

VASCULAR PLANTS UTILIZED BY THE PLAINS APACHE IN SOUTHWESTERN OKLAHOMA

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ABSTRACT.—Based on field studies conducted in 1963 and 1964, the Plains Apache in southwestern Oklahoma utilized at least 105 species of vascular plants as edible plants and for material culture, ritual and medicinal purposes, and personal care and adornment. Most species (98) are native to western Oklahoma and the Great Plains. The only North American exotics are watercress, white sweetclover, and Johnsongrass; peyote, sweetgrass, frosted mint, and mescal bean are the only North American natives used that do not occur in Oklahoma. We propose that many of the plants utilized by the Plains Apache have a long history of usage among numerous tribes in the temperate steppe ecoregion of North America, because 44 species appear in the archaeobotanical record throughout the Great Plains. Although the Plains Apache were historically nomadic and had an economy based in large part on the American Bison, they have a rich ethnobotanical heritage.

INTRODUCTION

Ethnobotanical studies among tribal groups from the Great Plains of North America generally are few in number, concentrated in the early decades of the twentieth century, and confined mostly to the northern and central regions (Kindscher 1987, 1992; Pfeiffer 1993; Adair 2003, Moerman 2006). Among traditionally nomadic hunting and gathering tribes in the southern plains, plant use among the Comanche (Carlson and Jones 1940, Jones 1968), Kiowa (Vestal and Schultes 1939), and Plains Apache (Jordan 1965) have been investigated. The Plains Apache are distinct culturally from the Apache of the Southwest, and were previously referred to as the 'Kiowa-Apache' or even erroneously considered a band of the Kiowa. The Plains Apache, similar to all Apacheans living east of the Rocky Mountains, were a small group whose traditional economy was centered on bison hunting supplemented by gathering (Schroeder 1974, Foster and McCullough 2001). They inhabited the western and southern Great Plains (Montana and North Dakota south to New Mexico and Oklahoma) in the High Plains and Osage Plains physiographic regions (Hunt 1967) since at least the 17th century (LaSalle report of 1682 in Foster 2003, Foster and McCullough 2001). The Plains Apache have an ethnobotanical heritage that is based historically and ecologically in the Temperate Steppe Ecoregion of North America (Bailey 1995) where they reside currently. We report here for the first time a list of plants utilized by the Plains Apache based on the field research of Jordan (1965, unpublished manuscript).

The North American temperate steppes have a continental climate characterized by hot summers and cold winters and an annual precipitation gradient increasing from west (<38 cm) to east (>76 cm). The surface topography has low relief, an eastward slope from 1675 m to less than 450 m, and valleys that are typically broad, steep sided, and shallow. The potential natural vegetation of the region inhabited by the Plains Apache is predominantly grassland with some woodland and forest associations. Grasslands are classified generally as Grama-Buffalo short grass (*Bouteloua-Buchloë*), Bluestem-Grama mixed grass (*Schizachyrium/Andropogon-Bouteloua*), Tallgrass (*Andropogon/Schizachyrium-Panicum-Sorghastrum*), Sandsage Bluestem (*Artemisia-Schizachyrium*), and Shinnery Oak-Bluestem (*Quercus-Andropogon/Schizachyrium*) communities. Vegetation with high cover of woody plants include Postoak-Blackjack Oak (*Quercus*) Forest (i.e., the Cross Timbers) and riverine woodland (Bruner 1931, Kuchler 1964, Hoagland 2000).

Most members of the Plains Apache now live in southwestern Oklahoma with a population around 2000 (Schweinfurth 2002). Because the Plains Apache were made to take individual allotments of 160 acres each from 1902 to 1908, there is no reservation currently (Schweinfurth 2002). Southwestern Oklahoma has the vegetation and flora characteristic of the Great Plains (Great Plains Flora Association 1986, Bailey 1995), Cross Timbers (Dyksterhuis 1948), and the North American Prairie floristic province (Takhtajan 1986). The tribe has subsisted and persisted with similar habitats and vegetation at least since contact with

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European explorers and settlers. Along with the Comanche and Kiowa, they have resided in southwestern Oklahoma since 1867. Members of the Plains Apache are concentrated near the towns of Anadarko, Apache, Boone, Carnegie, and Fort Cobb in the general area surrounding the juncture of southern Caddo, western Comanche, and eastern Kiowa counties. This area is characterized by a flat to rolling topography ranging in elevation from 360 m to 450 m, with the highest elevations (>730 m) in the Wichita Mountains of northern Comanche County.

The primary goal of this study was to list the plants utilized by the Plains Apache as identified by six Plains Apache elders. Discussion of the cultural, ritualistic, and cosmological significance of their plants is presented in Jordan (1965, unpublished manuscript). Although many other plants were undoubtedly important formerly in Apache life, information on their identity and use were not obtained and may be beyond recovery, because of the loss of cultural information.

MATERIALS AND METHODS

Information concerning plant use by the Plains Apache was obtained through interviews, observations, and field excursions by the senior author with two male and four female tribal elders in 1963 and 1964. Six principal informants provided most of the information and are now deceased: Fred Bigman, Ray Blackbear, Gertie Chalepah, Rose Chaletsin, Connie May Saddleblanket, and Louise Saddleblanket. Based on the age and experiences of the informants, most data about plant utilization date from around 1890 to 1930, but some present uses may be quite old and extend back into the pre-contact period.

Plants were placed into four ethnobotanical categories: edible plants, plants important for material culture, ritual and medicinal plants, and plants used for personal care and adornment. The list of medicinal plants recovered is less complete than those of other categories, because medicines were the property of healing specialists and their manner of preparation was not common knowledge (Jordan 1965). Plants classified as 'mates' (i.e., plants similar in appearance to those of cultural significance) and those used for firewood, fodder, crops, or bouquets were not included in the list presented here, but are available in Jordan (1965).

Most identifications were obtained directly from plant material brought by the senior author to the Robert Bebb Herbarium of the University of Oklahoma. Identifications were provided by George J. Goodman, a plant systematist and former curator of

the Bebb Herbarium; the second author verified naming of 19 voucher specimens. Five identifications were obtained without plant specimens and were based on detailed descriptions provided by informants. Because George Goodman was an acknowledged expert of the flora of Oklahoma (e.g., Goodman 1958), we have high confidence in our species identifications. Plant nomenclature including common names followed The PLANTS database (USDA, NRCS 2006). Several species were identified only to genus.

RESULTS AND DISCUSSION

At least 105 species in 86 genera of vascular plants representing 46 families were utilized by the Plains Apache; results are presented in Tables 1 and 2. Most plants (98) are native to southwestern Oklahoma, occur throughout the western and southern Great Plains, and most likely represent plants that were familiar to the Plains Apache during their history. Support for this latter hypothesis is inferred from the Great Plains paleoethnobotanical record (Adair 2003), which lists 44 species in 35 genera shared with the Plains Apache ethnobotanical survey (Jordan 1965).

Watercress (*Nasturtium officinale*), white sweet-clover (*Melilotus alba*), and Johnsongrass (*Sorghum halapense*) are the only North American exotics represented in the ethnobotanical survey of the Plains Apache (Jordan 1965). Jordan (1965) observed that most introduced plants were unnamed, ignored by the informants, and dismissed as "white man's plants." Peyote (*Lophophora williamsii*), sweetgrass (*Hierochloa odorata*), frosted mint (*Poliomintha incana*), and mescal bean (*Sophora secundiflora*) are native North American plants that do not occur in Oklahoma. Because they are important in rituals and for personal use, they were obtained via travel, trade and purchase (Jordan 1965, unpublished field notes). Pinyon pine (*Pinus edulis*) is native to Oklahoma, but occurs naturally only in the extreme western part of the panhandle (Cimarron County) and is distant from the present location of the Plains Apache. Pinyon seeds also were obtained through travel and trade.

The largest category of plants used by the Plains Apache are the 'edible plants' (48 species) followed by plants used in material culture (43 species), in rituals or for 'medicinal' use (39 species), and for personal care and adornment (7 species). Twenty-seven plants have multiple usages in more than one category. Three species of edible plants, groundnut (*Apios americana*), potato dwarf dandelion (*Krigia dandelion*), and tuberous desert-chicory (*Pyrrhophappus grandiflorus*), were identified by detailed descriptions provided by inform-

ants, whereas two species of medicinal plants, stiff greenthread (*Thelesperma filifolium*) and sneezeweed (*Helenium* sp.), were identified in a similar manner. Additional species of edible and medicinal plants were described by informants but not included in Jordan (1965), because plants were not observed and identities could not be determined. Based on the large number of plants in Table 2, it is apparent that the Plains Apache had a rich ethnobotanical tradition.

The present inventory lists plants used by the Plains Apache in the mid-1960s in southwestern Oklahoma - several generations after the near extermination of the American Bison and after high mortality and forced settlement permanently altered their traditional way of life. Although the tribe was forced to settle in Oklahoma during the latter part of the 19th century, they brought with them a long cultural tradition

and a rich understanding of natural resource use and management adapted to the Great Plains region. Because the vegetation and landscapes of Caddo, Comanche, and Kiowa counties were similar to those of their ancestral range in the western Great Plains, many of the culturally and economically significant plants of the Plains Apache reflect a long history of usage and knowledge predating their settlement. We hope that this summary list of the plants stimulates interest and honors the cultural traditions of the Plains Apache. Cultural knowledge is diminishing rapidly with each passing generation; it is imperative to record and archive as much information and material as possible. We hope this report is a contribution to that effort.

Table 1. Summary of vascular plants used by Plains Apache in Oklahoma recorded by J. A. Jordan in 1963-64. Plants classified as 'mates' and those used for firewood, fodder, crops, or bouquets are not included. Only one species included for *Crataegus*, *Cuscuta*, *Fraxinus*, *Rubus*, and *Typha*.

Total number of species	105
Total number of species native to North America	102
Total number of species native to Oklahoma	98
Species used as edible plants	48
Species used for material culture	43
Species used as ritual and medicinal plants	39
Species used for personal care and adornment	7
Species with multiple uses	27
Total number of genera	86
Total number of families	46

Table 2. Vascular plants used by the Plains Apache in southwestern Oklahoma recorded by J. A. Jordan in 1963-64. All species are native to Oklahoma unless indicated. * = voucher specimen deposited at OKL; † = not native to Oklahoma, †† = not native to North America.

Scientific plant name	Common name	Ethnobotanical use category	Plant part used
EQUISETALES			
Equisetaceae			
<i>Equisetum hyemale</i> L.	scouringrush horsetail	material culture	stem
CONIFERS			
Cupressaceae			
<i>Juniperus pinchotii</i> Sudworth	Pinchot's juniper	ritual/ medicinal	leaf
<i>Juniperus virginiana</i> L. *	eastern redcedar	material culture	wood
Pinaceae			
<i>Pinus</i> sp.	pine	material culture	wood
<i>Pinus edulis</i> Engelm.	twoneedle pinyon	edible	seed, resin
ANGIOSPERMS			
Agavaceae			
<i>Yucca glauca</i> Nutt. *	soapweed yucca	edible	flower, immature inflorescence
Anacardiaceae			
<i>Rhus aromatica</i> Ait. *	fragrant sumac	material culture	leaf
<i>Rhus glabra</i> L.	smooth sumac	personal care	root
Apiaceae			
<i>Apios americana</i> Medik.	groundnut	edible	tuber
Asclepiadaceae			
<i>Asclepias</i> sp.	milkweed	edible	immature fruit (follicle)
<i>Asclepias stenophylla</i> Gray	slimleaf milkweed	ritual/ medicinal	root
<i>Asclepias tuberosa</i> L.	butterfly milkweed	ritual/ medicinal	root
<i>Matelea biflora</i> (Raf.) Woods.	star milkvine	edible	immature fruit, immature seed
		ritual/ medicinal	root
Asteraceae			
<i>Ambrosia psilostachya</i> DC. *	Cuman ragweed	ritual/ medicinal	leaf
<i>Ambrosia trifida</i> L. var. <i>texana</i> Scheele *	Texan great ragweed	material culture	whole plant
<i>Amphichayris dracunculoides</i> (DC.) Nutt.	prairie broomweed	material culture	stem, leaf
		ritual/ medicinal	stem, leaf

Table 2. Continued

Scientific plant name	Common name	Ethnobotanical use category	Plant part used
<i>Artemisia filifolia</i> Torr.	sand sagebrush	material culture personal care ritual/ medicinal	stem, leaf stem, leaf stem, leaf
<i>Artemisia ludoviciana</i> Nutt. ssp. <i>mexicana</i> (Willd. ex Spreng.) Keck *	white sagebrush		
<i>Dyssodia papposa</i> (Vent.) A. S. Hitchc.	fetid marigold	ritual/ medicinal	inflorescence
<i>Echinacea angustifolia</i> DC. <i>Helenium</i> sp. <i>Helianthus</i> sp.	blacksamson echinacea sneezeweed sunflower	ritual/ medicinal ritual/ medicinal material culture edible edible	root inflorescence stem, leaf rhizome, tuber corm corm stem
<i>Krigia dandelion</i> (L.) Nutt. <i>Liatris punctata</i> Hook.	potato dwarf dandelion dotted blazing star	ritual/ medicinal ritual/ medicinal	
<i>Lygodesmia juncea</i> (Pursh) D. Don ex Hook.	rush skeletonplant	edible	root (tuberiform swelling)
<i>Pyrrhopappus grandiflorus</i> (Nutt.) Nutt.	tuberous desert-chicory	edible	sap sap leaf seed inflorescence
<i>Silphium laciniatum</i> L.	compassplant	ritual/ medicinal ritual/ medicinal edible ritual/ medicinal	stem, leaf
<i>Solidago</i> sp. <i>Thelesperma filifolium</i> (Hook.) Gray var. <i>intermedium</i> (Rydb.) Shimmers	goldenrod stiff green thread	ritual/ medicinal ritual/ medicinal edible ritual/ medicinal	root
<i>Vernonia baldwinii</i> Torr. *	Baldwin's ironweed	material culture	leaf
Boraginaceae <i>Lithospermum incisum</i> Lehm. *	narrowleaf stone seed	ritual/ medicinal	leaf
Brassicaceae <i>Nasturtium officinale</i> R. Br. ††	watercress	edible	entire plant
Cactaceae <i>Lophophora williamsii</i> (Lem. ex Salm-Dyck) Coult. † <i>Escobaria missouriensis</i> <i>Opuntia macrorhiza</i> Engelm.	peyote Missouri foxtail cactus twist spine pricklypear	ritual/ medicinal edible edible ritual/ medicinal personal care	fruit fruit stem (pads) spine
Caprifoliaceae <i>Viburnum rufidulum</i> Raf.	rusty blackhaw	edible	fruit

Table 2. Continued

Scientific plant name	Common name	Ethnobotanical use category	Plant part used
Caryophyllaceae			
<i>Paronychia virginica</i> Spreng.	yellow nailwort	material culture ritual/medicinal	leaf whole plant
Convolvulaceae			
<i>Ipomoea leptophylla</i> Torr.	bush morning-glory	ritual/medicinal	root
Cornaceae			
<i>Cornus drummondii</i> C. A. Mey. *	roughleaf dogwood	material culture	wood
Cucurbitaceae			
<i>Cucurbita foetidissima</i> Kunth	Missouri gourd	ritual/medicinal	root, stem, leaf, fruit
Cuscutaceae			
<i>Cuscuta</i> sp.	dodder	ritual/medicinal	entire plant
Cyperaceae			
<i>Cyperus setigerus</i> Torr.	lean flatsedge	edible	stem (culm) base
Ebenaceae			
<i>Diospyros virginiana</i> L.	common persimmon	edible	fruit
Fabaceae			
<i>Baptisia bracteata</i> Muhl. ex Ell. var <i>leucophaea</i> (Nutt.) Kartesz & Ghandi	longbract wild indigo	material culture	fruit (legume)
<i>Dalea enneandra</i> Nutt.	nineanther prairie clover	ritual/medicinal	stem
<i>Gymnocladus dioica</i> (L.) K. Koch	Kentucky coffeetree	material culture	wood, seed
<i>Lespedeza capitata</i> Michx. *	roundhead lespedeza	edible	leaf
<i>Melilotus alba</i> Medikus ††	white sweetclover	ritual/medicinal	leaf
<i>Mimosa microphylla</i> Dry.	littleleaf sensitive-briar	personal care	stem, leaf, flower
<i>Pediomelum esculentum</i> (Pursh) Rydb. *	large Indian breadroot	ritual/medicinal	flower
<i>Prosopis glandulosa</i> Torr. var. <i>glandulosa</i>	honey mesquite	edible	root
<i>Psoraleidum tenuiflorum</i> (Pursh) Rydb.	slimflower scurfpea	edible	fruit (legume), seed
<i>Robinia psuedoacacia</i> L.	black locust	material culture	stem
<i>Sophora secundiflora</i> (Ortega) Lag. ex DC. †	mescal bean	material culture	wood
Fagaceae			
<i>Quercus macrocarpa</i> Michx.	bur oak	material culture personal adornment	seed seed
		edible	nut (acorn)
		material culture	wood

Table 2. Continued

Scientific plant name	Common name	Ethnobotanical use category	Plant part used
<i>Quercus marilandica</i> Münchh.	blackjack oak	ritual/medicinal	leaf
<i>Quercus muhlenbergii</i> Engelm.	chinkapin oak	ritual/medicinal	leaf
<i>Quercus shumardii</i> Buckl.	Shumard's oak	edible	nut (acorn)
<i>Quercus stellata</i> Wangehn.	post oak	material culture	wood
		edible	nut (acorn)
		material culture	wood
Grossulariaceae			
<i>Ribes aureum</i> Pursh var. <i>villosum</i> DC.	golden currant	edible	fruit
Hippocastanaceae			
<i>Aesculus glabra</i> Willd. var. <i>arguta</i> (Buckl.) B. L. Robins.	Ohio buckeye	material culture	seed
Juglandaceae			
<i>Carya illinoensis</i> (Wangenh.) K. Koch	pecan	edible	seed
<i>Juglans microcarpa</i> Berl. var. <i>microcarpa</i>	little walnut	material culture	wood
		edible	seed
		material culture	wood, fruit husk
		personal care	hard shell
Lamiaceae			
<i>Monarda fistulosa</i> L. ssp. <i>fistulosa</i> var. <i>fistulosa</i> *	wild bergamot	personal care	leaf, flower
<i>Poliomintha incana</i> (Torr.) Gray †	frosted mint	ritual/medicinal	stem, leaf, flower
<i>Teucrium canadense</i> L.	Canada germander	ritual/medicinal	leaf
Liliaceae			
<i>Allium canadense</i> L. var. <i>fraseri</i> Ownbey	Fraser meadow garlic	edible	bulb, leaf
<i>Allium drummondii</i> Regel	Drummond's onion	edible	bulb, leaf
<i>Allium perdulce</i> S. V. Fraser *	plains onion	edible	bulb, leaf
Loasaceae			
<i>Mentzelia nuda</i> (Pursh) Torr. & Gray var. <i>stricta</i> (Osterhout) Harrington	bractless blazingstar	material culture	leaf
Malvaceae			
<i>Callirhoe involucrata</i> (Torr. & Gray) Gray	purple poppymallow	edible	root

Table 2. Continued

Scientific plant name	Common name	Ethnobotanical use category	Plant part used
Martyniaceae			
<i>Proboscidea louisianica</i> (P. Mill.) Thellung	ram's horn	edible ritual/ medicinal	seed seed
Menispermaceae			
<i>Cocculus carolinus</i> (L.) DC.	Carolina coralbead	edible	fruit
Moraceae			
<i>Maclura pomifera</i> (Raf.) Schneider	osage orange	material culture	wood
<i>Morus rubra</i> L.	red mulberry	edible material culture ritual/ medicinal	fruit wood root
Nelumbonaceae			
<i>Nelumbo lutea</i> Willd.	American lotus	edible	rhizome, seed
Oleaceae			
<i>Fraxinus</i> sp.	ash	material culture	wood
Onagraceae			
<i>Gaura coccinea</i> Nutt. ex Pursh	scarlet beeblossom	material culture	stem
Phytolaccaceae			
<i>Phytolacca americana</i> L. *	American pokeweed	edible material culture	stem, leaf fruit
Plantaginaceae			
<i>Plantago patagonica</i> Jacq.	wooly plantain	material culture	inflorescence
<i>Plantago wrightiana</i> Dcne.	Wright's plantain	material culture	inflorescence
Poaceae			
<i>Andropogon gerardii</i> Vitman	big bluestem	material culture	stem (culm), leaf
<i>Bouteloua curtipendula</i> (Michx.) Torr.	sideoats grama	ritual/ medicinal	stem (culm), leaf
<i>Hierochloa odorata</i> (L.) Beauv. †	sweetgrass	ritual/ medicinal	leaf
<i>Schizachyrium scoparium</i> (Michx.) Nash var. <i>scoparium</i> *	little bluestem	personal care material culture	stem (culm), leaf stem (culm), leaf
<i>Sorghum halepense</i> (L.) Pers. ††	Johnsongrass	ritual/ medicinal material culture	stem (culm), leaf stem (culm), leaf
Polygonaceae			
<i>Eriogonum longifolium</i> Nutt.	longleaf buckwheat	ritual/ medicinal	root
Rosaceae			
<i>Crataegus</i> sp.	hawthorn	edible	fruit
<i>Prunus angustifolia</i> Marsh. *	Chickasaw plum	edible	fruit
<i>Prunus gracilis</i> Engelm. & Gray *	Oklahoma plum	edible	fruit
<i>Prunus mexicana</i> S. Wats.	Mexican plum	edible	fruit

Table 2. Continued

Scientific plant name	Common name	Ethnobotanical use category	Plant part used
<i>Prunus virginiana</i> L.	chokecherry	edible	fruit
<i>Rubus</i> spp.	blackberry	edible ritual/ medicinal	fruit root
Salicaceae			
<i>Populus deltoides</i> Bartr. ex Marsh.	eastern cottonwood	material culture	wood
<i>Salix interior</i> Rowlee	sandbar willow	material culture	stem, bark, leaf
<i>Salix nigra</i> Marsh.	black willow	material culture	stem, bark, leaf
Sapindaceae			
<i>Sapindus saponaria</i> var. <i>drummondii</i> (Hook. & Arn.) L. Benson *	western soapberry	material culture ritual/ medicinal	wood bark
Solanaceae			
<i>Quincula lobata</i> (Torr.) Raf.	Chinese lantern	material culture	fruit
<i>Solanum dimidiatum</i> Raf.	western horsenettle	material culture	fruit
Sapotaceae			
<i>Sideroxylon lanuginosum</i> Michx.	gum bully	edible	sap, fruit
Typhaceae			
<i>Typha</i> sp.	cattail	edible ritual/ medicinal	rhizome pollen
Ulmaceae			
<i>Celtis laevigata</i> Willd. *	sugarberry	edible material culture	fruit wood
<i>Ulmus americana</i> L.	American elm	material culture	wood, bark
<i>Ulmus rubra</i> Muhl.	slippery elm	edible material culture	inner bark, sap wood
Vitaceae			
<i>Vitis riparia</i> Michx.	riverbank grape	edible	fruit
<i>Vitis vulpina</i> L.	frost grape	edible edible	fruit fruit
<i>Vitis</i> spp	grape	edible material culture	fruit stem, wood

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