

VIBURNUM L.

CONTRIBUTED BY MICHAEL J. DONOGHUE

Deciduous [or evergreen] shrubs [or trees]; winter buds with imbricate or valvate scales [or naked]. Lvs. simple, opposite [or rarely in whorls of 3], unlobed [or lobed], margins serrulate or coarsely dentate [to entire], petiolate, stipules absent or borne on the petiole. Infl. a terminal, sessile or pedunculate, umbel-like, modified compound corymb [or paniculate]; fls. small, usually numerous, actinomorphic and perfect [or marginal fls. zygomorphic and sterile]; calyx-lobes 5, small, persistent in fr.; corolla rotate [broadly campanulate, or tubular], white [cream, or rarely pink], the 5 lobes imbricate in bud; stamens 5, inserted near base of corolla, exerted [or included], filis. slender, anthers oblong, versatile, introrse, longitudinally dehiscent; gynoecium 3-carpellate, ovary inferior, unilocular, with 1 pendulous, anatropous ovule at anthesis; style very short, conical, glabrous [or pubescent], usually persistent in fr.; stigmas 3 or 3-lobed. Fr. a 1-seeded drupe, ellipsoidal [or globose], purplish black [red, or rarely yellow] at maturity, with soft, sweet or bitter, edible pulp; stone laterally compressed [or globose], elliptic [to circular] in outline, more or less grooved on one or both sides [or inflexed to form a prominent central intrusion]; seed with copious, fleshy, solid [or ruminant] endosperm; embryo minute, near the micropyle. Ca. 150 spp., N.A., S.A., W.I., Eur., N.Afr., Asia, Males.

Lf. margins coarsely dentate, the secondary veins straight, each ending in a tooth; stipules present on lvs. immediately below an infl.; winter buds with 2 (or more) pairs of imbricate scales; infl. with (5--7)(8) primary rays V. rafinesquianum var. affine.

Lf. margins serrulate, the secondary veins curving and anastomosing; stipules

absent; winter buds with 1 pair of valvate (or connate) scales; infl. with 4 (or 3) primary rays V. rufidulum.

1. V. rafinesquianum Schultes. Downy Arrow-wood. Shrubs 1--3 m. tall; winter bud scales paired, imbricate, red-brown, ciliate; young twigs glabrous to sparsely red glandular, older twigs dull gray, glabrous. Petioles 0.5--12(--15) mm. long, those immediately below an infl. 0.5--8 mm. long and bearing 1 (or more) linear, persistent stipules near base; lf.-bls. oblong-ovate to broadly deltoid-ovate, (2.5--3.5--7(--9) cm. long, (1.6--2--5(--7) cm. wide, acute at apex, cordate to rounded at base, with 3--6 pairs of straight secondary veins, each ending in a tooth, margins coarsely dentate and ciliate, glabrous to densely pubescent below, with simple or fascicled white hairs and red glands. Infl. 2--7 cm. wide, pedunculate, with (5--7(8) primary rays; stigmas 3 or appearing 3-lobed. Fr. 7--12 mm. long, 6--9 mm. wide; stone with 3 shallow grooves on one face, and 2 shallow grooves on the other.

Only V. rafinesquianum var. affine occurs in the C.D.R. It differs from var. rafinesquianum in lacking pubescence on the lf.-bls. below, except on the principal veins. Intermediates are known, and additional field study may indicate that recognition of two varieties is unjustified.

V. rafinesquianum var. affine (Schneider) House

[V. affine Schneider, V. pubescens var. affine (Schneider) Rehder, V. affine var. affine (Schneider) Blake, V. australe Morton, V. affine var. australe (Morton) McAtee]. Petioles and stipules more or less red glandular and with simple and/or fascicled white hairs on the midvein and secondary veins below, often with tufted white hairs in the vein axils towards base. Peduncle, rays, bracts, and calyx-tubes sparsely to densely red glandular; n = 18 (Egolf, 1962). Que. to Man., s. to Ga., Ky., and Ark., with outlying stations

in Okla., Tex., and S.M. Or. in N.L. In the e. C.D.R. at ca. 2000 m. alt. in wooded canyons and at the base of high bluffs, Coah. and trans-Pecos Tex. Apr.--Jun.

The plants of n. Mex. and Tex. have been called V. australe. An analysis of the characters used by Morton to distinguish his V. australe from V. rafinesquianum var. affine, reveals that the Mexican plants do not differ sufficiently from Midwestern plants to warrant separate recognition. Southern plants show a tendency towards denser and larger glands in the infl. but intergrade with northern plants in this and characters of lf. pubescence.

2. V. rufidulum Raf. [V. prunifolium var. ferrugineum T. & G., V. ferrugineum Small, V. rufotomentosum Small]. Southern Black-haw. Shrubs [or small trees to 10 m. tall]; winter buds with 1 pair of rusty brown, densely tomentulose, valvate (or connate) scales; young twigs red-brown stellate pubescent, becoming glabrous with age. Petioles 5--17(--23) mm. long, those below an infl. conspicuously winged and densely stellate pubescent beneath, elsewhere only slightly winged and sparsely pubescent to glabrous; stipules absent; lf.-bls. usually coriaceous, lustrous and glabrous above, elliptic or broadly-elliptic to obovate, (2.5--3--8(--10) cm. long, (1.3--2--4(--6) cm. wide, broadly acute to rounded at apex, cuneate to rounded at base, with (5)6--10 pairs of curving, anastomosing, secondary veins; margins serrulate, young lvs. rusty stellate pubescent below, esp. on midvein and secondary veins, becoming sparsely pubescent to glabrous; first lvs. of the season remaining small, ovate, truncate to emarginate at apex, moderately to densely rusty tomentose. Infl. 4.5--11 cm. wide, sessile, or rarely with a peduncle to 8 mm. long; primary rays 4 (or 3), moderately red-stellate to glabrate; calyx glabrous; stigma shallowly 3-lobed. Fr. blue-black, glaucous, oblong-elliptic in outline, 9--15 mm. long, 7--10 mm. wide; stone very

shallowly and indistinctly grooved; $\bar{n} = 9$ (Egolf, 1962). Fla. to Tex., n. to Va., s. O., S. Ind., s. Ill., Mo., and se. Kan. In the C.D.R., known from only one loc., ca. 2000 m. alt. in the Davis Mtns., trans-Pecos Tex. Mar.--May.

A closely related sp., V. elatum Benth., occurs in the S.M. Or. just e. of the C.D.R., and s. to Chis., Mex. It is possible that it will be found in the mtns. of the e. C.D.R. It differs from V. rufidulum in lacking rusty stellate pubescence on the buds and petioles and in being regularly red-black punctate on the lf. surfaces below.