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Rosa pratincola Greene

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ROSA PRATICOLA GREENE

EVELYN ENSIGN

There is more or less confusion as to the name and description of the wild rose of the prairies. A study of this problem was undertaken more particularly with reference to our Iowa forms.

R. PRATICOLA GREENE

R. pratincola Greene.

R. Arkansana Auct.

Stems low, usually very prickly; leaflets seven to eleven, rachises usually pubescent; inflorescence commonly corymbose; sepals frequently connivent; hypanthiums and pedicels usually naked.

The name for our commonest wild rose, the one found on the prairies everywhere, has not been unanimously agreed upon. Small and Britton call it *R. Arkansana*. In the latest editions of the Britton and Brown and the Gray manuals *R. pratincola* has replaced the *R. Arkansana* of former editions.

The original description of *R. Arkansana* was made by Porter in 1874. He thought that it might be an extreme form of *R. blanda*, but it differed in so many points that he ventured to describe it as new. His description is as follows: "Stem stout, erect, leafy, one foot high, glabrous and glaucous, armed with weak, deciduous prickles; leaflets 9-11, ovate and oblong-ovate 1 in. long or more, acute or obtuse, glabrous or sharply serrate, midrib and long stipules somewhat prickly and minutely glandular; the flowers numerous, terminal corymbed on peduncles about 1 in. long; fruit globose, smooth, glaucous; calyx segmented, ovate, reflexed in fruit, with terminal and sometimes lateral appendages, more or less glandular and tomentose, pubescent on the margins; petals broadly obovate or emarginate, longer than the calyx segments, rose-color; flower 2 in. in diameter. Canon City, Colo."

This description does apply to our prairie roses better than that of *R. blanda* and as a result the wild roses found on the prairies extending from Minnesota to Missouri and from West Texas to Colorado were named *R. Arkansana*.

But in 1899 Greene described *R. pratincola* and since then there has been more or less confusion. Greene's description and comments are as follows: "*R. pratincola*. Almost herbaceous and never more than suffrutescent, 1-2 ft. high, usually flowering terminally and corymbosely from upright shoots of the season; bark of the stem glaucescent, the prickles dark purplish, all slender and weak, but some larger and less slender than others, all straight, spreading or slightly deflexed; leaves very ample for the plant, leaflets 7-11, obovate and oblong-obovate, sharply serrate, somewhat cuspidately acute, pubescent on both surfaces when young, the upper surface glabrate in age; stipules very narrow and entire, soft-pubescent, but neither glandular nor prickly, the rhachis often setose-prickly; receptacle smooth and glabrous, the sepals very woolly within and also marginally, the tips villous on both sides, the back of the basal part glandular-hispid; achenes nearly smooth, but more or less hirsute on certain of the angles and about the base or summit.

"I thus designate unhesitatingly as a new species one of the commonest of North American roses, and one of the most abundantly habitating a very extensive range in U. S. and Canada; a denizen of the prairie regions of the west and northwest, from Illinois and Missouri to the Dakotas and Manitoba. It has passed for *R. Arkansana* and to that extent that probably almost all the so-called *R. Arkansana* of the herbaria of the country is of this species. It is found in eastern Kansas and Nebraska, but does not occur in Colorado or anywhere very near its borders in so far as we can ascertain. It is the peculiar rose of the rich grassy prairies of the upper Mississippi valley; and though passing for *R. Arkansana* has been distributed by Sandberg from Minnesota as *R. humilis*. It is of course, a part of *R. blanda* of the earlier American authors and of local botanists residing in prairie regions.

"Probably no botanist, knowing as I know both the Illinois and Wisconsin prairies and the valley of the Arkansas in Colorado, could be brought to entertain the notion that any species of rose could be common to the two. The latter is an arid and subsaline half-desert country, a region of cactaceous and salicorniaceus plants, probably about as different from the region of *R. pratincola* as Arabia is from England; a consideration which does not seem to have entered the minds of our American rhodologists—if we have any—much less those of the European students of the genus.

"*R. Arkansana* has not been, I think, collected a second time; and as I spent many a week in arduous collecting about Canon City, in

different years between 1873 and 1896, without having seen the original *R. Arkansana*, I entertain a suspicion that it may have been founded on some corymbosely-flowering precocious shoot of the so-called *R. blanda* of that region, or perhaps of *R. Fendleri*. But apart from the antecedent probability of this our eastern prairie species being also an inhabitant of a cactus desert, the western and xerophilous rose, the real *R. Arkansana* is glabrous, while ours is pubescent; it has stipules both glandular and prickly, while ours has them softly pubescent only; it has sepals reflexed in fruit, while in ours these are erect."

It will be noted that the above descriptions differ principally in the number and surface of the leaflets, the position of the sepals, and the surface of the stipules. After a study of the roses of Iowa it was found that both descriptions were needed; for, there are prickly and deciduously-prickly stems; plants with seven to eleven and nine to eleven leaflets; leaf surfaces as Greene describes them but some glabrous above and below; there are connivent and spreading sepals; and stipules with entire, glandular-toothed and glandular-hispid margins. However, on account of the promiscuous variation, which will be discussed later, one cannot recognize two species.

The description of *R. pratincola* in the seventh edition of Gray's manual differs from that of Greene's as follows:

GREENE	GRAY
1. Stipules; entire	More or less toothed
2. Sepals; glandular-hispid	Rarely hispid
3. Rhachis; often setose-prickly	Softly and finely villous or tomentulose, glandular hairs occasional or none.

The *R. pratincola* of Britton and Brown has spreading, sparingly glandular hispid calyx-lobes, stipules that are in some cases toothed, and leaflets glabrous on both sides.

These inconsistencies in the descriptions of the various authors suggested variability in the plants themselves. Accordingly an investigation of the extent of variation was made.

A part of the material used for this work was collected during the summer of 1918 from Dickinson and Buena Vista counties. Professor Shimek's extensive collection and the material of the herbarium of the State University of Iowa also were used.

The writer wishes to here acknowledge her indebtedness and gratitude to Professor Shimek for his helpful suggestions and kind criticism in the preparation of this paper.

VARIATIONS IN *ROSA PRATINCOLA*

SEPALS

Position.—In the schemes of classification made for roses much stress is laid upon the position of the sepals on the mature fruit, whether connivent and persistent, or spreading and deciduous. No uniformity was found in the specimens of *R. pratincola*. In one group of these roses that grew along a roadside in Dickinson county, a part had spreading sepals and a few combined the two types. In regard to the other characters, viz., leaves, pedicels, stem, etc., there was sufficient uniformity to satisfy one that there were not two species and a hybrid. In this same general locality there was another group in which all the plants save one had connivent sepals. It can be said, however, that the greater proportion of the plants have connivent sepals.

Surface of the basal part.—Out of the 250 specimens examined the majority have glandular-hispid and pubescent surfaces. A small per cent of the surfaces are glandular-pubescent, a few are pubescent and occasionally naked ones are found.

Foliaceous Tips.—The outer extremities of the sepals are more or less dilated. These are quite variable in length, ranging from two to fifteen mm. Only a very small per cent are lobed though in Gray's manual one of the taxonomic characters is "outer sepals lobed."

STEM

Height.—The smallest plant found in bloom was thirteen cm. in height while the tallest plants average about seventy-five cm.

Surface.—The greater percentage of the stems can be classed as prickly or very prickly. Most of the prickles are small with larger spines intermingled. The prickles may be weak or stiff and harsh. It is a common occurrence to find one stem with deciduous prickles among a group of prickly forms.

The upper portion of the stem may be unarmed. Specimens were collected the upper part of whose stems are free from spines of any kind, while the basal portions are covered with a flaky epidermis and there are a few spines about one mm. long. The prickles may be few but scattered along the whole length of the stem. In addition to prickles there may be stipitate glands. The climax of variability seemed to be reached when stems free from prickles of any description were found.

Branches.—The young stem very seldom branches but the older stems are usually much-branched. No difference was found in the

prickliness of the sterile and fertile branches. Naked and prickly flowering branches may be found on the same plant.

LEAVES

Number of leaflets.—The maximum number of leaflets is commonly 11 though it may be 7 or 9. On individual plants the variation may be 5 to 7; 5 to 9; 7 to 9; 7 to 11 and 9 to 11.

Length of leaflets.—The average length is about 2.5 cm. They vary from 1.5 to 4.5 cm.

Surface.—The upper and lower surfaces usually have a grayish cast due to the presence of soft hairs. However, both may be glabrous. On an individual plant there may be naked and scant pubescent surfaces, both upper and lower.

RHACHIS

Surface.—The rhachises are frequently covered with short hairs but occasionally, scattered among these hairs, there are stipitate glands or prickles.

On one plant the rhachises may be naked and glandular-hispid; pubescent and glandular-hispid; pubescent, occasionally prickly, and glandular-hispid; or pubescent and occasionally prickly.

STIPULES

Form.—The several types of stipules are shown on the plate, narrow, medium, and rather dilate. The narrow stipule is the prevailing form. Narrow and dilate stipules are occasionally found on the same plant.

Margin.—The margins of the stipules may be ciliate, ciliate and glandular-hispid, or ciliate and glandular-toothed.

INFLORESCENCE

Form.—Seldom does *R. pratincola* bear a solitary flower; it is usually a corymb, sometimes of twenty to thirty buds and flowers. The pedicels are short and commonly glabrous, only a small per cent being glandular-hispid and a few pubescent. A few glandular-hispid hypanthiums were found, the remainder being glabrous.

Color of buds and flowers.—The varied hues and markings defy accurate representation with paper and pencil. A mere outline of the extent of variation is all that will be attempted.

The range is typified for large areas by the colors of the buds and flowers found along a half mile of prairie roadside in Dickin-

son county. There was the deep red to the pure white and between these extremes various shades and combinations of colors that seemed to show a gradual transition from one extreme to the other.

Number of petals.—Very rarely does the number of petals exceed five. In Dickinson county there were two groups of roses in which the petals numbered six, seven, eight, nine, and even ten.

The petals are commonly obcordate but a few cuspidate forms were found.

FRUIT

The dark red fruits are commonly globose though some are pyriform.

One would be inclined to think that in a species exhibiting so much variation at least varietal subdivision could be made but the variation is not concomitant. One feature changes without apparent connection with any other. It exhibits what Dr. Gray called promiscuous variation.

This type of variation is well illustrated in the following examples. The features underscored are the exceptions to the general rule.

Example 1. *Stem with only an occasional prickle, pedicel pubescent, stipules dilate*, leaflets eleven, inflorescence corymbose, hypanthium glabrous, rhachis pubescent, sepals glandular-hispid.

Example 2. *Stem very prickly, pedicel glabrous, stipules dilate, leaflets seven to nine, inflorescence 2-corymbose*, hypanthium glabrous, rhachis pubescent, sepals glandular-hispid.

Dilate stipules is an exception common to both the above examples but note the difference in the accompanying variations. In example 1 they are almost naked stem and a pubescent pedicel and in example 2 they are seven to nine leaflets and a few-flowered inflorescence. In another specimen dilate stipules were accompanied by a deciduous-prickly stem.

In the above examples variations are cited which accompany dilate stipules, but narrow stipules is the prevailing form. The following examples will show that variations also accompany narrow stipules.

Example 1. *Stipules narrow, sepals spreading and pubescent, pedicel pubescent, hypanthium glabrous, stem very prickly, leaflets nine to eleven, rhachis pubescent, inflorescence corymbose.*

Example 2. *Stipules narrow, deciduous-prickly stem, leaflets seven to nine, rhachis pubescent, hypanthiums and pedicels glabrous, sepals glandular-hispid, inflorescence corymbose.*

Example 3. Stipules narrow, *sepals spreading* and glandular-hispid, *leaflets seven*, stem very prickly, hypanthiums and pedicels glabrous, inflorescence corymbose.

Example 4. Stipules narrow, *leaflets five to seven*, sepals connivent and glandular-hispid, hypanthiums and pedicels glabrous, stem very prickly, flowers corymbose.

It will be noted that in example 1 there are three exceptions, viz., spreading and pubescent sepals and pubescent pedicels; in example 2 deciduous-prickly stem and seven to nine leaflets; in example 3 spreading sepals and seven leaflets, and in example 4, five to seven leaflets.

These examples show that one cannot predict concomitant variations. There is no uniformity. One is justified in asking if a *R. pratincola* does exist which conforms to the general rule in every respect. The following example is a typical *R. pratincola*. Sepals connivent and glandular-hispid, hypanthiums and pedicels glabrous, flowers corymbose, stem prickly, leaflets seven to eleven, rachis pubescent, stipules narrow.

DISTRIBUTION

General.—Prairies of the United States and Canada, Manitoba to New Mexico and Texas and Iowa to Colorado.

Specific locality references outside of Iowa:—Colorado, Indiana, Southwest Minnesota, North Dakota.

Iowa counties:—Dickinson, Buena Vista, Iowa, Delaware, Johnson, Emmet, Cerro Gordo, Winnebago, Pottawattamie, Woodbury, Harrison, Winneshiek, Shelby, Lyon, Hardin, Calhoun, Webster, Fremont, Monona, Lee, Des Moines, Wapello.

Reported Iowa counties:—Boone (Diehl), Dickinson (Shimek, Pammel), Emmet (Shimek), Fremont (Fitzpatrick), Harrison (Shimek, Pammel), Johnson (Shimek, Somes), Ida (Macbride), Lyon (Shimek, Boot), Muscatine (Shimek, Pammel), Monona (Shimek, Pammel, Boot), Sioux (Shimek), Sac (Macbride), Story (Shimek, Pammel), Woodbury, Winneshiek, Polk, Palo Alto, Clay, Kossuth, Winnebago, Allamakee, Clinton, Scott, Decatur (Pammel).

ECOLOGY

The four species which were studied in the field, viz., *R. pratincola*, *R. virginiana*, *R. Woodsii*, and *R. blanda*, grow in xerophytic or semi-xerophytic habitats. The division of the leaf surface into small leaflets, thick cutin, water-storage cells, compact palisade tissue, hairs and glands are all good adaptations for preventing too rapid

transpiration and hence they may be expected to hold their own in such habitats.

The most xerophytic species is *R. pratincola* and it further protects itself by not reaching a greater average height than three decimeters. It thereby receives protection from the surrounding vegetation and is less exposed to the greater evaporation due to increased height.

No list of prairie plants would be complete without *R. pratincola*. It is not limited by any type of soil or topography, being absent only from bogs. It grows on every type of prairie; flat, rolling, alluvial, exposed ridges, sandy areas, and even sand dunes. The habitat of maximum exposure expresses itself in stunted plants, shorter and finer-leaved than usual.

R. pratincola is a troublesome weed in the prairie grainfields. It is difficult to eradicate due to its rather deep-growing, perennial rhizome.

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