The Potomac Sporophore

Summer | August 2020 Volume No. 35 | Issue No. 3

The quarterly publication of the Mycological Association of Washington, Inc. (MAW) | http://mawdc.org

In This Issue:

Lichens, Part Three: Rock Tripe

William Needham
MAW President

Rock Tripe lichen up close. Photo: William Needham

Common Name: Rock Tripe, Navel lichen.
The common name is a direct translation of *tripe-de-roche*, the French name for the lichen. Tripe is the name for the wall of the stomach of a ruminant animal when consumed as a food. It has taken on a number of secondary meanings that generally convey a notion of being worthless or of inferior quality. Thus, the common name conveys that it is a poor-quality food, like tripe, that is found on rocks.

Scientific Name: *Umbilicaria mammulata*
The genus is derived from the Latin *umbilicus* meaning navel (the umbilical cord attachment point); the whorled shape of the lichen with its single attachment point appears similar to a navel. Note that the common name "navel lichen" is based on this association. The species name is from the Latin word *mammula* meaning small breast, referencing the presence of papillae on the lichen's lower, black surface. A papilla is a small, rounded bump, like goose flesh. The term mammular means covered with papillae.

Alexander von Humboldt is credited with the observation that biology varies equally by elevation or latitude which he noted in the Andes at the dawn of the nineteenth century. The Appalachian Mountains rise from the eastern side of the North American (tectonic) plate in a literal blue ridge of billion-year old granitic rock overlooking the Piedmont "foot of the mountain" to the east like a brooding parent. This is the realm of rock tripe, with large, rounded structures that comprise the main body called the thallus that appear to be the peeling chips of a badly botched paint job. Inky black on the bottom, they are held in place by a single attachment point near the center. The lighter colored top surface faces the sun's photons that provide the energy processed by algae of the genus *Trebouxia*.

Rock tripe is a type of lichen; a dual organism that consists of both a fungus and an alga (some also have cyanobacteria) that live in mutualism, a type of symbiosis in which both constituents share the benefits of the association. A lichen has been called a fungus that has discovered agriculture; the fungus constitutes most of the extant vegetative body or thallus. The algal partner serves as a source of photosynthetic energy. The close mutual relationship allows lichens to occupy extremely adverse environmental habitats that range from isolated rock outcrops in the frigid rarefied atmosphere at elevations over 6,000 meters; there are over 3,600 species of lichen in North America alone. Rock tripe are among the hardiest of the lichens, they can survive extreme drought for over 62 weeks. The survival of lichens in low-oxygen environments supports the notion that the first aquatic plants to make landfall in the Silurian Period some 400 million years ago were some form of algae that brought along their fungal partners for structure and support.

The "rock" part of rock tripe is clear, as a mineral substrate is both necessary and sufficient for its domicile. What about tripe? Tripe is defined as either the portion of a ruminant animal's stomach consumed as food or it can mean anything worthless or offensive. In the minds of all vegetarians and many others, the two meanings are synonymous. Tripe is an exemplar of British cuisine; a Tripe Marketing Board persists in homage to its former glory. Offal is the general term for the internal organs of animals; the more popular connotation is refuse or garbage with a synonymy even more pronounced.

Historically, paleolithic hunters cherished the perishable internal organs for their own consumption in the field, dragging the meat back to their encampments for others. Stomachs were especially prized and may well have been consumed along with their contents. In medieval times, abattoirs were gruesome affairs, butchers standing knee deep in animal parts covered with their blood. Every part was put to use: the intestines for sausages; heads for head cheese; and random scraps for scrapple…

Continued on Page 2

Mushrooms

Continued from Page 1

among many other uses. The antiseptic package of hamburger and the guarantee of adequate food was preceded by eons of everything edible being eaten. When necessary, humans will eat just about anything (including each other) to stay alive – which is where rock tripe comes in.

Since the lichens called rock tripe thrive in the harshest arctic climates and maintain their viability through the winter, they have long served as a source of emergency food by Native Americans. The French name *tripe-de-roche* precedes the translation into the English rock tripe; the provenance of the term is Canadian. The Inuit peoples of the Canadian arctic regions considered rock tripe to be a food of last resort, to be eaten only in times of starvation, its continuous use thought to be pathological. Other Native Americans found it more palatable, incorporating it into their routine regimen of food gathering and preparation. For example, the Cree, which constitute the largest group of First Nations (Native Canadians) used it as an additive to fish broth to make a thick soup that was not only eaten for nutrition but was considered to be somewhat medicinal.

The early explorers of North America became aware of the use of rock tripe as a survival food from the indigenous peoples, and used it on occasion of isolation to stave off starvation. Most notable was the first expedition of Sir John Franklin to map out the Northwest Passage from Europe to Asia from 1819 to 1822. In the second year of the exploration, the party of 20 was forced to return on foot when their two canoes became damaged. Franklin's journal recorded the epic journey which has become one of the epitomes of deprivation: "Previous to setting out, the whole party ate the remains of their old shoes, and whatever scraps of leather they had, to strengthen their stomachs for the fatigue of the day's journey .... The *tripe-de-roche*, even where we got enough, only serving to allay the pangs of hunger for a short time." Nine of the party succumbed to the ordeal. Franklin survived only to perish with 134 officers and sailors on the *HMS Erebus* and *HMS Terror* on a quest for the Northwest Passage; they were last seen in July of 1845. It is hypothesized that they must have escaped the ships and set out over the ice. Some of the skeletal bones showed signs of knife marks suggesting that cannibalism may have been a last resort. That is what can happen when you can't find any rock tripe.

The different species of the *Umbilicaria* genus are found globally with different local names according to custom, including *shi er* meaning "rock ear" in Chinese, 'stone mushroom' *soegi posot* meaning "stone mushroom" in Korean and *iwatake* meaning "crag mushroom" in Japanese. *U. esculenta*, a rock tripe species indigenous to Asia, is considered a delicacy. Harvesters repel down steep slopes to collect it, favoring wet weather to reduce the risk of crumbling of the delicate lichen.

The nutritional and medicinal value of rock tripe fungi has been investigated to evaluate its viability as a survival food. A lichen supplementation was given to female mice for three weeks to measure its effects on growth, metabolism and immune function in comparison to mice fed a standard diet. The lichen-fed mice had a higher growth rate and ate more than the control group. The lichen diet had no deleterious effects. The study concluded that rock tripe was not only a good source of nutrition in survival situations but that it acted to stimulate the immune system, manifesting in an increase in the production spleen B-lymphocytes. Another study showed that several varieties of rock tripe possess substantive anti-bacterial activity. Rock tripe is used as a medicine in China. This lichen is certainly worth a try, if only to survive the winter.

Editor's note: Email newsletter@mawdc.org for a list of the references for this article.

A swath of Rock Tripe lichen. Photo: William Needham

Fungi in the News

Annie Greene
Newsletter Editor

Editor's Note: This article contains summaries of notable fungus-related news from May 2020 through August 2020. Visit the URL following each topic below for a closer look.

DC voters will weigh in on decriminalization of psychedelic mushrooms this November

Initiative 81, officially titled "the Entheogenic Plant and Fungus Policy Act of 2020," will appear on ballots of DC voters this November. If passed, this bill would decriminalize psilocybin-containing "magic mushrooms" and other mind-altering plants. Similar initiatives to decriminalize psychedelic mushrooms have already been passed in Oakland, California and Denver, Colorado. Read more at: **https://www.washingtonpost.com/local/dc-residents-to-vote-on-legalization-of-magic-mushrooms-on-november-ballot/2020/08/05/0e62478c-d720-11ea-b9b2-1ea733b97910_story.html**

Researchers discover method for synthesizing fungal compound with anti-cancer properties

Scientists at the University of Tokyo discovered how to synthesize a fungal compound called "FE399" that can kill cancer cells grown in petri dishes. Compound FE399 occurs naturally in fungal species from the genus *Ascochyta*, which are generally plant pathogens. Unfortunately, the compound is unstable when extracted from the fungus directly. The researchers' newly discovered method of synthesizing the molecule will hopefully aid further research into FE399's properties, perhaps resulting in new cancer treatments. Read more at: **https://www.sciencedaily.com/releases/2020/06/200610135103.htm**

Plant gene that influences symbiosis with fungi has been identified

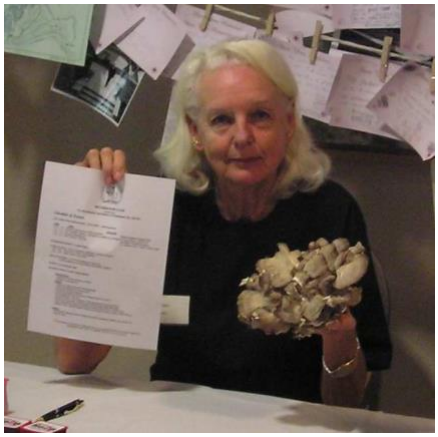
Researchers at the University of Copenhagen recently found that if a gene called CLE53 is removed from a plant, the plant is more likely to associate with beneficial underground fungi. Among an ever-expanding list of benefits, symbiotic plant-fungus relationships help the plant utilize fertilizer more efficiently. Researchers may use this new knowledge of plant genetics to make crops more fungus-friendly. Read more at: **https://www.science.ku.dk/english/press/news/2020/newly-discovered-plant-gene-could-boost-phosphorus-intake/**

In Memoriam: Dr. Karin Adams

With heavy hearts we would like to pass on the news that that former MAWDC member Dr. Karin Adams passed away in 2019.

Karin and her husband John joined MAW in the early 1990's, and Karin was the Chair of the Hospitality Committee for several years, always offering food, drink, and whimsical table decorations at meetings and events. Her contributions to the club were so valued that she was granted a Lifetime MAW Membership, a privilege offered to very few.

Our deepest condolences to those who knew Karin. She will be sorely missed.



Upcoming Events

The events listed below may change, so read MAW emails and check our website at **http://mawdc.org** for up-to-date information on events.

Upcoming Scheduled Programs

Sept 1 **Monthly Meeting** featuring chef Zachary Mazi on edible mushrooms of Thailand and Daniel Winkler, owner of Mushroaming, will share pictures and knowledge from his global myco-adventures.

Oct 6 **Monthly Meeting** featuring Nicholas Money, professor at University of Miami Ohio for a presentation titled "The Rise of Yeast & The Fall of Man."

Nov 10 **Monthly Meeting** featuring Serennela Linnares on bioluminescent fungi. ***Note**: this meeting is on the second Tuesday of the month to avoid a conflict with Election Day on November 3.*

For the time being, monthly meetings will be held on the first Tuesday of the month at 7:00 PM online via Zoom (www.zoom.us). Links will be emailed to members before each meeting and posted on the club's Facebook page. Members of the public are welcome to attend. To participate in the virtual mushroom ID session, email pictures of mushrooms ahead of time to forays@mawdc.org.

TALES OF THE FUN GUY

by Loretta E. Chi