

AN ETHNOBOTANICAL FIELD GUIDE OF THE MISSOURI RIVER TRENCH  
AND ENVIRONS, NORTH DAKOTA

MARÍA NIEVES ZEDEÑO

KACY HOLLENBACK

SAMRAT MILLER

WENDI FIELD MURRAY

BUREAU OF APPLIED RESEARCH IN ANTHROPOLOGY

SCHOOL OF ANTHROPOLOGY

PO BOX210030

MANUSCRIPT SUBMITTED TO THE UNIVERSITY OF ARIZONA PRESS

JUNE 1, 2010



# TABLE OF CONTENTS

PREFACE .....	1
INTRODUCTION .....	6
ETHNOBOTANICAL FIELD GUIDE	
Trees .....	27
Shrubs .....	67
Forbs .....	119
Grasses .....	247
Cactus .....	263
Vines .....	269
Other .....	277
References Cited .....	285
Plant Photo Credits .....	311
Index.....	319
Common Names.....	319
Scientific Names.....	327





## PREFACE

When the bottomlands of the Missouri River were artificially flooded in 1951, many plant species traditionally used by Native American tribes living along its banks were lost. Remnants of native bottomland and prairie habitats have been preserved in the Knife River Indian Villages National Historic Site in North Dakota, which contains vital resources of culturally affiliated tribes. A collaborative project between the Cultural Preservation Office of the Mandan, Hidatsa, and Arikara Nation (formerly the Three Affiliated Tribes), the National Park Service, and the University of Arizona was designed in 2006 to integrate construct a comprehensive plant inventory that also incorporates oral traditions, indigenous knowledge, and cultural landscape associations of riparian and prairie flora. This Ethnobotanical Field Guide for the Missouri River Trench and environs is the result of that collaboration.

The Ethnobotanical Field Guide ("the Guide") comprises three years of archival search and fieldwork with Mandan, Hidatsa, and Arikara consultants who reside in the Fort Berthold Indian Reservation, North Dakota, and with representatives of the Crow Tribe, Montana, who spoke from the perspective of their ancestral kinship with the Hidatsa, the Knife River villages, and the Missouri River. The immediate goal of this project was to provide the National Park Service and the tribes with historical, ethnographic, and contemporary information on traditional wild plant use and significance in a culturally sensitive narrative and accessible format. As the first comprehensive ethnobotany for the Missouri River Trench

and for the Mandan and Hidatsa ethnic groups, this is a much needed tool for an area where ethnographic and ethnobotanical research has been focused overwhelmingly on indigenous agriculture.

The intermediate goal of the research was to encourage respect and appreciation for tribal plant knowledge and culture among the scientific community and the public. Readers who seek to learn about specific plants will find information on native names, traditions, and uses for hundreds of tree, shrub, forb, grass, vine, cactus, mushroom, and lichen species and varieties. Beyond uses, readers will be astounded by the intricate and profound connections between people and plants, which have been integral to ethnogenesis, social history, and cultural survival.

Currently there are 9,500 enrolled members in the Mandan, Hidatsa, Arikara Nation, two-thirds of who live in their ancestral homeland by the Missouri River, and 9,300 enrolled members in the Crow Tribe, many of whom have ancestors and relatives in Fort Berthold. The histories and contemporary cultural and religious practices of individuals and communities are indivisible from the river. Thus, the long-term goal of this project was to produce a reference work that will not simply facilitate, but also bring tribal worldviews to bear on the management of culturally significant plants in public lands along the Missouri River. Ultimately, we hope that the Guide will be consulted and augmented by future generations of Mandan, Hidatsa, Arikara, and Crow people.

The Guide could not have been written without the sponsorship of the National Park Service and, specially, Dr. Michael J. Evans, Chief Ethnographer for the Midwest Region, who placed great trust in our scholarship, ethics, and responsi-

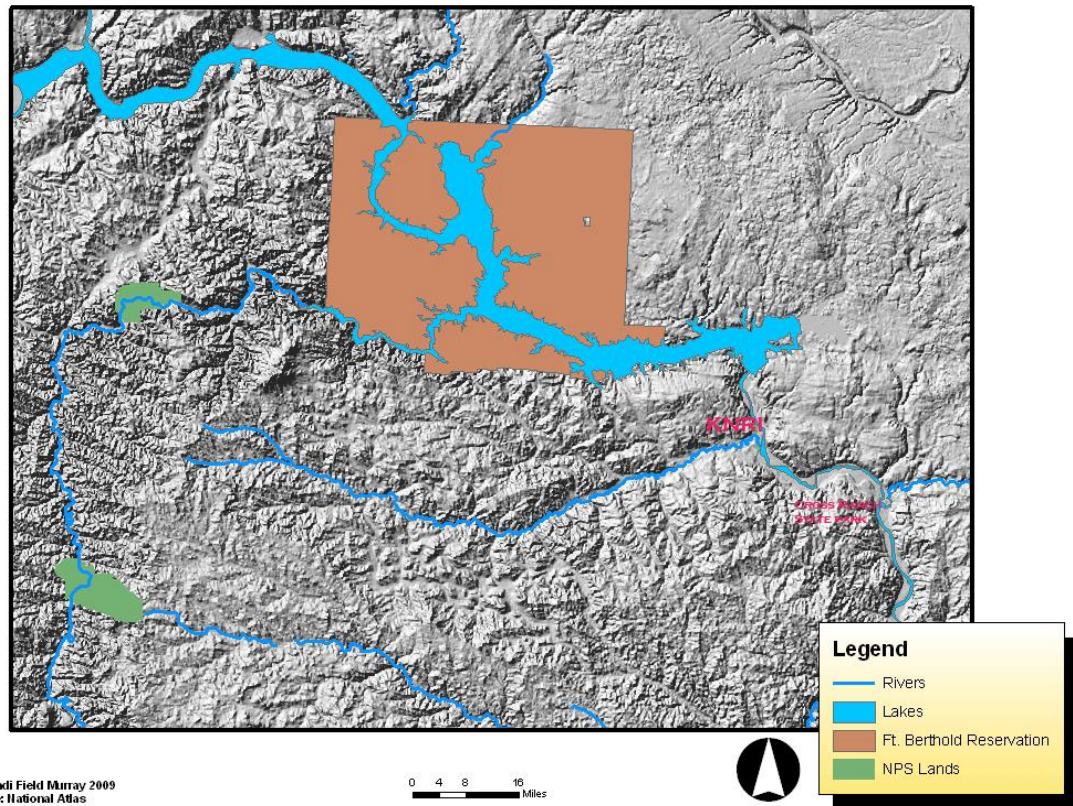
ble research practices. We are thankful for the unconditional support received from former Knife River Indian Villages National Historic Site Superintendent Cheryl Schreier, current Superintendent Brian McCutchen, former Cultural Resource Specialist Terry O'Halloran, and Ranger Kasha Hansen. Many thanks are also due to Valerie Naylor and Andy Banta, superintendents of Theodore Roosevelt National Park and Fort Union Trading Post National Historic Site, respectively, and their staff.

We owe an immense debt of gratitude to tribal elders and cultural resource experts Calvin Grinnell and Elgin Crows Breast, for accepting our original invitation to participate in resource surveys sponsored by the National Park Service since 2003, and for insisting that we help them find information on plants needed to revitalize Mandan, Hidatsa, and Arikara culture and to replenish tribal sacred bundles. Fort Berthold's consultants Edwin Benson, Madeline "Polly" Chase, Alex Gwin, Lyle Gwin, Bruce Nagel, Dolores White, Marcela White, and Ranie White showed us their beautiful country and generously shared their time and knowledge so that this Guide would be completed for the benefit of tribal youth. Tanya Driver helped us immensely with her botanical background and hands-on knowledge of local plants. Likewise, we thank Crow consultants and religious leaders George Reed, Edith Reed, Gordon Plain Bull, and the late Phyllis Plain Bull for lending a regional perspective to Missouri River flora and its significance, thus broadening the reach of the project in important ways.

We received expert advice in the field and laboratory from Dr. Ursula Schittko, a plant biologist at Minot State University. Ursula is at home on the Missouri River;

her easy manner and endless capacity for answering botanical questions was tremendously appreciated by the tribal consultants and the research team. Dr. Schittko's plant DNA research was sponsored by the North Dakota State Historical Society. We owe many thanks to this institution, to Deputy State Historic Preservation Officer Fern Swenson for her support and assistance in every step of this and other research projects, and to Curator of Collections Mark Halvorson. Paul Picha, North Dakota State Archaeologist, has been a staunch supporter of our work for many years.

Finally, we appreciate the support and encouragement of Plains Anthropological Society colleagues who urged us to publish this Guide, the University of Arizona faculty and staff, especially Dr. Barnet Pavao-Zuckerman, who donated her time to the identification of bundle contents, and family members and friends who stood by throughout this challenging but deeply fulfilling endeavor.



The Missouri River Trench, North Dakota

## INTRODUCTION

The Mandan, Hidatsa, Arikara, and Crow people have a long and complex history of sharing their living quarters and social spaces on the Missouri River Trench. Not surprisingly, they also share certain traditions and customs associated with the local flora. At the same time, they have maintained ethnic and linguistic distinctions founded upon each group's unique genesis and trajectory. The product of this interaction is a centuries-old, rich tapestry of botanical knowledge and practice. We begin by briefly introducing the people and the river, discuss our work with them and, finally, present what we learned of Mandan, Hidatsa, Arikara, and Crow views about plants and their relationship with the world.

## THE PEOPLE

Beginning in the mid-12<sup>th</sup> century, groups of sedentary, Siouan-speaking Mandan arrived to the Heart River in west-central North Dakota and built what would become a pre-Columbian trading enterprise that connected vast territories and distant peoples to the Missouri River (Wood and Thiessen 1985). Sometime in the 16<sup>th</sup> century, groups of unrelated Siouan-speaking Hidatsa bison hunters and farmers settled upstream from the Mandan, at the mouth of the Knife River, joining a local and closely related semi-nomadic band. At some point before the arrival of the first European explorers to the region, a group of Hidatsa that became known as Absarokee or Crow split from the parent community and, after a long migration across the northern Plains, the "River Crow" settled on the Yellowstone

River and became an important subgroup of the larger Crow Nation (Ahler et al. 1991; McCleary 1997; Schneider 2002).

Also during the last centuries before European contact, Caddo-speaking farmers known as Arikara (Arikaree) or Sahnish, split from the Skidi Pawnee and migrated from Nebraska toward the Missouri River, eventually settling near of the Mandan. Sometime friends and often enemies, the Mandan and Hidatsa interacted closely with the Arikara throughout the historic period. Their distinctive identities were acknowledged by their native neighbors and distinguished visitors to their villages (e.g., Abel 1939; Catlin 1965; Jenkinson 2003; Smith 1980; Thwaites 1906).

Native warfare, epidemics, and pressure from European fur traders during the Colonial (1750-1776) and early American (1776-1851) periods forced the Mandan, Hidatsa, and Arikara to move ever closer to one another. After the horrific smallpox epidemic of 1837, the three groups began the process of abandoning their traditional domiciles and moving upriver, consolidating their numbers by building multi-ethnic villages. In 1862 they settled in the historic village known as "Like-A-Fishhook" on the north bank of the Missouri River and near the American military post known as Fort Berthold, where they remained until the turn of the 20<sup>th</sup> century (Case and Case 1977).

A detailed analysis of the long-term process of intertribal coalescence and its consequences is outside the scope of this introduction. It is important to point out, however, that ethnographies written in the early 20<sup>th</sup> century by Gilbert Wilson (1916, 1924, 1928, 1987), Martha Beckwith (1938, 1978), and Alfred Bow-

ers (1992, 2004) strongly suggest that long-term coalescence had a dual result on traditional resource use: on the one hand, certain oral traditions, religious rituals, and cultural practices involving Missouri River flora and fauna amalgamated or overlapped to accommodate diversity and promote integration. On the other hand, identity and social distance among relatives and neighbors was preserved in resource and place uses specific to each ethnic group, and reified in the compartmentalization of knowledge and adoption of strict knowledge transfer rules.

Aided by geographic distance, the River Crow have remained distinctive linguistically and culturally through hundreds of years, despite intermarriage and regular contact with Fort Berthold's residents. The social distance among the Mandan, Hidatsa, and Arikara who co-reside in the reservation is subtle but persistent in a number of ways. This persistence is best illustrated in the tragic history of repeated relocation in the 20<sup>th</sup> century. First, when Like-A-Fishhook was vacated, residents dispersed to occupy reservation allotments. Small, isolated rural communities were then formed along common ancestry and dominant ethnicity, such the interethnic but predominantly Hidatsa community of Elbowoods, the Mandan enclave of Charging Eagle, and the Arikara town of Nishu or Armstrong.

With the creation of Lake Sakakawea in 1951 through the construction of the Garrison Dam above the Knife River, Elbowoods, Charging Eagle, and Nishu, as well as several other communities, were forcefully abandoned as they were to be submerged by the lake. Their residents formed new communities farther away from the river bottomlands, but somehow managed to preserve ethnic lines and community symbols despite arbitrary government intervention on relocation pat-



terns (Fort Berthold Water 2002). For instance, the shrine to the creator Lone Man was moved from the river to the predominantly Mandan Indian agency town of Twin Buttes, where it is cared for by a family of Mandan descent; the Arikara community of Nishu regrouped at White Shield, in immediate proximity to the Arikara Scout Cemetery.

The dynamics of contemporary community identities revolve around living native language speakers, family genealogies, historical trajectories, and individual knowledge and authority. Throughout this Guide we have endeavored to communicate to the reader commonalities as well as nuances of cultural difference as they transpire in wild plant use and significance.

## THE RIVER

Since the end of the Pleistocene, approximately 13,000 years ago, the Missouri River has served as a major avenue of human movement, connecting the Rocky Mountains to the Mississippi River and beyond (Zedeño et al. 2009); through time it became the homeland of many Native American tribes. The whimsical Missouri shaped landscape and life on the Northern Plains in unique ways, by creating deeply entrenched canyons with spectacular cliffs and bluffs; crafting terraces, sandbars, dunes, islands, and backwaters; and depositing fertile sediments on braided channels and wide floodplains (Schneiders 1999)—the ideal landscape for nomadic hunters and semi-nomadic farmers who inhabited it. Swift change characterized the Missouri River, forcing its people to remain vigilant for the ever shifting landmarks along its course. As described by Merriwether Lewis

and William Clark, who spent the year of 1805 among the earthlodge villagers (Jenkinson 2004), the country on both sides of the Missouri was an open, fertile plain, beautiful as far as the eye could reach, with vast grass-covered prairies, densely forested bottomlands, and cattail marshes populated by hundreds of terrestrial, aquatic, and avian species.

Before the construction of six dams in the mid-20<sup>th</sup> century, the remains of ancient fortified towns and the bustling earthlodge villages, eagle trapping pits, old and new vision quest sites, and cemeteries stood high on the bluffs above the Missouri River Trench. Prairies and river bottoms played a significant role in the seasonal movement of the Hidatsa, Mandan, and Arikara, who shifted from the large villages built in high open country to the winter villages located in wooded bottomland to seek protection from the brutal cold and have an abundant fuel supply. In the summer, gardens were placed on floodplains and fish traps at the water edge; young men traversed the open sea of grass to the west in search of bison, eagles, and enemies (Hanson 1987:334). Eventually, these men reached the secluded canyon lands lush with spring- and river-fed vegetation and populated by small and large game and birds, known as “the Badlands.” Paints of all colors were collected from exposed veins as were crystals and other stones used in the manufacture of secular and ceremonial crafts. The rhythm of the annual cycle placed people in contact with a wide variety of wild plants, which men and women collected opportunistically or seasonally, and for specific purposes.

With the exception of bluff sites and precious few other features, archaeological remains of the earthlodge villagers are now submerged under Lake Sakakawea.

Today, the Missouri River flows through 2,341 miles (3,746 km) from its source at the Tree Forks in south-central Montana to its confluence with the Mississippi River near the city of St. Louis. Its watershed comprises 529,350 square miles or one-sixth of the land area of the continental United States (Lewis & Clark Bicentennial Commission 1999:5). A variety of land types and eco-regions may be found along its course: mountains, foothills, badlands, sagebrush plains, grassy bluffs, prairie potholes, and hardwood forests. Climate varies from extreme temperature and wind conditions and low annual precipitation on the high, arid plains to moist and lush conditions near the Mississippi river. While not as ecologically diverse as it once was, the Missouri River still supports woody shrub and hardwood forests with varying structure, composition, and succession along the basin (Johnson et al. 1976:63). Habitat destruction and loss of prime agricultural land directly attributable to massive navigation and flood control projects, which altered the hydrology and channelization of the river, has been estimated at over 300,000 on Lake Sakakawea (Lawson 1982) and 200,000 on Lake Oahe. Damage also extends to the natural evolution of riparian sand formations and to the marshes and oxbow lakes derived from braiding of the river, with concomitant loss of flora and fauna (Lewis & Clark Bicentennial Commission 1999:7).

Artificial flooding along the Missouri River as well as overgrazing and irrigated agriculture on the prairies above it has left a patchwork of remnant native habitats. The most extensive remnants are found on the Trench and tributaries (Johnson et al. 1976:59), owing their existence, and in no small measure, to the presence and efforts of federal, state, and private land management and conservation units. Such patches may be observed on the Knife River Indian Villages

National Historic Site and the neighboring Cross Ranch State Park. In addition, the Little Missouri River, which flows across Theodore Roosevelt National Park and the Fort Berthold Indian Reservation, preserves badlands rich in native flora and fauna as well as minerals. Marshlands are found scattered along the back-channels of the river. All of these habitats were targeted in our research in order to recover as much information as possible for the Guide.

## THE PROJECT

The first indication that the Mandan and Hidatsa possess a vast plant pharmacopeia rivaling that recorded by ethnologist Melvin Gilmore (1991) among the tribes of the central Plains, came from a preservation-geared plant and animal inventory of medicine bundle contents conducted by Fort Berthold's tribal elders Calvin Grinnell and Bruce Nagel, and their University of Arizona and Minot State University collaborators. Twenty-two plant remains were tentatively identified to the genus or species and five confirmed by DNA analysis (Grinnell et al. 2006; Schittko 2007). This inventory, undertaken in 2005 at the request of the Mandan, Hidatsa, and Arikara Nation's Cultural Preservation Office and with sponsorship from the North Dakota State Historical Society and the University of Arizona, was influential in the decision to seek funding for an ethnobotanical study near the tribe's ancestral sites and contemporary homes. With funding from the National Park Service, University of Arizona researchers were to develop a comprehensive ethnobotany for the Knife River and vicinity. The Crow Tribe kindly accepted our invitation to join the project.

Research entailed manuscript searches, review of published literature, search of the U.S. Department of Agriculture and other authoritative internet-based databases, and fieldwork with tribal members who have the spiritual authority and willingness to speak about plants. Archival reviews were undertaken throughout 2006-2008, and included manuscript searches in the North Dakota State Historical Society in Bismarck and the Minnesota Historical Society in St. Paul. Additionally, relevant ethnographic monographs, book chapters, and journal articles were systematically searched for plant use references. This effort underscored the dearth of publications that directly and comprehensively deal with use of wild plants by Mandan and Hidatsa people.

Fieldwork was conducted in 2007 and 2008 on the Knife River Indian Villages National Historic Site, the neighboring Cross Ranch State Park, and on the Fort Berthold Indian Reservation, particularly Mandaree, White Shield, Twin Buttes, and the Little Missouri River badlands, where tribal members go to collect plants. Young tribal members who have self-taught botanical skills were encouraged to join the project to aid in the identification of plant specimens. Dr. Ursula Schittko, a plant biologist from Minot State University, was also invited to participate as expert consultant in the field and laboratory.

Collaboration with tribal cultural experts was central to the development of a survey instrument with substantive but respectful and culturally appropriate questions regarding plant use and significance. Additionally, we inquired about and closely followed traditional protocols for requesting information from elders, including gift exchange and payment, presentation of offerings to the spirit

guides of the consultants, and preparation and consumption of traditional foods, whenever the occasion required. This show of respect for tradition fostered excellent rapport among project participants. In the interest of privacy we have not attached consultant's names to their statements. Ethnic identities are revealed when information is specific to a group. If the information is shared among two or more groups, then no ethnic identity is attached to it.

Three types of field sites were selected for plant identification: areas known for having remnant native prairies in the Knife River Indian Villages National Historic Site; areas known for their stands of old-growth forests and bottomland under-story, such as Cross Ranch State Park; and areas where elders customarily gather plants. These site selection criteria ensured that a range of wild plants that are both of interest to park managers as well as of interest to tribal members could be identified in the field. Consultants were first invited to come to the parks, which are in close proximity to one another, and then were asked to take researchers to collection sites on the reservation with which they were most familiar. This method resulted in a large number of plants being identified as useful or culturally significant. Color photographs were used extensively to make identifications needed to complete the inventory.

We worked with Ursula Schittko and Tania Driver to ensure accurate plant identification in the field and to ascertain the genus and species of plants for which consultants did not have an English common name. We only collected plant specimens that were not readily identifiable in the field, and sent them to Minot State University for further inspection. There remain questions about the species and

varieties of a number of plants of widespread occurrence and multiple uses; to a large extent, these uncertainties are culturally produced and thus we present them in as much detail as possible rather than attempt to pigeonhole them in the Western scientific taxonomy.

Beyond plant identification, the guide would not have been complete without reference to the cultural context wherein each plant was or is used by the people. Thus the project needed a structure that would successfully integrate scientific and traditional knowledge. We erred on the side of holism, by incorporating native ontological and epistemological principles surrounding the world of plants within a cultural landscape framework that is flexible enough to accommodate these two divergent knowledge domains.

## THE PLANT WORLD

The Mandan, Arikara and, to a lesser extent, the Hidatsa, were historically known as gifted gardeners, having developed varieties of corn that were resistant to the inclement weather of the northeastern Plains (Will and Hyde 1917). Cultigens commonly planted in historic village gardens that were also exchanged with the upper Missouri River tribes included native plants such as sunflower, tobacco, and the Mesoamerican triad—corn, beans, and squash. Beginning in the mid-1800s, European explorers described the worth of the village tribes' gardens and the central role of their agricultural products in interregional trade networks (Ewers 1954; Wood 1980). Observations were also made about the gathering of wild plants, particularly roots and tubers (Gilmore 1966:189). Before their split from

the Hidatsa sometime in the protohistoric or early historic period (Wood and Downer 1977), the Crow may have participated in gardening activities, and took the rituals of sacred tobacco planting to their southern Montana home. Centuries later, as the rivers changed due to modern manipulation, fertile lands opened on the previously arid Crow Agency. From Elbowoods' Hidatsa gardeners the Crow obtained ceremonially the native seeds and sacred knowledge needed to plant corn (Paul Friesema, personal communication, 2008). Plant manipulation, therefore, has been an integral part of ancestral Mandan, Hidatsa, Arikara, and Crow lifeways for centuries, if not millennia, remaining so until the flooding of native habitats and prime agricultural land.

The archaeological record suggests that wild plant and cultigen uses among people from the Plains Village Tradition were ensconced by AD 1100. Nickel's (2008) recent examination of the River Basin Survey's archaeobotanical collections and publications, for example, demonstrates that wild foods, notably berries, rose, goosefoot and *Iva* grass seeds, marsh elder, amaranth, dock, and grapes, were consumed prehistorically alongside introduced cultigens. Many edible native species recorded across the Great Plains were likely cultivated as well as gathered in the wild (Adair 2003; Cutler and Blake 1973; Van Ness 1990). Nickel (2008:126) notes that, overall, the archaeological record conforms to early ethnographic descriptions of Mandan and Hidatsa horticulture, yielding information on the prehistoric use of 16 edible native plant species, of which two (sunflower and *Iva* sp.) are present in wild and cultivated forms.



The most thorough account of gardening traditions comes from Gilbert Wilson's lengthy interactions with a Hidatsa elder and master gardener known as Buffalo Bird Woman (Wilson 1987). Buffalo Bird Woman also shared with Wilson detailed information on wild plant uses which, inexplicably, he never published (Schneider 2007). Weitzner's description of Hidatsa material culture, based on Wilson's notes, contains only a few specific references to plant species used in different crafts (Weitzner 1979). Two other early 20th-century ethnographers of the village tribes, Martha Beckwith (1938, 1978) and Alfred Bowers (1992, 2004), collected a great deal of information on traditional life and customs, but their reference to wild plant uses, while extremely valuable for understanding the role of plants in Mandan and Hidatsa worldviews, is limited in scope and incidental to other activities, such as the practice of medicine and bundle ceremonialism. Thus, researchers and range managers have been left with Melvin Gilmore's detailed ethnobotany of Siouan-speaking tribes of the central Plains (Gilmore 1966, 1991) and of his notes on the Arikara (Gilmore 1931, 1991) as a proxy to wild plant uses by the Mandan and Hidatsa.

The Guide fills this knowledge gap in three ways: first, it shows that plants have been at the center of Mandan and Hidatsa life since time immemorial; second, it demonstrates that there is continuity in their worldviews as well as parallels with other Siouan-speaking groups and, third, it details contemporary knowledge about culturally significant wild plants.

## PLANTS AND LIFE

The Missouri River and its North Dakota tributaries, namely, the Heart, Knife, and Little Missouri, form the geographical, cultural, and spiritual center of Fort Berthold's residents. Until the mid-1900s, the ancestral earth lodge villages and modern reservation towns were surrounded by places of emergence, sacred buttes where the societies of the supernaturals and the spirituals reside, sources of sacred paints, high-quality flint quarries, plant collection areas, eagle trapping territories, and bison hunting grounds. For centuries, these natural places along the river were integrated into the rhythm of village life. While untold numbers of such culturally significant places are now under the waters of Lake Sakakawea, there remain precious other places that are vital for the survival of native culture and society and that have helped tribal members preserve traditional knowledge and practices. Our ethnobotanical study, which is organized from a cultural landscape perspective, strived to achieve a relational view of plants, other resources, places, and people, and to build a historical perspective that would highlight areas of ethnic diversity and overlap as well as evolution in botanical knowledge and traditional plant use.

The oral traditions recorded by Beckwith (1938, 1978) and Bowers (1992, 2004) eloquently explain the profound significance of plants in the Mandan and Hidatsa worlds, where the bodies of culture heroes and non-human persons are actually made of plants. From the birth of Lone Man's to the spoils of Eagle Man and the Sun, the embodiment of the local flora in the origin and organization of human society reveals the essential role of plants in life; its cyclical renewal further lends reason and purpose to complex rituals and daily agencies of individuals and groups. Likewise, Arikara and Crow oral traditions are ripe with plant allusions

and allegories that directly connect them with the creators of the world (Gilmore 1931; Snell 2006).

Gilmore's (1966) invaluable description of the Siouan world and the place of plants in the cultural and social landscapes, offers a historical perspective to contemporary explanations of the web of social relationships that people establish with beings of the natural and supernatural worlds. He relates how the Siouan world is constituted of tribes of men, animals, birds, and plants. Like his informants told him a century ago, contemporary elder consultants speak of plants as a type of "society" or "tribe" with rules and sanctions that regulated interactions within it and with other societies who possess plants.

We are taught that the world was not always connected relationally, but events and circumstances made it as it is now:

Envision a time when knowledge evolved on a need. Long ago, when had just entered this world, there was quite an animosity by the supernatural (different from the spiritual). When we arrived here [the supernatural forces] tried to rob us out of our humanity. So in defense, we gathered our elite warriors and society members to battle our supernatural enemies, because they wanted dominion of earth. To take the heart out of the people they killed children and to take our knowledge they killed elders—used a club with a stone hammer.

Regardless of people's skills we could not defeat the supernatural. There ensued a cry over the land, beseeching God for help, that is when fasting came, and needs of people began to be fulfilled.

The need to know became broken down: for defense and survival, and for healing of sickness. Healing can't happen unless the spirit is hailed. A plant is only a plant unless it is embodied by spirit. All of these plants, roots, and the stories to go with them belong to societies. There are several societies: the supernatural forces, the spiritual forces, the winged, the four legged, the pawed, the crawlers, and the water beings. These societies relate to plants, own plants; we don't. So as time evolved, people fasted to get allies so that knowledge of plants could be acquired for doctoring. The spirits of the societies who own plants are [contained] in the bundles (*Hidatsa Elder, 2007*).

When humans establish alliances with members of these societies, through fasts, visions, and transfers, they must respect the rules and sanctions governing their social relations just as they would respect those regulating human society: Sometimes mankind, with its free will, deviates its roles and duties and compromises not only their own values but those of other societies. When this happens you get sickness over land and humans, sickness at every level (individual, family, and village). So that is when plants come into place. For example, values and ethics associated with eagle trapping and eagle feather handling require the use of certain type of willow, eagle sage, and "blackroot" or red baneberry (Bowers 1992:307). To thoroughly understand the specific pattern of relationships among eagle sage, red baneberry, willow, and eagles and proper ways to use them, individuals must purchase the rights to ritual protocols along with the stories and songs (Murray 2009:69). Using the wrong type of willow, picking eagle sage at the wrong time of the day, or handling eagle feathers without red baneberry

would not only render the ritual useless, but would break the delicate network among these resources and even endanger the human who breaks the rules. Similarly, relationships among different plant parts must be respected, for violating them can bring deleterious consequences to the plant user, for example: *mixing male and female roots can bring about black magic*. The knowledge of doctoring obtained through fasting and visions helps correct errors associated with the violation of social relationships.

A curse or sickness, *déjà vu*, could come into play and through dreams—then [the doctor] would know already and the medicine would be ready to influence behavior and correct behavior. If bundles were at play, people had them ready; they would have a cure or solution, but would not put a price to it. [They would ask,] ‘what does it mean to you?’ (Hidatsa elder, 2007).

Plants help people clean their mind and their environment; *most sicknesses are caught by the mind, individuals doing something wrong or not doing what is supposed to be done*. Smudging with plants, smoking tobacco, and using plants in the sweatlodge are essential to achieve a clear and receptive mind. Thus plants must be obtained with the respect accorded to any member of a society and, in particular, to their significance for human survival: a root is dug, and tobacco is left in its place *to let them know that you, their grandchild, needs them*.

An important aspect of Siouan ontology is the existence of relationships among non-human members of different societies or tribes. For example, in the origin story of eagle trapping, humans were given eagle sage by the black bears; the

black bears, in turn, received knowledge about blackroot from a human (Murray 2009:40). *Plants go with certain animals: some are very selfish, like the rattlesnake and there is medicine for its strike.* Others, like the eagle, are very generous with the plants they own. Origin stories are a useful source for understanding these nonhuman connections. Once, two consultants went to search for sweet cedar (*Arbor vitae*) on the west side of the Rockies. As they were gathering the cedar an eagle flew over them. They took this as a signal that the sweet cedar had called the eagle, since this plant is used as incense during the eagle dance ceremony. Sweating and fasting are critical to develop people's ability to tap into the nonhuman relational world; *they put you in sync with everything.* Because plants have such a close connection with other societies, they play a central role in the sweat lodge and in vision quests. Aromatic plants, in particular, are excellent conduits for communication with the spiritual and the supernatural.

As I grew older after the army I went to a sweat lodge. There were young shoots of willow with a distinctive smell to them. That was when I began to realize that these natural items are [there] for connecting with the Great Spirit... After smudging with sweetgrass I feel better, lighter. People come with a bad attitude to your home and they change the spirit of your place, so you smudge to get rid of those feelings, to cleanse, to heal the spirit. I use sweetgrass and sweet cedar primarily.

Vision quests place individuals at a high spiritual risk; while fasting on a high point they are challenged by the supernaturals that test the

human strength and resolve to complete the quest. Plants act as friends, companions, protectors, and conduits of prayer or messengers to the spirits.

Sweet cedar, for example, is a woman who is kind of a sister to us. It befriends humans. When my grandfather fasted with mountain cedar it would produce a white light. Also, after his family was killed, my grandfather went out to die. An electric storm came, and it rained all night. A white light came on and it was cedar, flat cedar. He stayed dry. Flat cedar is owed by the wingeds. You use it to call the power of the wingeds. (Hidatsa Elder, 2007).

Appealing to relational ontology and oral history, one may be able to decode the consultant's grandfather experience, as the elemental thunder is associated with eagles and the mythical thunderbirds (Murray 2009:36)—hence the role of “flat cedar” (*Libocedrus decurrens*) in his ability to fend off the electric storm in a miraculous way. This is, in other words, a real-life expression of an ancient worldview that, as Gilmore (1931, 1966:179) notes for both Caddoan and Siouan speakers, regards trees (and other resources for that matter) as persons. People's intimate knowledge of the broad landscape comes to play in every instance of use and interaction with specific plants and other resources. The cumulative experience of generations of landscape and resource users is not only the fabric of oral tradition but also the source of moral and social principles that continue to inform contemporary practices.

An important guiding tool for scholars and resource managers that derives directly from the consultant's worldviews is that resources exist within a web of relationships among the natural, cultural, and spiritual worlds. These relationships are regarded and respected each time an individual reaches out to collect and use a resource, so that all of that resource's relations, too, may come to aid the individual to achieve his or her purpose. To illustrate, for the Hidatsa, berries are Bear's food. To eat berries is "a symbol of the man's gaining the strength of the Bear" (Beckwith 1938:256f); therefore these two resources are connected and, when one is managed, the other is affected physically as well as spiritually. As Murray (2009:72) notes, just as resource managers embrace and apply "ecosystem management" perspectives to natural resources, so do ethnographic resources need to be managed: as systems or complexes involving plants, animals, minerals, landforms, spirit beings, oral traditions, songs, and so on.



AN ETHNOBOTANICAL FIELD GUIDE OF THE MISSOURI  
RIVER TRENCH AND ENVIRONS, NORTH DAKOTA



# Trees

Mandan: wrq

*We notice that, when the river rises in the spring, it never gets about the bank where the water willows grow, so they must have the power of keeping the waters down.*

Bowers (2004:361)

# Boxelder

*Acer negundo* L. (ashleaf or ash-leaved maple)

Hidatsa: miteatadike; mitétadiki (Anonymous n.d.); mitótadiki (Wilson 1916:267)

Arikara: uháku; uuxaáku (Parks 1986)



Boxelder (*Acer negundo*), D. E. Herman, photographer

Native to the Missouri River region, boxelders prefer moist areas along river bottoms, floodplains, lakes, and streams. These trees are often found in association with green ash cottonwood, aspen, willow, and oak. It is a hardy, drought-tolerant species (Rosario 1988). Boxelder trees develop yellow or green blooms

in April and May, while its fruit ripens in early fall (LBJWC 2008; McGregor 1986a:569-570).

Boxelder seeds are an important food resource for birds and squirrels, though they may be toxic to livestock. The trees also provide habitat for many wildlife species (Rosario 1988).

## Preparation, Use, and Significance

According to Buffalo Bird Woman, a Hidatsa consultant, there are two kinds of boxelder. "One kind has a sort of seed blossom that we call 'owl knives' and one kind has not" (Wilson 1916:267). Traditions connect boxelder with hunting and weaponry: the Arikara oral tradition includes a story in which a coyote makes a knife from a boxelder seed, and after slashing the throat of a badger with the seed-knife, it turned back into a seed (Gilmore 1966:125). The Hidatsa used boxelder to make handles for rabbit snares, because the trees were easily hollowed of their soft pith (Gilman and Schneider 1987:73).

The boxelder is perhaps most recognizable fiber in the woven basket designs of the Arikara and Hidatsa. Boxelder bark was used in Arikara basketry with that of the contrasting black willow (*Salix nigra*) bark in order to make light/dark designs (Gilmore 1925a:90). The Hidatsa prepared the bark for basketry in the following manner:

The bark of the Boxelder was used for making carrying baskets. Gathered in Juneberry season, it was peeled upward on the trunk with the brown rind falling off by itself. It was then dried with the inner side up

for five days. The bark was kept from the rain or it spoiled. After five days, it was soaked in the river in a long bundle. When well-soaked, it was cut into narrow strips and rolled into 14 inch rings which would keep up to two years. This was the light-colored bark of the willow carrying baskets. (Anonymous n.d.)

Hidatsa basket makers also used boxelder bark because it was known to be softer and easier to work and therefore could be used to weave the sides of the basket (Wilson 1916:253). The stronger black willow bark was used for basket bottoms (Gilman and Schneider 1987:116).

Gilmore (1966:6) noted that boxelder sap was collected and made into sugar during early spring. Buffalo Bird Woman detailed the collection process:

In the spring when the snow was melting but the leaves had not sprouted yet, we children would go out to a box elder tree, break a branch and tie a cup under the broken end. Sap would drop into the cup. Sometimes we cut a cavity in the tree and drank from it. Cutting a tiny channel to which we put our mouths. This we did only when a south wind was blowing and then only at mid-day. The flow stopped in the evening. We children did this. We drank the sap and it smelled like box elder wood. We called this drink "mida-adáxi". It tasted sweet. (Wilson 1916:237)

This practice may have been discontinued in modern times. One elder suggested that the tree is not useful because *in late fall the sap leaks out and boxelder bugs crowd around them.*

In the past, young boys used young shoots from boxelder in the throwing stick game or “úwakixeke” (Wilson 1916:269). Contemporary uses of the boxelder include shade and firewood. One consultant noted that *it makes good fuel for burning as it creates a warm, long-lasting burn.*

Boxelder figures in a number of past and present rites and ceremonies. For example, in the Hidatsa Wolf ceremony, which is meant to bring success to men on the war path, a blade of reddish grass was swirled in a dish of boxelder before blessing the warriors (Beckwith 1938:250). Boxelder was also used to make the handles of buffalo shoulder-blade hoes found in Arikara bundles (Gilmore 1931:36). The Crow and Hidatsa created flutes and ornaments by hollowing out saplings and removing the pulpy center (Beckwith 1938:129). And the Mandan and Hidatsa were instructed by Buffalo to use boxelder to make pipe stems (Beckwith 1938:10). *Today, boxelder is used to make flutes and switches for use during sweats.*

# Birch

*Betula* L.

*Betula occidentalis* Hook. (water, red, black, spring, mountain birch)

*Betula papyrifera* Marsh. (paper birch)

*Betula pumila* L. (bog birch)

*Betula xsandbergii* Britt. (Sandberg's birch)

Mandan: wápate psi (black-colored birchbark cherry bag, Hollow 1970)

Hidatsa: Matúpusi akú cípica ("birch that is black", Wilson 1916:320)



Paper birch (*Betula papyrifera*), R. Toupal, photographer



This native tree prefers cool, damp areas, such as stream banks, lakeshores, and moist woods. Species are difficult to identify due to frequent hybridization (Flora of North America Association 2008a). Birch is typically found in association with cottonwood, willow, boxelder, and alder; is flood tolerant. Birch flowers in May and June, providing an important food resource for birds such as grouse, chickadees, broad-tailed hummingbirds, and red-naped sapsuckers. Mountain birch stems are often felled by beavers and used in the construction of dams (Uchytel 1989; Kaul 1986a:143).

## Preparation, Use, and Significance

In Buffalo Bird Woman's time, birch was not often used by the Hidatsa (Wilson 1916:320). Whip or quirt handles were made from this tree. Occasionally, when "*maxóxies* willow" could not be found, birch was used to make bull boat frames. "The wood was pliant and the saplings if used for bull boat frames did not usually break in the making" (Wilson 1916:320).

Today, birch (particularly mountain birch) has many uses. Among the Crow, birch's wood is a primary choice for the construction of sweat lodge structures; to do this, *the wood is dug up when it is flexible. The leaves and branches are then used to tie the structure together.* Birch branches also used to manufacture lances or spears, pipe stems, and arrows. *Baa saa poo te* means "my perfect straight arrow."

*The birch leaves are soaked in water and laid on meat to preserve it. Birch is one of four ingredients in a compound used to treat heart disease. The [birch] ash is mixed with a certain kind of bitter root and two other medicines. It unclogs the arteries, but may make the skin itch.*

Contemporary stories associated with birch state that when poplar or birch fall and hit the ground it signifies lightning. Also, *lone birch trees growing on knolls mark places where the horses go in and out [of the spirit world].*

# Oak

*Quercus ellipsoidalis* E. J. Hill (northern pin oak)

*Quercus macrocarpa* Michx. (bur oak)

Mandan: *itáhu* (Hollow 1970)

Arikara: *skaánux* (Parks 1986)



Oak (*Quercus* sp.), J. O'Brien, photographer

## Preparation, Use, and Significance

During his time among the Mandan, Lone Man traveled to the ocean and found giant oaks growing on the water. Lone Man parted the water with his sacred staff

and saw a giant turtle supporting the trees. He asked Turtle to be his drum; Turtle declined but asked Lone Man to make a drum in his likeness. Lone Man used the oak from the giant trees to make the legs of the drum (Bowers 2004:359).

Oak is the habitat of "the woman outside" or witch, who robs men of their masculinity. The only cure is to burn the body with coals, to recover it.

Oak is a hardwood used in construction. The acorns are parched and eaten like sunflower seeds.

# Ash

*Fraxinus* L.

*Fraxinus pennsylvanica* Marsh. (green, marsh, red ash)

Mandan: tapsá (Hollow 1970)

Hidatsa: mícpa' (Wilson 1916:264)

Arikara: c'inihnaáku (Parks 1986)



Green ash (*Fraxinus pennsylvanica*), D. E. Herman, photographer

Native to the region, green ash is common in open woodlands, stream banks, low-lying areas, swamps, draws, and river bottoms (LBJWC 2008; USNPS 2007). This species is flood-tolerant. They are often found in association with boxelder in the river valleys of the Knife River Indian Villages National Historic Site. Ash trees also line the cliff tops of the Little Missouri badlands where there is spring water present just below the surface. The ash flowers in mid-April and fruits in August and September (Gucker 2005).

Ash was once the habitat of the Holy Women killed by the Foolish One in the Okipa origin story (Bowers 2004:352).

## Preparation, Use, and Significance

Two types of ash were traditionally recognized: according to Buffalo Bird Woman, "they are both exactly the same tree except that one has blossoms and one has not." Both types are found in the same habitat, but the latter was more common (Wilson 1916:263). Ash has a reputation as a solid wood; *it is tough to drive a nail through it*. Green ash is an important construction material, used past and present. For example, it was once used in construction of Mandan fortifications (Potter 2003:22) and domestic earthlodges. Currently, green ash is used for making support rafters in ceremonial Sundance lodges, railings, and fence posts.

Ash wood wedges, or buffalo horn wedges with the hollow filled with ash, were used by the Hidatsas to split cottonwood (Anonymous n.d.; Wilson 1916:263). Weapons such as bows and pikes were also made out of ash trees. "The ash

wood bow, especially the sinew-backed ones... were our dependence in war and hunting," said Wolf Chief (Gilman and Schneider 1987:69). Furthermore, ash had other uses in raiding and conflict. "It was the rule in a war party that every warrior should care for his own horse. Each man carried a hard, seasoned ash-wood pin to picket his pony, in the evening a little after dark" (Wilson 1924:181).

As a craft wood, ash was the preferred material for the hoops of horse and dog travois among the Hidatsa (Anonymous n.d.). Saplings were scraped smooth and tied with rawhide strips to make a Hidatsa gardening rake, in the style of the older deer antler rakes (Gilman and Schneider 1987:37). Hidatsa farmers used to craft corn mortars and pestles and digging sticks (Gilman and Schneider 1987:16). Ash logs that surrounded the central fireplace of Hidatsa earthlodges were used by men to lay their heads on when sleeping (Beckwith 1938:123).

Ash had multiple uses and meanings in traditional life. Beckwith (1938:103) was told that once there was a Hidatsa who was a great gambler. A dispute arose between him and opponent. He took the gambling-stick made of ash, painted it to represent a snake, and broke it to pieces in anger. As a result he was poisoned. Both legs became numb. He went to bed and the numbness increased until his whole body was affected and he lay helpless.

Many rituals and ceremonies required ash wood sticks. For example, when outlining an eagle trapping pit, the expedition leader would mark the corners of the pit with an ash stick (Bowers 2004:236). In addition, the Small Hawk Ceremony principal bundle contains a small digging stick made from ash. It was carried by women with bundle rights at the end of the Okipa ceremony (Bowers 2004:270-

271). The Shell Robe Bundle also contained an ash digging stick. The presence of the digging stick indicates that the bundle originated from the Holy Women (Bowers 2004:308). Other items include pipe stems carved by the Hidatsa for the sacred bundles (Anonymous n.d.; Gilmore 1926a:573) and lances of blackened ash wood that were wrapped in red cloth and carried by the Hidatsa Raven Society (Mails 1973:173). *It is used for ceremonial arrows and drumsticks; is sturdy, hot-burning, and produces no sparks, it makes good incense coals.*



# Pine

*Pinus* L.

*Pinus banksiana* Lamb. (jack, soft, scrub, gray, black, Banks, princess)

*Pinus ponderosa* P. & C. Lawson (ponderosa pine)

Arikara: načíšú (Parks 1986)



Jack pine (*Pinus banksiana*) Left, D. E. Herman, photographer; right, © L-M. Landry

Native to the region, jack pine are found on rolling plains, ridges and rocky outcrops, sand dunes, and lakeshores. This tree favors dry, sandy, or acidic soils (Carey 1993). As the northernmost of pine species, jack pine is a habitat song-birds and game birds, many of which may have ceremonial significance for the Missouri River peoples (LBJWC 2008). Jack pine flowers in April and May. Its cones mature in late summer and early fall (Carey 1993). Also native to the region, drought-resistant ponderosa pine is found in rocky hills and low-elevation mountainous areas (Brooks 1986a:76). Ponderosa pine blooms in May and June and attracts butterflies (Brooks 1986a:76; LBJWC 2008).

## Preparation, Use, and Significance

The soft, easy to carve wood of pine trees were and continue to be used for a number of secular and ceremonial purposes. The Hidatsa sometimes made digging sticks out of pine (Gilman and Schneider 1987:35). The Crows used the pitch as glue (Hart 1992:51). Nowadays, *prepared branches of pine trees (particularly ponderosa and lodgepole pine) are primarily used in the erection of tipis and other structures. They are also planted on burial grounds.* But pine is not a used as fuel *because it sparks too much.*

The needles of different species of pine were dried and kept in Mandan medicine and ceremonial bundles (Grinnell et al. 2006). *The tea made of steeped and boiled pine needles was made for its vitamins A and C.* Ponderosa pine, in particular, is still being used as a medicine. For example, a growth that occurs on the tree and looks like a wart, called *baa apax shi chea* is medicinal. *It is used for*

*curing women's disease or venereal disease.*

Ceremonial functions of pine are numerous. Most importantly, pine needles from the Rocky Mountains were significant in bundle renewal ceremonies, as well as in the opening of bundles (Bowers 2004:297, 304), and continue to be sought and gathered whenever possible. In addition, pine needles were and are frequently used for smudging.

# Poplar

*Populus xacuminata* Rydb. (pro sp.) (lanceleaf cottonwood)

*Populus balsamifera* L. (balsam poplar)

*Populus balsamifera* ssp. *trichocarpa* (Torr. & Gray ex Hook.) Brayshaw  
(black cottonwood)

Mandan: wáxox (Hollow 1970)

Hidatsa: matápusi akú má'kuhica (Wilson 1916:332)



Balsam poplar (*Populus balsamifera*), L. Gardes, photographer

Poplar is native to the region and grows in forested areas of the hills. Stands may be found in the timber along the Missouri River (Wilson 1916:332).

### Preparation, Use, and Significance

Poplar is the preferred material for tipi poles, but is difficult to obtain because the tree tends to grow irregularly. In the past, the Hidatsa made tent poles by peeling the bark off the trunk of poplar and cottonwood. Hoe handles were also made from poplar. If the hoe had an iron blade, however, cottonwood was used instead (Wilson 1916:327, 332; 1924:193). According to one consultant, *poplar can be poisonous; however, part of this plant is used in heart medicine.*

# Cottonwood

*Populus deltoides* Bartr. ex Marsh. (eastern, plains cottonwood)

*Populus xacuminata* Rydb. (pro sp.) (lanceleaf cottonwood)

*Populus angustifolia* James (narrowleaf cottonwood)

*Populus balsamifera* L. (balsam poplar)

*Populus xcanadensis* Moench (pro sp.) (Carolina poplar)

*Populus tremuloides* Michx. (quaking aspen)

Mandan: wáx (cottonwood, Hollow 1970)

Hidatsa: ma'ku (Anonymous n.d.; Wilson 1916:249)

Arikara: waxakúsu (Parks 1986)



MHAN consultants examine a giant cottonwood at Cross Ranch State Park, ND,

M. N. Zedeño, photographer

Native cottonwood species grow in the sandbars on the rivers and in bottomland areas (USNPS 2007). Eastern cottonwood prefers floodplains, ravines, and bottomlands; plains cottonwood is found in sandy soils of floodplains, river sandbars, and around springs. The cottonwood's yellow flowers bloom from February through April; it is the habitat of eastern screech-owls, golden and bald eagles, hawks, other raptors, woodpeckers, and fox squirrels (Taylor 2001).

When the cotton flies, it is time to sweat.

## Preparation, Use, and Significance

The cottonwood tree was and continues to be an important secular and ceremonial resource for the tribes of the upper Missouri River. The Hidatsa used the wood for making earthlodges, palisades, corrals, tent poles, corn stages, drying racks, and travois (Anonymous n.d.; Wilson 1916:249). The tree comprised the four main posts of the earthlodge (Potter 2003:25). Consultants noted that,

While the main posts were fresh-cut cottonwood, the cottonwood crosspieces were treated first. Once the wood was cut, the men would stack it like a tipi to let the sap and moisture drain out of it for one to two months. These secondary posts could then be used in the earthlodge. Long poles made from cottonwood do not warp, like ash, because of differences in water content. It may have been used to construct scaffolding.

Cottonwood was also used in the construction of Mandan fortifications (Potter 2003:22; Wilson 1924:218); it figures prominently in the construction of Arikara fish traps. A cottonwood sapling is placed in the center of the circular fish trap. This symbolizes the fireplace of the Arikara earthlodge or more specifically the medicine lodge. According to Gilmore (1924:121), "the sapling in the center of the pen, correlated with the fireplace of the house or temple, must be a young cottonwood tree, the cottonwood being one of the species of trees having sacred and mystical significance." The leaves of the cottonwood sapling are left at the top of the trap, which then rustle and alert the fisherman when the fish begin to enter (Gilmore 1924:131).

Grooved paddles for pottery production were made of cottonwood. The paddles were beaten against the sides of clay pots during manufacture to thin and strengthen the vessel (Gilman and Schneider 1987:119). They also used cottonwood bark to smooth arrow shafts by "gluing" crushed rock to the bark (Gilman and Schneider 1987:74). *The bark can be chopped off and used for kindling. The wood is also well-suited for burning.*

Cottonwood was a food item. The Crow *peeled back the bark to find an ice cream-flavored jelly underneath*. The Hidatsa found that the inner bark was sweet to chew on, particularly in early summer (Anonymous n.d.; Wilson 1916:250). They also used the top branches and bark of the cottonwood as winter fodder for prized, lodge-kept horses:

On pleasant days the women of the household went out every afternoon about two o'clock for bark. They commonly cut down two or



three small trees, perhaps a foot in diameter. They cut the rough, outer bark from the trunks; stripped the green, inner bark off in pieces, many of them as long as my arm and as broad as my hand; and lopped off the tender tops and smaller branches. Both bark and branches the women bore to the lodge with their pack straps. (Wilson 1924:175)

After being thawed in the lodge near the fire, they were given to the ponies (Anonymous n.d.; Wilson 1916:249, 1924:175-176).

The cottonwood is a mystical tree associated with creation stories, sacred societies and ceremonies at Fort Berthold. In the past, the central post of the Hidatsa *Naxpike* lodge was made of cottonwood from driftwood in the Missouri (Bowers 1992:315). Cottonwood branches were also used for the roof poles (Bowers 1992:316). Wood from the tree was also incorporated into the Lone Man shrine in Mandan villages (Bowers 2004:113). Today, *in the Sundance the star shape found in the core of the cottonwood branch, called madáabushii naxbiikewa or warrior star, is used. In addition, cottonwood is burned in ceremonial fires and used to make drumsticks and lodge poles.*

In the Arikara Buffalo Society, cottonwoods were part of the buffalo-calling ceremonies. A man would strike a pole with an ash stick, saying "Come buffalo" (Dorsey 1904 cited in Howard 1974:246). "The offering pole struck with an ash stick in their buffalo calling ceremony clearly represents the hollow cottonwood out of which the ancestral Arikara emerged from the underworld" (*ibid.*). In the Arikara story *Why the Buffalo No Longer Eat People*, "the ancestral Arikara are

trying to emerge to the surface of the earth from a subterranean realm. As they emerged, via a hollow cottonwood tree, the Buffalo people, aided by their ritual, began hunting and killing the humans" (*ibid.*). The story then goes on to explain that this was the origin of the Buffalo Society Bundle.

Along with willow, cottonwood plays a role in the adoption ceremony of the Crow Sacred Tobacco Society (Zedeño et al. 2006:203). Their branches are used to build the altar, which is made of two upright cottonwood stakes and seven willow loops on each cottonwood stake. Juniper is placed flat between the upright cottonwoods. Four black lines made with ashes from the ceremonial fire are painted on the juniper branches.

# Willow

*Salix* spp.

*Salix alba* (white willow)

*Salix amygdaloides* (peachleaf willow)

*Salix bebbiana* (Bebb willow)

*Salix candida* (sageleaf willow)

*Salix discolor* (pussy willow)

*Salix eriocephala* (Missouri River willow)

*Salix fragilis* (crack willow)

*Salix humilis* (prairie willow)

*Salix interior* (sandbar willow)

*Salix lucida* (shining willow)

*Salix lutea* (yellow willow)

*Salix maccalliana* (McCalla's willow)

*Salix pedicellaris* (bog willow)

*Salix pentandra* (laurel willow)

*Salix petiolaris* (meadow willow)

*Salix serissima* (autumn willow)

Mandan: íruxaxka (willow rake, Hollow 1970)

Hidatsa: mahuhisa; midahadsi; miira hachiiArikara: čítabatč (Parks 1986)



Willows on the Missouri River, M. N. Zedeño, photographer

"Willows were always found growing along watercourses, as though they had some duty or function in the world in connection with water" (Gilmore 1966:180).

### Preparation, Use, and Significance

There are many species of willow traditionally used by the Mandan, Hidatsa, and Arikara. Yet the species is not always indicated by authors or by consultants when discussing its importance or use. The following information is for uses and cultural significance of "willow" at the most general level.

The largest of the Hidatsa social divisions, and apparently the last to settle along the Missouri, were the Hidatsa proper (*hiraáca*), whose own name for themselves was popularly thought to be related to the word *wiraháci*, or 'willows,' giving rise in the nineteenth century to the occasional designation of Willow Indians, Osier tribe, or People of the Willows (Bowers 1992:xi-xii). According to one consultant,

There are five kinds of willows. They can all be found by lost springs. There is the family willow, used in crafts and construction; purification willow, used for sweats before or after a ceremony, vision, or vow; medicine willow, for doctoring and other sweats; and two kinds of red willow [redosier dogwood] for smoking, blessing the pipe and household, and making kinnickinnick. The purification willow is also known as sandbar willow.

The flexibility of willow branches made it useful in the construction of many different types of lodges and myriad crafts. For instance, the branches were bunched and used to cover the leaning poles of Mandan earthlodges (Potter 2003:25). Willow branches were also used to frame Mandan sweat lodges (Anonymous n.d.; Estes 1990:9). Young willow trees were used to make bullboat frames. The wood was also used for drums and saddle stirrups (Anonymous n.d.). Among the Hidatsa, willow branches were formed into "pot stand ringlets," which allowed pots to be stored in such a way that they did not have to touch the ground (Gilman and Schneider 1987:17). The Crow wrapped a wet piece of willow around a stone and, as it rotted, it produced an acid that softened the stone enough to carve a groove to haft a stone hammer (Zedeño et al. 2006:257).

The chief use of the willow, among the Hidatsa, was furnishing the bark with which carrying baskets were woven. Strips of bark were peeled upward from 3 inch diameter trees just before June. The strips were usually about three and one-half feet long and were dried inside the earthlodge for up to six days. They were then soaked in the river. The bark was cut into narrow strips, dyed in creek mud for six or seven days, and washed in the river. *A lot of people, even those in Belcourt, used small willows to make baskets.*

The bark was useful as fishing line, which the Mandan made by twisting strips of willow bark together (Hiller 1940:145). As a boy, one consultant would play along the banks among the willows and fish in the inlets for northern walleye, catfish, and trout. He would use green willow to make the spears and baskets used to catch the fish, because *willows have natural buoyancy*.

Among young Arikara boys, willow wands were made and used in a popular throwing game. The willow branches were peeled, usually in rings or spirals, and then stained with either berry juice or fire. The last of the bark was then removed. The effect of the coloring was a contrast of dark and white designs along the length of the wand. The wands were thrown as far as one could reach from a given spot on the ground (Gilmore 1926b:11). Among the Hidatsa, willow was used to make the hoop for a hoop and stick game, as well as the stick in the stick and ball game (Gilman and Schneider 1987:27).

The medicinal properties of willow bark makes it an ideal all-around remedy; as one consultant said, *if you scrape off the bark the medicine comes right out*. The Crow were known to chew the tips of willow stems to induce vomiting, particular-

ly in sweat baths (Hart 1992:67). *Willow is a main ingredient in sweat baths.* The bark was also chewed as a headache remedy, and to prevent cavities (Hart 1992:67).

Willow is associated with several Mandan ceremonies and origin stories, in particular, the Okipa origin myth. It is an integral component of the Lone Man Shrine and symbolizes Lone Man's power to keep the Mandan villages safe from the flood. The Mandan Okipa required male buffalo dancers or bull dancers to wear bundles of willows (Bowers 2004:130; Potter 2003:33). Additionally, women would gather willows for the Okipa fires, and the men would bring it into the Okipa lodge (Bowers 2004:129). Willows were also used to decorate the exterior of the Okipa lodge, and to make hoops for the Okipa hunting ceremonies (Bowers 2004:147). On the fourth day of the Okipa ceremony (the Hunting Day), Okipa fasters were given a sandbar willow to add to their own medicine bundles.

There are other ceremonial uses of willow as well. On the first day of the Arikara Buffalo Society medicine bundle ceremony, "women and girls went to the river and gathered dry willow boughs, and carried them to within half a mile of the ceremonial site. From this point they were brought in ceremonially that evening" (Howard 1974:258). Uncovered sweat tents of willow boughs were constructed by women in clearings of the willows for marriage ceremonies (Beckwith 1938:180). In addition, men used willow shavings in unspecified ceremonies. According to a Crow consultant, *willow also has an important role in adoption ceremonies [see cottonwood page], the planting of sacred tobacco, and the Sundance ceremony.*

# Peachleaf willow

*Salix amygdaloides* Anderss. (peach-leafed, Indian willow, Wilson 1916:253)

Hidatsa: maxóxica (Wilson 1916:253)



Peachleaf willow (*Salix amygdaloides*), R. H. Mohlenbrock, photographer

Peachleaf willows are found in the timbered bottomlands along the Missouri or in the timber clumps in the hills. It is not a plentiful tree. Bark was harvested for use just before June (Wilson 1916:254).



## Preparation, Use, and Significance

There are many documented uses of peach-leafed willow, which come from an account provided by Buffalo Bird Woman, a Hidatsa (Wilson 1916:253-257). Utilitarian uses of young peachleaf willow trees include the construction of bull boat frames and the frames of bark-covered carrying baskets. The wood was also used for making drums. Saddle stirrups were also made of this willow, but not the saddle frames. The Hidatsa, however, did not use the wood to make fires because it did not give out much heat.

Specifically, basket frames were made from *maxoxica* willow and also of the trunks of young diamond willows or *midáhatsi pópokei*. The main use of the peachleaf willow was to furnish bark out of which carrying baskets were woven; boxelder bark was interwoven to obtain contrasting design colors. The boxelder produces a light yellow color and the peachleaf willow was yellowish-brown, but was dyed black for baskets. *Maxoxica* willow bark is tough and strong. Boxelder bark is softer and works easier. Hidatsa women used boxelder bark on the sides of the basket and willow bark for the bottom. This is the reason that the bottoms of Hidatsa baskets are usually black.

According to Buffalo Bird Woman, "a basket of willow and boxelder bark lasted a long time if it was used carefully and kept in out of the rain; but if the owner loaded the basket with too heavy a weight or if she left it out in the rain, it soon spoiled" (Wilson 1916:256). The bark baskets were viewed as being very useful. Women carried vegetables from the gardens back to the lodges in baskets. They also used baskets for carrying berries, stones, earth, and ice.

# Diamond willow

*Salix bebbiana* Sarg. (Bebb, gray, long-beaked, beaked; heart-leaved willow, Wilson 1916:291)

Mandan: skí (Hollow 1970)

Hidatsa: mirahacii; midáhatsi pokpokoí (Wilson 1916:291)

Arikara: čítab-kusu (big willow); čítab-nanuh (black, many-branched willow; Parks 1986)



Diamond willow (*Salix bebbiana*), K. Laninga, photographer

Native to the region, diamond willows are found in wet lowlands, along lakeshores, riparian environments, seep areas, hillsides, and uplands. The tree blooms in April and May and fruits in late May and June (LBJWC 2008; Larson 1986a:285).

Diamond willow is also a term used to describe any of several species of willow which has been attacked by a fungus. The fungus creates diamond-shaped patterns on the trunk (LBJWC 2008).

## Preparation, Use, and Significance

A variety of willow once recognized in the Fort Berthold Indian reservation was called *pokpokoi* which has no known meaning. According to Buffalo Bird Woman, “pokpokoi is an old word and the meaning is probably lost” (Wilson 1916:291). She identifies the *midahatsi pokpokoi* as the diamond willow and goes on to say:

Midahatsi pokpokoi does not bend as flexibly as Maxoxica, yet it bends very fairly. So we used it for making sweat-lodge frames, also we used these willows for covering the roofs of our earth lodges. They were laid over the rafters and when they were this kind of willow lasted a long time. For covering the rafters we picked out willows that were about as thick as my thumb, young ones, using the whole plant. Sometimes when we could not find maxoxica we got diamond willows to make bull boat frames, but they were not so good. Only good ones, free of branches and knots, were used for boat frames.

Consultants note that diamond willow is valued for its flexibility, which is why it is commonly used to make drum rims, catfish traps, and garden fences (also, Bowers 2004:257-259; Potter 2003:27). *It was cut when green, whittled to size, soaked, and molded into shape.* Though useful in many respects, diamond willow is one of the few unsuitable fire woods, because it was known to throw many sparks (Wilson 1924:208). If it was burned, it was never in the hearth within the earthlodge (Wilson 1916:292).

The diamond willow has several ceremonial and ritual associations. It played an important role in the Lone Man shrine, acting as a floodwater marker around the shrine (Bowers 2004:113). It also plays a role in helping the soul travel from the body to the spirit world (Gilmore 1966:181). Today the diamond willow is thought to be affiliated with ghosts.

# Sandbar willow

*Salix interior* Rowlee (coyote, narrowleaf, river-bank, red willow; Wilson 1916:293)

Mandan: skí (Hollow 1970)

Hidatsa: midáhatsi hici (red willow; Wilson 1916:293)

Arikara: čítapahatu (sandbar willow, red willow; Parks 1986)



Sandbar willow (*Salix interior*), D. E. Herman, photographer

Sandbar willow is a thin-leaved species found along stream banks, sandbars, and ditches. Sandbar willows flower in May and early June, bearing fruit in June and July (LBJWC 2008; Larson 1986b:287). Sandbar willow is also known as purification willow among the Hidatsa.

## Preparation, Use, and Significance

Consultants noted that sandbar willow has gender-specific uses. For example, Wolf Chief told Gilbert Wilson (1916:294) that Hidatsa warriors would eat the roots of sandbar willows on war parties.

On war parties if out of food, we used to eat the roots of red willows, hátsihíci. We ate the roots of the young willows, also those of the larger trees that stood on the edge of the Missouri bank and the water had undermined the bank so that we could get the roots. The roots we sometimes washed in water and sometimes cleaned with our hands. We chewed only the bark of the roots of the larger trees, but we chewed all the roots – parts of the tender roots of the young willows. We swallowed the bark as well as the juice. It was sweet and pleasant to the taste.

Utilitarian functions of the sandbar willow are numerous. This willow was important in the construction of Arikara fish traps (Gilmore 1925a:95). Fish traps were circular pens with a layout similar to Arikara dwellings or medicine lodges. These were constructed of four panels, each panel consisting of a hundred sandbar willows, attached to four posts (Gilmore 1924:120). The sandbar willow was greatly preferred by watermen for setting poles (Jenkison 2003:516).

In addition, “sandbar willows were utilized by the Hidatsa people for making mats which were three feet by eight feet. They sat upon these mats on the ground but they were also used on corn stages and for making fish traps” (Anon-

ymous n.d.; see also Wilson 1916:293). The roots of these willows were also used in making a kind of round basket for playing dice (Wilson 1916:294).

Children and young adults chewed on the roots of young sandbar willows (Anonymous n.d.). According to Buffalo Bird Woman, "the roots of the young plants in early spring before the leaves came out were very sweet and were chewed by children and young folks. After the leaves came out the woody stem was chewed, but not the roots" (Wilson 1916:293).

The trees are important in recounting the Arikara genesis and are known to have been found in Arikara Sacred Bundles (Gilmore 1931:40, 50). In addition, sandbar willow and buckbrush were used in the Hidatsa Naxpike ceremony. They were tied to the buffalo head that sits atop the cottonwood post at the center of the Naxpike lodge (Bowers 1992:316).

Sandbar willows continue to be used extensively different types of sweats. For example, one consultant noted that women and "unisex" sweat lodges made from the sandbar willow have two poles placed on each of the four sides of the lodge. These are bound not with cloth or rope, but with greens.

# American elm

*Ulmus americana* L. (white, water, soft elm)

Mandan: wráwi (Hollow 1970)

Hidatsa: mídai (Anonymous n.d.; Wilson 1916:300)

Arikara: nakás (Parks 1986)



American elm (*Ulmus americana*), © J. S. Peterson

American elms are increasingly being found among river bottoms, draws, plains, and moraine hills. The elm favors rich, well-drained soils (Barker 1986a:122; Coladonato 1992; USNPS 2007). Elm is one of five major tree species growing in



the river bottoms just east of the Knife River Indian Villages National Historic Site.

Elms flower throughout late spring depending upon latitude, ranging from February through May (Coladonato 1992; Barker 1986a:122). Deer and rabbits occasionally browse the leaves of the elm, while grouse, squirrels, opossums, and mice are known to eat the flowers and fruit.

### Preparation, Use, and Significance

Elms are commonly utilized by the tribes of the Upper Missouri River. The Arikara, Hidatsa, and Mandan used elm for many purposes. American elms and cottonwoods were used in the construction of Mandan fortifications (Potter 2003:22). The Hidatsa surrounded their gardens with a fence of diamond willow, bound together with the inner bark of the elm. Elm branches were valued for making excellent bows for buffalo hunting. In addition, the Hidatsa made a tea from the elm's inner bark. This was only done after sugar was introduced to the region by Europeans (Wilson 1916:300).

Consultants noted that sacred and medicinal uses of elms include planting these trees at the four corners of Mandan burial grounds. *This is for their silver and red colors.*



# Shrubs

Mandan: wá'iri

*Small Ankles talked to the bundle, saying, "I saw you in my dream and you taught me how to doctor and I am doing that now. You showed me how to doctor with chokecherries."*

Bowers (1992:386)

# Yucca

*Yucca glauca* Nutt. (soapweed)

Hidatsa: itsidamiikah; maa-ii-haa ida miikah (enemy's grass)



Blooming yucca (*Yucca glauca*), C. Rechenthin, photographer

Yucca is native to the region. In North Dakota, this plant is found mostly south and west of the Missouri River. It grows on dry sandy hills, dry prairie slopes, and in the badlands (Kantrud 1995; LBJWC 2008). The plant produces greenish-white flowers in May, June, and July (Churchill 1986a:1265; Groen 2005a).

## Preparation, Use, and Significance

The roots, seed pods, flowers, and leaves of this plant were used variously by the Missouri River tribes. In terms of utilitarian functions, *the tips of the yucca were used as needles when dried to pierce leather*. The central stalk, flowers, and seed pods of the yucca were consumed as food (Kantrud 1995).

Consultants indicate that yucca has medicinal and cosmetic uses:

The plant can be used as a diuretic if the soap is boiled out of the root.

Yucca is also used for constipation. The plant's root was used to create a shampoo and hair strengthener. It was believed that shampoo made from yucca was useful for lengthening hair.

Finally, there is something mysterious to this plant: the Hidatsa have a story about a man who lives at the base of the yucca plant. The little red man is at the end the yucca root that is six feet long.

# Sumac

*Rhus glabra* L. (smooth-leaved sumac)

*Rhus aromatica* Ait. (skunkbush, fragrant sumac, Zedeño et al. 2006:245)



Skunkbush (*Rhus aromatica*), J. Pisarowikz, photographer

Sumac shrubs thrive on dry slopes of plain and foothill zones.

## Preparation, Use, and Significance

Although upper Missouri river tribes used smooth-leaved sumac to thicken the blood (Zedeño et al. 2006:257), Hidatsa elders do not recognize it as a useful plant in the past or present; in fact, they think that the roots of the sumac may be poisonous. Because of its pungent odor, the Crow consider fragrant sumac to be a good insect repellent (Zedeño et al. 2006:245).

# Snowberry

*Symphoricarpos occidentalis* Hook. (western snowberry, wolfberry, buck-brush)

Hidatsa: masukaaksu; masúksakca (Wilson 1916:243)

Arikara: kaapiniwóx (Parks 1986)



Snowberry (*Symphoricarpos occidentalis*), U. Schittko, photographer

A very leafy bush, which often grows in dense colonies, the snowberry, better known as buckbrush among the Missouri River Indians, is common in mixed-grass prairies (Hauser 2007). Since it can adapt to a wide variety of soil types, it

is also commonly found in riparian areas, such as alluvial floodplains, ravines, swales, and along rivers and streams, as well as open woods. The snowberry blooms in June and July and has white flowers (USNPS 2007; Brooks 1986b:828).

Snowberries are associated with nesting areas of the sharp-tailed grouse, as well as waterfowl and turkeys (Hauser 2007). Additionally, prairie chickens were noted to eat its green and ripe fruit (Wilson 1916:248).

## Preparation, Use, and Significance

In the past, the plant's berries could be eaten. "They were ripe in the spring, about March. Sometimes when we went out in the woods for fuel we women would gather each a handful of the berries and eat them. They were not sweet, but we liked the taste" (Wilson 1916:248).

Snowberry was used in the manufacture of multiple useful tools. For example, the wood from this plant and/or black sage was used to construct snares for prairie chickens (Wilson 1916:246-247). Several consultants mentioned snowberries bushes as a source for making brooms (also Wilson 1916:243). The brooms are still being made for sweeping the tipi or lodge when camping. Buffalo Bird Woman described how to make a broom, which would last about 20 days and then be discarded.

I gathered good, long plants, and laid them side by side to be sure they were of the same length, and bound them together with a piece of thong so that the stems made a handle of about fifteen inches,



enough for two hands to grasp. We used no other kind of plant for brooms; but we did make them sometimes of buffalo hair. (Gilman and Schneider 1987:39)

The broom was then stored next to the entrance of the earthlodge. Buckbrush was also used on occasion to make mattresses or beds during hunts. This was often done when there was snow or the ground was wet. The mattresses were approximately 6 to 8 inches thick (Wilson 1916:244). Snowberry was also used to make toys that helped children learn basic life skills. Men, for example, would make arrows out of buckbrush for their sons:

Buckbrush stems or sticks were used for arrows, for boys. The boy's father would thrust the stem into the hot ashes of the fireplace; a green stem I mean. When it was hot, the father took a piece of skin in his hand and drew the hot stick thru it holding it quite tightly. This peeled off the outer bark but left the inner yellow. Such labor was always done by men, – by the boy's father, brother, grandfather, etc. It was not women's part to do. The arrows were unfeathered. When the green stick was thrust into the hot ashes it went tsa-tsa-tsa with the heat. (Wilson 1916:244-245)

Snowberry has important medicinal uses. Buffalo Bird Woman, a Hidatsa, told Gilbert Wilson (1916:245) that buckbrush was often used by the Hidatsa and Sioux to treat snow blindness:

A man would roll up a little ball of the inner bark of the buck brush as

big as the end of his little finger. Then he pulled hair out of a buffalo robe and wrapped it around the bark ball. This he dipped in water squeezing out the water lightly. Then if there were two or three in camp that were snow blind, he went around and as they sat he squeezed a drop out of the bark ball into the corner of the eye of each patient. My father used to do this; also I know a Sioux Woman that did.

Consultants indicate that snowberry continues to be used as an eye medicine. The plant is boiled and passed through a sieve, then placed in a bottle. Four or five drops are placed in each eye to treat cataracts. It is also useful in the treatment of tonsillitis. In addition, if someone has the rights, snowberry bushes can be used to pierce ears.

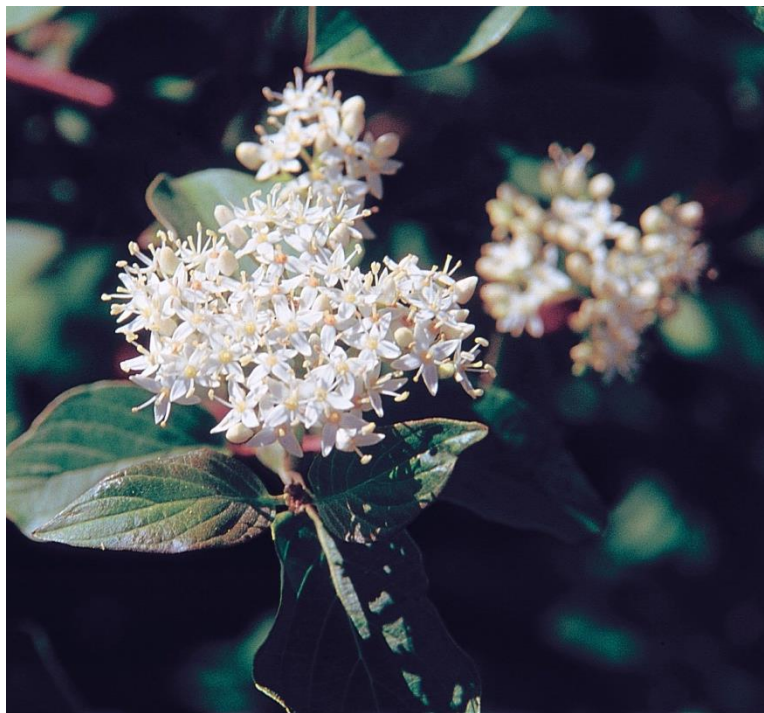
All we Indians had pierced ears. When the ear was pierced with a sharp iron, a little tiny bit of the top of a buck brush branch was taken, of a length equal to the thickness of the ear, and each end touched to a live coal to burn the ends smooth, so that it would not lacerate the flesh as it was pushed through the aperture. The little stick was peeled and scraped smooth with a knife. It was left in the ear, till the latter healed. This was universally done; no other wood or plant would serve the purpose. (Wilson 1916:246)

Finally, buckbrush twig bundles were used to heat the rocks used in the sweat lodge (Wilson 1916:247). *It is often added to some ceremonial bundles.*

# Redosier dogwood

*Cornus sericea* L. (western, American, redstem, poison dogwood; red willow, dogberry tree)

Mandan: wárqš ot (red willow, Hollow 1970)



Redosier dogwood in bloom (*Cornus sericea*), D. E. Herman, photographer

Redosier dogwood is a flood-tolerant plant that prefers rich, wet areas such as swamps, river banks, floodplains, and lowlands (Crane 1989). Due to its tolerance of extreme cold, the dogwood maintains its fruit into the winter months (Crane 1989).

Redosier dogwood is often referred to as “red willow” for its bright red stems, although this plant is not a true willow.

## Preparation, Use, and Significance

Redosier dogwood is best known as one of three main ingredients in the smoking mixture known as kinnickinnick. The inner bark of the shrub is mixed with sacred tobacco and dried bearberry leaves and smoked (Gilmore 1966:106). This mixture was often used for the purchase of stories amongst the Mandan (Bowers 2004:93). In addition to use in tobacco mixtures, *straight stems of redosier dogwood were used to make pipe stems*. As a result, the plant is ceremonially associated with tobacco, tobacco bundles, and tobacco societies.

Consultants indicate that during the Sundance, members of the Crow Sacred Tobacco Society use redosier dogwood as part of the ceremony. Often objects like shrub branches and sticks are used for specific motions and the dogwood is one such item. It is shaken in time with the drum. Additionally, members of the Sacred Tobacco Society wrap it with ground cedar around the base of sacred structures. They put redosier dogwood around to symbolize a nest with boughs five to six feet off the ground.

Known as a “timekeeper,” the life cycle of the redosier dogwood marked important stages in the ceremonial cycle. For instance, one consultant noted that the sprouting and maturing of the leaves of the dogwood marked the time of year for new sweat lodge construction. This rule has not persisted into modern times. Today sweat lodges are built whenever necessary. Redosier dogwood is

also associated ceremonially with the use of sweat lodges, the Sacred Tobacco Society lodge, and the Sundance lodge.

Every part of the redosier dogwood had a medicinal purpose. *The plant was powerful, but its success as a medicine dependended on whether the doctor knew how to work with the spirit.* An example of a specific medicinal use, the inner bark of the plant could be boiled to treat respiratory problems and ulcers.

# Cedar and juniper

*Juniperus* L.

*Juniperus virginiana* L. (eastern red cedar, red cedar juniper)

*Juniperus horizontalis* Moench (creeping juniper, creeping cedar, creeping savin, flat cedar)

*Juniperus communis* L. (common juniper)

Mandan: óxtqr (cedar); óxtq šrúr (juniper, Hollow 1970)

Hidatsa: midahopa

Arikara: tawihsaáku (Parks 1986)



Left: Eastern red cedar (*Juniperus virginiana*), B. Lockhart, photographer. Right: Common juniper (*Juniperus communis*), G. Wojciech, photographer

Juniper and cedar species that grow close to the ground prefer the rocky slopes and sandy soils of mountains, hillsides, and plains (LBJWC 2008; Brooks 1986c:72). Juniper and cedar bloom in May and June (Brooks 1986c:72).

The terms, "juniper" and "cedar," are often used interchangeably in the ethnographic literature and in consultants' descriptions. The term "creeping cedar" is used most often to refer to what is technically known as "creeping juniper." Consultants often use the fine differences in needle shape between juvenile and mature juniper to assign folk taxa. Flat cedar that grows locally is distinguished from *Arbor vitae* or "mountain cedar." Red cedar stands in its own category.

# Red cedar

*Juniperus virginiana* L. (eastern red cedar, red cedar juniper)

Mandan: wrq xópri (sacred cedar, Hollow 1970)



Lone Man Shrine, Twin Buttes, Fort Berthold Indian Reservation, M. Evans, photographer

This native perennial tree is found in rocky, sandy soils in fields, woodlands, and prairie hillsides (Brooks 1986d:74; LBJWC 2008). Red cedars flower in April or May (Brooks 1986d:74). The aromatic cedar contains volatile oils and the fleshy cones and leaves are poisonous (LBJWC 2008). Consultants identify it as a mountain plant, similar to a pine tree. *We consider red cedar to be a woman and a sister to us.*



## Preparation, Use, and Significance

Red cedar is one of the most culturally significant and sacred plants in Mandan, Hidatsa, Arikara, and Crow ceremonial life: it appears in several origin stories and is associated with several ceremonies. It also functions as the central element, the Lone Man shrine, around which the rest of the village was spatially organized (Bowers 2004:113). This sacred cedar played an important role in the Mandan Origin Myth and Okipa Origin Myth.

The Mandan Okipa ceremony is centered around the cedar pole, which embodies the culture hero Lone Man in this world. It commemorates the day in time immemorial when Lone Man saved the Mandan ancestors from the flood sent by their enemies by building a fortification of cottonwood and willow that stopped the water from rising over the river banks. This story also explains the origin of Mandan village fortifications or palisades.

Later, when (Lone Man) was leaving the tribe, he erected a Red-painted cedar, as a symbol of his body and of all the Mandans who had lived before. The cedar was surrounded by a wall of cottonwood planks as a symbol of the wall he erected to protect the people from the flood. A water willow surrounding the planks marked the highest advance of the flood waters. (Bowers 2004:113)

For the Okipa ceremony to be performed properly in the circular central plaza of the village, the pole was situated in the center and surrounded by a wall constructed of cottonwood and tied together by an exterior band of willow. The

lodges had to be placed around the plaza, with their entrances facing inward, toward the pole. The flat-fronted ceremonial lodge was always placed just north of the cedar post (Bowers 2004:111, 113).

When the MHAN left Like-a-Fishhook Village, the Lone Man shrine was moved to Elbowoods, but when the town flooded in the 1950s it was once again moved to Twin Buttes. There it is now, cared for by a Mandan family that has the proper rights to do it. A Mandan consultant noted that the poles are sacred, and when they are replaced, they are burned toward the west, in keeping with the tradition of a westward migration. *Nowadays, people come to pray and leave tobacco, cloth, and offerings to Lone Man.* In terms of cedar's relationship to other societies, *the yellow-crested blackbird is associated with the Lone Man pole. Incense made of "ground cedar" is associated with eagles.*

The cedar that is placed outside the Arikara Medicine Lodge beside the Holy Grandfather Rock is referred to as the "Holy Grandmother Cedar Tree," which "represents all living things" (Yellow Bird 2004:76). Gilmore 1929:186-188 offers the following account of an Arikara religious ceremony honoring the cedar tree. The cedar is called Grandmother, and the Ceremony of the Holy Grandmother Cedar Tree, is performed every year. The veneration of the Holy Cedar Tree is in effect an act of worship of the principle or essence of Life, a cedar tree being employed as a symbol of Everlasting Life.

A cedar tree is brought in from the place where it grew in the wilderness and placed on the prairie at a certain distance from the holy lodge, the tribal temple. The priests go out to this place and there set

up the tree and consecrate it. Then it is again taken up and carried in religious procession upon the shoulders of the bearers to the sacred lodge. When they come into the temple yard, they let the tree down from their shoulders, and the people gladly rush forward, bearing gifts which they lay upon the tree. The priests give blessing to the donors. It is a time of rejoicing and good feeling among the people.

Later, at the conclusion of the ceremonies, these gifts are distributed to the poor and unfortunate in the tribe. The bearers again take the tree upon their shoulders, carrying it in procession into the tribal temple or sacred lodge. After the ceremonies within the lodge are concluded, the tree is carried out and erected in front of the lodge. There the tree stands as a witness and participant with the people in the later celebration of the festival to Mother Corn, and in all their joys and sorrows during the remainder of the summer, through the following autumn and winter. So it remains with the people until the end of the winter has come, when the ice has gone out of the river and the pasque flowers again bring their cheering promise of coming spring (Gilmore 1966:187-188).

The cedar was also significant in ceremonies performed by the Arikara Buffalo Society:

In the meanwhile a group of men had gone into the hills to select a cedar tree to place in front of the medicine lodge. Returning with it they left it some distance from the village. Early the following day,

which was the first day of the annual ceremony of the Medicine fraternity, the women and girls went to the river and gathered dry willow boughs, and carried them to within half a mile of the ceremonial site. From this point they were brought in ceremonially that evening....Once brought into the village for commencement of ceremony, people made offerings to it...

Beaver bundle keeper[s], the leader of the ceremony, further consecrated the tree by rubbing red paint on its trunk and on each branch, and by tying eagle feathers at its topmost twig following the directions of Mother Corn... Later in the day the sacred cedar was carried out and replanted in the ground close to the sacred stone in front of the Medicine Lodge, and again the members of the various Medicine societies, including the Bears and the Buffalos, danced about them.... At sundown the women went to the pile of dry willow boughs they had gathered the previous day. Forming a long line they slowly marched to the village, while people threw offerings upon their bundles of boughs. This fuel was set down in the Medicine lodge close by the entrance. (Howard 1974:258-259)

As incense, red cedar is used in the home to ward off and protect the living from evil; *however, if you don't know how to use it actually may attract ghosts into your home.* It is also one of sacred plants used ceremonially by the Crow in the Sacred Tobacco Society. Cedar plays an important role in the treatment of the dead. *The four corners of a burial ground are usually marked by four planted cedars, and cedar twigs were traditionally burned next to graves in order to assist*

*the dead with their journey.* The Arikara also made a sacred fire by the grave with twigs from the cedar tree, as the breath of its fire would bring “persons of good intention into communion with those Unseen Powers” (Gilmore 1966:12). It is also contained in a buckskin pouch inside the Owl Bundle.

The cedar possesses a healing power that would come to people who sat under it, and could help them face obstacles in their life or solve problems. This is illustrated in the Mandan story, “The First Basket.” In this story, a tired woman carrying the plants she had collected sat beneath a cedar tree to rest. The cedar spoke to her and taught her to make baskets from its roots; this story explains why women must bear the burden of carrying loads in their baskets (Caduto and Bruchac 1997:149-150; Gilmore 1966:63). Though the power associated with cedar is usually positive, the smell of smoking cedar leaves has also been associated with the presence of *wood’s witches*.

Red cedar had several medicinal purposes. The Crows brewed into a medicinal tea, which was drunk to treat diarrhea, lung or nasal hemorrhage, and for post-childbirth cleansing and healing (Kindscher 1992:133). Today, cedar berries are brewed into a tea with bitterroot and used to treat diabetes and issues of the stomach and digestion: a consultant recommends *mixing the cedar berries with bitterroot to make a tea to ease the tightness of the stomach after eating too much*.

Only one type of the four species of cedar can be used to cure a child’s earache (which is unknown)- crushed cedar bark is placed on top of embers by a medicine man – Then he mixes some finely ground herbs with beef tallow. He holds

this mixture over the embers to make it nearly liquid, and then rubs it in the ear and all about the ear. Next he holds the child over the fumes of cedar and herbs, moving it around a little (Hilger 1951:70).

The old timers dry cedar out and put it on hot rocks. They use the cedar berries as an offering. Men use cedar with their pipes. It is also used to smudge. Cedar was here before sweetgrass. People used cedar and sage before sweetgrass came down from Canada.

Cedar also figures in people's and place names. Naming one after cedar originates in the story of the seven brothers or "gods of war" who tormented Black Wolf and played with dismembered human body parts; one of the brothers "had a small cedar growing on his forehead" (Beckwith 1938:153). Hence, the popularity of the Mandan male name of Cedar-between-his-eyes and Sticks-cedar-in-his-head (Beckwith 1938:143, 213). There are buttes west of the Black Hills that the Mandans call Two-cedar-buttres-facing-each-other, likely the same as Two-Pine-Trees-facing-each-other; "these hills face each other and look as if water had washed out between them" (Beckwith 1938:304). A Mandan winter camp was also named Sharp-pointed Cedar (Beckwith 1938:319)

People from Fort Berthold cut the badlands cedars down for Christmas trees.

# Creeping juniper

*Juniperus horizontalis* Moench (creeping cedar, creeping savin, flat cedar)

Hidatsa: miira xubah ohguca'a (creeping cedar, "holy wood like a root or seed")

Arikara: tawihsaakatóx (Parks 1986)



Creeping juniper (*Juniperus horizontalis*), T. Weldy, photographer

Creeping juniper is a slow-growing, mat-forming shrub that grows in open, well-drained areas, including hillsides and sandy, rocky poorly-developed soils. It is highly frost-resistant and blooms in April and May (Gucker 2006; LBJWC 2008). Consultants noted that it could be found on or at the foot of a mountain and identified by its small, sharp leaves.

## Preparation, Use, and Significance

Today, creeping juniper is mainly used as a medicinal herb for smudges or teas:

Cedar is creeping juniper. It grows like lightning. The eagles and other big birds use the plant. It is used to calm the spirit or bring the spirit back to children when they are fussy at night. Creeping cedar may calm adults down, as well. Also when spirits are about to leave the flesh, cedar helps bring the spirit down. It is used as a smudge for mental stress and insomnia.

Creeping juniper is brewed into a tea used by some Indians to produce a sweat (Jenkinson 2003:519).



# Common juniper

*Juniperus communis* L.



Common juniper (*Juniperus communis*), P. Amorati, photographer

Native to the region, juniper is found on rocky slopes and coniferous forests. The yellow blooms of the common juniper emerge in April. Juniper's fleshy cones and leaves are toxic (LBJWC 2008).

## Preparation, Use, and Significance

Juniper has high vitamin C content, which may contribute to its powerful medicinal properties. Cedar berries were mixed with white clay to create a medicine. The common juniper, which looks like cedar, is brewed into a tea for diarrhea and coughs. Its smoke is used under a blanket and inhaled.

# Silver buffaloberry

*Shepherdia argentea* (Pursh) Nutt. (bullberry)

Mandan: hqs (bullberry); hqs húr (bullberry bush, Hollow 1970)

Hidatsa: mähicí (Anonymous n.d.); mähisi (red-thing, Wilson 1916:251)

Arikara: naanisaáku (Parks 1986)



Consultant gathers buffaloberry (*Shepherdia argentea*), M. N. Zedeño, photographer

Buffaloberry is found on hillsides and along stream banks with rocky, sandy, or clayey soils (Kindscher 1992:281; Van Bruggen 1986a:492). It is a drought tol-

erant plant (LBJWC 2008). The yellow flowers of the silver buffaloberry bloom in May and June. The red berries first appear in July and are available through September (Van Bruggen 1986a:492).

The Arikara have a saying: “when buffalo berries are plentiful in the fall, our tribe says that there will be a mild winter, and this always comes true” (Hilger 1951:70). *Deer scratch their backs on buffaloberry.*

## Preparation, Use, and Significance

The “bright red or sometimes orange berries were gathered in the fall in parfleche bags. The Hidatsa would bend a tree over a tent skin and knock the berries down into it” (Anonymous n.d.). The Hidatsa only ate the berries fresh (Wilson 1916:251). In contrast, the Mandan collected the berries opportunistically and stored them through the winter (Beckwith 1938:96-97, 109).

This tradition continues on:

Buffaloberries are a delicacy, red with very small seeds, though their thorns make them hard to collect. The berries are picked in late August and September, after they have been sweetened by the frost. The best way to collect the berries is to lay down a hide under the plant and beat the bush with sticks. This “harvest hitting” is called baa-li-shii-she.

Buffaloberries are edible when eaten raw. However, buffaloberries are typically made into a pudding. Two kinds of berries, yellow and red, are used to make pudding.

The buffaloberry also has sacred and practical uses. Buffaloberry was used in a Hidatsa women's gambling game:

Bull berry sticks were used for making sticks for a kind of dice or women's gambling game. Two sticks about a foot long were cut, carefully peeled of bark and smoothed, and split. The pith was removed and the flat or split side also smoothed. Marks were made on the flat side. There were twelve chips or counters to go with them. (Wilson 1916:251)

Gilmore (1930:75) recorded the placement of an afterbirth bundle in branches of this plant. The branches of the bullberry were often incorporated into the fences surrounding tobacco fields to strengthen them (Wilson 1916:251).

# Bearberry

*Arctostaphylos uva-ursi* (L.) Spreng (kinnickinnick)

Mandan: wárqš ot (kinnickinnick, Hollow 1970)

Hidatsa: aruuxtuu iashahé; aru iixtuu iasha hé; aru iixuu tua



Bearberry (*Arctostaphylos uva-ursi*), © J. S. Peterson

Bearberry is most often found in pine and spruce forests, and on steep, sunny hillsides in the Rocky Mountains. In the Great Plains, this plant is commonly located on sandy hillsides and woods (Van Bruggen 1986b:334). It favors well-

drained soils (Crane 1991). *These bushes can be found in the Twin Buttes area.*

In the northern Great Plains, the bearberry plant flowers in June and bears fruit in September. Bearberries spoil slowly, and thus often persist through the winter. According to one consultant, the Crow pick bearberries when the *leaves turn red in the fall*. The berries of the bearberry plant are an important food source for black bears and grizzly bears, as well as hummingbirds and mule deer (Crane 1991).

## Preparation, Use, and Significance

Although the tribes of the Upper Missouri River are familiar with the plant, a consultant said that it is known as a *mountain plant*. Elders said that it was not common around Knife River, but rather found in Blackfoot country and traded. Another elder noted that there is an area around Twin Buttes where it may be collected. Bearberry was obtained through frequent trade with Crow, especially during gatherings.

Bearberry has utilitarian, medicinal, and ceremonial uses. According to Buffalo Bird Woman:

The kinikinik [sic] bush bears a white berry. These berries are quite bitter before the frost falls; after freezing they are quite sweet. We used to eat them even when bitter, picking them from the tree. After they are frozen, they are quite good for two or three days, when they turn black and fall to the ground. We were fond of the sweet, new frozen berries before they fell off the bush. I would gather one or two

gallons of the berries in a bark basket, take it to the river and sink it gently till half under the water; the bark bits of leaves and sticks etc., would rise and could be taken off; the berries sank to bottom of basket. The brief wetting did not hurt the basket. The berries were taken to the lodge to be distributed to all who would. We gathered berries after the frost, or even before, if they were well ripened. (Wilson 1916:266)

Today, bearberries are not eaten nearly as often as juneberries or strawberries, if at all.

The inner bark of the plant is combined in a mixture of tobacco and other plants to create kinnickinnick, a sacred smoke for the Missouri River Indians. Kinnickinnick is used in the ceremony for the Mother Corn. In the past, the inner bark of the bearberry was not commonly mixed with tobacco (Wilson 1916:266). Prior to contact with Euroamericans, old men only smoked native tobacco. According to Buffalo Bird Woman, the practice of mixing kinnickinnick was initiated only after contact with Euroamericans (Wilson 1916:266). In Hidatsa, the mixture is called *Ópi Íhaca* or "tobacco mixed." It is *kri-kri* in Mandan (Hollow 1970).

Hart (1992:4) notes that the Crow Indians pulverized the leaves and applied the powder to canker sores of the mouth.

# Blueberry

*Vaccinium* L.

*Vaccinium angustifolium* Ait. (lowbush blueberry)

*Vaccinium ovalifolium* Sm. (oval-leaf blueberry)

*Vaccinium pallidum* Ait. (blue ridge blueberry)

*Vaccinium uliginosum* L. (bog blueberry)



Blueberry (*Vaccinium* sp.), S. Bauer, photographer

Blueberries grow on forested slopes as understory, blanket species. Bog blueberries grow on forest bogs. They bloom in early July through September (Kershaw 2000:96). They are native but rare in North Dakota.



## Preparation, Use, and Significance

In the past, these berries were collected and stockpiled through the winter (Beckwith 1938:103-104). Today, *blueberries are used to make puddings that may be offered as spirit food.*

# Buckthorn

*Rhamnus alnifolia* L'Her. (alderleaf buckthorn)



Buckthorn (*Rhamnus alnifolia*), R. H. Mohlenbrock, photographer

Native to the region, buckthorn thrives in wetlands, swamp edges, bogs, and along lakeshores. The shrub flowers throughout May and June (LBJWC 2008; McGregor 1986b:556).

## Preparation, Use, and Significance

The berries of the buckthorn are poisonous. They are extremely toxic if eaten and will cause nausea, vomiting, and diarrhea (LBJWC 2008). It is likely that this plant was used as a purgative or to induce vomiting when other poisons were eaten. Consultants know it as a native plant but they do not currently use it.

# Juneberry

*Amelanchier* Medik.

*Amelanchier alnifolia* (Nutt.) Nutt. ex M. Roemer (saskatoon serviceberry)

*Amelanchier humilis* Wieg. (low serviceberry)

*Amelanchier sanguinea* (Pursh) DC. (roundleaf serviceberry)

*Amelanchier stolonifera* Wieg. (running serviceberry)

Mandan: pušek (Hollow 1970)

Hidatsa: matsutapa; mátsu tapa' (soft berry, Anonymous n.d.; Wilson 1916:210); agudabac (soft berry); mátsú atáki (white berry, Wilson 1916:265)



Juneberry (*Amelanchier alnifolia*), M. Harte, photographer

Native to the region, this shrub favors well-drained soils along stream banks, hillsides, and woods (LBJWC 2008). Consultants noted the juneberry comes from Canada. The juneberry's white flowers bloom from April through June (LBJWC 2008). The berries ripen at different times depending on elevation. In the high mountains, they are ready in June and July. In the bottomlands they ripen in late July (National Park Service n.d.). *They are only ripe for one week.*

## Preparation, Use, and Significance

The juneberry has a long history of use by the Mandan, Hidatsa, and Arikara. It appears in origin traditions, for example, the Hidatsa story of Eagle Man, one of two eagle friends who wished to live among humans. Eagle Man chose to be carried and delivered by a Hidatsa (Awatixa) woman. He lived a long life at the Knife River villages and left the Water Buster bundle to help the people when he decided to return to the eagle world. Once, his eagle friend came to take Eagle Man with him; a battle ensued, and when Eagle Man was struggling to decapitate his friend, he discovered that his spinal cord was made of juneberry wood (Bowers 1992:470).

In "old times" the shrub was called *mída káti*, meaning real tree or genuine tree, because it was believed that the wood was "the best of the forest" (Wilson 1916: 10). "White berry" shrubs are rare and grow in groups. They were once only found in one place close to Independence on the Fort Berthold Indian Reservation (Wilson 1916:265). According to Buffalo Bird Woman "The wood of white June berries has the same value exactly as real June berry trees. Also the berries

are used and cooked in exactly the same way. Berries of both trees are equally sweet. The trees of both varieties are I think of the same size" (Wilson 1916: 265).

Juneberries were and are an important staple food of the Indians of the Upper Missouri River. Berry-picking was woman's work, but it was often a time for courtship, according to Buffalo Bird Woman,

We gathered Juneberries, either picking them off the tree by hand, or we broke off a laden branch and beat it with a stick, thus knocking the berries off upon a skin... It was a common thing for a young man to help his sweetheart pick Juneberries. A young man might send word to his sweetheart by some female relative of his own saying, 'That young man says that when you want to go for Juneberries, he wants to go along with you!' Or else he watched when she came out of the lodge to start berrying; for it was not our custom for a young man to talk openly with a young woman. (Gilman and Schneider 1987:65)

Men might also accompany women berry-picking for protection. They would carry weapons against dangerous enemies or grizzly bears (Anonymous n.d.). Hidatsa women would gather up the fallen berries on hides and calfskin bags, which they carried back to the village on their backs (Anonymous n.d.; Wilson 1916:213). At the village, juneberries were put on the canvas to dry. When they were dry like rocks, women would put them in flour sacks to keep during the winter months (Estes 1990:8; Gilman and Schneider 1987:65). In another account, "Juneberries were winnowed and then dried on a skin on a corn stage for five

days, sacked, and then stored in food caches. During the drying process the berries were taken inside each night” (Anonymous n.d.). Fresh and dried berries were traded between the tribes (Gilmore 1966:90).

Once dried, juneberries were used in various ways. Dried berries could be prepared as follows: juneberry balls, juneberry balls with pounded turnips, puddings, puddings with wheat flower, juneberries mixed with corn balls, or they could be eaten raw (Wilson 1916:216-217). Most commonly, they were made into pudding (Estes 1990:8). *Puddings would be used both everyday and for ceremonial meals. Juneberries are used to preserve and flavor sweet meats.*

In terms of ceremonial uses of plant parts, juneberry wood sticks were used to pierce the flesh of men during certain ceremonies in the past (Beckwith 1938:42). In addition, the women of the Hidatsa Grandmother’s Society carry canes made out of Juneberry wood (Beckwith 1938:228). In the eagle trapping ceremony, a juneberry branch (with white sage) was placed over the entrance of the eagle trapping lodge. The shrub was associated with the black-tipped eagle and was meant to represent the moon (Bowers 2004:234).

Utilitarian uses for juneberries are numerous. Oral tradition reveals that Charred Body taught the Hidatsa to make arrows using juneberry wood for the arrow’s shaft (Beckwith 1938:136). The Hidatsa also used it for eagle feather fans, arrow shafts, tent pegs, and pins for hide drying (Anonymous n.d.; Wilson 1916:189). Juneberry was used in Arikara fish traps. The wood was used to fasten the door of the trap when closed (Gilmore 1924:121). Consultants stated that,

Before replanting [juneberry shrubs], old folks would tie a ribbon around the Juneberry bush to indicate which way the sun was facing. This is to avoid shock to the plants and indicates their importance to the Missouri River peoples.

The hard, straight wood is the preferred material for drumsticks. Juneberries can also be used to make blue dyes.

Juneberries serve to mark time and the changing of seasons on the prairie. For example, Beckwith (1938:131) recorded an oral tradition in which Old Woman cautioned her people to "wait until the Juneberries begin to ripen. At that time of the year the prairies are red with antelope."

# Wild Plum

*Prunus* L.

*Prunus americana* Marsh.

Mandan: *wákta* (Hollow 1970)

Hidatsa: *makata* (plum tree); *maa-ga daa* (plum trees)

Arikara: *niwaharít* (Parks 1986)



Wild plum (*Prunus americana*), © L. Allain

Wild plums grow along the Missouri River and in the timber covering the hills (Wilson 1916:261). The fruits of the wild plum are picked in August and September, while the plant flowers in May (National Park Service n.d.). Deer are known to scratch their backs on the shrub trunks.



There are mature wild plum shrubs growing around Big Hidatsa village in the Knife River Indian Villages National Historic Site.

## Preparation, Use, and Significance

Wild plum is a staple in kitchens and apothecaries among the tribes of the upper Missouri River. Rules govern the cultivation and harvest of plums. Consultants indicate that *plum trees should not be planted in a bunch. When they are ready to harvest, a blanket should be placed under the tree and then shaken.* An anonymous source (n.d.) noted that,

The Hidatsas gathered wild plums in August when they were light colored but not quite ripe. Then they would dig a hole a foot deep and line it with sage brush. The plums were poured in and covered with two inches of sage then three inches of dirt. This place was marked with a stick of bone and after four days the plums were dug up and were quite ripe. If left on the tree they did not ripen until well into autumn (September-October). The pit scent was strong and sweet and boys would often smell it and steal the plums.

In the past, plums were collected when they were slightly green. Hidatsa women would then dig storage pits and line them with sage. The plums were placed inside and covered to ripen. Buffalo Bird Woman describes the process in the following account:

When the plums were small they were green; but as they grow to full size they turned light colored, but were not yet ripe. When they were

thus light colored, we gathered them, – say two or three gallons. Somewhere outside the village we dug a little pit or hole, about a foot deep. The bottom and sides of the pit we lined with long sage bushes, the kind with seeds on them, two inches thick and very neatly. These white or light colored plums were then poured within, covered with two inches of sage, and three inches of dirt. Then the place was marked with a stick or bone or buffalo chip or grass. After four days we went out and dug up the plums and found them quite ripe. If left on the tree, the plums would not ripen until quite into autumn. (Wilson 1916: 261)

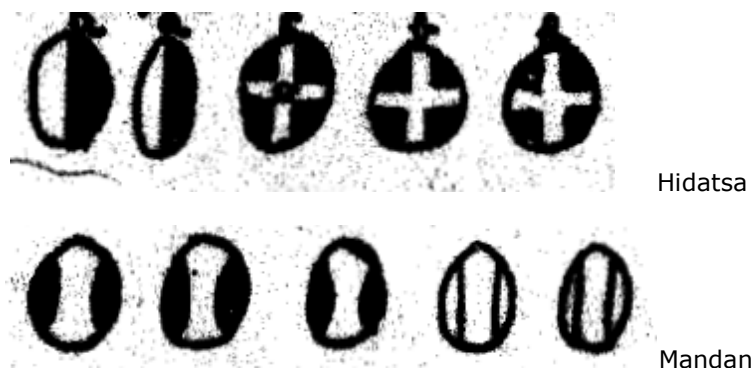
Plums are most commonly used as a food item, but parts of the wild plum shrub could also be used as a medicine. The following account comes from the Hidatsa:

Crow Bull gained some understanding of doctoring from this bear. He would ask the sick person if he wished any kind of fruit. If, for example, the person asked for plums he would uproot a plum tree, dig a hole in front of the sick person, reset the tree, then ask someone to hold the tree while he sang. Then the man holding the tree would shake it and some plums would drop off, which he would give to the sick person to eat. (Beckwith 1938:266)

In another account recorded by Bowers (2004:177), Poor Bear had been shot in the chest by Sioux warriors. The Bear spirit had instructed him to chew wild plums as protection from bullet wounds. Only wild plum leaves were available, so he chewed them while singing the sacred songs he had been given, and was

walking within four days. Gilmore (1930:75) recorded that, among the Arikara, the afterbirth bundle being placed in the branches of the plum tree. Consultants said that *the bark can be boiled to make a tea. Bark is used to reduce fever and control diarrhea.*

The Hidatsa used wild plum seeds in a game called *ätsuúkě*. Five marked plum seeds were used to play (Anonymous n.d.; Wilson 1916:263). The Mandan had a similar game. Gilbert Wilson sketched the seeds as shown in the following illustration.



The plum's fruit is edible raw or used to make puddings. The plum is eaten by squeezing out the inside and discarding the skins. They were occasionally boiled, often cooked by young Hidatsa girls ten to thirteen years old (Anonymous n.d.).

# Chokecherry

*Prunus virginiana* L. (black, western, common chokecherry)

Mandan: katék (Hollow 1970)

Hidatsa: mätshidumatu (berry that has bones, Anonymous n.d.)

Arikara: nakaanustaátu (Parks 1986)

Crow: malupwa (Kindscher 1992:170); ba-la-pua (wood with no smoke);

baalishishi



Consultant examines a chokecherry shrub, M. N. Zedeño, photographer

Native chokecherry bushes favor rich soils, and are found in thickets, wooded draws, steep hillsides, along rivers, and floodplains (Kindscher 1992:170). They are abundant in the Northern Plains and grow on hills and along the edge of the

timber along the Missouri. The bushes are quite common (Wilson 1916:218). Chokecherry is an important food resource for large and small mammals, as well as various species of birds, but can be toxic to livestock (Johnson 2000).

The shrub blooms in early summer (May-June). It bears red fruit in late summer or early fall (National Park Service n.d.; Johnson 2000). Berries can be picked in August but more commonly in September (Wilson 1916:218). Consultants noted that *chokecherries must be picked before the birds can eat them all. The inner bark, which is used to make coffee, can be collected any time. One can also collect chokecherry at any time for use in planting the sacred tobacco.*

## Preparation, Use, and Significance

Chokecherries have a variety of uses among the Crow and Fort Berthold residents. Historically, chokecherries were traded between indigenous groups (Gilmore 1966:90; Anonymous n.d.) and today these plants are highly valued. To harvest the berries, an individual hits the chokecherry bush with a stick, *as if you are angry*. Once collected there are numerous ways to prepare the fruit. Chokecherries could be eaten raw, with seeds spat on the ground or swallowed (Anonymous n.d.; Wilson 1916:218). The chief way of preparing the cherries, however, was to pound them with a stone hammer. The pulp created in this process was and is then made into lumps and dried for storage (Wilson 1916:218).

To grind the berries, two stones are used—a larger one with an indentation and a smaller one for pounding (Wilson 1916:220). In the past, an individual within the villages specialized in making these stones (Wilson 1916:219-220). The stone

hammers were called *maópaki* and the stone anvils were called *míimkě*, from *mi*, which means stone (Wilson 1916:219-220).

This stone had three uses. We pounded choke cherries on it. We pounded dried meat on it to make it fine for pemmican and for eating. Old people especially had to have dried meat pounded fine for them. Also we used the stone to break bones on for boiling for bone grease. For this latter purpose, we used a bigger hammer than the woman wielded with both hands. These larger hammer stones I do not think any one ever made. We just found them, either out on the prairie or elsewhere. And on them we put handles. Every lodge had one.

The chokecherry paste created during pounding was always worked by hand (Anonymous n.d.). Estes (1990:8) describes the process as follows, "we would squeeze the mush with our hand, forming strips on the canvas to dry in the hot sun on top of the scaffold." Gilman and Schneider (1987:65) describe the process, used by the Hidatsa:

Two or three cherries were laid on the stone and struck smartly, then two or three more. When enough pulp had accumulated it was taken up in the woman's hand and made into a ball, and then squeezed out in lumps thru the first finger and thumb of the right hand by pushing with the left thumb into the right palm. These lumps we dried on the corn stage on a skin. On warm days they dried in three days' time. But if the weather was damp and chilly, it might take 5 or 6 days. They were ready, when a lump broke dry clear thru. If the lump was put

away while still soft inside, it spoiled and smelled bad.

Once the lumps were dried, they were stored in a number of places. A Hidatsa family usually filled a sack with the dried lumps, but some families filled two sacks. In the fall, the sacks were stored in one of two places: on the food platform that stood in every earth lodge, or in the *makimídakei* or swinging loops that hung from one of the rafters of the lodge (Wilson 1916:221). Buffalo Bird Woman noted that “every family had one of these swings” (Wilson 1916:221). In the winter, the bags of dried cherries were put in a cache pit for permanent storage.

There are also other ways to prepare chokecherries. Both in the past and today, they were used to make puddings. The berries are slow-boiled with sugar and flour is gradually added for thickening. The cherries can also be mixed into dried, pounded meats with grease or oil, which is then shaped into balls with added sugar. Sometimes, the berries were boiled with fats or bone grease (Anonymous n.d.; Wilson 1916:218). The balls could also be made with corn (Wilson 1916:223). The balls were called *mátsupi* or pounded-cherries (Wilson 1916:222). Today, chokecherries are frequently made into jellies. *They contain natural pectin when they are red... when they turn blue, the pectin is lost. Therefore, if you make jelly with red chokecherries, you don't need to add pectin.*

Chokecherries have ceremonial importance as well. According to the consultants:

The plant is associated with the sacred tobacco gardens, used there to make gardening hoes and markers. Chokecherry implements would

break ground in areas in which sacred tobacco was going to be planted. After mountain birch, chokecherry wood is the second most desirable material used in the construction of sweat lodges.

The Water Clan uses chokecherry wood. The plant is often confused with black root. The wood is significant.

Chokecherry also plays a role in several ceremonies. For example, in the Hidatsa Grandmother's Society, women make an offering of jerked meat on the point of a chokecherry stick (Beckwith 1938:229). Additionally, one man carries a chokecherry stick as a fertility symbol in the Hidatsa Bear ceremony (Beckwith 1938:261). Another example comes from the Hidatsa Wolf ceremony where each man carries "a stick of choke cherry wood peeled off in four strips to represent the four nights the ceremony is to last and ornamented at the top with a wolf's tail" (Beckwith 1938:249-250; see also Bowers 1992:226).

In the eagle trapping ceremony, a chokecherry branch was placed over the eagle trapping lodge altar. The chokecherry was associated with the speckled eagle and was meant to represent the sun (Bowers 2004:234). Chokecherry branches were also used ceremonially during eagle trapping, though the ways in which they were used varied, depending upon the leader's decisions (Bowers 2004:235).

Additionally, chokecherry has a number of utilitarian uses. During raids and war parties, the wood of the plant was used for fire because *it is known as wood with no smoke or ba-la-pua*. This is confirmed by written sources.



Crow Indians, virtually surrounded by enemy tribes in earlier days, learned of several ways to conceal their presence. They made their daytime campfires with the wood of chokecherry, a wood which, they claimed, makes no smoke. (Hart 1992:43)

The Hidatsa used chokecherry wood to make bows (Gilman and Schneider 1987:69). Consultants said its wood, which was tougher than willow when cured, *is also used for arrow shafts. The wood's flexibility was well suited for arrows and lances. Chokecherry branches are also whittled into drumsticks. Its juice produces a dye with a strong, staining purple or red color.*

Medicinal properties of chokecherry are numerous. The berry juice was a well-documented Arikara treatment for bleeding after childbirth. They would drink the berry's juice or a tea of the pulverized red false mallow root and the gum of the chokecherry shrub (Gilmore 1930:74; Weiner 1972:34; Kindscher 1992:171). Buffalo Bird Woman noted that "dried choke cherry lumps were a food that were valuable to correct one's bowels if they were too loose....But ripe choke cherries eaten raw acted in a contrary manner" (Wilson 1916:223). Consultants reported that unspecified parts of the plant *were used for helping with childbirth and provoking contractions, while its boiled bark was used for abortions.*

The Crow also used chokecherry as a medicine. They treated dysentery, diarrhea, and miscellaneous stomach problems with a tea of the boiled chokecherry bark (Kindscher 1992:171). The Crow also used the bark "to cleanse sores and burns, but only certain tribal members had the authority to perform the medicinal applications" (Hart 1992:43).

# Raspberry

*Rubus* L.

*Rubus idaeus* L. (American red raspberry)

*Rubus occidentalis* L. (black raspberry)

*Rubus pubescens* Raf. (dwarf red blackberry)

Mandan: wq́píkosok (Hollow 1970)

Hidatsa: amánska akú áhatski (ground or earth kidney, Wilson 1916:326)



American red raspberry (*Rubus idaeus*), R. H. Mohlenbrock, photographer

Raspberries are known by consultants to grow at high altitudes. They grow on hills (Wilson 1916:326). The plant blooms in June and July (Kershaw 2000:71).

## Preparation, Use, and Significance

In the past, women gathered these berries in raw hide berry baskets and ate them off the bushes. They were never dried (Wilson 1916:326). Today, raspberries are a food for special occasions and often used in puddings. The red berry is rather long, like a kidney, which is why the Hidatsa call it *amánska akú áhatski*.

# Broadleaf cattail

*Typha latifolia* L. (common cattail, soft flag, slough grass, cattail rush)

Mandan: da xika (blackbird, Hollow 1970)

Hidatsa: húpatokikě (like an ear of corn, Wilson 1916:321)

Arikara: čīrinasiínu' (Parks 1986)



Common cattail (*Typha latifolia*), R. Old, photographer

Native to the region, cattail grows in dense clusters near freshwater marshes and ponds, favoring saturated soils, and often found in association with bulrush. Cat-

tail flowers in early to mid-summer (Uchytel 1992). The plants are collected at various times of the year, including spring and winter. In Hidatsa villages, families gathered cattail in the winter (Anonymous n.d.).

Cattail is important to nesting Red-winged blackbirds, Yellow-headed blackbirds, and Marsh wrens, after which the Mandan named it *da xika*. It also provides building material for muskrats and cover for deer (Uchytel 1992).

## Preparation, Use, and Significance

Cattail has many household uses. In the past, it was used as an insulation and diapering material (Wilson 1916:321).

Cattail down was gathered by men for insulating and diapering babies on journeys during cold weather. 'One application lasted two or three days,' explained Buffalo Bird Woman. 'I would apply say ten cattails in the morning we started on the journey. At noon or eve the child perhaps would cry and I knew it was uncomfortable. I would open his bundle and remove the wetted part which would be made into a kind of ball, for the down would ball up with the wetting. But I would not put in any more down. But at the end of two or three days I had taken out so much of the down that I now had to replace with some more of the down. 'Cattail down was used only on journeys in cold weather. I never knew it to be used in the earth lodge where indeed it was unnecessary. Its use was essentially for warmth ... On such a journey, we carried along always an extra supply in a sack, in the whole heads

when needed.’ (Gilman and Schneider 1987:124)

Consultants added that the down was used for wound dressings and menstrual pads (Zedeño et al. 2006:171). Cattail down has ceremonial functions as well. *It was taken to Sun Dances, where participants used it to soften their bed. Cattails are used by Sundance dancers to make their bed and keep them cool.*

Cattails were also used in a children’s game. Leaves were plaited together in the form of a cross, which was then placed on the ground. If the children, walking around the cross in a circle, touched it with their feet, they were chased and “clubbed” with a cattail stalk (Gilmore 1928:317-318). Slough grass is used in the construction of earthlodges. A layer of sweetgrass and slough grass is placed under the sod (Potter 2003:25).

A consultant said the cattail nurtures the body. Parts of the cattail are edible. For example, the potato-like roots can be fried. Additionally, before the “cattail” forms, one can eat the stalk of the plant. However, the Cheyenne and Crow Indians were cautioned that if the down got into their eyes, they would be stricken with blindness or cataracts (Hart 1992:60).

# Forbs

Mandan: wa'ós<sup>e</sup>re (flower)

*In the beginning the earth was covered with water. Lone Man was walking along on top of the waves. He turned back to follow his tracks, all the time wondering where he came from. He came to a flower and saw that there was blood in it. The Flower said, "My son, you were born from me. I gave birth to you in order that you could go around in the world and do much work."*

Bowers (2004:347)

# Sweetflag

*Acorus* L.

Hidatsa: aruuca shuudii

Arikara: kaséhts̃ (Parks 1986)



Sweetflag (*Acorus calamus*), B. Tokarska-Guzik, photographer

Sweetflag grows on wet, muddy soils usually bordering lakes and ponds. It blooms from late spring to early summer. It provides habitat for waterfowl and food for muskrats and ducks.



## Preparation, Use, and Significance

The roots of *Acorus calamus* were found in an Arikara Buffalo Society medicine bundle. According to Howard (1974:265), they may have been intended for use as 'throat medicine' by the singers for the Buffalo ceremony, as present-day Grass Dance singers often chew small pieces of this root to clear their throats. Additionally, the root is sought for the treatment of diabetes and toothache.

A consultant stated that the root is chewed for protection from witchcraft, especially at pow-wows.

# Poison ivy

*Toxicodendron rydbergii* (Small ex Rydb.) Greene (western poison ivy)

Mandan: kq̄x (Hollow 1970)

Hidatsa: midápöti (wood leaf ripe, color of ripe fruit, Wilson 1916:338)

Arikara: kaanánax (Parks 1986)



Poison ivy (*Toxicodendron tydbergii*), D. Powell, photographer\

Native to the region, poison ivy is adaptable to a wide range of habitats. The plant typically occurs in disturbed areas, including lakeshores, floodplains, railroads, roadsides, and talus slopes. This plant often blooms twice annually, in May and July in North Dakota (McMurray 1988). Poison ivy's oils will produce a blistering rash within a few hours of contact. Objects which have come in contact with the oils may also transmit these oils to humans (McMurray 1988).

## Preparation, Use, and Significance

Poison ivy is a medicinal plant. Consultants stated that it is typically used in the sweat lodge. One elder used to beat herself for arthritis pain in her legs while in the sweat tipi. Poison ivy is also used to treat eczema, ringworm, and warts. Buffalo Bird Woman described using poison ivy to treat warts, as follows:

I once had a wart on my nose. My husband took a piece of the woody stem of the plant and broke it in two. It was in the spring when the sap was flowing. He pinched off the leaves at the top and in the wound thus left a littly [sic] milky juice exuded which he increased by arguing the section of stem between his thumb and finger. The little drop of juice thus collected on the end of the bit of stem he touched to the wart. It was sore the next day, but not irritating to me. In two or three days my husband applied the same again. Then after a like interval, he made a third application. The wart got sore, but the wound was not at all irritating to me. The juice rotted the wart, roots and all. After five or six days, the sore healed. The wart did not grow again all summer. But the next winter it returned. I tried the remedy again the next spring applying it three times. This took the wart out, roots and all. This use of the plant for removing warts was very general in the tribe. (Wilson 1916:338-339)

Though his family did not use poison ivy, one elder noted that this plant *helps the immune system*.

# Wild carrot

*Daucus carota* L. (Queen Anne's lace, bird's nest)

Mandan: wasiré, wasé (carrot, Hollow 1970)

Hidatsa: Pódituka-ita-ahí-pi-sa (Raven-'s-turnip-digger-like, Wilson 1916:229)



Wild carrot (*Daucus carota*), © L-M. Landry

Wild carrot is found in disturbed areas, such as along roadsides (Robert W. Freckmann Herbarium n.d.; McGregor 1986c:592). *Wild carrots also grow close to the water's edge.* Wild carrots bloom throughout April, May, and June. They can be dug in the latter part of April through early June (Wilson 1916:228).

There are two types of wild carrot—a larger one and a smaller one (Wilson 1916:232). The larger variety grows in locations where clay is present. Both varieties are eaten by humans and bears (Wilson 1916:231)

## Preparation, Use, and Significance

In the past, these plants were collected by girls who were about ten years of age. They were dug on ridges in open prairie where the snows first melted (Wilson 1916:228). Girls would harvest these plants when they were a quarter of an inch high. A sharp stick held in the hand or a wooden pin used to stake out hides to dry was used for digging up carrots. The roots of the plant were sweet and firm when collected early in the season. Later, however, the roots were no longer sweet (Wilson 1916:229). In the past, carrot roots were never cooked or dried. However, Buffalo Bird Woman told the following story:

My mother Rod Blossom once told me that she knew a man's wife who gathered a lot of wild carrot roots and peeled off the rinds and mashed the roots with a stone and dried the mashed roots in the sun. When well dried they were put away. Later this man made a ceremony, and the feast given by him at the time had for the guests a kind of soup made of the mashed and dried wild carrots. She said that the soup tasted and smelled something like wild turnips – ahí as we call them...I never made such a dish as this, or ever put away wild carrot roots in this manner. (Wilson 1916:230)

In another account, the Crow were noted to have prepared wild carrots in a similar manner.

Once also a number of Hidatsa people went to visit the Crow Indians. Now the Crows are not corn raisers, and the Hidatsas greatly missed

their main foods, to which they were accustomed. So they had their women go out and gather quantities of these wild carrot roots and mash and dry them, first peeling off the rinds before mashing them. When cooked, these carrot roots made messes that tasted something like the maize dishes the Hidatsas longed for. (Wilson 1916:230)

Wild carrots are still gathered and consumed today.

# Cow parsnip

*Heracleum maximum* Bartr.



Cow parsnip (*Heracleum maximum*), © G. Monroe

Cow parsnip is found in moist, rich woods, along streams, floodplains, lakeshores, and in thickets (Kindscher 1992:254). It flowers in June, July, and August. The foliage of cow parsnip may cause skin irritation (Esser 1995).

## Preparation, Use, and Significance

Consultants noted that cow parsnip can be identified by its heart-shaped leaves. It is not eaten, but instead used for medicinal and spiritual uses. Its shooting green berries are mixed with mint for use as horse medicine.

# Milkweed

*Asclepias* L.

*Asclepias incarnata* L. (swamp milkweed)

*Asclepias lanuginosa* Nutt. (sidecluster milkweed)

*Asclepias ovalifolia* Dcne. (oval-leaf milkweed)

*Asclepias pumila* (Gray) Vail (plains milkweed)

*Asclepias speciosa* Torr. (showy milkweed)

*Asclepias sullivantii* Engelm. ex Gray (prairie milkweed)

*Asclepias syriaca* L. (common milkweed)

*Asclepias verticillata* L. (whorled milkweed)

*Asclepias viridiflora* Raf. (green comet milkweed)

Mandan: hósa (Hollow 1970)



Whorled milkweed (*Asclepias verticillata*), C. Evans, photographer



Consultants noted that milkweed grows tall alongside the gravel roads in the Upper Missouri River region. Milkweed can be picked any time of year. In August, however, they turn pink. Their roots are only pulverized in the fall, while the milk from its stalk is collected year round.

## Preparation, Use, and Significance

Today, Fort Berthold's residents use milkweed for curing sores. It is also used as a shampoo or soap.

# Common yarrow

*Achillea millefolium* L. (carpenter's weed, milfoil, wooly yarrow, bloodwort, sneezewort, soldier's woundwort, *larb*)

Crow: chih pa chiish kishshe (prairie dog's tail)



Common yarrow (*Achillea millefolium*), M. N. Zedeño, photographer

Yarrow is found in grasslands, open woods, disturbed areas, roadsides, and dry meadows. It thrives in thin, gravelly soils (Alekssoff 1999; Barkley 1986a:854; Robert W. Freckmann Herbarium n.d.). Yarrow's white flowers bloom from May through October (Kindscher 1992:17).

## Preparation, Use, and Significance

Yarrow has a variety of medicinal uses among the four groups. Yarrow leaves are brewed into a tea to treat sore throats and headaches. It is also a common “cure all” for skin conditions. Yarrow root mixed with red willow root is used for cleaning arteries. It is also recommended to treat sores, toothaches, and diseases of lungs, bladder, and kidneys. It is also used as a local anesthetic and stomach and nerve tonic (Kantrud 1995).

Kindscher (1992:18) adds that the Crow made a tea that was held in the mouth to soothe toothache and sore gums. The crushed plant (probably fresh) was used for burns and a poultice from it was applied to boils and open sores. They mixed it with goose fat to make a salve.

Yarrow also has ceremonial importance. It is grown on arbors during or after the Sundance; this yarrow is picked because it is more powerful. Yarrow is also used in bundles. It is picked as an ingredient for the bundle offering. However, a person must have rights to use yarrow.

Yarrow is also used as an ingredient in soups and salads and a substitute for tobacco (Kantrud 1995).

# Pussytoes

*Antennaria* Gaertn.

*Antennaria howellii* Greene (Howell's pussytoes)

*Antennaria microphylla* Rydb. (littleleaf pussytoes)

*Antennaria neglecta* Greene (field pussytoes)

*Antennaria parlinii* Fern. (Parlin's pussytoes)

*Antennaria rosea* Greene (rosy pussytoes)



Rosy pussytoes (*Antennaria rosea*), M. Harte, photographer

Pussytoes are commonly found growing in prairies, clay prairies, slopes of open woodlands, dry meadows in woodland areas, savannas, eroded clay banks, pastures, abandoned fields, and roadsides.

## Preparation, Use, and Significance

Consultants noted that pussytoes are planted around burial grounds. Field pussytoes are chewed as a gum and used to treat snakebites.

# Wormwood

*Artemisia absinthium* L. (absinth, absinth sagewort, common sagewort)



Wormwood (*Artemisia absinthium*), © J. S. Peterson

Wormwood is a perennial herb introduced to the United States in 1841 (Barkley 1986b:868). Wormwood is found in disturbed sites, including fence lines, roadsides, overgrazed pastures, and recently abandoned cultivation fields. It prefers moist habitats (Carey 1994). It flowers from July through September. In North Dakota, blossoms are found during the second week of August (Carey 1994).

## Preparation, Use, and Significance

The flowerheads of wormwood produce a volatile oil called absinthal (Carey 1994). It is known for its fragrance (Barkley 1986b:868). One consultant noted that wormwood may be used as an astringent.

# Sage

*Artemisia* L.

*Artemisia cana* Pursh (dwarf sagebrush, silver sage)

*Artemisia frigida* Willd. (prairie sagewort, fringed sagewort, fringed sagebrush, pasture sage, women's sage)

*Artemisia ludoviciana* Nutt. (prairie sage, white sage, mourning sage, eagle sage)

*Artemisia tridentata* Nutt. (big sagebrush, buffalo sage, contrary sage)

Mandan: pšíxar (Hollow 1970)

Hidatsa: iixoodadagii; ihokataki, uhimaduti (eagle sage)

Arikara: êewá'ut (women's sage); napaút (buffalo sage); ċeewohnaaniśíśu' (eagle sage; Parks 1986)



A field of sage, K. G. Beck and J. Sebastian, photographers

## Taxonomy

Consultants noted that the Mandan once recognized seven kinds of sage while the Hidatsa knew twelve. Of these, only four can be currently tied to known species. Other folk taxa may refer to seasonal variations in the appearance, aroma, and strength of the plant or variations in growing habitat. Consultant noted that *the small sages are used for smudges, sage can be harvested even when it is dry.*

Weitzner (1979:268) learned from Wilson's notes that the Hidatsa recognized three varieties of sage that grew on the reservation: "no-top-sage" or "black sage" which was used as incense in the sweatlodge and as a protection against evil influences in the fish trap. This sage was also used to neutralize the power of menstruating women at the eagle trapping lodge. "Sage-that-has-the-top" was used in women's societies such as the Goose Society. This sage has a distinctive head and bears seeds that excrete a strong smell. Weitzner (1979:268-69) described a third kind, *"sage-of-the-kind-that-is-straight,"* in the Sun Dance and other ceremonies.

Our consultants spoke of the following kinds of sage, which we have been able to tie to a known species. *Buffalo* or big sagebrush, is known as *Artemisia tridentata* and could also be what Weitzner (1979:268-69) describes as "no-top-sage" and our consultants describe as *short, gray sage*. Yet other folk taxa that may refer to big sagebrush is *contrary sage*. One consultant noted that contrary sage *grows in clumps and has no pattern, rhyme or reason to it. It is typically a tall sage, though some are low-growing. It grows all over the Plains.*



*Eagle sage*, also known as white sage and having *long and skinny leaves*, has been identified as *Artemisia ludoviciana*. This is likely Wilson's "sage-of-the-kind-that-is-straight."

*Women's sage* has been identified as *Artemisia frigida*. One consultant pointed at a photograph of *Artemisia frigida* in bloom and said: *this is not women's sage, its holy sage*. We concluded then that both holy and women's sage are the same species but at different blooming stages. This is likely "sage-that-has-the-top." *Mourning sage* is yet another kind of sage, with *short leaves and seeds*.

Silver sage or dwarf sagebrush (*Artemisia cana*) was identified by the consultants as being used by the Mandan *until it gets to be two feet high and starts stinking*. No specific uses have yet been found for this sage.

Finally, consultants noted that winterfat (*Krascheninnikovia*spp.) looks like sage, but is not; this plant is only eaten by animals.

## Preparation, Use, and Significance

Sage is among the most ubiquitous wild plants used by Native Americans and certainly by the Missouri River tribes. In north-central Montana, sage appears in archaeological contexts associated with bison hunting as early as AD 1050 (Zedeño et al. 2008). Its folk taxonomy is complex and its ontological relations numerous.

Among Forth Berthold residents, sage is considered part of the body of spiritual beings and culture heroes—a vital component of creation, magical life, health,

and rebirth. For example in Mandan oral tradition, at sunrise the Sun takes on the form of a stout man who carried a great pipe and from whose nostrils grew fine sage (Beckwith 1938:69). In the story of *Sun and the Gambler*, sage was inserted in the back of the fine warrior's ornaments worn by Sun's son. When the son died, Sun "went back to his son's [dead] body and, using black sage for hair, he tried to bring him to life, but did not succeed and went away crying" (Beckwith 1938:184-185). Likewise, in the origin story for the Hidatsa Grandmother's Society, an old woman "plucked sage, placing it upon the skull [of her dead sister], and turned it into hair" (Beckwith 1938:231).

Sage helps balance male-female relationships. In the Hidatsa marriage ceremony, Coyote burns sage and incenses four bows (Beckwith 1938:128). Sage also counteracts the power of menstruating women who come into contact with men's sacred objects and ceremonial lodges, particularly during eagle trapping (Wilson 1928:168).

Among the Arikara, sage is the center of performance as part of the annual medicine fraternity ceremonies.

After dark began the colorful Sage dance rite. All members of the Medicine fraternity participated. They were naked except for the breechcloth and their bodies were painted with white clay. Each held in his hand a bunch of sage. They seated themselves in a large circle near the altar, around an outstretched, unworked rawhide, and began to beat upon it with long rods. To the rhythm of this simple drum they sang songs of supplication for power to drive away illness. Now willow

brush was thrown on the fire, and the dancers formed a circle close about it, holding the sage before their faces to avoid inhaling the flames. They continued to sing and dance around the fire, repeating the performance several more times.

Curtis was told that that formerly this portion of the rites of the Medicine lodge was observed once each on three successive nights. "Fire is sacred," a priest told him, "so our medicine men dance around it to drive away disease. It purifies our bodies and gives us strength, and our shouting frightens illness." (Howard 1974:259)

This dance was performed the day before the entry of the cedar tree and the Mother Corn ceremony, and that dancers were purified with a sweat before performing it (Howard 1974:259).

Unspecified kinds of sage, in general, are often mentioned in the ethnographic literature as having multiple uses: an incense, a smudge, a poultice, a tea or concoction, an ingredient in meat processing and hide tanning, a cooking spice, and bedding material during vision quests and other camping occasions (Beckwith 1938:222; Hiller 1948:8; Weitzner 1979:268; Bowers 1992, 2004). Other uses included animal husbandry: sage was used to rub the scrotum of colts immediately prior to and following castration (Wilson 1924:148). Also, puppies' heads were held in sage smoke until they frothed at the mouth; this was believed to give them good appetites and prevent worms (Wilson 1924:200).

# Buffalo sage

*Artemisia tridentata* Nutt. (big sagebrush, black sage)



Buffalo sage (*Artemisia tridentata*), © J. S. Peterson

Native to the region, buffalo sage is typically found in dry, rocky soils on plains, hills, and slopes. The drought-tolerant shrub develops yellow blooms in June (Barkley 1986c:871; LBJWC 2008).

Buffalo sage, an important nesting material for songbirds, also provides browse for antelope, bighorn sheep, deer, and sage grouse (LBJWC 2008).

Consultants identify it by its jagged leaves. They noted that *it may be picked any time of the year, even when it is dry.*

## Preparation, Use, and Significance

Buffalo sage is *owned by the wingeds* and plays an important role in the Hidatsa and Mandan eagle trapping origin myth. In the story of Black Wolf, told by Ben Benson to Bowers (2004:219), Black Wolf went reluctantly on a war party and he kept falling behind and finally fell asleep, so his companions left him. While alone, he watched a little black bear catch an eagle. He followed the little bear to his lodge, where the Black Bear people lived. After learning how to trap eagles from his little black bear brother and healing the bear's wounds with black medicine (see red baneberry), Black Wolf decided to return to his village. So Big Black Bear told him and little black bear:

"You two boys go out to the side of the lodge and pick the best feathers you can find." The boys found many good eagle feathers and soon had a bag full of them. The father asked that two bunches of sage be brought and divided into two equal piles and he gave each pile to Black Wolf. He said, "Go south until you come to the highest place. Go up there and put one bunch of sage on the ground and step on it; put the other bunch one step ahead, and step on that, reaching back for the bunch behind you. Step that way four times, and the fourth time you will look ahead of you and see your village.

Black Wolf did as he was told, and used the sage bunches again to return to the Black Bear people. Later in the same story (Bowers 2004:223) the Black Bears came to Black Wolf's village to visit and used buffalo sage in the sweatlodge; it continues to be used today *for lining the sweatlodge*. One consultant also identi-

fied *contrary sage* as being used in the sweatlodge.

Buffalo sage is used for ceremonial smudging. In the past, it was significant in eagle trapping camps, particularly when menstruating women came upon them. Then, the eagle trappers would make four balls of sage pointing in the four directions. They would burn sage and make her stand over the smoke to purify her so that her power would not diminish the power of sacred objects (Weitzner 1979:268). Sage smoke was also used to ward off spirits away from buckbrush before it was collected for use in a pit trap cover (Allen 1983:8). According to Murray (2009:95), buffalo sage is used for ceremonies associated with the eagle; furthermore, garlands of this sage are still worn around the head, wrists and ankles by the Sun Dancers, and it is placed in the beak of the eagle at the center pole of the Sun Dance arbor. Murray's informants attribute the growth of buffalo sage in old trapping pits today as a result of the use of sage by trappers in the past.

Our consultants added that when people come for help with marital, financial, or physiological problems, buffalo or eagle sage is used as a smudge to cleanse their home of the problems. Buffalo sage must be used for everything.

# Eagle sage

*Artemisia ludoviciana* Nutt. (prairie sage, white sage, white sagebrush)



Eagle sage (*Artemisia ludoviciana*), U. Schittko, photographer

Native to the region, eagle sage is typically found on dry, rocky open uplands, woods, prairies, pastures, and fields, and is also common in “semi disturbed” sites and valley bottoms (Anderson 2005; Kindscher 1992:48; Ladd 1995:206; Barkley 1986d:870). Eagle sage produces yellow blooms between July and October (Ladd 1995:206; LBJWC 2008).

The sage, which grows in colonies, contains pollen that may cause allergies, but also represents an important food resource for pronghorn, elk, sage-grouse, and grasshoppers (Anderson 2005; LBJWC 2008).

Consultants identified it by its long, thin leaves and noted that *June is a perfect time to pick eagle sage.*

## Preparation, Use, and Significance

Eagle sage, also commonly referred to as white sage, has a variety of ceremonial and medicinal uses. Consultants told us that,

Sage was the first medicine plant I knew when I was eight or nine years old, my grandpa and uncles told me to use sage for cuts. I remember that. When I was about 15, I stayed south of Mandaree with my uncle and went to the coulee cut fence posts of ashwood. I had work boots on but wasn't familiar with axe swinging. It went through my boot into my left foot between the big toe, a deep wound. My uncle Mat said "take some sage—white leaf or eagle sage— and put it on the wound wrapped with a rag until we get to New Town." When we got there at night a clot had already formed and the wound was closing itself. The doctor took the clot out and sewed it up.

Chewing "straight sage leaf" mixed with charcoal and placed in the eye will cure white spots on the eyeball caused by snowblindness. When people come for help with marital, financial, physiological problems, buffalo or eagle sage is used as a smudge to cleanse their home of the



problems, or in four days they will reenact them.

Eagle sage is an important item in sacred bundles such as the Sacred Robe bundle (Bowers 2004:184). Eagle sage is also used in conjunction with fish trapping. After an Arikara circular fish trap is erected, "a bunch of sage is attached to each of the four main posts and one on each side of the door" (Gilmore 1924:123). The operator also cleanses himself with another bunch of eagle sage as he leaves the fish trap (Gilmore 1924:128).

Eagle or white sage has a number of applications to women's health. Arikara women would move out of the lodges and into a menstrual hut during their menses, where they would drink a bitter tea brewed either of the leaves of the white sage or the root of the women's sage (Gilmore 1930:80; Kindscher 1992:50). In the birthing process, a midwife uses the eagle sage variety for inducing a speedy labor.

The midwife also takes some of the black medicine [red baneberry] into her mouth and sends it forcibly into the mouth of the woman. It is supposed that this will "scare the baby," so that it will quickly move down and be delivered. At the same time the midwife takes in hand a wisp of wild sage which she has ready. With it she brushes downward on the woman's body in front, both right and left sides, and then down the back, with four sweeping motions from head to feet. When all this is done the delivery is no longer delayed, and the baby comes quickly (Gilmore 1930:73). This same wisp of sage is attached to the outside of the afterbirth bundle before being placed in a bush or tree (Gilmore 1930:75).

The Crows mixed eagle sage with an animal's neck fat to create a salve for sores and also brewed a strong tea from the sage, which was used as a deodorant and an astringent for eczema (Kindscher 1992:49; Hart 1992:45).

# Silver sage

*Artemisia cana* Pursh (dwarf sagebrush)



Silver sage (*Artemisia cana*), © G. Monroe

Native to the region, silver sage is found in floodplains, open areas, and grasslands characterized by rocky soils. The plant is also in high-elevation forests (above 6000 feet). In August and September, the shrub grows yellow flowers (Barkley 1986e:869; LBJWC 2008).

## Preparation, Use, and Significance

The Mandan use silver sage until it gets to be two feet high and starts stinking.

# Women's sage

Holy sage

Mourning sage

*Artemisia frigida* Willd. (prairie sagewort, fringed sagewort, fringed sagebrush, pasture sage)



Left: Women's sage. Right: Holy sage. M. Harte, photographer

Women's sage prefers abundant sunlight and shallow soils, characteristic of the "open, high plains", but is known to be highly adaptable to various habitats, including woodlands, grasslands, and along stream banks (Barkley 1986f:870; McWilliams 2003).

The shrub blooms yellow in August and September (McWilliams 2003; Barkley 1986f:870).

Consultants recognize women's sage because it has lot of little buds and a strong perfume.

## Preparation, Use, and Significance

Women's sage is used to make smudge sticks. After their menses, women boil and smudge with the sage to cleanse the house and use it in their bathwater. It is also used by Arikara midwives (see eagle sage).

Holy sage or round sage,

Is harvested in winter when it grows through the snow. This specific sage is green and very rare. Holy sage is very sacred and primarily used for doctoring.

To use sage for protection, it must be associated with the society you are familiar with. Holy sage rights belonged to my grandmother.

Mourning sage, which we suspect is also women's sage, has *short leaves and seeds*. Two consultants spoke about the significance of mourning sage in the Hidatsa burial ceremony, particularly among pallbearers, who are elders, medicine men, bundle holders, or other people of means that have clan or kin affiliation with the deceased and the mourning group. This is an office of great importance, as the pallbearers are responsible not only for ensuring that the deceased travels from this world to the spirit world, but also for ensuring that his or her relatives

will observe proper protocols and be safe from undue influences.

When the senior pallbearer talks to the spirit after the ceremony or service he exhorts the spirit to go on without scaring or bothering people. And they pass sage to those that had the bundle. At this point nobody looks in the windows particularly those with close contacts with the dead. Then, they toss the sage toward the east over the grave.

# Sunflower

*Helianthus annuus* L.

Mandan: wqépé (sunflower plant); wqépé ós e re (sunflower, Hollow 1970)

Hidatsa: mapi'-na'ka (Wilson 1987:18)

Arikara: ċiriiNAhkataanawí (Parks 1986)



Sunflower (*Helianthus annuus*), W. F. Murray, photographer

Wild sunflowers are native to the region and spread rapidly in disturbed areas with heavy sands and moist soils. They flourish in open areas, foothills, and valleys (LBJWC 2008; Knoke 2006a). The characteristic flowers bloom from July through September (Barkley 1986g:954). Sunflowers' heads follow the movement of the sun each day.

The Mandan, Hidatsa, and Arikara used both wild and cultivated sunflowers (Kindsher 1987:127).

## Preparation, Use, and Significance

The sunflower is one of the first native North American plants to have been domesticated in prehistoric times (Adair 2003). In the Missouri River region, wild and cultivated sunflower varieties appear in archaeological contexts beginning in the late Woodland/early Plains Village transition, and certainly they have been recovered from ancestral sites such as Menoken, beginning around A.D. 1150 (Ahler 2003:3-5; Nickel 2008:135).

Sunflowers were ubiquitous in Mandan gardens; they were planted along the perimeter of the garden (Potter 2003:27). Consultants said that they did so *to keep the bugs away and to keep different corn varieties from cross-pollinating from one plot to another*. According to Buffalo Bird Woman, the Hidatsa planted several varieties of sunflower, distinguishable only by their color, in April, which was the *Mapi'-o'-cẽ-mi'-di* or "sunflower planting moon" (Wilson 1987:16). Seeds, seed oil, and flower heads were harvested and used in various ways.

The sunflower seeds were an important food source; all the tribes ate the seeds raw and made a meal out of dried seeds that they would then boil and mix with vegetables or with grease to make sunflower cakes (Wilson 1987:19-21). The Arikara warriors consumed the cakes in the war path to combat fatigue. They and the Mandan used the oil to lubricate or paint face and body (Blankenship 1905:12-13).



Sunflowers are incorporated into numerous ceremonial objects. For example, the Sacred Robe bundle, an important element of the Corn ceremonies, contained a rattle made from a gourd, a bundle of white or eagle sage, three dried squash, a cornhusk braid, the head of a sunflower, and three ears of corn (Bowers 2004:184). The sunflower cakes were consumed in ceremonial feasts, a custom that has its origins in Mandan stories such as that of Corn Silk and Split Wing-Feather (Beckwith 1938:63).

# Prairie thistle

*Cirsium canescens* Nutt. (Platte thistle)



Prairie thistle (*Cirsium canescens*), © E. J. Judziewicz

Native to the region, prairie thistle is common in disturbed sites and upland prairies, preferring sandy or gravelly soils (Brooks 1986e:910). Prairie thistle bloom throughout May, June, and July (Brooks 1986e:910; LBJWC 2008).

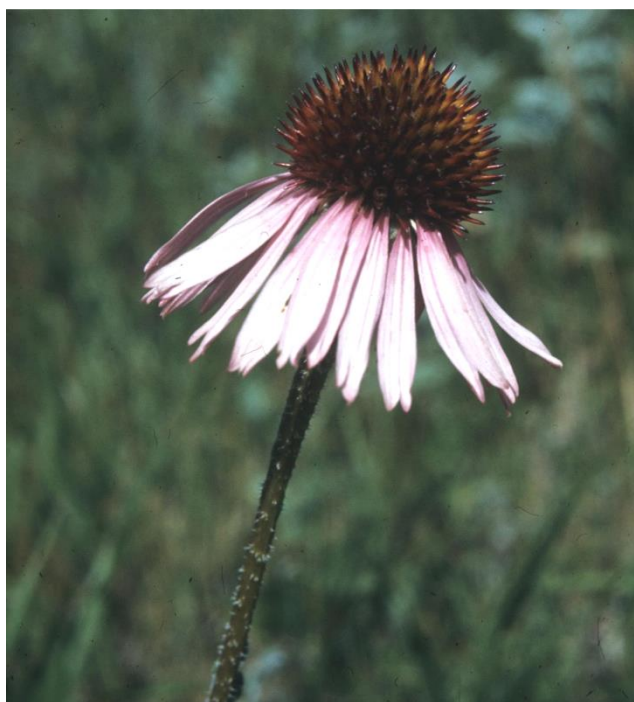
No uses were recorded, but one consultant noted that *prairie thistle kills horses if they eat it*.

# Echinacea

*Echinacea angustifolia* DC. (purple coneflower, blacksamson echinacea, narrow-leaved purple coneflower, blacksamson)

Hidatsa: xubaadii ciivia

Arikara: kaskatít; šapitaahákux (Parks 1986)



*Echinacea* sp., J. Viola, photographer

Native to the region, echinacea grows in open, rocky plains and upland prairies, and also in drainages and low-lying areas (Groen 2005b; Kindscher 1992:86).

Echinacea blooms pink or purple in June and July (Barkley 1986h:921). Consultants stated that the plant *is found in abundance directly across from Twin Buttes. It does not necessary come back every year.*

One consultant noted that, because of similarities in taste and numbing sensation when chewed, echinacea is sometimes called *black root*. True black root, however, is the red baneberry (see below).

## Preparation, Use, and Significance

The tribes of the upper Missouri River have a number of medicinal uses for Echinacea, which they have collected for centuries with great care, because *gathering for five or so years depletes the natural resource*. Consultants attribute its increasing scarcity to commercial herbal medicine manufacturers that gather it or pay tribal members to take it in large quantities without regard for its delicate environment. One Crow consultant noted that, today, *Indians are collecting Echinacea to sell for use in oriental medicines; this is not right. A lady from Canada came to gather and was taking them back home*. Another Crow elder stated that his tribe does not use that plant currently.

The MHAN has had to establish strict rules for gathering Echinacea in the Fort Berthold Indian Reservation and even go as far as to ban its gathering until the plant recovers. One consultant said that *without proper regard for the spiritual aspects of the plant people are only getting the "placebo" effect*.

In terms of its medicinal properties, consultants observed its numbing effects on the tongue and would chew on the root for toothaches, among other uses:

It's good for the teeth and will numb them. The downside to its use is that teeth treated with it will eventually fall out. There is one kind of echinacea for ulcers and throats, which singers use. Its leaves are thin and the bottom of the plant is red.

The coneflower's root is like Novocain. Echinacea is more potent when dry; just a little bit will make your mouth numb. It is a treatment for the throat and laziness.

Echinacea root, when pulverized and sniffed, makes a person sneeze.

The Crows chewed the root for colds and drank a tea prepared from the root for colic. Warriors of the Hidatsas used the root as a stimulant, chewing small pieces to keep them awake while traveling through the night (Kindscher 1992:88). Western scholars have long noted the importance of Echinacea in traditional healing. According to Gilmore (1913), "the macerated root of the purple coneflower was used to treat snakebite as well as other venomous bites, stings, and poisonings by all the Indians of the Upper Missouri River region, who used the purple coneflower "for more ailments than any other plant."

# Rabbitbrush

*Ericameria nauseosa* (Pallas ex Pursh) Nesom & Baird (goldenbush, rubber rabbitbrush, gray rabbitbrush)



Rabbitbrush (*Ericameria nauseosa*), © J. Reveal

Native to the region, rabbitbrush is found in sagebrush, grassland, or open woodland habitats with dry climates (LBJWC 2008). Rabbitbrush flowers bloom from June through September (Barkley 1986i:906). The yellow flowers are picked in August and September.

## Preparation, Use, and Significance

Crow consultants use rabbitbrush in conjunction with other wild plants for medicinal purposes (Zedeño et al. 2006:215).

# Daisy fleabane

*Erigeron strigosus* Muhl. ex Willd. (prairie fleabane, rough fleabane)



Daisy fleabane (*Erigeron strigosus*), © T Bodner

Native to the region, daisy fleabane grows in dry places at low elevations, particularly along roadsides and in disturbed areas (Knoke 2006b; Robert W. Freckmann Herbarium n.d.). Daisy fleabane blooms in April and May (LBJWC 2008).

## Preparation, Use, and Significance

A consultant noted that fleabane was used by the tribes of the Upper Missouri River for medicinal purposes.



# Curlycup gumweed

*Grindelia squarrosa* (Pursh) Dunal (curlytop gumweed, rosinweed, tarweed, gumweed, sticky-heads)

Hidatsa: máí'pucicipi (Wilson 1916:238)

Arikara: paxčíísis (Parks 1986)

Crow: bauuposhiga



Curlycup gumweed (*Grindelia squarrosa*), U. Schittko, photographer

Native to the region, curlycup gumweed is a drought resistant plant. It is found on dry prairies, roadsides, disturbed areas, and salt flats (Walsh 1993a). Curlycup gumweed flowers from July through September (Wetter 1986).



Consultants identify this plant by its sticky yellow flowers, which grow close to the ground and are often surrounded by spiny teeth. *The plant is picked later in summer. It is gathered any time it is blooming.* The plant releases bitter resins, which prevent livestock from grazing.

## Preparation, Use, and Significance

Curlycup gumweed is a medicinal plant, used to cure ailments of both humans and horses. Among the Mandan, it is a “man’s medicine,” gathered only by males that have the rights to it. In the past, curlycup gumweed was a sacred horse medicine, which was a very important gift. It was used to make horses pass water. The Mandan prepare curlycup gumweed in a variety of ways for use as a medicine. Most commonly, the flowers are boiled.

In the past, this concoction was used as a treatment for diarrhea and gonorrhea (Wilson 1916:241). In addition, the Crow brewed a tea used to treat coughs (including whooping cough), pneumonia, bronchitis, asthma, colds, and postpartum pain. They also sniffed the flowers for treatment of catarrh, which is an inflammation of the mucous membrane, which causes a flow of liquid, and applied a hot poultice of curlycup gumweed to control swellings (Kindscher 1992:120).

Curlycup gumweed was one of Wolf Chief’s medicines, which he had purchased for two hundred items from an Arikara man named *Mítetsádax*. Wolf Chief told Wilson (1916:240-241) that,

To use this medicine; if one was bleeding from a cut or wound, I chewed up some of the seed balls and put the chewed cud on the

wound and the blood stopped flowing. Also, I would take two of the seed balls, after they had gotten ripe, and pounded them up and put them in the bag in which I carried my shells for my gun. Now if I was out hunting and shot a deer or buffalo, if I hit it in the heart or liver, the animal died at once. But if I shot it thru some non-vital part it would run away and die perhaps the next night: but if I had these powdered seed balls of this plant in my shell sack, and then shot an animal in a non-vital place, the blood was checked from flowing so that the wound swelled up at once and the animal died. In laying the cup on a wound, it did not matter whether the seed pod chewed up, was green, ripe, or in blossom. All were equally good. But only ripe seed balls were used to put in with gun shells.

Today, the sticky resin which surrounds the flower head is used as a sedative, an expectorant, and to treat burns, ivy poisoning, and whooping cough (Kantrud 1995).

# Marshelder

*Iva annua* L. (annual marshelder, sumpweed)



Marshelder (*Iva annua*), M. H. Mohlenbrock, photographer

Marshelder is found in moist, disturbed areas. It blooms in late summer and early fall, from August to October (Barkley 1986j:964; LBJWC 2008).

## Preparation, Use, and Significance

Marshelder is one of the oldest cultivated native North American plants (Adair 2003). It was thought to have been brought to the northern Plains by ancestral

Arikara gardeners in the Coalescent period (ca. A.D. 1500) (Berry 1978:55-56). Importantly, wild and cultivated varieties were found in archaeological sites around the Heart River that date as early as A.D. 1150 even though this area falls outside the modern range of the marshelder (Nickel 2008:133).

Marshelder is found in historic Mandan medicine bundles (Grinnell et al. 2006). Consultants recognize the plant as edible but do not consume it.

# Dotted blazing star

*Liatris punctata* Hook. (narrow-leaved blazing star, dotted gayfeather)



Dotted blazing star (*Liatris punctata*), © T. G. Barnes

Dotted blazing star is found in dry prairies and native pastures, especially in sandy or gravelly soils (Kindscher 1992:137; Kantrud 1995; Ladd 1995). As a drought resistant plant, it prefers the dry uplands (Walsh 1993b). The plant matures by mid-August (Walsh 1993b). It is picked from July through September.

The dotted blazing star attracts butterflies and birds.

## Preparation, Use, and Significance

The dotted blazing star's bloom signals the ripening of the corn. The Missouri River tribes "noted the time of the appearance of the blossoms of the blazing star. When these flowers came into bloom they would say, 'Now the Arikaras' corn is coming into condition for eating. Let us go and visit them'" (Gilmore 1966:89). This plant is found in Mandan medicine bundles (Grinnell et al. 2006).

## “Chief root”

*Arctium minus* Bernh. (common burdock, lesser burdock)

Hidatsa: xuubaarii Ih'tia (big or large root)



Common burdock (*Arctium minus*), M. Harte, photographer

“Chief root” was identified by a consultant from a dry, leaveless stalk still standing on a patch of moist grass and eagle sage. We returned to this location a few months later but were unable to find a living plant. After much deliberation, U. Schittko used a comparative specimen to determine that the stalk was from a

common burdock. The elder's description of its appearance strongly suggests a burdock.

## Preparation, Use, and Significance

Chief root has a heart-shaped leaf and a white fuzzy top. It may be difficult to distinguish chief root from its twin, the female plant, which has red berries and is used as a love medicine. There is one that grows by the river that is poisonous. There is one that grows in real dark soil, which is almost identical, but is the one that is used.

Cow turnip is similar to the chief root, but not quite. Chief root has big, heart-shaped leaves. There is a cousin to the chief root; there's a healing kind and a dark side. The dark side is for greed. I would have to go to Canada to collect it. We used to have it here, but it has since left the river bottom and is hard to find.

The plant has specific protocols for collection:

*It cannot be dug up with anything metal and a tobacco offering must be left in the ground on that spot. When the root is boiled, the preparer must have complete silence. Noise will make the spirit leave you. The plant is like a really spoiled, finicky child. The gatherer cannot be too loud or make any sudden noise. You have to pick it before the sun goes beyond its zenith [3:00 PM], otherwise it is mushy.*

Regarding its preparation and use,



Once the chief root is prepared, as in a tea, it cannot be blown on or the spirit part leaves. Chief root is used only in life and death situations, and then only sparingly. Only a few people know of it or use it, because only a few have the rights. Many people have tried to use it, but they may get sick.

In the Hidatsa relational taxonomy, chief root is associated with the society of the blacktail (mule) deer.

# Skeletonweed

*Lygodesmia juncea* (Pursh) D. Don ex Hook. (rush skeletonbush, rush skeleton plant)



Skeletonweed (*Lygodesmia juncea*), U. Schittko, photographer

Skeletonweed flourishes in dry, light-textured soils of upland prairies and barren alkaline sites (Kantrud 1995; Kindscher 1992:261; Barkley 1986k:975). From June through September, skeleton weed displays pink or violet flowers (Barkley 1986k:975). Wasps are known to lay eggs in the stems of the skeleton weed, which excretes a milky, yellowish sap (Ladd 1995:101).

## Preparation, Uses, and Significance

Latex derived from plant was used as chewing gum (Kantrud 1995). Skeleton-weed was an ingredient in Mandan medicine bundles (Grinnell et al. 2006). It was known and utilized by the Crow (Zedeño et al. 2006:202).

# Pineapple weed

*Matricaria discoidea* DC. (disc mayweed)



Pineapple weed (*Matricaria discoidea*), © M. Black

Pineapple weed was introduced into the region. The plant can adapt to either moist or dry conditions and is often found in disturbed areas (Robert W. Freckmann Herbarium n.d.; Knoke 2006c). The plant emits a pineapple-like odor, and its yellow flowers bloom from May through September (Robert W. Freckmann Herbarium n.d.).

## Preparation, Use, and Significance

Consultants noted that the Crow used pineapple weed to de-worm horses, by mixing it in with their feed. In addition, the Cree wrap human hair around the prickly part to make love medicine—a powerful and much feared edicine across the northern Plains.

# Stiff goldenrod

*Oligoneuron rigidum* (L.) Small (rigid goldenrod, hard-leaf goldenrod)

Hidatsa: máí' putsidi (thing with the yellow top)



Stiff goldenrod (*Oligoneuron rigidum*), U. Schittko, photographer

Stiff goldenrod is common in dry prairies with rocky or sandy soils. Its yellow flowers bloom from August through October (Barkley 1986l:1006).

## Preparation, Use, and Significance

When the goldenrod was in bloom, it was an indication to the Hidatsa that the green corn was ready to eat (Wilson 1916: 301). Parts of the goldenrod were

used by boys for fishing. For example, a light ball, called *maretikaděhě*, grows on the stem of the plant. In Hidatsa, *mareti* is the front part of a man's neck and *kaděhě* means rotten or sore. This ball was used as a cork or bob on fishing line. It was an old practice according to Good Bird (Wilson 1916:301).

Schittko (2007) identified the DNA of stiff goldenrod among the remains of numerous plants that were once kept in a historic Mandan medicine bundle.

# Rosinweed

*Silphium* L.

Crow: baa uh paa shii le (yellow end)



Rosinweed (*Silphium* sp.), © L-M. Landry

Rosinweed is characteristic of moist-to-dry mesic prairies.

## Preparation, Use, and Significance

Consultants noted that rosinweed has unspecified medicinal uses. It is mentioned in the Crow Sacred Tobacco Society song known as *ash shi lahche*.



# Dandelion

*Taraxacum officinale* G.H. Weber ex Wiggers



Common dandelion (*Taraxacum officinale*), © J. Reveal

There are both native and introduced species of dandelion in the region. They grow in variable soils, disturbed and marshy areas, and as a weed on many lawns. The dandelion blooms from April through June. Dandelions are also an important food resource for bears, deer, elk, and Sharp-tailed grouse (Esser 1993).

## Preparation, Use, and Significance

Parts of dandelion are edible. Dandelions are eaten as greens, in soups, and used to make dandelion wine, an alcoholic beverage fermented from this plant. One consultant that her grandmother *used to make dandelion beer and wine, but she never drank it.*

# Goatsbeard

*Tragopogon dubius* Scop. (Western goatsbeard, common salsify, wild oysterplant, yellow salsify)



Goatsbeard (*Tragopogon dubius*), M. N. Zedeño, photographer

Goatsbeard is introduced into the region. The plant crops up in dry, disturbed areas, and is common along roadsides and the edges of grain fields. Goatsbeard blooms from May through July (Barkley 1986m:1015).

## Preparation, Use, and Significance

Goatsbeard was grown during old times in the village gardens. The plants were used to preserve and flavor sweet meats.

# Prairie bluebell

*Mertensia lanceolata* (Pursh) DC. (narrowleaf bluebell)



Prairie bluebell (*Mertensia lanceolata*), © J. Reveal

Native to the region, prairie bluebell prefers rocky soils in prairies and brushy canyons. Prairie blue bell has blue flowers which bloom in May, June, and July (Kaul 1986b:698).

## Preparation, Use, and Significance

The blooming of the prairie bluebell signals the medicine men to open their bundles.

# Horseradish

*Armoracia rusticana* P.G. Gaertn., B.Mey. & Scherb.



Horseradish (*Armoracia rusticana*), © E. J. Judciewicz

Horseradish was introduced to the region. The plant prefers moist and disturbed areas. Horseradish has white flowers which bloom throughout May, June, and July (Robert W. Freckmann Herbarium n.d.).

## Preparation, Use, and Significance

The root of horseradish is a ground and used as a spice. Consultants recommend processing the root outside because the plant can be an irritant.

# Lambsquarter

*Chenopodium album* L. (white goosefoot, pigweed)

Arikara: hawaxtaátu' (Parks 1986)



Lambsquarters (*Chenopodium album*), B. Summers, photographer

Native and introduced species of lambsquarter may be found in the region. It found in disturbed areas, such as those along roadsides, and in open habitats (Crawford and Wilson 1986:168). Lambsquarters bloom in summer and early fall (Flora of North America Association 2008b; LBJWC 2008).

## Preparation, Use, and Significance

Lambsquarter, also referred to in the literature as chenopodium or goosefoot, is one of the earliest native North American plant species to appear in archaeological remains across the midcontinent (Adair 2003). In the Middle Missouri subarea, lambsquarters has been identified in sites dating to the late Woodland/ early Plains Village transition (ca. AD 1150); notably it was recovered at Menoken in the Heart River valley (Ahler 2003). Its presence suggests that the seeds were intentionally collected and consumed alongside corn and other plants (Haberman 1993:92). Lambsquarter became a staple by A.D. 1500 (Nickel 2008: 134-135).

Lambsquarter was identified in a Mandan medicine bundle (Grinnell et al. 2006). Consultants noted that it can be hazardous if not handled appropriately.



# Horsetail

*Equisetum laevigatum* A. Braun (scouringrush, scouringrush horsetail, ghost whistle)

Hidatsa: nokadaxi-íta ískosi (According to Wolf Chief, the word 'nokadaxi' means ghost. Noka is an old Hidatsa word that means people; Wilson 1916:295)



Horsetail (*Equisetum laevigatum*), R. Old, photographer

Scouring rushes grow in the woods (Wilson 1916:295).

## Preparation, Use, and Significance

According to Wilson (1916:295-296), ghost-whistle rushes were used for smoothing or polishing things. Men used these plants in smoothing bows and arrow shafts. Wolf Chief explained to Wilson that women and men used scour-

ingrush and bits of hide with the fur on as well as to smooth and polish wooden bowls. Women scoured dirty clay pots with scouringrush and water where corn had boiled; *this made them clean and more solid*.

Hidatsa boys made whistles of these rushes: they would break off a hollow section of the rush, chew up one end, and blow into it (Wilson 1916:296). Additionally, horsetail was good for fattening horses, especially in the winter (Wilson 1916:295).



# Indian potato

*Apios americana* Medik. (groundnut, potato-bean)



Indian potato (*Apios americana*), © L. Allain

Native to the region, Indian potato is found along stream banks, ravines, and moist woods. The Indian potato's pink or brown flowers bloom in late summer (McGregor 1986d:420; Robert W. Freckmann Herbarium n.d.).

## Preparation, Use, and Significance

Wild potato figures in the Mandan story of "Old Man Coyote and the Wild Potato," told by Annie Eagle (Parks et al. 1978:116-117), in which the trickster eats a po-

tato and subsequently develops bad gas, which makes him jump high and get hurt when hitting the ground. He calls the village children to pile up on him but they cannot help him and they all get hurt. Coyote fills up his pipe and asks for help from all the holy beings but they refuse him and when his gas is finally all gone, his back turns all blue from hitting the ground. Perhaps for this reason people did not eat the wild potato.

# Purple prairie clover

*Dalea purpurea* Vent. (violet prairie clover, child's grass, or children's grass)

Hidatsa: Makadicta-ita wika (child's grass; Anonymous n.d.; Wilson 1916:195)



Purple prairie clover (*Dalea purpurea*), © L. Allain

This species is common in North Dakota and occurs mostly on the plains and prairies, but can grow in river bluffs, where environmental conditions similar to those of the interior grasslands occur. The roots of the purple prairie clover are long and yellow and have a sweet taste (Anonymous n.d.).

## Preparation, Use, and Significance

Hidatsa children and young people chewed the roots in summer and autumn. They were sweeter in the fall (Wilson 1916:195). According to Buffalo Bird Woman, the plant had no sacred or medicinal use (Wilson 1916:196).

# Wild licorice

*Glycyrrhiza lepidota* Pursh (ghost spit, American licorice)



Wild licorice (*Glycyrrhiza lepidota*), U. Schittko, photographer

Wild licorice grows in rich soil areas, such as native prairie in wetlands or coulee bottoms, ravines, stream valleys, and along roadsides and railroads. They are often associated with cottonwood stands in riparian areas. The plant blooms from May to August (Esser 1994; Kantrud 1995; McGregor 1986e:452).

## Preparation, Use, and Significance

Wild licorice is known to have been cultivated by American Indians. Tribes often ate the sweet roots of this plant (Kantrud 1995). Consultants noted that,

Licorice can be made into a tea. Singers use it as throat medicine.

Licorice also has spiritual “implications.” Wild licorice is used to capture someone spiritually. When a ghost takes it and then you eat it, that is bad.

It also helps braid a horse’s hair.

# Bearroot

*Hedysarum* L.

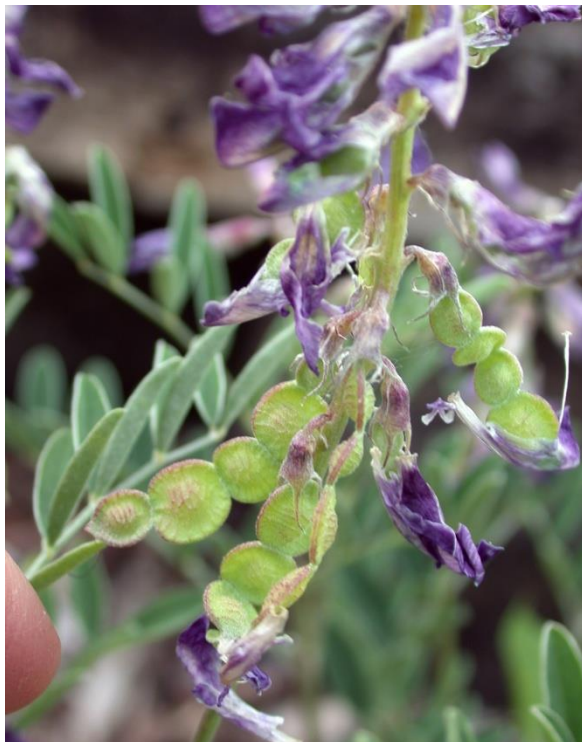
*Hedysarum alpinum* L. (alpine sweetvetch, alpine sweet broom, licorice root)

*Hedysarum boreale* Nutt. (western sweetvetch)

*Hedysarum sulphurescens* Rydb. (yellow sweetvetch)

Hidatsa: nuxbitcii (bear) xuubaarii (medicine), aruiciih giidaa (root)

Arikara: kaskatarí (Parks 1986)



Bearroot (*Hedysarum boreale*), M. Harte, photographer

Bearroot grows among moist soils in forests, meadows, along the banks of rivers and creeks, and on rocky slopes (LBJWC 2008; McGregor 1986f:453). Purple flowers bloom during June, July, and August (McGregor 1986f:453). Consultants stated that,

Bearroot grows in Montana. The plant grows tall. Around September, people from the river would go to get the plant from the mountains for the smudging.

### Preparation, Use, and Significance

Consultants noted that bearroot is not common along the Missouri River; bearroot was traded during the Sun Dance and other gatherings. The Hidatsa and the Crow *traded blackroot (red baneberry) for bearroot.*

Bearroot is important to the Hidatsa and the Crow, with specific protocols governing the collection and use of the plant. In order to collect bearroot, an individual must have the bear as spirit patron. He or she must use a specific gesture before collecting and only take a certain amount.

Bearroot is used when a person is fatigued or emotionally drained. It reverses the spirit or psyche. If a person takes it when they are well, its properties will reverse and it will make them depressed. Bearroot is also used to treat colds: the patient chews the plant and swallows their saliva. The root can also be made into a powder and turned into a tea.

Beyond its medicinal uses, the bearroot holds sacred and ceremonial importance. It is used by the Crow Sacred Tobacco Society in naming ceremonies and in the



sweat lodge. It is made into a smudge for the inside of the tobacco lodge and the sweat lodge. The glossy leaves of bearberry or kinnickinnick and bearroot are mixed into tobacco. This mix is called "crazy bottom" by the Crow (Zedeño et al. 2006:244). Bearroot is also used at funerals. For protection, individuals keep a small piece of bear root in their mouths.

# Indian breadroot

*Pedimelum esculentum* (Pursh) Rydb. (breadroot scurfpea, large Indian breadroot, pomme-de-prairie, prairie turnip, turnip, tipsin)

Hidatsa: ahi (Anonymous n.d.; Wilson 1916:184)

Arikara: Hhsúoka; wasuúka' (Parks 1986)



Indian breadroot (*Pedimelum esculentum*), M. N. Zedeño, photographer

Native to the region, Indian breadroot prefers sandy soils in dry plains and prairies, and flowers from May through July (Robert W. Freckmann Herbarium n.d.). They are frequently found along hillsides above the Missouri River (Wilson 1916:184).

## Preparation, Use, and Significance

In the literature, the "prairie turnip" may often be confused with the "wild turnip" (Gilmore 1926a:573). Indian breadroot has many synonyms. These include prairie turnip and tipsin.

Prairie turnip figures prominently in origin stories of the northern Plains tribes. In the Hidatsa origin story, "Grandmother's grandson" told by Bear's Arm to Beckwith (1938:119),

In course of time the Moon's wife gave birth to a boy. Moon said, "You may do anything you like up here except one thing. I forbid you to dig the male turnips, you may dig only the female." ... [when the boy discovered the truth about his earthly origin] The boy said "I wish you would dig just one and see what would happen." The mother answered, "O son! I am forbidden by your father." The boy insisted and said, "I take the responsibility. Tell my father if he says anything, that I commanded you."

When she dug the turnip, it seemed as if the thickness of the sky was cut right through and she could see the Missouri River down below and the buffalo and other creatures roaming around, and it was beautiful....

Grandson and his mother used the hole in the sky made by her digging the turnip to climb down to earth. Moon, upon learning of his wife's disobedience, sent a huge rock through the hole to strike the wife but to protect the grandson. Consultants noted that this rock *used to be near the site of Elbowoods, but it may be*

*underwater*. They would like to go near its landing place and see if it is indeed gone or still standing, but the landowner does not allow them to enter the property.

*Indian breadroot constituted an important food source for Plains Indians*. Yet, the plant was never planted in household gardens (Wilson 1916:187). The Hidasta harvested Indian breadroot during the early summer bison hunt (Reid 1977:322). Women would collect the roots with their husbands a few miles from the earthlodge villages. They would camp on the digging grounds for the night (Wilson 1916:184). If a girl wanted to collect breadroot, she “would go in the company [of] a relative. Her sweetheart would follow to help her dig turnips, and always took his gun along to give her protection, as when June berries were picked” (Wilson 1916:184). The plants were dug using iron hoes (e.g., mattocks; Anonymous n.d.). These tools were narrow and made specifically for this purpose (Wilson 1916:184). However, if the soil was stony, a wooden digging stick would be used instead because the “iron implement would be spoiled on stony ground” (Wilson 1916:184).

Once collected, turnips were carried back to the village in sacks on horseback (Wilson 1916:185). “When a family got back from digging turnips and [had] come to the lodge, women friends would come in. To each visiting woman would be given about ten turnips” (Wilson 1916:185). The women then began processing the turnips. The starchy roots of the breadroot were peeled and eaten fresh or could be stored. Only the sweetest turnips were eaten raw. They had a smooth yellow rind that was peeled with the teeth (Anonymous n.d.). Roots with

yellowest rinds were the most highly prized, as they were supposed to be the sweetest (Wilson 1916:184).

Dried breadroot stored well (Gilman and Schneider 1987:63). For storage, the prairie turnips were cut into vertical slices around the heart, then the heart was thrown away. The turnip slices were dried on a skin on the floor of a corn stage for three to four days. When the slices were dry they were put into sacks and storied in food caches (Anonymous n.d.). The slices which could be dropped into meat stews; the flour could be used to thicken berry pudding (Gilman and Schneider 1987:63; Wilson 1916:186). In addition, cooked turnips might be boiled whole, left in the water for two or three days, or roasted in hot ashes within their rind (Anonymous n.d.; Wilson 1916:186).

Breadroot was not always collected by earthlodge villagers. They often traded with other Plain's tribes (e.g., the Crow and Sioux) for this plant. According to Gilmore's informant, Stesta-kata:

Dried tipsin-root was the commodity most commonly obtained from the Dakota (Sioux). Tipsin grows abundantly in our country, but our women feared the Dakota too much to go out on the prairie far from the villages to gather it. The Dakota made strings of it of standard length. The length of a tipsin string was one arm-reach. They also split and dried the roots loose. We traded one hunansadu of shelled corn for four strings of tipsin roots, plus one hunansadu of dried split roots of tipsin. (Gilmore 1926c:14-15)

The plant has several ceremonial uses and associations. Breadroot is associated with the bear in most northern Plains tribes. Grizzly bears were often seen digging for and eating these plants (Wilson 1916:187). Howard (1974:253) describes a trick performed by bear shamans in a ceremony:

On another visit to these performances, the introductory act was to produce the spontaneous growth of a prairie turnip (*pomme blanche*) from the floor of the interior of the lodge. The dancers passed slowly over the entire surface of the lodge floor. Then, suddenly stopping, they pointed out to the public leaves sprouting from the root. One of the musicians pulled it up and passed it through the rows of the audience so that all might see it.

# Gooseberry

*Ribes L.* (currant)

*Ribes americanum* P. Mill. (American black currant)

*Ribes aureum* Pursh (golden currant)

*Ribes cereum* Dougl. (wax currant)

*Ribes cynosbati* L. (eastern prickly gooseberry)

*Ribes hirtellum* Michx. (hairystem gooseberry)

*Ribes missouriense* Nutt. (Missouri gooseberry)

*Ribes oxycanthoides* L. (Canadian gooseberry)

*Ribes triste* Pallas (red currant)

Crow: uu-phat-ta-che (the stem is sharp)

Hidatsa: mitóktsatsa akú a apoáta (berry of-kind fruit-bearing-plant not-sharp);

mitokitsatsa akú a ápon (berry of-kind fruit-plant sharp; Wilson 1916: 258, 260)



Golden currant (*Ribes aureum*), © J. Reveal

Currants are found along creeks and the Missouri, as well as back in the hills. The berries ripen when Juneberries ripen in early July, and must be picked in the summer, before they drop (Wilson 1916:258).

### Preparation, Use, and Significance

Gooseberries and currants are closely related. Currants look almost black when they are ripe. Yet the plants are closely related. Buffalo Bird Woman told Gilbert Wilson of two different types of *Ribes* sp. – smooth wild currant and thorny berry plant. The former had dark, almost black fruit, while the latter had red fruit (Wilson 1916:258-260).



Consultants observed that *gooseberries are thorny and look like they have frost on them. They have veins in them, making them look like little basketballs.*

Young men gathered these currents [sic] when ripe and dried them. The dried berries they pounded with a stone, then put them in a cup with a little water, in which they stirred the pounded berries. The liquor so obtained they poured on some powdered white clay. This was squeezed in the hands and made into a ball which was put away. It was a very good face paint. When wanted for use, the ball was slightly wetted and rubbed on the face. It made a pink color, while grapes made more of a purple color. Both colors were admired. (Wilson 1916: 258-259).

The fruit of these plants is eaten fresh and is not stored for the winter. Due to the relative rarity of gooseberries and currants, as well as the sharp thorns which make harvesting the berries difficult, they were (and are) considered a delicacy. Today, the bluish-black fruit of the gooseberry plant is used to make puddings and richly-colored jams. *Gooseberries may also be used to treat the blood. The deep color also makes it an ideal dye for clothing.*

# Mare's tail

*Hippuris vulgaris* L. (common mare's tail)



Mare's tail (*Hippuris vulgaris*), © Missouri Botanical Garden

Native to the region, mare's tail is best suited to a freshwater aquatic habitat, including streams and lakes. The plant also occurs in the mud of wet ditches and sloughs (Burke Museum of Natural History and Culture 2006a; Van Bruggen 1986c:740). It booms from June through August (Van Bruggen 1986c:740).

## Preparation, Use, and Significance

Mare's tail was tentatively identified in the contents of a Mandan medicine bundle (Grinnell et al. 2006).

# Blue giant hyssop

*Agastache foeniculum* (Pursh) Kuntze (fragrant giant hyssop, lavender hyssop, sweet leaf, peppermint)

Hidatsa: Ápa tsikáa (Wilson 1916:209)



Blue giant hyssop (*Agastache foeniculum*), © R. W. Freckmann Herbarium

Native to the region, blue giant hyssops are found in moist woodlands with nearby streams and lakes, and in damp wooded ravines. The hyssop flowers from July through September (Brooks 1986f:711; Gilmore 1926a:572). The plant emits a sweet anise or fennel smell (Robert W. Freckmann Herbarium n.d.).

## Taxonomy

Along with wild bergamot and false pennyroyal, blue giant hyssop is perceived in folk taxonomy as a kind of “peppermint” not to be confused, however, with true peppermint (Pepper and Wilson 1908:281, cf. Bowers 1992:470). Often a fragrant smell, similar hued flowers and growing environments will translate in similar uses. But because peppermint is so central in origin stories and religious practices, we have attempted to find as many distinctions among “peppermint” plants as consultants’ specimen identifications and literature made it possible.

## Preparation, Use, and Significance

Buffalo Bird Woman distinguished giant blue hyssop and wild bergamot, also known as horsemint. In her taxonomy, blue giant hyssop was used like horsemint to bind on fans for the sweet odor. The plant is called “sweet leaf” because of the sweet taste it has when one chews the leaves. Hidatsa children were reported to chew the leaves often and swallow the juice from the plant (Wilson 1916:209). During the early Reservation period, when sugar became available, people at Fort Berthold began making tea from the leaves of the sweet leaf plant. Sweet leaf tea is now quite commonly used on the reservation.

# Peppermint

*Mentha arvensis* L. (wild mint, field mint)

Mandan: šáxkuxke (Hollow 1970)

Hidatsa: hiishuaa; hiću (Anonymous n.d.; Wilson 1916:193)

Arikara: sčireéšu' (Parks 1986)



Peppermint (*Mentha arvensis*), © L. Allain

Peppermint grows in the moist soils along stream banks, particularly in marshes and other shady, low elevation areas (Brooks 1986g:722; Burke Museum of Nat-

ural History and Culture 2006b; LBJWC 2008). Peppermint blooms with pink or white flowers from July through September (Robert W. Freckmann Herbarium n.d.). Consultants observed that *the plant is picked in August. It can also be harvested in late fall.*

## Preparation, Use, and Significance

Peppermint has several uses among the people of the Missouri River region. Among the Hidatsa, "The peppermint is a symbol of strength because it has a revivifying effect on man" (Beckwith 1938:256f):

Among men, peppermint is a "gifted" medicine. As such, it has strict guidelines for collection and use. While there are no specific rituals associated with root collection, the gatherer must be careful to pick only the stem, without removing the root. Also, dirt should be replaced after collection. This is done for respect. Holes should not be left behind.

In the past, peppermint was used as a medicine by doctoring women (Wilson 1916:193). According to Buffalo Bird Woman,

If a woman gives birth to a child, she drinks water with this peppermint in it. It is not boiled. The unmacerated plant is dipped in the cold water, and drunk. It stops the flow of blood. The woman does not drink before, but after the birth. [The] purpose was to stop the hemorrhage. It is very commonly used on this reservation now after child birth.

"This use of the plant was not made for any other hemorrhage, as of a wound or from the nose" (Wilson 1916:193).

The plant was also used by women as an offering to ensure the abundance of the harvest in the direction of growth. *For example, if peppermint was placed to the north, it was offered to the north.* In historic times (AD 1760-1850), essential mint oil was traded to the tribes by the Europeans. Peppermint has been found archaeologically in an Arikara burial of a five-year old girl (Kindscher 1992:153). *Peppermint is still used by some bundle holders.*

Peppermint is also a food and ceremonial plant. According to the consultants, the peppermint's white-to-lavender flower,

It's boiled and used as a rinse for the rash of the poison ivy, using a wash rag several times to treat the area. Afterward, the flower buds are used for tea in which the blossoms are taken out and the Creator is thanked.

This tea was for internal use, stomach and gas relief. Peppermint cleanses the digestive tract.

Peppermint was the drink of choice during ceremonial feeds.

Peppermint was also used to make deodorant (Kindscher 1992:153).

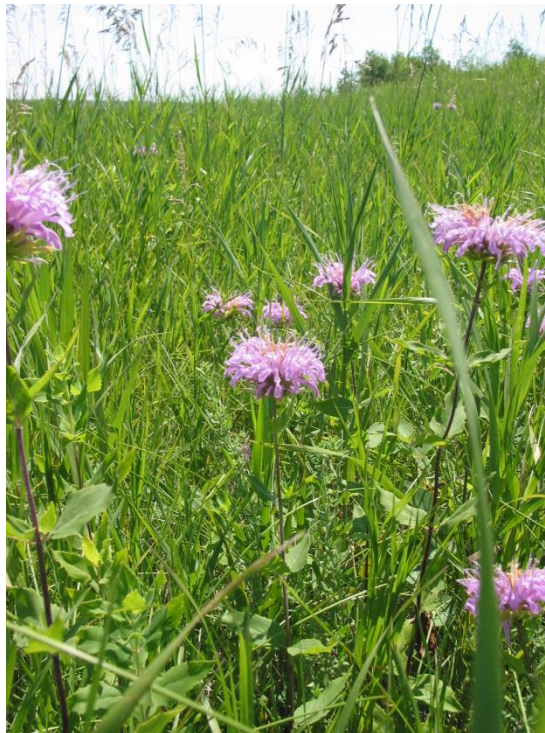
# Wild bergamot

*Monarda fistulosa* L. (horsemint, bee balm, Oswego tea)

Hidatsa: maa'aruboobaruuwa; mnitapópadusa (Wilson 1916:208)

Arikara: kahaahrtatpaxsaá'u' (Parks 1986)

Crow: bahpuushe



Wild bergamot (*Monarda fistulosa*), U. Schittko, photographer

Native to the region, wild bergamot is found on tall grass prairie hillsides and in thickets, pastures, old fields, roadsides, stream banks, and occasionally open dry prairies or open woods. The plant usually grows in rocky soil (Kindscher



1992:157; Ladd 1995:54). Consultants noted that it was found close to water.

Wild bergamot blooms from June through September (Brooks 1986h:725). It is picked in August, and is recognized by its purplish color and compressed long stalk.

## Preparation, Use, and Significance

According to Kantrud (1995) Native Americans recognize four different varieties of horsemint based on the scent of the plant. *The purple blossom is used for "Indian perfume."* Like sweet grass, wild bergamot was attached to mens' eagle fans "so that every fan brought some of the scent" (Gilman and Schneider 1987:107; Wilson 1916:208). A decoction of bergamot can be used to make a hair pomade (Kantrud 1995). Women also used the plant. Buffalo Bird Woman recounts:

In winter when we women went for wood, we would find these plants standing. We would crumple up some of the leaves and thrust them under our belts or into our mittens and thus made them smell very good. We also mixed horse mint blossoms with sweet leaf blossoms to put in our pillows, which thus were made to smell sweet all winter.  
(Wilson 1916:208)

Consultants often referred to this plant as "peppermint." Both belong to the Lamiaceae, or mint, family. Yet they also recognize that horsemint is not the same as peppermint. For example, one consultant explained,

My grandfather would use peppermint leaves mixed with other medicines when horses would cut themselves. When you smell the wild mint, in the fall, they are purple. The peppermint with the purple flower is bergamot. To prepare, take the leaves off and boil it, but don't put the leaves on the ground.

To increase the usefulness of horsemint, the plant can be preserved for use during the winter; one consultant indicated that it was frozen and thawed to make a crown when warriors came home. Horsemint can also be used to make black pigment, which is only used in victory.

Wild bergamot has a variety of ceremonial, cosmetic, and medicinal uses. The plant is used to treat both humans and animals. For example,

It is often used to protect people from getting sick before the Sun Dance. Horsemint can also be boiled and made into a paste which has astringent properties to treat the swelling associated with snake bites. It can be used to treat poison ivy and poison oak, and muscle spasms.

The Crow "found beebalm tea helpful in treating respiratory problems" (Kindscher 1992:158). In addition, the plant is known to induce sweat. Horsemint leaves can also be boiled with meat and eaten (Kantrud 1995). *The stem of the plant is a hollow reed, like bamboo, which can be used as a whistle.*

# Pennyroyal

*Hedeoma* Pers.

*Hedeoma drummondii* Benth. (Drummond's false pennyroyal)

*Hedeoma hispida* Pursh (rough false pennyroyal)

*Hedeoma pulegioides* (L.) Pers. (American false pennyroyal)



Rough false pennyroyal (*Hedeoma hispida*), © K. Chayka

Species of false pennyroyal that grow along the Missouri River Trench and environs are found growing on sandy soil patches on the prairie, around spoil piles left by burrowing animals, road sides, and disturbed areas (Chayka 2008).

False pennyroyal is often confused with blue giant hyssop. The flowers of the false pennyroyal, however, are smaller than those of the hyssop. We have included false pennyroyal in the Plant Field Guide because Pepper and Wilson (1908:281) identified specimens of pennyroyal shown to them by Hidatsa informants as the plant in the Hidatsa shrine associated with the Water Buster bundle. Versions of the origin story subsequently collected by Bowers (1992:470) identify it as peppermint.

## Preparation, Use, and Significance

The significance of false pennyroyal derives from the complex story of Eagle Man, one of two eagle friends who wished to live among humans. Eagle Man chose to be carried and delivered by a Hidatsa (Awatixa) woman. He lived a long life at the Knife River villages and left the Water Buster bundle to help the people when he decided to return to the eagle world. From this origin story derive the preparation, uses, and significance of false pennyroyal and other locally available plants of the mint family.

In the version told to Wilson by Wolf Chief (and translated by Good Bird) at the turn of the twentieth century, Eagle man first used false pennyroyal to improve upon the flavor of the muddy Missouri River water: "He reached for the wooden drinking bowl, over which he had laid some sweet-smelling pennyroyal so that the water was fragrant. This he handed to his friend, who drank it. He liked it well." (Pepper and Wilson 1908:290). A battle ensued between Eagle Man's people and the warriors of his defiant eagle friend. This battle took place on the Knife River, where Eagle Man defeated his friend and took his skull (ibid.:292).

Thereupon, Eagle Man used pennyroyal in a magical way:

When the Hidatsa became old he put an aromatic herb [pennyroyal] in a bowl of water until it was sweet-smelling; he drank of the water and rubbed it over his body, and became a young man again. But when he grew old a second time, he said, "I am tired of living among men. I want to go back whence I came. I long to live again with my friend as I did before I entered this present life." (ibid.:295)

At this point, Eagle Man began enumerating the medicines that he was to give to the Hidatsa to ensure prosperity and health. He left his and his friend skulls, his medicine pipe, the buffalo robe that would cover the skulls, and the songs that ensured success in war and in the buffalo hunt. Then, Eagle Man said,

Again, if anyone is sick, let the keeper get aromatic herbs [pennyroyal] and put them in water and set the mixture before the skull. And when the body of the sick man is rubbed with the sweet-smelling water he will get well. And now I want to die. (ibid.:296)

Two warriors then took Eagle Man's body and placed it on a scaffold. When the bones were white, they took his skull to an earth lodge and placed it next to his Eagle friend's skull, and made a bundle with all of his sacred items; to which many other sacred items were added as time went on. A warrior was designated to be the keeper of this shrine. Untold years after Eagle Man died, a Hidatsa chief named Small Ankle (father of story teller Wolf Chief) purchased the rights to be the keeper of Eagle Man's shrine. Small Ankle was very successful at bringing

food and rain to the people, and at defeating their enemies, owing to his rights to the bundle and his good care of the shrine. According to Wolf Chief,

With the skulls rested the medicine-pipe. The skulls rested on the sweet-smelling weeds [pennyroyal] ....

When one became sick, a bowl was filled with water and placed before the shrine, and the same blue aromatic herbs [pennyroyal] placed over it to make the water sweet-smelling, and the water was rubbed on the sick man's body and given him to drink....

In divination for rain, the keeper took certain purple flowered plants [pennyroyal], laid these down, and put the [tortoise] shell upon it. These plants grow in damp places. They bite the tongue when chewed. When the shell is placed on the plants, water is sprinkled over it to bring rain. (ibid.:299)

The element of interpretation in Pepper and Wilson's rendition of this story is clear in the frequent bracketed references to pennyroyal; furthermore, the reference to this plant growing in moist places and in the timber makes us think that it was indeed peppermint, and not pennyroyal, what Eagle Man used as an aromatic herb. However, one must not discount the possibility that turn-of-the-century Hidatsa shrine keepers used any of the four mint species to refurbish the bed for the skulls in the shrine and for other uses associated with its power.

When in the 1940s Bowers asked Wolf Chief to retell the Water Buster bundle origin story, Wolf Chief was fluent in English and thus the details are closer to English terms and descriptions than in the earlier version. For example, in his

death bed, Eagle man instructed the Hidatsa about rain making,

It may be that sometime you will need rain; have both of our skulls placed on the ground with a hide under us; sprinkle water with the peppermint on us and it will not be long until the clouds will come from all directions. (Bowers 1992:470).

Like the Lone Man's shrine of the Mandan, Eagle Man's shrine was transported from village to village when the people left the Knife River for Like-a-Fishhook, and its lodge rebuilt; the bundle and its keeper played a central role in the layout of Like-a-Fishhook (Bowers 1992:472).

So powerful was the Water Buster bundle that, according to our consultants, the Hidatsa attributed the Dust Bowl to the fact that Wolf Chief sold the bundle to Gilbert Wilson, who in turn placed it in the Haye Museum. A member of the Water Buster clan recalls that when the bundle was repatriated in the 1930s, storm clouds began to build in the horizon as the group who went to retrieve it came closer to Fort Berthold, and a huge storm unleashed upon their return.

# Wild onion

*Allium textile* A. Nels. & J.F. Macbr. (big onion, prairie onion, textile onion)

Mandan: kášre (onion, Hollow 1970)

Hidatsa: mihaauudii; mih kaa uutii (grass beside root); miká-uti (miká, grass; utí, the foot of a tree or plant; Wilson 1916:227).

Arikara: koóxu' (onion, Parks 1986)

Crow: bit xua (edible variety of onion)



Wild onion (*Allium textile*), M. N. Zedeño, photographer

Wild onions inhabit open plains, prairies, and meadows (Churchill 1986b:1246; LBJWC 2008; Wilson 1916:227). The shoots of the wild onion develop white flowers from May through July (Churchill 1986b:1246; LBJWC 2008; Wilson 1916: 227). *In July, you can smell the wild onions.*



*Wild onions were here before Columbus.* The plant grows about six inches high. The bulbous root tastes very much like modern domesticated onions. These plants can have a low toxicity if eaten in large quantities (LBJWC 2008).

## Preparation, Use, and Significance

According to Buffalo Bird Woman, the Hidatsa “named white men’s onions after [the wild onion], miká-uti” (Wilson 1916:227). Crow elders distinguished between two types of wild onion; the edible variety is a staple in native diet. In the past, Hidatsa children were those who mostly ate wild onions. Adults did not favor the plant. The children would make digging sticks and go out into the prairie to dig the onions up and eat them. They were one of the first plants to grow in the spring. When wild onions blossomed in May, women would begin planting beans and squash in their gardens. This is because “when wild onions and June berry trees blossomed ... [it] meant that the frost was out of the ground” (Wilson 1916:227).

Wild onions were also used as medicine. Buffalo Bird Woman noted that these plants “are a good medicine for one who has diseased bones” (Wilson 1916:227). Individuals who had problems with their bones gathered the roots and ate the onions frequently. The roots were thought to diffuse into the blood, flesh, bones, and marrow. This was believed because animals that had eaten wild onions tasted and smelled like them. This was not a taste preferred in meat: “Even the marrow of the animal tasted of the wild onions. Hence we thought wild onions a good medicine for diseased bones, because we were sure the onion flavor went clear thru the flesh and bones” (Wilson 1916:228).

# Wild flax

*Linum L.*

*Linum lewisii* Pursh (Lewis flax)



Lewis flax (*Linum lewisii*), D. Powell, photographer

Different varieties of flax grow on dry plains, foothill, and mountain slopes. Flax flowers from May to August (Kershaw 2000:15). Consultants identified this species for its purple or blue flowers. Lewis flax is adapted to cold climates; its moisture content makes it fire-resistant. It provides fair forage for livestock and wildlife; birds eat the seeds and capsules in winter (USUE 2009).

## Preparation, Use, and Significance

According to our consultants,

When the flowers of the wild flax open, this signals that it is time to open the medicine bag. It is also a horse medicine, which prevents worms and encourages a shiny coat.

The flax is braided for drying rack cordage.

# Pink top

*Polygonum amphibium* L. (water knotweed)

Hidatsa: kadákadaduti (Wilson 1916:272)



Knotweed (*Polygonum amphibium*), J. Anderson, photographer

"Pink top grows in wet places or in standing water. It grows to be over three feet high and has joints like a reed with broad leaves and pink blossoms" (Wilson 1916:272).

## Preparation, Use, and Significance

In the past, the Hidatsa dug the roots of pink top and boiled them. A dye was made via this process that was used to color porcupine quills (and possibly feathers). The quills turned a light yellow (Wilson 1916:272). According to Buffalo Bird Woman, her father also colored white horse hair with this dye (Wilson 1916:272). The white horse hair was boiled in the dye.

# Bitterroot

*Lewisia rediviva* Pursh (redhead Louisa)



Bitterroot (*Lewisia rediviva*), © M. Skinner

Bitterroot prefers poorly developed soils on dry, exposed slopes of valleys and forests (Phillips 2001:86). It is also found on river bars, gravelly slopes, and plains. Bitterroot blooms in June in Montana, with white or pink flowers; rodents eat the seeds and leaves of the bitterroot (Howard 1993).

Consultants noted that the bitterroot is usually obtained through trade by the tribes of the upper Missouri River,

But it does grow in some areas. One consultant noted that individuals go to “medicine country” to pick it where it grows. The plant is har-

vested in the fall. If a person goes to the sloughs of medicine country, the pieces grow to be huge. They are found about one foot underground.

A consultant noted that bitterroot and sweetflag root may be used interchangeably.

## Preparation, Use, and Significance

Bitterroot has a number of medicinal properties and uses:

It is used for everything, including fever, physical ailments, spirit sickness, cleansing, and protection. Bitter root is also a smudge. It can be made into a topical treatment or poultice for cuts. A person can also keep a piece in their mouth, then chew it up, and swallow it.

Cedar berries also ease the tightness of the stomach after eating too much; mix the cedar berries with bitterroot and make a tea.

The root of bitterroot can also be dried and used to rejuvenate the system.

The Arikara cooked bitterroot with corn and turnips.

# Red baneberry

*Actaea rubra* (Ait.) Willd. (blackroot, black medicine, big medicine, cohosh, red cohosh, snakeberry, necklaceweed)

Mandan: ríšk<sup>e</sup>re psi (black medicine plant, Hollow 1970)

Hidatsa: xubadishibisha; hupádi cípica (medicine black, Wilson 1916:314)

Arikara: škanikaátit (Parks 1986)

Crow: bim mun xap (song associated with blackroot)



Red baneberry (*Actaea rubra*), left: © L-M. Landry; right: D. Powell, photographer



Native to the region, red baneberry prefers rich, moist soils of forests and bogs. The plant flowers from May through July and fruits from August through October (Crane 1990; Robert W. Freckmann Herbarium n.d.). Only the root of the red baneberry is used. Brightly colored and poisonous, the berries are not palatable to humans. However, they constitute an important food resource for several species of birds and small mammals (Crane 1990).

## Taxonomy

Traditionally, red baneberry root has been referred to as "big medicine," "black medicine," or "blackroot" (Gilmore 1926a:573; Wilson 1916:314). Certain plants that have sweet-tasting roots with numbing properties, such as echinacea and wild licorice, (see above) may also be called "blackroot." However, red baneberry is the true "black medicine." Knowledge associated with the ceremonial use of red baneberry is considered sacred among contemporary religious practitioners and thus it is closely guarded. Individuals wishing to use red baneberry for religious or medicinal purposes must pay a high physical and spiritual price to purchase the rights and knowledge from another owner.

Formerly there were two forms of baneberry, both scarce. The first, red baneberry (*Actaea rubra*), is still used by tribes today. The second, white baneberry (*Actaea alba*), may have become locally extinct due to clear-cutting and flooding related to the Garrison Dam (Schneider 2008). According to Buffalo Bird Woman, the Hidatsa used the latter most commonly, for all doctoring purposes and in the River Ceremony, but both species could be used in the same way (Wilson 1916:314).

## Preparation, Use, and Significance

Red baneberry is a highly regarded medicinal and ceremonial plant among the contemporary Hidatsa, Mandan, Arikara, and Crow. The root had many uses in the past and continues to be used today. Red baneberry roots have long been traded for bearberry, bitterroot, and other powerful medicines used by the Upper Missouri River and Rocky Mountain tribes (Zedeño et al. 2006). Currently, annual intertribal gatherings of religious practitioners during the Sun Dance season are a welcome opportunity to trade plants and other resources and to transfer use knowledge that would otherwise be lost (Zedeño et al. 2007). The origin of "big medicine" may be traced back to the creation of the world. In the version of the creation story told by Foolish Woman to Beckwith (1938:7),

In the beginning the whole earth was covered with water. Lone Man was walking on top of the waves. He thought within himself, "Where did I come from?" So he retraced his footsteps on the top of the water and he came to a bit of land jutting out of the water. He saw a plant called "big medicine" such as grows in the marsh two or three feet high with flat white blossoms that come out in the spring. His footsteps led to this plant. One branch was broken and hung at the side. At the broken place he saw drops of blood and he thought, "This must be my mother!" As he looked about he saw an insect called "Tobacco blower" flying about the plant and he thought, "This must be a father to me."

As for the use of baneberry in doctoring, two important origin stories are told by the Hidatsa and Mandan. The first appears in the suite of ancient Hidatsa

(Awatixa) oral traditions known as "The Sacred Arrow." In the story of Two Men (Spring Boy and Lodge Boy) and their son Unknown One, told to Beckwith (1938:47) by Bear's Arm and interpreted by Arthur Mandan,

Two Men had observed that [Unknown One's] father-in-law was lame and Spring-boy now agreed to doctor the man. They came to the lodge a second time. Spring-boy had the fire rekindled with split wood and water brought. He dipped up some of the water into his mouth and gargled four times. Then he took more water into his mouth, chewed up some black medicine and going over to the man he took hold of the leg by the ankle, lifted it up and blew the finely chewed medicine four times from the man's feet up to his hips. Something was seen twitching in the man's leg. Spring-boy reached into the instep and drew out a male bullsnake and placed it on the ashes. Lodge-boy did the same and drew out a female bull-snake from the left leg which he laid on the ashes beside the other. He told the husband and wife to tie cords to the snakes, spit black medicine over their legs and draw the snakes out on the snow and leave them with their heads pointing to the west, then cleanse their hands with sagebrush and lay sagebrush at the rear, pointing to the west. The man was now perfectly well.

Hidatsa myths of the Sacred Arrow explain the participation of Holy Women in several ceremonies, including "Black Medicine rites with the red baneberry root" (Bowers 1992:293). The Mandan of the twins whose bodies were made of Black Medicine and Sweet Medicine, respectively, explain the origin of the Black Medi-

cine bundle used in the Big Bird ceremony (Bowers 2004:261). Both suites also clarify the relationship between snake stories, places, and events, and black medicine. They, too, are associated with the rights to use the plant for doctoring snake bites and pulling snakes (usually in the form of small worms) out of the body, among other ailments (Bowers 1992:373).

The third suite of stories belongs to the origin of the Mandan and Hidatsa eagle trapping ceremony and its closely associated bear ceremony (Beckwith 1938:258). Numerous versions of these stories were recorded by Wilson (1928), Beckwith (1938:103, 197, 206), and Bowers (2004:206). For example, Ben Benson's story of how Black Wolf learned to trap eagles and brought the knowledge to the Mandan (Bowers 2004:218), Black Wolf befriended Little Black Bear; his new friend was trapping eagles and so Black Wolf asked to be taken to his lodge and taught how to do it. Against the advice of Old Black Bear, the two boys went out and set out a trap:

A bald-headed eagle was coming down; they are hard to catch. Before Black Wolf caught the eagle, it had stuck its claws through the little boy's wrists. Black Wolf pulled the eagle into the pit and took the claws out of the little boy's hand, but the pain was so severe that he cried and went home. Black Wolf walked right behind him, crying too, he felt so sorry for his little brother.

As they walked, Black Wolf saw a pretty leaf and dug to the roots of the plant to get the black sweet roots to chew and put on the wounds, thinking it might help the boy's hand. This root was Black Medicine. He

put the root which he chewed up onto the boy's hand, and it felt better immediately. The little boy was happy to be relieved of the pain, and the father inquired of Black Wolf where he found the material, for he wanted to gather some to keep near in case eagles should seize anyone again.

Black Wolf's story illustrates a unique case of knowledge transfer from a human to an animal; in return, the Bear people taught him the rites and songs of eagle trapping and helped him return to his village. Little Black Bear further gave up his skin for the transfer (Bowers 2004:221), thus explaining as well the use of whole stuffed animal skins in medicine and ceremonial bundles, and the custom of spitting chewed blackroot on eagle trap snares (Beckwith 1938:258), and tying a piece of the root to the ceremonial snare (Bowers 2004:245). Thereafter, the bears taught eagle trappers like Cherry Necklace how to use the medicine root and sing the songs to kill snakes and use their poison (Bowers 2004:178).

Murray (2009:95) observes that in contemporary times, rights to red baneberry are closely tied to eagle medicine and to the rights to work with eagle feathers:

This root protected trappers who were wounded by eagles or who came into contact with powerful eagle parts. It was rubbed or blown over the body, and is a vital component of eagle medicine today.

Because different parts of plants are used seasonally and for different reasons, "medicinal plant knowledge typically took several seasons to learn." Black root was identified by most consultants as the main plant associated with eagles, and remains an integral component of eagle

medicine practice....

MB uses this root every time he handles eagle feathers. This plant protects him when the feathers get "hot," and "wards off evil spirits and misfortune." Harvesting the roots requires the performance of rituals. This plant is known to grow in Twin Buttes and is still collected. When asked if he carried the root every day, he responded, "Yep. Everywhere I go. Somebody might need some help, and I pray and put that on them.... It is a real powerful medicine." The rights to use this plant are still transferred with eagle medicine. Its sacredness prevented him from being able to talk about its specific uses in great detail.

As a medicinal plant, red baneberry was widely used during pregnancy and childbirth among the Mandan and Arikara. Mrs. Good Bear told Bowers (2004:174) how her mother had fasted in the woods, and in her dream had seen an old Mandan couple digging the root and singing the sacred songs. The couple was helping a woman with childbirth while at the same time they were blowing chewed blackroot to bring a number of dead water snakes back to life. The couple taught her mother how to be a midwife. Afterwards her mother never killed snakes but blew blackroot whenever she found one near the lodge and then carried it away.

Gilmore (1930:73) noted that, among the Arikara, an infusion of roots sprayed upon a pregnant mother's abdomen was used when a baby was emerging on its side. At the same time the midwife repositioned the child by pressing on the abdomen. An infusion of roots was also placed on a pregnant woman's head in cas-

es of delayed delivery:

The midwife also takes some of the medicine into her mouth and sends it forcibly into the mouth of the woman. It is supposed that this will "scare the baby," so that it will quickly move down and be delivered. At the same time the midwife takes in hand a wisp of wild sage (*Artemisia gnaphalodes* or *Artemisia ludoviciana*) which she has ready. With it she brushes downward on the woman's body in front, both right and left sides, and then down the back, with four sweeping motions from head to feet. It is said that when all this is done the delivery is no longer delayed, and the baby comes quickly.

In addition, a root infusion, with the manual "treatment" of the abdomen, was used to relieve painful internal clotting in women after giving birth (Gilmore 1930:75). "In case of inflammation and abscess of the breast a mixture of pulverized roots of red baneberry and the application of a poultice made from the spore mass of a puffball give prompt relief" (Gilmore 1930:76). Bathing the breast with a root infusion also helped to stimulate milk flow.

The infusion of red baneberry root was further utilized in the care and cleansing of eyes, mouth, and nostrils of newborns before they were swaddled. "A drop of this medicine, combined with another medicine, the botanical name of which has not been learned, was placed in the mouth of the infant, on the right side, if a girl, on the left, if a boy" (Gilmore 1930:77).

Arikara fishermen used boiled and dried baneberry roots as an antidote to the

poison transferred in catfish stings:

In case of such poisoning, some of the root is chewed and put upon the wound, together with the chewed bark of young sandbar-willow sprouts. At the same time a finger is inserted into the mouth of a catfish and some of the slime therefrom is wiped out and also applied to the wound. (Gilmore 1924:128-129)

Small quantities of powdered red baneberry roots are used as medicine.



# Anemone, “crocus”

*Anemone* L.

*Anemone canadensis* L. (Canadian anemone)

*Anemone cylindrica* Gray (candle anemone, long-fruited anemone)

*Anemone multifida* Poir. (Pacific anemone)

*Anemone parviflora* Michx. (smallflowered anemone)

*Anemone quinquefolia* L. (wood anemone)

*Pulsatilla patens* spp. *multifida* (Pritz.) Zamels (prairie crocus, cutleaf anemone)

Arikara: kaskúhtu' (Parks 1986)



Prairie crocus (*Pulsatilla patens* spp. *multifida*), U. British Columbia Botanical Gardens

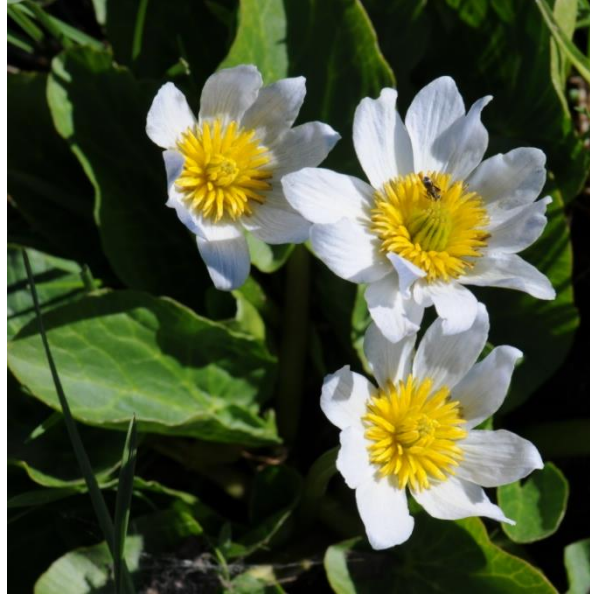
Anemone species prefer moist, gravelly soils and lightly grazed prairies. Anemone flowers from May to August (Sutherland 1986a:88). *Crocus come out in the spring. They are small and do not last long. When they come out, the crocus is the first flower of the season to wake up all the other flowers.*

## Preparation, Use, and Significance

Consultants often use “crocus” to refer to “anemone;” there is no true *Crocus* species in the region. The anemone without a flower is a heart medicine for the Hidatsa. However, the anemone is toxic when eaten.

# Marigold

*Caltha leptosepala* DC. (marsh marigold, white marsh marigold)



Marigold (*Caltha leptosepala*), © J. Reveal

Native to the region, marigolds are found in moist soils of alpine and subalpine meadows or the shallow water of stream banks and bogs. Their white flowers bloom in April and May (LBJWC 2008; Sutherland 1986b:90).

## Preparation, Use, and Significance

According to Crow consultants, marigolds are planted in gardens to keep bugs away.

# Wild strawberry

*Fragaria virginiana* Duchesne

Mandan: waqpíksok

Hidatsa: amaáhoka; Axáxska akú ápaduni (ground kidney-of sort that is-short;

Wilson 1916:343)

Arikara: apáru' (Parks 1986)



Wild strawberry (*Fragaria virginiana*), © T. G. Barnes

Native to the region, wild strawberries prefer the dry soil of prairies, woodlands, and roadsides (McGregor 1986g:376). Wild strawberries bloom with white flowers from March through June (LBJWC 2008; McGregor 1986g:376). The fruits grow shortly thereafter and are picked *toward the end of June*.

## Preparation, Use, and Significance

The fruit of the wild strawberry is edible and used in puddings. The Indians of the Missouri River region use the small strawberries to make puddings. They are a ceremonial food. Bears also consume the fruit of this plant.

# Prairie rose

*Rosa arkansana* Porter (dwarf prairie wild rose, Arkansas rose, sunshine rose, biskabia)

Hidatsa: mítskapa a (Anonymous n.d.; Wilson 1916:233)

Arikara: pAhastaátu' (rosebush); pahaahnaanataakaáh (rose); páhat (berry of the plant) (Parks 1986)



Prairie rose (*Rosa arkansana*), D. Anderson, photographer

Prairie rose is native to the region. In eastern and central North Dakota, prairie roses prefer the cool, moist soils of sandy pastures, roadsides, and edges of

woods (Kantrud 1995), prairies, bluffs, meadows, and ditches (Robert W. Freckmann Herbarium n.d.; McGregor 1986h:398). The pink or white blooms come in June and July (McGregor 1986h:398). *When the rose hips bloom, it is time to sweat*. They are known to attract butterflies.

According to the consultants, hips, petals, and roots are collected when the river rises, in the late summer, or after the first snow. Some consultants noted that prairie rose requires burning to get them growing.

## Preparation, Use, and Significance

The prairie rose has many nutritional, medicinal, ceremonial, and utilitarian uses. One property of the plant that is often noted, however, is its beauty. In a traditional story, Mother Earth becomes sad because her robe (i.e., the prairie) was dull and gray. Prairie Rose offered to go up onto the earth to brighten her robe. Wind threatened to blow the prairie rose off the earth, but refrained when he saw her beauty. "Sometimes the Wind forgets his gentle songs and becomes loud and boisterous, but he does not harm a person whose robe is ornamented with the color of the prairie rose" (Gilmore 1966:202). The plant could be stored,

I have been told that the Crow Indians and perhaps other tribes dried rose pods to put away for the winter. They mixed the scrapings of hides with the pods. They however used only the inner scrapings of a dry hide, those that come off after the outer dirty part is all scraped off. These clean scrapings were mixed with the rose pods, and all pounded up and dried. They would lay a raw hide down, put the rose

berries on it, mix with them the hide scrapings, and mash and pound all together with a stone. Then this mass was dried and when it was wanted for food, it was boiled. We Hidatsas never dried rose pods, however, to store by for winter. (Wilson 1916:235)

The prairie rose was a food item. Missouri River tribes eat petals, hips, stems, and leaves. "The rose has vitamins A and C. We taught the Europeans to use it to prevent scurvy. Rose hips were ground and mixed with oil and another ingredient to make a sweet dish. The rose was used in preserves, candies, sauces, flavorings, wines, and teas (Kantrud 1995). Elders said the plant was used to make puddings. The berries were sometimes eaten.

The stem or root's bark was brewed into a tea by the Crow (Hart 1992:62). "We picked young wild rose leaves, just enough to make tea which tasted real good. I would pick the wild rose berries or rose hips and eat the outer part but not the seeds" (Estes 1990:4). The Hidatsa also made a tea. "The inner bark was shaved into strips and bound into a bundle three or four inches thick. This was placed in boiling water and lifted out before drinking" (Anonymous n.d.).

Roses were also used as perfume (Kantrud 1995). For example, rose berries might be placed in the mouth to make a Hidatsa's breath smell sweet (Anonymous n.d.). Men were often noted to do this when visiting their "sweet hearts" (Wilson 1916:237). In addition, men used the wood of the rose bushwood to construct rabbit snares (Wilson 1916:236). These traps were then placed in the woods.



Rose bushes were also used to protect lodges in the winter. These smaller structures were built in the timber of the floodplain. Because they were warm, dogs often climbed onto the lodges and became troublesome when they dug holes in the roofs.

The family leaned rose bushes against the lodge thickly, stems to the ground and branches upright. The thorny bushes kept the dogs from climbing up on the roof. Bullberry bushes were used for the same purpose, but rose bushes were best. Sometimes the two kinds of bushes were both used, intermixed. The bushes were leaned quite around the lodge, clear up to the perch entrance. (Wilson 1916:237)

The prairie rose and its essential oils have many curative properties. The roots were crushed and boiled by the Crow, forming a hot compress to lessen swelling (Kindscher 1992:191). "They also sniffed the vapor from this brew for nosebleed, drank it to stop bleeding in the mouth, and gargled and swallowed some of it to treat tonsillitis and sore throat" (Kindscher 1992:191). According to consultants, the plant was employed as an eye medicine. *Consultants also noted that its leaves were laid over the itch left by exposure to poison ivy to cure it.* In a contrasting statement, *roses were also known to cause itchiness.*

Numerous ceremonial uses and associations are attributed to the prairie rose. In the past, when kinickkinick was scarce, men would dry rose leaves to be mixed with tobacco and smoked:

A man held a bush over the fire, and then holding the bush over a skin or something, crumpled the ends with his hand and the dried leaves crumbled and fell off. This was often done by members of a war party who were out of tobacco. I don't think it was a very good substitute however. (Wilson 1916:236)

Gilmore (1930:75) recorded the placement of an afterbirth bundle in branches of rosebushes (*Rosa arkansana* var. *woodsii*) in hopes that disease would strike the bundle rather than the child. In addition, "pipe stems were made with rose bush stems for they were hollow. Large stalks were cut, trimmed of thorns and split. A Hidatsa man scraped out the pith with a knife and bound it back together in four or five places with sinew" (Anonymous n.d.; Wilson 1916:236).

# Groundcherry

*Physalis L.*

Mandan: wít'ok (Hollow 1970)

Hidatsa: Áma-mátsu (Wilson 1916: 327)



Groundcherry (*Physalis* sp.), Ohio State Weed Lab Archive

Groundcherry grows on rocky soils of high hill or butte tops (Wilson 1916:327).

## Preparation, Use, and Significance

Not common to the Fort Berthold Indian Reservation, Hidatsa women went out to collect groundcherry in a very specific way; if found in large quantities, they

pounded the fruit to make lumps like chokecherries (Wilson 1916:327). According to Buffalo Bird Woman,

When we found a patch of the plants with ripe berries and went out to gather them, we were always careful to approach them from down-wind. Thus if the wind was blowing from the westward, we approached it from the east; if toward the east, we approached from the west. If we did not do so, the wind would carry our smell to the fruit and the cherries would turn sour. Approaching from the down-wind side, the cherries were always found sweet. Everyone on the reservation knew this, that if a picker approached going with the wind, he would find the fruit spoiled and sour.

# Stinging nettle

*Urtica dioica* L. (slender nettle, tall nettle, American stinging nettle)



Stinging nettle (*Urtica dioica*), © J. Reveal

Stinging nettle is both native and introduced to different parts of the Great Plains. It is common in wet areas, such as moist woods, stream banks, coulees, woodland clearings, and disturbed sites, but can occur in both wetlands and uplands, but it is vulnerable to flooding. Stinging nettle flowers from June through September (Carey 1995; Barker 1986b:130).

## Preparation, Use, and Significance

Once consultant observed that stinging nettle is used for horses.



# Grasses

Mandan: *Xq̣h*

*Chief of the Wolves said, "We heard about you and we came over here to help you." ...*

*When you are having these ceremonies, have a bowl of clean water and red grass from the hills ready. Dip the grass in the water. The water is sacred. The grass is sacred too. You will use that for the ceremonies as well as for doctoring. There is also a song to the old female wolf.*

Bowers (1992:411)

# Beaver grass

*Carex stricta* Lam. (upright sedge, uptight sedge, Wilson 1916:270)

Hidatsa: Midápa-ita Wiká (beaver's grass; Wilson 1916:270)



Beaver grass (*Carex stricta*), J. Anderson, photographer

Beaver grass is found growing where beavers have their dens. Specifically, it grows in the woods along the Missouri in wet places (Wilson 1916:270)

Beaver grass is a long-leaved grass with a round stem. It differs from other grasses in that a stalk grows up and branches into four or five long leaves. According to Buffalo Bird Woman, it was by this peculiarity that the Hidatsa could identify beaver grass (Wilson 1916:270). One consultant believed that beaver grass *may be the same plant as stink grass*.



## Preparation, Use, and Significance

This plant has both ceremonial and medicinal functions. According to one consultant, it's a love medicine, though it comes with a price. It is also made into switches, which are used by men during sweats.

In terms of utilitarian functions, Gilman and Schneider (1987:62) noted that the Hidatsa braided the beaver grass and used it to string dried squash. In the past, men would go out and collect bundles of grass and bring it back to the village (Wilson 1916: 270). They would spread the grass on the corn stages, weighed down with sticks, to dry. Women would then soak the grass in water and twist it into cordage. These were used to skewer the squash slices for drying. The squash strings could be hung in the earthlodge for storage (*ibid.*:270).

# Bulrush

*Schoenoplectus* (Reichenb.) Palla

*Schoenoplectus acutus* (Muhl. ex Bigelow) A. & D. Löve (hardstem bulrush)

Crow: bi-shux xa te



Hardstem bulrush (*Schoenoplectus acutus*), © L. Allain

Bulrush occurs in marshes, swamps, seeps, washes, floodplains, along lake and stream margins, and in wet meadows. It grows in fresh or brackish water. Hardstem bulrush can grow in areas where the water table is up to five feet (1.5 m) above or a third of a foot (0.1 m) below the soil surface. It is fairly drought tolerant; it can persist through several years of dry conditions (Utah State Cooperative Extension 2009).

According to Crow elders, bulrush is used in the sweat structure.

# Wheatgrass

*Agropyron Gaertn.*



Crested wheatgrass (*Agropyron cristatum*), © L-M. Landry

A Native American ecologist notes that:

Wheatgrass is a common plant and forage. Bluebunch wheatgrass is the second favorite forage material for large mammals. Western wheatgrass is the third favorite forage material for large mammals.

Western wheatgrass [*Agropyron smithii*] is a native plant and appears when an area is disturbed by gophers or large mammals. Crested

wheatgrass [*Agropyron cristatum*] is widespread throughout the Plains but is an introduced bunchgrass. (Zedeño et al. 2008:21-22)

## Preparation, Use, and Significance

In a Mandan story recorded by Bowers (2004:237), Bear on the Flat twisted wheatgrass into two hoops, one to represent the moon and one to represent the sun. They were hung inside the eagle trapping lodge.

# Big bluestem

*Andropogon gerardii* Vitman (turkeyfoot bluestem, tall bluestem)

Mandan: ishtíhe (blue prairie grass, Hollow 1970)

Arikara: haaNUtkúsu' (Big Grass Society, Parks 1986); huhwáhat



Big bluestem (*Andropogon gerardii*), J. Anderson, photographer

Big bluestem is found on prairies that the prairies and along roadsides. While it favors moist lowlands, it can be found in uplands that contain adequately-moist soils (Kindscher 1992:226; Sutherland 1986c:1132). In North Dakota, this plant flowers from July through August after a spring growth period, after a growth period in mid to late spring. Fire also encourages flowering (Uchytíl 1988). Consult-

ants agreed that *it is good for bison, a warm season plant flourishing in July and August*. The grass provides nesting for various bird species and food for livestock and wildlife (Uchytel 1988).

## Preparation, Use, and Significance

In addition to providing fodder, big bluestem was used by children in games. The grass stems were used by little boys of the Mandan, Hidatsa, and Arikara to make arrows. A thorn from the thorn apple plant was inserted as an arrow point (Gilmore 1991:16).

# Buffalograss

*Buchloe dactyloides* (Nutt.) Engelm. (Antelope-hair grass; Wilson 1916:225)

Hidatsa: Amauxihica (hair or Earth-hair that is like antelope's hair; Wilson 1916:225)



Buffalograss (*Buchloe dactyloides*), Lady Bird Johnson Wildflower Center

Native to the region, buffalograss is found in upland and short-grass prairies, well-drained pastures, and meadows. It is common in disturbed sites. The grass flowers from May to June, but its blooms may extend into late summer (Howard 1995; Sutherland 1986d:1148; LBJWC 2008).

Buffalo grass is important forage for livestock (Howard 1995; LBJWC 2008).

## Preparation, Use, and Significance

*Buffalograss was once dried and used for insulation in earthlodges.* Because it is sod-forming and drought resistant it can be used in construction (Howard 1995; LBJWC 2008).

In the past, buffalo grass , which was also called antelope-grass, was sought out for drying food. Buffalo Bird Woman told Gilbert Wilson (1916:225) the following:

When I was younger and it was the season to dry squash I used to choose a patch of antelope-hair grass always on which to dry the solid slices of squash which could not be spitted on a stick. If we tried to spit them, the slices broke. Also when dried meat got wetted or was moist and was therefore like to spoil, antelope hair grass was good to dry the meat on. Also when we dried squash blossoms, as I have told you before, we chose antelope hair grass to dry them on.

The grass is apparently good to dry things on because it “grows matted and thick and quite severe the ground, almost like moss, so that there is no earth exposed to soil the drying article” (Wilson 1916:225).

Women also used the roots of buffalo grass for embroidery. When fresh, the roots are not black but can be made this color by drying. When a woman made porcupine quill embroidery, she put in the black stripes in these black antelope-hair grass roots. Other colors, such as, red, yellow, and white, were made with porcupine quills. The black, however, was made with these roots (Wilson 1916:225-226).



# Sweetgrass

*Hierochloa odorata* (L.) Beauv. (vanilla grass)

Mandan: pšáš

Hidatsa: macuaca'; Matsúatsa (Wilson 1916:188)

Arikara: haaNUtwaraakhá (Parks 1986)



Sweetgrass (*Hierochloa odorata*), © L-M. Landry

Sweetgrass grows in wet lowlands, such as meadows, prairies, marsh edges, and swales (Kindscher 1992:254; Sutherland 1986e:1184). *Sweetgrass is also found in small draws or coulees.* It is never found up on the open prairie (Wilson 1916:188). Sweetgrass blooms from May through July (Sutherland 1986e:1184). However, "sweet grass could be gathered at any time in the summer season, and smelled good" (Wilson 1916:192).

Sweetgrass is identified by the red or blue streak at the base of each of its leaves. According to one consultant, *sweetgrass came to the people of the Upper Missouri from Canada*.

## Preparation, Use, and Significance

Both in the past and today, this plant had many ceremonial, medicinal, and practical uses for the tribes of the Upper Missouri. It was and is most commonly used and stored when individual blades of the grass were braided together.

Sweetgrass is associated with First Creator in the Grizzly Bear ceremony and with the Wolf bundle, among other myths and rituals. For example, “if [Hidatsa men] wore a ‘ring’ of sweetgrass, it was for ceremonial purposes—specifically the Wolf Ceremony (Bowers 1992:394; Wilson 1916:192). It was also a significant component in the women’s attire during the Woman Above ceremonies. According to Awatixa and Mandan oral tradition, “Woman Above came down from the sky, carrying her ashwood stick in her right hand and wearing her robe with a coil of sweetgrass...” (Bowers 1992:329). Rights to the Woman Above bundle include a song that calls for sweetgrass (*ibid.*:407).

The mysterious powers of Woman Above are further associated with the Beardache, who rejected their sex and dressed like women after repeated visions sent by her or after finding coils of sweetgrass on their path, which were believed to have been placed there by Woman Above or the Holy Women (Bowers 1992:33).

Sweetgrass smoke was an important component of Mandan, Hidatsa, and Arikara ceremonies, valued specifically for its cleansing and purifying properties. Its ceremonial significance is evident in its inclusion in numerous sacred objects and sacred spaces among the Mandan, Hidatsa, and Arikara. For example, *the eagle society burned sweetgrass inside the earthlodge but not outside to create a sacred space*. Sweetgrass braids are often integrated into sacred items, such as corn fetishes, buffalo headdresses (Howard 1974:263), and medicine bundles.

Describing the Arikara Buffalo Society medicine bundle, which contained two sweetgrass braids, Howard (1974:265) wrote:

Its inclusion in the bundle was to honor the deities to which the bundle was dedicated, particularly the thunderbirds, and also to serve as a perfume and vermifuge. Such sweet grass braids are common in Plains Indian medicine bundles.

*Sweetgrass was also used to smudge bundles*. Arikara bundles wrapped in hides were often discolored due to the ritual of passing the bundle through sweetgrass smoke. This smoke is created by dropping the dried sweetgrass contained inside the bundle over hot coals (Gilmore 1931:38). The main ceremonial function of sweetgrass was as an incense, which was burned before sacred objects (Wilson 1916:192). For example, after the Old Woman's society dances in the Hidatsa Wolf ceremony, they incense their canes with burning sweetgrass and put them away to hang on the wall (Beckwith 1938:253). Use of sweetgrass was, however, determined by the rites of the particular ceremony that was observed.

In addition, to the examples provided above, sweetgrass is included in Mother Corn household shrines among the Arikara. Whenever the shrine was opened, a piece of the braided sweetgrass was broken and sprinkled as an offering over a fire. The sacred ear of Mother Corn was passed through the sweetgrass smoke. The smoke was also used to purify household members during the ceremony (Gilmore 1925b:31-33). Dried braids of sweetgrass were broken off and offered to the four directions during this Mother Corn veneration (Gilmore 1931:50).

Sweetgrass also played an important role in name-giving ceremonies (Estes 1990:4), as a means of purification before the transfer of song rights (Parks 1996:117), and as spiritual protection for girls entering into adulthood. In Gilmore's account of a woman's puberty ceremony, he observes:

When the homily was finished the girl was brushed down the front, right side, back and left side with a wisp of sweet grass...It was believed that the sweet grass is attractive to all spiritual influences for good, especially all those benignant influences which make for kindness, peace, benevolence and intercession. The brushing of the girl with sweet grass was an invocation of all good Powers in the four quarters of the universe to watch and guard and aid her. (Gilmore 1930:81)

Consultants observe that there are a number of medicinal uses for sweetgrass:

A tea was used for curing colds or other illnesses. It could also cleanse contaminated people, spaces, or animals (e.g., during a woman's

menstruation or when someone is beset by anger or negative feelings).

As a cleansing agent it was sometimes combined with sage. It could also cure a foul-smelling horse when used as incense.

The sweet fragrance of sweetgrass made it a popular perfume (Wilson 1916:188). Older women wore sweetgrass tied to the collar on the left side of their dresses (Wilson 1916:192). Because of the scent, "young men... kept it in their beds on the frame inside where they slept" (Wilson 1916:188). Buffalo Bird Woman said that braided sweetgrass was often placed on the undersides of young men's fans (Gilman and Schneider 1987:107). They would tie about four small braids of sweetgrass to the fan so that it smelled good every time the fan was waved. The braids were bound big end down, little end up, so that they would flap every time the fan was waved (Wilson 1916:188).

"Old men used fans of eagle wings, [while] young men fans made of eagle tail feathers" (Wilson 1916:190). Young women also used sweetgrass as a perfume, but not on fans or robes (Wilson 1916:190). Buffalo Bird Woman, a Hidatsa, noted:

Sometimes a young woman tied sweet grass on the ends of the braids that fell forward over the shoulders. The end of the braid was tied with a piece of cloth or thong. I used to make a little ball or bunch of sweet grass and tied it with the same thing that tied the end of either of my hair braids..... Older women wore sweetgrass tied to the collar on the left side of their dresses.

Sweetgrass was also used as a construction material in earthlodges, comprising part of a grass layer placed underneath the sod on the outer part of the house (Potter 2003:25).

# Cactus

Mandan: šákri

There was a time when Hoita trapped the animals inside Dog Den Butte. The mosquito mice told Lone Man that to trick Hoita,

*You ought to change into a jackrabbit.... He will ask you what you eat.*

*Tell him that your favorite food is the cactus plant. You must practice eating from the cactus, since he will ask you to eat some.....*

Bowers (2004:357)

# Plains pricklypear

*Opuntia polyacantha* Haw. (starvation pricklypear)

Mandan: šákri (Hollow 1970)

Hidatsa: patskidíá aku xaxúá (bunch cactus or bulky cactus) (Wilson 1916:197)

Arikara: na'aatkátox (Parks 1986)



Pricklypear cactus (*Opuntia polyacantha*), D. Powell, photographer

Plains pricklypear is found in “dry grasslands, badlands, and eroded areas.” These cacti are also found along roadsides, preferring rocky or sandy soils. It flowers in May and June, with yellow and orange blooms (Kaul 1986c:159). The “clustered hairs” on the pricklypear pads are poisonous. However, the fruit and pads of this cactus are edible and often consumed by pronghorn deer and box turtles (LBJWC 2008).



## Taxonomy

Buffalo Bird Woman told Wilson (1916:197) that there were three types of cactus on the Fort Berthold Indian Reservation: *patskidía aku oúka* (wide cactus), *patskidía aku tawóxi* (small cactus), and *patskidía aku xaxúa* (bunch cactus, or bulky cactus, or prickly pear). These cacti are identified by different attributes. For example, wide cactus has a wide “leaf” that is flat. The spines on this cactus are larger than those on the bunch cactus. The small cactus has no flowers, whereas the wide cactus has a pink flower, but no berries. We have inferred that the bunch cactus is the prickly pear, however, it is less certain whether the small cactus is pincushion cactus, since this does have a bright pink flower. This cactus may be pincushion.

## Preparation, Use, and Significance

The cactus figures in the origin story of the Okipa ceremony, as the plant that Lone man was instructed to eat he turned into a jackrabbit to trick Hoita into freeing the animals that he had trapped inside Dog Den Butte (Bowers 2004:357).

According to Buffalo Bird Woman, only the “bunch cactus” or prickly pear was purportedly used by the tribes of the Hidatsa. It was eaten by warriors or hunters in times of food scarcity (Wilson 1916:197). The men “dug the cactus up by the roots and laid them on the fire until the spines were burned off. The charred outside portions were then removed or cut off and the fleshy inside of the plant could be eaten” (Wilson 1916:197-198). Yet this plant could only be eaten from

the early spring through the fall. Wolf Chief, prepared a meal of cactus for Gilbert Wilson in 1916:

The cactus grows in bunches or clusters made up of multiple bulbs or fleshy bodies about an inch or more in diameter laden with spines. Wolf Chief separated one of these fleshy bodies from the cluster and laid it on the fire rolling about the coals with the point of a stick. "We did not thrust the cactus directly on the stick, only rolled it about with the stick thus," he explained. When it was cooked, Wolf Chief cut off the charred spines and burnt rind with his knife. "Sometimes," he said, "we ate cactus raw; there were many of them eaten on war parties." (Wilson 1916:201)

"Cactus berries" from the bunch cactus were also eaten. Buffalo Bird Woman recounts:

Berries of the Bunch cactus are good and the children were fond of eating them. They tasted, as I have said, like figs... We gathered the cactus berries in small children's bark carrying baskets and in parfleche bags... Children and their mothers gathered the berries, especially girls. Two or three, sometimes four girls went out together. We found the cacti growing on small ridges or rising ground. One girl could gather one heaping double handful in about a half a day – counting a day in Indian fashion, for we did not work a whole day straight. Bunch cacti were not plentiful and were, therefore, hard to get. When a girl came home to the lodge with her basket of berries, everybody in the

lodge, young and old, would cry: "Give me some. Give me some," and each would hold out his hands, laughing. The girl would reach in her bag and, drawing out the berries, would put some into each outstretched hand. The children, especially, would eagerly crowd about the girl, crying out and begging her for berries. The berries were not saved until meal time but were eaten up as soon as brought in. But then we had no regular meal time anyhow. The berries were never cooked but were always eaten raw. Girls of over ten years of age gathered the berries. (Wilson 1916:198-199)

One elder noted that the pulpy inside of the plains pricklypear may serve as a survival food.

Other uses have been recorded for the Crow and Sioux tribes. "In order to fix colors on hides, Sioux and Crow Indians rubbed a freshly-peeled stem [of the plains pricklypear] over the paint" (Hart 1992:39). The cactus has a natural insect repellent inside.

# Pincushion

*Escobaria* Britt. & Rose



Pincushion blooms (*Escobaria* sp.), M. N. Zedeño, photographer

Pincushion cactus grows on rocky soils.

## Preparation, Use, and Significance

Pincushion cactus is known to have been used among the Hidatsa and Mandan in the performance of witchcraft (Zedeño et al. 2006). One consultant noted that the pincushion cactus has edible fruit.

# Vines

Mandan: w<sup>á</sup>rǫ irúw<sup>i</sup>rǫ

In the beginning the land was mainly under water....

*First Creator caused the people who were leaving below to come above, bringing with them their garden produce. The people continued to come up, following a vine, until one woman heavy in pregnancy broke the vine.*

Bowers (1992:298)

# American bittersweet

*Celastrus scandens* L. (false bittersweet, climbing bittersweet, fevertwig, Jacob's ladder)

Hidatsa: maaxiiraaxii

Arikara: čirahwáko'(Parks 1986)



American bittersweet (*Celastrus scandens*), © L-M. Landry

Bittersweet grows in well-drained soils of woodlands, stream banks, rocky hillsides, and along fence lines and roadsides. The vine blooms from May through July. The plant has green flowers. These are followed by red or orange berries (LBJWC 2008; McGregor 1986i:534).

American bittersweet is ghost medicine. It is used because some ghosts do not know they are dead. They are called "those that chased away."

# Wild cucumber

*Echinocystis lobata* (Michx.) Torr. & Gray (wild balsamapple, wild mock cucumber)



Wild cucumber (*Echinocystis lobata*), © L-M. Landry

Native to the region, wild cucumber is found in moist woods, woodlands, and stream banks. It blooms in June-October (Barker 1986c:268).

## Preparation, Use, and Significance

The plant is inedible but had unspecified uses in the past. Dried wild cucumber was found in a Mandan medicine bundle (Grinnell et al. 2006).

# Ground bean

*Amphicarpaea bracteata* var. *comosa* (L.) Fern. (American hogpeanut)

Mandan: ówrĭk (bean, Hollow 1970)

Hidatsa: Amasa-ke (bean-dug, Wilson 1916:194)

Arikara: átit (bean, Parks 1986)



Ground bean (*Amphicarpaea bracteata*), © L-M. Landry



## Preparation, Use, and Significance

Ground beans are identified by their purple flowers. The beans are food for the tribes of the upper Missouri River. The Arikara clearly distinguished the ground bean from imported beans, both in origin traditions and in practical uses (Parks 1996:155n). The Mandan, for example, store ground beans for winter (Beckwith 1938:96-97). These plants are also associated with the prairie mice that collect them, and the people who collect beans from these stores (Gilmore 1926d:178).

# Wild grape

*Vitis riparia* Michx. (riverbank grape, frost grape)

Mandan: hášure (grape vine, Hollow 1970)

Hidatsa: macípica (black thing, Wilson 1916:242)

Arikara: tšustaátu' (grape vine, Parks 1986)



Wild grape (*Vitis riparia*), B. Summers, photographer

Wild grapes flourish in woodlands, ravines, thickets, fencerows, and on stream banks and open hillsides (LBJWC 2008). Tribal consultants noted finding them along river bottoms. Wild grapes flower in May and June. The plant fruits from July through September (McGregor 1986j:560).

## Preparation, Use, and Significance

Wild grapes are discussed in two Missouri River tribe stories. The Mandan emergence story tells of how the people climbed up to the earth from underground on a grapevine (Bowers 2004:183). The quality of the grapes on the vine impressed the Mandan. It was for this reason they climbed to the surface (Potter 2003:41).

Wild grape may have ceremonial and medicinal properties. In an account told to Beckwith (1938:153), White Owl gives Black Wolf "a piece of wild grapevine" to protect himself against a seductress on his journey. The bundle associated with the Snow Owl ceremony contains a grapevine (Bowers 2004: 285). In another story told by a consultant, Owl told man to wrap grapevines around his head to treat hair loss.

The fruit of the wild grape is edible. In the past, grapes were eaten off the vine (Wilson 1916:242). They were never cooked, but occasionally were brought home for consumption the next day. Today, grapes are used to make candies or jellies. The jelly is also described as a bitter jam.

Also in the past, wild grapes were used to make red paint. In an account given to Wilson (1916:242) by Wolf Chief,

I took some white clay, powdered, in my palm. I took ten grapes and crushed them and pulped them in the clay with my fingers, mixing the pulp and clay in my palm, I picked the seeds out of the mass and threw them away. Then I added a very little water and touching my finger in the mass I tried a little on my wrist, letting it dry there. If too

red, I added a little more clay. We wanted it to be a rose color. When just right, I made the mass into a ball. This I used for painting my forehead and hair over for part of my head and in front at the sides. Also the gum spots on a hair switch. The paint so put on the hair lasted one day. The clay ball I put away. It lasted a long time, and did not fade.

The fruit of the wild grape is edible. In the past, grapes were eaten off the vine (Wilson 1916:242). They were never cooked, but occasionally were brought home for consumption the next day. Today, grapes are used to make candies or jellies. The jelly is also described as a bitter jam.

# Other

# Mushrooms



"Rain Cap" mushroom, M. N. Zedeño, photographer

Many kinds of mushrooms were and are used by the Mandan, Hidatsa, Arikara, and Crow. Of note, mushrooms can be poisonous. According to one consultant, to test if a mushroom is poisonous, cut it and put it on a white piece of paper. If it turns black, it is poisonous. Other elders have noted that mushrooms with red undersides are thought to be poisonous and have been known to kill trees. Different mushrooms may have culinary, ceremonial, and medicinal uses:

Mushrooms were and are found in bundles. Today, old women boil mushrooms and use them for unknown purposes. A "raincap" mush-

room was used as a poultice to stop war wounds from bleeding.

One mushroom that grows in the “crotch” of a bullberry tree is used as a smudge and for cleaning houses. One only needs a tiny bit for the whole house. A flat, white mushroom which grows on trees is eaten, typically cooked, though today it is also breaded.

Mushrooms that grow under the bullberry trees also may be used to undo love medicine (Zedeño et al. 2006). And last, there is a saying, “*do not step on mushrooms or it will rain.*”

# Puffball mushroom

*Lycoperdon* Tourn. ex L.

Mandan: íreh<sup>e</sup> rek (mushroom, Hollow 1970)

Hidatsa: mistoda (puffball, Wilson 1916:312)

Arikara: kaáhA (mushroom, Parks 1986)



Puffball mushroom (*Lycoperdon pyriforme*), J. O'Brien, photographer

Puffball mushrooms grow on dead wood or above buried wood. The puffball mushroom looks like a brown ball out on the flats.

Men gathered puffballs in the fall when they were ripe (Wilson 1916:313).



## Preparation, Use, and Significance

Consultants observed that puffball mushrooms are a traditional medicine. However, if they are used too much, they can cause blindness. They stop the bleeding of bad wounds.

Puffball mushrooms were associated with medicine for pregnant women and newborn infants. For new mothers, "in case of inflammation and abscess of the breast a mixture of pulverized roots of red baneberry and the application of a poultice made from the spore mass of a puffball give prompt relief" (Gilmore 1930:76). Bathing the breast with this infusion also helped to stimulate milk flow. Additionally, these fungi were used as an "absorbent" on the umbilical cord of newborn babies. Gilmore (1930:74) records women twisting "up the cord and coil[ing] it spirally about the navel and leav[ing] the end turned upward. A ripe puffball is clapped on and bound with a bandage of soft tanned buffalo hide. After three or four days the cord will be dried up and drop off."

In the past, the puffball was used to make fire with flint and steel. Men would cut out a thin slice and rub one side with wetted gun powder. They would then hold the following things in their hands: the piece of puff ball, a piece of flint and the steel shaped like a ring (Wilson 1916:312). Using the slice of puffball, the men would then make a fire. Not many pieces of puffball were carried.

Puffball mushrooms were found in a Mandan medicine bundle (Grinnell et al. 2006).

# Lichen



Lichen, H. F. Schwartz, photographer

People pick the yellow kind because it is already dry. Lichen may be used as a poultice, either boiled or chewed up, for sores, rashes, and wounds. It may also be used as incense.

# Moss



Moss, M. N. Zedeño, photographer

Moss is used as a poultice for cuts and wounds to stop the bleeding.

# Watergrass



Grass fields along Lake Sakakawea, Fort Berthold Indian Reservation, M. N. Zedeño, photographer

Watergrass grows along the river and is identifiable by its long leaves. It is burnt or dried into a powder. This powder is then mixed with grease to treat mouth sores.

## REFERENCES CITED

Abel, A. H., ed.

1939 Tabeau's Narrative of Loisel's Expedition to the Upper Missouri. Norman: University of Oklahoma Press.

Adair, Mary J.

2003 Great Plains Paleoethnobotany. *In* People and Plants in Ancient North America. P. E. Minnis, ed. Pp. 258-346. Washington, D.C.: Smithsonian Institution Press.

Ahler, Stanley

1993 Plains Village Cultural Taxonomy for the Upper Knife-Heart Region. *In* The Phase I Archeological Research Program for the Knife River Indian Villages National Historic Site, Part IV: Interpretation of the Archeological Record. T. D. Thiessen, ed. Pp. 57-108. Lincoln: National Park Service Midwest Archeological Center.

Ahler, Stanley A., ed.

2003 Archaeology at Menoken Village, a Fortified Late Plains Woodland Community in Central North Dakota. Flagstaff, Arizona: PaleoCultural Research Group.

Ahler, Stanley A., Thomas D. Thiessen, and Michael K. Trimble

1991 People of the Willows: the prehistory and early history of the Hidatsa Indians. Grand Forks: University of North Dakota Press.

Aleksoff, Keith C.

- 1999 *Achillea millefolium*. *In* Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>, accessed January 31, 2008.

Allen, W. E.

- 1983 Eagle Trapping along the Little Missouri River. *North Dakota History* 50(1):4-22.

Anderson, Michelle D.

- 2005 *Artemisia ludoviciana*. *In* Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>, accessed January 18, 2008.

Anonymous

- N.d. Notes on Hidatsa Plant Uses. Fort Union Trading Post National Historic Site Archives, North Dakota.

Barker, William T.

- 1986a *Ulmus americana*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 122. Lawrence: University Press of Kansas.
- 1986b *Urtica dioica*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 130-131. Lawrence: University Press of Kansas.

1986c *Echinocystis lobata*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 268. Lawrence: University Press of Kansas.

Barkley, T. M.

1986a *Achillea millefolium*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 854. Lawrence: University Press of Kansas.

1986b *Artemisia absinthium*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 868. Lawrence: University Press of Kansas.

1986c *Artemisia tridentata*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 870-871. Lawrence: University Press of Kansas.

1986d *Artemisia ludoviciana*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 870. Lawrence: University Press of Kansas.

1986e *Artemisia cana*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 869. Lawrence: University Press of Kansas.

1986f *Artemisia frigida*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 870. Lawrence: University Press of Kansas.

1986g *Helianthus annuus*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 954. Lawrence: University Press of Kansas.

1986h *Echinacea angustifolia*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 921-922. Lawrence: University Press of Kansas.

1986i *Chrysothamnus nauseosus*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 906-907. Lawrence: University Press of Kansas.

1986j *Iva annua*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 964-965. Lawrence: University Press of Kansas.

- 1986k *Lygodesmia juncea*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 975. Lawrence: University Press of Kansas.
- 1986l *Solidago rigida*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 1006. Lawrence: University Press of Kansas.
- 1986m *Tragopogon dubius*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 1015. Lawrence: University Press of Kansas.

Beckwith, M.

- 1938 Mandan-Hidatsa Myths and Ceremonies. *Memoirs of the American Folk-lore Society* 32. New York: G. E. Stecherd and Co.
- 1978 Myths and Hunting Stories of the Mandan and Hidatsa Sioux. New York: AMS Press.

Blankenship, J. W.

- 1905 Native Economic Plants of Montana. *Montana Agriculture Experiment Station Bulletin* 56:1-38.

Berry, J. J.

- 1978 Arikara Middlemen: The Effects of Trade on an Upper Missouri Society. Anthropology Department. Bloomington: Indiana University.

Bowers, A. W.

- 1992 Hidatsa Social and Ceremonial Organization. Washington, D.C.: U.S. Government Printing Office.
- 2004 Mandan Social and Ceremonial Organization. Lincoln, Nebraska: University of Nebraska Press.



Brooks, Ralph E.

- 1986a *Pinus ponderosa*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 76. Lawrence: University Press of Kansas.
- 1986b *Symphoricarpos occidentalis*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 828. Lawrence: University Press of Kansas.
- 1986c *Juniperus communis*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 72. Lawrence: University Press of Kansas.
- 1986d *Juniperus virginiana*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 73-74. Lawrence: University Press of Kansas.
- 1986e *Cirsium canescens*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 910. Lawrence: University Press of Kansas.
- 1986f *Agastache foeniculum*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 710-711. Lawrence: University Press of Kansas.
- 1986g *Mentha arvensis*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 721-722. Lawrence: University Press of Kansas.
- 1986h *Monarda fistulosa*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 724-725. Lawrence: University Press of Kansas.

Burke Museum of Natural History and Culture

- 2006a *Hippuris vulgaris*. *In* WTU Herbarium Image Collection. Burke Museum of Natural History and Culture, University of Washington. Electronic document,  
<http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Hippuris&Species=vulgaris>.

2006b *Mentha arvensis*. In WTU Herbarium Image Collection. Burke Museum of Natural History and Culture, University of Washington. Electronic document,  
<http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Mentha&Species=arvensis>.

Caduto, Michael J., and Joseph Bruchac

1995 Native Plant Stories (told by Joseph Bruchac), from Keepers of Life. Golden, Colorado: Fulcrum Publishing.

Carey, Jennifer H.

1993 *Pinus banksiana*. In Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document,  
<http://www.fs.fed.us/database/feis/>, accessed January 18, 2008.

1994 *Artemisia absinthium*. In Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document,  
<http://www.fs.fed.us/database/feis/>, accessed November 28, 2007.

1995 *Urtica dioica*. In Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>, accessed January 31, 2008.

Case, Rev. and Mrs. Harold W.

1977 100 Years at Ft. Berthold: the History of Fort Berthold Indian Mission, 1876-1976. Published by the author. AINS: B0010E5FHI.

Chayka, K.

2008 Rough False Pennyroyal. *In* Minnesota Wildflowers. Electronic document, <http://www.minnesotawildflowers.info/flower/rough-false-pennyroyal>.

Catlin, George

1965 Letters and Notes on the Manners, Customs, and Condition of the North American Indians. Minneapolis: Ross and Haines.

Churchill, Steven P.

1986a *Yucca glauca*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 1265. Lawrence: University Press of Kansas.

1986b *Allium textile*. *In* *Flora of the Great Plains*. Great Plains Flora Association, ed. Pp. 1246. Lawrence: University Press of Kansas.

Coladonato, Milo

1992 *Ulmus americana*. *In* Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>, accessed November 28, 2007.

Crane, M. F.

1989 *Cornus sericea*. *In* Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sci-

ences Laboratory. Electronic document,

<http://www.fs.fed.us/database/feis/>, accessed January 30, 2008.

1990 *Actaea rubra*. *In* Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>, accessed January 30, 2008.

1991 *Arctostaphylos uva-ursi*. *In* Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>, accessed November 28, 2007.

Crawford, Daniel J., and Hugh D. Wilson

1986 *Chenopodium album*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 168. Lawrence: University Press of Kansas.

Cutler, Hugh C., and Leonard W. Blake

1973 *Plants from Archaeological Sites East of the Rockies*. St. Louis: Missouri Botanical Gardens.

Dorsey, George A.

1904 *Traditions of the Arikara*. Pub. No. 7. Washington, D.C.: Carnegie Institution of Washington.

Esser, Lora L.

1993 *Taraxacum officinale*. *In* Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station,

Fire Sciences Laboratory. Electronic document,  
<http://www.fs.fed.us/database/feis/>, accessed February 1, 2008.

1994 *Glycyrrhiza lepidota*. *In* Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document,  
<http://www.fs.fed.us/database/feis/>, accessed January 31, 2008.

1995 *Heracleum lanatum*. *In* Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document,  
<http://www.fs.fed.us/database/feis/>, accessed January 27, 2008.

Estes, Bernice Q.

1990 *They Called Me Sweetgrass*. Bellevue, Washington: Sweetgrass Publishing.

Ewers, J. C.

1954 *The Indian Trade of the Upper Missouri Before Lewis and Clark: An Interpretation*. St. Louis: Missouri Historical Society.

Fort Berthold Water

2002 *Three Affiliated Tribes Commemorative Edition*. North Dakota Water 10, special issue.

Flora of North America Association (FNAA)

2008a *Betula*. *In* Flora of North America. Electronic document,  
[http://www.efloras.org/florataxon.aspx?flora\\_id=1&taxon\\_id=103887](http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=103887).

2008b *Chenopodium album*. In *Flora of North America*. Electronic document,  
[http://www.efloras.org/florataxon.aspx?flora\\_id=1&taxon\\_id=200006809](http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=200006809).

Gilman, Carolyn, and Mary Jane Schneider

1987 *The Way to Independence: Memories of A Hidatsa Indian Family*  
1840-1920. St. Paul: Minnesota Historical Society Press.

Gilmore, Melvin R.

1913 *A Study in the Ethnobotany of the Omaha Indians*. Lincoln: Nebraska  
State Historical Society Collections 17:314-357.

1924 *Arikara Fish-Trap*. Indian Notes I:120-134.

1925a *Arikara Basketry*. Indian Notes II:89-95.

1925b *Arikara Household Shrine to Mother Corn*. Indian Notes II:31-34.

1926a *Being an Account of an Hidatsa Shrine and the Beliefs Respecting It*.  
*American Anthropologist* 28(3):572-573.

1926b *Some Games of Arikara Children*. Indian Notes III:9-12.

1926c *Arikara Commerce*. Indian Notes III:13-18.

1926d *The Ground Bean and Its Uses*. Indian Notes II:178-187.

1928 *The Cattail Game of Arikara Children*. Indian Notes V:316-318.

1930 *Notes on Gynecology and Obstetrics of the Arikara Tribe of Indians*.  
Michigan Academy of Sciences Volume 1 pp. 71-81 Ramona, California:  
Acoma Books.

1931 *The Sacred Bundles of the Arikara*. Papers of the Michigan Academy  
of Science, Arts, and Letters 16:33-50.

1966 *Prairie Smoke*. New York: AMS Press.

1991 Uses of Plants by the Indians of the Missouri River Region. Lincoln: University of Nebraska Press.

Grinnell, Calvin, Barnet Pavao-Zuckerman, Nieves Zedeño, and Nicholas Laluk

2006 Reconstructing Landscape Knowledge and History from Bundles. Symposium poster presented at the 71st Annual Meeting of the Society for American Archaeology, San Juan, April 26-30.

Groen, Amy H.

2005a *Yucca glauca*. In Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>, accessed January 31, 2008.

2005b *Echinacea angustifolia*. In Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>.

Gucker, Corey L.

2005 *Fraxinus pennsylvanica*. In Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>, accessed January 18, 2008.

2006 *Juniperus horizontalis*. In Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station,

Fire Sciences Laboratory. Electronic document,  
<http://www.fs.fed.us/database/feis/>, accessed January 16, 2007.

Haberman, Thomas W.

1993 The Randall Phase Component at the Dirt Lodge Village Site, Spink County, South Dakota: late Woodland/Early Village Transitions on the Northeastern Plains. *In* Prehistory and Human Ecology of the Western Prairies and Northern Plains, edited by J. A. Tiffany, pp. 75-116. Plains Anthropologist 38 (145), Memoir 27.

Hanson, Jeffery R.

1987 The Hidatsa Natural Environment. *In* The Way to Independence. C. Gilman and M J. Schneider, eds. Pp. 333-339. St. Paul: Minnesota Historical Society.

Hart, Jeffrey A.

1992 Montana: Native Plants and Early Peoples. Helena: Montana Historical Society Press.

Hauser, A. Scott

2007 *Symphoricarpos occidentalis*. *In* Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document,  
<http://www.fs.fed.us/database/feis/>, accessed January 31, 2008.

Hilger, M. Inez



1951 Some Customs Related to Arikara Indian Child Life. *Primitive Man* 24(4):67-71.

Hiller, Wesley R.

1940 The Manufacture of Bone Fish-hooks and Stone Net Sinkers By the Mandans. *Minnesota Archaeologist* VI:144-148.

1948 Hidatsa Soft Tanning of Hides. *Minnesota Archaeologist* 14(1):4-11.

Hollow, Robert Charles, Jr.

1970 A Mandan Dictionary. Ph.D. dissertation, Linguistics, University of California, Berkeley.

Howard, James H.

1974 The Arikara Buffalo Society Medicine Bundle. *Plains Anthropologist* 19(66):241-271.

Howard, Janet L.

1993a *Lewisia rediviva*. In *Fire Effects Information System*. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>, accessed January 16, 2008.

1995b *Buchloe dactyloides*. In *Fire Effects Information System*. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>, accessed March 14, 2008.

Jenkinson, Clay S., ed.

2003    A Vast and Open Plain: The Writings of the Lewis and Clark Expedition in North Dakota, 1804-1806. Bismarck: State Historical Society of North Dakota.

Johnson, Kathleen A.

2000    *Prunus virginiana*. In Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>, accessed January 27, 2008.

Johnson, W. Carter, Robert L. Burgess, and Warren R. Keammerer

1976    Forrest Overstory Vegetation and Environment on the Missouri River Floodplain in North Dakota. *Ecological Monographs* 46(1):59-84.

Kantrud, Harold A.

1995    Native Wildflowers of the North Dakota Grasslands. Jamestown, North Dakota: Northern Prairie Wildlife Research Center Online. Electronic document, <http://www.npwrc.usgs.gov/resource/plants/wildflwr/index.htm> (Version July 6, 2000).

Kaul, Robert B.

1986a    *Betula occidentalis*. In *Flora of the Great Plains*. Great Plains Flora Association, ed. Pp. 143. Lawrence: University Press of Kansas.

1986b    *Mertensia lanceolata*. In *Flora of the Great Plains*. Great Plains Flora Association, ed. Pp. 698. Lawrence: University Press of Kansas.

1986c *Opuntia polyacantha*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 159. Lawrence: University Press of Kansas.

Kershaw, Linda

2000 *Edible and Medicinal Plants of the Rockies*. Edmonton, Canada: Lone Pine Publishing.

Kindscher, Kelly

1987 *Edible Wild Plants of the Prairie: An Ethnobotanical Guide*. Lawrence: University Press of Kansas.

1992 *Medicinal Wild Plants of the Prairie: An Ethnobotanical Guide*. Lawrence: University Press of Kansas.

Knoke, Don

2006a *Helianthus annuus*. *In* WTU Herbarium Image Collection. Burke Museum of Natural History and Culture, University of Washington. Electronic document,  
<http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Helianthus&Species=annuus>.

2006b *Erigeron strigosus*. *In* WTU Herbarium Image Collection. Burke Museum of Natural History and Culture, University of Washington. Electronic document,  
<http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Erigeron&Species=strigosus>.

2006c *Matricaria discoidea*. *In* WTU Herbarium Image Collection. Burke Museum of Natural History and Culture, University of Washington. Electronic

document,

<http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Matricaria&Species=discoidea>.

Ladd, Doug, with Frank Oberle (photographer)

1995 Tallgrass Prairie Wildflowers: A Field Guide. Guilford, Connecticut: Globe Pequot Press.

Lady Bird Johnson Wildflower Center (LBJWC)

2008 Native Plant Database. Native Plant Information Network, Lady Bird Johnson Wildflower Center, The University of Texas at Austin. Electronic document, <http://www.wildflower.org/plants/>.

Larson, G. E.

1986a *Salix bebbiana*. In *Flora of the Great Plains*. Great Plains Flora Association, ed. Pp. 285. Lawrence: University Press of Kansas.

1986b *Salix exigua*. In *Flora of the Great Plains*. Great Plains Flora Association, ed. Pp. 287. Lawrence: University Press of Kansas.

Lewis & Clark Bicentennial Commission

1999 Part I: Missouri River Habitats. In *Proceedings of the Conference "A Voyage of Recovery,"* St. Charles, Missouri.

Mails, Thomas E.

1973 *Dog Soldiers, Bear Men, and Buffalo Women*. Englewood Cliffs, New Jersey: Prentice Hall.

McCleary, Timothy P.

1997 *The Stars We Know: Crow Indian Astronomy and Lifeways*. Prospect Heights: Waveland Press.

McGregor, Ronald L.

1986a *Acer negundo*. *In Flora of the Great Plains*. Great Plains Flora Association, ed. Pp. 569-570. Lawrence: University Press of Kansas.

1986b *Rhamnus alnifolia*. *In Flora of the Great Plains*. Great Plains Flora Association, ed. Pp. 555-556. Lawrence: University Press of Kansas.

1986c *Daucus carota*. *In Flora of the Great Plains*. Great Plains Flora Association, ed. Pp. 592. Lawrence: University Press of Kansas.

1986d *Apios americana*. *In Flora of the Great Plains*. Great Plains Flora Association, ed. Pp. 420-421. Lawrence: University Press of Kansas.

1986e *Glycyrrhiza lepidota*. *In Flora of the Great Plains*. Great Plains Flora Association, ed. Pp. 452. Lawrence: University Press of Kansas.

1986f *Hedysarum alpinum*. *In Flora of the Great Plains*. Great Plains Flora Association, ed. Pp. 453. Lawrence: University Press of Kansas.

1986g *Fragaria virginiana*. *In Flora of the Great Plains*. Great Plains Flora Association, ed. Pp. 376. Lawrence: University Press of Kansas.

1986h *Rosa arkansana*. *In Flora of the Great Plains*. Great Plains Flora Association, ed. Pp. 398. Lawrence: University Press of Kansas.

1986i *Celastrus scandens*. *In Flora of the Great Plains*. Great Plains Flora Association, ed. Pp. 534. Lawrence: University Press of Kansas.

1986j *Vitis riparia*. In *Flora of the Great Plains*. Great Plains Flora Association, ed. Pp. 560-561. Lawrence: University Press of Kansas.

McMurray, Nancy E.

1988 *Toxicodendron rydbergii*. In *Fire Effects Information System*. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>, accessed January 30, 2008.

McWilliams, Jack

2003 *Artemisia frigida*. In *Fire Effects Information System*. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>, accessed January 31, 2008.

Murray, Wendi Field

2009 "The Gods Above Have Come": A Contemporary Analysis of the Eagle as a Cultural Resource in the Northern Plains. Tucson: Bureau of Applied Research in Anthropology, University of Arizona.

National Park Service

N.d. Common Plant List. Theodore Roosevelt National Park. Electronic document, <http://www.nps.gov/thro/naturescience/common-plant-list.htm>.

Nickel, Robert K.

2008 Cultigens and Cultural Traditions in the Middle Missouri. *In* Plains Village Archaeology. S. A. Ahler and M. Kay, eds. Pp. 126-139. Salt Lake City: University of Utah Press.

Parks, Douglas

1986 An English-Arikara Student Dictionary. Roseglen, North Dakota: White Shield School District.

1996 Myths and Traditions of the Arikara Indians. Lincoln: University of Nebraska Press.

Parks, Douglas R., A. Wesley Jones, and Robert C. Hollow

1978 Earth Lodge Tales From the Upper Missouri: Traditional Stories of the Arikara, Hidatsa, and Mandan. Bismarck, North Dakota: Mary College.

Pepper, George H., and Gilbert L. Wilson

1908 An Hidatsa Shrine and the Beliefs Respecting It. *Memoirs of the American Anthropological Association* II(4):275-328.

Phillips, H. Wayne

2001 Northern Rocky Mountain Wildflowers. Guilford, Connecticut: Globe Pequot Press.

Potter, Tracy

2003 Sheheke: Mandan Indian Diplomat. Helena, Montana and Washburn, North Dakota: Farcountry Press and Fort Mandan Press.

Reid, Kenneth

1977 Psoralea Esculenta As A Prairie Resource: An Ethnographic Appraisal.  
Plains Anthropologist 22(78):321-327.

Robert W. Freckmann Herbarium

N.d. Plants of Wisconsin. Robert W. Freckmann Herbarium, University of  
Wisconsin – Stevens Point. Electronic document,  
<http://wisplants.uwsp.edu/VascularPlants.html>.

Rosario, Lynn C.

1988 Acer negundo. *In* Fire Effects Information System. U.S. Department of  
Agriculture, Forest Service, Rocky Mountain Research Station, Fire Scienc-  
es Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>,  
accessed January 18, 2008.

Schittko, Ursula

2007 Identification of the Plant Contents of a Mandan Sacred Corn Bundle.  
Minot, North Dakota: Minot State University.

Schneider, Mary Jane

2002 Cultural Affiliations of Native American Groups within North and South  
Dakota and Ethnohistorical Overview. Grand Forks: University of North  
Dakota.

Schneider, Fred

2008 An Update on Gilbert Wilson's Hidatsa Botany. Paper presented at the  
66th Annual Plains Anthropological Conference, Laramie, Wyoming, Octo-  
ber 1-4.



Schneiders, Robert Kelley

- 1999    Unruly River: Two Centuries of Change Along the Missouri. Lawrence: University Press of Kansas.

Smith, G. H.

- 1980    The Explorations of the La Verendryes in the Northern Plains, 1738-43. Lincoln: University of Nebraska Press.

Snell, Alma H.

- 2006    A Taste of Heritage: Crow Indian Recipes & Herbal Medicines. L. Castle, ed. Lincoln: University of Nebraska Press.

Sutherland, David

- 1986a    *Anemone cylindrica*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 87-88. Lawrence: University Press of Kansas.
- 1986b    *Caltha palustris*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 89-90. Lawrence: University Press of Kansas.
- 1986c    *Andropogon gerardii*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 1132. Lawrence: University Press of Kansas.
- 1986d    *Buchloë dactyloides*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 1148. Lawrence: University Press of Kansas.
- 1986e    *Hierchloë odorata*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 1184. Lawrence: University Press of Kansas.

Taylor, Jennifer L.

2001 *Populus deltoides*. *In* Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>, accessed January 18, 2008.

Thwaites, R. G., ed.

1906 Early Western Travels 1748-1846: Maximilian, Prince of Wied's Travels in the Interior of North America, 1832-1834. 2 vols. Cleveland: The Arthur H. Clark Company.

Uchytel, Ronald J.

1988 *Andropogon gerardii* var. *gerardii*. *In* Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>, accessed November 28, 2007.

1989 *Betula occidentalis*. *In* Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>, accessed January 20, 2008.

1992 *Typha latifolia*. *In* Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>, accessed November 29, 2007.

Utah State Cooperative Extension

2009 <http://extension.usu.edu/>

Van Bruggen, T.

1986a *Shepherdia argentea*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 491-492. Lawrence: University Press of Kansas.

1986b *Arctostaphylos uva-ursi*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 334. Lawrence: University Press of Kansas.

1986c *Hippuris vulgaris*. *In* Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 740. Lawrence: University Press of Kansas.

Van Ness, M. A.

1990 Macrobotanical Remains from Five Sites in the lake Sharpe Area, Central South Dakota. *In* Archaeological Test Excavations at Eight Sites in the Lake Sharpe Project Area of Hughes, Lyman, and Stanley Counties, South Dakota, 1987. D. L. Toom, ed. Pp. 453-507. Boulder, Colorado: Western Cultural Resources Management, Inc.

Walsh, Roberta A.

1993a *Grindelia squarrosa*. *In* Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>, accessed January 27, 2008.

1993b *Liatris punctata*. *In* Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Electronic document, <http://www.fs.fed.us/database/feis/>, accessed January 27, 2008.

Weiner, Michael A.

1972 Earth Medicine – Earth Foods: Plant Remedies, Drugs, and Natural Foods of the North American Indians. New York: MacMillan.

Weitzner, B.

1979 Notes on the Hidatsa Indians Based on Data Recorded by the Late Gilbert L. Wilson. Anthropological Papers of the American Museum of Natural History 56:181-322.

Wetter, Mark A.

1986 *Grindelia squarrosa*. In Flora of the Great Plains. Great Plains Flora Association, ed. Pp. 584. Lawrence: University Press of Kansas.

Will, G. F., and G. E. Hyde

1917 Corn among the Indians of the Upper Missouri. Lincoln: University of Nebraska Press.

Wilson, Gilbert L.

1916 Native Hidatsa Botany. In Papers of Gilbert L. and Frederick N. Wilson, Hidatsa-Mandan Report, vol. 20 (M460 4-434). St. Paul: Minnesota Historical Society.

1924 The Horse and the Dog in Hidatsa Culture. Anthropological Papers of the American Museum of Natural History 15 pt. 2.

1928 Hidatsa Eagle Trapping. Anthropological Papers of the American Museum of Natural History 30:99-245.

1987 Buffalo Bird Woman's Garden: Agriculture of the Hidatsa Indians. St. Paul: Minnesota Historical Society Press.

Wood, W. R.

- 1980 Plains Trade in Prehistoric and Protohistoric Intertribal Relations. *In* Anthropology on the Great Plains. W. R. Wood and M. Liberty, eds. Pp, 98-109. Lincoln: University of Nebraska Press.

Wood, W. R., and A. S. Downer

- 1977 Notes on the Crow-Hidatsa Schism. Trends in Middle Missouri Prehistory. W. R. Wood, ed. Plains Anthropology Memoir 13(22):83-100.

Wood, W. Raymond, and Thomas D. Thiessen, eds.

- 1985 Early Fur Trade on the Northern Plains: Canadian Traders Among the Mandan and Hidatsa Indians, 1738-1818. University of Oklahoma Press, Norman.

Yellow Bird, Loren

- 2004 Now I Will Speak (Nawah Ti Waako'): A Sahnish Perspective on What the Lewis and Clark Expedition and Others Missed. Special Issue, "American Indian Encounters with Lewis and Clark", *Wicazo Sa Review* 19(1):73-84.

Zedeño, María N., John. R. Murray, Samrat Miller, and Kacy Hollenback

- 2007 Blackfeet Sacred Site Protection Along the Birch Creek Watershed, Lewis and Clark National Forest, MT. Tucson: Bureau of Applied Research in Anthropology, University of Arizona.

Zedeño, María N., Kacy Hollenback, Christopher Basaldú, Vania Fletcher, and Samrat Miller

2006 Cultural Affiliation Statement and Ethnographic Resource Assessment Study for Knife River Indian Villages National Historic Site, Fort Union Trading Post National Historic Site, and Theodore Roosevelt National Park, North Dakota. Tucson: Bureau of Applied Research in Anthropology, University of Arizona.

Zedeno, Maria N., Kacy L. Hollenback, and Calvin Grinnell

2009 From Path to Myth: Journeys and the Naturalization of Territorial Identity along the Upper Missouri River. *In* The Anthropology of Paths and Trails. J. Snead, A. Darling, and C. Erickson, eds. Pp. 106-133. Philadelphia: Pennsylvania Press.

Zedeño, María N., Samrat Miller, Liz Cutright-Smith, Nicholas Laluk, Kacy Hollenback, and J. Murray

2008 Blackfeet Traditional Land Use Assessment for Selected Localities along the Montana Alberta Tie, Ltd. Proposed Transmission Line. Prepared for John Railton, Montana Alberta Tie Ltd. Tucson: Bureau of Applied Research in Anthropology, University of Arizona.

# PLANT PHOTO CREDITS

- 1.** COVER *Helianthus annuus*. Photo by Robert H. Mohlenbrock, USDA-NRCS PLANTS Database / USDA SCS. 1991. *Southern Wetland Flora: Field Office Guide to Plant Species*. South National Technical Center, Fort Worth.
- 2.** *Acer negundo*. Photo by D. E. Herman, USDA-NRCS PLANTS Database / Herman, D.E., et al. 1996. North Dakota Tree Handbook. USDA NRCS ND State Soil Conservation Committee; NDSU Extension and Western Area Power Administration, Bismarck.
- 5.** *Betula papyrifera*. Photo by Rebecca Toupal, Bureau of Applied Research in Anthropology, University of Arizona.
- 7.** *Quercus* sp. Photo by Joseph O'Brien, United States Forest Service, <http://bugwood.org>.
- 8.** *Fraxinus pennsylvanica*. Photo by D.E. Herman, USDA-NRCS PLANTS Database / Herman, D.E., et al. 1996. North Dakota Tree Handbook. USDA NRCS ND State Soil Conservation Committee; NDSU Extension and Western Area Power Administration, Bismarck.
- 10.** *Pinus banksiana* (left). Photo by D.E. Herman, USDA-NRCS PLANTS Database / Herman, D.E., et al. 1996. North Dakota Tree Handbook. USDA NRCS ND State Soil Conservation Committee; NDSU Extension and Western Area Power Administration, Bismarck.
- 10.** *Pinus banksiana* (right). © 2008 Louis-M. Landry, <http://calphotos.berkeley.edu/>.
- 12.** *Populus balsamifera*. Photo by Lynden Gerdes, USDA-NRCS PLANTS Database / USDA NRCS. 1995. *Northeast Wetland Flora: Field Office Guide to Plant Species*. Northeast National Technical Center, Chester.
- 13.** *Populus* sp. Photo by Maria Nieves Zedeño, Bureau of Applied Research in Anthropology, University of Arizona.
- 16.** *Salix* sp. Photo by Maria Nieves Zedeño, Bureau of Applied Research in Anthropology, University of Arizona.

- 19.** *Salix amygdaloides*. Photo by Robert H. Mohlenbrock; USDA-NRCS PLANTS Database / USDA SCS. 1989. Midwest Wetland Flora: Field Office Illustrated Guide to Plant Species. Midwest National Technical Center, Lincoln.
- 21.** *Salix bebbiana*. Photo by K. Laninga. [ken@sticksite.com](mailto:ken@sticksite.com).
- 23.** *Salix interior*. Photo by D.E. Herman, USDA-NRCS PLANTS Database / Herman, D.E., et al. 1996. North Dakota Tree Handbook. USDA NRCS ND State Soil Conservation Committee; NDSU Extension and Western Area Power Administration, Bismarck.
- 25.** *Ulmus americana*. © J. S. Peterson, USDA-NRCS PLANTS Database.
- 28.** *Yucca glauca*. Photo by Clarence Rechenthin, USDA-NRCS PLANTS Database.
- 30.** *Rhus aromatica*. Photo by J. Pisarowicz, National Park Service Archives.
- 31.** *Symphoricarpos occidentalis*. Photo by Ursula Schittko, Minot State University.
- 34.** *Cornus sericea*. Photo by D.E. Herman, USDA-NRCS PLANTS Database / Herman, D.E., et al. 1996. North Dakota Tree Handbook. USDA NRCS ND State Soil Conservation Committee; NDSU Extension and Western Area Power Administration, Bismarck.
- 36.** *Juniperus virginiana*. (left). Photo by Brian Lockhart, USDA Forest Service, <http://bugwood.org>
- 36.** *Juniperus communis* (right). Photo by Gil Wojciech, Polish Forest Research Institute, [Http://bugwood.org](http://bugwood.org).
- 37.** *Juniperus virginiana*. Photo by Michael J. Evans, National Park Service.
- 41.** *Juniperus horizontalis*. Photo by Troy Weldy, New York Natural Heritage Program. 2009. Online Conservation Guide for *Juniperus horizontalis*. <http://acris.NYNHP.org>.
- 43.** *Juniperus communis*. Photo by Piero Amorati, ICCroce-Casalecchio di Reno, <http://bugwood.org>
- 44.** *Shepherdia argentea*. Photo by Maria Nieves Zedeño, Bureau of Applied Research in Anthropology, University of Arizona.
- 46.** *Arctostaphylos uva-ursi*. © J. S. Peterson, USDA-NRCS PLANTS Database.



- 48.** *Vaccinium*. Photo by Scott Bauer, USDA Agricultural Research Service, <http://bugwood.org>.
- 49.** *Rhamnus alnifolia*. Photo by Robert H. Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS. 1995. Northeast Wetland Flora: Field Office Guide to Plant Species. Northeast National Technical Center, Chester.
- 50.** *Amelanchier alnifolia*. Photo by Mary Ellen (Mel) Harte, [Http://bugwood.org](http://bugwood.org).
- 53.** *Prunus americana*. © Larry Allain, USGS National Wetlands Research Center, USDA-NRCS PLANTS Database.
- 56.** *Prunus virginiana*. Photo by Maria Nieves Zedeño, Bureau of Applied Research in Anthropology, University of Arizona.
- 60.** *Rubus ideaus*. Photo by Robert H. Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS. 1995. Northeast Wetland Flora: Field Office Guide to Plant Species. Northeast National Technical Center, Chester.
- 61.** *Typha latifolia*. Photo by Richard Old, XID Services, Inc., [Http://bugwood.org](http://bugwood.org).
- 64.** *Acorus calamus*. Photo by Barbara Tokarska-Guzik, University of Silesia, <http://bugwood.org>.
- 65.** *Toxicodendron rydbergii*. Photo by Dave Powell, USDA Forest Service, [Http://bugwood.org](http://bugwood.org).
- 67.** *Daucus carota* ssp. *sativus*. Photo by Howard F. Schwartz, Colorado State University, <http://bugwood.org>.
- 69.** *Heracleum maximum*. © Gary A. Monroe, USDA-NRCS PLANTS Database.
- 70.** *Asclepias verticillata*. Photo by Chris Evans, River to River CWMA, [Http://bugwood.org](http://bugwood.org).
- 71.** *Achillea millefolium*. Photo by Maria Nieves Zedeño, Bureau of Applied Research in Anthropology, University of Arizona.
- 73.** *Antennaria rosea*. Photo by Mary Ellen (Mel) Harte, [Http://bugwood.org](http://bugwood.org).

- 74.** *Artemisia absinthium*. © J. S. Peterson, USDA-NRCS PLANTS Database.
- 75.** *Artemisia* sp. Photo by K. George Beck & James Sebastian, Colorado State University, [Http://bugwood.org](http://bugwood.org).
- 78.** *Artemisia tridentata*. © J. S. Peterson, USDA-NRCS PLANTS Database.
- 80.** *Artemisia ludoviciana*. Photo by Ursula Schittko, Minot State University.
- 82.** *Artemisia cana*. © Gary A. Monroe, USDA-NRCS PLANTS Database.
- 83.** *Artemisia frigida*. (left). Photo by Mary Ellen (Mel) Harte, [Http://bugwood.org](http://bugwood.org).
- 83.** *Artemisia frigida*. (right). Photo by Mary Ellen (Mel) Harte, [Http://bugwood.org](http://bugwood.org).
- 85.** *Helianthus annuus*. Photo by Wendi Field Murray, Bureau of Applied Research in Anthropology, University of Arizona.
- 87.** *Cirsium canescens*. © Emmet J Judziewicz, University of Wisconsin-Stevens Point, USDA-NRCS PLANTS Database.
- 88.** *Echinacea* spp. Photo by Joy Viola, Northeastern University, [Http://bugwood.org](http://bugwood.org).
- 90.** *Ericameria nauseosa*. © J.L. Reveal, [www.plantsystematics.org](http://www.plantsystematics.org).
- 91.** *Erigeron strigosus*. Photo by Ted Bodner, USDA-NRCS PLANTS Database / Miller, J.H. and K.V. Miller. 2005. Forest Plants of the Southeast and Their Wildlife Uses. University of Georgia Press, Athens.
- 92.** *Grindelia squarrosa*. Photo by Ursula Schittko, Minot State University.
- 94.** *Iva annua*. Photo by Robert H. Mohlenbrock, USDA-NRCS PLANTS Database / USDA SCS. 1989. Midwest Wetland Flora: Field Office Illustrated Guide to Plant Species. Midwest National Technical Center, Lincoln.
- 95.** *Liatris punctata*. © Tom Barnes, University of Kentucky, USDA-NRCS PLANTS Database.
- 96.** *Arctium minus*. Photo by Mary Ellen (Mel) Harte, <http://bugwood.org>
- 98.** *Lygodesmia juncea*. Photo by Ursula Schittko, Minot State University.

- 99.** *Matricaria discoidea*. © Merel Black, University of Wisconsin-Stevens Point, <http://wisplants.uwsp.edu/>.
- 100.** *Oligoneuron rigidum*. Photo by Ursula Schittko, Minot State University.
- 101.** *Silphium*. © 2007 Louis-M. Landry, <http://calphotos.berkeley.edu/>.
- 102.** *Taraxacum officinale*. © J. L. Reveal, <http://plantsystematics.org>.
- 103.** *Tragopogon dubius*. Photo by Maria Nieves Zedeño, Bureau of Applied Research in Anthropology, University of Arizona.
- 104.** *Mertensia lanceolata*. © J. L. Reveal, <http://plantsystematics.org>.
- 105.** *Armoracia rusticana*. © Emmet J Judziewicz, University of Wisconsin-Stevens Point, USDA-NRCS PLANTS Database.
- 106.** *Chenopodium album*. Photo by Bill Summers, USDA-NRCS PLANTS Database / USDA SCS. 1989. Midwest Wetland Flora: Field Office Illustrated Guide to Plant Species. Midwest National Technical Center, Lincoln.
- 108.** *Equisetum laevigatum*. Photo by Richard Old, XID Services, Inc., <http://bugwood.org>.
- 109.** *Apios americana*. © Larry Allain, USGS National Wetlands Research Center, USDA-NRCS PLANTS Database.
- 110.** *Dalea purpurea*. © Larry Allain, USGS National Wetlands Research Center, USDA-NRCS PLANTS Database.
- 111.** *Glycyrrhiza lepidota*. Photo by Ursula Schittko, Minot State University.
- 112.** *Hedysarum boreale*. Mary Ellen (Mel) Hart, <http://bugwood.org>.
- 114.** *Pedimelum esculentum*. Photo by Maria Nieves Zedeño, Bureau of Applied Research in Anthropology, University of Arizona.
- 117.** *Ribes aureum*. © J. L. Reveal, <http://plantsystematics.org>.
- 119.** *Hippuris vulgaris* . © Missouri Botanical Garden.

- 120.** *Agastache foeniculum*. © Robert W. Freckmann, Robert W. Freckmann Herbarium, <http://wisplants.uwsp.edu/>.
- 122.** *Mentha arvensis*. © Larry Allain, USGS National Wetlands Research Center, USDA-NRCS PLANTS Database.
- 124.** *Monarda fistulosa*. Photo by Ursula Schittko, Minot State University.
- 126.** *Hedeoma hispida*. © Katy Chayka, <http://minnesotawildflowers.info>.
- 129.** *Allium textile*. Photo by Maria Nieves Zedeño, Bureau of Applied Research in Anthropology, University of Arizona.
- 131.** *Linum lewisii*. Photo by Dave Powell, USDA Forest Service, <http://Http://bugwood.org>
- 132.** *Polygonum amphibium*. Photo by Jennifer Anderson @ USDA-NRCS PLANTS Database.
- 133.** *Lewisia rediviva*. © Mark W. Skinner @ USDA-NRCS PLANTS Database.
- 135.** *Actaea rubra*. (left). © 2007 Louis-M. Landry, <http://calphotos.berkeley.edu/>.
- 135.** *Actaea rubra*. (right). Photo by Dave Powell, USDA Forest Service, <Http://bugwood.org>.
- 140.** *Anemone patens* var. *multifida*. University of British Columbia Botanical Gardens and Centre for Plant Research Website, <http://ubcbotanicalgarden.org/>.
- 141.** *Caltha leptosepala*. © J.L. Reveal, used with the permission of the Academy of Natural Sciences of Philadelphia, <http://plantsystematics.org>.
- 142.** *Fragaria virginiana*. © Tom Barnes, University of Kentucky, USDA-NRCS PLANTS Database.
- 143.** *Rosa arkansana*. © Derek S. Anderson, Robert W. Freckmann Herbarium, University of Wisconsin-Stevens Point.
- 146.** *Physalis* sp. Photo in the Ohio State Weed Lab Archive, The Ohio State University, <http://bugwood.org>.

- 147.** *Urtica dioica*. © J. L. Reveal, <http://plantsystematics.org>.
- 149.** *Carex stricta*. Photo by Jennifer Anderson; USDA-NRCS PLANTS Database.
- 151.** *Schoenoplectus acutus*. © Larry Allain, USGS National Wetlands Research Center, USDA-NRCS PLANTS Database.
- 152.** *Agropyron cristatum*. © 2005 Louis-M. Landry, <http://calphotos.berkeley.edu/>.
- 153.** *Andropogon gerardii*. Photo by Jennifer Anderson, USDA-NRCS PLANTS Database.
- 154.** *Buchloe dactyloides*. Photo in Lady Bird Johnson Wildflower Center Archives.
- 156.** *Hierochloe odorata*. © 2007 Louis-M. Landry, <http://calphotos.berkeley.edu/>.
- 161** *Opuntia polyacantha*. Photo by D. Powell, <http://bugwood.org>
- 164.** *Escobaria*, M. N. Zedeño, Bureau of Applied Research in Anthropology, University of Arizona.
- 166.** *Celastrus scandens*, © 2007 Louis-M. Landry, <http://calphotos.berkeley.edu/>.
- 167.** *Echinocystis lobata*, © 2007 Louis-M. Landry, <http://calphotos.berkeley.edu/>.
- 168.** *Amphicarpaea bracteata* var. *comosa*. © 2007 Louis-M. Landry, <http://calphotos.berkeley.edu/>.
- 169.** Wild grape (*Vitis riparia*). Photo by B. Summers; USDA-NRCS PLANTS Database.
- 172.** "Rain Cap" mushroom. Photo by M. N. Zedeño, Bureau of Applied Research in Anthropology, University of Arizona.
- 173.** *Lycoperdon pyriforme*. Photo by J. O'Brien, United States Forest Service, <http://bugwood.org>.
- 175.** Lichen. Photo by H. F. Schwartz, Colorado State University, United States Scenic, <http://bugwood.org>.
- 176.** Moss. Photo by M. N. Zedeño, Bureau of Applied Research in Anthropology, University of Arizona.
- 177.** Grass fields along Lake Sakakawea, Fort Berthold Indian Reservation. Photo by M. N. Zedeño, Bureau of Applied Research in Anthropology, University of Arizona.



## INDEX

### Common names

- absinthium 134
- absinth sagewort 134
- alderleaf buckthorn 98
- alpine sweet broom 191
- alpine sweetvetch 191
- American bittersweet 270
- American black currant 199
- American dogwood 75
- American elm 64
- American false pennyroyal 211
- American hogpeanut 272
- American licorice 189
- American red raspberry 114
- American stinging nettle 245
- anemone 233
- annual marshelder 163
- antelope-hair grass 255
- Arkansas rose 238
- ash 37
- ashleaf maple 28
- ash-leaved maple 28
- autumn willow 51
- balsam poplar 44, 46
- Banks pine 41
- beaked willow 58
- bearberry 93
- bearroot 191
- beaver grass 248
- Bebb willow 51, 58
- bee balm 208
- big bluestem 253
- big medicine 224
- big onion 216
- big sagebrush 135, 140
- birch 32
- bird's nest 124
- biskabia 238
- bitterroot 222
- black chokecherry 108
- black birch 32

black cottonwood 44  
black medicine 224  
black pine 41  
black raspberry 114  
blackroot 224  
black sage 140  
blacksamson 155  
blacksamson echinacea 155  
bloodwort 130  
blueberry 96  
blue giant hyssop 203  
blue ridge blueberry 96  
bog birch 32  
bog blueberry 96  
bog willow 51  
boxelder 28  
breadroot scurfpea 194  
broadleaf cattail 116  
buckbrush 71  
buckthorn 98  
buffaloberry 90  
buffalograss 255  
buffalo sage 135,140  
bullberry 90

bulrush 250  
bunch cactus 264  
burdock 167  
bur oak 35  
Canadian anemone 233  
Canadian gooseberry 199  
candle anemone 233  
Carolina poplar 46  
carpenter's weed 130  
carrot 124  
cattail rush 116  
cedar 78  
chief root 167  
children's grass 187  
child's grass 187  
chokecherry 108  
climbing bittersweet 270  
cohosh 224  
common burdock 167  
common cattail 116  
common chokecherry 108  
common juniper 78, 89  
common mare's tail 202  
common milkweed 128



common sagewort 134	dwarf red blackberry 114
common salsify 178	dwarf sagebrush 135, 147
common yarrow 130	eagle sage 135, 143
contrary sage 135	eastern cottonwood 46
cottonwood 46	eastern prickly gooseberry 199
cow parsnip 127	eastern red cedar 78, 80
coyote willow 61	echinacea 155
crack willow 51	elm 64
creeping cedar 78, 87	false bittersweet 270
creeping juniper 78, 88	fevertwig 270
creeping savin 78, 87	field mint 205
crocus 233	field pussytoes 132
curlycup gumweed 160	flat cedar 78, 87
curlytop gumweed 160	fragrant giant hyssop 203
currant 199	fragrant sumac 70
cutleaf anemone 233	fringed sagebrush 135, 148
daisy fleabane 159	fringed sagewort 135, 148
dandelion 177	frost grape 274
diamond willow 58	ghost spit 189
disc mayweed 172	ghost whistle 183
dotted blazing star 172	goatsbeard 178
dotted gayfeather 165	golden currant 199
Drummond's false pennyroyal 211	goldenbush 158
dwarf prairie wild rose 238	gooseberry 199

gray pine 41  
gray rabbitbrush 158  
gray willow 58  
green ash 37  
green comet milkweed 128  
ground bean 272  
groundcherry 243  
groundnut 185  
gumweed 160  
hairystem gooseberry 199  
hard-leaf goldenrod 174  
hardstem bulrush 250  
heart-leaved willow 58  
holy sage 148  
horsemint 208  
horseradish 280  
horsetail 183  
Howell's pussytoes 132  
Indian breadroot 194  
Indian potato 185  
Indian willow 56  
jack pine 41  
Jacob's ladder 270  
juneberry 99

juniper 78, 99  
kinnickinnick 93  
lambsquarter 181  
lanceleaf cottonwood 44, 46  
larb 130  
large Indian breadroot 194  
laurel willow 51  
lavender hyssop 203  
Lewis flax 218  
lesser burdock 167  
lichen 282  
licorice root 191  
littleleaf pussytoes 132  
long-beaked willow 58  
long-fruited anemone 233  
lowbush blueberry 96  
low serviceberry 99  
mare's tail 202  
marigold 235  
marsh ash 37  
marshelder 163  
marsh marigold 235  
McCalla's willow 51  
meadow willow 51

milfoil 130	peachleaf willow 51, 56
milkweed 128	peach-leafed willow 56
Missouri gooseberry 199	pennyroyal 211
Missouri River willow 51	peppermint 203, 205
moss 283	pigweed 181
mountain birch 32	pincushion cactus 268
mourning sage 135, 148	pine 41
mushroom 278	pineapple weed 172
narrowleaf bluebell 179	pink top 220
narrowleaf cottonwood 46	plains cottonwood 46
narrowleaf willow 61	plains milkweed 128
narrow-leaved blazing star 165	plains pricklypear 264
narrow-leaved purple coneflower 155	Platte thistle 154
necklaceweed 224	plum 104
northern pin oak 35	poison dogwood 75
oak 35	poison ivy 122
onion 216	pomme-de-prairie 194
Oswego tea 208	ponderosa pine 41
oval-leaf blueberry 96	poplar 44
oval-leaf milkweed 128	potato-bean 185
Pacific anemone 233	prairie bluebell 179
paper birch 32	prairie crocus 233
Parlin's pussytoes 132	prairie fleabane 159
pasture sage 135, 148	prairie milkweed 128

prairie onion 216	redhead Louisa 222
prairie rose 238	redosier dogwood 75
prairie sage 135, 143	redstem dogwood 75
prairie sagewort 135, 148	red willow 61, 75
prairie thistle 154	rigid goldenrod 174
prairie turnip 194	riverbank grape 274
prairie willow 51	river-bank willow 61
princess pine 41	rosinweed 160, 176
puffball mushroom 280	rosy pussytoes 132
purple coneflower 155	rough false pennyroyal 211
purple prairie clover 187	rough fleabane 159
pussytoes 132	roundleaf serviceberry 99
pussy willow 51	rubber rabbitbrush 158
quaking aspen 46	running serviceberry 99
Queen Anne's lace 124	rush skeletonbush 170
rabbitbrush 158	rush skeletonplant 170
raspberry 114	sage 135
red ash 37	sageleaf willow 51
red baneberry 224	sandbar willow 51, 61
red birch 32	Sandberg's birch 32
red cedar 80	saskatoon serviceberry 99
red cedar juniper 78, 80	scouringrush 183
red cohosh 224	scouringrush horsetail 183
red currant 199	scrub pine 41

serviceberry 99	stinging nettle 245
shining willow 51	sumac 70
showy milkweed 128	sumpweed 163
sidecluster milkweed 128	sunflower 151
silver buffaloberry 90	sunshine rose 238
silver sage 135, 147	swamp milkweed 128
skeletonweed 170	sweetflag 120
skunkbush 70	sweetgrass 257
slender nettle 245	sweet leaf 203
slough grass 116	tall bluestem 253
smallflowered anemone 233	tall nettle 245
smooth-leaved sumac 70	tarweed 160
snakeberry 224	textile onion 216
sneezewort 130	tipsin 194
snowberry 71	turkey foot bluestem 253
soapweed 68	turnip 194
soft elm 64	upright sedge 248
soft flag 116	uptight sedge 248
soft pine 41	vanilla grass 257
soldier's woundwort 130	violet prairie clover 187
spring birch 32	water birch 32
starvation pricklypear 264	water elm 64
sticky-heads 160	watergrass 284
stiff goldenrod 174	water knotweed 220

wax currant 199	wild flax 218
western chokecherry 108	wild grape 274
western dogwood 75	wild licorice 189
western goatsbeard 178	wild mint 205
western poison ivy 122	wild mock cucumber 271
western sweetvetch 191	wild onion 216
western snowberry 71	wild oysterplant 178
wheatgrass 251	wild plum 104
white elm 64	wild strawberry 236
white goosefoot 181	willow 51
white marsh marigold 235	wolfberry 71
white sage 143	women's sage 135, 148
white sagebrush 143	wood anemone 233
white willow 51	wooly yarrow130
whorled milkweed 128	wormwood 134
wild balsamapple 271	yellow salsify 178
wild bergamot 208	yellow sweetvetch 191
wild carrot 124	yellow willow 51
wild cucumber 271	yucca 68

## Scientific Names

<i>Acer negundo</i> 28	<i>Antennaria micropylla</i> 132
<i>Achillea millefolium</i> 130	<i>Antennaria neglecta</i> 132
<i>Acorus</i> spp. 120	<i>Antennaria parlinii</i> 132
<i>Actaea rubra</i> 224	<i>Antennaria rosea</i> 132
<i>Agastache foeniculum</i> 203	<i>Apios americana</i> 185
<i>Agropyron</i> spp. 251	<i>Arctium minus</i> 167
<i>Allium textile</i> 216	<i>Arctostaphylos uva-ursi</i> 93
<i>Amelanchier</i> spp. 99	<i>Armoracia rusticana</i> 180
<i>Amelanchier alnifolia</i> 99	<i>Artemisia</i> spp. 135
<i>Amelanchier humilis</i> 99	<i>Artemisia absinthium</i> 134
<i>Amelanchier sanguinea</i> 99	<i>Artemisia cana</i> 135, 147
<i>Amelanchier stolonifera</i> 99	<i>Artemisia frigida</i> 135, 148
<i>Amphicarpaea bracteata</i> var. <i>comosa</i> 272	<i>Artemisia ludoviciana</i> 135, 143
<i>Andropogon gerardii</i> 253	<i>Artemisia tridentata</i> 135, 140
<i>Anemone</i> spp. 233	<i>Asclepias</i> spp. 128
<i>Anemone canadensis</i> 233	<i>Asclepias incarnate</i> 128
<i>Anemone cylindrica</i> 233	<i>Asclepias laguninosa</i> 128
<i>Anemone multifida</i> 233	<i>Asclepias ovalifolia</i> 128
<i>Anemone parviflora</i> 233	<i>Asclepias pumila</i> 128
<i>Anemone quinquefolia</i> 233	<i>Asclepias speciosa</i> 128
<i>Antennaria</i> spp. 132	<i>Asclepias sullivanti</i> 128
<i>Antennaria howellii</i> 132	<i>Asclepias syriaca</i> 128
	<i>Asclepias verticillata</i> 128

<i>Asclepias viridiflora</i> 128	<i>Glycyrrhiza lepidota</i> 189
<i>Betula</i> spp. 32	<i>Grindelia squarrosa</i> 160
<i>Betula occidentalis</i> 32	<i>Hedeoma</i> spp. 211
<i>Betula papyrifera</i> 32	<i>Hedeoma drummondii</i> 211
<i>Betula pumila</i> 32	<i>Hedeoma hispida</i> 211
<i>Betula xsandbergii</i> 32	<i>Hedeoma pulegioides</i> 211
<i>Buchloe dactyloides</i> 255	<i>Hedysarum</i> spp. 191
<i>Caltha leptosepala</i> 235	<i>Hedysarum alpinum</i> 191
<i>Carex stricta</i> 248	<i>Hedysarum boreale</i> 191
<i>Celastrus scandens</i> 270	<i>Hedysarum sulphurescens</i> 191
<i>Chenopodium album</i> 181	<i>Helianthus annuus</i> 157
<i>Cirsium canescens</i> 154	<i>Heracleum maximum</i> 127
<i>Cornus sericea</i> 75	<i>Hierchloe odorata</i> 257
<i>Dalea purpurea</i> 187	<i>Hippuris vulgaris</i> 202
<i>Daucus carota</i> 124	<i>Iva annua</i> 163
<i>Echinacea angustifolia</i> 155	<i>Juniperus</i> spp. 78
<i>Echinocystis lobata</i> 271	<i>Juniperus communis</i> 78, 89
<i>Equisetum laevigatum</i> 183	<i>Juniperus horizontalis</i> 78, 87
<i>Ericameria nauseosa</i> 158	<i>Juniperus virginiana</i> 78, 80
<i>Erigeron strigosus</i> 159	<i>Lewisia rediviva</i> 222
<i>Escobaria</i> spp. 268	<i>Liatris punctata</i> 165
<i>Fragaria virginiana</i> 236	<i>Linum</i> spp. 218
<i>Fraxinus</i> spp. 37	<i>Linum lewisii</i> 218
<i>Fraxinus pennsylvanica</i> 37	<i>Lycoperdon</i> spp. 280



<i>Lygodesmia juncea</i> 170	<i>Pulsatilla patens</i> spp. <i>multifida</i> 233
<i>Matricaria discoidea</i> 172	<i>Quercus ellipsoidalis</i> 35
<i>Mentha arvensis</i> 205	<i>Quercus macrocarpa</i> 35
<i>Mertensia lanceolata</i> 179	<i>Rhamnus alnifolia</i> 98
<i>Monarda fistulosa</i> 208	<i>Rhus aromatica</i> 70
<i>Oligoneuron rigidum</i> 174	<i>Rhus glabra</i> 70
<i>Opuntia polyacantha</i> 264	<i>Ribes</i> spp. 199
<i>Pediomelum esculentum</i> 194	<i>Ribes americanum</i> 199
<i>Physalis</i> spp. 243	<i>Ribes aureum</i> 199
<i>Pinus</i> spp. 41	<i>Ribes cereum</i> 199
<i>Pinus banksiana</i> 41	<i>Ribes cynosbati</i> 199
<i>Pinus ponderosa</i> 41	<i>Ribes hirtellum</i> 199
<i>Polygonum amphibium</i> 220	<i>Ribes missouriense</i> 199
<i>Populus xacuminata</i> 44, 46	<i>Ribes oxycanthoides</i> 199
<i>Populus angustifolia</i> 46	<i>Ribes triste</i> 199
<i>Populus balsamifera</i> 44, 46	<i>Rosa arkansana</i> 238
<i>Populus balsamifera</i> spp. <i>trichocarpa</i>	<i>Rubus</i> spp. 114
44	<i>Rubus idaeus</i> 114
<i>Populus xcanadensis</i> 46	<i>Rubus occidentalis</i> 114
<i>Populus deltoides</i> 46	<i>Rubus pubescens</i> 114
<i>Populus tremuloides</i> 46	<i>Salix</i> spp. 51
<i>Prunus</i> spp. 104	<i>Salix alba</i> 51
<i>Prunus americana</i> 104	<i>Salix amygdaloides</i> 51
<i>Prunus virginiana</i> 108	<i>Salix bebbiana</i> 51

<i>Salix candida</i> 51	<i>Silphium</i> spp. 176
<i>Salix discolor</i> 51	<i>Symphoricarpos occidentalis</i> 71
<i>Salix eriocephala</i> 51	<i>Taraxacum officinale</i> 177
<i>Salix fragilis</i> 51	<i>Toxicodendron rydbergii</i> 122
<i>Salix humilis</i> 51	<i>Tragopogon dubius</i> 178
<i>Salix interior</i> 51, 61	<i>Typha latifolia</i> 116
<i>Salix lucida</i> 51	<i>Ulmus americana</i> 64
<i>Salix lutea</i> 51	<i>Urtica dioica</i> 245
<i>Salix maccalliana</i> 51	<i>Vaccinium</i> spp. 96
<i>Salix pedicellaris</i> 51	<i>Vaccinium angustifolium</i> 96
<i>Salix pentandra</i> 51	<i>Vaccinium ovalifolium</i> 96
<i>Salix petiolaris</i> 51	<i>Vaccinium pallidum</i> 96
<i>Salix serissima</i> 51	<i>Vaccinium uliginosum</i> 96
<i>Schoenoplectus</i> spp. 250	<i>Vitis riparia</i> 96
<i>Schoenoplectus acutus</i> 250	<i>Yucca glauca</i> 96
<i>Shepherdia argentea</i> 90	