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## Common milkweed indicator species

Maine Food System Pre-flower growth early June. P. Bell, SOS observer Directions Leaves Flowers Fruits Directions: As you report on phenophase status (Y, N or ?) on the datasheets, refer to the definitions on this sheet to find out what you should look for, for each phenophase in each species. To report the intensity of the phenophase, choose the best answer to the question below the phenophase, if one is included. Leaves Initial growth: New growth of the plant is visible, either from above-ground buds with green tips, or new green or white shoots breaking through the soil surface. Growth is considered "initial" on each bud or shoot until the first leaf has fully unfolded. Early flower growth. P. Bell, SOS observer Leaves: One or more live fully unfolded leaves are visible on the plant. For seedlings, consider only true leaves and do not count the one or two small, round leaves (cotyledons) that are found on the stem almost immediately after the seedling emerges. jajoda Do not include dried or dead leaves. Flowers Flowers: One or more fresh flowers or flower heads (inflorescences) are visible on the plant. Flower heads include many small flowers that usually do not open all at once. Do not include wilted or dried flowers that remain on the plant, or heads whose flowers have all wilted or dried. Common milkweed inflorescence with some open flowers. P. yuboyiluzeka Bell, SOS observer How many fresh flowers or flower heads are present?



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## Twelve Native Milkweeds



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Growth is considered "initial" on each bud or shoot until the first leaf has fully unfolded. Early flower growth. P. Bell, SOS observer Leaves: One or more live fully unfolded leaves are visible on the plant. For seedlings, consider only true leaves and do not count the one or two small, round leaves (cotyledons) that are found on the stem almost immediately after the seedling emerges. Do not include dried or dead leaves. Flowers Flowers: One or more fresh flowers or flower heads (inflorescences) are visible on the plant. Flower heads include many small flowers that usually do not open all at once. Do not include wilted or dried flowers that remain on the plant, or heads whose flowers have all wilted or dried. Common milkweed inflorescence with some open flowers. P. Bell, SOS observer How many fresh flowers or flower heads are present? Less than 3; 3 to 10; More than 10. Open flowers: One or more open fresh flowers are visible on the plant. Flowers are considered "open" when the reproductive parts (male stamens or female pistils) are visible between unfolded or open flower parts. Do not include wilted or dried flowers that remain on the plant. How many fresh flowers are open?





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It can be found in upland fields, woodland margins and disturbed areas such as roadsides (Wilburg, 1979). It prefers well-drained soils. Common milkweed can spread highly efficiently by shooting out rhizomes that can form large clones of up to several thousand stems (Wilbur, 1979). This means a patch of common milkweed could actually just be a single plant. Nectar composition in *A. syriaca* is nearly 100% sucrose (Southwick et al. 1981). Monarchs often lay eggs on fresh shoots that are easier for caterpillars to feed on. Key Characteristics of Common Milkweed, *Asclepias syriaca*. Flower color ranges from pink to white, highly fragrant Milky sap when leaves/stem broken Fine hairs on underside of leaves—soft and velvety! Mature leaves typically quite broad Butterfly weed is a native perennial found across the eastern United States. It is well loved by butterflies for its brightly colored flowers and abundant nectar supply. It is typically found in fields with drier soil and often grows in clumps. The stems are distinct because they are very hairy; however, unlike other milkweeds it doesn't have a milky sap when broken. Butterfly weed will usually bloom two to three years after germination and can persist for 20 years or longer (Woodson, 1947). Key Characteristics of Butterfly Weed, *Asclepias tuberosa*: Flower color ranges from orange to yellow Typically grow in clumps, stalks 1-3' tall No milky sap is present Very hairy stems Swamp Milkweed is a native perennial of the eastern and central United States and southern Canada (Manitoba, Quebec, and Nova Scotia). It is common in wetlands. Swamp milkweed will often have multiple stems up to 2 m tall and it can have several stems coming from one single root crown (Ivey et al., 2003). Each stem can have 22 pink flowers (Ivey et al., 2003). Flowers will last about 5 days and each flower produces about 1.5 ul of nectar each day, with a mean sucrose concentration of 30% (C.T. Ivey, unpublished data). Monarchs often lay eggs on fresh shoots that are easier for caterpillars to feed on. Swamp milkweed can spread highly efficiently by shooting out rhizomes. This means a patch of Swamp milkweed could actually just be a single plant! Key Characteristics of Swamp Milkweed (*Asclepias incarnata*) Flower color ranges from pink to light purple, fragrant Produces milky sap when leaves/stem broken Leaves are generally smooth, long, and narrow, tapering to a point Prefers wet ground Tropical milkweed is an annual plant that is not native to the US (Woodson, 1954). It is native to Central and South America (Broyles and Stoj 2019). Electronic records show that tropical milkweed was planted in gardens in the US as early as 1806 (Satterfield et al., 2015). Tropical milkweed is self-compatible (Wyatt and Broyles 1997) so the plants can be fertilized with their own pollen. Its striking flowers and easy propagation have increased its popularity in the US in spite of the fact that it is non-native. In colder climates that experience hard freezes, tropical milkweed will die back; however, in warmer southern climates it is able to persist year round. It is also known to have a longer flowering period than other winter-hardy milkweeds. Avoid buying this plant if possible. Key Characters of Tropical Milkweed, *Asclepias curassavica*: Flowers with orange corona and red corolla Produces milky sap when leaves/stem broken Leaves narrow and pointed Prefers moist soils and thrives in disturbed areas (but is typically found in gardens) Showy milkweed is native to the western United States and is typically found in prairies and savannas. It is known for its long blooming period, drought tolerance and easy propagation. Key characteristics of Showy Milkweed, *Asclepias speciosa*: Broad, velvety leaves similar to common milkweed (can be distinguished by presence of white hairs) Flower color ranges from light pink to purple Fragrant flowers that resemble stars Antelope horns milkweed is native to the western United States and is found in savannas and prairies. Its name comes from the curved shape of the seedpods that often resembles antelope horns. Key characteristics of Antelope Horns Milkweed, *Asclepias asperula*: Greenish-yellow flowers with maroon accents Clump forming, upright or sprawling Long, narrow leaves that often fold in on themselves Leaves irregularly grouped Stems covered in tiny hairs Genus of flowering plants "Milkweed" redirects here. For other uses, see Milkweed (disambiguation). Not to be confused with *Asclepius*. *Asclepias incarnata* (swamp milkweed) flowers and a monarch butterfly Scientific classification Kingdom: Plantae Clade: Tracheophytes Clade: Angiosperms Clade: Eudicots Clade: Asterids Order: Gentianales Family: Apocynaceae Subfamily: Asclepiadoideae Tribe: Asclepiadeae Subtribe: Asclepiadinae Genus: *Asclepias*.<sup>[1]</sup> Type species *Asclepias syriaca*.<sup>[1]</sup> Species<sup>[2]</sup> *Asclepias albens* *Asclepias albicans* *Asclepias alpestris* *Asclepias alticola* *Asclepias ameliae* *Asclepias amplexicaulis* *Asclepias atrovivacea* *Asclepias aurea* *Asclepias auriculata* *Asclepias barjonifolia* *Asclepias boliviensis* *Asclepias brachystephana* *Asclepias brevipes* *Asclepias californica* *Asclepias californica* subsp. *californica* *Asclepias californica* subsp. *greenii* *Asclepias candida* *Asclepias* aff. *candida* Fishbein 6347 *Asclepias cinerea* *Asclepias circinalis* *Asclepias connivens* *Asclepias cordifolia* *Asclepias coulteri* *Asclepias crispa* *Asclepias cryptoceras* *Asclepias cryptoceras* subsp. *daviesii* *Asclepias cucullata* *Asclepias cultriformis* *Asclepias curassavica* *Asclepias curassavica* subsp. *daviesii* *Asclepias densiflora* *Asclepias dispersalis* *Asclepias eastwoodiana* *Asclepias elata* *Asclepias elegantula* *Asclepias emoryi* *Asclepias engelmanniana* *Asclepias eriocarpa* *Asclepias erosa* *Asclepias exaltata* *Asclepias fascicularis* *Asclepias feayi* *Asclepias flava* *Asclepias foliosa* *Asclepias fourieri* *Asclepias fulva* *Asclepias gentryi* *Asclepias gibba* *Asclepias glaucescens* *Asclepias grandirandii* *Asclepias hallii* *Asclepias hirtella* *Asclepias humistrata* *Asclepias hypoleuca* *Asclepias inaequalis* *Asclepias incarnata* *Asclepias incarnata* subsp.

*incarnata* *Asclepias incarnata* subsp. *pulchra* *Asclepias involuocrata* *Asclepias jalsiscana* *Asclepias jorgeana* *Asclepias labriformis* *Asclepias lanceolata* *Asclepias lanuginosa* *Asclepias latifolia* *Asclepias lemmonii* *Asclepias leptopus* *Asclepias linaria* *Asclepias linearis* *Asclepias longifolia* *Asclepias lynchiana* *Asclepias macropus* *Asclepias macrosperma* *Asclepias macrotis* *Asclepias macrostachya* *Asclepias masonii* *Asclepias mcvaughii* *Asclepias medadi* *Asclepias melantha* *Asclepias mellodora* *Asclepias mellodora* var. *mellodora* *Asclepias mexicana* *Asclepias michauxii* *Asclepias mirifica* *Asclepias multicaulis* *Asclepias niwua* *Asclepias notha* *Asclepias nummularia* *Asclepias nyclaifolia* *Asclepias obovata* *Asclepias oenotherifolia* *Asclepias oarioides* *Asclepias ovalifolia* *Asclepias ovata* *Asclepias pedicellata* *Asclepias penninis* *Asclepias phenax* *Asclepias pilgeriana* *Asclepias praemorsa* *Asclepias pratensis* *Asclepias pringlei* *Asclepias prostrata* *Asclepias purpurascens* *Asclepias purpurascens* subsp. *asperula* *Asclepias quadrifolia* *Asclepias quinqueidentata* *Asclepias randii* *Asclepias rosea* *Asclepias rubra* *Asclepias ruthiae* *Asclepias sanjuensis* *Asclepias scaposa* *Asclepias schaffneri* *Asclepias scheryi* *Asclepias senecionifolia* *Asclepias similis* *Asclepias solonaoana* *Asclepias solstitialis* *Asclepias speciosa* *Asclepias standleyi* *Asclepias stathmosteloides* *Asclepias stellifera* *Asclepias stenophylla* *Asclepias subaphylla* *Asclepias subulata* *Asclepias subverticillata* *Asclepias sullivantii* *Asclepias syriaca* *Asclepias syriaca* subsp. *tenaxa* *Asclepias tomentosa* *Asclepias tuberosa* *Asclepias tuberosa* subsp. *interior* *Asclepias tuberosa* subsp. *rofisii* *Asclepias tuberosa* subsp. *tuberosa* *Asclepias uncialis* *Asclepias variegata* *Asclepias verticillata* *Asclepias vestita* *Asclepias vestita* subsp. *parishii* *Asclepias vestita* subsp. *vestita* *Asclepias vinosa* *Asclepias viridiflora* *Asclepias viridis* *Asclepias viridula* *Asclepias virletii* *Asclepias welshii* *Asclepias woodii* *Asclepias woodsoniana* *Asclepias zanthodacryon* Synonyms<sup>[1]</sup> *Acerates* Elliott *Anantherix* Nutt. *Asclepiodella* Small *Asclepiodora* A.Gray *Biventraria* Small *Oxypteryx* Greene *Podostemma* Greene *Podostigma* Elliott (probable) *Schizonotus* A.Gray *Solanoa* Greene *Trachycalymma* (K.Schum.) Bullock (possible) *Asclepias* is a genus of herbaceous, perennial, flowering plants known as milkweeds, named for their latex, a milky substance containing cardiac glycosides termed cardenolides, exuded where cells are damaged.<sup>[3][4][5]</sup> Most species are toxic to humans and many other species, primarily due to the presence of cardenolides. However, as with many such plants, some species feed upon them (e.g. their leaves) or from them (e.g. their nectar). The most notable of them is the monarch butterfly, which uses and requires certain milkweeds as host plants for their larvae. The genus contains over 200 species distributed broadly across Africa, North America, and South America.<sup>[6]</sup> It previously belonged to the family Asclepiadaceae, which is now classified as the subfamily Asclepiadoideae of the dogbane family, Apocynaceae. The genus was formally described by Carl Linnaeus in 1753.<sup>[7]</sup> who named it after Asclepius, the Greek god of healing.[8] Flowers A monarch butterfly on swamp milkweed *Asclepias syriaca* seed pods, upper image from August and lower from December Milkweed sprout, a few days after sowing Chemical structure of oleandrin, one of the cardiac glycosides Members of the genus produce some of the most complex flowers in the plant kingdom, comparable to orchids in complexity. Five petals reflex backwards revealing a gynostegium surrounded by a five-membrane corona. The corona is composed of a five-paired hood-and-horn structure with the hood acting as a sheath for the inner horn. Glands holding pollinia are found between the hoods. The size, shape and color of the horns and hoods are often important identifying characteristics for species in the genus *Asclepias*.<sup>[9]</sup> Pollination in this genus is accomplished in an unusual manner. Pollen is grouped into complex structures called pollinia (or "pollen sacs"), rather than being individual grains or tetrads, as is typical for most plants.

The feet or mouthparts of flower-visiting insects, such as bees, wasps, and butterflies, slip into one of the five slits in each flower formed by adjacent anthers. The bases of the pollinia then mechanically attach to the insect, so that a pair of pollen sacs can be pulled free when the pollinator flies off, assuming the insect is large enough to produce the necessary pulling force (if not, the insect may become trapped and die).[10] Pollination is effected by the reverse procedure, in which one of the pollinia becomes trapped within the anther slit. Large-bodied hymenoptera (bees, wasps) are the most common and best pollinators, accounting for over 50% of all *Asclepias* pollination.[11] whereas monarch butterflies are poor pollinators of milkweed.[4] Male *Pennis grossa*, a typical milkweed-pollinating wasp. Honeybee on antelope horn (*Asclepias asperula*) showing pollinia attached to legs *Asclepias* species produce their seeds in pods termed follicles. The seeds, which are arranged in overlapping rows, bear a cluster of white, silky, filament-like hairs known as the coma<sup>[12]</sup> (often referred to by other names such as pappus, "floss", "plume", or "silk"). The follicles ripen and split open, and the seeds, each carried by its coma, are blown by the wind. Some, but not all, milkweeds also reproduce by clonal (or vegetative) reproduction. Selected species Image Scientific name Common name Distribution *Asclepias albicans* Whiteleaf milkweed Native to the Mojave and Sonoran deserts *Asclepias amplexicaulis* Blunt-leaved milkweed Native to central and eastern United States *Asclepias asperula* Antelope horns Native to American southwest and northern Mexico *Asclepias californica* California milkweed Native to central and southern California *Asclepias cordifolia* Heartstem milkweed Native to the Sierra Nevada and Cascade Range up to 2000 m *Asclepias cryptoceras* Pallid milkweed Native to the western United States. *Asclepias curassavica* Scarlet milkweed, tropical milkweed, bloodflower, bastard ipecacuanha Native to the American tropics, introduced to other continents *Asclepias curtissii* Curtiss's milkweed Endemic to sandy areas of Florida *Asclepias eriocarpa* Woollypod milkweed Native to California, Baja California, and Nevada *Asclepias erosa* Desert milkweed Native to California, Arizona, and Baja California *Asclepias exaltata* Poke milkweed Native to eastern North America *Asclepias fascicularis* Narrow-leaf milkweed Native to Western United States *Asclepias hirtella* Tall green milkweed *Asclepias humistrata* Sandhill milkweed Native to southeastern United States *Asclepias incarnata* Swamp milkweed Native to wetlands of North America *Asclepias lanceolata* Lanceolate milkweed (Cedar Hill milkweed) Native to coastal plain of eastern United States from Texas to New Jersey *Asclepias linaria* Pine needle milkweed Native to Mojave and Sonoran deserts *Asclepias meadii* Mead's milkweed Native to midwestern United States *Asclepias nycotagifolia* Mojave milkweed native to the American southwest *Asclepias purpurascens* Purple milkweed Native to Texas and northern Mexico *Asclepias quadrifolia* Four-leaved milkweed Native to eastern United States and Canada *Asclepias rubra* Red milkweed *Asclepias solonaoana* Serpentine milkweed Native to northern California *Asclepias speciosa* Showy milkweed Native to western United States and Canada *Asclepias subulata* Rush milkweed Native to southwestern North America *Asclepias subverticillata* Horsetail milkweed<sup>[13]</sup> *Asclepias sullivantii* Sullivant's milkweed *Asclepias syriaca* Common milkweed *Asclepias texana* Texas milkweed *Asclepias tuberosa* Butterfly weed, pleurisry root *Asclepias uncialis* Wheel milkweed *Asclepias variegata* White milkweed *Asclepias verticillata* Whorled milkweed *Asclepias viridiflora* Green milkweed *Asclepias viridis* Green antelopehorn, spider milkweed *Asclepias welshii* Welsh's milkweed There are also 12 species of

*Asclepias* in South America, among them: *A. barjonifolia*, *A. boliviensis*, *A. curassavica*, *A. mellodora*, *A. candida*, *A. flava*, and *A. pilgeriana*. Deprecated *Calotropis gigantea* (L.) W.T.Aiton (as *A. gigantea* L.). *Calotropis procera* (Aiton) W.T.Aiton (as *A. procera* Aiton) *Cynanchum louiseae* Kartesz & Gandhi (as *A. nigra* L.) *Cynanchum thesioides* (Frey) K.Schum. (as *A. sibirica* L.) *Funastrum clausum* (Jacq.) Schltr. (as *A. clausa* Jacq.) *Gomphocarpus cancellatus* (Burm.f.) Bruyns (as *A. cancellatus* Burm.f. or *A. rotundifolia* Mill.) *Gomphocarpus fruticosus* (L.) W.T.Aiton (as *A. fruticosa* L.) *Marsdenia macrophylla* (Humb. & Bonpl. ex Willd.) E.Fourn. (as *A. macrophylla* Humb. & Bonpl. ex Schult.) *Marsdenia tenacissima* (Roxb.) Moon (as *A. tenacissima* Roxb.) *Matelea maritima* (Jacq.) Woodson (as *A. maritima* Jacq.) *Sarcostemma acidum* (Roxb.) Voigt (as *A. acida* Roxb.) *Sarcostemma viminale* (L.) R.Br. (as *A. viminalis* (L.) Steud.) *Telosma cordata* (Burm.f.) Merr. (as *A. cordata* Burm.f.) *Telosma pallida* (Roxb.) Craib (as *A. pallida* Roxb.) *Tylophora indica* (Burm.f.) Merr. (as *A. asthmatica* L.) *Vincetoxicum hirundinaria* Medik. (as *A. vinceitoxicum* L.) *Vincetoxicum pycnostelma* Kitag. (as *A. paniculata* Bunge) *Ysomalobium undulatum* (L.) R.Br. (as *A. undulata* L.)<sup>[14]</sup> Ecology Milkweeds are an important nectar source for native bees, wasps, and other nectar-seeking insects, though non-native honey bees commonly get trapped in the stigmatic slits and die.[10][15] Milkweeds are also the larval food source for monarch butterflies and their relatives, as well as a variety of other herbivorous insects (including numerous beetles, moths, and true bugs) specialized to feed on the plants despite their chemical defenses.<sup>[4]</sup> Milkweeds use three primary defenses to limit damage caused by caterpillars: hairs on the leaves (trichomes), cardenolide toxins, and latex fluids.<sup>[16]</sup> Data from a DNA study indicate that, generally, more recently evolved milkweed species ("derived" in botany parlance) use these preventive strategies less but grow faster than older species, potentially regrowing faster than caterpillars can consume them.<sup>[17][18][19]</sup> Research indicates that the very high cardenolide content of *Asclepias linaria* reduces the impact of the *Ophryocystis elektroscirrha* (OE) parasite on the monarch butterfly, *Danaus plexippus*. The OE parasite causes holes to form in the wings of fully developed monarch butterflies. This causes weakened endurance and an inability to migrate. The parasite only infects monarchs when they are larvae and caterpillars, but the detriment is when they are in their butterfly form.<sup>[20]</sup> By contrast, some species of *Asclepias* are extremely poor sources of cardenolides, such as *Asclepias fascicularis*, *Asclepias tuberosa*, and *Asclepias angustifolia*.<sup>[citation needed]</sup> Monarch butterfly conservation and milkweeds The leaves of *Asclepias* species are a food source for monarch butterfly larvae and some other milkweed butterflies.<sup>[4]</sup> These plants are often used in butterfly gardening and monarch waystations in an effort to help increase the dwindling monarch population.<sup>[21]</sup> However, some milkweed species are not suitable for butterfly gardens and monarch waystations. For example, *A. curassavica*, or tropical milkweed, is often planted as an ornamental in butterfly gardens outside of its native range of Mexico and Central America. Year-round plantings of this species in the United States are controversial and criticised, as they may lead to new overwintering sites along the U.S. Gulf Coast and the consequent year-round breeding of monarchs.<sup>[22]</sup> This is thought to adversely affect migration patterns, and to cause a dramatic build-up of the dangerous parasite, *Ophryocystis elektroscirrha*.<sup>[23]</sup> New research also has shown that monarch larvae reared on tropical milkweed show reduced migratory development (reproductive diapause), and when migratory adults are exposed to tropical milkweed, it stimulates reproductive tissue growth.<sup>[24]</sup> Because of this, it is most often suggested to grow milkweeds that are native to the geographical area they are planted in to prevent negative impacts on monarch butterflies.<sup>[25][26]</sup> Monarch caterpillars do not favor butterfly weed (*A. tuberosa*), perhaps because the leaves of that milkweed species contain very little cardenolide.<sup>[27]</sup> Some other milkweeds may have similar characteristics. Uses Milkweeds are not grown commercially in large scale, but the plants have had many uses throughout human history.<sup>[4]</sup> Milkweeds have a long history of medicinal, every day, and military use. The Omaha people from Nebraska, the Menomni from Wisconsin and upper Michigan, the Dakota from Minnesota, and the Ponca people from Nebraska, traditionally used common milkweed (*A. syriaca*) for medicinal purposes.<sup>[citation needed]</sup> The best fibers of some species can be used for rope. The Miwok people of northern California used heart-leaf milkweed (*A. cordifolia*) for its stems, which they dried and used for cords, strings and ropes.<sup>[28]</sup> A study of the insulative properties of various materials found that milkweed floss was outperformed by other materials in terms of insulation, loft, and lumpiness, but it scored well when mixed with down feathers.<sup>[29]</sup> The milkweed filaments from the coma (the "floss") are hollow and coated with wax, and have good insulation qualities. During World War II, more than 5,000 t (5,500 short tons) of milkweed floss was collected in the US as a substitute for kapok.<sup>[30][31]</sup> Milkweed is grown commercially as a hypoallergenic filling for pillows<sup>[32]</sup> and as insulation for winter coats.<sup>[33]</sup> *Asclepias* is also known as "Silk of America"<sup>[34]</sup> which is a strand of common milkweed (*A. syriaca*) gathered mainly in the valley of the Saint Lawrence River in Canada. The silk is used in thermal insulation, acoustic insulation, and oil absorbents.<sup>[35][36][37]</sup> Seeds of *Asclepias syriaca* (Common Milkweed) Milkweed latex contains about two percent latex, and during World War II both Nazi Germany and the US attempted to use it as a source of natural rubber, although no record of large-scale success has been found.<sup>[38]</sup> Many milkweed species also contain cardiac glycoside poisons that inhibit animal cells from maintaining a proper K<sup>+</sup>, Ca<sup>2+</sup> concentration gradient.<sup>[5]</sup> As a result, many peoples of South America and Africa used arrows poisoned with these glycosides to fight and hunt more effectively.

Some milkweeds are toxic enough to cause death when animals consume large quantities of the plant. Some milkweeds also cause mild dermatitis in some who come in contact with them. Nonetheless, some species can be made edible if properly processed.<sup>[4]</sup> References ^  a  b   "Taxon: *Asclepias* L." Germplasm Resources Information Network. United States Department of Agriculture. 2003-03-13. Retrieved 2013-02-05. ^ "Asclepias". NCBI taxonomy. Bethesda, MD: National Center for Biotechnology Information. Retrieved 10 August 2018. ^ Singh, B.; Rastogi, R. P. (1970). "Cardenolides-glycosides and genins". *Phytochemistry*. **9** (2): 315–331. Bibcode:1970PChem...9.315S. doi:10.1016/0031-9422(00)85141-9. ^  a  b  c  d  e  f   Agrawal, Anurag (2017-03-07). Monarchs and Milkweed: A Migrating Butterfly, a Poisonous Plant, and Their Remarkable Story of Coevolution. Princeton University Press. 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In our study, the least preferred milkweed species *A. tuberosa* (no choice; Fig. 2) and *A. verticillata* (choice; Fig. 3A) both have low cardenolide levels recorded in the literature (Roeseke et al. 1976; Agrawal et al. 2009, 2015; Rasmann and Agrawal 2011)(2) Abugattas, Alonzo (3 January 2017). "Monarch Way Stations". *Capital Naturalist*. Archived from the original on 5 June 2017. Retrieved 5 June 2017 - via Blogger. It is the least favored by monarch caterpillars though because it has very little toxin (cardiac glycosides) in its leaves, but other butterflies and adult monarchs love it as a nectar source.(3) "Butterfly Weed: *Asclepias tuberosa*" (PDF). Becker County, Minnesota: Becker Soil and Water Conservation District. Archived (PDF) from the original on September 11, 2020. Retrieved September 11, 2020. 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ISBN 0-89672-614-2 External links Milkweed test-cultivated for the insulation value of floss Milkweed in Handbook of Energy Crops Common milkweed production research at Western Illinois University UVSC Herbarium — *Asclepias* Retrieved from "