

Simple key to living *Abronia* and *Tripterocalyx*

Draft: 8/2020, Eric LoPresti. Very much a work in progress!

Please send any/all comments to lopresti.eric@gmail.com.

I intend this to be more of a field/photograph key and thus rely on some characters (e.g. floral color) not always obvious in specimens, though I have tried to limit these as much as possible. Most species are positively identifiable to species solely with fruit morphology; however, even without mature fruit, fruit morphology may still be deduced by shape of base of perianth or with fruit coat attached, usually belowground, to young seedlings.

1.

(a) Fruit with thin, fragile, membranous wings, rarely no wings, (left photo, top row) fruit oval in profile, inflorescences maturing from one side to the other (left photo, lower row), never glandular, often sparse stiff bristly hairs:

(2) *Tripterocalyx*

(b) Fruit with papery or hard wings of various shapes, or no wings, (right three photos top row) inflorescences maturing outside to inside (right photo, lower row), often glandular, rarely stiff bristly hairs:

(5) *Abronia*



2. Most fruit two-winged, flat, pink flowers, most with four corolla lobes, NV/CA:
Tripterocalyx crux-maltae

(b) Most fruit with more than two-wings, not flat, many flowers five-lobed or greatly reduced

(3)

3. (a) Flowers large (corolla lobes >4mm), white or pink, often closed in daytime

Tripterocalyx carneus var. *carneus*

(b) Flowers small, white or greenish, fruit occasionally developing with unopened (cleistogamous) flowers

(4)

4. (a) Fruit with spongy body, sandy areas, sometimes dunes, in sagebrush steppe and plains, central Canada to New Mexico.

Tripterocalyx micrantha

(b) Fruit with hard, reticular body, sandy areas, especially dunes, in deserts. Southern Utah, Arizona, Nevada, & California (rarely)

Tripterocalyx carneus var. *pedunculatus*

5. (a) Leaves and stems succulent (>4 mm thick), green or whitish (not red); stems arising from a common, often deeply buried taproot, plants often covering very large areas, stems and leaves viscid, often covered in entrapped sand. Coastal beach and dunes of BC, WA, OR, CA, and MX.

(6)

(b) Not as above.

(7)

6. (a) Leaves and stems silvery glandular pubescent, flowers deep red magenta, inflorescence very tight with flowers all facing ~vertical. Mature fruits viscid with inflated body. Monterey Co., CA (rarely N to Sonoma Co.), south through Baja and on both coasts of Gulf of California.

Abronia maritima

Commented [EL1]: Guess based on my common garden and field observations, but I have not seen or grown *carneus* var. *pedunculatus*, though have looked at sheets.

(b) Very large taproot. Leaves and stems glandular pubescent, but without silvery pubescence. Flowers yellow in a half-spherical inflorescence. Fruits not viscid when mature, fruit body not strongly inflated. San Luis Obispo Co., CA, north to BC.

Abronia latifolia

(c) Not as above, or with conflicting characteristics.

various hybrids of *A. latifolia*, *umbellata*, *maritima*, *gracilis*, and *villosa*

7. (a) All fruits completely nonwinged, with smooth surfaces (not with a wing wrapped tightly on fruit). Either high mountain Tulare Co., CA or clay substrates in E UT/W CO.

(8)

(b) Fruits with wings, if nonwinged fruit present, winged fruit present as well. Number and structure of wings varied, either held perpendicular to body of fruit or wrapped around body of fruit, wings with inflated pads or thin.

(9)

8. (a) Plant completely prostrate with small spatulate leaves on pedicels usually longer than the leaf. Flowers purple, <5 per inflorescence. Stems, leaves, and fruit very viscid. Only Tulare Co., CA

Abronia alpina

(b) Leaves and stems entirely glabrous, plant generally erect, flowers white, clay soil, E UT & W CO.

Abronia glabrifolia

9. (a) Outer fruit in infructescence (pictured below) coin-shaped: flat, two-winged. Inner fruit usually 0, but occ. 1- or 3-winged. Flowers white to pink. Plant usually with glandular and nonglandular hairs. CA coast range dunes and roadsides & CA/NV Mojave desert dunes and roadsides.

Abronia pogonantha

(b) Not as above.

(10)



Commented [EL2]: I worry people will choose this for turbinata and ammophila.

10. (a) Cauline leaves absent or rare (11)

(b) Cauline leaves present and obvious (13)

11. (a) Leaves very long and narrow, pedicels short. Occasionally somewhat caulescent. Flowers white. Gypsum soils, NM.

Abronia bigelovii

(b) Not as above. (12)

12. (a) Leaves spatulate, pedicel length > leaf length, leaves usually glandular, but occasionally bristly. Flowers white or pink. Fruit long-winged, but usually without inflated pads. Varied substrates: CA, NV, AZ, NM, UT, CO.

Abronia nana

(b) Leaves slightly or nonglandular. Leaf length > pedicel length. Fruit sometimes with folded wings, sometimes with inflated pads, occasionally rhizomatous, sand or gravel: N UT, WY (???)

Abronia elliptica, in part

13. (a) Wing(s), often single, usually folded against fruit body, occasionally small and reduced wings. Fruits not usually beaked. Leaves spatulate usually with White or light-pink flowered. CA, E OR, and S NV.

Abronia turbinata

(b) Not with all characters above. If fruit has folded wings, usually with distinctive beak at top. (14)

14. (a) Fruit usually with inflated "pads" on the tops of wings (pictured below), not strongly beaked. (15)

(b) Fruit lacking pads on wings, usually strongly beaked (18)

Commented [EL3]: *Abronia elliptica* var. *harrisii* may come out here as well; Stanley Welsh (who doesn't believe *elliptica* is a species, so I have no idea why the hell he made a variety!) described it for what I imagine, but have not confirmed by seeing specimens, is actually *A. bigelovii*. It was collected not too far from known *bigelovii* sites, on gypsum, and nobody has ever deposited a specimen of it in decades since the description.

Commented [EL4]: My collection of *A. "elliptica"* from Fontenelle, WY was largely acauline, but it was very obviously not *nana*. And from the phylogeny is probably not *elliptica* in a strict sense. So *elliptica* will have to come out in multiple parts.



15. (a) Flowers always white, always perennial, usually nonglandular. E WA, E OR, ID, WY, UT, CO, N NM, N AZ.

(16)

(b) Flowers light-pink to deep pink, sometimes annual, usually glandular. C/S NM, E AZ, W TX

(17)

16. (a) Usually with leaves more than double as long as wide; never with thin rhizomes. In sand. WA/OR/ID and W WY (?).

Abronia mellifera

(b) Usually with leaves not much longer than wide, if so, skinnier leaves usually cauline. In sand, clay, gravel, or disturbed areas. Rarely with rhizomes. UT, AZ, NV, WY, CO.

Abronia elliptica

17. (a) Long, narrow, strap-like, glabrous leaves. Gypsum soils. Always perennial. Southern NM, W TX.

Abronia nealleyi

(b) Dunes, riverbanks, or gypsum dunes (e.g. White Sands, NM and areas in W TX). Sometimes annual in AZ. C/S NM, E AZ

Abronia angustifolia

18. (a) Pink flowered, with papery fruit, C/SE TX.

(19)

(b) Not as above, if pink-flowered in TX/NM, fruit tough and strongly beaked

(20)

19. (a) Fruit with small papery thin wings, >50 pink flowers per inflorescence. SE TX.

Abronia ameliae

(b) Fruit with large wings, <50 flowers per inflorescence. C TX

Abronia macrocarpa

20. (a) Always white-flowered, prostrate, sticky, Yellowstone National Park, WY.

Abronia ammophila

(b) Not as above

(21)

Commented [EL5]: Guessing here, but seems unlikely.

Commented [EL6]: Fruit of the populations around Daniel, WY are indistinguishable from elliptica. In fact, they are elliptica per genetics, though I'm not sure what to make of that! The structure of both of these plants is so variable: sometimes erect, sometimes glandular, sometimes prostrate, etc... Need to collect more out here.

Commented [EL7]: This couplet needs work.

Commented [EL8]: This is certainly two distinct taxa; the perennial gypsum with highly glandular foliage, narrow leaves, light flowers which close during day, and the annual form in AZ which has none of those characters.

Commented [EL9]: To keep the few pink-flowered *fragrans* pops out of the following couplet.

The 'nealleyi' I collected in E NM would key out here, too, which is more accurate since it is close to *fragrans*. Don't know what name will end up being on that stuff anyway, probably best left as *fragrans* for now.

21. (a) Plants coastal, annual or perennial, without deeply lobed leaves. BC, WA, OR, CA, MX. (22)

(b) Plants not as above. If coastal, in Baja California, MX and with deeply lobed leaves. (23)

22. (a) Plants with thin stems generally reddish, stems and leaves generally nonglandular, flowers deep pink or purple, flowers large (usually >1 cm) usually with >15 flowers per inflorescence. Most fruits empty. South of San Francisco Bay.

Abronia umbellata var. *umbellata*

(b) Stems usually greenish, stems and leaves glandular, flowers light pink, small, usually with < 15 flowers per inflorescence. Most fruits with seed. North of San Francisco Bay.

Abronia umbellata var. *breviflora*

(c) Some combo of: thick stems with short glandular trichomes, stems greenish or whitish south of San Francisco Bay, +/- glandular fruit, fruit without thin wings, leaves very succulent, whitish flowers, ball-shaped inflorescences, other baffling characters

Hybrids of *A. umbellata*, *latifolia*, *villosa*, *pogonantha*, *maritima*

23. (a) Leaves deeply lobed; usually coastal. central Baja California, MX.

Abronia gracilis

(b) Leaves not deeply lobed, MX, CA, AZ, NV.

(24)

24. (a) Desert floor. usually in dunes, usually with white centers to flowers, tube usually <15mm. Peduncles usually short. Flowers usually with white centers and packed tightly into inflorescence. desert CA, NV, AZ, MX, apparently naturalized near Santa Fe, NM (???)

Abronia villosa var. *villosa*

(b) California Coast Range. Not on desert floor, in chaparral and roadsides. Peduncles often quite long (>6 cm, rarely >10cm). Inflorescences loose, flowers often not touching. Floral diameter generally >12 mm, tube usually > 15 mm. Often without white center to flower. Peduncles usually quite long. Riverside, San Diego Cos. CA

Abronia villosa var. *aurita*

Commented [EL10]: That's a guess... I don't really know what to make of this taxa and have not grown/seen it. Specimens don't look any different than *umbellata* or *villosa* to me besides the deep lobes, so I don't annotate them.

Thanks to Thanks to Tom Chester, Bruce Watts & Patrick Dockens for comments.