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## Native American Ethnobotany of Cane (*Arundinaria* spp.) in the Southeastern United States: A Review

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**ABSTRACT** Cane (*Arundinaria* spp.) was one of the most important plant resources for Native Americans living in the southeastern United States prior to Euro-American settlement. The use of cane permeated virtually every aspect of tribal life. Cane was used to make houses and village structures, military and hunting weapons, fishing gear, furniture and domestic implements, personal adornments, baskets, musical instruments, and watercraft. Medicines were prepared from cane, and parts of the plant furnished food and fuel. Canebrakes provided agricultural land, livestock forage, and habitat for wild game. Although large numbers of canes were harvested each year, there is no historic evidence that Native Americans actively managed canebrakes for the production of culms. The cultural importance of cane to Native Americans declined dramatically following Euro-American settlement of the southeast because: 1) trade goods were deemed superior and replaced articles made from cane in local economies; 2) the rapid disappearance of canebrakes deprived Native Americans of raw material and forced them to seek alternatives; and, 3) many of southeastern tribes were eventually relocated to regions peripheral to or outside of the geographic range of cane.

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**INTRODUCTION** Cane (*Arundinaria Michx.*) is the only bamboo native to the United States and occurs throughout most of the southeast (range maps provided by Marsh 1977, Farrelly 1984). Mature culms form dense monotypic stands known as canebrakes, which were a characteristic feature of the regional pre-settlement landscape (Platt and Brantley 1997). Historic accounts indicate that hundreds of thousands of hectares were characterized by canebrake ecosystems (Noss et al. 1995, Platt and Brantley 1997, Stewart 2007). Wherever bamboos are a major component of the flora, they play an important cultural role in human societies, fulfilling economic, ecological, spiritual, and occasionally medicinal necessities (Judziewicz et al. 1999). Although the cultural importance of cane to Native Americans prior to Euro-American settlement has long been recognized (Swanton 1946, Hudson 1976, Neuman 1984), a full ethnobotanical treatment has not been forthcoming, most likely because

information is fragmentary and located in widely scattered and often obscure sources (Platt and Brantley 1997). Our objective is to address this deficiency in the literature and provide a comprehensive review of the past use of cane by Native Americans inhabiting the southeastern United States.

**OVERVIEW OF CANE AND CANE-BRAKES** Cane is a monopodial bamboo with erect culms arising from rhizomes and bearing evergreen foliage (McClure 1973). Phenotypic variation among cane populations in the southeastern United States has inspired diverse taxonomic interpretations, with one to three taxa recognized at either the specific or subspecific levels (reviewed by Marsh 1977, Platt and Brantley 1997, Triplett et al. 2006). Triplett et al. (2006) recently accorded specific status to three taxa [*A. gigantea* (Walter) Muhl., *A. tecta* (Walter) Muhl., and *A. appalachiana* Triplett, Weakley & L.G. Clark] based on a comprehensive review of vegetative morphology, ecology, and genetic

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### Agriculture

By 1000 AD the southeastern tribes had adopted an intensive system of swidden agriculture based on corn (*Zea mays* L.), beans (*Phaseolus vulgaris* L.), and squash (*Cucurbita* L.) (Hudson 1976, Doolittle 1992). Canebrakes were indicative of fertile soils and cleared for agricultural fields (Hudson 1976, Platt and Brantley 1997, Ethridge 2003). Clearing was accomplished by cutting culms with mattocks made from hickory (*Carya* Nutt.) and bison scapulas (Le Page du Pratz 1774), and uprooting rhizomes with hooked sticks (Hawkins 1848). This material was allowed to dry for up to a month and then burned (Le Page du Pratz 1774, Hawkins 1848, McWilliams 1953). When soil fertility declined after three to five years of continuous cultivation, agricultural fields were abandoned for a lengthy fallow and quickly reverted to canebrakes (Platt and Brantley 1997, Ethridge 2003). Platt and Brantley (1997) suggested the extensive canebrakes of the pre-settlement landscape were largely anthropogenic in origin, resulting from the abandonment of agricultural fields after decimation of aboriginal populations by introduced European diseases.

In addition to providing sites for growing

Indian and Euro-American hunters (White 1983, Ethridge 2003, Perdue 2003). Early writers frequently commented on the large herds of cattle, horses, and swine maintained by Native Americans on tribal lands (Adair 1775, Hawkins 1848, Van Doren 1928), and the nutritional qualities of cane made it an especially important source of livestock forage (White 1983, Hill 1997, Ethridge 2003). Cane was the highest yielding native pasture in the southeast (Biswell and Foster 1942), and in contrast to other native forages, provided grazing as well as shelter throughout the winter (Platt and Brantley 1997). Cane foliage contains up to 18% crude protein, is rich in calcium and phosphorous (Shepherd et al. 1951, Smart et al. 1960), and wherever plentiful comprised the bulk of cattle diets (Biswell and Foster 1942). Cattle grazing on cane exhibited significant weight gains (0.18 kg/d), produced a 95% annual calf crop (Shepherd et al. 1951), and were reputed to yield superior milk and butter (Flint 1828). Horses pastured on cane were able to work nearly as well as those fed corn (Imlay 1792). Swine consumed cane rhizomes (Adair 1775, Michaux 1805), which are rich in carbohydrates (Lindahl et al. 1949). Cane was so highly regarded as livestock forage by Native

### *Rafts*

Cane rafts offered an expedient means of crossing larger creeks and rivers and warrant occasional mention in the accounts of early travelers (Le Page du Pratz 1774, Romans 1775, Bourne 1904, Van Doren 1928, Lincecum and Philips 1994). Cane is an excellent material for raft construction because the air-filled internodes confer a high degree of buoyancy (Farrelly 1984). Rafts were constructed by lashing bundles of canes in multiple layers perpendicular to each other (Le Page du Pratz 1774) or to a framework of dry wood (Van Doren 1928). Cane rafts described by William Bartram were 9 ft (275 cm) long and capable of floating large loads (Van Doren 1928). Gideon Lincecum mentioned that Indians crossed even the Mississippi River on cane rafts (Lincecum and Philips 1994).

### *Games*

Games were universally popular among the southeastern tribes (Swanton 1946), and pieces of cane often played an integral role

repeatedly suck small quantities of blood from the wound with a short (ca. 10 cm) culm segment. Teeth were extracted by placing a piece of cane with a leather pad attached to one end against the ailing tooth, and striking it a sharp blow (Lawson 1714b). This method was said to be far less painful than extracting a tooth with the European instruments in use at the time (Lawson 1714b).

**DISCUSSION** Our literature review demonstrates that Native Americans used cane for a multitude of purposes, supporting the earlier contention of Swanton (1946) that cane was one of the most important plant resources for the southeastern tribes. Because the use of cane permeated virtually every aspect of tribal life, we consider it appropriate to describe the southeastern Indians as having a "bamboo culture" (*sensu* Anderson 1993). In addition to the many uses we documented, the southeastern tribes probably employed cane in ways not recorded by contemporary observers. We speculate that some common

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pieces of cane often played an integral role in these contests. Lawson (1714b) described an arithmetic game played by throwing part of a compliment of 51 small cane splints to another person who must then guess the number they received. The Creek played a game using culms split in half and thrown into the air; scoring was done on the basis of whether these landed with the convex or concave side facing upwards (Swanton 1928a). Similar games using split culms were played by other tribes (Swanton 1911, Swanton 1942, Kniffen et al. 1987). Dice-like games of chance were played by several tribes using small bits of ornamented cane as dice (Swanton 1946). Cane slivers were used to keep score in other games (Swanton 1946).

#### *Medicine and Dentistry*

The use of cane in the traditional medicine and dentistry practices of the southeastern tribes appears limited. Infusions prepared by boiling cane rhizomes were used by the Choctaw to relieve "pain in the breast" (Taylor 1940), and as a cathartic by the Seminole (Sturtevant 1955). The Houma consumed rhizome tea to stimulate the kidneys and as a general tonic to "renew the strength" of older persons (Speck 1941). Cane lancets were used to bleed the sick (Feest 1975). Romans (1775) observed a healer make a small incision on a patient's temple, and then

cane in ways not recorded by contemporary observers. We speculate that some commonplace uses of cane may have been deemed unworthy of comment or simply escaped the notice of historic chroniclers.

Because 18 to 20 culms are required to make even a small cane storage basket (Hill 1997), each Indian village undoubtedly consumed thousands of culms each year. Despite this tremendous demand for raw material, we suggest the annual culm harvest was probably sustainable for several reasons. First, culms occur at densities as high as 49,000 to 160,000/ha (Meanley 1966, Marsh 1977). Thus, a relatively small area of canebrake could produce enough culms to meet the annual needs of a village. Second, vegetative growth of cane is rapid; culms resprout quickly after cutting and will continue to do so provided the interval between harvests is long enough (about five years) for sufficient nutrient reserves to accumulate in the rhizomes (Platt and Brantley 1997). Given the regenerative potential of cane (Gagnon et al. 2007, Gagnon and Platt 2008) and the fact that canebrakes dominated extensive areas of the pre-settlement landscape (Platt and Brantley 1997), the impact of annual harvesting on the overall resource base was likely minimal.

The historical record is largely silent with regards to any practices that Native American

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might have employed to manage canebrakes. Periodic burning of canebrakes (Buttrick 1831, Featherstonhaugh 1844) to flush game and provide favorable habitat for bison herds (Platt et al. 2001) is thought to have eliminated competing woody vegetation and fostered vegetative growth of cane (Platt and Brantley 1997, Gagnon and Platt 2008). Hill (1997) suggested that selective cutting pruned cane stands and stimulated the regeneration of culms suitable for basketry. Obviously, knowledge of Native American management practices would be enlightening from an academic perspective, and also for restorationists seeking to reestablish canebrakes, which to date has proven difficult (Platt and Brantley 1993, Dattilo and Rhoades 2005, Griffith et al. 2007).

The importance of cane to Native Americans dramatically declined following settlement of the southeastern frontier by Euro-Americans. This was in part due to the overall collapse of Native American culture that occurred subsequent to contact (Crosby 1972) when pandemics of introduced Old World diseases reduced

cane no longer available to tribal members, but ethnobotanical knowledge of cane and its uses was lost when elders died.

Today, few uses of cane survive among Native Americans; basketry is practiced for artistic and commercial rather than utilitarian reasons (Hill 1997), and artisans make cane blowguns and arrows (Watts 1999 and 2001). Notably, renewed interest in cane and recognition of its cultural importance to Native Americans has resulted in a number of canebrake restoration projects, many of which are funded by tribal governments (e.g., Griffith et al. 2007).

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