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NINETEENTH CENTURY SHAMAN GRAVE GUARDIANS ARE CARVED *FOMITOPSIS OFFICINALIS* SPOROPOHORES

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Spirit figures placed on shaman graves were carved in the 19th century from large sporophores of the fungus *Fomitopsis officinalis* (Vill: Fr.) Bond. & Sing. (Basidiomycotina). The perennial basidiocarps were recognized by the Indigenous Peoples of the Northwest Coast as objects with supernatural powers and were used during the shaman's life in various society rituals. After the death of a shaman, these carved sporophores were placed as guardians at the head of the grave. Collectors for various museums obtained these carved objects in the late 1800s, and they have been displayed or stored in various museum collections since that time. *Fomitopsis officinalis*, known to some Indigenous Peoples of the Northwest Coast region of North America as 'bread of ghosts' had an important spiritual as well as a medicinal role in Indian society. Its supernatural powers were intensified through shamanic art forms. Society myths and rituals also are presented to demonstrate the supernatural prestige that forest fungi held among the Indigenous Peoples of the Northwest Coast.

The Indigenous Peoples of the Northwest Coast used products of the temperate rain forest to provide many of the necessities for life. Forest fungi, as in other societies, were resources for dyes,

tinder, paint and medicine (Emmons, 1902; Gunther, 1945; Turner, 1979). One particular fungal sporophore, *Fomitopsis officinalis*, had a peculiar appearance with its perennial layers of chalky white pileus (FIG. 1), and was given supernatural attributes by the Tlingit, Haida, Tsimshian, and other Peoples of the Pacific Northwest. The sessile, columnar fruiting bodies, reaching sizes of up to 1 m in length, were referred to as *gwayax* (Haisla, Kitlope dialect) or '*adagan* (Coast Tsimshian) meaning 'ghost bread' and also as *tak'a di* (Tlingit) meaning 'tree biscuit' (Boas, 1891, 1912; Dunn, 1978). The fungus is endemic throughout the Northwest Coast and occurs on a variety of coniferous hosts causing a brown-rot form of wood deterioration within the heartwood of standing or fallen trees (Faull, 1916; Holsten *et al.*, 1985). Although basidiocarps are not common, they could have been obtained by trade with interior tribes or possibly collected by the shamans during their retreats of one week to a month when they "had to go into the woods, far back toward the mountains to encounter the spirit" (Laguna, 1972).

Fomitopsis officinalis (syn. *Fomes officinalis*) was one of the first fungi recognized by ancient Europeans and was recorded by Dioscorides in 200 AD as *Agaricum* (Buller, 1914; Gilbertson, 1980). It was used as a medicine by early herb-

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alists for a long list of ailments (Buller, 1914; Faull, 1916). Although the value of the fungus as a cure-all is questionable, it has styptic and purgative properties and was used in the early 20th century by pharmaceutical companies as a source of agaric acid and agaricin (Youngken, 1948; Gilbertson, 1980). Its major use was for an antiperspirant to relieve night sweats associated with tuberculosis.

The medicinal value of this fungus appears to have been independently discovered by the Indians of North America. The earliest record is a collection made from British Columbia about 1860 and deposited in the Museum of Economic Botany, Royal Botanic Gardens, England, with information that it was used by the Indians as a medicine (Faull, 1916). Its use as medicine has been documented in collections made by I. Cowie in 1892 (Beardsley, 1941) among the Cree of northern Canada, and also in later reports on the Bella Coola (Nuxalk) and other native groups of British Columbia (Smith, 1929; McIlwraith, 1948). A sporophore that was not carved was accessioned in the raw materials collection of the Field Museum of Natural History, Chicago, Illinois (78731). This specimen was collected in the 1890s and noted to have been used by the Tlingit in a poultice for swollen and inflamed areas (Emmons, 1902). This fungus has been identified by the authors as *F. officinalis*.

During an investigation to evaluate and characterize the types of wood deterioration present in wooden art objects from the Pacific Northwest Collection at the American Museum of Natural History, a carved "wood" figure was observed (E/1044, FIG. 2) that did not have the usual characteristics of wood. After inspection, sampling and subsequent microscopic observations this carving was determined to be made from a large sporophore of *F. officinalis*. A search for additional carved sporophores at several museums has resulted in the identification of 10 carved objects that were made from large sporophores. Macroscopic characteristics and microscopic

sections of the hymenial layers from these carved sporophores were used to positively identify the fungus as *F. officinalis*. The objects were collected by G. Emmons during 1880 to 1900 from shaman grave sites and sent to the American Museum of Natural History in New York (E/1044, 19/309, E/1042 and E/701 shown in FIGS. 2, 4, 5, and 6 and E/1043, E/1045 photographs not shown), Field Museum of Natural History in Chicago (77870 shown in FIG. 3 and 78394 photograph not shown), or the Burke Museum, University of Washington, Seattle (1056 and 2078) (photographs not shown). The locations where the objects were obtained are listed as Augoon, Alaska (19/309, E/1042, E/1043, E/1044, E/1045, 1056), Admiralty Island (78394), and Hood's Bay (2078), Chilkhart River, Alaska (E/701); no definite location is known for 77870. Collection notes by Emmons (1902) indicate that the grave guardians were made from wood or decayed wood and were placed on graves to protect the shaman during his long death sleep. The tube layers of the perennial sporophores are evident as horizontal lines and apparently were confused by the collector with the annual rings found in wood. Most of the carvings are oriented so that the tube layers appear in the same positively geotropic orientation that occurs when the fungus is attached to a tree. Many of the carved sporophores are dark in color and appear to have been treated with grease or some other substance. Others have been painted and one is ornamented with copper. In a treatise on the Art of the Northern Tlingit (Jonaitis, 1986), a photograph of 77870 is shown and it was speculated that it was made from "fungus (?)."

Since sickness was considered to be brought about by supernatural forces, the shaman applied a spiritual remedy. Sporophores of *F. officinalis*, when ground, were administered to cure many different ailments (documentation for specimen 78731 by Emmons, 1902; Faull, 1916; Smith, 1929; McIlwraith, 1948) but other sporophores were carved to represent spirit figures (FIGS. 2–

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FIGS. 1–6. Large perennial sporophore of *Fomitopsis officinalis* (approx. 1 m in length) from the mycological herbarium at Washington State University, Pullman, Washington (FIG. 1) and grave guardians carved from sporophores of *Fomitopsis officinalis* during the late 19th century (FIGS. 2–6) located in the American Museum of Natural History, New York, E/1044 (FIG. 2), 19/309 (FIG. 4), E/1042 (FIG. 5), E/701 (FIG. 6), and the Field Museum of Natural History, Chicago, 77870 (FIG. 3). Approximate dimensions for the grave guardians are: 2 = 16 × 11 × 19 cm (length × width × height); 3 = 9 × 15 × 20 cm; 4 = 11 × 10 × 16 cm; 5 = 31 × 21 × 28 cm; and 6 = 13 × 12 × 19 cm.

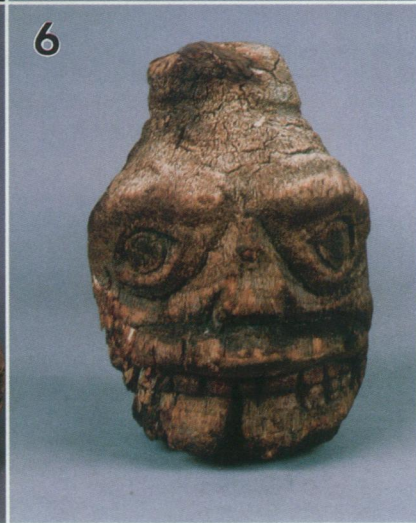
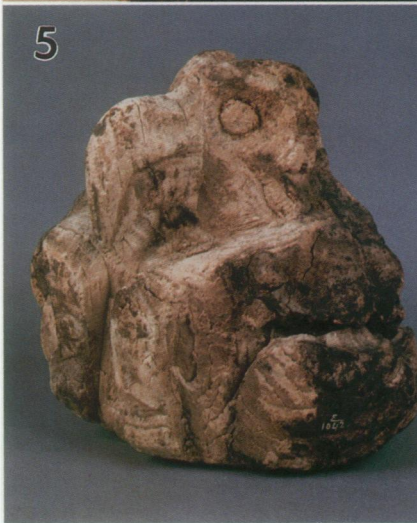




FIG. 7. Drawing of an argillite plate, carved by Charles Edenshaw in approx. 1890, depicting the Haida myth of the origin of women. Fungus Man is paddling the canoe with Raven in the bow in search of female genitalia. Of all creatures that Raven placed in the stern of the canoe only Fungus Man had the supernatural powers to breach the spiritual barriers that protected the area where women's genital parts were located. Diameter = 35 cm. Redrawn from a photograph, courtesy of the Field Museum of Natural History, Chicago.

6). These objects were thought to have special supernatural powers and were an important component of paraphernalia used by shamans. During society rituals, the sporophores were displayed in the ceiling timbers of special dance houses of the shaman for ritual protective purposes (information from Gordon Robertson, Kitlope elder, personal communication to B. D. Compton, 1988). Their role as spirit catchers and objects facilitating the shaman seance can only

be assumed by their representative shapes and the orifices in the mouth and stomach regions. These shamanic art forms appear to have significant meaning, which is intensified by the ghostly fungal substrate. When the shaman died, the carved sporophores of *F. officinalis* were placed at the head of the grave site to guard the grave (Emmons, 1902). Along with the other shamanic objects, the grave guardians would relay a clear message to the people that the area was

occupied by spirits and should never be approached (Jonaitis, 1986). During expeditions to the Northwest Coast during the late 1800s George Emmons collected these unusual art objects from shaman graves. Most of the carved sporophores have been in museum storage collections since that time but a few have been on public display (77870 and 78394) at the Field Museum of Natural History in Chicago without knowledge of their true identity and past uses by the Indigenous Peoples of the Northwest Coast.

No other society has used forest fungi to such a dramatic extent as the various Indigenous Peoples of the Northwest Coast. Further evidence of the supernatural prestige that forest fungi held among the native peoples of North America is found in a Haida myth on the origin of women that has been illustrated on an argillite plate carved by Charles Edenshaw, circa 1890, and now in the Field Museum of Natural History (17952). The imagery depicts a canoe paddled by a Fungus Man with Raven seated in the bow holding a spear to capture the female genitalia growing along the shore (FIG. 7). The myth states that Raven tried all other creatures in the stern to paddle the canoe but none were able to bring the canoe to approach the area. Only the Fungus Man had the supernatural powers to successfully bring Raven to his destination (Swanton, 1905; Hoover, 1983). Fungus Man originated from a bracket fungus with a white undersurface upon which Raven drew a face. Although the bracket fungus has been previously assumed to be *Ganoderma applanatum*, it could also represent a carved basidiocarp of *F. officinalis*.

Among the Nuxalk, or Bella Coola, of the central British Columbia coast, tree fungi were used as special dance symbols in certain ceremonials. The most common theme of the songs used by the fungus dancers was the upper world, or sky country (McIlwraith, 1948; Turner, 1973). The Ditidaht (Nitinaht) and Coast Salish peoples of Vancouver Island and the adjacent mainland attributed echo-making powers to tree fungi. Some Ditidaht families who owned the right to tree fungus protective powers could use the fungus to reflect any evil or malicious thought directed towards members of the family back to the person who sent them (Turner and Bell, 1971; Turner *et al.*, 1983).

The association of fungi with the supernatural has occurred throughout the world over past centuries. Ethnomycological studies have reported

the divine mushroom of Eurasia (*Amanita muscaria* (L.: Fr.) Hook.) and the sacred mushroom of Mexico (*Psilocybe cubensis* (Ear.) Sing.) to have intoxicating effects on those who ingested it. These mushrooms were used to induce spiritual experiences (Wasson, 1957, 1968). The shamans of the Northwest Coast did not depend upon hallucinogenic substances to achieve their supernatural habitude. Instead, an array of art forms made up the shaman's paraphernalia that provided symbols of spiritual power. *Fomitopsis officinalis*, when carved into animal or anthropomorphic figures, assumed intense supernatural attributes that were well utilized by the shaman to influence the beliefs and practices of the entire community.

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Key Words: Indigenous Peoples of North America, Northwest Coast Indians, ethnomycology, medicinal fungi, Basidiomycotina, Aphyllophorales

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UTILITY OF SPORE LENGTH/WIDTH RATIO IN SEPARATING *GEOPORA COOPERI* FORM *COOPERI* AND *G. COOPERI* F. *GILKEYAE*

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Burdsall (1968) described two forms of *Geopora cooperi* Harkness based on differences in spore shape. Form *cooperi* is described as having oval-elliptical, 12-17 μm broad ascospores with mean length/width ratios of 1.5-1.8. Form *gilkeyae* has broadly oval to subglobose, (15-)16-21(-24) μm broad ascospores with a mean length/width ratio of 1.25. I have frequently collected specimens matching the descriptions of both forms ectomycorrhizal with Pinaceae (*Abies concolor* (Gord. & Glend.) Lindl. ex Hildebr., *A. lasiocarpa* (Hook.) Nutt., *Picea engelmannii* Parry ex Engelm., *Pinus edulis* Engelm., *P. flexilis* James, *Pseudotsuga menziesii* (Mirb.) Franco) on the isolated mountain ranges of the central and eastern Great Basin (Fogel and Pacioni, 1989). A number of the collections, however, cannot be unambiguously assigned to one of the two forms

as described by Burdsall on the basis of spore width or length/width ratio because of the overlap in widths and intermediate mean spore length/width ratios of 1.3-1.4. The increased variability in the ratio is not unexpected as the ratio for *G. cooperi* f. *gilkeyae* was based on a very small sample of five collections. Increased variability might also be expected if genetic drift has occurred in some populations. Wells (1983) describes how the isolated mountain ranges and glacial history of the Great Basin produced ideal conditions for isolation and genetic drift.

This note reports the results of testing the hypotheses that two forms of *G. cooperi* can be separated on the basis of spore length, spore width and length/width ratio. Data were recorded from an independent set of 81 collections, not included in the original study by Burdsall, from a large