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#### **Authors**

Buckskin, Floyd

Benson, Arlene

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## REPORTS

### The Contemporary Use of Psychoactive Mushrooms in Northern California

FLOYD BUCKSKIN, Ajumawi, P.O. Box 617, Fall River Mills, CA 96028

ARLENE BENSON, 1125 Wilson Drive, Simi Valley, CA 93065

*At the present time, the Ajumawi people living in the Fall River Valley southeast of Mount Shasta use a yellow mushroom with hallucinogenic properties (*A. pantherina*) for religious purposes, and have done so at least since the early part of the twentieth century. If this mushroom was used prehistorically in northern California, as is suggested here, the use of hallucinogenic mushrooms in North America may have been more widespread than previously believed.*

The subject of this paper is a poisonous mushroom, *Amanita pantherina*, so some background information is in order. Mushroom poisoning can involve a variety of symptoms, ranging from relatively mild gastrointestinal distress to liver and kidney damage with cellular destruction resulting in death. "The fatality rate [for *A. pantherina*] is probably less than 1%, but reports are still inadequate" (Lincoff and Mitchel 1977:195); however, large quantities (five or more caps) of this mushroom can result in death.

*Amanita pantherina* contains ibotenic acid-muscomol. Symptoms of poisoning occur within 30 minutes to two hours. The symptoms include "inebriation, derangement of the senses, manic behavior, delirium, and a deathlike sleep, from which all but a very few persons recover rather quickly..." (Lincoff and Mitchel 1977:78-79, 195). Allergic reactions are quite common, and this can result in death; however, the most serious problem is that the mushroom can be confused by inexperienced collectors with another highly toxic mushroom. "In 1972 four members of a family that had recently

moved from Texas to California gathered and ate mushrooms, and two died. The mushrooms were *Amanita phalloides* that the family had mistaken for edible ones they had known in Texas" (Lincoff and Mitchel 1977:29).

At least seven *Amanita* species, including *A. phalloides* (Death Cap), are known to contain deadly toxic cyclopeptides, which are among the most lethal poisons known. One *A. phalloides* cap could kill a healthy adult human. "Mortality rate is 50-90%. These mushrooms account for over 90% of all cases of fatal mushroom poisoning" (Lincoff and Mitchel 1977:140, 188; Arora 1986:892). Symptoms do not occur until six to 24 hours after ingestion, by which time the toxin has spread throughout the body (Lincoff and Mitchel 1977:19, 28-29; Arora 1986:270-71).

Do not sample these mushrooms on your own. Do not try to identify them using a book. Do not eat an *Amanita pantherina* unless it has been positively identified by a mycologist or an experienced and knowledgeable mushroom collector. Even then be skeptical. If in doubt, do not eat it. Cooking will not necessarily destroy the toxin.

Even if you are sure you have an *Amanita pantherina*, it is wise to be cautious, because you may be allergic to the mushroom; take a small bite from one cap to begin with. Never take more than four *A. pantherina* caps. It is also a good idea to keep one mushroom in case you have an adverse reaction. Take this specimen along with you to a hospital, where it can be identified and appropriate treatment begun.

\* \* \*

Some years ago, Peter Furst (1976:107) stated that although there was no conclusive evidence that any kind of psychoactive mushroom had been used by Native Americans north of Mexico, several varieties containing hallucinogenic compounds grow on the West Coast, including *Amanita muscaria* (also known as fly-agaric). According to Weston La Barre (1970:371), this mushroom is native to British Columbia, Washington, Oregon, and Colorado, and "the yellow variety occurs elsewhere in North America." Subsequently, Schultes and Hofmann

(1979:84-85) reported that *A. muscaria* was employed by the Dogrib Athabaskan peoples, who lived in the Mackenzie mountain range in northwestern Canada, and by the Ojibwa Indians who lived on Lake Superior in Michigan. In addition, the use of hallucinogenic mushrooms in Siberia and Mexico is well documented (Wasson 1967; La Barre 1970; Dobkin de Rios 1972; Furst 1976; Embodden 1979). It therefore seemed odd that there were no reports of the use of the hallucinogenic mushrooms that grow in the intervening region—that is, between northwestern Canada and Mexico.

Although *A. muscaria* grows in Washington, Oregon, and northern California (Arora 1986; Biek 1982), there has been nothing in the ethnographic literature to date to suggest any use of this or any other hallucinogenic mushrooms by Native Americans in this region. However, we will introduce evidence that Ajumawi people<sup>1</sup> living in the Fall River Valley southeast of Mount Shasta now use a yellow mushroom with hallucinogenic properties (*A. pantherina*) for religious purposes, and have done so at least since the early part of the twentieth century. If, as we suggest, this mushroom was used prehistorically in northern California, then the use of hallucinogenic mushrooms in North America may have been more widespread than previously believed.

### BOTANICAL INFORMATION

*A. muscaria* grows only in a symbiotic relationship with the roots of certain trees, especially birch and pine. This distinctive umbrella-shaped mushroom has a fiery red cap covered with white, wart-like protuberances. A yellow variety also occurs in parts of North America, including northern California. Also present in northern California is *Amanita pantherina*, which is colored the faded yellow of dead leaves. Both species of *Amanita* have powerful hallucinogenic properties.

Other than color, the primary differences between *A. muscaria* and *A. pantherina* appear to be taste and potency. *A. pantherina* "is more powerful than *A. muscaria* and potentially fatal in large doses" (Biek 1982:38). The taste of *A. pantherina* is mild, lacking the nauseating effect of *A. muscaria* (Biek 1982:36-38). The main active principle in both *A. muscaria* and *A. pantherina* is not muscarine, as was once

thought, but ibotenic acid, "which is converted...into muscimol, a more powerful form [of hallucinogen] that passes out in the urine" (Arora 1986:894).

In California, *A. muscaria* "is common in the Sierra Nevada but rather rare in the Coast ranges" (Arora 1986:282-283). In northern California, it is found "scattered to gregarious in conifer woods.... It's most common along the Coast" (Biek 1984:37). It occurs in two color phases: "the flaming red variety, standard in Eurasia, grows in Washington, Oregon, and British Columbia as well (and also commonly in the Sierra Madre of Mexico), while the yellow variety prevails in birch forests of the rest of its range" (La Barre 1970:371).

*A. pantherina* ('The Panther') shares a similar geographic distribution and habitat. It is "especially common under conifers from the Rocky Mountains westward" (Arora 1986:280). The plant used by Ajumawi in the Fall River Valley is *A. pantherina*, rather than the yellow variety of *A. muscaria*.

### ETHNOGRAPHIC REPORTS

The use of *A. muscaria* by Siberian cultures is thoroughly documented by Wasson (1972). The following is a synthesis of data from Wasson's primary sources, which were translated from Russian, Swedish, or German. The mushroom is taken in two forms: it is either eaten whole or mixed with liquid, or urine from an intoxicated person is drunk.

The Koryaks, of extreme northeast Siberia, boil desiccated mushrooms in water and drink the intoxicating liquor (Strahlenberg in Wasson 1972:153); the dried buttons are also eaten or formed into a little 'pill' and swallowed whole. Most ethnographers have commented on the unusual effect *Amanita* has on the urine of an intoxicant. The psychoactive compounds in the mushroom apparently are not altered by the kidneys, making it possible for a person to prolong the effects of mushroom intoxication by drinking the urine of another intoxicated person. Intoxication from urine is as effective as ingesting the mushroom itself. *A. muscaria* is used by Siberian shamans. After eating the mushroom, the shaman, in a hallucinogenic trance, is able to communicate with supernatural beings and travel to the other world.

Hallucinogenic mushrooms are used for similar

purposes in Mexico. Three varieties used by Mexican natives have been identified: *Psilocybe caerulescens*, *Panaeolus campanulatus*, and *Stropharia cubensis*. Although *A. muscaria* grows in highland Guatemala, there is no positive evidence that it has been used for trances, although there is reason to suspect native use. Sculptured stones that resemble the fly-agaric have been found at archaeological sites in Guatemala dating back some 2200 years (Furst 1976:79). The presence of these mushroom stones in an area where *A. muscaria* occurs has prompted both Furst and Wasson to speculate that the fly-agaric may have been (or still is) used in Mexico and other parts of North America. Although the use of hallucinogenic mushrooms in Mexico was suspected early in the twentieth century, use of the three mushrooms identified above was not confirmed until the 1950s and 1960s (Furst 1976:76).

The use of *A. muscaria* by natives of British Columbia has also been confirmed: "Indications of an undoubted hallucinogenic use of the Fly Agaric have been discovered among the Dogrib Athabaskan peoples, who live on the Mackenzie Mountain Range in northwestern Canada. Here *Amanita muscaria* is employed as a sacrament in shamanism" (Schultes and Hofmann 1979:84-85).

The same authors also report the use of *A. muscaria* in "an ancient annual ceremony practiced by the Ojibwa Indians or Ahnishinaubeg who live on Lake Superior in Michigan" (1979:85).

#### CURRENT MUSHROOM USE IN NORTHERN CALIFORNIA

Our search of the literature has revealed nothing about the use of hallucinogenic mushrooms in northern California. As stated previously, *A. muscaria* is native to British Columbia, Washington, and Oregon, growing in pine forests of the Cascade Range. The mushroom's range extends south into northern California, and it is found in the vicinity of Mount Shasta. Furthermore, a dull yellowish mushroom, identified as *A. pantherina*, grows in the Fall River Valley, southeast of Mount Shasta. This mushroom is currently used for healing and religious purposes by the local Ajumawi Indians. The indigenous name for this mushroom is *pulqui*.<sup>2</sup>

It is believed that the mushrooms start to grow only after the spring thunder and lightning storms. At

this time the mushroom hunters go into the woods to call the mushroom by singing to it. The hunters will address prayers to the mushroom spirit and the thunder and lightning. No mushrooms are gathered at this time.

When the red bells, Johnny-jump-ups, and dogwood start to bloom, the mushroom hunts can begin. Edible mushrooms begin to appear on the lower slopes of large mountains near the end of March. A variety of different mushrooms, both edible and hallucinogenic, are hunted at different times throughout the year. Each family, band, and individual has their own traditional mushroom hunting locations.<sup>3</sup>

Currently, the yellow hallucinogenic mushroom is hunted in the fall on the slopes of Mount Shasta. The head mushroom hunter carries a large white feather which he ritually fans over the mushrooms. The first mushrooms gathered are strung together and hung in a warm place to dry. After a couple of days they are hung over a low fire and smoked with oak leaves. When completely dry, they are placed in a leather pouch until used.

In prehistoric times, Indian doctors (shamans) would ingest these mushrooms during healing ceremonies to induce a trance that would allow the doctor to 'see' the shadow or spirit of the patient. The doctor also was able to see past, present, or future events in the life of the patient. Spirits of inanimate objects such as rocks, trees, mountains, or springs also can be seen in this manner.

The same dull yellow mushroom is sometimes used today as a substitute for peyote, as the latter is hard to obtain in this area. Hallucinogenic mushrooms were never used during the power quest.

Four mushrooms will normally produce the desired effects, which last approximately eight hours. During this time, vivid hallucinations occur. Only one mushroom should be taken initially, as the effects vary widely from person to person. "Some people experience *extreme* discomfort, others have vivid dreams, still others experience no effects whatsoever" (Arora 1986:894). The mushroom is also used in doctoring. The patient ingests a very small portion of a single cap, which is not enough to induce discomfort or hallucinations, but is enough to engender a sense of relaxation and well-being. Individuals with a liver condition such as hepatitis or cirrhosis must be treated

with great caution; in addition, anyone who suffers from alcoholism should never be treated with any type of psychoactive mushroom, due to its adverse effects on the liver and kidneys.

We definitely do *not* recommend use of this mushroom for any purpose. "Amanitas are responsible for 90% of mushroom-induced fatalities" (Arora 1986:263). Several varieties are deadly.

### ADDITIONAL ETHNOGRAPHIC CLUES

When John P. Harrington visited northern California in the early 1930s, he interviewed several people from the Big Bend region, including members of the Madeisi band of the Ajumawi tribe. His list of edible mushrooms includes *mak mah ka 'ulah*, which Harrington translated as "head of [a] sp. of woodpecker.... This is a big red mushroom, umbrella-shaped, dark red on top" (Harrington 1984: Reel 27, Frame 115). Harrington's description suggests *A. muscaria*; however, he includes *mak mah ka 'ulah* in his list of edible mushrooms, along with *ph'lko'y*. *Mahk-mah-kah* is the Ajumawi name for the pileated woodpecker (Merriam 1926:10).

The association of this mushroom with woodpeckers is intriguing. Throughout northern California, woodpecker scalps and feathers were associated with shamanism and the acquisition of power. Both feathers and scalps were and still are used for ceremonial headdresses. During the power quest, Hupa men searched for a *kikine* (snag, standing dead tree<sup>4</sup>), where pileated or sacred red-headed woodpeckers (*kildikikyoh*) made their homes. Here the man hoped to obtain a woodpecker scalp to be used in a ceremonial headdress (Davis 1988:227).

It is therefore interesting to note the belief in Siberia that shamans are sometimes chosen by being struck by lightning (Eliade 1964:19). Furthermore, the Vedic hymns assert that the god of thunder is the father of the plant god, Soma (Schultes and Hofmann 1984:82). The Vedic hymns identify Soma as a powerful hallucinogenic plant that induces visions. Wasson (1967) identified Soma as *A. muscaria*. It is possible that native Californians may also have associated lightning, hallucinogenic mushrooms, and the shamanic trance.

Alena Caldwell (personal communication 1988), whose husband's family homesteaded near Alturas,

California, was told that a person who dreamed of a yellowhammer (red-shafted flicker) would become a doctor. The curing paraphernalia of Modoc and Klamath shamans included woodpecker scalps and feathers: "The shaman's dress includes a band of woodpecker scalps worn on the forehead or around the neck, or a bunch of yellowhammer feathers attached to the top of the hat or worn as a necklace. Shamans alone wear these" (Spier 1930:110). The woodpecker also assisted the Klamath shaman by traveling to the other world: "The kiuks [shaman] had sent the red headed woodpecker to prospect for his patient's disease in the atmosphere" (Gatschet 1890). The feathers of the yellowhammer are still used in ceremonial headbands worn by Maidu dancers.

Why should an umbrella-shaped, bright red mushroom be named "head of the woodpecker"? The color red, of course, is obvious, but are there other reasons as well? Is it possible that the scalp and feathers of woodpeckers were associated with a hallucinogenic mushroom, *A. muscaria*, which was taken in association with the power quest and by shamans who, like their counterparts in Siberia, needed to communicate with beings in the other world? We do not know the answers to these questions; we know only that a dull yellow mushroom is currently used for religious purposes by some Ajumawi. This mushroom is *A. pantherina*, which is known to have hallucinogenic properties. However, the mushroom described by Harrington was bright red and obviously was not the same plant as that used today. Furthermore, Harrington listed it as an edible plant.<sup>5</sup>

Little more is known about the hallucinogenic mushroom or its use by Ajumawi people. The senior author, Floyd Buckskin, learned about this mushroom from his grandmother, Pearl Hursey. According to Mrs. Hursey, it "makes you crazy." It was not eaten for food.

We do not know how long the Ajumawi have used this plant, nor do we know if the red *A. muscaria* was also used. But we do know that a dull yellowish mushroom identified as *A. pantherina* grows in the Fall River Valley, and that Ajumawi people currently use this mushroom for religious purposes. We also know that a variety of *A. muscaria* grows on the flanks of Mount Shasta and, in what appears to be a well established tradition, Ajumawi people from the Fall

River Valley still travel to Mount Shasta each spring to gather edible mushrooms. It is possible that in the past they also gathered the hallucinogenic *A. muscaria*.

### CONCLUSIONS

We know that *A. muscaria* was used by shamans in Siberia and in northwestern Canada. We also know that *A. muscaria* and other varieties of hallucinogenic mushrooms were used ceremonially in Mexico and by the Ojibwa Indians on Lake Superior. Now, use of *A. pantherina* is reported in northern California, where it has been used at least since the early part of the twentieth century. This suggests that the use of hallucinogenic mushrooms may have been much more widespread in North America than previously believed. Possibly the use of hallucinogenic mushrooms went underground, along with other Native American religious practices. It seems unlikely that such a powerful hallucinogenic plant would be ignored by Indian doctors and others seeking power through trance-induced visions.

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### NOTES

1. The Pit River people include eleven bands. Those living in the Fall River Valley were named Ajumawi (or Ahjumawi, which currently is the preferred spelling for the Ahjumawi themselves). The name means "where the waters (Pit and Fall Rivers) fall (or come) together." This happened to be the site of one of the earliest white settlements, hence the name of the town—Fall River Mills—where a sawmill was built. Thus all eleven bands were named Achumawi by white people, a term which is another spelling of the name of the main settlement of one band, Ajumawi.

2. Ethnographer John P. Harrington reported that *p'holk'oy* was an edible mushroom that was dried and put in acorn soup (Harrington 1984:Rl. 27, Fr. 117). The term *pulqui* is used today in both a generic and a specific sense. It can refer to the *Amanita* genus in general, but is also used to designate a specific edible mushroom that is gathered in the spring. The cap of the latter mushroom is yellow, with a large, unbroken, leathery white remnant of the universal veil. The stem and gills are white, with a large, loose-fitting volva or cup at the base of the stem, unlike the volva of *A. pantherina*.

3. Some edible mushrooms closely resemble toxic varieties; in addition, toxic mushrooms in certain phases can so closely mimic edible varieties in appearance that it is almost impossible to tell them apart. In order to avoid confusion (with possibly tragic consequences), the Ajumawi had family plots to which they regularly returned to harvest certain varieties.

4. Snags on ridge tops and basalt rims may be the result of lightning kills.

5. There are several red-capped, white-gilled, and white-stemmed edible mushrooms that are harvested locally. One is small, growing to only about four inches in height; another is approximately six to eight inches in height. These are not hallucinogenic in nature. They also lack a volva and universal veil, and do not have the characteristic spotted cap or universal remnants. One large, red-capped mushroom that is harvested locally has been tentatively identified as the Red Cap Russala. It has a spicy flavor, like a chili pepper, but it can cause severe intestinal pain or physical distress, and must be used with caution.

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