



# Flora of North America

Buchnera (Orobanchaceae)

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X. BUCHNERA Linnaeus, Sp. Pl. 2: 630. 1753; Gen. Pl. ed. 5, 278. 1754 \* Bluehearts  
[For Andreas Elias von Büchner, 1701--1769, physician]

Bruce A. Sorrie

**Herbs**, biennial or perennial [annual]; hemiparasitic, caudex about as wide as stem, semiwoody. **Stems** erect, not succulent, glabrate or hispid-hirsute. **Leaves** basal and cauline or strictly cauline, opposite or subopposite, not fleshy; petiole absent or nearly so; blade margins entire to dentate. **Inflorescences** terminal, spikes; bracts present. **Pedicels** absent or present; bracteoles present. **Flowers**: sepals 5, connate most of length, calyx nearly radially symmetric, tubular, lobes narrowly triangular, (abaxial slightly longer than adaxial); petals 5, connate most of length, corolla purple to blue-purple (blue, violet, rosy, white), salverform (pilose within), abaxial lobes 3, adaxial lobes 2 (slightly smaller); stamens 4, adnate to corolla, subequal, filaments pilose; (anthers monothealous), staminode 0; ovary 2-locular, placentation axile; stigma short-cylindric. **Capsules** symmetric, dehiscence loculicidal. **Seeds** ca. 250, dark brown to blackish, cylindric-hexahedral, slightly broader at one end, not winged.  $x = 10$  or  $20$ .

Species ca. 100 (3 in the flora): North America, Mexico, West Indies, Central America, South America, Asia (Malesia), Africa, Australia.

In many publications, the honoree of the name *Buchnera* is given as Johann Gottfried Büchner (1695--1749), German botanist. However, Linnaeus (1738) explicitly stated that the honoree is A. E. Büchner. Linnaeus omitted this information in 1753 and 1754, thus perhaps opening the door to erroneous etymology.

SELECTED REFERENCE Philcox, D. 1966. Revision of the New World species of *Buchnera* L. (Scrophulariaceae). Kew Bull. 18: 275--315.

- 1. Leaves linear to linear-lanceolate, not reduced distally; calyx tube prominently 10-nerved ..... 1. *Buchnera obliqua*
- 1. Larger leaves narrowly ovate to lanceolate or narrowly oblanceolate, much reduced distally; calyx tube obscurely 10-nerved.
  - 2. Largest leaves narrowly ovate, major veins 3, minor veins (0--2), apex acute, margins irregularly dentate, teeth mostly 2--3 mm; corolla lobes 5--8 mm; calyces 6--8 mm ..... 2. *Buchnera americana*
  - 2. Largest leaves narrowly oblanceolate to lanceolate(--broadly linear), major veins 1, minor veins (0--2), apex obtuse or rounded, margins entire to crenate, teeth 0.5--1.5 mm; corolla lobes 2--5 mm; calyces 4.5--5.5 mm ..... 3. *Buchnera floridana*

1. ***Buchnera obliqua*** Bentham in A. P. de Candolle and A. L. P. de Candolle, Prodr. 10: 498. 1846

*Buchnera pilosa* Bentham var. *arizonica* A. Gray; *B. arizonica* (A. Gray) Pennell

**Perennials**; not blackening upon drying. **Stems** simple or branched distal to middle, 2--6 dm, spreading- or ascending-hispid, hairs pustular-based. **Leaves** not reduced distally, obscurely 3-nerved, linear to linear-lanceolate, 20--50 x 2--6 mm, margins entire to irregularly dentate, apex acute, short-hispid on both surfaces, teeth 0.5--2 mm. **Spikes**: bracts 1, ovate-lanceolate, 5--9 mm, apex acuminate. **Pedicels** ascending, 0--1 mm; bracteoles 2, linear-subulate, 5--9 mm. **Flowers**: calyx 7--9 mm, tube prominently 10-nerved, ascending-hispid, hairs pustular-based; corolla 10--15 mm, lobes 3--5 mm, pubescent externally; stamens included; style included, 2--3 mm, glabrous. **Capsules** blackish, ovoid, 4.5--6 mm, glabrous. **Seeds** 0.6--0.8 mm.

Flowering Aug--Sep. Streamsides in oak woodlands; 1100--2000 m; Ariz.; Mexico; Central America (Guatemala, Honduras); South America (Ecuador).

*Buchnera obliqua* was first collected in the flora area in the Huachuca Mountains in August 1882; it was next collected in 1993.

2. *Buchnera americana* Linnaeus, Sp. Pl. 2: 630. 1753 \* American bluehearts E F

**Biennials**; blackening upon drying. **Stems** simple or few-branched distally, 3--9 dm, spreading-hirsute proximally, appressed-hirsute or glabrate distally. **Leaves** much reduced distally, larger leaves with 3 major veins and (0--2) minor veins, narrowly ovate to lanceolate, 25--65 x 5--18 mm, margins irregularly dentate, apex acute, short-hispid on both surfaces, teeth 2--3 mm. **Spikes**: bracts 1, ovate-lanceolate, 4--6 mm, apex acuminate. **Pedicels** ascending, 1--1.5 mm; bracteoles 2, linear-subulate, 2--3 mm. **Flowers**: calyx 6--8 mm, tube obscurely 10-nerved, ascending- to appressed-hispid, hairs often pustular-based; corolla 15--21 mm, glabrate externally, pilose internally, lobes 5--8 mm, stamens included; style included, 1--2 mm, glabrous. **Capsules** blackish, ovoid, 6--8 mm, glabrate. **Seeds** 0.6--0.8 mm.  $2n = 40$ .

Flowering May--Oct. Moist to dry prairies, prairie openings, barrens, glades, pine savannas, interdune pannes; 20--400 m; Ont.; Ala., Ark., Del., D.C., Fla., Ga., Ill., Ind., Kans., Ky., La., Md., Mich., Miss., Mo., N.J., N.Y., N.C., Ohio, Okla., Pa., S.C., Tenn., Tex., Va.

*Buchnera americana* has declined significantly in the past century and now is of conservation concern in most states east of the Mississippi River and in Ontario; its current stronghold is in Kansas, Missouri, and Oklahoma. In greenhouse studies, *B. americana* and *B. floridana* parasitized a variety of grass and tree species (*Celtis*, *Fraxinus*, *Liquidambar*, *Liriodendron*, *Nyssa*, *Paspalum*, *Pinus*, *Quercus*); natural hosts remain largely undocumented (L. J. Musselman and W. F. Mann 1977, 1978). This species is nearly restricted to older geological regions away from the coastal plain, primarily in circumneutral to high pH soils, but there are concentrations of records in eastern Texas-central Louisiana, southeastern Louisiana-southern Mississippi, and a few records in northwestern Florida, all apparently in acidic soils. There appears to be no morphological intergradation with *B. floridana* in this region, and the occurrence of *B. americana* there is puzzling.

3. *Buchnera floridana* Gandoger, Bull. Soc. Bot. France 66: 217. 1919 \* Florida bluehearts

*Buchnera breviflora* Pennell

**Biennials**; blackening upon drying. **Stems** simple or few-branched distally, 2--8 dm, appressed- to spreading-pilose proximally, appressed-pubescent or glabrous distally. **Leaves** much reduced distally, larger leaves with 1 major vein and with (0--2) minor veins, narrowly elliptical to oblanceolate to broadly linear, 2--6 x 3--12 mm, margins entire to crenate, apex obtuse, rounded, or occasionally acute, glabrate or appressed-pilose on both surfaces, teeth 0.5--1.5 mm. **Spikes**: bracts 1, ovate-lanceolate, 1.5--4 mm, apex acuminate. **Pedicels** ascending, 0.5--1 mm; bracteoles 2, linear-subulate, 1--2 mm. **Flowers**: calyx 4.5--5.5 mm, tube obscurely 10-nerved, ascending- to appressed-hispid, hairs often pustular-based; corolla 10--16 mm, glabrate externally, pilose internally, lobes 2--5 mm; stamens included; style included, 1--2 mm, glabrous. **Capsules** blackish, ovoid, 4.5--6.5 mm, glabrate. **Seeds** 0.5--0.7 mm.

Flowering May--Oct. Moist pine savannas, flatwoods, streamhead ecotones, seepage slopes, pitcher-plant bogs; 0--150 m; Ala., Ark., Fla., Ga., La., Miss., N.C., S.C., Tex.; Mexico (Yucatan); West Indies (Bahamas, Cuba, Dominican Republic, Jamaica); Central America (Belize).

*Buchnera floridana* is mostly restricted to the Coastal Plain, occurring primarily in fire-maintained, pine-graminoid ecosystems in strongly acidic soils. Collections also have been made from higher pH soils of chalk prairies in Alabama and Mississippi, and limestone substrates in Florida and Texas; in the Caribbean it regularly occurs in limestone soils. The situation in Texas is unusual in that *B. floridana* occurs far inland as well as on the Coastal Plain; the great majority of Texas specimens of *Buchnera* belong to *B. floridana*, while *B. americana* is restricted to a few counties along the Red River and to five counties in the pinelands of eastern Texas.

Many specimens of *Buchnera floridana* from southern Florida and the Keys have slender leaves and reduced pubescence on the calyx, typical of *B. longifolia* Kunth (= *B. elongata* Swartz; both names have been applied to Florida plants) of the Caribbean, Central America, and South America, but they lack the glabrous corollas, long calyces, and large inflorescence bracts of *B. longifolia*. The presence of one or more *B. longifolia* characters in southern Florida plants may be the result of past contact between the two species, but there is no evidence that the two come into contact in Florida at present.