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Short Topical Reviews

Native Food Uses of Common Milkweed (*Asclepias syriaca*)

Michael P. Gonella[1*] and Kelly Kindscher[2]

[1]Environmental Horticulture Department, Santa Barbara City College, Santa Barbara, USA.

[2]Kansas Biological Survey, University of Kansas, Lawrence, USA.

[*]gonella@sbcc.edu

Abstract Common milkweed (*Asclepias syriaca*) is used as a food by numerous North American Indigenous groups, yet also considered a poisonous plant by chemists and others. The details of traditional, Indigenous preparation methods, which render it as an edible and culturally important food choice, are reported here, along with harvesting and tending methods. The specifics of these interactions between Indigenous groups and common milkweed not only allow consumption of this "poisonous" plant, but also appear to sustain the vigor of the species, making these details important for conservation of this traditional food.

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Introduction

Many North American native communities use common milkweed (*Asclepias syriaca*) as a food source (Gonella 2007; Kindscher 1987), despite its potential toxicity (Gonella and Everest 2019)[1]. Much has been learned about common milkweed by the scientific community since Gaertner's (1979) common milkweed monograph, including its behavior as an invasive weed in crop fields, the impacts of decades of herbicide control methods, and its ecological importance to the Monarch butterfly (*Danaus plexipplus*) and other insects (Price and Wilson 1979). But the extent of its importance as a native food plant, utilized for centuries by Indigenous communities in North America, including methods of harvesting, preparation, and tending, have not been well examined or recorded. Here we report on new ethnographic data regarding the specific uses of common milkweed as a food, learned directly from native interlocutors through personal interviews, archival data, and from participation with the native families and individuals still involved in milkweed harvesting, processing, and consumption.

Sustainable Harvesting

Most wild food plants used by native peoples are utilized in a way that sustains or increases production, and specific methods are aimed at protecting the long-term viability of the species (Anderson 2013). The Myaamia (Miami) people, inhabiting a large area in the lower Great Lakes, centered in northern Indiana, have utilized milkweed for centuries. Their historic relationship with common milkweed involved burning milkweed habitat in the late fall to improve milkweed (and other prairie plant species) growth, as well as to improve hunting grounds (Gonella 2007). They also selected the most robust milkweed clones for harvesting in early spring, which had a positive, long-term impact on the species, according to some native community members (Gonella 2007). Domestic cultivation of common milkweed was another way plant health and production were optimized, with accounts of tribal members taking wild seeds and planting them in their home gardens (Gonella 2007; Smith 1933:47). For example, Smith (1933:47) remarked that in Forest County Potawatomi villages, "One always finds a riot [large patch] of milkweed close to the wigwam or house of the Indian,

suggesting that they have been cultivated". Similarly, a number of Myaamia families brought common milkweed seeds from Indiana during their forced removal and planted them in their allotment home-gardens in Oklahoma (Gonella field notes 2003-2006). However no morphological or genetic evidence was found to support semi-domestication, where certain traits were actively selected. In addition, although common milkweed has not been nutritionally analyzed, if it is like its cogeners, it provides protein, carbohydrates, vitamin C, calcium, potassium, and other trace elements (Cheatham and Johnston 2000). One Myaamia colleague recalled:

> My mother used milkweed. It was good spring medicine. She cooked it and we ate it because it was good. It had a lot of iron in it and everything and so we'd have that for greens. Pods were not eaten.

Concern over the loss of common milkweed and discussion about conservation are found amongst the Omaha, Winnebago and Myaamia, and certainly other native communities. Members of these three communities have observed reductions in individual plant health and habitat of common milkweed, as well as reduced availability of uncontaminated plants due to roadside herbicide spraying. Each of these communities intends to replant milkweeds on tribal nation lands to provide "clean," accessible plants in adequate numbers for traditional uses (Gonella 2007; Kindscher 2023). Traditional management methods of common milkweed, to protect and restore this important food, fiber, and medicine resource, whether intentional or a byproduct of culinary desires, is all aimed at species conservation.

Native American use of common milkweed as food in the early part of the twentieth century was well recorded (Table 1), but the details on harvesting, preparation, and consumption methods, which are key to future protective measures, were almost non-existent until more recently. For example, Gonella (2007) documented the detailed methods of Myaamia milkweed harvesting while working directly with Myaamia harvesters, who also relayed their view of the plant-human relationships, where harvesting methods benefit both the plant and the harvester. This mutualistic goal is achieved by specific methods: (1) removing only 25-50% (depending on the family) of early spring shoots from each clone; (2) harvesting at a specific life history stage (only 4-8 leaves and less than 25 cm tall); (3) recognizing subtle differences between individual neighboring clones; and (4) harvesting only annually. These fine-scale methods, long known to many Indigenous harvesters, mitigate negative effects of high intensity harvesting (Anderson 2013).

The sustainability of these careful methods have been validated in a number of scientific studies. Harvesting common milkweed shoots stimulates dormant root buds (Bhowmik and Bandeen 1976), and removes apical dominance, promoting growth of new shoots (Evetts and Burnside 1975). And if the seasonal harvest timing is early enough, it allowed for reblooming (Kaul et al. 1991), seed set, and clone persistence (Gonella 2007).

Additionally, from his work with Omaha and Winnebago (tribal nations of Nebraska) and the Prairie Band Potawatomi in Kansas, Kindscher learned that harvested flower bud clusters, used in cooking, are removed only at a specific stage of maturity, just before they open. From this specific timing of harvesting pods, the harvester ensures tenderness, but also increases the chances of reflowering by that clone.

Preparation

For all of the historical information in Table 1, the specifics of preparation of milkweed for consumption are still being elucidated. What we do know is that milkweed was and is boiled and the water drained. In contemporary practice, the Omaha, Winnebago, and Potawatomi all put tender milkweed parts (most often the flower buds) into a culturally prized soup, along with deer meat or beef and vegetables, and cook it for a long time (Kindscher, personal observation, 1987). In discussing the concern about poisonous properties in the milkweed being in the soup with Potawatomi colleagues, they were unconcerned and amused at the thought.

Although consumption of raw shoots can be dangerous, Gonella (2007) learned that the Myaamia prepare milkweed shoots in a way that dramatically reduces the levels of toxic compounds, rendering them non-toxic and edible (Everest et al. 2019). Specifically, early spring shoots are boiled by the Myaamia, two to three times, using fresh water for each boiling (Gonella 2007).

Besides common milkweed, other milkweed species were eaten as well, although many are simply too toxic, with the verticillate-leaved taxa being responsible for most poisonings in livestock,

Table 1 Records of Common Milkweed Food Uses.

Tribal Nation	Food Use and Plant Part	Reference
Acoma	Early spring shoots eaten	Castetter 1935
Apache	Early spring shoots eaten	Kindscher 2023
Arikara	Sprouts, tender young leaves and tips, bud clusters and young seed pods stewed alone or with corn and bison meat	Kindscher et al. 2020
Cherokee	Food source	Parker 1910
Cheyenne	Early spring shoots eaten	Kindscher 1987
Crow	Early spring shoots eaten	Kindscher 1987
Dakota	Sprouts used in early spring for food	Kindscher 1987
Forest Potawatomi	Flowers and buds used in meat soups	Smith 1933
Hopi	Early spring shoots eaten	Kindscher 2023
Iroquois	Stalks eaten as greens in spring	Parker 1910
Laguna	Early spring shoots eaten	Castetter 1935
Lakota	Sprouts used in early spring for food	Gilmore 1913; Rogers 1980
Meskwaki	Dried and fresh buds used in soups; cooked with meat or added to cornmeal mush	Smith 1928
Myaamia	Immature flower buds, pods and shoots eaten	Gonella 2007
Ojibway (Anishinaabe)	Flowers cut up, stewed and eaten like preserves; eaten before a feast to increase appetite	Densmore 1928
Omaha	Tender shoots, young pods, and inflorescence eaten as greens before the flower buds opened	Fletcher and La Flesche 1911; Gilmore 1977
Osage	Shoots, floral buds and young pods eaten	Matthews 1961
Paiute	Early spring shoots eaten	Kindscher in press
Pawnee	Tender shoots, young pods, and inflorescence eaten as greens before the flower buds opened	Fletcher and La Flesche 1911; Gilmore 1977
Ponca	Tender shoots, young pods, and inflorescence eaten as greens before the flower buds opened	Fletcher and La Flesche 1911; Gilmore 1977
Shoshone	Early spring shoots eaten	Kindscher 2023
Winnebago	Tender shoots, young pods, and inflorescence eaten as greens before the flower buds opened	Fletcher and La Flesche 1911; Gilmore 1977

especially *Asclepias fascicularis* and *A. subverticillata* (Burrows and Tyrl 2013). Showy milkweed (*Asclepias speciosa*) overlaps in range with common milkweed in the Great Plains and was certainly used by tribal nations in the region. Many of the reports of milkweed consumption by the Cheyenne, Crow, Kiowa, Lakota, Osage, Plains Apache, and others were likely to have been of either showy milkweed or both species (Kindscher 2023). It is possible that discernment between the two species was not needed by the communities and both were eaten, or there was inaccuracy on the part of the ethnographer. It should be noted that tribal communities recognized many distinct species of milkweed for food and medicine (Kindscher 1987, 2023). For example, the Lakota had specific names for the following milkweed species: *Asclepias incarnata*, *A. pumila*, *A. speciosa*, *A. stenophylla*, *A. verticillata*, and *A. viridflora* (Buechel 1983).

Harvester-Harvested Relationship

Because of dramatic declines in common milkweed abundance within its range due to wide-scale herbicide use in the last two decades, there are current efforts to enhance and restore some populations for the Monarch butterfly (*Danaus plexippus*) and other associated insects (McCauley 1991). But there is also a need for restoration of common milkweed for cultural use by Indigenous groups as well, since common milkweed populations on native lands are often not large enough (Gonella 2007) or adequately free of pollutants (e.g. herbicides) to be culturally viable for human use. Ironically, their abundances are not so low that they are given state or federal regulatory

protection, but their abundances are far below what is viable for use as a native community's resource. All of that said, the relationship between the native harvesters and the harvested plant is indeed "endangered" from the viewpoint of the native communities (Anderson 2013).

Although endangered, the strength of the historic and ongoing relationship between native harvesters and common milkweed is evident. This is partially demonstrated by the simple fact that native peoples are able to use this otherwise "poisonous" plant as a food source, much like the contemporary use of tomatoes, potatoes, and rhubarb, which also have toxicity, and their ability to harvest it sustainably for centuries. Conservation efforts should follow native tending protocols and methods, and focus on restoring and strengthening this particular human-plant relationship, which has wider ecological benefits than simply restoring the abundance of common milkweed alone.

Notes

[1]Common milkweed and other milkweeds contain toxic cardiac glycosides and these plants should not be ingested without expert guidance or oversight.

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Declarations

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