the bile and then reabsorbed.

The initial stages of poisoning can start anywhere from 6 to 24 (average 10) hours after ingestion and consist of the usual gastrointestinal distress symptoms of nausea, vomiting, diarrhea, stomach cramps with a severity indicated by hematuria (blood in the urine). This is likely the reaction of the gastrointestinal mucosa cells. There follows a period 12 to 48 hours after the initial ingestion of apparent recovery, although liver and kidney disturbances can be clinically detected. This is probably after the stomach cells are recovering before the onset of the slower hepatic and renal processes. The third and final stage occurs about 72 hours after ingestion and consists of a progressive series of organ failures that begin with the liver and kidneys and end in convulsions, coma and death. The people who fall victim to

amanitin poisoning are for the most part amateur mushroom gatherers who mistake the Destroying Angel (or its close relative *A. phalloides*, the Death Cap) for a known edible such as *Agaricus campestris*, the meadow mushroom. Not atypically, they are foreigners who mistake the delectable looking *Amanitas* for a native edible. Michael Beug, writing in *Fungi Magazine* (Summer 2008) reports that the North American Mycological Association (NAMA) received a total of 126 reports of *Amanita* poisoning over 30 years, or about 4 per year. Traditionally, about 30 percent of the victims have eventually died due to liver and/or kidney failure, but this number has improved recently to about 5 percent due to a better understanding of the physiology of the amanitin and aggressive therapy. The basic tenet of the treatment is to reduce the concentration of the amatoxins in the blood serum as rapidly as possible. Gastric lavation is used if the ingestion was recent enough and is followed by a thorough purging using emetics to induce vomiting and cathartics to induce evacuation of the bowels. Perhaps the most important therapy is the administration of activated charcoal, as amatoxins have a high affinity for adsorption on its surface. Although there is no proven antidote for amanitin poisoning, intravenous injections of penicillin have been used with some apparent benefit. The most promising treatment is silibinin, an extract of the blessed milk thistle (*Silybum marianum*), which has recently been offered commercially by a German pharmaceutical company as Legalon®SIL. Liver transplant was once considered the last resort for amatoxin poisoning, but it has fallen into disfavor due to its concomitant iatrogenic effect

-William Needham

