

APOCYNACEAE A. L. JUSS. DOGBANE FAMILY

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Trees, shrubs, vines, or perennial herbs, usually with milky sap. LEAVES opposite, alternate, or whorled, simple, entire, stipulate. INFLORESCENCES cymes to panicles, or flowers solitary. FLOWERS perfect, actinomorphic; calyx lobes 5, imbricate in bud; corolla 5-merous, sympetalous, twisted in bud, campanulate to salverform; stamens 5, epipetalous, alternating with the lobes, the anthers often connivent around the stigma; pistil 2-carpelled, ovaries 2, superior, distinct or united apically, each 1-loculed, the style 1 with a single, often enlarged stigma. FRUIT (in ours) a pair of follicles, the seeds several, naked or comose. --215 genera, 2100 spp., mostly tropical with a few temperate. Includes many important drug plants (*Strophanthus*, *Catharanthus*) and ornamentals (*Nerium*, *Vinca*, *Thevetia*). Woodson, R. E. 1938. N. Amer. Flora 29:103-192. Rosatti, T. J. 1989. J. Arnold Arbor. 70:307-401.

1. Leaves alternate.
 2. Corolla yellow, not constricted at the throat; seeds comose *Haplophyton*
 - 2' Corolla white or tinged with pink or blue, never yellow, constricted at the throat; seeds naked
..... *Amsonia*
- 1' Leaves opposite or whorled.
 3. Plants evergreen, low and trailing; flowers blue or violet *Vinca*
 - 3' Plants not evergreen, erect or ascending; flowers white, pinkish, or rose.
 4. Corolla 2-10 mm long *Apocynum*
 - 4' Corolla (18-)20-30 mm long.
 5. Plants with milky juice; corolla white *Macrosiphonia*
 - 5' Plants lacking milky juice; corolla rose *Cycladenia*

Amsonia Walter Blue Star

Perennial herbs with milky juice. STEMS several, erect or ascending from a woody rootstock. LEAVES alternate, hairy or glabrous, ovate to linear, gradually to abruptly narrowing apically. INFLORESCENCE a terminal, compound cyme. FLOWERS: calyx green, the lobes equal, acuminate; corolla white, blue, or pinkish, salverform, the lobes spreading to reflexed; stamens included in the corolla tube, the anthers not connivent; ovules numerous. FRUIT terete or constricted between the seeds. SEEDS several, naked, corky, cylindrical or elliptic. --14 spp. in U.S. and n Mex.; 1 sp. in Japan. (for Dr. C. Amson). McLaughlin, S. P. 1982. Ann. Missouri Bot. Gard. 69:336-350.

1. Follicles markedly constricted between the seeds; seeds elliptic; corolla tube short, 7-12 mm long, distinctly constricted at the orifice *A. tomentosa*
- 1' Follicles not markedly constricted between the seeds; seeds cylindrical; corolla tube either longer, 16-45 mm, or not distinctly constricted at the orifice.
 2. Corolla tube long, 16-20 mm, widest near the top and distinctly constricted at the orifice; corolla lobes 10-15 mm long *A. grandiflora*
 - 2' Corolla less than 16 mm long, or, when longer than 15 mm, widest toward the middle and not distinctly constricted at the orifice; corolla lobes (except occasionally in *A. peeblesii*) less than 10 mm long.
 3. Seeds broad, typically 3-4 mm wide; stems pilose; corolla lobes 2-4 mm long
..... *A. kearneyana*

- 3' Seeds narrower, usually less than 2.5 mm broad; stems either glabrous or pubescent; corolla lobes mostly more than 4 mm long.
4. Lower leaves ovate, 14-30 mm broad; stems glabrous *A. jonesii*
- 4' Lower leaves linear to elliptic-lanceolate, 3-15 mm broad; stems glabrous or pubescent.
5. Stem much branched below the inflorescence, the latter barely surpassing the foliage; corolla tube 15-19 mm long; corolla lobes 5-12 mm long; stems glabrous *A. peeblesii*
- 5' Stem sparingly branched below the inflorescence, the latter well surpassing the foliage; corolla tube 10-15 mm long; corolla lobes 2-7 mm long; stems glabrous or pubescent *A. palmeri*

Amsonia grandiflora Alexander (large-flowered). --Plants 4-9 dm tall, glabrous. LEAVES linear-lanceolate to linear, the lower ones 5-10 cm long, 3-6 mm broad, the upper ones 6-9 cm long, 1-3 mm broad. FLOWERS: calyx lobes linear, 3-7 mm long; corolla tube 16-20 mm long, broadest near the apex, markedly constricted at the orifice, the lobes 10-15 mm long. FRUIT terete, 4-15 cm long. SEEDS cylindrical, corky, 8-11 mm long, 2-3 mm broad. --Rare in canyons in oak woodlands: Pima, Santa Cruz cos.; 1200-1350 m (3900-4500 ft); Mar-May; s AZ; n MEX.

Amsonia jonesii Woodson (for M. E. Jones). --Plants 15-50 cm tall; foliage glabrous. LEAVES ovate to lanceolate, the lower ones 3-7 cm long, 14-30 mm broad, the upper ones 2.5-4 cm long, 3-10 mm broad. FLOWERS: calyx lobes ovate to lanceolate, 1-4 mm long; corolla tube 6-10 mm long, broadest near the apex, slightly constricted at the orifice, the lobes 4-8 mm long. FRUIT terete, 1.5-9 cm long. SEEDS cylindrical, corky, 6-8 mm long, 2.0-2.5 mm broad. --Sandy sagebrush deserts and pinyon-juniper woodlands n of Colo. R.: Coconino, Mohave cos.; 1200-1600 m (4000-5200 ft); Apr-May; CO, UT.

Amsonia kearneyana Woodson (for T. H. Kearney). --Plants 4-9 dm tall, pilose. LEAVES lanceolate to linear-lanceolate, the lower ones 6-10 cm long, 11-17 mm broad, the upper ones 4-6 cm long, 3-8 mm broad. FLOWERS: calyx lobes subulate, 3-6 mm long; corolla tube 12-15 mm long, broadest below the apex, slightly constricted at the orifice, the lobes 2-4 mm long. FRUIT slightly constricted between the seeds, 3-10 cm long. SEEDS cylindrical, corky, 8-11 mm long, 3-4 mm broad. --Known only from two localities on the w side of the Baboquivari Mts., Pima Co., at 1100 m (3600 ft). The U.S. Fish & Wildlife Service, Endangered Species Office, has sponsored a project to establish a population from transplants on the e side of the Baboquivari Mts.

Amsonia palmeri A. Gray (for Edward Palmer). --Plants 3-8 dm tall, foliage glabrous or sparsely pubescent. LEAVES lanceolate to linear, the lower ones 3-9 cm long, 4-18 mm broad, the upper ones 3-7 cm long, 2-5 mm broad. FLOWERS: calyx lobes subulate, glabrous, ciliate along the margins, or densely pubescent, 2-7 mm long; corolla tube 8-15(-17) mm long, broadest below the apex, moderately constricted at the orifice, the lobes (2-)4-7 mm long. FRUIT terete, 2-13 cm long. SEEDS cylindrical, corky, 6-10 mm long, 1.0-2.5 mm broad. [*A. hirtella* Standl.]. --Mostly along watercourses in desert grasslands and mesquite scrublands: Cochise, Graham, Maricopa, Mohave, Pinal, Yavapai cos.; 750-1500 m (2500-5000 ft); Mar-May; se NM, w TX; n Mex. Plants previously assigned to *A. hirtella* are not consistently distinguishable from *A. palmeri* using either floral or vegetative characters. Plants from Mohave and Yavapai cos. are mostly glabrous; those from the central and southeast parts of the state usually occur in mixed populations of glabrous and hairy individuals.

Amsonia peeblesii Woodson (for R. H. Peebles). --Plants 4-9 dm tall, glabrous. LEAVES oblong-linear to linear, the lower ones 3-7 cm long, 4-9 mm wide, the upper ones 3-7 cm long, 1-2 mm wide. FLOWERS: calyx lobes ovate to linear, 2-7 mm long; corolla tube 13-19 mm long, broadest below the apex, only slightly constricted at the orifice, the lobes 5-10 mm long. FRUIT terete, 2-10 cm long. SEEDS cylindrical, corky, 8-11 mm long, 1.5-2.5 mm broad. --Sandy deserts: Apache, Coconino, Navajo cos.;

1200-1850 m (4000-6000 ft); May-Jul; endemic to n AZ.

Amsonia tomentosa Torr. & Frém. (woolly). --Plants 2-6 dm tall, glabrous or moderately to densely woolly. FLOWERS: calyx lobes linear, 2-9 mm long; corolla tube 7-12 mm long, broadest at the apex, markedly constricted at the orifice, the lobes 3-9 mm long. FRUIT distinctly constricted between the seeds, 2-8 cm long. SEEDS elliptic, corky, 8-21 mm long, 3-6 mm broad.

1. Lower leaves ovate, (8-)10-25 mm broad var. *tomentosa*
 1' Lower leaves oblong-lanceolate to linear-lanceolate, 3-13(-16) mm broad var. *stenophylla*

Var. *stenophylla* Kearney & Peebles (narrow-leaved). --Plants glabrous or woolly. LEAVES narrow, oblong- or linear-lanceolate to linear, the lower ones 2-6 cm long, mostly 3-10 mm broad, the upper ones 2-3 cm long, 1-3 mm broad. [*A. eastwoodiana* Rydb.]. The glabrous form of this plant was formerly known as *A. eastwoodiana*; seeds from a single follicle, however, can develop into either woolly or glabrous plants, and the two forms often occur together. --Sandy deserts: Coconino, Mohave Cos.; 450-1400 m (1500-4500 ft); Apr-Jun. s NM, w TX, s UT; n Mex.

Var. *tomentosa* (woolly). --Plants glabrous or woolly. LEAVES wide, ovate to lanceolate, the lower ones 3-5 cm long, 10-25 mm broad, the upper ones 2-4 cm long, 3-8 mm broad. [*A. brevifolia* A. Gray]. --Sandy deserts, Joshua-tree woodlands: Mohave, Yavapai cos.; 600-900 m (2000-3000 ft); Mar-May; CA, NV. The glabrous form of this variety was formerly known as *A. brevifolia*; as in the previous variety seeds from a single follicle produce both forms, and these almost always occur together.

Apocynum L. Dogbane, Indian Hemp

Perennial herbs with milky juice. STEMS erect from horizontal rootstocks. LEAVES opposite, hairy or glabrous, broadly ovate to linear. INFLORESCENCE cymose, terminal and axillary. FLOWERS small; calyx lobes obtuse to acuminate; corolla cylindrical to campanulate; stamens included, the anthers connivent and adherent to the stigma. FRUIT narrow, terete. SEEDS numerous, comose. --2 spp. in N. Amer. (Greek: *apo* = away from + *kyon* = dog). Woodson, R. E., Jr. 1930. Ann. Missouri Bot. Gard. 17:1-212. Anderson, E. 1936. Ann. Missouri Bot. Gard. 23:159-168.

This is a highly variable genus for which numerous sympatric, poorly-segregated species, subspecies, and varieties have been described. Anderson (1936) showed that the widespread *A. medium* consists of hybrids of *A. androsaemifolium* and *A. cannabinum* and later-generation segregates. This treatment follows recent floristic works in recognizing 2 broadly circumscribed, widespread species and a single more narrowly circumscribed hybrid.

1. Corollas 2-4 mm long; leaves generally spreading to ascending, largest ones mostly 60-130 mm long, 3.5 or more times as long as broad *A. cannabinum*
 1' Corollas 4-8 (-10) mm long; leaves generally spreading to drooping, largest ones mostly 40-60 (-80) mm long, less than 3.5 times as long as broad.
 2. Corollas 4 (-5) mm long, cylindrical to narrowly campanulate; leaves spreading, mostly 2-3.5 times as long as broad *A. x medium*
 2' Corollas 5-8 mm long, broadly campanulate; leaves (at least those along the main stem) drooping, 1.5-2 times as long as broad *A. androsaemifolium*

Apocynum androsaemifolium L. (leaves like *Androsaemum*). Spreading dogbane. --STEMS erect, 2-5 dm tall, dichotomously branched. LEAVES glabrous to sparsely hairy above, sparsely to densely hairy below, ovate to lanceolate, those along the main stem broader and drooping, larger ones 25-60(-75) mm long, 15-35(-40) mm broad, the petioles 1-5 mm long. FLOWERS: calyx lobes ovate to lanceolate, 1-3 mm long; corolla white, occasionally with pink to red veins, (4.5-)5-8 mm long, campanulate, the lobes spreading to reflexed. FRUIT 6-15 cm long. --Mostly in forests at higher elevations: Apache, Cochise, Coconino,

Gila, Graham, Greenlee, Navajo, Pima, Yavapai cos.; 1500-3050 m (5000-10000 ft); May-Sep; throughout the U.S., s Can. Plants referable to var. *pumilum* A. Gray have narrower corollas and erect follicles. However, those specimens from our area with these characters appear to be mostly immature plants. This doubtful variety therefore does not seem to occur in our area.

Apocynum cannabinum L. (hemp-like). Dogbane. --STEMS erect, 3-10 dm tall, branches mostly opposite. LEAVES glabrous or hairy, ascending to spreading, narrowly elliptic, lanceolate to linear, larger ones (50-)60-100(-130) mm long, 5-25(-60) mm broad, the petioles 0-5 mm long. FLOWERS: calyx lobes ovate to lanceolate, mostly 1-2 mm long; corollas white, 2-3.5(-4) mm long, urceolate to cylindrical, the lobes erect. FRUIT 8-20 cm long. [*A. suksdorfii* Greene, *A. sibiricum* Jacq.]. Moist places at low altitudes, oak woodlands and pine forests at middle altitudes: Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Navajo, Pima, Santa Cruz, Yavapai cos.; 450-2300 m (1500-7500 ft); May-Aug; throughout the U.S., s Can, n Mex.

Apocynum x medium Greene (intermediate). --STEMS erect, 2-6 dm tall, branching opposite or unequally-dichotomous. LEAVES glabrous or hairy, mostly spreading, narrowly elliptic to lanceolate, larger ones 50-80 mm long, 20-35 mm wide, the petioles 2-4 mm long. FLOWERS: calyx lobes mostly lanceolate, 1.5-3 mm long; corolla white, (3.5-)4(-5) mm long, cylindrical to narrowly campanulate, lobes erect to spreading. FRUIT 7-15 cm long. Roadsides and forests: Cochise, Coconino, Gila, Greenlee, Navajo, Pima cos; 1500-3050 m (5000-10000 ft); May-Aug; throughout the U.S., s Can. Intermediate between *A. androsaemifolium* and *A. cannabinum* in both floral and vegetative characters, this plant tends to occur in disturbed habitats.

Cycladenia Benth.

Perennial herbs, lacking milky juice. STEMS erect from a branched caudex. LEAVES opposite, ovate to suborbicular. INFLORESCENCE axillary. FLOWERS: calyx the lobes equal; corolla funnellform; stamens born near the base of the corolla tube, the anthers connivent and sagittate. FRUIT a pair of follicles. SEEDS comose at the apex. --1 sp. in AZ, CA, UT. (Greek: *kyklos* = ring + *aden* = gland, referring to a perigynous, nectariferous disk).

Cycladenia humilis Benth. (low-growing). --Plants 1-4 dm tall, glabrous and glaucous. LEAVES ovate to broadly obovate, 35-95 mm long, 20-65 mm wide. FLOWERS: pedicels 5-25 mm long; calyx lobes linear-lanceolate, pilose, 5-11 mm long; corolla rose purple, 18-28 mm long. FRUIT 5-10 cm long. Mohave Co. (?). The Arizona plant is var. *jonesii* (Eastw.) S.L. Welsh & N.D. Atwood, known in Arizona from a single collection made in May 1944 from clay slopes near Pipe Springs at 4800 ft (1450 m) (*W. P. Cottom 9346*, UT!) . This variety also occurs in Utah where it is rare; it appears to be an obligate gypsophile.

Haplophyton A. DC. Cockroach Plant, Hierba de la Cucaracha

Suffrutescent. LEAVES alternate. FLOWERS showy, solitary or paired in the upper leaf-axils; corolla salverform; stamens included in the corolla tube, the anthers not connivent. FOLLICLES terete. SEEDS comose. --3 spp. in sw U.S., Mex, Cuba (Greek: *haplo* = single + *phyton* = plant). The plant contains alkaloids that are insecticidal to cockroaches, flies, fleas, lice and mosquitoes.

Haplophyton crooksii (L.D. Benson) L.D. Benson (for D. M. Crooks). --STEMS 2-6 dm tall, branched, strigose. LEAVES short-petiolate, lanceolate, sparsely hirsute, 20-35 mm long, 6-12 mm wide. FLOWERS yellow; calyx lobes linear, hirsute, often unequal, 2-9 mm long; corolla tube 6-9 mm long, pubescent externally, the lobes ovate, 7-15 mm long. FOLLICLES 5-9 cm long. SEEDS black, noticeably ridged, tapering slightly at the ends, 6-8 mm long, whitish comose. --Rocky slopes in desert scrub and desert grassland: Cochise, Graham, Pima, Pinal, Santa Cruz cos.; 750-1600 m (2500-5200 ft); Mar-Oct; s NM, w TX; n Mex.

Macrosiphonia Muell. Arg.

Low, suffrutescent plants. LEAVES opposite, sessile or short-petiolate. FLOWERS axillary; corolla funnelform; stamens included in the corolla tube, the anthers connivent and cohering to the large stigma. SEEDS comose. --10 spp. in N. Amer. and S. Amer. (Latin: *macro* = long + *sipho* = tube). Woodson, R. E., Jr. 1933. Ann. Missouri Bot. Gard. 20:605-790.

Macrosiphonia brachysiphon (Torr.) A. Gray (short-tubed). --Plants 1-4 dm tall. STEMS puberulent. LEAVES puberulent, broadly ovate to elliptic, 15-30 mm long, 4-20 mm broad. FLOWERS white, showy, vespertine; calyx lobes linear-lanceolate, subequal, 3-7 mm long; corolla hairy externally, 35-75 mm long, the tube 10-25 mm long, the throat 10-25 mm long, the lobes ovate, 10-25 mm long; stamens borne at the base of the throat. FOLLICLES 5-13 cm long. SEEDS minutely reddish puberulent, flat, with the margins folded in forming a ventral groove, the tuft of hairs copper-colored. --Rocky slopes and plains in desert grassland, often on limestone: Cochise, Graham, Pima, Santa Cruz cos.; 1150-1750 m (3700-5800 ft); Jun-Aug; sw NM; n Mex.

Vinca L. Periwinkle

Erect or vining perennial herbs. LEAVES opposite. FLOWERS solitary, axillary, perfect; corolla funnelform; anthers not connivent. FRUIT terete. SEEDS naked. --5 spp. native to Eur., n Afr., w Asia (abbreviated from Pliny's *Vincapervinca*).

Vinca major L. (larger). --Trailing perennial. LEAVES petiolate, cordate, the blade 7 cm long, 2-5 cm wide, glabrous on the surface, occasionally ciliate on the margins and veins, the petiole 5-20 mm long, with a distinct pair of glands midway along the margins. FLOWERS blue or violet; calyx lobes ciliate, linear, 7-13 mm long; corolla tube 12-17 mm long, the lobes 10-18 mm long. --Moist, shaded canyons; naturalized in Oak Creek Canyon, Coconino Co., Madera Canyon, Pima and Santa Cruz cos., Prescott, Yavapai Co., at several stations in Cochise Co., and doubtless elsewhere, 1350-1850 m (4500-6000 ft); Mar-Nov; widely cultivated throughout the U.S. and often escaping.