

HURON SMITH'S ETHNOBOTANY OF THE HOCĄK (WINNEBAGO)

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Kelly Kindscher (Kansas Biological Survey, 2041 Constant Ave., University of Kansas, Lawrence, KS 66047-2906 USA, k-kindscher@ukans.edu) and **Dana P. Hurlburt** (Department of Systematics and Ecology, University of Kansas, Lawrence, KS 66045 USA) HURON SMITH'S ETHNOBOTANY OF THE HOCĄK (WINNEBAGO). *Economic Botany* 52(4):352–372. 1998. The Hocąk, commonly known as the Winnebago, are one of the original tribes in the present state of Wisconsin. The field notes of Huron Smith, compiled in the late 1920s and early 1930s, document the extensive use of plant materials by Hocąk people. Smith's notes contain references to 199 vascular plant species in 74 families, with recorded uses for 153 of these species. Medicinal plants (with 117 species) comprise the largest category, followed by food (37 species), and fiber and material uses (22 species). Smith's work is unique for its time because he thoroughly explored the tribal uses of the plants in addition to collecting voucher specimens and photographic plates, and because it remains the most extensive Hocąk ethnobotanical study. Added to Smith's other works of tribes in Wisconsin (Menominee, Meskwaki, Ojibwe, and Potawatomi), the Hocąk ethnobotany broadens the cultural base of his regional compilation of Native North American plant uses. In addition, this is an important body of information for the Hocąk people and those interested in their use of plants.

Key Words: Hocąk; Winnebago; ethnobotany; Smith, Huron; Wisconsin; North American Indians, Wisconsin ethnobotany.

HOCĄK WAZIJACI: A STATEMENT

Wąksik š'ak ra waire šunų na. Ma'una wana'i cų wák hahiwi na. Wana'i na hanáč hik'ų kjawi hesge aire na. Wažą hijawi ra, wažą hanaxguwi ra, goišip hiwiperes hanihe kjawi hesge na. Wąksik wošgą na hirasa aire na. Wana'i nąkre wažą wokoresge ų ruxuruk wa'ų nąk šana. Ma hogihi rohá xjį hijihawi ra, wana'i homaşšja hesge ra, hųkurujis hįrahawi na. Wąksik hająwi na, egi ma hirakara wák hakererawi na. že hawa'ų wana'i homaşšja že'e hųkurujis hįrahawi na. Xąwi nąkre, na nąkre, Hocąk ra hanáč wawiperes hire na. Jagu hirokų pi wa'ų nąk hišge wawiperes hire na. Wošgą že haniwi manegi hajjewire ja na. Wošgą že'e šge hoxawani rahe na. Jąnakira šge maķą maššja ra wawiperes hire, hesge wagax nąkre ų hįgikarahere ra, nącge stak jį hąho wawiege, nunige, jagu šişik hųgiwawi ra, wąksik wošgą hi'ųwi šunų na kenį šge Mańi Xete ra hajire ni, hegų hąkaranį hajawi na. Te pi, wąksik hijane nąkre hota šge hoit'era gixawanine, wošgą na šge hirasa.

Wąksik ra, te, Huron Smith Project ąkre ų hįgijirairawi ra, hižaki šana wa'iginap šana. Kansas Biological Survey Team ra racak pi wakik'ųne wagax te'e hirušja hire ra. Huron Smith Ethnobotany of the Hocąk ra, epa, wagax horucgus haniwi na eja niže woiš'ak eja naži kšanahe na.

HOCĄK WAZIJACI: A STATEMENT

Hocąk means "Sacred Language, Parent Tongue, Master Language"

Wazijaci means "Hocąk who lives in pine forests"

One of the teachings of the Hocąk people is that the Creator of all things has given us a mind. We are told to utilize it to the fullest, as far as we can, using all of our senses. We have to remember and recall everything we have heard and seen. This was a way of life with our people. The mind has capabilities beyond anyone's imagination of what it could and can do. Throughout the many centuries we have gradually lost this trait. This degeneration of the most powerful energy source we have has happened due to unrestrained invasion causing genocide of a race of people that were caretakers of this continent. The Hocąk people knew about the gifts

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of plants and their uses and have successfully been a part of their existence since the beginning of this creation. Again due to the elimination of cultural values once practiced by our people there are but a handful of our people who still know of these powerful medicines. It is with a very heavy heart that I have consented to be part of this project. However, regardless of all tribulations we have experienced, we still to this day maintain all of our ceremonies that we have been blessed with, before the appearance of white people, which is very unique since many tribes have lost their languages and ceremonials.

I want to express my personal gratitude to my fellow tribes people who had the foresight to agree to become involved with the Huron Smith Project. The staff of the Kansas Biological Survey team from the University of Kansas, Lawrence, is to be commended for furnishing this invaluable piece of work. The Huron Smith Ethnobotany of the Hoçak (Winnebago) will always have an honored place in our tribal library for the benefit of our people now and in the future. (Kenneth Funmaker, Hoçak Wazijaci Language and Culture Program)

THE HOÇAK ETHNOBOTANY: HISTORY

The Hoçak (Winnebago) are an important tribe in the Great Lakes Region, with a long history in the present state of Wisconsin. Their long occupancy of the Lake Winnebago-Fox River area is supported by historical and archaeological sources (Dorsey and Radin 1910; Lawson 1906; Lurie 1978; Peske 1971) and by the tribe's traditions. Detailed references in their folk literature to the flora, fauna and landforms of the area confirm that Hoçak knowledge of the local flora is extensive (Bigony 1982; Radin 1990).

Huron Smith's previously unpublished draft manuscript "Ethnobotany of the Winnebago" is the only known work that focuses solely on the knowledge and use of plants by the Hoçak tribe. Melvin Gilmore's *Uses of Plants by the Indians of the Missouri River Region* (1991), completed in 1914, contains Hoçak names for 48 medicinal plants used by the tribe on their Nebraska reservation. Andros (1883) listed 23 plants (without Hoçak names) used by the Winnebago and Dakota for medicine during the period when the majority of the Hoçak were being relocated to Iowa, Minnesota, South Dakota, and Nebraska. Radin's extensive work on Hoçak culture in Nebraska, completed in 1923, lists 50 Hoçak plant

names but includes no Latin binomials and only limited information on uses (Radin 1990:69-70). Smith's ethnobotany is unique because of its thoroughness (153 useful species, 91 photographic plates, and 201 voucher specimens) and because it is the most extensive research conducted in the original Hoçak homelands in Wisconsin.

HOW THIS MANUSCRIPT ORIGINATED

This project is of mutual interest to botanists and to the Hoçak people, whose elders generously provided the original data to Huron Smith. As Curator of Botany at the Milwaukee Public Museum from 1917 to 1933, Smith had already studied the uses of plants among the Menominee, Meskwaki, Ojibwe, and Forest Potawatomi when he began to work with the Hoçak. Smith spent most of the summer of 1928 based at the farm of a Hoçak family near Wisconsin Rapids, Wisconsin. During that summer, Smith learned about Hoçak culture and plant uses from over fifteen Hoçak men and women. His consultants, acknowledged in his field notes and photographs and in his publication "Among the Winnebago" (Smith 1928b), included the following people: John Bear, the family of Dave Dekorah, Henry Dick, "Cahabięe" (Annabelle Eagle), Mr. and Mrs. Jim Henniger, Mr. and Mrs. Fred Mallory, "Iwahonąžika" and Beaver Woman (Mr. and Mrs. George Monegar), Mr. and Mrs. Frank Smith, Ray White, and Mr. and Mrs. Ulysses A. White.

Smith's field notes for the "Ethnobotany of the Winnebago" were archived by the Milwaukee Public Museum following his death. The manuscript has been photocopied and circulated among Hoçak people as well as among linguists researching Native American languages. However, Smith's notes were never published or examined in depth by ethnobotanists. The increasing interest in ethnobotany has generated interest in publication of the manuscript. In order to update this manuscript accurately, we consulted the Hoçak Wazijaci Language and Culture Program to obtain the correct Hoçak plant names corresponding to Smith's phonetics and to help us with historical information.

THE HOÇAK NATION

In 1994 the Wisconsin Winnebago adopted a new constitution, which officially changed their name to the Hoçak Sovereign Nation. Hoçak (or

HoChunk), the name they have always called themselves, means "People of the Big Voice" or "Sacred Language" (Hocak Nation Department of Historical Preservation 1996). Traditions generally place the origin of the Hocak at a place called Red Banks, located on Green Bay (Lurie 1960, 1978; Radin 1990:3, 17). Stories of the Hocak and related tribes tell that over time, groups of Hocak people moved away, becoming the Oto, Iowa, Missouri, Dakota, and several other tribes (Lurie 1978; Radin 1990:2-4). The name "Winnebago," used for the Hocak tribe, is of Algonquian origin, while "Sioux," used for the Hocak family of tribes and languages, is a French derivation of an Algonquian name. Other interpretations of names for the Hocak are given by Dorsey and Radin (1910) and Lurie (1978).

At the time of earliest European contact, the Hocak lived in the area of Green Bay, the Fox River, and Lake Winnebago in east central Wisconsin (Lawson 1906; Lurie 1960, 1978; Dorsey and Radin 1910; Thwaites 1902). They were surrounded by central Algonquian neighbors, the Menominee, Potawatomi, Sauk, and Meskwaki (Fox). The Menominee were also one of the original tribes inhabiting the Green Bay region, while the Potawatomi, Sauk, and Meskwaki were driven from the eastern Great Lakes region into Wisconsin by pressure from the Iroquois (Dorsey and Radin 1910; Lurie 1978).

Early European contacts with the Hocak were made by Jean Nicollet in 1634, and by other French explorers, fur traders and priests (Lawson 1906; Lurie 1960, 1978; Thwaites 1902). By 1670, the initially numerous and powerful Hocak were severely reduced in numbers by warfare with the Illinois, their neighbors to the south (Lurie 1960; Radin 1990:5-17), and by epidemics, which occurred in the area as early as 1666 (Kay 1984). The Hocak and neighboring tribes participated in the fur trade from approximately 1665 to 1840. Intensified use of an expanded resource base during this period was associated with increases in tribal populations (Kay 1984) and dispersal into smaller settlements (Lurie 1960, 1978).

White encroachment on Hocak lands began in the 1820s when armed bands of prospectors intruded into Hocak lands where lead could be mined (Abbott 1988). Pressure by lead miners, lumbermen, and settlers for access to Hocak land forced the tribe to accept a series of cession

treaties with the U.S. government from 1825-1837. The Hocak were thereby deprived of their lands east of the Mississippi (Fay 1966; Lurie 1978; Smith and Carstensen 1974). The 1837 treaty, signed under duress by a delegation that had no authority to cede lands, was considered to be fraudulent by the Hocak (Lurie 1966, 1978; Merrell 1876). Most of the Hocak were moved to the Turkey River in Iowa in 1840 (De La Ronde 1876; Merry and Green 1989; Thwaites 1892), and thereafter to three different locations in Minnesota (1846-55), to South Dakota (1862), and finally to Nebraska, where a reservation was given by treaty in 1865 (Lurie 1978). From 1838 until 1874, the Wisconsin Hocak led a fugitive existence in the face of repeated attempts by the U.S. Government to remove them (De La Ronde 1876; Lurie 1978; Thwaites 1892). About six hundred Hocak people took up homesteads under special legislation enacted in 1881 (Lurie 1978), leaving them scattered throughout eleven Wisconsin counties (Smith 1928b). Today, all Wisconsin Hocak lands have been repurchased. The 4,700 members of the Wisconsin Hocak Nation hold title to 2,000 acres of land (Hocak Nation Department of Historical Preservation 1996).

The Hocak originally had access to a wide range of ecological communities and a rich and varied resource base, as their homelands are within the ecotone or floristic tension zone between the prairie-forest province and the northern hardwoods province (Curtis 1959:15-20). The archaeological sites associated with Hocak culture were located in the Fox River drainage basin, which flows into Green Bay (Peske 1971). This area was noted for its highly productive fishery and wild rice beds (Jenks 1900; Thwaites 1902). European-Americans who explored the Fox River waterway described its "channel choked with fields of wild rice" and "myriads of ducks and waterfowl" (Schoolcraft 1975). In addition to these riverine-lacustrine resources, the Hocak "were in easy reach of prairies, oak openings, southern hardwoods, northern hardwoods, and conifer stands" (Peske 1971). The Hocak maintained villages and agricultural lands near waterways, but spent months away from the villages hunting, fishing, and gathering. Hocak food resources thus included cultivated corn, beans, squash, and tobacco, the Great Lakes fisheries, wild rice, and waterfowl, and abundant game and wild berries (Bigony 1982;



Fig. 1. Huron Smith in herbarium with ethnobotanical specimens. (Milwaukee Public Museum staff, date unknown.)

Funmaker 1983; Radin 1990:61–70; Thwaites 1902).

It is likely that the Hocąk relied heavily on wild plant and animal resources during the period of their attempted removal from Wisconsin. However, by the time Huron Smith was working with the tribe, he portrayed the Hocąk people as agricultural, raising “potatoes, corn, beans, carrots, hay, grain, hogs and chickens” (Smith 1928b). The Hocąk people at this time based their economy on seasonal work, picking berries, selling handicrafts, harvesting crops, and hunting and trapping (Lurie 1961:8–17, 1987). Smith did not attempt to quantify the relative importance in the Hocąk economy of cultivated versus wild foods, or the degree to which traditional materials were still used for crafts and items for household use.

HURON SMITH

Huron H. Smith (Figure 1) was Curator of Botany at the Milwaukee Public Museum from 1917 to 1933 (Barrett 1933a). Beginning in 1921, he began investigating the uses of plants

by Wisconsin Indian tribes. Smith attributed his initial interest in ethnobotany to being called upon frequently “to identify plants or parts of plants used by various Indian tribes” (Smith 1923). Before his untimely death at age 49 in an automobile accident, Smith had published three of a proposed series of six ethnobotanies of Wisconsin tribes. These included the ethnobotany of the Menominee (Smith 1923), the Meswaki (Smith 1928a), and the Ojibwe (Smith 1932). The ethnobotany of the Forest Potawatomi was published later in the year of his death (Smith 1933).

Smith understood that “the Winnebago were the original inhabitants of Wisconsin, at least so far as the period immediately preceding White occupation is concerned” (Smith 1933). He mentions their cultural and linguistic differences from the adjacent Algonquian tribes as part of his interest in working with the Hocąk (Smith 1928b). Smith had completed fieldwork for the Hocąk ethnobotany and mentioned this in a footnote in his Ojibwe study (Smith 1932). In

Barrett's published eulogy he reported the following:

[Smith's] last day of life had been devoted to writing on his Winnebago paper and he had carried on this work up to within three hours prior to his death, leaving the notes and data in place upon his desk where they could be taken up immediately upon his return. As is inevitable in the handling of such original observations and data, it will be extremely difficult for anyone else to take up these notes and complete the work. It is hoped that this can be done later but for the present it will be necessary to hold it in abeyance (Barrett 1933a).

Smith was unusually suited to his work as an ethnobotanist in the early part of the century. He understood the need to combine botanical fieldwork with ethnology and linguistics. Smith was adept at acquiring Native languages and often spent his summers with indigenous peoples (Barrett 1933b), learning their language while paying specific attention to plant names. He believed that "the botanist must sharpen his ethnological observing faculties" and he stated that "the investigator must be able to write the Indian names so that they can be understood again when pronounced to other Indians of the same tribe, as a basis of checking back on the truth of the information" (Smith 1928a). He believed it was important to spend time in the local communities because different people knew different species of plants, and deplored the brevity of time that he was spending with each tribe (Smith 1932). He recognized that Native knowledge of plant use was being lost by elders dying and through cultural change (Smith 1933).

Smith's interest in indigenous culture and religion extended to both the traditional Medicine Lodge and the Native American Church, which many Hocak embraced in the early 1900s (Hill 1990; Radin 1990). He published a version of the Medicine Lodge origin story and a Hocak translation of the Lord's Prayer (Smith 1928b). In his last published work, Smith wrote: "Previous experience with other tribes has taught the writer that the way to an Indian's confidence is to recognize his philosophy of life, to treat sacredly the things he holds sacred and to practice hospitality and generosity in dealing with them" (Smith 1933). Smith gave liberal donations of tobacco and other gifts to people with whom he worked (Smith 1921) and developed friendships with members of several tribes. He noted that a Native person "is quick to appreciate favors and

to acknowledge the respect that is given to him by the White man, and becomes confident when he realizes that his confidence is not abused" (Smith 1932). From his personal letters (archived at the Milwaukee Public Museum) we found that he attended ceremonies and powwows and called the 1928 Hocak pow-wow he attended a "very good sight."

Although Smith's notes and writings reflect some of the cultural biases of the times, he did not believe that Whites were culturally superior to Indians. Smith was disturbed that there was not more respect for the indigenous way of life and wrote that "it is the fallacy of the white man in trying to impose his culture on other peoples and in always assuming that it is superior to any other way of living" (Smith 1932). He recognized with regret that the U.S. government was involved in deliberately discouraging treatment by medicine men, and that through its educational efforts was also discouraging the Medicine Lodge ceremonies (Smith 1932).

Overall, Smith greatly appreciated the wisdom of the people he came to know. While working with Native people, Smith made great effort to collect the plant species that he found in the area where tribal members lived. He would then ask the Menominee, Meskwaki, Ojibwe, or Hocak people what names and uses they knew for the plants he collected. Smith believed that many of the medicinal plants could be important for medical purposes and stated:

Much of the knowledge of white men originated from studying the Indian plant uses, in the early days. Eclectic practitioners sought the Indian herbs and observed carefully what parts of the plant were used. The mass of early information was sifted scientifically by the students of medicine, and finally tested physiologically on animals. Perhaps sixty-five per cent of their remedies were found to be potent and are included in our pharmacopeias; the other thirty-five per cent were discovered to be valueless medicinally (Smith 1932).

Smith's keen insights and warm appreciation of traditional knowledge helped make his work a valuable contribution to our body of Native American ethnobotanical knowledge.

METHODS

HURON SMITH'S DATA COLLECTION

Huron Smith's methods for gathering ethnobotanical data among the Hocak were similar to



Fig. 2. Huron Smith's camp at the White farm, Wisconsin Rapids, Wisconsin. (Huron Smith, 1928.)

the methods used in his earlier ethnobotanical studies of Native peoples of Wisconsin (Smith 1923, 1928a, 1932, 1933). During most of the summer of 1928 Smith camped at the Ulysses A. White family farm, 10.5 km south of Wisconsin Rapids, Wisconsin (Figure 2), where he began learning the Hocak language, met the people, and participated in community life (Smith 1928b).

From his notes, it appears that Smith collected plants and ethnobotanical information simultaneously. An informant's name frequently appears at the start of a series of specimens, and each entry identifies both the species and its uses. Given that Smith participated in aspects of his hosts' daily and ceremonial life, it is likely that he used participant observation techniques; however, as was common for his time, Smith did not describe his interview techniques in detail.

The Milwaukee Public Museum's Department of Anthropology has archived the glass plate negatives for 91 of Smith's photographs. The plates depict his Hocak work, including consultants and their families, ceremonies, processing of plant materials (Figures 3–6), and food.

VOUCHER SPECIMENS

Smith collected 201 herbarium specimens representing 190 species during the course of his work with the Hocak. Smith's voucher specimens are housed in the Herbarium of the Botany Department of the Milwaukee Public Museum (Smith 9167–9367 MIL). He reported uses for another 14 species for which he collected no specimens. As in his earlier works, Smith collected species for which no use was identified by the Native people he consulted, believing that further work with other consultants was likely



Fig. 3. Mrs. George Monegar shelling sweet corn. Wood County, Wisconsin. (Huron Smith, 1928.)

to reveal additional uses. He used *Gray's New Manual of Botany*, 7th ed. (1908) for plant identification and nomenclature.

METHODS FOR MANUSCRIPT COMPLETION

After learning of Smith's Hocak manuscript, we contacted the Milwaukee Public Museum and offered to complete and update it. We typed and edited a photocopy of the handwritten manuscript, highlighting words and phrases in need of possible correction. In November 1994,



Fig. 4. George Monegar washing *Acorus americanus* rhizomes for winter use. Wood County, Wisconsin. (Huron Smith, 1928.)



Fig. 5. George Monegar and granddaughter, Fanny White, cleaning supply of *Acorus americanus* rhizomes for drying, Wood County, Wisconsin. (Huron Smith, 1928.)

we visited the Museum and compared our type-written text with Smith's original field notes. We also examined all of Smith's other published and unpublished works, as well as his correspondence. This process enabled us to verify all but a few illegible words of Smith's notes, and to place this work in the context of his previously published ethnobotanies.

VOUCHER SPECIMEN VERIFICATION AND NOMENCLATURE

During our November 1994 visit to the Milwaukee Public Museum, we examined Smith's plant voucher specimens and verified plant identification, in collaboration from the Museum's Department of Botany. Vascular plant identification was verified according to Gleason and Cronquist (1991). All scientific names have been updated to current nomenclature for vascular plants (Kartesz 1996), mosses (Anderson 1990; Anderson, Crum, and Buck 1990) and fungi (Smith, Smith, and Weber 1981).

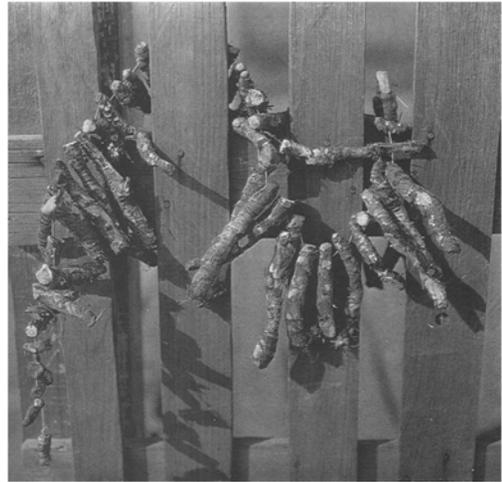


Fig. 6. String of *Acorus americanus* rhizomes as George Monegar hung them to dry. Wood County, Wisconsin. (Huron Smith, 1928.)

CURRENT HOCĄK LINGUISTIC INFORMATION

The linguistic information and phonetic key Smith used for the Hocąk language came from at least two Hocąk informants. John Bear spent the winter of 1927–28 at the Museum recording stories with anthropology curator W. C. McKern, and Fred Mallory compiled a Hocąk syllabary for Smith (Smith 1928b).

The Hocąk Wazijaci Language and Culture Program was established in 1993 to maintain the viability of the Hocąk language and its cultural significance. The Program provided the Hocąk plant names corresponding to Smith's phonetics. This work places Smith's Hocąk plant names in conformity with currently accepted spelling and phonetic symbols. We did not attempt to verify correspondence of the Hocąk name to the botanical name, as that would require a fluent Hocąk-speaking botanist.

HOCĄK PLANT USES

The Hocąk ethnobotany contains 199 vascular plant species in 74 families, one alga, two mosses, and two fungi. Smith recorded uses for 153 of these species (Appendix 1). The largest use category is medicinal plants with 117 species, followed by food and beverages (37 species) and fiber and material uses (22 species). The vascular plant families with the largest number of useful species are the Asteraceae (22 species), followed by the Rosaceae (12), Fabaceae (10), Pinaceae (6), Ericaceae (5), and Salicaceae (5).

Smith's notes on Hoçak plant use contain specimen numbers, Hoçak and English common names, and Latin binomials, followed by the uses of the plant. To bring the notes into a format which could be compared to his other works, we have organized the plant data by family within use categories (medicine, food, dye, fiber and material uses, and animal medicines and foods). Although the nomenclature has been updated, we have also retained Smith's nomenclature to facilitate comparison with his earlier works.

We have edited the manuscript minimally for clarity, by expanding abbreviations, adding articles, and correcting minor grammatical errors. Our comments and interpretations within the plant list are bracketed. Through our study of his other manuscripts, we feel certain that Smith would have edited the text further. However, we wanted to retain the original flavor of his vernacular speech and to avoid altering his meaning by our own interpretations.

MEDICINAL PLANTS

Smith recognized "the sanctity of . . . medicinal knowledge" of Native people and observed in his earlier publications that medicines must be gathered using the proper method (Smith 1923, 1928a, 1932, 1933). However, he wrote only that the "Winnebago observe the same precautions in gathering plants and place as great stress upon the manner of gathering as do other Wisconsin Indians" (Smith 1928b), without mentioning the religious observances related to the gathering, preparation, and administration of medicinal plants. Hoçak culture specifies that a medicine's efficacy depends on appropriate payment for the privilege of learning about it (Lurie 1961:61-65). Because this information is not included in his field notes, we do not know whether Smith ever learned the full details of medicinal plant use. He may have omitted specific methods for plant gathering and use out of deference to his consultants, or perhaps he disregarded this information as botanically irrelevant.

Smith noted with interest that Native people sometimes cultivated medicinal plants (e.g., see *Rumex orbiculatus* below). *Acorus americanus* and *Gymnocladus dioicus* are two other medicinal species in the Hoçak ethnobotany which probably were cultivated or propagated by indigenous peoples (Curtis 1959:463).

PLANT FOODS AND BEVERAGES

The Hoçak traditionally relied on both cultivated and wild foods. Gardens around old villages were said to be "as large as the distance covered when you shoot an arrow three times" (Hoçak Nation Department of Historical Preservation 1996). Smith took interest in his Hoçak collaborators' industriousness in agriculture and noted that they raised a variety of crops and livestock (Smith 1928b). His field notes describe Fred Mallory as having "several garden patches, raising potatoes, carrots, beans, peas and other garden truck." The field notes contain lists of names of garden vegetables, including eight varieties of corn and seven varieties of beans, which are not reproduced here. Despite this interest in agricultural production, Smith affirmed the value of wild foods, noting that "Indian foods are always described by the Winnebago as being [healthful] for the partaker."

Before European contact, Native peoples were actively involved in managing plant communities and landscapes through the use of fire (Curtis 1959:461-462). Blueberries, mentioned below as an important food, were encouraged by burning. State restriction of burning underbrush resulted in a decline of this important wild crop (Lurie 1961:116). White ownership of cranberry bogs also removed this wild resource from Native control (Lurie 1978). Nevertheless, at the time of Smith's work with the Hoçak, food gathering was still important. Food gathering activities described by Lurie (1961) include a reference to stealing wild beans from mice (see *Amphicarpea bracteata* below) and gathering water lily roots. Smith does not discuss methods of food preparation or preservation; however, some of these methods are described in Lurie (1961: 8-14) and Radin (1990:70).

APPENDIX 1

HOÇAK ETHNOBOTANY, HURON SMITH'S NOTES

Smith's notes are organized within use categories (medicinal plants, foods and beverages, dye plants, fiber and material uses, animal uses), following the format he used in his other published works. Each use category contains plants arranged alphabetically by family and species. Each entry is organized as follows: Botanical name (Smith's original identification), common name [standard common name], collection number, "Hoçak name" (Smith's translation), and uses and cultural information. Plant entries are numbered and are cross-refer-

enced to other use categories (M=medicinal; F=food or beverage; D=dye; C=fiber and material culture; A=animal food or medicine). All collection numbers are Huron H. Smith's. Plants are native to the region unless otherwise noted.

HOCAK MEDICINAL PLANTS

Several of the plant species included in this section are toxic. Medicinal plants should not be experimented with or used without proper observations and guidance.

VASCULAR PLANTS

Acoraceae, Sweet Flag Family

1. *Acorus americanus* (Raf.) Raf. (*A. calamus* L.) Calomel [Calamus], Sweet Flag. Smith 9358. "Maḡatek" (Medicine bitter) or "Maḡakerekerep" (Medicine spotted). A very important medicine for physic and colds, but very dangerous unless only a little bit is used. It is great medicine for camping out. Spray it around the tent to keep out spiders and snakes.

Anacardiaceae, Cashew Family

2. *Rhus hirta* (L.) Sudworth (*R. typhina* L.) Staghorn Sumac. Smith 9171. "Haznihu" (Berries, water leaking out). The green leaves at the top are cooked to cure stomach-ache and diarrhoea and cramps. It is also a stomachic to clean out the system. The inner bark and the root bark are both used for poultices for sores. The berries are also used in combinations with other medicines. (F120, C163)

3. *Toxicodendron radicans* (L.) Kuntze (*Rhus toxicodendron* L.) Poison Ivy. Smith 9340. The root and leaves are used. Chop a little very fine and open up a boil or carbuncle and put a little in, and it will draw the swelling. One must know just how or else it is very dangerous.

Apiaceae, Carrot Family

4. *Cicuta maculata* L. (*Conium maculatum* L.) [Common water-hemlock.] Smith 9218. "Maḡuḡske" (Smells good). The roots are used to restore lost appetite.

[Both *Cicuta* and *Conium* are considered to be highly toxic and should not be experimented with. It is possible that the original contributor may have confused *Cicuta* with *Sium* L., water-parsnip.]

5. *Heracleum maximum* Bartr. (*H. lanatum* Michx.) Cow parsnip. Smith 9309. "Maḡaḡ'apxete" (Medicine big leaves). The roots are used for the sweat bath. The Hocak sweat bath has a three foot pit over which a small wigwam is erected . . . The covering is burlap or flour sacks. In this pit, the kettle or flat pan of water is placed and the hot rocks [are placed] in on top of the medicines.

6. *Sanicula marilandica* L. Black snakeroot. Smith 9313. "Maḡaḡ'apzazac" (Medicine leaves fine small

roots). Chew the root up, spray it on the feet and no snakes will approach you.

Apocynaceae, Dogbane Family

7. *Apocynum androsaemifolium* L. Spreading dogbane. Smith 9192. "Waruhaxawi" (Fireflies' weed). The leaves are used as a medicine for babies when they have the colic. (C164)

Aquifoliaceae, Holly Family

8. *Nemopanthus mucronatus* (L.) Loes. Northern holly. Smith 9235. "Maḡaḡhas" or "Naḡo" (Stick green). When someone wants to vomit, they use the bark for tea.

Araceae, Arum Family

9. *Arisaema triphyllum* (L.) Schott. [Jack-in-the-pulpit.] [No specimen.] Root is "Waxge." The root is made into a bitter compound much like a mustard plaster for neuralgia or rheumatism.

Araliaceae, Ginseng Family

10. *Aralia nudicaulis* L. Sarsaparilla. Smith 9276. "Maḡakirikiri" (Medicine soft). When [one is] cut with a sharp instrument, the root is cut and mashed to make a poultice to cure.

11. *Aralia racemosa* L. Indian spikenard. Smith 9180. "Peḡahu" (Sand hill crane-lake). The root is boiled for sores, boils and carbuncles.

Aristolochiaceae, Birthwort Family

12. *Asarum canadense* L. [Wild ginger.] [No specimen.] "Wamaḡe." A food seasoner, used to make a tonic tea. (F122)

Asclepiadaceae, Milkweed Family

13. *Asclepias exaltata* L. (*Asclepias phytolaccoides* Pursh) [Tall] milkweed. Smith 9307. "Maḡhic." The root is a medicine. A tiny piece boiled is a lactuary for a squaw [to increase lactation]. (F123, C165)

14. *Asclepias tuberosa* L. Orange milkweed [Butterfly-weed]. Smith 9363. "Maḡaḡska" (Medicine white). A very great remedy for the Hocak. The root is chewed and placed in a wound to heal. In case of hemorrhage one should drink it [the root].

Asteraceae, Sunflower Family

15. *Achillea millefolium* L. (*A. lanulosa* Nutt.) Yarrow. Smith 9191. "Maḡaḡwirotopanahi" (Medicine smudge). The smoke is an important medicine used to revive consciousness.

16. *Ageratina altissima* (L.) King & H.E. Robins. (*Eupatorium urticaefolium* Reichard.) White snakeroot. Smith 9285, 9303. "Wakaḡmaḡa" (Snake medicine). The root is macerated and used to poultice a rattle-snake bite and cure it. The bite won't swell.

17. *Ambrosia artemisiifolia* L. Ragweed. Smith 9195. "Maḡaḡhikikuruza" (Medicine headache wash). The tops of this are used to make a wash to cure headache.

18. *Artemisia ludoviciana* Nutt. [White sage.] Smith 9364. "Xawışkarawırotapañahi." A smudge to revive consciousness.
19. *Aster cordifolius* L. var. *sagittifolius* (Wedemeyer ex Willd.) A.G. Jones (*A. tradescantii* L.) [Arrow-leaved aster.] Smith 9206. "Poaxu" (Sweat). Used in the sweat bath.
20. *Aster furcatus* Burgess. Forked Aster. Smith 9207. "Poaxu." Used in the sweat bath.
21. *Aster sericeus* Vent. [Western silvery aster.] Smith 9365. "Paxşışik'ımaka" (Diarrhoea medicine). For colic and diarrhoea, eat the leaves only. Eat them raw, just as they are.
22. *Erechtites hieraciifolia* (L.) Raf. ex DC. [Pilewort.] Smith 9200. "Poaxu" (Sweat). Used in the sweat bath to tincture steam with healing ingredients.
23. *Erigeron strigosus* Muhl. ex Willd. (*E. ramosus* (Walt.) BSP.) Fleabane. Smith 9204. "Poaxu" (Sweat). Used in the sweat bath.
24. *Eupatorium maculatum* L. (*E. purpureum* var. *maculatum* (L.) Darl.) Joe Pye. Smith 9220. "Wirotapañahi" (Smudge). Used as a smudge for illnesses.
25. *Eupatorium perfoliatum* L. Boneset. Smith 9221. "Maka'apghap" (Medicine stem three leaves). The tea is used to cause sweating and break up a fever. If one spits blood, it will cure that, too.
26. *Helianthus giganteus* L. [Giant sunflower]. Smith 9225. "Poaxu" (Sneeze). Used for the sweat bath.
27. *Helianthus strumosus* L. [Rough-leaved] sunflower. Smith 9257. "Sawazi" or "Hınuc" (Yellow legs). Of the class called "Poaxu" or snuff. The fumes of the leaves on coals are used to cure headache.
28. *Liatrix scariosa* (L.) Willd. Blazing star; Dotted button snakeroot. Smith 9300, 9302. "Cesıchoşok" (Buffalo's tail; like buffalo tails). The root extract cures sunburn. The powdered root is a healing, dusting powder for cancer, sore throat, etc. The root is dried, powdered, and swallowed dry, followed by a drink of water. Swallow down just a little at a time. It is also used for poulticing and tied on over night. (A184)
29. *Oligoneuron rigidum* (L.) Small (*Solidago rigida* L.) [Stiff goldenrod.] Smith 9362. This is much like *S. speciosa* in use. A blood purifier and a great female remedy, taken three times a day.
30. *Prenanthes alba* L. White lettuce. Smith 9238. "Na'apparas." When a boy goes swimming sometimes he gets lumps all over his body. Then he rubs with this, and they all go away.
31. *Pseudognaphalium obtusifolium* (L.) Hilliard & Burt (*Gnaphalium polycephalum* Michx.) Many headed everlasting. Smith 9202. "Maka'wırotapañahi" (Medicine smoke or smudge). When someone is bad sick, use a funnel to smoke and revive them.
32. *Rudbeckia hirta* L. Black-eyed Susan. Smith 9354. "Poaxu." Used for the sweat bath.
33. *Solidago canadensis* L. Canada goldenrod. Smith 9214. "Poaxu" (Sneeze). Used for the sweat bath.

34. *Solidago speciosa* Nutt. [Showy goldenrod.] Smith 9361. "Maka'rejuserec" (Medicine root long). For incontinent urine. The best blood purifier of the Hoçak.
35. *Solidago uliginosa* Nutt. [Northern bog-goldenrod.] Smith 9222. "Poaxu" (Sneeze). Used for the sweat bath.

Betulaceae, Birch Family

36. *Alnus incana* (L.) Moench. [Speckled] alder. Smith 9234. "Hapuruc" (Bark good to eat). When the stomach is sour and out of whack they eat the bark.

Brassicaceae, Mustard Family

37. *Armoracia rusticana* P.G. Gaertn., B. Mey., & Scherb. (*Radicula armoracia* (L.) Robinson) Horseradish. Smith 9336. "Maka'takac" (Medicine hot). Used in compounds to cure old sores. Very good for internal cramps. [Naturalized from Europe.]
38. *Brassica nigra* (L.) W.D.J. Koch. Black mustard. [No specimen.] "Xawıpañatek" (Medicine with strong smell). The seeds are ground up for tonic and used in compounds for internal ailments, colds, and stomach troubles. [Escaped cultigen, native to Europe.]
39. *Lepidium virginicum* L. Peppergrass. Smith 9188. "Xawısureha" (Lots of seed). When one is tired and the feet and legs ache, this plant is cooked and the tea is used to wash the tired members.

Campanulaceae, Bellflower Family

40. *Campanula aparinoides* Pursh. Long leaf stitchwort, [Marsh-bellflower]. Smith 9244. "Maka'apserec" (Medicine leaf small long). Used to make a steam to inhale.
41. *Lobelia inflata* L. Indian tobacco. Smith 9258. "Wakşıktanı" (Indian tobacco). Used for smoking in Indian ceremony. Before the white man came, they used to use it almost exclusively for every day smoking. Does this mean Hoçak had no native tobacco? [George] Monegar's snuff for a cold is *Lobelia inflata* L., slippery elm [*Ulmus rubra* Muhl.] bark, coffee tree [*Gymnocladus dioica* (L.) K. Koch] bark, and ginseng [*Panax quinquefolius* L.] root, powdered together. [This species is considered to be quite toxic.]

Caprifoliaceae, Honeysuckle Family

42. *Diervilla lonicera* P. Mill. Bush honeysuckle. Smith 9187. "Maka'naşık" (Medicine—little stick). The root is cooked for a tea to clean out after childbirth. Also used by both sexes to make urine come.
43. *Sambucus nigra* L. ssp. *canadensis* (L.) R. Bolli (*S. canadensis* L.) Elderberry. Smith 9272. "Hicocox" (Hollow stem). A teaspoon of the inner bark in a cup of hot water is a quick physic.
44. *Sambucus racemosa* L. Red elderberry. Smith 9312. "şoşoc." The bark is physic and emetic. It is also used as an injection in constipation.
45. *Triosteum aurantiacum* Bickn. Tinker's weed, [Horse-gentian]. Smith 9308. "Maka'kirikirik" (Med-

icine soft) or "Maḡaḡazmīṅaḡ" (Medicine with berries on). Injections of the tea are given for stomach troubles and chronic constipation, in the regular Indian way. They drink the tea for kidney trouble. One of the greatest Hocāḡ medicines.

Celastraceae, Staff-tree Family

46. *Celastrus scandens* L. [American bittersweet.] [No specimen.] "Maḡaḡazi" (Medicine yellow). The root is used in compounds, especially the one I drank for a cold. This had nine medicines in it.

47. *Euonymus atropurpurea* Jacq. Wahoo. [No specimen.] "Naḡsikhazmīṅaḡ" (Little stick berries). The inner bark and the root bark both were used in treating chills and fevers. The hot tea is used for a foot bath. The root bark is a tonic, and is used very thinly diluted for women to drink during childbirth.

Cornaceae, Dogwood Family

48. *Cornus amomum* P. Mill. [Knob-styled dogwood.] Smith 9288. "Cawaruc" (Deer feed). They smoke the bark.

49. *Cornus racemosa* Lam. (*C. paniculata* L'Hér.) Panicled dogwood, [Northern swamp-dogwood]. Smith 9263. "Maḡsiḡuḡe" (Arrow wood). They use the bark for smoking, and it has almost the same flavor but is milder than their regular kinnikinnick. The inner bark and the root bark is medicine as a cleanser for female illnesses. (C168)

50. *Cornus rugosa* Lam. (*C. circinata* L'Hér.) Silky cornel, [Rough-leaved dogwood]. Smith 9255. "Rugiḡuḡe" (Smoking bark). It is used as a kinnikinnick and the bark is efficient in a combination for measles.

Cucurbitaceae, Gourd Family

51. *Cucurbita pepo* L. Squash. [No specimen.] "Wicawacozu." The seeds are used to dispel worms. The shells are removed and the seed eaten raw.

52. *Echinocystis lobata* (Michx.) Torr. & Gray. Squirt-cucumber. Smith 9304. "Xa'o'oke" (Hoot owl). The roots are used by some of the Hocāḡ. The seeds are used as a urinary [medicine].

Cupressaceae, Cypress Family

53. *Thuja occidentalis* L. Arbor vitae. Smith 9306. "Waziparage" (Pine cedar). One of the greatest Hocāḡ medicines. Combined with red willow bark and cedar leaves pounded together, it is drunk cold, for curing measles.

Dennstaedtiaceae, Bracken Family

54. *Pteridium aquilinum* (L.) Kuhn (*Pteris aquilina* L.) Bracken fern. Smith 9293. "Coḡerekehu" (Fern). This root [rhizome] is used in several remedies, most of them for female complaints.

Ericaceae, Heath Family

55. *Vaccinium angustifolium* Ait. (*Vaccinium pensylvanicum* Lam.) Blueberry. Smith 9262. "Hastīk"

(Wonderful berries). The berries are dried and sometimes added to medicine to flavor it. This is the type of tonic used to stimulate a lost appetite. (F130)

Euphorbiaceae, Spurge Family

56. *Euphorbia corollata* L. Flowering spurge. Smith 9267, 9360. "Na'apraxatake" (Leaf milk); "Xaḡiḡsaska." A piece of the root 2 ½ inches long is used to clear out the stomach. The leaves are steeped to make a tea to cure a baby's colic.

Fabaceae, Bean Family

57. *Amorpha canescens* Pursh. Leadplant. Smith 9270, 9331. "Xaḡiḡsku" (Sweet root); "Taxumaḡaḡ" (Burnt medicine). The leaves are medicine for scalds. It is powdered, then wet and put on. (F133)

58. *Baptisia alba* (L.) Vent. (*B. leucantha* Torr. & Gray) [No specimen.] "Capakḡiḡuḡe." The root is a single remedy to use for injured womb alone. Cook the root and mash it to form a poultice to bind on. Wash with water and draw out the inflammation. Change twice a day until healed.

59. *Desmodium cuspidatum* (Muhl. ex Willd.) DC. ex Loud. (*D. grandiflorum* (Walt.) DC.) Tick trefoil. Smith 9261. "Waraxḡaxḡapkeparasti" (Stickers flat). The root is used as a seasoner for other medicines. It gives a good flavor, but very little is needed.

60. *Gleditsia triacanthos* L. Honey Locust. Smith 9357. "Naḡsikhpaḡiḡk" (sharp bushes[?]). The root is used in a hot bath or sweat bath.

61. *Gymnocladus dioica* (L.) K. Koch. Kentucky coffee tree. [No specimen.] "Naḡpacakḡakhu." They steep the bark or the root bark and drink it. For colds, take a hot bath, and drink this tea as hot as you can stand. This is one of the ingredients in [George] Monegar's snuff recipe [see *Lobelia inflata* L.]. I took pictures of this. George Monegar was quite anxious to locate where this grew so he could get some. I told him about the Fountain City, Wisconsin grove [located] 1 ½ miles south of town towards Winona, Minnesota. (C170)

62. *Lespedeza capitata* Michx. [Bush-clover.] Smith 9341. "Xaḡiḡzi" (Weed yellow). The root is used in the sweat bath.

63. *Robinia pseudoacacia* L. Black locust. Smith 9356. The root is used in a hot bath or sweat bath.

Fagaceae, Beech Family

64. *Quercus alba* L. White oak. Smith 9169. "Naḡhasaka" (Tree nuts). The bark and root bark are used in mixture for curing flux. (F135)

65. *Quercus ellipsoidalis* E.J. Hill. Hill's Oak. [Northern pin-oak.] Smith 9280, 9339. "Piksikhakekhu"; "Piksigu'ap." The root bark is a medicine used in compounds. (F136)

66. *Quercus macrocarpa* Michx. (var. *oliviformis* (Michx. f.) Gray) Bur oak. Smith 9316. "Piksigu." The bark is used in combinations of medicines. (F137)

67. *Quercus rubra* L. Red oak. Smith 9170. "Huksi-

gu" or "Piksigu" (Nut tree). The inner bark is mixed with apple bark for worms. (F138, A188)

Hamamelidaceae, the Witch Hazel Family

68. *Hamamelis virginiana* L. Witch hazel. Smith 9177. "Huksik" (Squirrel berries). The root is used as a seaso-ner for other medicines, to make them taste right.

Iridaceae, Iris Family

69. *Iris versicolor* L. Blue flag. Smith 9250. "Maķasa- gre" (Medicine fast). A strong physic and a quick one. It is dangerous and must be used correctly, as an over- dose would kill. For a baby, use one-half inch; for an adult, use one inch only.

Juglandaceae, Walnut Family

70. *Juglans cinerea* L. Butternut. Smith 9283. "Ca- zuke" (Fruit tree). The bark is a physic. (F140, D156)
71. *Juglans nigra* L. Black walnut. [no specimen.] The tree itself is "Cakhu." The bark is boiled down with maple sugar until it is about the consistency of black strap molasses, and used for a blood tonic. A teaspoon- ful in the morning every other day is the dose. (F141, D157)

Lamiaceae, Mint Family

72. *Monarda fistulosa* L. Wild bergamot. Smith 9284. "Poaxu" (Sweat). Used in the sweat bath. They inhale the fumes to cure a cold.
73. *Nepeta cataria* L. Catnip. Smith 9273. "Niķjākmaķa" (Baby medicine). A sweetened tea is given to babies when they are prone to cry and not sleep. Then they will get a good sleep. [Naturalized from Europe.]
74. *Prunella vulgaris* L. Self heal. Smith 9294. "Wir- ašarak" (Heal all). The plant itself is used to heal up sores.

Liliaceae, Lily Family

75. *Clintonia borealis* (Ait.) Raf. Northern clintonia. Smith 9260. "Šumāķa" (Dog medicine). The root is used to kill worms in a dog, and in a person, too. (A189)
76. *Maianthemum racemosum* (L.) Link (*Smilacina ra- cemosum* (L.) Desf.) False spikeweed [False Solomon's seal]. Smith 9217. "Wakewaruc" (Coon berries). The root is a physic.

Monotropaceae, Indian Pipe Family

77. *Monotropa uniflora* L. Indian pipe. Smith 9291. "Xaķiška" (Flowers white). This is used as a "Poaxu" or smudge to revive consciousness in one ill who has fainted.

Myricaceae, the Bayberry Family

78. *Comptonia peregrina* (L.) Coult. (*Myrica asplen- ifolia* L.) Sweet fern. Smith 9184. "Maķaķihira" (Medicine sweat bath). When someone catches cold this is put into a sweat bath to cure him.

Nymphaeaceae, Water-lily Family

79. *Nymphaea odorata* Ait. (*Castalia odorata* (Ait.) Wood) Sweet white water lily. Smith 9241. "Kecok- sik" (Red turtle feet). The root is cooked to make a female remedy to cure after a woman gives birth.

Osmundaceae, Royal Fern Family

80. *Osmunda claytoniana* L. Ostrich fern [Interrupted fern]. Smith 9179. "Cūkeresge" or "Cūšereke" (Stand up—lots of leaves). The root is medicine. (C173)

Oxalidaceae, Wood Sorrel Family

81. *Oxalis stricta* L. Yellow sorrel. Smith 9277. "Xaķišku" (Weed sweet). Give to a baby sick with colic. (F144, D158)

Papaveraceae, Poppy Family

82. *Sanguinaria canadensis* L. Bloodroot. Smith 9367. "Pexhišuc" (Red gourd). This is a dye and a medicine also. (D159)

Pinaceae, Pine Family

83. *Larix laricina* (DuRoi) K. Koch. Tamarack. Smith 9325. "Casak." The gum and the bark are medicines. The gum is used on wounds and cuts. (C174)
84. *Pinus resinosa* Soland. Norway or Red pine. Smith 9168. "Ruģihašarašarake." (Tree has no branches.) The pitch from the cones is mixed with some kind of fat to make a salve to heal sores.
85. *Pinus strobus* L. White pine. Smith 9167. "Wazi." The white pine is used by the Hoçak and was impor- tant to them. It is plentiful around in Wood Co., where the soil is sandy and jack pines and Norway pines are second and third in order of occurrence. They use the gum boiled out of the cones to cure sore throat, and also to apply on a sore which would be apt to leave a scar when it heals. Use this and there will be quick healing and no scar left. They also cook the inner bark and make a poultice to cure burns and make them heal quickly. The leaves are also used in the sweat baths. (C176)
86. *Tsuga canadensis* (L.) Carr. Hemlock. Smith 9355. "Siķhu" (Rice stem). The leaves and bark are used in compounds. It is a medicine for a child. Grind the red part of the bark, and when dry its flavor is good. Eat it when dry to cure diarrhoea.

Plantaginaceae, Plantain Family

87. *Plantago media* L. Plantain. Smith 9323. The leaves heal old sores. They chop the leaves as fine as they can get them for a poultice. [Native of Eurasia.] (A190)

Polygalaceae, Milkwort Family

88. *Polygala sanguinea* L. Milkwort. Smith 9226, 9227. "Cesičošok" (Buffalo tail). The whole plant is

used for a tea to cure sunburn. If there is cancer in the throat, this is gargled. (A191)

Polygonaceae, Buckwheat Family

89. *Rumex orbiculatus* Gray (*R. britannica* Amer. auct. non L.) [Great water-dock.] [No specimen.] "Hišuc" (Water red). This large root does not occur right here, but the Hocak can get it at the grist mill at Necedah or at Kilbourn. It is one of their greatest medicines, a great tonic and for consumption. George Monegar didn't have any growing but had seed which he got from the Meskwaki at Tama, Iowa, and was going to plant it to raise his own medicine root. (D160)

Potamogetonaceae, Pondweed Family

90. *Potamogeton natans* L. [Floating pondweed.] Smith 9252. "Kecoksikxunñik" (Turtle feet small water weed). This is much used in combination with other medicines.

Ranunculaceae, Buttercup Family

91. *Anemone cylindrica* Gray. Anemone. Smith 9335. "Maqawira'aphi."

They use the fuzz part to chew up and put on boils or carbuncles and bandage. After 24 hours they will open. It is somewhat similar in strength to poison ivy, but is not so dangerous a remedy. The root tea is an eye lotion for sore eyes.

92. *Coptis trifolia* (L.) Salisb. Gold thread. Smith 9320. "Xawitanisara" (Weed club leaves), "Rejusini" (root yellow). The root is used to cure sores in a baby's or an adult's mouth.

93. *Thalictrum dasycarpum* Fisch. & Avé-Lall. Meadow rue. Smith 9281. "Xawipapani" (Smells good). Used to make a sachet bag and to perfume smoke.

Rhamnaceae, Buckthorn Family

94. *Ceanothus americanus* L. [New Jersey tea.] Smith 9332. "Cawaruc" (Deer food). The root is fine medicine for women. (A192)

95. *Rhamnus alnifolia* L'Hér. Buckthorn. Smith 9183. "Naconik" (Little green stick). The inner bark is a strong physic, and the root too.

Rosaceae, Rose Family

96. *Aronia arbutifolia* (L.) Pers. Chokeberry. Smith 9236. "Tocgişik." When the berries are dry in the fall, they are ground up and used to stop flux or diarrhoea.

97. *Potentilla norvegica* L. (*P. monspeliensis* L.) [Strawberry-weed.] Smith 9198, 9297. "Hišucxunñik" (Yellow flower). The root is a remedy to clean up the afterbirth.

98. *Prunus pensylvanica* L.f. Pin cherries. Smith 9176. "Napakšuc" (Red cherries). The cherries are dried for medicine, pounded in a mortar to a powder and then steeped to make a tea to stop flux.

99. *Prunus serotina* Ehrh. Wild black cherry. Smith 9264. "Napakwijanik" (Tree cherry drunk). This is

called the drunk cherry, because if you eat too many you get drunk. The inner bark is used as a seasoner in 20 kinds of combinations, and it sweetens and gives a good taste. A tea of its bark is considered a good tonic. (F148)

100. *Rosa carolina* L. (*R. humilis* Marsh.) Pasture rose. Smith 9196. "Hasšuc" (Red berries). The root is cooked for a baby medicine when the mother is going to have another baby. The [first] baby will get sick easily then and needs this remedy to keep it well. The skin of the rose hip is a stomachic. The root of rose is for diarrhoea.

Rosa carolina L. (*R. humilis*), gall on stem. Smith 9345. This gall was gathered on the chance that it might have particular medicinal properties but it did not. [Specimen consists of stem only; authors could not verify to species.]

101. *Rubus allegheniensis* Porter. Blackberry. Smith 9173. "Hassep" (Black berry). The root is used to make a tea to cure sore eyes. (F150)

Salicaceae, Willow Family

102. *Populus grandidentata* Michx. Large tooth aspen. Smith 9174. "Wasge." This bark mixed with red oak was used to cure worms. (C178, A194)

103. *Populus tremuloides* Michx. Trembling aspen. Smith 9175. "Wasge." No recognition of difference from *P. grandidentata* in name, although the Hocak know that the trees are different. The use is the same. (C179, A195)

104. *Salix amygdaloides* Anderss. [Peach-leaf willow.] Smith 9351. "Ruğixete." The root bark is used in a mixture for soreness and for female weakness.

105. *Salix bebbiana* Sarg. [Beaked willow.] Smith 9318. "Ruki" (Crooked). They say of this one that it never grows straight. They use the root bark in compounds.

106. *Salix candida* Fluegge *ex* Willd. [Sage-leaved] Willow. Smith 9317. "Ruğixoc" (Willow). The root is medicine in compounds.

Sarraceniaceae, Pitcher-plant Family

107. *Sarracenia purpurea* L. Pitcher plant. Smith 9271. "Canacawa" (Deer's ear). The root, though small, is the part used. It is a female remedy to drink when sick at the stomach of pregnancy.

Scrophulariaceae, Figwort Family

108. *Verbascum thapsus* L. Mullein. Smith 9203. "Caskanacawa" (Sheep's ear). Heat the leaves and apply to reduce a swelling. [Naturalized from Europe.]

109. *Veronicastrum virginicum* (L.) Farw. (*Leptandra virginica* (L.) Nutt.) Culver's root. Smith 9359. "Maqaski" (Medicine root bitter) or "Maqarejuzi" (Medicine root yellow). This is a physic, but also is used for a poultice for a pain anywhere.

Smilacaceae, Catbriar family

110. *Smilax tamnoides* L. (*S. hispida* Muhl. ex Torr.) Bristly sarsaparilla, [Bristly greenbriar]. Smith 9292. "Waxacsep" (Black stickers). If the berries are ground up and the powder gets in the eyes, it will blind and no medicine can cure you. The root flavor is esteemed and the root is used in a tonic medicine. (A196)

Tiliaceae, Linden Family

111. *Tilia americana* L. Basswood. Smith 9315. "Hışge." The root is used for female weakness. (C180)

Ulmaceae, Elm Family

112. *Ulmus rubra* Muhl. (*U. fulva* Michx.) Slippery elm. Smith 9282. "Mağarak Ap" (Elm leaves). Used as a sore throat lozenge and in many combinations.

Verbenaceae, Vervain Family

113. *Verbena hastata* L. Blue [common] vervain. Smith 9223. "Mağarejüksuksik" (Medicine—fine roots). The fine hair roots are used for female weakness.

114. *Verbena stricta* Vent. Blue [hoary] vervain. Smith 9301. "Caxiwico" (Green flowers). When someone is bad sick, vomits and spits blood, this root stops it.

Vitaceae, Grape Family

115. *Vitis* sp. Wild grape. [No specimen.] "Hapsic." The vines are sappy and in the spring exude a sap which can be used as a hair tonic. They also hard boil the root in water to get a hair tonic. (F154)

FUNGI

116. *Calvatia gigantea* (Pers.) Lloyd. Giant puffball. [No specimen.] "Wanağipoaxu" (Ghost sneeze). Used for a haemostatic, but it is too strong by itself and so is mixed with other medicines.

117. *Scleroderma citrinum* Pers. (*Lycoperdon* or *Sclerodermatum*). Smith 9278. "Wanağipoaxu" (Ghost sneeze). When the nose bleeds, a small quantity is puffed up the nose to stop it.

PLANT FOODS AND BEVERAGES

VASCULAR PLANTS

Aceraceae, Maple Family

118. *Acer rubrum* L. Red maple. Smith 9172. "Wisebu" (Black growing). The Hocak like the maple syrup made from this, better than the sugar maple. They say it is sweeter and whiter in color than sugar maple. (C162)

Alismataceae, Water-plantain Family

119. *Sagittaria latifolia* Willd. (*S. latifolia* var. *gracilis*) Broadleaved arrow head. Smith 9224. "Şiporo" (Rice round). This is the Indian potato whence St. Paul, Minn. was named. In early times they dried and stored it.

Anacardiaceae, Cashew Family

120. *Rhus hirta* (L.) Sudworth (*R. typhina* L.) Staghorn sumac. Smith 9171. "Haznihu" (Berries, water leaking out). The fruit is used for a beverage, sweetened by maple sugar. (M2, C163)

Araliaceae, Ginseng Family

121. *Aralia hispida* Vent. Bristly sarsaparilla. Smith 9208. "Toşanık Axuçge" (Otter armband). In olden times the root and the berries were used as food. The root is still used in vegetable soup, but the berries are not used now.

Aristolochiaceae, Birthwort Family

122. *Asarum canadense* L. [Wild ginger.] [No specimen.] "Wamaçe." A food seasoner cooked with any hard meat like fish or raccoon to make it tender and to give it good flavor. (M12)

Asclepiadaceae, Milkweed Family

123. *Asclepias exaltata* L. (*A. physaloides* Pursh.) [Tall] Milkweed. Smith 9307. "Mağic." The flowers or buds are eaten in soups in the spring. (M13, C165)

124. *Asclepias syriaca* L. Milkweed. Smith 9253. "Mağic" (Oatmeal). The flowers and buds are used in soup.

Asteraceae, Sunflower Family

125. *Taraxacum officinale* G.H. Weber ex Wiggers. Dandelion. Smith 9201. "Xawizi" (Make wine). They use the blossoms to make wine when somebody is going to get married. [Native of Eurasia.]

Betulaceae, Birch Family

126. *Betula papyrifera* Marsh. (*Betula alba* L. var. *papyrifera*) Canoe birch. Smith 9185. "Nağaska" (Tree—white skin). The inner bark is a substitute for white man's tea. (C166)

127. *Corylus americana* Walt. Hazelnut. Smith 9256. "Huksik" (Indian nut). Food. (C167)

Chenopodiaceae, Goosefoot Family

128. *Chenopodium album* L. Goosefoot, Lamb's quarters. Smith 9190. "Raxgemağejahağep" (Old ground growing). Used as greens when it first comes out, cooked with beef or any meat in soup. [A European weed.]

Ericaceae, Heath Family

129. *Gaultheria procumbens* L. Wintergreen. Smith 9209. "Waşjıkpuc" (Rabbit's nose). Indian beverage tea.

130. *Vaccinium angustifolium* Ait. (*Vaccinium pensylvanicum* Lam.) Blueberry. "Hastık" (Wonderful berries). Smith 9262. Food. The berries are dried. (M55)

131. *Vaccinium macrocarpon* Ait. Cranberry. Smith 9251. "Hocake." Where the Hocak get their name. A food.

132. *Vaccinium myrtilloides* Michx. (*V. canadense* Kalm.) Huckleberry, [Velvetleaf-blueberry]. Smith 9328. "Hawu." Food.

Fabaceae, Bean Family

133. *Amorpha canescens* Pursh. Leadplant. Smith 9270, 9331. "Xawısku" (Sweet root); "Taxumaqa" (Burnt medicine). The root is used as a food. (M57)

134. *Amphicarpaea bracteata* (L.) Fern. (*A. monoica* (L.) Ell.) Wild bean. Smith 9212, 9314. "Huñikboija" (Wild bean; Indian beans; Sets in the ground). The Indians eat the beans and storage tubers. They follow the rat trails and find storage of half a bushel or more. When beans grow full size and are harvested in October they are highly relished by the Hocak.

Fagaceae, Beech Family

135. *Quercus alba* L. White oak. Smith 9169. "Nahas-ka" (Tree nuts). Soup is made from the acorns like hominy is made. (M64)

136. *Quercus ellipsoidalis* E.J. Hill. Hill's oak [Northern pin-oak]. Smith 9280, 9339. "Piksigu'ap"; "Pik-sikrakekhu." The acorns "Huc" are to eat. (M65)

137. *Quercus macrocarpa* Michx. (var. *oliviformis* (Michx. f.) Gray) Bur oak. Smith 9316. "Piksigu." They eat the acorns. (M66)

138. *Quercus rubra* L. Red oak. Smith 9170. "Huk-sigu" or "Piksigu" (Nut tree). They make soup from the acorns in the same way as above [see *Q. alba*]. (M67, A188)

Grossulariaceae, Gooseberry Family

139. *Ribes cynosbati* L. Prickly gooseberry. Smith 9279. "Napunupunuke." A favorite food.

Juglandaceae, Walnut Family

140. *Juglans cinerea* L. Butternut. Smith 9283. "Cazuke" (Fruit tree). (M70, D156)

141. *Juglans nigra* L. Black walnut. [No specimen.] "Cakhu." (M71, D157)

Lamiaceae, Mint Family

142. *Stachys tenuifolia* Willd. (var. *aspera* (Michx.) Fern.) Rough hedge nettle. Smith 9265. "Nıtaş-jakna'ap" (Indian tea tree leaf). The leaves of this plant are dried and kept for tea, and it substitutes for regular tea from the store.

Liliaceae, Lily Family

143. *Polygonatum biflorum* (Walt.) Ell. (*P. commutatum* (J.A. & J.H. Schultes) A. Dietr.) Solomon's seal. Smith 9342. "şukhi" (Dog teeth). The root is a vegetable food to the Hocak. They cook it, then dry and store it for winter and use it in soup.

Oxalidaceae, Wood Sorrel Family

144. *Oxalis stricta* L. Yellow sorrel. Smith 9277. "Xawısku" (Weed sweet). To eat. (M81, D158)

Rosaceae, Rose Family

145. *Amelanchier laevis* Wieg. Juneberries. Smith 9178. "Wıxcawux" (Duck's berry). Food.

146. *Crataegus flabellata* (Spach) Kirchn. (*C. grayana* Egglest.) Thorn apple, [Fanleaf-hawthorn]. Smith 9287. "Cosawahu" (Berries on trees). Used as a food.

147. *Fragaria vesca* L. [Thin-leaved wild strawberry.] Smith 9343. "Hastekhu." They eat the fruit.

148. *Prunus serotina* Ehrh. Wild black cherry. Smith 9264. "Napakwijanik" (Tree cherry drunk). This is called the drunk cherry, because if you eat too many you get drunk. (M99)

149. *Prunus virginiana* L. Choke cherry. Smith 9290. "Napak" (Tree choke cherry). Food.

150. *Rubus allegheniensis* Porter. Blackberry. Smith 9173. "Hasep" (Black berry). The Indians gather large quantities for food. (M101)

151. *Rubus hispida* L. [Swamp dewberry]. Smith 9211. "Hasepxununok" (Blackberry—little). For food.

152. *Rubus idaeus* L. Red raspberry. Smith 9338. "Hazeşuce" (Red raspberries). They eat them. The leaves and vines are used as a tea substitute beverage.

Solanaceae, Nightshade Family

153. *Physalis virginiana* P. Mill. Ground cherry. Smith 9334. "Hapokhişjasu" (Owl's eyes). They eat the berries.

Vitaceae, Grape Family

154. *Vitis* sp. Wild grape. [No specimen.] "Hapsic." [Fruits] are eaten. (M115)

DYE PLANTS

VASCULAR PLANTS

Balsaminaceae, Touch-me-not Family

155. *Impatiens capensis* Meerb. (*I. biflora* Walt.) Spotted touch-me-not. Smith 9275. "Xawızi." An old time yellow dye plant to dye woven woolen bags or basswood bags.

Juglandaceae, Walnut Family

156. *Juglans cinerea* L. Butternut. Smith 9283. "Cazuke" (Fruit tree). Butternut bark dye is about the same [as walnut], "Cak." The bark is a dye to get a chocolate brown color. (M70, F140)

157. *Juglans nigra* L. Black walnut. [No specimen.] Black walnut dye is "Cak" while the tree itself is "Cakhu." (M71, F141)

Oxalidaceae, Wood Sorrel Family

158. *Oxalis stricta* L. Yellow sorrel. Smith 9277. "Xawısku" (Weed sweet). The Sorrel dye is called a tan or buckskin color and the whole plant is boiled to get the color. (M81, F144)

Papaveraceae, Poppy Family

159. *Sanguinaria canadensis* L. Bloodroot. Smith 9367. "Pexhišuc" (Red gourd). This is used for a red or pink dye. (M82)

Polygonaceae, Buckwheat Family

160. *Rumex orbiculatus* A. Gray (*R. britannica* Amer. auct. non L.) [Great water-dock.] [No specimen.] "Hišuc" (Water red). This is another fine red dye and somewhat a tanning agent at the same time. This large root does not occur right here, but the Hoçak can get it at the grist mill at Necedah or at Kilbourn. It is a fine red dye. They say it is their best. (M89)

ALGAE

161. The Hoçak use the blue moss—algae [no specimen] that grows in spring water and sometimes floats to the top. They gather and burn this to make a dye. It is called "maji" (water moss).

FIBER AND MATERIAL USES

VASCULAR PLANTS

Aceraceae, Maple Family

162. *Acer rubrum* L. (Red Maple). Smith 9172. "Wisebu" (Black growing). The wood is used in making large spoons and dishes, especially the dice and bowl game bowls. (F118)

Anacardiaceae, Cashew Family

163. *Rhus hirta* (L.) Sudworth (*R. typhina* L.) Staghorn sumac. Smith 9171. "Haznihu" (Berries, water leaking out). The wood is used for making the flutes with holes in them, love song flutes. The stick is split in half while green and the holes are then cut out in half circles. Then the two halves are glued together. (M2, F120)

Apocynaceae, Dogbane Family

164. *Apocynum androsaemifolium* L. Spreading dogbane. Smith 9192. "Waruhaxawî" (Fireflies' weed). Late in the fall it furnishes a thread material. (M7)

Asclepiadaceae, Milkweed Family

165. *Asclepias exaltata* L. (*A. phytolaccoides* Pursh). [Tall] Milkweed. Smith 9307. "Mañic." In the fall this furnishes thread from the rind or bark. (M13, F123)

Betulaceae, Birch Family

166. *Betula papyrifera* Marsh. (*B. alba* L. var. *papyrifera* (Marsh.) Spach.) Canoe birch [Paper birch]. Smith 9185. "Nañaska" (Tree-white skin). Baskets and canoes are made from the bark. (F126)

167. *Corylus americana* Walt. Hazelnut. Smith 9256. "Huksik" (Indian nut). Used for bag fiber, rough made. (F127)

Cornaceae, Dogwood Family

168. *Cornus racemosa* Lam. (*C. paniculata* L'Hér.) Panicked dogwood. Smith 9263. "Maşiguşge" (Arrow wood). Its chief use is to make arrows. (M49)

Cyperaceae, Sedge Family

169. *Scirpus cyperinus* (L.) Kunth. Rushes. Smith 9259. "Caiksap." Before the whitemen came, there were no locks, so if the Indians wanted to hide something, they dug a hole, lined it with this rush and concealed it again.

Fabaceae, Bean Family

170. *Gymnocladus dioica* (L.) K. Koch. Kentucky coffee tree. [No specimen.] "Nañacaknañkhu." The seeds are used for chips and dice in Indian dice and bowl game. (M61)

Juncaceae, Rush Family

171. *Juncus canadensis* J. Gay ex Laharpe. (*J. scirpoides* Lam.) Canadian rush. Smith 9233. "Sa." For making mats.

Oleaceae, Olive Family

172. *Fraxinus nigra* Marsh. Black ash. Smith 9289. "Rakhap." For basket splits.

Osmundaceae, Royal Fern Family

173. *Osmunda claytoniana* L. Ostrich fern [Interrupted fern]. Smith 9179. "Çukeresge" or "Çuşereke" (Stand up—lots of leaves). Hoçak use it for making a bed when they go hunting. (M80)

Pinaceae, Pine Family

174. *Larix laricina* (DuRoi) K. Koch. Tamarack. Smith 9325. "Casak." Bark wigwams are made from the big ones—1 ½ feet in diameter. You can't find them now. (M83)

175. *Pinus banksiana* Lamb. Jack pine. Smith 9299. "Waziguşge" (Pine wood). The central part of the root is used to sew birch bark canoes.

176. *Pinus strobus* L. White pine. Smith 9167. "Wazi." The Hoçak preferred the white pines for making big dugout canoes and say that they will last a long time. (M85)

Polygonaceae, Buckwheat Family

177. *Polygonum convolvulus* L. [Black bindweed]. Smith 9248. "Waruczugu" (Growing in field). Used as a string for tying. [Native of Europe.]

Salicaceae, Willow Family

178. *Populus grandidentata* Michx. Large tooth aspen. Smith 9174. "Wasge." Indian children make toys out of it. (M102, A194)

179. *Populus tremuloides* Michx. Trembling aspen. Smith 9175. "Wasge." The use is the same as *P. grandidentata*. (M103, A195)

Tiliaceae, Linden Family

180. *Tilia americana* L. Basswood. Smith 9315. "Hišge." Used to make string, bags, fancy and hunting bags. The wood is used for cradles or baby boards. (M111)

Typhaceae, Cat-tail Family

181. *Typha latifolia* L. Cattails. Smith 9242. "Wicihu" (Leaves mats) or "Kšohi" (Baby's coat). Used as a padding or to make mats.

MOSSES

Polytrichaceae

182. *Polytrichum commune* Hedw. (*P. juniperinum* (Willd.) Hedwig.) Smith 9181. "Xaje" (Soft, spongy). Used to keep tree [roots] wet a long time before planting.

Sphagnaceae

183. *Sphagnum fallax* (Klinggr.) Klinggr. (*S. warnstorffii* Russ. var. *virescens* Russ. in Warnst.) [Sphagnum moss.] Smith 9182. "Xaje" (Soft, spongy). The Indians say it is soft or spongy and use it to keep tree roots wet.

ANIMALS

Glue was made from deerhorn [*Odocoileus* sp., Cervidae], but it doesn't hold long. The best glue is made out of the egg of the sturgeon [*Acipenser fulvescens* Raf., Acipenseridae]. Glue can also be obtained from the back bones of the sturgeon.

ANIMAL FOODS AND MEDICINES

Asteraceae, Sunflower Family

184. *Liatris scariosa* (L.) Willd. Blazing star; Dotted button snakeroot. Smith 9300, 9302. "Cesičošok" (Buffalo's tail). Fed to a weak pony, it fleshes him up. When horses are ill, they feed the root to pep them up. (M28)

Equisetaceae, Horsetail Family

185. *Equisetum arvense* L. [Common horsetail]. Smith 9347. "Hinik." Should horses eat too much of this, they would die right away if one ran them. Let them stand for two days. If they eat only a little, they will get fat. The root is horse medicine. The tea acts as a urinary for horses.

Fabaceae, Bean Family

186. *Trifolium pratense* L. Red clover. Smith 9189. "Xawijop" (Four leaved). No use except to feed horses. [Native of Europe.]

187. *Vicia americana* Muhl. ex Willd. [American Vetch]. (*Lathyrus* sp.) Smith 9268. "Pišgehunik" (Night hawk bean). Eaten by horses. No [other] use ascribed.

Fagaceae, Beech Family

188. *Quercus rubra* L. Red oak. Smith 9170. "Huk-sigu" or "Piksigu" (Nut tree). It is used to cure worms in horses. The tincture or tea of this combination is used to soak corn which is fed to the horses to expel worms. (M67, F138)

Liliaceae, Lily Family

189. *Clintonia borealis* (Ait.) Raf. Northern clintonia. Smith 9260. "Šumaka" (Dog medicine). The root is ground up for dog medicine, [in case of] distemper. It is also used to kill worms in a dog. (M75)

Plantaginaceae, Plantain Family

190. *Plantago media* L. Plantain. Smith 9323. Feed a little at a time to horses to cure them. [Native of Europe.] (M87)

Polygalaceae, Milkwort Family

191. *Polygala sanguinea* L. Milkwort. Smith 9226, 9227. "Cesičošok" (Buffalo tail). If horses have distemper, this is cut up and put in their feed. (M88)

Rhamnaceae, Buckthorn Family

192. *Ceanothus americanus* L. [New Jersey tea.] Smith 9332. "Cawaruc" (Deer food). The deer eat the leaves. (M94)

Rubiaceae, Madder Family

193. *Mitchella repens* L. Partridge berry. Smith 9319. [They] don't use the partridge berry and only know that the quail eat the berries.

Salicaceae, Willow Family

194. *Populus grandidentata* Michx. Large tooth aspen. Smith 9174. "Wasge." This bark mixed with red oak was used to cure worms in horses. (M102, C179)

195. *Populus tremuloides* Michx. Trembling aspen. Smith 9175. "Wasge." The use is the same as *P. grandidentata*. (M103, C180)

Smilacaceae, Catbriar Family

196. *Smilax tamnoides* L. (*S. hispida* Muhl.) Bristly sarsaparilla. Smith 9292. "Waxacsep" (Black stickers). When horses are weak, a little of the root at a time, fed once a day in their feed, will build them up. (M110)

NOT USED, OR USE UNKNOWN

VASCULAR PLANTS

Aceraceae, Maple Family

197. *Acer negundo* L. Box elder. Smith 9269. "Našošge" (Tree grows fast). No use for it is known. They merely note the rapidity with which the tree grows in its name.

Asteraceae, Sunflower Family

198. *Arctium minus* Bernh. [Common burdock.] Smith 9274. "Waraxgaxgakpe" (stickers). Not used. [Native of Eurasia.]

199. *Artemisia campestris* L. ssp. *caudata* (Michx.) Hall & Clem. (*Artemisia caudata* Michx.) [Wormwood; Sage] Smith 9353. [Consultants] don't know [it].

200. *Bidens coronata* (L.) Britt. (*B. trichosperma* (Michx.) Britt.). [Northern tickseed-sunflower.] Smith 9240, 9266. "Rakesep" (Black weed). Don't know.

201. *Conyza canadensis* (L.) Cronq. (*Erigeron canadensis* L.) Horseweed. Smith 9296. "Rake" (Weed). Not used.

202. *Coreopsis* sp. (*C. grandiflora* Hogg. ex Sweet). [Tickseed.] Smith 9232. [Specimen is in poor condition and may be *C. verticillata* L. or *C. tinctoria* Nutt.] Don't know.

203. *Coreopsis palmata* Nutt. [Finger-tickseed.] Smith 9330. Don't know it.

204. *Doellingeria umbellata* (P. Mill.) Nees (*Aster umbellatus* P. Mill.) [Tall flat-topped white aster.] Smith 9239. "Poaxu." [No note of use, but species called "Poaxu" are generally used as smudges.]

205. *Euthamia graminifolia* (L.) Nutt. (*Solidago graminifolia* (L.) Salisb.) Fragrant Goldenrod. Smith 9205. "Jiraisagu." No use ascribed to it, unless maybe sweatbath.

206. *Hieracium scabrum* Michx. [Sticky hawkweed.] Smith 9215, 9216. Not known, although some think it is used by others.

207. *Tanacetum vulgare* L. [Tansy.] Smith 9310. [The Hoçak] don't use it. [They] know the whites use it. [Native of the Old World.]

Betulaceae, Birch Family

208. *Betula pumila* L. var. *glandulifera* Regel (*B. glandulifera* (Regel) Butler). Dwarf birch. Smith 9243. "Naşip" (Tree dwarf). No use.

Campanulaceae, Bellflower Family

209. *Campanula rotundifolia* L. [Harebell.] Smith 9350. [Consultants] don't use it, but some others use the root.

Caprifoliaceae, Honeysuckle Family

210. *Viburnum acerifolium* L. Maple leaved viburnum. Smith 9186. "Naşuc" (Tree bear). Not used so far as known.

Caryophyllaceae, Pink Family

211. *Silene noctiflora* L. Bladder campion. Smith 9193. "Xawihokirikisa" (Close at night). No use discovered. [Native of Europe.]

Commelinaceae, Spiderwort Family

212. *Tradescantia ohiensis* Raf. (*T. reflexa* Raf.) [Smooth spiderwort.] Smith 9337. Don't know.

Cornaceae, Dogwood Family

213. *Cornus canadensis* L. Bunchberry. Smith 9210. "Wakere" (Bad taste). Some use it, but [informant does] not know how.

Cyperaceae, Sedge Family

214. *Eriophorum viridicarinatum* (Engelm.) Fern. [Dark-scale cotton-grass.] Smith 9322. Don't use it.

Equisetaceae, Horsetail Family

215. *Equisetum hyemale* L. [Common scouring-rush.] Smith 9348. [Collected after *E. arvense*, which is a horse medicine; no note about use.]

Ericaceae, Heath Family

216. *Andromeda polifolia* L. var. *glaucophylla* (Link) DC. (*A. glaucophylla* Link). [Bog-rosemary.] Smith 9249. "Naşikrupak" (Sticks bunch). No use.

217. *Epigaea repens* L. Trailing arbutus. Smith 9326. "Xawiskapanapi" (White smells good). Don't use it.

218. *Gaultheria hispidula* (L.) Muhl. ex Bigelow (*Chiogetes hispidula* (L.) Torr. & Gray). [Creeping Snowberry.] Smith 9327. Don't know it.

Fumariaceae, Fumitory Family

219. *Corydalis sempervirens* (L.) Pers. [Corydalis.] Smith 9305. Used but name forgotten.

Geraniaceae, Geranium Family

220. *Geranium bicknellii* Britton. [Wild geranium.] Smith 9298. "Xawiwawara" (Pretty flowers). Not used.

Lamiaceae, Mint Family

221. *Hedeoma hispidum* Pursh. [Rough false pennyroyal.] Smith 9366. Don't know.

222. *Lycopus uniflorus* Michx. [Northern water-horehound.] Smith 9324. Don't know.

Linaceae, Flax Family

223. *Linum usitatissimum* L. Flax. Smith 9333. Don't use it. [Escaped European cultigen.]

Lycopodiaceae, Clubmoss Family

224. *Lycopodium obscurum* L. [Princess-pine]. Smith 9321. "Wazininisge" (Looks like pine). The Hoçak don't use it, but gather it for white people to use in decorations.

Malvaceae, Mallow Family

225. *Malva rotundifolia* L. [Dwarf mallow.] Smith 9247. "Xawiwaiskap" (weed bead [?]). No use. [Native of Europe.]

Onagraceae, Evening Primrose Family

226. *Epilobium angustifolium* L. Fire weed. Smith 9199. Said to be a recent migrant to [Hoçak] country

and not known to them. It has been here only five or six years.

227. *Epilobium coloratum* Biehler. [Eastern willow-herb.] Smith 9237. Don't know.

228. *Oenothera biennis* L. Evening primrose. Smith 9194. "Raxgesuserec" (Long seed). No use discovered.

Orchidaceae, Orchid Family

229. *Malaxis unifolia* Michx. (*Microstylis unifolia* (Michx.) BSP.) [Green adder's mouth.] Smith 9213. No use.

230. *Spiranthes cernua* (L.) Richart. [Nodding ladies-tresses.] Smith 9229. Don't know.

Poaceae, Grass Family

231. *Hordeum jubatum* L. Squirrel tail grass. Smith 9254. "Xawışıcserec" (Weed long tail). While they have a name for this, it has no use in any manner.

Polygalaceae, Milkwort Family

232. *Polygala polygama* Walt. [Bitter milkwort]. Smith 9344. They don't know it.

Polygonaceae, Buckwheat Family

233. *Polygonum amphibium* L. (*Polygonum muehlenbergii* (Meisn.) Wats.) [Water smartweed.] Smith 9245. "Xawıokereşuc" (Weed red flowers). No use.

234. *Polygonum arifolium* L. [Halberd-leaved tear-thumb.] Smith 9246. "Xawımaşısu" (Yellow head). No use.

235. *Polygonum pensylvanicum* L. (var. *laevigatum* Fernald, f. *pallescens* Stanford) [Pennsylvania smartweed.] Smith 9228. Don't use it.

236. *Polygonum sagittatum* L. [Arrow-leaved tear-thumb.] Smith 9219. "Waraxgapxgapke" (Sticky). Not used.

Primulaceae, Primrose Family

237. *Lysimachia quadriflora* Sims. (*Steironema quadriflorum* (Sims.) Hitchcock). Fourleaved loosestrife. Smith 9197. "Raxge'apjop" (Four leaves). [There is] a use, but not known to informant.

238. *Trientalis borealis* Raf. (*Trientalis americana* Pursh). [Starflower.] Smith 9329. Don't know.

Pyrolaceae, Shinleaf Family

239. *Chimaphila umbellata* (L.) Barton. [Prince's pine.] Smith 9346. Don't know it.

Ranunculaceae, Buttercup Family

240. *Clematis virginiana* L. [Virgin's bower.] Smith 9311. Don't know it.

Rosaceae, Rose Family

241. *Agrimonia gryposepala* Wallr. [Common agrimony.] Smith 9295. "Waraxgaxgapke" (Stickers). No use.

242. *Spiraea alba* DuRoi (*S. salicifolia* L.) [Meadowsweet.] Smith 9230. Don't know.

243. *Spiraea tomentosa* L. var. *rosea* (Raf.) Fern. (*S. tomentosa* L.) [Hardhack.] Smith 9231. Don't know.

Rubiaceae, Madder Family

244. *Galium concinnum* Torr. & Gray. [Shining bedstraw.] Smith 9352. Don't know.

Rutaceae, Rue Family

245. *Zanthoxylum americanum* P. Mill. Prickly ash. [No specimen.] "Nāpahi" (Tree stick sharp). They use it, too, but none grows right close to Monegar's.

Scrophulariaceae, Figwort Family

246. *Linaria vulgaris* Miller. [Butter-and-eggs.] Smith 9349. Don't know. [Native of Europe.]

Vitaceae, Grape Family

247. *Parthenocissus quinquefolia* (L.) Planch. (*Psedera quinquefolia* (L.) Greene). Virginia creeper. Smith 9286. "Nā'apxete" (Big leaves). Not used.

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BOOK REVIEW

At the Desert's Green Edge. An Ethnobotany of the Gila River Pima. Amadeo M. Rea. 1997. The University of Arizona Press, 1230 Park Ave., Tucson, AZ 85719. 430 pp. (hardcover). \$60.00. ISBN 0-8165-1540-9.

This book began in 1963 when the author went to the Arizona Pima reservation to teach high school. Rea, an ornithologist by training, wrote his first book *Once a River* (1983, University Arizona Press, Tucson) detailing recent habitat changes on the reservation and consequent impacts on birds and plants. During those years he became better acquainted with the people and their plants. *At the Desert's Green Edge* is the phenomenal result.

Published in a coffee-table size (9×12 in.), three-column text, with black and white photographs, line drawings of habitats and plant parts, and illustrated by Takashi Ijichi's *sumi-e* paintings, this is a volume to behold. Yet, those are just the surface impressions. Within is "The Pima and Their Country" (pp. 5-90), "Gila Pima Plants" (pp. 91-376), four appendices (pp. 377-400), a bibliography (pp. 401-411), and index. Rea chose to continue calling the people by their "outside" name. Pima is the name usually associated with them, and simplifies a complex array of group relationships that he discusses in detail (pp. 5-14).

Part one describes the people, the changes in their habitat including the draining of their river, and basic information about their language. Next, Rea discusses the Pima classification of plants, and lists them by their *O'odham* (the people's word for themselves) names. In doing this, he provides us with a sketch of their worldview. Some of their plant groups are *Vashai* (grasses & grassy plants), *Livagi* (eaten greens), and *E'es*

(crops). Within the groups, the species are arranged alphabetically by genus. All organisms are listed by common and scientific name in the index. This makes the book useful to *O'odham* and non-*O'odham*.

The book includes 250 plants that are (or recently were) used by these people. Each entry puts the species in historical context. For example, *kuup chevel-dakud* is "hairlike algae growing in rivers." Although this alga was once common in Pima country, its name is not recognized by some now. On the devastatingly arid land of the modern Pima reservation, it is hard to believe that these were once a riverine people living in the same places by agriculture and fishing. Much more detail is given for plants like *hui* (*Prosopis velutina*), *ki'aki* (*Amaranthus hybridus*), *ko'okol* (*Capsicum* spp.), *haal* (*Cucurbita* spp.), and *huun* (*Zea mays*).

Amadeo Rea and I met in 1989. He impressed me as unusually sensitive to the Pima, their lands, and their ways. We also talked about plants and animals, and he was knowledgeable about all of these topics. Those impressions are reinforced on each page of this book. Amadeo has achieved the nearly impossible. He has salvaged the remaining collective knowledge of a fragmented and partly acculturated people and presented it in a remarkably palatable and useful format. This is an outstanding book that adds another key piece of the Sonoran human and habitat puzzle. Every person interested in American people and plants should use this book.

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