

Key updated to include newly published taxon *A. abietinum* subsp. *grandae* in synonymy of *A. abietinum*. No key provided in publication. Included in synonymy here so that users are aware of the taxon if they choose to recognize infraspecific taxa.

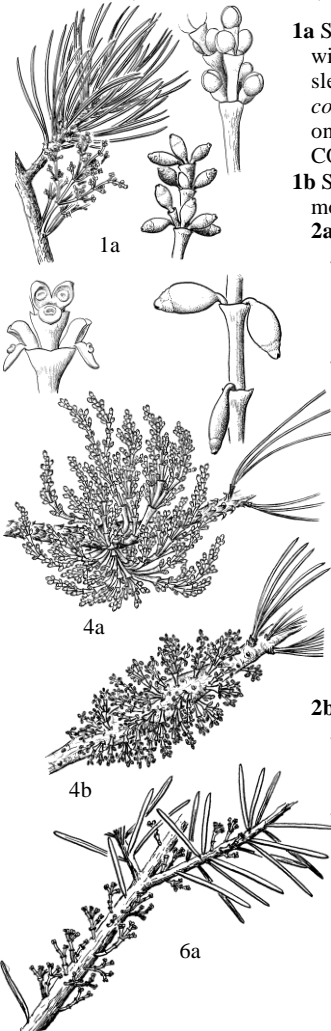
References:

Kenaley, S.C. 2020. New subspecies of fir dwarf mistletoe (*Arceuthobium abietinum*: Viscaceae) from the western United States and Mexico. *Journal of the Botanical Research Institute of Texas*. 14(1): 27–45. <https://doi.org/10.17348/jbrit.v14.i1.894>.

Arceuthobium M. Bieb. Dwarf Mistletoe

Pls ♀, ♂; fls opp or whorled at st nodes, yellowish to greenish; ♂ fls with (2–)3–4(–7), ± fleshy tepals, each tepal with a sessile, circular, 1-celled anther in center; ♀ fls with 2 persistent tepals adnate to ovary; ovary inferior, 1-locular; fr 1(2)-seeded, ovoid, bicolored, ped; seed explosively released, mucilaginous, sticky; small, greenish to yellowish or reddish, glab subshrubs, holoparasitic on conif brs; lvs scalelike, opp-connate. (Gr *arkeuthos*, juniper, and *bios*, life, some spp. parasitic on juniper). (*Razoumfskya*).

Taxonomy remains disputed, with spp. 3 and 5–7 weakly defined; Nickrent (2012) treats these as subsp. of *A. campylopodum* while Mathiasen and Kenaley (2016) argue for their recognition as spp. Two taxa included in the 1st ed. do not occur in our area: *A. campylopodum* Engelm. f. *blumeri* (A. Nelson) L.S. Gill (= *A. b.*) and f. *microcarpum* (Engelm.) L.S. Gill (= *A. m.*). Most spp. show high host-specificity; however, they may occ parasitize other conif spp. growing adj to the primary or secondary hosts. Primary and secondary host trees listed below are specific to our area, and most spp. are keyed by common secondary hosts as well as primary hosts. For identification, note fresh st color, host tree sp., and adj parasitized tree spp.



1a Secondary brs of sts in part whorled and 3+ per node; fls often 3+ per node; ♂ fl buds with tepals scarcely keeled; frs 3.5–4.5 mm; sts mostly 5–9 cm, lower internodes slender, mostly 7–15 × as long as wide; fresh pls yellow-green to olive-green; on *Pinus contorta* vars. *latifolia* and *murrayana*, rarely on other adj *Pinus* spp. and *Picea*, not on *P. contorta* var. *contorta*; in and e Cas, n BC to Ont, s to CA, and in RM to UT and CO; Am d. **1** *A. americanum* Nutt. ex Engelm.

1b Secondary brs of sts mostly opp, or brs 3+ but all lying in same plane and fanlike; fls mostly 2 per node; ♂ fl buds with lateral tepals strongly keeled (except occ no 4)

2a Pls parasitic primarily on *Pinus*

3a Pls parasitic primarily on *Pinus contorta* var. *contorta*, rarely on adj *P. monticola* or *Tsuga heterophylla*; sts 3–11 cm, greenish-brown to yellow-green in life; w Cas, in sw BC and nw WA, gen within a few km of saltwater (see lead 9b, subsp. *contortae*) **7** *A. tsugense* (Rosend.) G.N. Jones

3b Pls parasitic on other *Pinus* spp., not found w Cas in WA and BC

4a Sts (4–)7–25 cm, (2–)3–6 mm wide at base, gen forming discrete clumps on host brs; frs 4–7 mm; lower st internodes (3–)5–10 × as long as wide; fresh pls yellow-brown to orange-brown or olive-green; primarily on *Pinus ponderosa*, occ on adj *P. contorta* vars. *latifolia* and *murrayana* and rarely on *P. lambertiana*, not known on *Tsuga* or *Larix*; e WA s, on both sides Cas in OR, to Baja Cal, e to n and c ID; w d. **2** *A. campylopodum* Engelm.

4b Sts 1–3(–5) cm, 1–2(–3.5) mm wide at base, often ∞ and densely packed around lengths of host brs; frs 2.5–4.5 mm; lower st internodes mostly 2–6 × as long as wide; fresh pls yellow- to orange-green; primarily on *Pinus albicaulis* (also on *P. flexilis* outside our area), rarely on adj *Tsuga mertensiana* in OR; e ID and sw MT s to CA and CO, disjunct in c Cas of OR; limber pine d. (*A. campylopodum* f. *cy.*)

3 *A. cyanocarpum* (A. Nelson ex Rydb.) J.M. Coult. & A. Nelson

2b Pls parasitic primarily on *Abies*, *Larix*, *Pseudotsuga*, and *Tsuga*

5a Sts 1–3 cm, gen ∞ and densely packed around lengths of host brs, yellow- to orange-green; on *Tsuga mertensiana* adj to *Pinus albicaulis* in OR Cas (see lead 4b) **3** *A. cyanocarpum* (A. Nelson ex Rydb.) J.M. Coult. & A. Nelson

5b Sts either > 3 cm, or forming discrete clumps on host brs, or pls not on *Tsuga mertensiana*; pl color and distribution various

6a Sts 0.5–2(–3) cm, mostly 1–1.5 mm wide at base and few-br, scattered along lengths of host brs among needles; frs olive-green, 3.5–4.5 mm; pls olive-green in life; primarily on *Pseudotsuga menziesii*, rarely on adj *Abies* and *Picea*; s BC to n CA, in and e Cas in our area, w to ID and w MT, and s in RM to Mex; Douglas fir d. **4** *A. douglasii* Engelm.

6b Sts (2–)3–20 cm, gen > 1.5 mm wide at base and often much-br, gen forming discrete clumps on host brs; primarily on *Abies*, *Larix*, and *Tsuga*

7a Pls parasitic primarily on *Abies*

8a Fresh pls light yellow to yellow-green, 5–20 cm (ave > 9 cm); fls ca same color as the subtending yellowish bracts; frs 3.5–6 mm (ave 5 mm); primarily on *Abies grandis* and *A. concolor* in our area, rarely on adj *Pinus* spp. in OR Cas; Cas of s WA s, in Cas and coast ranges, to CA, e in s NV to UT and AZ, also in n Mex; white fir d. (*A. a. f. specialis concoloris*, *A. a. subsp. grandae*, *A. campylopodum f. a.*)

5 ***A. abietinum*** Engelm. ex Munz

8b Fresh pls yellow-green to brownish-green or maroon-tinged, 2–9(–13) cm; fls gen lighter than the subtending, gen maroon bracts; frs 3.5–5.5 mm (ave 4.5 mm); primarily on *Abies amabilis*, *A. procera*, and occ adj *A. grandis*; widespread in and w Cas (see lead 9b, subsp. *amabilae* and occ subsp. *tsugense*)

7 ***A. tsugense*** (Rosend.) G.N. Jones

7b Pls parasitic primarily on *Larix* or *Tsuga*

9a Sts usually deep purplish to maroon in life, occ greenish-brown, 2–4(–7) cm; primarily on *Larix occidentalis* and *Tsuga mertensiana*, occ on adj *Pinus contorta*, *P. ponderosa*, and *Abies lasiocarpa*, not on *T. heterophylla*; sc BC s, in and e Cas, to c OR, e to c ID and w MT; larch d. (*A. campylopodum f. l.*)

6 ***A. laricis*** (M.E. Jones) H. St. John

9b Sts yellow-green to green-brown in life, occ maroon-tinged, 2–9(–13) cm; primarily on *Tsuga heterophylla* and *Abies*, if on *Tsuga mertensiana* then restricted in our area to OR Cas where often also parasitizing adj *Abies*; in and w Cas, se AK s to WA, OR, and CA; hemlock d. (*A. campylopodum f. t.*); 4 subspp.

7 ***A. tsugense*** (Rosend.) G.N. Jones

a1 Pls parasitic primarily on *Pinus contorta* subsp. *contorta*, occ also on adj *Tsuga heterophylla*, rarely on adj *Pinus monticola*; sts 3–11 cm; around straight of Georgia, BC, and on Orcas Island, WA, gen within a few km of saltwater

subsp. ***contortae*** Wass & Mathiasen

a2 Pls parasitic primarily on *Abies* or *Tsuga*

b1 Pls parasitic primarily on *Tsuga mertensiana*, rarely on adj *Pinus monticola*, not on *T. heterophylla*; sts mostly 2–6 cm; s Cas, from Lane Co, OR to c CA

subsp. ***mertensianae*** Hawksw. & Nickrent

b2 Pls parasitic primarily on *Tsuga heterophylla* and *Abies* spp., or on *T. mertensiana* adj to *Abies* in n and c OR Cas; sts 3–9(–13) cm

c1 Pls parasitic primarily on *Abies amabilis*, *A. procera*, and adj *Tsuga mertensiana*, occ on *T. heterophylla*, rarely on *A. grandis* and *Pinus monticola*; Mt Hood s, in Cas, to c OR, and vic of Mary's Peak in the Coast Range

subsp. ***amabilae*** Mathiasen & C.M. Daugherty

c2 Pls parasitic primarily on *Tsuga heterophylla*, occ on adj *Abies* spp. and *Pinus contorta* var. *latifolia*, very rarely on *P. c. var. c.*, *P. monticola*, *Picea* spp., and *Pseudotsuga menziesii*, not on *Larix*, not on *Tsuga mertensiana* in our area; range of sp.

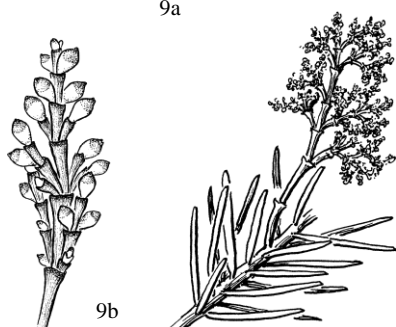
subsp. ***tsugense***



8a



9a



9b