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NOTES ON CRATAEGUS

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Mr. Ernest J. Palmer in going critically through Crataegus in the Arboretum herbarium has made some interesting observations.

One of the most interesting of these is the fact that *Crataegus olivacea* (Sargent in Proc. Acad. Nat. Sci. Phila. LXII. 153 [1910]) based on a specimen of the Crus-galli group collected in the valley of the Little Juniata River near Altoona, Pennsylvania, in 1905 by B. H. Smith in May and by C. S. Sargent in September, is the same as the plant cultivated in Europe for at least one hundred years as *Mespilus Fontanesiana* Spach and **Crataegus Fontanesiana** Steudel; also the plant raised from seeds received from the Paris Museum in 1876 and grown in the Arboretum as *Crataegus Fortunei*, an unpublished name, proves to be *Crataegus Fontanesiana*. This discovery is interesting as showing that the general opinion in Europe that *C. Fontanesiana* was of North American origin was correct.

Crataegus exigua Sargent (in Rhodora, v. 52 [February 1903]) is probably best considered, as pointed out by Eggleston (in Rhodora, x. 75 [1908]) as a variety of *Crataegus Crus-galli*, **C. Crus-galli** var. **exigua**. This plant must not be confused with the *C. exigua* of Ashe (in Jour. Elisha Mitchell Sci. Soc. XIX. 20 [1903]) from Wisconsin, said to be a species of *Tenuifoliae*, but not represented in the Arboretum herbarium.

Crataegus Crus-galli L., after a longer study of the genus, must be considered more widely distributed and more variable in the shape of the leaves than was formerly believed; and Mr. Palmer rightly suggests that *C. strongylophylla* Sargent (in Rep. Mo. Bot. Gard. XIX. 44 [1908]) from Webb City, Missouri, cannot be distinguished by any good character from the Linnaean species and must be considered a synonym of it.

Crataegus arduennae Sargent. To this *Crus-galli* species with 10 stamens and yellow anthers, first noticed at Glenellyn, Illinois, may probably best be referred the following Missouri plants as synonyms: *Crataegus ferox* Sargent (in Rep. Mo. Bot. Gard. XIX. 52 [1908]); *C. albanthera* Sargent (l. c. 53); and *C. candens* Sargent (l. c. 55).

Crataegus sordida var. **villosa**, n. var.

The typical form of *C. sordida* Sargent (in Bot. Gaz. XXXIII. 114 (1902]), a *Punctatae* species from southeastern Missouri, collected by B. F. Bush at Pleasant Grove, is quite glabrous with the exception of a few scattered hairs on the young branches and inflorescence which become glabrous before autumn, but two trees discovered by Palmer growing together on the border of upland woods near Fulton in southern Arkansas in 1914, differ so distinctly in their densely villose young branches, corymbs and calyx with matted hairs more or less persistent during the season that it seems necessary to consider these trees as representing a variety for which I propose the name *villosa*. As the type of this variety may be taken Palmer's Nos. 20,709 and 22,266, collected April 5 and October 11, 1922. To this variety should also be referred specimens from Williamsville, Missouri, collected first by *B. F. Bush*, April 25 and October 10, 1912 (Nos. 6649, 6941) and by *Palmer*, June 30, 1914 (No. 6147), April 20 and October 9, 1920 (Nos. 17,204, 17,245, 19,413, 19,414).

Crataegus furcata Sargent (in Rep. Mo. Bot. Gard. XIX. 86 [1908]) was based on a shrub forming thickets on limestone hills near Carterville and Webb City in southwestern Missouri. It has since been found by Mr. Palmer, who has seen many thousands of these plants, that when it descends into valleys along streams in that part of the state it then grows as a tree indistinguishable from the widely distributed **C. viridis** Linnaeus of which *C. furcata* must be considered a synonym.

Crataegus ignava has been used for two different plants, first by Beadle in 1901 for a species of the *Flavae* group and second by Sargent in 1910 (in Proc. Acad. Nat. Sci. Phila. LXII. 228) for a handsome shrubby species of the *Pruinosae* group first collected in 1909 near Bedford Springs, Bedford County, Pennsylvania, by the late Benjamin H. Smith of Philadelphia, for which I now propose the name of **Crataegus neosmithii**.

The name of *Crataegus ampla* has been given by Sargent to two different plants, the first a species of *Tenuifoliae* from Kutztown, Pennsylvania, published in September, 1905, and the second a species of *Coccineae* from Lanesboro, Massachusetts, published in November, 1905 (in Rhodora, VII. 208). For the Massachusetts species the name **C. neofaxonii** is now proposed, this plant having been discovered in 1899 by the late Charles E. Faxon.

Crataegus Ridgwayi, n. sp.

Leaves ovate, acute or acuminate at apex, broad and rounded or slightly cordate or occasionally cuneate at base, usually slightly lobed with acuminate lobes, and sharply often doubly serrate, scabrate above early in the season by short early deciduous hairs and villose below, especially on the midrib and veins, dark green on the upper surface, rather paler on the lower surface, 4.5–8 cm. long and 3.5–8 cm. wide; petioles slender,

densely villose when the flowers open, becoming nearly glabrous, 1.2–3 cm. in length; stipules oblanceolate, long-acuminate, coarsely glandular-serrate, 1–1.2 cm. long, deciduous in May. Flowers opening early in April, 2 cm. in diameter, in compact many-flowered villose corymbs, furnished with deciduous hairs; calyx-tube glabrous, the lobes narrow-acuminate, coarsely glandular-serrate, glabrous on the outer surface, sparingly villose on the inner surface; stamens 20; anthers "brownish gray"; styles 2 or 3, surrounded at the base by a conspicuous tuft of long white hairs. Fruit subglobose to short-oblong, scarlet, 1.5 cm. in length; nutlets 5, acute at the ends, broadest at the apex, obscurely grooved on the back, 6–8 cm. in length.

A slender tree 4–5 m. high with a trunk rarely more than 15 cm. in diameter, and spreading branches; common in open woods, growing on creek bottoms and dry uplands near Olney, Richland County, southeastern Illinois, *R. Ridgway*, May 14, 1921, April 29 and August 20, 1924 (Nos. 1375, 2087 & 2041, type); *E. J. Palmer*, May 14, 1923 (No. 22615).

Judging by the habit of this tree and the shape of the leaves it is an unusually small-fruited *Molles* species approaching in the size of the fruit plants of the *Coccineae* group which, although common in northern Illinois, is not found as far south anywhere as Richland County.

I am glad to associate with this interesting plant the name of Robert Ridgway, the distinguished ornithologist.

× **Crataegus Whitakeri**, n. hyb.? (*Molles* sp.? × *Macracanthae* sp.?).

Leaves broad-ovate, acute, rounded or abruptly or gradually narrowed at base, often slightly divided into short acute lateral lobes and coarsely and irregularly serrate with acute teeth, sparingly villose below, especially on the midrib and primary veins, becoming nearly glabrous in the autumn, dark green on the upper surface, rather paler on the lower surface, 8–10 cm. long and 6–7 cm. wide; petioles stout, densely villose early in the season, becoming glabrous or nearly glabrous, and 8–15 mm. in length. Flowers opening early in June, 2 cm. in diameter, on slender pedicels densely villose like the 6–12-flowered rather compact corymbs; calyx thickly covered with matted pale hairs, the lobes glandular-serrate, nearly glabrous above, densely villose below, deciduous or persistent on the fruit; stamens 20; anthers "pale green fading to blackish"; style surrounded at the base by a conspicuous tuft of white hairs. Fruit ripening early in October, on stout pedicels, in nearly glabrous few-fruited clusters, subglobose to ovoid, crowned by the persistent calyx-tube, orange red, up to 1.5 cm. in diameter; nutlets 2, ellipsoid, often slightly broader at the apex, rounded or slightly ridged on the back, furnished on the inner surface with irregular shallow depressions or ocassionally with a short deep pit, 1–1.2 cm. long, 1 cm. wide.

A tree from 5–6 m. tall, with a trunk 3.5 dm. in diameter, a wide head of spreading branches and stout branchlets without spines in the Arboretum specimens.

In an upland field of the Page Whitaker farm, Richland County, southeastern Illinois, *Robert Ridgway*, October 7, 1923 (No. 2057, type for fruit), June 2, 1924 (No. 2105, type for flowers). Small trees in an adjoining field are believed by Dr. Ridgway to be seedlings from this tree (Nos. 2057 and 2105) but of these I have seen no specimen.

In habit, spreading branches, stout large branchlets and large leaves it resembles a *Molles* species, while in the shape of the leaves, the size and color of the soft fruit, the two nutlets and the nature of their lower surface it resembles a *Macracanthae* species.

Crataegus coccinioides Ashe, a species of the *Dilatatae*, grows in the neighborhood of St. Louis and is common near Allenton and Pacific, Missouri. If *C. speciosa* Sargent (in Trees and Shrubs, I. 65 [1903]) is considered a synonym of Ashe's species, as the examination of a large amount of material recently collected by Palmer seems to justify, the range of this species must be extended to southwestern Missouri, Galena, Cherokee County, Kansas, and to the neighborhood of Farmington, Washington County, Arkansas. Ashe includes southern Illinois in the range of his species but I have seen no specimen from east of the Mississippi River.

Crataegus cupulifera Sargent (in Rochester Acad. Sci. IV. 129 [1903]) was referred to the *Macracanthae* by me in the New York State Bull. 167, 119 (1913) but it really belongs to the *Rotundifoliae* group, and **C. simulans** Sargent (in New York State Bull. CXXII. 125 [1908]) which was later referred by me to *C. cupulifera* as a synonym, belongs as originally described to the *Anomalae*.

Crataegus Wheeleri, an *Intricatae* species from Grand Rapids, Michigan, was published by Sargent in 1907 (in Rep. Geolog. Surv. Michigan, 1906, 552) and is found to be a homonym, a *C. Wheeleri* from Colorado which probably belongs to *C. Douglasii* having been published in 1902 by Nelson (in Bot. Gaz. XXXIV. 369). There is not a specimen of Nelson's plant in the herbarium of the Arboretum. **Crataegus diversifolia**, with broad or narrow ovate leaves of the fruiting branches becoming sometimes distinctly 3-lobed on vigorous sterile shoots, may be adopted as the name of *C. Wheeleri* of Sargent.

Crataegus padifolia var. **incarnata**, n. var.

Leaves ovate, acute and short-pointed at the apex, rounded or abruptly narrowed at the base, acutely and frequently doubly serrate, and often slightly divided into short acute lateral lobes, glabrous with the exception of a few caducous hairs on the upper side of the midrib early in the season, thin, dark green above, slightly paler below, 3–5.5 cm. long and 3–5 cm. wide, with a slender midrib deeply impressed on the upper side, and usually 5 or 6 pairs of slender primary veins; petioles slender, more or less glandular, with glands generally persistent during the season, usually about 1.5

cm. in length; stipules oblanceolate, glandular-serrate, caducous. Flowers 1.5 cm. in diameter, in small mostly 5- or 6-flowered corymbs, furnished with broad conspicuously glandular-serrate deciduous bracts; calyx glabrous with narrow acuminate glandular-serrate lobes often persistent on the ripe fruit; stamens 7–10; anthers pale pink; styles 2–4. Fruit ripening in early October, subglobose, dull crimson, punctate, about 1.5 cm. in diameter; nutlets 3–4, rounded on the back and ends, slightly broader at the apex than at the base, 5–6 mm. in length.

Usually a shrub from 4.5–5 m. high, with stout stems covered with dark corky bark, and erect or ascending branches armed with numerous slender straight or slightly curved dark purple spines 4–5 cm. in length; or often a small tree 5–6 m. high.

Rocky limestone hills near Galena, Stone County, Missouri, *E. J. Palmer*, October 13, 1913 (No. 4645, type for fruit), September 27, 1920 (No. 19,183), April 29, 1924 (No. 24,569, type for flowers), all from plant No. 3; same locality, May 23, 1923 (No. 22,798), April 29, 1924 (No. 24,568). Rocky upland woods, near Cotter, in Marion County, Arkansas, *E. J. Palmer*, June 18, 1914 (No. 6026).

The specimens of Mr. Palmer's plant No. 3 can probably best be regarded as a variety of *C. padifolia* of the *Intricatae* group which occurs in this region, and from which it differs in its generally broader and usually slightly lobed leaves and in its larger and softer crimson fruit.

Crataegus panda has been used for two different plants, first by Beadle in 1902 (Biltmore Bot. Studies, I. 89) for a shrubby species of the *Flavae* group from the neighborhood of Tallahassee, Florida, and second by Ashe in 1903 for a plant from Glendon, N. Carolina (in Jour. Elisha Mitchell Sci. Soc. XIX. 29). The description does not give the group to which this plant belongs and there is not a specimen in the Arboretum herbarium.

Crataegus cirrata was used in 1902 by Beadle (Biltmore Bot. Studies, I. 101) for a shrubby species of the *Flavae* group from Girard, Alabama. The same name was used in 1916 by Ashe (in Bull. Charleston Mus. XII. 42) for a plant from Georgia, no information being given of the type locality or of the group to which it belongs. Ashe's plant is not represented in the Arboretum herbarium.

SYNOPSIS OF NORTH AMERICAN CRATAEGI

ERNEST J. PALMER

INTRODUCTION

The following alphabetical list and synoptical tables of the North American species and varieties of the genus Crataegus was compiled several years ago, in a somewhat different form, for use in the Herbarium of the Arnold Arboretum. It was not intended for publication and was