

Proceedings of the Iowa Academy of Science

Volume 62 | Annual Issue

Article 22

1955

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Nicolson, Dan and Russell, Norman H. (1955) "The Genus *Asclepias* in Iowa," *Proceedings of the Iowa Academy of Science*: Vol. 62: No. 1, Article 22.
Available at: <https://scholarworks.uni.edu/pias/vol62/iss1/22>

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The Genus *Asclepias* in Iowa

By DAN NICOLSON AND NORMAN H. RUSSELL

INTRODUCTION

The present study was undertaken to provide modern distribution maps and a workable key for the Iowa milkweeds. The genus *Asclepias* has not been separately studied in Iowa, so far as the authors can ascertain. In the most recent Iowa flora, Conard (1951) lists 16 species. In the present work 15 species are recognized. Appreciation is extended to Dr. Robert Thorne and Dr. Richard Pohl for the use of specimens from the herbaria of the State University of Iowa and Iowa State College. In addition, material from the herbarium of Grinnell College has been studied. In all, approximately 1200 sheets of *Asclepias* were examined.

Woodson (1954) has been followed in the nomenclature accepted for the milkweeds of Iowa. The key to species was prepared from herbarium material, but the keys to *Asclepias* in Woodson (1954) and Gleason (1952) proved of especial aid in the determination of which characters had the greatest taxonomic value.

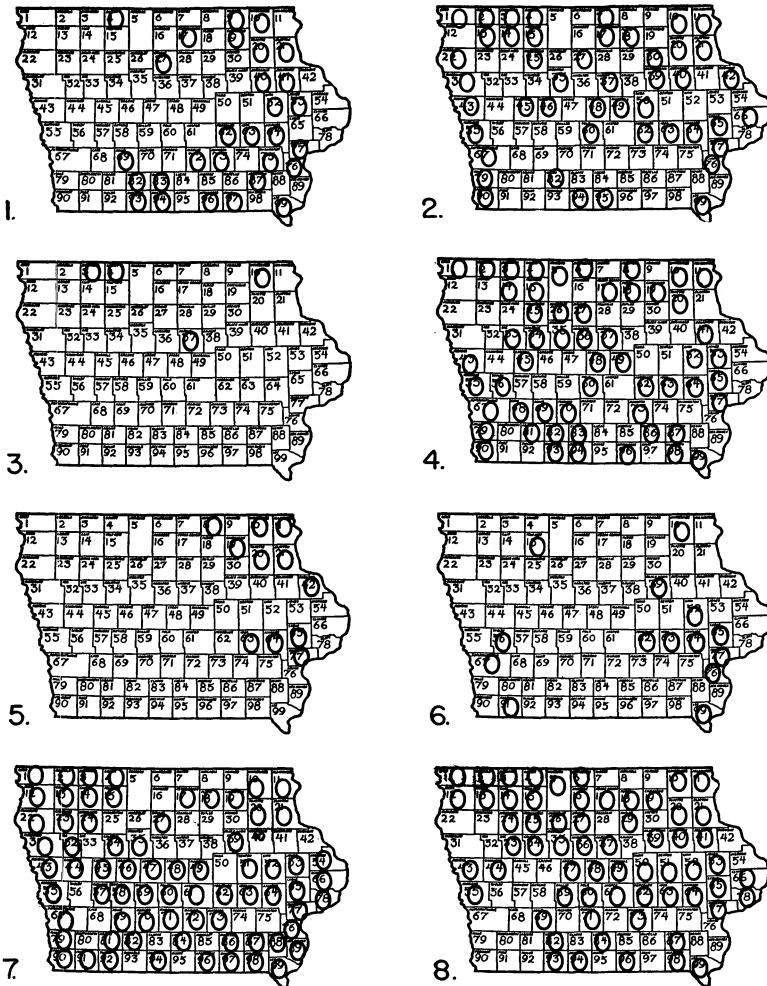
The distribution maps represent, in every case, specimens actually examined. This practice of not including literature reports has not significantly diminished the apparent ranges of any of the species, with the exception of *A. meadii*, which is discussed below.

An attempt has been made to render the following key especially useful in the identification of dried specimens by omitting such characteristics as corolla color and the presence or absence of a marginal lobe on the corolla hood. Both of these characteristics are useful in identifying living plants but are very difficult to distinguish on herbarium material.

KEY TO *Asclepias* IN IOWA

1. Hoods without horns.
 2. Corona distinctly on a short column; peduncle thin, 2-4 cm. long
..... *A. hirtella* (Pennell) Woods. (Fig. 1)
 2. Corona sessile; peduncle thick, nearly obsolete to 15 cm. long.
 3. Umbels lateral and usually numerous; plants mostly taller than 3 dm. *A. viridiflora* Raf. (Fig. 2)
 3. Umbels terminal and solitary; plants usually less than 3 dm. in height *A. nuttalliana* Torr. (Fig. 3)
1. Hoods with distinct horns.
 4. Hoods equaling or slightly surpassing gynostegium; horns definitely surpassing the hoods.
 5. Leaves below inflorescence alternate; plant hirsute
..... *A. tuberosa* L. subsp. *interior* Woodson (Fig. 4)
 5. Leaves below inflorescence opposite or whorled; plant never hirsute.
 6. Corona and hoods truncate; hood tubular.

- 7. Leaves petiolate, cuneate at base
A. exaltata L. (Fig. 5)
- 7. Leaves sessile, broadly rounded at base
..... *A. amplexicaulis* Sm. (Fig. 6)
- 6. Corona and hoods not truncate; hood scoop-shaped.
 - 8. Leaves linear and whorled *A.*
verticillata L. (Fig. 7)
 - 8. Leaves lanceolate and opposite
A. incarnata L. subsp. *incarnata* (Fig. 8)
- 4. Hoods definitely surpassing gynostegium; horns not surpassing the hoods.
 - 9. Lower leaf surface pubescent.
 - 10. Hoods 11-15 mm. long; summit of hood elongate; pedicels very pubescent
..... *A. speciosa* Torr. (Fig. 9)
 - 10. Hoods 5-8 mm. long; summit of hood ovate or oblong; pedicels slightly pubescent.
 - 11. Plants large (4-20 dm. tall); principal leaves 6-18 cm. long; venation pinnate.
 - 12. Umbels several and always axillary; venation always strongly pinnate; summit of hood obtuse
..... *A. syriaca* L. (Fig. 10)
 - 12. Umbels one or two and terminal or in upper two leaf axils; venation less strongly pinnate, varying toward net-like; summit of hood acute *A.*
purpurascens L. (Fig. 11)
 - 11. Plants small (1-3 dm. tall); principal leaves 3-7 cm. long; venation net-like *A. ovalifolia*
Dcne. (Fig. 12)
 - 9. Lower leaf surface glabrous.
 - 13. Leaves petiolate and with cuneate bases; plants usually with one whorl of four leaves
..... *A. quadrifolia* Jacq. (Fig. 13)
 - 13. Leaves subsessile and with subcordate bases; plants with strictly opposite leaves.
 - 14. Plant 2-4 dm. tall; leaves with scabrous margins; leaves 5-7 cm. long
..... *A. meadii* Torr. (Fig. 14)
 - 14. Plant 6-9 dm. tall; leaves with glabrous margins; leaves 9-15 cm. long
..... *A. sullivanii* Engelm. (Fig. 15)

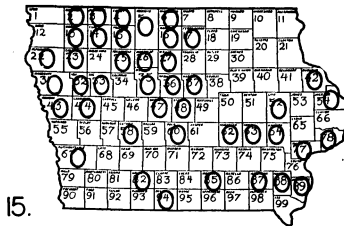
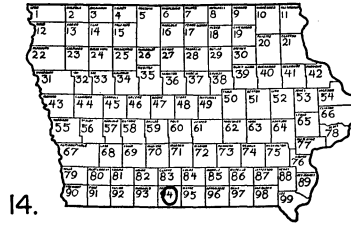
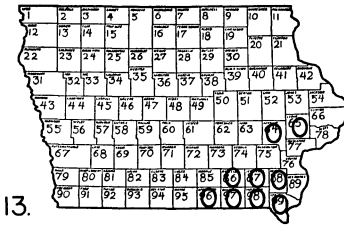
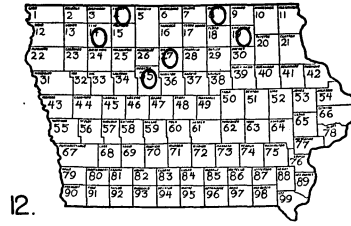
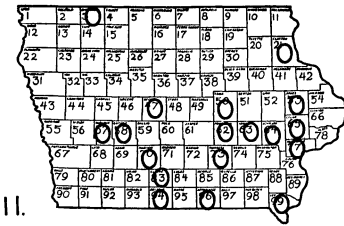
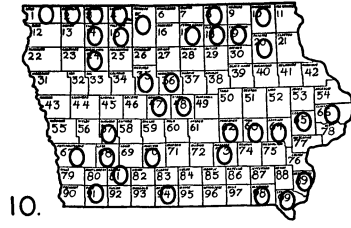
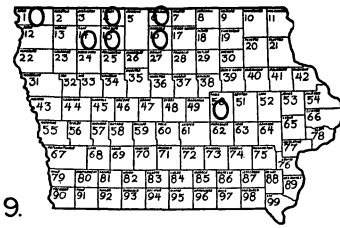


Figures 1-8 Fig. 1. Iowa range of *Asclepias hirtella* (Pennell) Woods. Fig. 2. *A. viridiflora* Raf. Fig. 3. *A. nuttalliana* Torr. Fig. 4. *A. tuberosa* L. subsp. *interior* Woodson. Fig. 5. *A. exaltata* L. Fig. 6. *A. amplexicaulis* Sm. Fig. 7. *A. verticillata* L. Fig. 8. *A. incarnata* L. subsp. *incarnata*.

DISCUSSION

Though the milkweeds are, in general, quite distinct and easy to distinguish, a number of problems were met during the course of the present study. Some of the more significant of these are discussed below.

In one respect, Woodson (1954) was not followed. It was found very difficult to distinguish *Asclepias tuberosa* L. subsp. *terminalis* Woodson. The authors feel that, at least so far as Iowa material is concerned, there is little evidence for according this form subspecific



Figures 9-15. Fig. 9. Iowa range of *Asclepias speciosa* Torr. Fig. 10. *A. syriaca* L. Fig. 11. *A. purpurascens* L. Fig. 12. *A. ovalifolia* Dcne. Fig. 13. *A. quadrifolia* Jacq. Fig. 14. *A. meadii* Torr. Fig. 15. *A. sullivantii* Engelm.

rank and have therefore not recognized it. All Iowa specimens of *A. tuberosa* have been placed in Woodson's subspecies *interior*.

A number of varieties, based upon particular leaf shapes have been recognized in *Asclepias viridiflora*. Woodson believes that this variation is not sufficiently consistent to justify recognition of these varieties, and the present authors have agreed with this judgment. Color forms have not been included in the key, though corolla color often varies intra-specifically, particularly in *A. tuberosa*. A characteristic of value in identification of milkweeds is the presence or absence of marginal lobes on the corolla hoods. *A. syri-*

aca, *A. ovalifolia*, *A. quadrifolia*, and *A. meadii* have these lobes; *A. speciosa*, *A. purpurascens*, and *A. sullivantii* do not.

Hybridization between milkweeds seems to be very rare in Iowa. Only a single instance was found of putative hybridization. In the ISC herbarium there is a set of milkweed collections by Ada Hayden from a wet prairie meadow in Clay County, which includes material of both *A. syriaca* and *A. speciosa*. A number of these specimens have corolla hoods intermediate in length between those of *A. syriaca* (5-8 mm. long) and *A. speciosa* (11-15 mm. long) and appear intermediate in other characters, such as leaf pubescence. Woodson (1954) mentions that spontaneous hybrids have been found between these two species and that the cross was performed experimentally by O. A. Stevens at the North Dakota Experiment Station.

The two rarest Iowa Asclepiads are *Asclepias nuttalliana* and *A. meadii*. We have four reports for *A. nuttalliana*, a tiny milkweed often found with *A. ovalifolia*. Woodson mapped two Iowa locations for *A. meadii* and two more collections in Illinois just across the Mississippi River. Only one specimen from Iowa was seen by the present authors. It is deposited in the Iowa State College herbarium and has been seen and verified by Woodson, as have most of their other specimens of *Asclepias*.

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