



# Ethnobotany Along the Missouri River Trench and Environs: A Collaborative Research Project



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## Introduction and Project Objective

When the bottomlands of the Upper Missouri River were flooded in the 1950s, many plant species traditionally used by village tribes were lost. Remnants of bottomlands and native prairies have been preserved in the Knife River Indian Villages National Historic Site (KNRI), which contains vital cultural resources of culturally affiliated tribes. A collaboration between the Cultural Preservation Office of the Mandan, Hidatsa, and Arikara Nation, National Park Service, and University of Arizona, this project aims to 1) integrate published and unpublished historical materials with contemporary literature and ethnography, in order to construct a comprehensive ethnobotany for the tribe, and 2) incorporate contemporary indigenous knowledge and perspectives about riparian and native prairie vegetation into the park's resource management strategies.



## Project Background

Consultation-based research with the Mandan, Hidatsa, and Arikara Nation and the Apsáalooke (Crow) Nation, among other tribes, began in 2004, when the National Park Service sponsored an ethnographic overview and cultural affiliation study for North Dakota parks (Zedeño et al. 2006). From these and subsequent projects grew the idea for a collaborative project in which the two tribes, Park Service officials, and academic researchers would develop a comprehensive ethnobotanical field guide for the Knife River region. Fieldwork was conducted in the summers of 2007 and 2008 in the Knife River Villages N.H.S., the neighboring Cross Ranch State Park, and on the Fort Berthold Indian Reservation. Archival reviews were undertaken throughout this period.

In recent years, American Indian tribes are increasingly involved in research related to their cultural resources. The legally mandated consultation process—a result of the passage of state and federal historic preservation laws—has become fertile ground for more inclusive, long-term collaborative relationships between multiple stakeholders in cultural resource management. This approach has stimulated the design of scholarly endeavors that not only address indigenous concerns, but also empower tribes to define the parameters of the research process (Hollenback et al. 2006).

Particularly influential to this collaborative project was an earlier multidisciplinary effort to identify floral and faunal materials contained in medicine bundles, undertaken at the request of cultural preservation officers and sponsored by the North Dakota State Historical Society (Grinnell et al. 2006; Schittko 2007).



(Above) George Ironshield (Sioux elder) and Maria Nieves Zedeno (UA Project Director) at KNRI.

(Right) Ursula Schittko (Plant Scientist, MSU), George Reed (Crow Tribe), Samrat Miller (UA), Kacy Hollenback (UA), Gordon Plain Bull (Crow Tribe), and Kasha Hansen (NPS Ranger) at KNRI.



## Methodology

Collaboration was central to this project's theoretical and methodological framework. Habitat destruction from flooding and overgrazing, combined with the passing of elders, has resulted in the loss of traditional knowledge among Northern Plains Tribes. Researchers and representatives from the Cultural Preservation Office of the Fort Berthold Reservation and the University of Arizona worked jointly to develop a methodology that would 1) preserve traditional plant knowledge in the face of the drastic landscape alterations along the Missouri River Trench, and 2) elicit information from tribal consultants that would both expand on extant archival materials and provide a contemporary context of relevance for tribal members interested in learning about plant uses or who need to replenish sacred bundles. Concerns for management and preservation were also recorded during interviews at the park.

• **Consultants** were identified by tribal collaborators who know which tribal members have the rights to speak about plants.

• **Site visit** locations were selected based on the recommendations of tribal consultants, park personnel, and plant scientist Dr. Ursula Schittko (Minot State University).

• **Survey instruments**, jointly designed by project collaborators, emphasized the use and significance of plants in river bottom and native prairie habitats.

• **Open-ended questions** were used to elicit perspectives on the native landscape, contemporary uses of native flora, transfer of traditional plant knowledge to younger generations, and native names.

• **Literature review** included extensive search of archives, ethnographic literature, photographs, and archaeological reports.

**Chokecherry**  
*Prunus virginiana* L.  
Black chokecherry, western chokecherry, common chokecherry

**Habitat:** Native to most of the continental United States, chokecherry bushes favor rich soils. These plants are found in thickets, wooded draws, steep hillsides, and along rivers and floodplains (Johnson 2000; Kindscher 1992:170; Wilson 1916).

**Seasonality:** The chokecherry bush flowers in early summer (May-June), and bears red fruit in late summer or early fall (Johnson 2000). The berries ripen in August and early September (Anonymous, MC; Wilson 1916). Chokecherries must be picked "before the birds can eat them all." The wood of the plant can be collected at any time for use in planting the sacred tobacco.\* In addition, the inner bark can be collected year round.\*

**Other:** Chokecherry is an extremely important food resource for large and small mammals, as well as various species of birds, but can be toxic to livestock (Johnson 2000).

**Parts Used:** Berries, inner bark, wood

Margaret Williams @ USDA-NRCS PLANTS Database

**Indigenous Names:**

Mandan:	Aaká (also generic for all berries, Hollow 1970:104)
Hidatsa:	maacu (also generic for all berries, AG) mátsheumaru (berry that has bones, Anonymous, Wilson 1916)
Arikara:	tu
Crow:	makpwa (Kindscher 1992:170), áa-lá-paa (wood with no smoke)*, GR áa-lá-paa (chokecherry berries, GR)

**Preparation/Uses:**

Historically, chokecherries have had a variety of uses for the Crow and Three Affiliated Tribes. They were often traded between groups (Anonymous, Gilmore 1929:90). Today these plants are still valued by Upper Missouri River peoples.

To harvest the berries, one should hit the bush sharply with sticks, "as if you are angry" (GR). Chokecherries were rarely eaten raw but upon return to the earthlodge, "if anyone wanted to eat them he got a handful and ate" (Wilson 1916). The seeds would be spat on the ground and swept up later or swallowed (Anonymous, Wilson 1916).

Once collected there are a number of ways to prepare the berries. The berries can be dried.\* The most common practice, however, is to grind the berries. Hidatsa women pounded the berries with a stone hammer which was made by a male specialist in the village (Wilson 1916). They also ground the berries between two stones called *minimá*: a larger one with an indentation and a smaller one for pounding (Wilson 1916). "Soon it was like mush. We would squeeze the mush with our hand, forming strips on the canvas to dry in the hot sun on top of the scaffold" (Estes 1990:8). There are numerous dishes that can be made with chokecherries. For example, they are often used to make pudding (GR). The berries are slow-boiled with sugar, and flour is gradually added for thickening (ER). Sometimes, the berries were boiled with fat or bone grease (Anonymous). They can also be mixed with dried, pounded maize and grease or oil, which is then shaped into balls with added sugar (ER). Chokecherries are prepared as a jelly as well. "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" (MC).

Chokecherry concoctions were a well-documented Arikara treatment for bleeding after childbirth. Women would drink the berry's juice or a tea made from the poked-out false malloo root and the gum of the chokecherry tree (Gilmore 1930:74; Kindscher 1992:171; Weiner 1972:34). Consultants reported that unspecified parts of the plant were used for helping with childbirth and prooking contractions, while its boiled bark was used for abortions.\* The Crows treated dysentery, diarrhea, and miscellaneous stomach problems with a tea of the boiled chokecherry bark (Kindscher 1992:171).

Chokecherry also has ceremonial importance. It is associated with the sacred tobacco gardens, used to make gardening hoes and markers.\* Chokecherry implements were used to break ground in areas in which sacred tobacco was going to be planted.\*

The plant has a number of utilitarian uses as well. In times of war, it was used for fire because it is known as "wood with no smoke" or *áa-lá-paa* (GR). 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 (Gilmán 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 (EN). Chokecherry branches are also whittled into drumsticks.\* Its juice produces a dye with a strong, staining purple or red color.\*

\*Information provided by tribal consultant



(Above) Kacy Hollenback (UA) examines a prairie turnip, as identified by Bruce Nagel (far right, Mandan elder) and Dolores White (far left, Arikara elder).



(Above and top left) Sample pages from the plant field guide.

## Results

- Fourteen tribal consultants were interviewed.
- A total of 120 plants were recorded.
- Over 20 native plant names were added to those recorded in published and unpublished sources.
- Traditional and contemporary uses, including medicinal, ritual, and utilitarian aspects of the plants were discussed at length by the consultants.
- Consultants also shared origin stories and plant associations with the seasonal ceremonial cycle.
- The final product is a plant field guide that combines scientific and native knowledge, language, and significance.
- The field guide will be made available to the tribe, the park service, the academic community, and the general public.



(Above) Marcella White (Arikara elder) in her home, holding a likeness of the Corn Maiden.

(Below) Alex Gwin (Hidatsa elder) examines Silver Buffaloberry.



(Above) Calvin Grinnell (Cultural Resource Specialist, MHAN), and Wendi Field Murray (UA) appraise a cottonwood, Cross Ranch S.P.

## Discussion and Future Research

### Project highlights:

- A research design that combines researcher/park official-guided site visits to target habitats with elder-guided visits to preferred collection areas near their home elicits complementary information about native flora and contributes to the preservation of endangered language forms, such as plant and place names. Conducting interviews on familiar landscapes promotes a more comfortable environment for sharing knowledge.
- Conducting ethnographic fieldwork over multiple seasons (including winter visits to elder homes), while not as preferable as establishing residence within the community, nonetheless helps build collaborative relationships and interactions based on personal trust.
- Projects that incorporate information collected in the past, as well as in the present, furnish arguments for continuity in cultural practices that tribes may then utilize to build stronger cases of land use rights and ownership.

### Ongoing and future collaborative projects:

- Ongoing development of an animal field guide that will document traditional uses, stories, and perspectives.
- An archaeological and ethnographic study of traditional eagle trapping practices and sites, which will document modern perceptions and the cultural significance of eagles.
- A joint proposal for the nomination of Lake Sakakawea as a Traditional Cultural District.

