

PROCEEDINGS
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FIVE NEW SPECIES OF CEDRELA.

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Recent study of the material of Spanish cedar (*Cedrela*) in the United States National Herbarium, in connection with the determination of a species of the genus from Guatemala which will be described in another connection, has led to the detection of five apparently new members of the genus from Mexico, Central America, and South America. In Casimir DeCandolle's original treatment of this genus in 1878¹ nine species were recognized from America in addition to two doubtful ones and one (*C. alternifolia* (Mill.) Steud.) which was considered as probably to be excluded from the family. Numerous species have since been described, chiefly by DeCandolle, the recognized authority on the family, and in a key to the American species given by him² in 1907 twenty-five species are recognized. Adding to these *C. saxatilis* Rose, omitted from DeCandolle's key, and the species since described, the total number of species of *Cedrela* now recognized from America, including the five here first published, is brought to 34.

As is well known, the wood of many species of *Cedrela* is of much economic importance, being very permanent, easy to work, and having an agreeable odor. It is much used for the manufacture of moth-proof chests, furniture, and cigar boxes, and in the regions where it is native it is used for shingles, canoes, and other articles which have to withstand the weather.

¹ Mon. Phan. 1: 735. 1878.

² Ann. Cons. Jard. Genève 10: 168. 1907.

Cedrela discolor Blake, sp. nov.

Tree; branches stout, lenticellate, fuscous or grayish, essentially glabrous; leaves alternate, abruptly pinnate, with 8 pairs of leaflets; petiole stout, 9 cm. long, subterete, sulcate above, glabrous; rachis similar, 32 to 37 cm. long, obscurely puberulous above between the bases of the leaflets; petiolules obscurely puberulous above, 1 to 4 mm. long; leaflets opposite, the lowest pair ovate, 5.5 to 7.5 cm. long, 3 cm. wide, the second pair similar but larger, 9.5 to 10.5 cm. long, 3.5 cm. wide, the others oblong or elliptic-oblong, 13 to 17 cm. long, 3.5 to 4.3 cm. wide, slightly inequilateral, acuminate and somewhat falcate, rounded-cuneate at base, above deep green, lucid, glabrous, beneath softly and very densely cinereous-pilosulous with curved spreading hairs except on the costa and the chief veins, the costa and the 18 to 20 pairs of lateral veins yellowish white and prominent beneath, the costa impressed above, the lateral veins prominulous, the secondaries and tertiaries prominulous-reticulate both sides; panicle axillary, ovoid, branched from the base, 29 cm. long, 13.5 cm. wide, the branches densely floriferous from near the base, only the ultimate branches sordid-puberulous; cymules crowded, about 7-flowered; pedicels 1 mm. long or less; calyx cup-shaped, 1.8 mm. high, loosely sordid-puberulous, 5-toothed for about half its length, the teeth deltoid, acute; corolla densely rufidulous-pilosulous outside with matted hairs, more sparsely pilose within, 9 mm. long; petals 4 or 5, 2 exterior and 2 interior, or quincuncial, oblong; stamens 4 or 5, glabrous; filaments subulate, 4.5 mm. long; anthers oval, emarginate, 1.5 mm. long; pistil and column 8.5 mm. long; ovary ovoid, glabrous, 2 mm. long, 5-celled; style slender, 3.5 mm. long, glabrous.

Type in the U. S. National Herbarium, no. 571205, collected at San Ramón, Durango, Mexico, April 21 to May 18, 1906, by Edward Palmer (no. 184).

This handsome species may be easily recognized by its very densely flowered panicles of medium-sized rufidulous flowers and its large leaves, deep green and shining above and densely cinereous-pilosulous beneath. It appears to be nearest *C. saxatilis* Rose.

Cedrela rosei Blake, sp. nov.

Tree; branchlet fuscous, angled, finely spreading-puberulous with sordid curved hairs; leaves abruptly pinnate, with 13 pairs of leaflets; petiole stout, densely sordid-puberulous with curved hairs, 10 cm. long, the rachis similar, sulcate, 52 cm. long; petiolules sordidly tomentose-pilosulous, 3 to 4 mm. long; leaflets opposite below, those of the upper pairs about 1.5 cm. apart, the lowest one or two pairs ovate, 5.5 to 8 cm. long, the others oblong or slightly ovate-oblong, 10.5 to 15.5 cm. long, 3.5 to 4.5 cm. wide, slightly inequilateral, short-acuminate, at base subequal and slightly cordate or broadly rounded, coriaceous, above deep green, shining, persistently pilosulous and sparsely glandular along costa, sometimes so along some of the lateral veins, otherwise glabrate, ciliolate, beneath dull green, densely sordid-pilosulous along costa and lateral veins, tufted in the

axils, evenly but not densely spreading-pilosulous along the secondary and tertiary veins and veinlets, the lateral veins 13 to 20 pairs, prominulous on both sides, the secondaries prominulous beneath, less so above; panicle (imperfect) sordid-pilosulous, the axis zigzag, angled, the branches densely floriferous from the middle; cymules about 3-flowered; pedicels mostly less than 1 mm. long; calyx 2 mm. long, 5-lobed to middle, loosely and sordidly tomentose-pilosulous especially toward margin, the lobes imbricated at base, suborbicular-ovate or deltoid-ovate, obtuse to acute, thick-herbaceous with thinner paler margins; corolla in bud ovoid-oval, blunt, thick, 6 mm. long, densely pilosulous-tomentose, griseous, along the edges of the petals rufidulous; petals 5 (two exterior, two interior, one with one margin exterior), oblong-oval, obtuse, pubescent within; column in bud slightly shorter than pistil; stamens 5, glabrous, the subulate filaments in bud 1.8 mm. long, the oval apiculate anthers 1.2 mm. long; ovary subglobose, glabrous, 2 mm. long in bud, the thick glabrous style 1.2 mm. long.

Type in the U. S. National Herbarium, No. 1023058, collected in the vicinity of Quito, Ecuador, October 26 to November 1, 1918, by J. N. Rose and G. Rose (No. 23571).

Cedrela rosei is related to *C. bogotensis* Tr. & Pl., of Colombia, but may be distinguished by its puberulous branches, its larger leaflets, and its thicker calyx. When the mature flowers are known they will doubtless prove to be much larger, as the petals of *C. bogotensis* are said to be only 6 mm. long, while the buds of *C. rosei* are of the same length.

Cedrela rotunda Blake, sp. nov.

Tree; branchlets gray-green, striate, spreading-puberulous, glabrescent; leaves abruptly pinnate, with 2 to 4 pairs of leaflets; petiole subterete, spreading-puberulous, 2.3 to 6.5 cm. long; rachis similar, striate above, 4 to 12.5 cm. long; leaflets subopposite, on densely spreading-puberulous petiolules 3 to 4 mm. long, the blades broadly oval to orbicular, the lower 4 cm. long, 3 cm. wide, the upper 6.5 to 11 cm. long, 4.5 to 9 cm. wide, subequilateral, broadly rounded at each end or obtuse, sometimes emarginulate, papyraceous, above light green, slightly lucid, rather sparsely spreading-puberulous, glabrescent, beneath densely and softly griseous-pilosulous with incurved hairs, the costa and the 4 to 6 pairs of chief veins whitish and prominulous beneath, the costa impressed above and the veins somewhat prominulous, the secondaries slightly prominulous above, obscure beneath; fruiting panicle loose, pyramidal, glabrescent, about 25 cm. long and 18 cm. wide; fruiting pedicels stout, 8 mm. long; fruit oval, obtuse, 2.5 cm. long, 1.4 cm. wide, fuscous, pustulate, dehiscing from the apex, 5-celled; seeds obovate, 1.4 to 1.6 cm. long, 5 to 6 mm. wide, chestnut-brown.

Type in the U. S. National Herbarium, No. 636749, collected in the vicinity of Villa Union, Sinaloa, Mexico, April 12, 1910, by J. N. Rose, P. C. Standley, and P. G. Russell (No. 13907).

Owing to the lack of flowers the place of this species is uncertain. It may be recognized readily by its oval or orbicular subequilateral leaflets which are densely griseous-pilosulous beneath.

Cedrela whitfordii Blake, sp. nov.

Tree; branchlet fuscous-brown, stout, sparsely spreading-puberulous and strigose; leaf abruptly pinnate, with 9 pairs of leaflets; petiole terete, 4 cm. long, densely spreading-pilosulous; rachis similar, 36 cm. long, sulcate above; leaflets of the pairs about 1 cm. apart below, subopposite above, on densely puberulous petioles 1 mm. long or less, the lowest ones obliquely ovate-oblong, 8 cm. long, 3.5 cm. wide, the others gradually larger, the sixth and seventh pairs largest, elliptic-oblong, 13.5 cm. long, 5 cm. wide, inequilateral, obtuse, very unequal at base, broadly rounded and overlapping the rachis on the upper side, obliquely cuneate-rounded on the lower, subcoriaceous-pergamentaceous, above deep green, shining, curved-puberulous along costa, ciliolate, beneath duller green, rather densely spreading-pilosulous along the costa and chief veins, spreading-puberulous along all the finer veinlets, barbatulate in the axils, the costa and the 13 to 15 pairs of chief lateral veins prominent beneath, prominulous above, the secondaries and tertiaries prominulous-reticulate on both sides; panicle large, loose, 25 cm. long or perhaps much more, about 50 cm. wide, sordidly spreading-pilosulous on the widely spreading branches, the axis glabrescent; cymules 3-flowered; pedicels 1 to 2 mm. long; calyx 3 mm. long, cup-shaped, cinerascens-puberulous with appressed hairs, 5-toothed, the teeth semicircular, broadly rounded or apiculate, about 0.7 mm. high; corolla densely rufidulous-pilosulous with matted hairs, 8.5 to 9 mm. long; petals 4 or 5, linear-oblong, obtuse; stamens 4 or 5, glabrous, the subulate filaments 2 mm. long, the quadrate-oval anthers 1.2 mm. long, notched at apex and minutely apiculate in the notch; column 5 mm. long; pistil 2.8 mm. long; ovary glabrous, 1 mm. long; style stout, glabrous, 1.2 mm. long; stigma thick, discoid; fruit 4 cm. long; seeds obovate-elliptic, acute or acuminate at each end, 2.2 cm. long, 6.5 mm. wide, chestnut-brown.

Type in the U. S. National Herbarium, no. 1037001, collected near Buena Vista, in the Magdalena and Negro Rivers bottom, Colombia, July, 1917, by H. N. Whitford and J. Pinzon (no. 7).

Cedrela whitfordii is related to *C. bogotensis* Tr. & Pl. and *C. fissilis* Vell. From the former it may be separated by its considerably larger obtuse leaflets on very obscure petiolules, and its much larger corolla; from the latter by its not velutinous branches, its blunt leaflets, the lower of which are alternate, its blunt calyx teeth, and its larger fruit. It bears the vernacular name "cedro real."

Cedrela yucatanana Blake, sp. nov.

Tree about 12 meters high; branchlets stout, gray, striate, glabrous; leaves alternate, abruptly pinnate, with 4 to 11 (usually 6 to 8) pairs of leaflets; petioles densely incurved- or spreading-puberulous, glabrate, 4 to 8 cm. long; rachis similar, sulcate above, 8 to 37.5 cm. long; leaflets

opposite or subopposite, the petiolules spreading-puberulous, sometimes glabrescent, 5 to 10 mm. long; blades of the lowest one or two pairs of leaflets ovate or oval-ovate, 3.5 to 7 cm. long, 2.5 to 3.5 cm. wide, inequilateral, acute, broadly rounded at base, of the other leaflets oblong-elliptic to lance-oblong, 6.5 to 13 cm. long, 2 to 4 cm. wide, rather abruptly acuminate to an acutish apex and slightly falcate, at base unequal, obliquely cuneate or rounded-cuneate on the lower side, broadly rounded or subcordate on the upper, pergamentaceous, above grayish green, at maturity incurved-puberulous on costa or glabrate, beneath evenly spreading-puberulous over whole surface or only along the veins, the costa and the 9 to 16 pairs of lateral veins flattish or usually impressed above, prominent beneath, the secondaries prominulous-reticulate beneath; panicle pyramidal, loose, branched essentially from the base, about 16 cm. long and wide, spreading branches branched from near the middle, the ultimate branchlets finely puberulous; cymules about 3-flowered; pedicels 1 to 2 mm. long; calyx cup-shaped, 1.5 to 2 mm. high, rather sparsely and finely puberulous, 5-toothed for about $\frac{1}{3}$ its length, the teeth triangular, acute; corolla densely griseous-pilosulous outside with matted hairs, pilose within, 8 to 9 mm. long; petals, 5, quincuncial, linear-oblong, 1.8 to 2 mm. wide; stamens 5, the slender filaments sparsely pilose, 2 mm. long, the blunt quadrate anthers 0.7 mm. long; column much longer than ovary and style; ovary subglobose, glabrous, 0.7 mm. long; style glabrous, 2.5 mm. long; fruit oblong-oval, 3.5 cm. long, 1.8 cm. thick, obtuse, fuscous, lenticellate; seeds elliptic or elliptic-oblong, chestnut-brown, 2 to 3 cm. long, 6 mm. wide.

Type in the U. S. National Herbarium, no. 15618, collected at Mérida, Yucatan, Mexico, by A. Schott (no. 199).

OTHER SPECIMENS EXAMINED:

VERACRUZ: Carrizal, May 12-14, 1901, *Goldman* 711.

CAMPECHE: Apazote, near Yohaltun, December 30, 1900, *Goldman* 505.

YUCATAN: Vicinity of Mérida, December 26, 1912, *Collins* 3.

Cedrela yucatanana seems to be nearest to *C. occidentalis* C. DC. & Rose, of western Mexico, but may be distinguished by its larger flowers, pilose filaments, and long style.