

Taxon Name: *Asclepias meadii* Torr.

Common Name: Mead's Milkweed

Family: Asclepiadaceae

States where taxon occurs: Missouri, Illinois, Indiana,
Iowa, Kansas, Wisconsin

Current Federal Status: Proposed - Endangered

Recommended Federal Status: Endangered

Author of Report: Sharon W. Morgan

Original Date of Report: September 30, 1980

Institution, agency or individual
to whom further information and
comments should be sent: Natural History Section
Missouri Department of
Conservation

TABLE OF CONTENTS

I. Species Information

1.	Classification and nomenclature.	1
2.	Present legal or other formal status	1
3.	Description.	2
4.	Significance	3
5.	Geographical distribution.	3
6.	Environment and habitat.	6
7.	Population biology	7
8.	Population ecology	8
9.	Current ownership and management responsibility.	8
10.	Management practices and experience.	8
11.	Evidence of threats to survival.	8

II. Assessment and Recommendations

12.	General assessment of vigor, trends, and status.	8
13.	Priority of listing or status change	8
14.	Recommended critical habitat	9
15.	Conservation/recovery recommendations.	9
16.	Interested parties	9

III. Information Sources

17.	Sources of information	10
18.	Summary of material on file.	11

IV. Authorship

19.	Initial authorship	12
20.	Maintenance of status report	12
21.	Record of revisions.	

V. New Information

I. SPECIES INFORMATION

1. Classification and Nomenclature

A. Species

1. Scientific Name

a. Binomial

Asclepias meadii Torr.

b. Full Bibliographic Citation

Man. Bot. U.S., ed. 2, Add. 704. 1856.

c. Type Specimen

Missouri Botanical Garden (MO)
2345 Tower Grove Avenue
St. Louis, MO 63110

2. Pertinent Synonyms

None

3. Common Names

Mead's Milkweed, Fragrant Milkweed

B. Family Classification

1. Family Name

Asclepiadaceae

2. Pertinent Family Synonym

None

3. Common Name

Milkweed Family

C. Major Plant Group

Dicotyledonae

D. History of Knowledge of Taxon

Asclepias meadii was originally described by John Torrey in the 2nd edition of Gray's Manual (1856). The species is distinct as originally described and has had no synonyms proposed.

E. Current Alternative Taxonomic Treatments

None

2. Present Legal or Other Formal Status

A. International

None

B. National

1. United States

a. Present designated or proposed legal protection or regulation.

Proposed for listing as endangered under the U.S. Endangered Species Act of 1973. Listed in the Federal Register of June 16, 1976 - 41(117):24529.

- b. Other current formal status recommendations.
Recommended for listing as threatened in the 1975
Smithsonian Institution report (House Document No. 94-51).

Recommended for listing as endangered in Endangered and Threatened Plants of the United States (Ayensu and DeFilippis, 1978).

- c. Review of past status.
The notice of review for listing as threatened was published in the Federal Register of July 1, 1975 - 40(127):27860.

C. State

1. Missouri

Listed as endangered in Rare and Endangered Species of Missouri (Nordstrom, et al., 1977). This is a change in listing from the 1974 publication in which the species was not listed.

2. Illinois

Endangered (Kartesz and Kartesz, 1977)

3. Indiana

Rare and endangered (Kartesz and Kartesz, 1977)

4. Iowa

Unknown

5. Kansas

Threatened (Kartesz and Kartesz, 1977)

6. Wisconsin

Extirpated (Kartesz and Kartesz, 1977)

3. Description

A. General Nontechnical Description

Perennial from a slender rootstock. Stems slender, occurring singly, 8-16 inches tall, without hairs, and covered with a whitish waxy covering. Leaves opposite, broadly ovate in shape, 2-3 inches long, 3/8 - 2 inches broad, without hairs, and covered with a whitish waxy covering. One inflorescence with few to several flowers occurs at the top of the plant. Flowers are greenish cream and tinged with purple on the outside. Flowering: late May - early June.

B. Technical Description

"Herbaceous perennials from a slender rootstalk. Stems rather slender, simple, 2-4 dm. tall, glabrous, glaucous. Leaves opposite, sessile, broadly ovate to ovate-lanceolate, apex acute to obtuse, base broadly obtuse to rounded, 5-7 cm. long, 1-5 cm. broad, firmly membranaceous or somewhat subsucculent, glabrous, glaucous. Inflorescences terminal and solitary, few- to several-flowered; peduncles 5-8 cm. long, rather stout; pedicels rather slender, 1.0-1.5 cm. long. Flowers rather large; calyx lobes lance-triangular, 3-5 mm. long; corolla greenish cream more or less tinged with purple without, the lobes 7-9 mm. long; gynostegium greenish

cream, very shortly stipitate, the column very broadly obconic, about 1.5 mm. long and 2.5 mm. broad, the hoods cucullate, very broadly oval, about 5 mm. long, the horn adnate toward the base, incurved and falciform, somewhat shorter than the hood, the anther head truncately conic, about 2 mm. long and 3 mm. broad. Follicles erect on deflexed pedicels, narrowly fusiform, 8-10 cm. long, about 1 cm. broad, glabrous; seeds broadly oval, about 8 mm. long, the white coma about 4 cm. long." (Woodson, 1954)

C. Local Field Characters

Asclepias meadii seems to be a fairly distinctive species. Some of the key characters that distinguish this milkweed from other species include the 2 to 6 pairs of opposite, sessile leaves. The leaves have a cordate to rounded base, taper to the tip, are 3-8.5 cm. long, glabrous, and scabrous near the margins. Flowers are 12-14 mm. long, have greenish-white corolla lobes with purplish hoods, and have a slender horn arising from the cavity of each hood. These flowers are fragrant and occur in a disk-like nodding solitary cluster at the tip of the stem.

D. Identifying characteristics of material which is in interstate or international trade or commerce.

Not applicable

E. Photographs and/or line drawings.

Attached

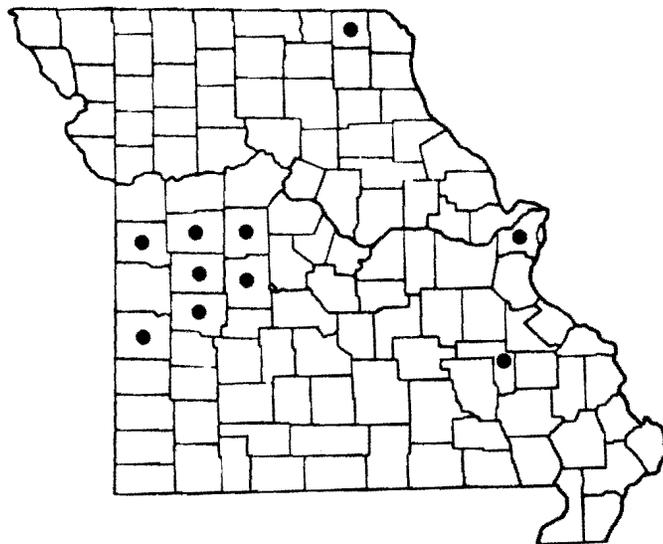
4. Significance of Taxon

Unknown

5. Geographical Distribution

A. Geographical Range

Missouri - Benton, Cass, Henry, Iron, Johnson, Pettis, St. Clair, Vernon, St. Louis and Scotland Counties.



This map reflects historic distribution in Missouri.

B. Precise Occurrences

1. Extant Populations

a. Missouri, Pettis and Johnson Counties

T46N R21-25W

Initial discovery: 1975.

Most recent observation or collection: 1975. *PUT.*

Location: ~~Railroad prairie~~ adjacent to railroad tracks between Warrensburg and Sedalia.

b. Missouri, St. Clair County

T37N R28W

Eldorado Springs North or Tiffin, Mo. Quadrangles, 7.5 minute series, 1939 and 1949.

Initial discovery: 1978.

Most recent observation or collection: 1978.

Location: **Thoreson Ranch, prairie.** *-PUT. OWNER*

c. Missouri, St. Clair County

T36N R28W NE $\frac{1}{4}$ Sec. 10, NW $\frac{1}{4}$ Sec. 11, S $\frac{1}{2}$ Sec. 3

Tiffin Mo. Quadrangle, 7.5 minute series, 1949.

Initial discovery: June 1980.

Most recent observation or collection: June 1980.

Location: **Wah-Kon-Tah Prairie.** *TNC OWNS*

d. Missouri, St. Clair County

T38N R28W NE $\frac{1}{4}$ Sec. 23

Taberville, Mo. Quadrangle, 7.5 minute series, 1938.

Initial discovery: 1978.

Most recent observation or collection: 1978.

Location: **Piepmeyer Prairie.** *-owned by DOC*

e. Missouri, St. Clair County

T38N R28W NE $\frac{1}{4}$ Sec. 22

Taberville, Mo. Quadrangle, 7.5 minute series, 1938.

Initial discovery: 1978.

Most recent observation or collection: 1978.

Location: **Taberville Prairie.** *owned by DOC*

f. Missouri, Vernon County

T35N R31W SW $\frac{1}{4}$ Sec. 34

Nevada, Mo. Quadrangle, 7.5 minute series, 1933.

Initial discovery: 1978.

Most recent observation or collection: 1978.

Location: **Little Osage Prairie.** *TNC OWNS*

g. Missouri, Vernon County

T34N R31W SE $\frac{1}{4}$ Sec. 4

Sheldon, Mo. Quadrangle, 7.5 minute series, 1962.

Initial discovery: 1978.

Most recent observation or collection: 1978.

Location: **Osage Prairie.** *DOC OWNS Part
TNC OWNS Part*

2. Extirpated Populations
 - Missouri, Henry County
 - T41N R24W NE $\frac{1}{4}$ Sec. 5
 - Leesville, Mo. Quadrangle, 7.5 minute series, 1953.
 - Initial discovery: 1975.
 - Most recent observation or collection: 1975.
 - Location: Land owned by U.S. Army Corps of Engineers; now under Truman Reservoir.

3. Historically Known Populations of Uncertain Status
 - a. Missouri, Henry County
 - T40N R26W Sec. 16
 - Clinton South, Mo. Quadrangle, 7.5 minute series, 1953.
 - Initial discovery: 1 August 1949.
 - Most recent observation or collection: 1 August 1949.
 - Location: North side Hwy. 52, 1 $\frac{3}{4}$ mile west of Deepwater.

 - b. Missouri, Johnson County
 - T45N R28W Sec. 4
 - Kingsville, Mo. Quadrangle, 7.5 minute series, 1954.
 - Initial discovery: 16 May 1949.
 - Most recent observation or collection: 16 May 1949.
 - Location: Prairie along Hwy. 58 and railroad, 2 $\frac{1}{2}$ mi. northwest of Holden.

 - c. Missouri, Pettis County
 - T46N R22W
 - Hughesville, Mo. Quadrangle, 7.5 minute series, 1973.
 - Initial discovery: 20 May 1949.
 - Most recent observation or collection: 20 May 1949.
 - Location: Prairie along Hwy. 50, 1 $\frac{1}{2}$ mile west of Dresden.

4. Potential Locations
 - Unknown

5. Reports with Incomplete or Ambiguous Information
 - a. Missouri, Benton County
 - No legal description.
 - Initial discovery: 24 May 1936.
 - Most recent observation or collection: 24 May 1936.
 - Location: Rocky upland chert-lime glade, 5 mi. north of Narrow. (Cannot find Narrow on map.)

 - b. Missouri, Cass County
 - No collection information on specimen.
 - Date: May and June 1865.

 - c. Missouri, Iron County
 - No legal description.
 - Date: 10 June 1898.
 - Location: Buzzard, dry exposed ground. (Cannot find Buzzard on map.)

 - d. Missouri, St. Louis County
 - No collection information on specimen.
 - Date: May 1883.

e. Missouri, Soctland County

No collection information on specimen.

Date: 12 June 1847.

C. Biogeographical and Phylogenetic History of the Taxon

"On the basis of its range, Fernald considered *A. meadii* one of several species that may have survived the Pleistocene glaciations in the 'Driftless Area' of Wisconsin and adjoining states. However, only one collection is definitely known from this area (Grant Co., Wis.). In the rest of its range about half of the records come from glaciated territory, while the remainder come from unglaciated territory south of the Glacial border, in Missouri and Kansas. This distribution, as well as the nature of the habitat suggests a southwestern origin, with an evolution and dispersal center perhaps in the ancient Ozarkian uplands, and a subsequent post-glacial northward migration." (Noamesi and Iltis, 1957)

6. General Environment and Habitat Description

A. Concise Statement of General Environment and Habitat

Asclepias meadii is found in unplowed bluestem prairies in the west-central unglaciated section of Missouri. Soils are deep silt-loam soils formed from loess, glacial till and limestone, and occur over Pennsylvanian Age geologic formations.

B. Physical Characteristics

1. Climate

This general area has a mild temperate rainy climate with no dry season and a hot summer (Cfa) (after Koppen, 1936).

Regionally, average daily temperatures range from 32°F in January to 80°F in July. Annual precipitation is about 39 inches per year, ranging from 1.8 inches in the driest month (January) to 5.1 inches in the wettest month (June).

2. Air and Water Quality Requirements

Unknown

3. Physiographic Province

Most recorded locations occur in the Interior Plains Region, Central Lowlands Province and Osage Plains Section (Prairie Plains Division) (after Fenneman, 1938).

Osage Plains Natural Division (Thom and Wilson, 1980).

4. Physiographic and Topographic Characteristics

A. meadii is known from unplowed bluestem prairies in the west-central unglaciated section of the state.

5. Edaphic Factors

Soils are mostly mollisols and alfisols of the Haig-Hartwell-Deepwater, Newtonia-Summit-Barco-Snead, and Liberal-Barco-Collinsville Series (Allgood and Persinger, 1979). These are deep silt-loam soils formed from loess, glacial till, limestone, sandstone, and shale. Underlying geologic substrate is from the Marmaton and Cherokee Groups of Pennsylvanian Age (Missouri Geologic Survey, 1979).

Specific soil characteristics reported from *A. meadii* sites show a mean litter depth of 9.2 cm., mean soil depth of 25.4 cm., mean soil pH of 5.4, and a mean soil texture of 30% sand, 23% clay, and 46% silt (Skinner, 1979).

6. Unusual Physical Features
Unknown

C. Biological Characteristics

1. Vegetation Physiognomy and Community Structure

Asclepias meadii inhabits unplowed bluestem prairies and is one of the taller forbs present when in bloom during late May and early June.

2. Regional Vegetation Type

Mosaic of bluestem prairies and oak-hickory forests (Kuchler, 1966).

3. Frequently Associated Species

Prairies are communities that typically show high species diversity and approximately 60 species of prairie plants are associated with *A. meadii*. Good indicator species are *Sorghastrum nutans* (Indian grass), *Andropogon gerardi* (big bluestem), *Petalostemon candidum* (white prairie clover), *Gentiana puberula* (prairie gentian), *Ruellia humilis* (hairy ruellia) and *Silphium laciniatum* (prairie compass plant). (Betz, 1978)

4. Dominance and Frequency of the Taxon

A. meadii is infrequently found and occurs in populations of a dozen or less individuals.

5. Successional Phenomena

Bluestem prairies are successional stable communities. These communities are relatively old and highly complex with high species diversity.

6. Other Endangered or Threatened Species Occurring in Habitat of This Taxon

None known

7. Population Biology

There are five locations where *A. meadii* is currently known in Missouri. During 1978 these populations were visited and were found to have the following numbers of individuals:

Vernon Co., Little Osage Prairie	11
Vernon Co., Osage Prairie	13
St. Clair Co., Thoreson Ranch	5
St. Clair Co., Thoreson Ranch	22
St. Clair Co., Piepmeier Prairie	1
St. Clair Co., Taberville Prairie	2

During 1980, one plant was seen at the following prairie:

St. Clair Co., Wah-Kon-Tah Prairie

8. Population Ecology
Unknown
9. Land Ownership and Management Responsibility
Missouri Department of Conservation owns Piepmeyer and Taberville Prairies in St. Clair County and owns part of Osage Prairie in Vernon County. The Nature Conservancy owns Wah-Kon-Tah Prairie in St. Clair County, Little Osage Prairie in Vernon County and the majority of Osage Prairie in Vernon County. All other areas are presumably in private ownership.
10. Management Practices and Experience
The Missouri Department of Conservation manages the prairies owned by The Nature Conservancy in the state, in addition to managing Department prairies. Management practices include haying, grazing, and burning but no sites are specifically managed for *A. meadii*.
11. Evidence of Threats to Survival
The following items come directly from a status report prepared by Dr. Robert Betz. For more discussion on these points, consult the report prepared by Betz, (1978).
 1. Never very common even in pre-settlement times, the species may have slipped below the number necessary for its survival.
 2. Plants maturing in the late summer on the prairie hay-meadows including *A. meadii* are not reproducing because of annual mowings.
 3. Although the plants are long-lived (probably a century or more), they are susceptible to the attacks of two insect species that are probably killing small numbers each year.
 4. The destruction of the remaining sites for the species.
 5. The long time needed for the plants to mature also works against its survival.

II. ASSESSMENT AND RECOMMENDATIONS

12. General Assessment of Vigor, Trends, and Status
Historically, *A. meadii* was known from 10 counties in the state of Missouri. The species is currently known from 4 prairies in St. Clair County and 2 in Vernon County. Population counts in 1978 yielded a total number of ~~64~~ plants in the state. The threats to survival listed above supported by declining population numbers in Missouri warrant listing of *Asclepias meadii* as an endangered species.
13. Priority of Listing or Status Change
 - A. Recommendation to Director, U.S. Fish and Wildlife Service, Department of Interior
It is recommended that *Asclepias meadii* be listed as Endangered, according to the Endangered Species Act of 1973.

This listing is a top priority recommendation of the Missouri Department of Conservation.

B. Recommendations to Other U.S. Federal Agencies

None

C. Other Status Recommendations

Asclepias meadii should continue to be listed at the state level in all states of occurrence.

14. Recommended Critical Habitat

None

15. Conservation/Recovery Recommendations

A. General Conservation Recommendations

The Missouri Department of Conservation should consider managing some of its prairies specifically for *A. meadii* populations that are present.

B. Monitoring Activities and Further Studies or Research Recommended ✓

The populations of this species in Missouri should be monitored for population fluctuations. This would be an ideal species to work with in the state as most of the populations occur on public lands. The Department of Conservation is responsible for maintaining information on threatened and endangered species in the state of Missouri and should coordinate such research.

16. Interested Parties

Missouri Botanical Garden
2345 Tower Grove Avenue
St. Louis, MO 63110

Missouri Department of Conservation
P.O. Box 180
Jefferson City, MO 65102

Missouri Native Plant Society
Jon Hawker, President
Department of Biology
St. Louis Community College at Meramec
11333 Big Bend Blvd.
St. Louis, MO 63122

Soil Conservation Service
555 Vandiver Drive
Columbia, MO 65201

The Nature Conservancy
Midwest Regional Office
328 East Hennepin Avenue
Minneapolis, MN 55414

III. INFORMATION SOURCES

17. Sources of Information

A. Publications

1. Botanical Publications Specific to This Taxon

Betz, Robert. 1978. Status Report on *Asclepias meadii*.
Unpublished report submitted to the U.S. Fish and Wildlife
Service.

Nicolson, Dan and Norman H. Russell. 1955. The Genus *Asclepias*
in Iowa. Proc. Iowa Acad. Sci. 62:211-215.

Noamesi, Gottlieb K. and Hugh H. Iltis. 1957. Preliminary
Reports on the Flora of Wisconsin. No. 40. Asclepiadaceae-
Milkweed Family. Wisc. Acad. Sci., Trans. 46:107-114.

Woodson, Robert E., Jr. 1954. The North American Species of
Asclepias L. Ann. Mo. Bot. Garden 41:1-211.

2. Popular Publications

None

3. Other General Botanical References and Status References

Fernald, M. L. 1950. Gray's Manual of Botany, 8th ed.
D. Van Nostrand Co., New York.

Gleason, H. A. 1952. New Britton and Brown Illustrated Flora
of the Northeastern United States and Adjacent Canada.
New York Botanical Garden, New York. 3 vols.

McGregor, R. L. 1978. The Status of Native Rare Vascular
Plants in Kansas. Trans. Kans. Acad. Sci. 81:164. 1978.

Nordstrom, Gary R., William Pflieger, Kenneth C. Sadler, and
Walter H. Lewis. 1977. Rare and Endangered Species of
Missouri. Missouri Department of Conservation, Jefferson
City and U.S.D.A., Soil Conservation Service, Columbia,
Missouri.

Roedner, Beverly J., David A. Hamilton, and Keith E. Evans. 1978.
Rare Plants of the Ozark Plateau - A Field Identification
Guide. North Central Forest Experiment Station, Forest
Service - U.S. Department of Agriculture, St. Paul, Minnesota.

Steyermark, Julian A. 1963. Flora of Missouri. Iowa State
University Press, Ames, Iowa.

4. General References

See attached list at end of report.

B. Museum Collections Consulted

Collection records from the following herbaria were provided by the Missouri Botanical Garden (Daley and Spellman, 1978):
Field Museum of Natural History (F), Chicago, IL
Missouri Botanical Garden (MO), St. Louis, MO
New York Botanical Garden (NY), Bronx, NY
University of Missouri (UMO), Columbia, MO

The following herbaria were searched but no collections were found:

Arnold Arboretum (A), Cambridge, MA
Gray Herbarium of Harvard University (GH), Cambridge, MA
U.S. National Herbarium (US), Washington, D.C.
University of Missouri-Kansas City, Kansas City, MO
Southwest Missouri State University (SMS), Springfield, MO
Central Missouri State University, Warrensburg, MO
Northeast Missouri State University, Kirksville, MO
Southeast Missouri State University, Cape Girardeau, MO
Missouri Southern State College, Joplin, MO
William Jewell College, Liberty, MO
School of the Ozarks, Point Lookout, MO
Northwest Missouri State University, Maryville, MO
Department of Natural Resources, Jefferson City, MO
Ava District Ranger's Office, U.S. Forest Service, Ava, MO
Ozark National Scenic Riverways, Van Buren, MO

C. Fieldwork

Tom Toney, Prairie Biologist with the Missouri Department of Conservation, checked some of the known population locations during June of 1980.

D. Knowledgeable Individuals

Tom Toney, Prairie Biologist
Missouri Department of Conservation
Route #2
Lockwood, MO 65682

Tom Toney is responsible for the management of the Conservation Department's prairies and he is also knowledgeable about *Asclepias meadii* populations on these prairies.

E. Other Information Sources

None

18. Summary of Materials on File

All botanical publications specific to this taxon (listed in 17.A.1.).
All general botanical references and status references (listed in 17.A.3.).
All topographic maps cited, general soil map of Missouri and the geologic map of Missouri.
Records from herbarium collections consulted.

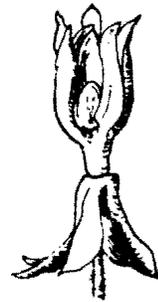
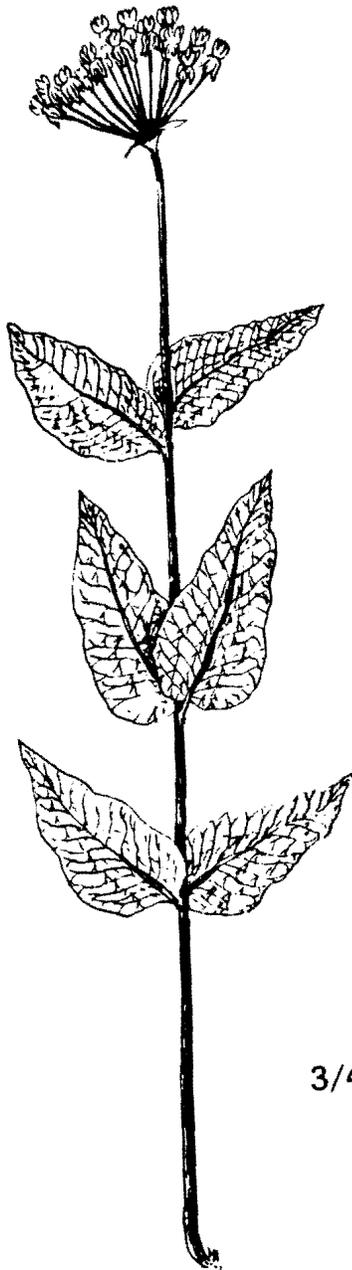
IV. AUTHORSHIP

19. Initial Authorship

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Missouri Department of Conservation
P.O. Box 180
Jefferson City, MO 65102

20. Maintenance of Status Report

Natural History Section
Missouri Department of Conservation
P.O. Box 180
Jefferson City, MO 65102 Telephone: (314) 751-4115



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3/4 X

Asclepias meadii

Used with permission from Rare Plants of the Ozark Plateau - A Field Identification Guide.

General References

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- Ayensu, Edward S. and Robert A. DeFilipps. 1978. Endangered and Threatened Plants of the United States. The Smithsonian Institution and the World Wildlife Fund, Inc., Washington, D.C.
- Daley, Richard H. and David L. Spellman. 1978. Taxonomic Review of the Plants of Missouri's Rare and Endangered Species List and A Compendium of Collection Locations Based upon Herbarium Specimens. Report to the Missouri Department of Conservation. Missouri Botanical Garden, St. Louis.
- Fenneman, Nevin M. 1938. Physiography of Eastern United States. McGraw Hill, New York.
- Gray Herbarium Card Index. 1894+. Harvard University.
- Holmgren, Patricia K. and Wil Keuken (compilers). 1974. Index Herbariorum Part I. The Herbaria of the World. 6th ed. Regnum Vegetabile 92. Utrecht.
- Hooker, J. D. and B. D. Jackson, et al. 1893-1895. Index Kewensis Plantarum Phanerogamarum. 2 vols. and 14 supp. Oxford.
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- Smithsonian Institution. 1974. Report on Endangered and Threatened Plant Species of the United States. Committee on Merchant Marine and Fisheries, Serial No. 94-A. 94th Congress, 1st Session, House Document No. 94-51. (Washington, D.C., U.S. Government Printing Office, 1975).
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- Stafleu, F. A. 1967. Taxonomic Literature. Regnum Vegetabile 52. Utrecht.
- Steyermark, Julian A. 1940. Spring Flora of Missouri. Lucas Brothers Publishers, Columbia, Missouri. (1964 reprint)
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Maps

- Missouri Geological Survey. 1979. Geologic Map of Missouri. Department of Natural Resources, Division of Geology and Land Survey. Rolla, Missouri.