SPORE PRINTS

BULLETIN OF THE PUGET SOUND MYCOLOGICAL SOCIETY
Number 488 January 2013

ANCIENT FUNGI FOUND IN DEEP-SEA MUD

Richard Monastersky
Nature 492: 163, Dec. 2012

Researchers have found evidence of fungi thriving far below the floor of the Pacific Ocean, in nutrient-starved sediments more than 100 million years old. The discovery has the potential to turn the brown muck of the sea floor into pure gold for biologists looking for alternative forms of life—and possibly for pharmaceutical companies seeking antibiotics to combat the growing problem of drug-resistant bacteria.

"This is adding a new family of potential drugs," says Brandi Reese, a biogeochemist at the University of Southern California in Los Angeles who studied the fungi, some of which belong to the genus *Penicillium*, the source of penicillin. Finding multicellular organisms in such a deprived environment "extends what we understand about the limits of life on the planet," says Heath Mills, a molecular geomicrobiologist at Texas A&M University in College Station, who collaborated with Reese. They reported their results on December 6 at a meeting of the American Geophysical Union (AGU) in San Francisco, California.

To follow up on earlier reports of deep-sea fungi, Reese and her colleagues studied sediments pulled up from as deep as 127 meters below the sea floor during an expedition of the Integrated Ocean Drilling Program in the South Pacific in 2010. They searched the samples for fungal genetic material and found sequences from at least eight groups. The team succeeded in growing cultures of four of the fungi.

A decade ago, the only organisms known to live in deep layers of sediment were single-celled—bacteria and archaea. Hints of fungi in sediments started emerging in 2005, but just a handful of researchers are studying those sediment dwellers and the other fungi living in ocean water. "These things are ubiquitous and they're largely ignored," says Jennifer Biddle, a microbial ecologist at the University of Delaware in Lewes, who was among the first to culture fungi from sea-floor sediments (J. F. Biddle et al., *Geobiology 3*: 287–295; 2005).

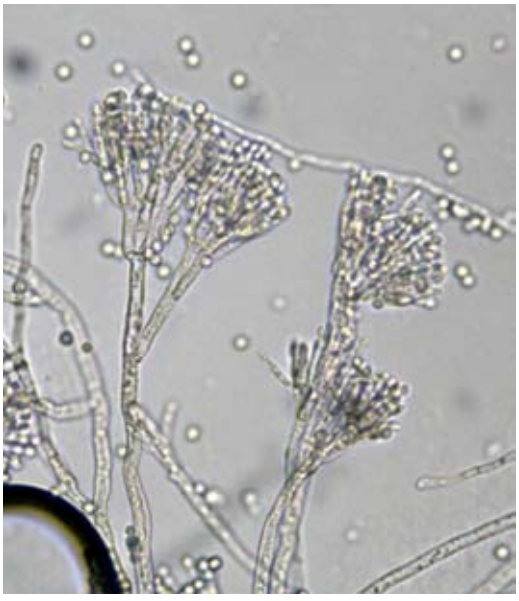
Some biologists have been sceptical about such reports, suggesting that the material might be the result of contamination—or inactive spores of surface fungi that became trapped in the muck. But Reese and her colleagues say that they took several steps to rule out contamination. Steven D'Hondt, who studies microbes in sediments at the University of Rhode Island in Narragansett, says that Reese's group and others are "accumulating a lot of evidence that there are fungi in the deep sediments."

And the material seems to be more than spores, says William Orsi, a molecular ecologist at the Woods Hole Oceanographic Institution in Massachusetts. Working with Biddle and Virginia Edgcomb, a microbiologist at Woods Hole, Orsi has studied deep-sea sediments from off the coast of Peru and detected bits of fungal messenger RNA that code for several proteins, including those involved in transporting ions and metals across membranes. This shows that the subsurface fungi are metabolically active, says Orsi, who presented the work at the AGU meeting.

Now that the evidence in favor of fungi in deep sediments is accumulating, "the pressing question is: what are they doing?" says Orsi. The sediments studied by Reese and her colleagues underlie the South Pacific Gyre—"One of the most dead places on the planet," says Mills. The gyre is far from land, so few nutrients get there. Marine life is scarce, and microbes in the surface sediments devour the scant organic matter that sinks to the bottom.

Mills thinks that the fungi might have a key role in the nutrient-starved deep ecosystem. Researchers have previously presumed that the organic matter left in sediments after millions of years is too difficult for most single-celled organisms to consume. But fungi are masters at breaking down tough organic molecules, says Mills, so they could be providing sources of food for microbes far below the sea floor.

The team says that it is not clear whether the fungi in the deepest sediments are more than 100 million years old; they might have colonized those layers by moving in from younger deposits. But if the fungi have been isolated for a long time, they may have evolved unusual biological defences against bacteria and could provide a source of useful antibiotics. "What if this is a new version of penicillin?" asks Mills. "That's one of the benefits of going to the deep biosphere."



Kiel Reese and Heath J. Mills

Penicillium *fungi grown from seep-sea sediments.*

The word truffle *originated from the Latin* tuber*, which meant "swelling" or "lump." Over time,* tuber *became* tufer *and before we knew it, the* truffle *was born.*

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Annual dues: single or family **$30**; full-time students **$20**

CALENDAR

Jan. 8	Membership Meeting, 7:30 pm, CUH
Jan. 14	Board Meeting, 7:30 pm, CUH
Jan. 22	*Spore Prints* deadline
Jan. 26	One-day Beginner's ID Class, 9:00 am, Douglas classroom, CUH **(full)**
Feb. 12	Membership Meeting, 7:30 pm, CUH

A slime mold is just one cell that keeps getting bigger and bigger. It can be three meters long, and it's still just one cell.

OREGON MUSHROOM PICKER DODGES SHOTGUN BLASTS

Jared Dill

KAJO, Dec. 14, 2012

Ore - A mushroom picker called authorities a little after noon Thursday to report that he had been shot at by a 12 gauge shotgun in the area of Poorman Creek.

The victim said he was picking mushrooms on private property which he had obtained permission to be on when three shots rang out in succession. He managed to avoid getting hit by any of the rounds and he fled the area.

The Sheriff's Office is investigating the case and there are no suspects at this time.

MEMBERSHIP MEETING

Tuesday, January 8, 2013, at 7:30 pm at the Center for Urban Horticulture, 3501 NE 41st Street, Seattle

We start off 2013 with the engaging and inimitable **Paul Kroeger**. Paul's presentation, titled "Fungi of Haida Gwaii," is an updated account of past and more recent fungal studies of the Queen Charlotte archipelago and includes general interest slides and short film clips.

Well known for his taxonomic skills, Paul has more than 20 years experience identifying mushrooms in the Pacific Northwest and is respected for his identification and teaching abilities. Paul served as the Vancouver Mycological Society's president, edited their newsletter, was their foray and exhibit chair, and chaired the North American Mycological Society's foray hosted by the VMC at Whistler Mountain in 1990. He has served as a mycological and botanical consultant for Canadian forestry projects, was a founder of the Meager Creek Wilderness Society, and was president of the Pacific Northwest Key Council. He was also the chief mycologist at the most recent Breitenbush conference and is also an expert on the flora and geology of hot springs. He has recently co-authored *The Outer Spores: Mushrooms of the Haida Gwaii*. Listening to Paul is always fascinating, and you should be in for a real treat.

Would members with last names beginning with the letters A–K please bring a plate of refreshments to share after the meeting.

FIELD TRIP REPORT, Oct. 20, 2012 **Brian Luther**

I got to the gate for Kitchen No. 1 shelter a little after 7:00 am and had to wait for only a few minutes before State Park employee Rick saw me and came over and opened up. He also turned on the water and power for us, which was greatly appreciated. I would also like to thank Park Manager and Head Ranger Charlie Korb for his hospitality and for reserving and opening up the shelter for our use.

About a half hour later our hosts, Tom & Olga Olufs and Kitty Loceff, rolled in, and working together they quickly set up a fantastic spread of morning goodies and hot coffee. It's this kind of devotion in our all-volunteer, nonprofit club that keeps us going and running so smoothly. Special thanks, Kitty, Olga, and Tom!

Also, Wren Hudgins volunteered to lead a group out into the park to teach beginners some of the basics. Thanks, Wren, for such a valuable contribution.

We actually lucked out and the day was pretty nice. It was mostly overcast, sometimes threatening, with a little sun at times and it never poured on us. I kept the fire roaring in the big fireplace, which seemed to attract a sizable following. I brought a large amount of firewood, and was surprised that it was all consumed after the potluck.

Fifty people signed in, which is less than half of our normal turnout for this venue, but many were new members and their enthusiasm made up for the numbers. Unfortunately, it was a really terrible fall for macro-fungi because of the super dry conditions, which lasted until the PSMS Show weekend in mid-October. This was reflected by the mere 50 or so species collected. A few Chanterelles

were found, but mostly not in prime condition; that was also the case with all the other edibles. Nothing of outstanding merit was brought in.

The potluck, however, was excellent and those who stayed had a good meal with many diverse dishes.

FIELD TRIP REPORT, OCT. 27, 2002

Brian Luther

It was a pretty cold and rainy day, actually a better one to be sitting by the fire or in a cozy Hobbit hole. But that didn't discourage a surprising 48 intrepid mycophiles from making their way up into the mountains. After September 30, the two shelters at this location are first come, first served and are free, but we had no power or lights. We discovered that if we contact the Snohomish Parks ahead of time, for a small fee they'll turn the power and lights on for us. This location also does not have a fireplace, and a warm fire was dearly missed. As a result, we were kind of in the dark all day, but I'll make sure we're prepared the next time we go here.

All of this was made up for by the fact that our hosts were Andrea and John Goldman. You know when they've volunteered, it's going to be good, and nobody was disappointed. We had plenty to eat and lots of great hot coffee. Thanks, John and Andrea!

We got an excellent selection of fungi for display, around 90 species, with a smattering of good edibles, some in very good condition, unlike the previous field trips. Many new members attended and seemed to enjoy their first outing. Again, Wren Hudgins offered to take a group out, and we hope others who are more advanced will follow his lead and do the same in the future. Thank you, Wren.

Because of the dreary conditions, food and fungi were our only hope for a great day and, as usual, the potluck was quite welcome, well attended, and enjoyed.

PRESIDENT'S MESSAGE

Marian Maxwell

Happy New Year!

Thank you: Thank you to everyone who helped set up, decorate, and clean up after the Cookie Bash last month! A special *thank you* to Lynn Phillips who put together the *beautiful* silent auction baskets from Patrice's donated items and also provided the decorations for the tables. The silent auction baskets and a few book sales netted $570.00 for the Ben Woo Scholarship fund. We had a great time!

A big thank you also to our ID class instructors for their dedication and for volunteering their time to teach these classes!

I would like to thank the existing PSMS Board for their time in conducting the business of the society, helping with all the things that were done in the past year, and running the sometimes mundane business end of things. We have a great board and I am happy to be serving with them! There is a tremendous amount of work that is done by all the members of this society—working together for a common goal and cause. I am proud to serve as president for an organization of people such as this one.

February Beginning ID Class: January 18 we announced, via e-mail, another one-day beginning ID class in February, since the January class had filled so quickly. In 24 hours, all 41 spots were taken.

Because of the large number of PSMS members who have been waiting to take ID classes, we opened the February class first to members who were on previous waiting lists and then to the general membership. These invitations were issued via the e-mail announcement system on the website, which is a separate list from the yahoo group forum. I also posted the classes on the yahoo group list.

You received this notice *if you elected to receive periodic announcements on the profile you filled out when you joined PSMS.* If you elected NOT to receive notifications, then you did not receive it.

If you would like to change your notification selection on your profile so that you receive notices like these, log in on the member's page (using your unique username and password that you received in your initial welcoming e-mail) and check the box that says "E-mail List? (members@)" at the bottom of your profile page. If you have lost your password, follow the link that says "lost password". If you do not remember or know your username, contact membership@psms.org.

PSMS Board: We are still searching for people who are willing to run for the Board of Trustees (a 2-year term). The Board meets monthly from 7:30 pm–9:30 pm, usually on the Monday following the general membership meeting.

We will be working on "spinning off" some new committees (like photography, mycophagy, etc) to reflect the interests of our membership. If you would like to serve on the Board and help with this and other workings of PSMS please send an e-mail to president@psms.org or you can contact Randy Richardson, Debra Lehrberger, or Brenda Fong. To contact them, call our office at 206-522-6031 and leave the message in mailbox 6.

2014 NAMA Foray: We are in the initial stages of planning for the 2014 NAMA foray. If you would like to help with this, please e-mail Pacita Roberts or Teddy Basladynski at nama2014@psms.

LIVING CONCRETE

Kate Taylor

http://www.tgdaily.com/, Dec. 20, 2012

Barcelona, Spain - To a team at the Universitat Politècnica de Catalunya, a lichen-covered façade is a way of regulating a building's temperature and improving air quality.

The researchers have developed and patented a type of biological concrete that supports and accelerates the growth of microalgae, fungi, lichens, and mosses. It starts looking good within a year, they say, and evolves over time, changing color according to the time of year and the predominant families of organisms.

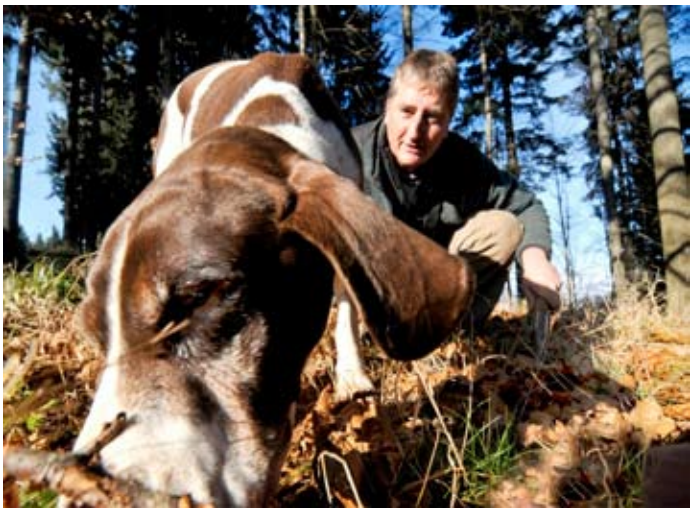
The concrete consists of a structural layer, with three others on top. First, a waterproof layer protects the structural layer from possible water damage. Next, the biological layer supports colonization and allows water to accumulate inside it, giving a base for the organisms to attach to. Finally there's a discontinuous coating layer with a reverse waterproofing function that redirects the flow of water to where it's needed.

Thanks to its biological coating, the new concrete absorbs atmospheric CO_2. At the same time, it can capture solar radiation, making it possible to regulate temperatures inside the building.

BOTANISTS UNCOVER TRUFFLE PARADISE IN SOUTHERN GERMANY

Frank Thadeusz

Spiegel online, Dec. 18, 2012



Expert Ludger Sproll and Diana, his truffle-hunting French Pointer. Sproll, together with forestry expert Ulrich Stobbe, has been compiling a treasure map of areas where the delicacy has been found in Germany.

In Germany, only a few of the initiated search for the wrinkled, exotic truffle. The burgundy, or summer, truffle, buried in the soil, is considered a rarity here, where it appears on the Red List of threatened animal, plant, and mushroom species.

The burgundy truffle (*Tuber aestivum*), which German foodies like to shred in very small amounts over pasta or use to season a wild boar terrine, is imported from France, Italy, or Spain. Germans consume 40 to 60 tons of truffles a year, at prices ranging from €250 ($329) to €9,000 a kilo.

Now what would German truffle aficionados say to the claim made by two avid mushroom pickers that substantial numbers of the valuable fungi lie hidden in the ground in southwestern Germany, undiscovered and accessible to everyone?

Dyed-in-the-wool foodies would probably say that this is about as ridiculous as an amateur archeologist stumbling upon untapped oil reserves while digging in the Bavarian Forest.

Deposits across Southern Germany

Forestry expert Ulrich Stobbe, 32, and locksmith Ludger Sproll, 49, recently wrote about their surprising discovery in the professional journal *Fungal Ecology*, and corroborated the theory that there are large truffle deposits in southwestern Germany with five years of field research. The two men found seven different truffle species at 121 sites in the region. The popular burgundy truffle turned up at 116 of the sites.

For Stobbe and Sproll, the discovery initially felt like finding a suitcase full of cash on the subway, and they were very tempted to sell the harvest for lots of money on the market. "I'll be quite honest about that," Sproll confesses.

The two mushroom devotees resisted the urge. Instead Stobbe, who was studying Forest Botany at the University of Freiburg in southwestern Germany, decided to channel his passion into scientific research. He told his faculty mentor that he wanted to make truffle research the subject of a master's thesis and, to Stobbe's amazement, the professor reacted enthusiastically to the proposal.

When they began their truffle project in 2007, they were all but unfamiliar with the subterranean growth. Stobbe and Sproll only knew how the fungus spreads in the forest. Attracted by the intensive fragrance of the tubers, wild boars, mice, and squirrels dig up the delicacy, eat it, and then excrete the undigested spores elsewhere. Under favorable conditions, new fungal cultures develop in these locations. But what are favorable conditions?

There is plenty of superficial knowledge about truffles out there. For instance, it's said that truffles can only be found where there are oak trees. The trees and the mushrooms enter into a symbiotic relationship. The fungal material improves the tree's ability to extract water and nutrients from the forest soil. In return, the truffle gains access to strengthening carbohydrates.

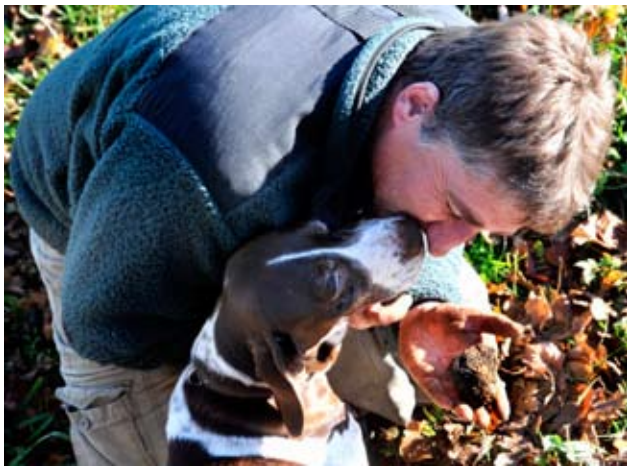
A Lost German Delicacy

At first, Stobbe and Sproll didn't find what they were looking for in the forest soil, and instead had to turn to the library for information. In 1891, mycologist Rudolph Hesse included a relatively accurate description of the deposits of German truffles in his book *Hypogeous Fungi of Germany*. The duo also dug up recipe books that were more than 100 years old and revealed knowledge of the existence of the German truffle.

At the time, the truffle was a regular feature in ordinary home cooking. Butchers mixed truffles found in the loamy soil into liverwurst. Housewives stuffed spring chickens with truffles to season the poultry, and once the chickens were done the truffles were tossed into the compost. At some point, however, knowledge of the domestic delicacy waned, and the truffle disappeared from German menus.

As hunters of this lost treasure, Stobbe and Sproll set out without maps and without the slightest clue as to where to find truffle deposits. All they had at their side was a dog named Diana. The French Pointer is a breed of dog that is especially receptive to being trained to sniff out truffles. Sproll bought the dog in the Italian region of Umbria while undergoing a training program to become a state-licensed truffle hunter.

Diana picked up the scent for the first time on the Schönberg, a mountain on the southern outskirts of Freiburg in the state of Baden-Württemberg. The dog returned with a truffle in her mouth that looked like a charred avocado. The find was tiny and hardly worth mentioning. Nevertheless, says Sproll, "we were delighted."



Ben Behnke/*Der Spiegel*

Sproll and Diana: The researcher says it is a myth that pigs are the best tools for truffle hunting. Instead he suggests the French Pointer, which is especially receptive to being trained to sniff out the fungus.

Ben Behnke/*Der Spiegel*

Sproll and Stobbe test truffles for their aroma and appearance.

From then on, Sproll drove the 100 kilometers (63 miles) from his home in the Swabian Jura region to Freiburg almost daily. He still had no idea that much bigger truffle deposits were buried underground practically at his front door.

The two men spent hundreds of hours wandering around the area, hoping to cover the geographic range of the burgundy truffle in Germany on foot. Stobbe had also bought a truffle dog by then. The workday was determined by the animals' limitations. They could normally work for about five hours, but less on very cold days.

The stereotype is that pigs are best suited for truffle hunting, but "that's just a myth," Sproll says. "Try holding onto a 150-kilo (330.7 pound) pig on a hillside." There's another problem with swine as well: The scent of truffles makes pigs hungry. In the 19th century, botanist Carl Adolfo Emmo Theodor Bail warned that the pig had "the great disadvantage that, unless it is observed very carefully, it will pull up the truffle, from which, once it has found one, it must be chased with shouts and abuse."

Dogs, on the other hand, will retrieve truffles reliably. Sproll and Stobbe lead their companions to places where they suspect there are truffle deposits. Then the animals take over, their concentration only occasionally interrupted by the search for a mouse.

Treasure Map Gourmets Would Kill For

The two truffle hunters are still mystified by the preferences of the fungi. Why, for example, do they thrive in one spot but not 20 meters away?

After three years and thousands of hours spent walking through the forest, Stobbe and Sproll have compiled something of a treasure map, one that many a gourmet and mushroom fanatic would presumably kill for. The map includes the precise locations of all the sites the two researchers have discovered.

Truffle enthusiasts will be frustrated to know that the delicacies that are ready for the plucking at the many sites will probably all rot away in the ground. The reason is that the truffles are subject to conservation laws that apply to threatened species.

Nevertheless, Stobbe and Sproll predict a rosy future for burgundy truffles in southwestern Germany, primarily because they mature at different times of the year in different geographic areas.

Burgundy truffles mature in the summer in France, Italy, and Spain. "But that's precisely when the vagaries of the climate are causing the biggest problems. And if there's flooding, it's the death of the truffles," Sproll explains.

Not so in southern Germany, where the subterranean mushroom thrives from October to February. It even continues to mature under a thick blanket of snow.

This leads to the paradoxical situation in which France is still plundering its already heavily depleted reserves, while Germany is leaving its considerable resources untouched.

Could Germany Become a Truffle Exporter?

Stobbe and Sproll hope to change things in the not too distant future. They say they have a plan that could enable Germany to become an exporter of truffles in the medium term. They hit upon the idea in a beer garden, when truffle hound Diana began poking her nose into a narrow strip of grass. The dog returned a short time later, her tail wagging and a truffle in her mouth, and her master learned something new: Truffles don't necessarily grow in the forest.

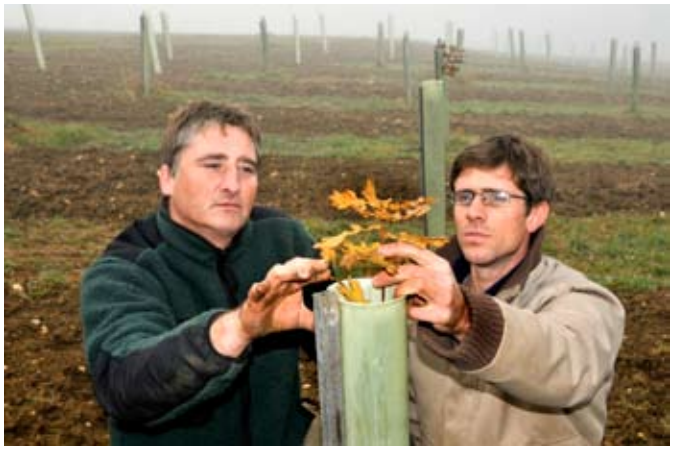
Since then, Stobbe and Sproll have been running a business selling truffle trees, in addition to their research activities. The two men now know that in addition to the oak tree, hazelnut and beech trees serve as host trees.

After several years of experiments, the team discovered a successful recipe for literally inoculating the trees with truffle cultures. The creators guard this mixture about as jealously as Coca-Cola does its own famous formula.

Sproll and Stobbe are completely serious when they tell farmers to consider switching to truffle cultivation. They believe that land throughout Germany is suitable, noting that individual truffles have even been spotted in Rostock in northeastern Germany.

Sproll can hardly contain his excitement when he talks about the fantastic conditions for growing truffles in Germany. But then the man, who tends to prefer very simple pleasures, pauses for a moment, and says thoughtfully: "Sure, truffles have an incredibly intense aroma. But they really don't taste of anything at all."

Translated from the German by Christopher Sultan



Ben Behnke/*Der Spiegel*

Here, the researchers can be seen at their own truffle farm with one of the trees they succeeded in inoculating with truffle cultures. The creators guard this mixture about as jealously as Coca-Cola does its own famous formula.

The most learned men have been questioned as to the nature of this tuber, and after two thousand years of argument and discussion their answer is the same as it was on the first day: we do not know. The truffles themselves have been interrogated, and have answered simply:

"Eat us and praise the Lord."

—Alexandre Dumas (1802–1870)

THE HISTORY OF TRUFFLES

Susan Rice Alexander

http://thetruffledIva.com/, Nov. 5, 2012

Discoverer of the "Black Jewel" Revealed

The truffle is a paradoxical thing. On the one hand, it is a humble fungal growth associated with pigs and peasants. On the other, it is a delicacy that graces the chandelier-lit dinners of potentates and popes.

When was the truffle first "discovered"? The first known mention of it comes not from the Romans and the ancient Greeks—but the Sumerians.

In a Sumerian myth, *The Marriage of Martu*, a desert nomad called Martu wants to marry Adjar-Kidug, the daughter of a city god, but one of her girlfriends is not impressed by the nomad who, she says, "is clothed in sack-leather," cannot "properly recite prayers," "lives in the mountains," "eats raw flesh" and—the most devastating put-down of the lot—"digs up truffles in the foothills."

The truffle that grew in Sumeria would have been the desert truffle, which is different from the gourmet truffles of Europe. (And the desert truffle compared with the gourmet truffle is, so to speak, as the mountain-dwelling nomad to the city slicker. But, it should be added, Martu did win over the daughter of the city god in the end.)

These desert truffles are mentioned in a number of Sumerian sources—clay tablets with cuneiform texts. About 4,000 years ago, for example, one ruler is recorded as complaining to one of his governors: "You have sent me bad truffles!"

The Greek philosopher Theophrastus (371–287 BCE) noted that truffles could be found in the area now known as Libya. The author and naturalist Pliny the Elder (23–79 CE) wrote that the most highly valued truffles came from "Africa" (meaning the area of Africa along the Mediterranean).

Truffles Laden on 30 Camels

The great Arabic traveler Ibn Battuta (1304–c.1368 CE), recounting a journey through the west African Sahara, noted the abundance of truffles in the region. In the early 1500s, an Italian traveler wrote of seeing 25 to 30 camels laden with truffles arriving in Damascus and being sold over three or four days.

There's a wonderful description of the truffle in the *Description of Africa* by another Arab, the diplomat Leo Africanus. The English translation of a Latin translation of the original Italian is particularly highly flavored:

"Terfez [the African truffle] is to be called rather by the name of a root then of a fruit, and is like unto a mushrom or toad-stoole, but that it is somewhat bigger. It is enclosed with a white rinde and groweth in hot and sandy places…. Some of them are as bigge as a walnut, and others as a limon. The phisicians, which call it Camha, affirme it to be a refrigeratiue or cooling fruit … the Arabians take as great delight in eating of the same as in eating of sugar. This fruit being stued upon the coles, and afterward made cleane, and sodden in fat broath they esteeme for great dainties."

Fresh Black Truffles for Sale

In Europe, after the fall of the Roman Empire, little appears about the truffle until the 14th century. Up to the 19th century, truffles were "hunted" but, in 1810, a French peasant, Joseph Talon, from the Vaucluse area, planted acorns on his small plot of land. A few years later, he noticed that black truffles were growing in the soil around the young oak trees. He bought up land, planted it with oak trees—and ended up making a big profit from selling fresh truffles.

He was the first to make the connection between the fungus and the oak … and the first to actively cultivate truffles.

Over the centuries, many famous people have been associated with truffles. Pope Gregory IV partook of a feast of truffles before battling the Saracens. The poet Lord Byron kept the powerful fungus on his desk to inspire his imagination.

White Truffle for Marilyn Monroe

The best white truffles supposedly come from Alba in Italy's Piedmont region. In 1949, a restaurateur from Alba, Giacomo Morra, had the marketing brainwave of presenting a famous person with a prized white truffle. He began with Rita Hayworth. Recipients since then include Presidents Truman, Eisenhower, Kennedy, and Reagan, Winston Churchill, Mikhail Gorbachev, Marilyn Monroe, Alfred Hitchcock, Sophia Loren, Luciano Pavarotti, Joe DiMaggio, Pope John Paul II, and Valentino.

Discovery of the Truffle

We now know the names of some famous people who have savored the magic fungus. But who was the first person to discover and devour it?

We'll never know. It is more than probable that the first people to eat truffles lived back in the Stone Age, if not well before that.

As for actually discovering it, it was not a person at all. Male boars produce a sexual hormone, androsterone, in their salivary glands that attracts females. This hormone is found as well in the sweat glands of humans—and, yes, it's also produced by the truffle.

So the truffle was, almost certainly, first discovered by a pig—more exactly, a mate-seeking wild female boar.

TRUFFLES 101

various sources

Truffles are the fruiting bodies of underground fungi.They have a strong odor and rely on being eaten by animals for spore dispersal. Truffles grow all over the world and embrace hundreds of species, but the three most highly valued in Western cuisine are the white (Alba) truffle, the Black (Périgord) truffle, and the Summer/Burgundy truffle.

White Truffle (*Tuber magnatum*)

This is the most rare—and expensive—of the European culinary truffles. The white truffle is at its peak of flavor in October and November and comes from the Langhe and Montferrat areas of the Piedmont region in northern Italy and, most famously, in the countryside around the cities of Alba and Asti.

Winter Black Truffle (*Tuber melanosporum*)

Although not as expensive as *Tuber magnatum, Tuber melanosporum* is called The Black Diamond because of its high price. It is harvested from November to March and is at its peak of flavor right now during the month of January. This truffle is sometimes called the "Périgord" truffle, although only 20% of production comes from Southwest France. The majority of French

black truffles are today harvested in the Vaucluse department of Provence. It also grows in Spain, Italy, and the Balkans.

Summer or Burgundy Truffle (*T. aestivum/uncinatum*)

Molecular analysis showed in 2004 that the burgundy truffle (*Tuber uncinatum)* and the summer truffle (*T. aestivum*) are one species, although differences in appearance and pungency, probably due to environmental factors, result in a difference in price.

Burgundy truffles

The more expensive of the two is the Burgundy truffle, which has an intense, hazelnut-like aroma and is highly prized for its gastronomic qualities. They are used in the haute cuisine of France and Italy, as well as a substitute for the Périgord black truffle (*T. melanosporum*). Like other truffles, they are also canned and bottled for export.

Burgundy truffles are harvested from September to late December, sometimes until late January. They have a wider distribution than any other truffle species. Burgundy truffles are found across Europe, from Spain to eastern Europe, and from Sweden to North Africa. In France they are found mainly in the northeast and in Italy in the north. In the United Kingdom they were plentiful prior to the 20th century but are now rare.

Summer truffles

The flavor, size, and color of summer truffles are similar to those of burgundy truffles, but their aroma is less intense and the flesh is a paler hazel color. As their name suggests, summer truffles are harvested earlier than burgundy truffles, from May to August. They are most often found in the southern part of their distribution area, notably in the Mediterranean climate areas of France, Italy, and Spain.

BEAGLE DIGS UP NEW ZEALAND'S FIRST SUMMER TRUFFLE

Anna Turner

http://www.stuff.co.nz/, July 7, 2012

New Zealand's first burgundy truffle, worth $330, has been dug up in Canterbury.

Grown by truffiere Gareth Renowden on his Waipara farm, the "beautiful" truffle is believed to be the first of its kind to be sold in New Zealand.

"It's New Zealand's first big, ripe burgundy truffle and it has a delicious smell to it," Renowden said.

The 330-gram truffle was dug up by his 2-year-old beagle, Rosie.

"Most truffles are the size of about a golf ball and this one is the size of a baseball. It is pretty large.

"Rosie did very well," Renowden said.

Don Dcott/Fairfax NZ

Truffiere Gareth Renowden, left, and his truffle dog Rosie have dug up a 330 g burgundy truffle which chef Jonny Schwass will cook up in a 10-course dinner on Friday.

He said the discovery of the truffle was "really exciting" for the farm, which had suffered some disappointing harvests over the past few years.

"Previously we just grew black truffles, but after this harvest we're the first in the country to have all three kinds of truffles. We're very happy."

After the truffle was unearthed, Renowden put a picture of the delicacy on Facebook. Christchurch chef Jonny Schwass commented within minutes, writing "sold."

"It had his name all over it," Renowden said.

SAN FRANCISCO ARTIST CRAFTS FURNITURE FROM MYCELIUM

Alec Scott

San Francisco Chronicle, Dec. 16, 2012

The house is filled with the earthy smell of mushrooms cooking. It's not a welcome-to-winter soup simmering or a ragout thickening; I'm baking a little mushroom footstool in the oven.

The footstool is the product of a furniture-making class taught by Philip Ross at the Workshop Residence in San Francisco's Dogpatch neighborhood midway through the fall. To call it a mushroom footstool is technically accurate, but slightly misleading—it comes out of the oven looking like weathered concrete and feels slightly spongy, like cork. Only the pungent smell gives away the footstool's nature.

"It sounds like a joke, right, mushroom furniture, but actually it's a versatile building material with many attractive qualities," Ross says. Mycelium is fire-retardant, compostable, plastic, a good insulator, healthy for humans to be around, and as strong, structurally, as the concrete it resembles. "I've shot a handgun at one of these," he says, "and the network was strong enough to block the bullet—it only went in about 5 inches."

The 40ish transplanted New Yorker bears a striking resemblance to images I've seen of Edgar Allan Poe and wears several other hats. He teaches design at the University of San Francisco; he's an inventor—he has a patent pending for specially grown, treated and handled mycelium; he's an artist—galleries around the world have featured his furniture and the for-show-only pieces where he's allowed the shapes to fruit; and he's the world's only "myco-tect"—he's built small structures from mycelium bricks.

He generally works with reishi mushrooms—he often sources from Far West Fungi, the mushroom seller with a branch in the Ferry Building—and lets it grow on red oak sawdust from mills in Northern California.

"They can grow on lots of things—sawdust, crushed pistachio nuts, corncobs, seed husks—often on waste material that would otherwise have no use and that the mushroom grower is paid to take [away]," he says. "The resulting compound can be radically different depending on the nutrient. To make it lighter, you can put some perlite in the mix, let it grow around that."

Ross has a fantasy joke ad in mind for an all-organic furniture line. It features a motorist throwing old pieces out the window, littering with little danger to the environment.

"Cookie Bash"
2012

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