

A RE-EVALUATION OF A GREEN-FLOWERED ASARUM (ARISTOLOCHIACEAE) FROM SOUTHERN OREGON

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Lu, Karen L. and Michael R. Mesler (Department of Biological Sciences, Humboldt State University, Arcata, CA 95521). A re-evaluation of a green-flowered *Asarum* (Aristolochiaceae) from southern Oregon. *Brittonia* 35: 331-334. 1983.— A green-flowered wild ginger from southern Oregon, previously named *Asarum caudatum* Lindl. var. *viridiflorum* Peck, is recognized as an independent species, *A. wagneri* Lu & Mesler, illustrated and discussed.

Asarum wagneri Lu & Mesler, nom. & stat. nov. (Fig. 1)

A. caudatum Lindl. var. *viridiflorum* Peck, Proc. Biol. Soc. Wash. 47: 185. 1934, (non *A. viridiflorum* Regel, Ind. Sem. Hort. Petrop. 83. 1869). TYPE: UNITED STATES. OREGON: Klamath Co., N end of Lake-of-the-Woods, Peck 16579 (LECTOTYPE here designated: OSC!).

Low, rhizomatous, aromatic perennial herb; roots fleshy, slender, arising along the length of a rhizome ca 2.5-3.0 mm diam, growth between first leaves of successive years 5-21 mm; bracts 3; leaves deciduous, 1 pair per shoot per year, alternate, pale green to darker yellow-green to blue-green, the blade broadly reniform to cordate-reniform, at apex usually obtuse (broadly acute to almost flat), at base cordate often with broad, open sinus, 4-11 cm wide at widest point, 3-8 cm long to insertion of petiole, length/width ratio 0.68 (0.50-0.95), glabrous or with scattered hairs along veins above, sparsely pubescent below, the margin ciliate, sometimes gently undulate, especially near apex; petiole 3-15 cm long with scattered long, white hairs; flowers solitary, terminal, with a faint foul odor, erect to slightly inclined; sepals 3, the lower segments contiguous proximally and forming a subglobose, rectangular-urceolate to urceolate calyx-tube, 6-11 mm long, 8-13 mm wide, light green without, white to light green within, each with a red-maroon band along the top and sides and occasionally a red-maroon stripe down the center, sparsely to moderately villous without, densely puberulent within with short, maroon-tipped hairs; calyx-lobes white to pale green without, typically yellow-green (green-maroon) and often with a maroon band at the base within, 8-20 mm long (ave. = 14.5 mm), 6-10 mm wide at the base (ave. = 7.7 mm), spreading, bent through $\pm 90^\circ$ near middle, the lower segment triangular (deltate to narrowly triangular) sometimes flared at the base, the upper one linear-triangular, marginally revolute, sparsely villous to villous dorsally with scattered white hairs, densely covered ventrally with straight, white, maroon-tipped hairs; stamens 12 in two whorls, the inner longer, and 1-3 additional staminodes opposite stamens of the inner whorl in about half of the flowers examined, filaments red-maroon, anthers dehiscent extrorsely, connective surpassing anther, bluntly triangular; inner stamens 2.5-5.0 mm long (ave. = 4.1), filaments 1.25-2.5 mm long, anthers 1.0-2.0 mm long, connective 0.3-1.0 mm long, outer stamens 2.25-5.0 mm long (ave. = 3.3), filaments 1.0-2.0 mm long, anthers 1.0-1.5 mm long, connective 0.25-1.0 mm long; pollen spherical, 43-55 μm in diam; style white or light green with few to many red spots or entirely red-maroon, 2.0-4.0 mm long, 1.0-2.5 mm wide, subtruncate to deeply lobed between stigmas; stigmas 6, dark maroon, elliptic to narrowly elliptic, lateral or extending over the apex of the style lobe, 0.5-1.25 mm long, 0.2-0.5 mm wide; ovary usually more than half inferior (50-95%), light green-white, sparsely to densely villous, at apex maroon

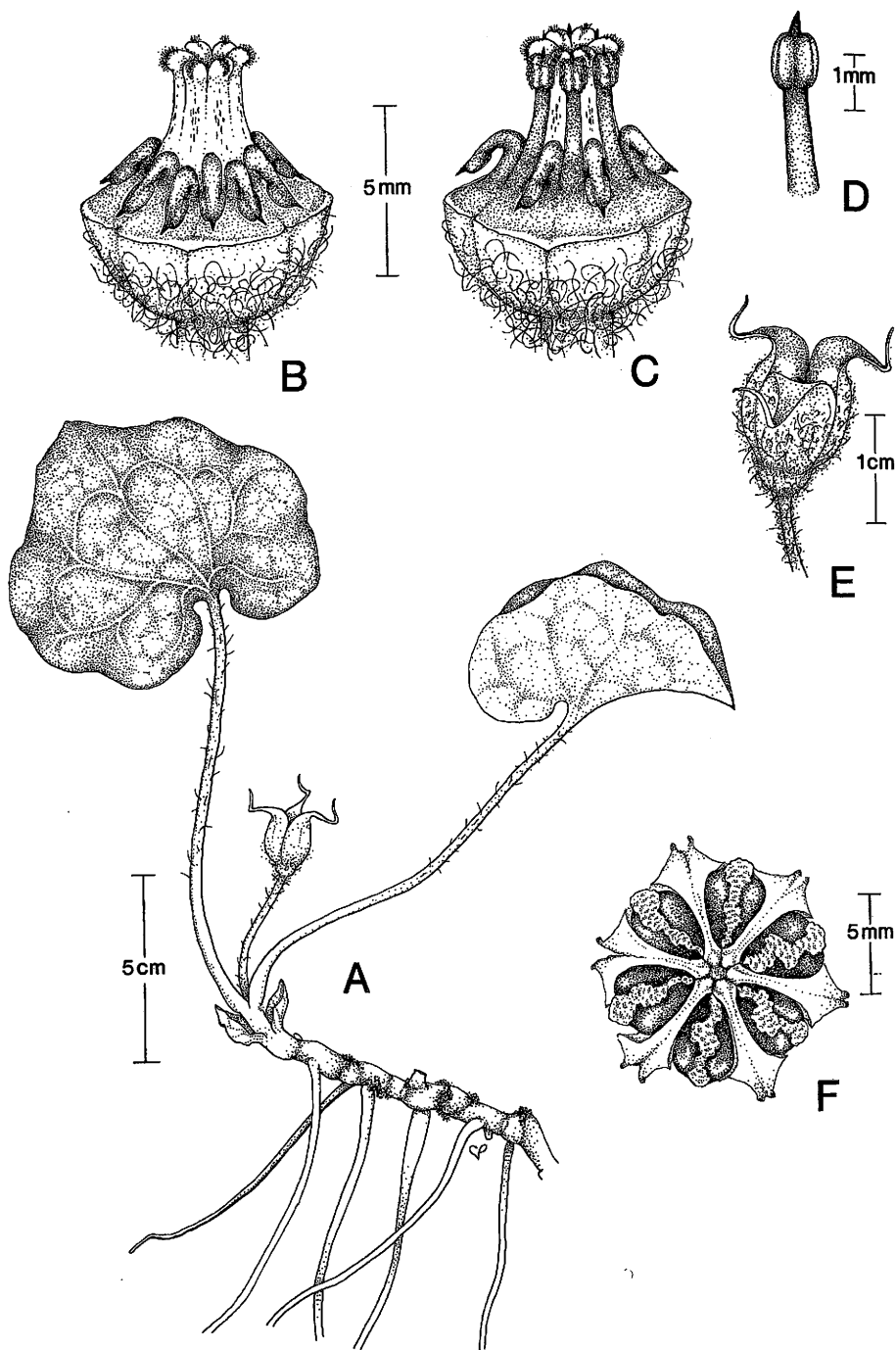


FIG. 1. *Asarum wagneri*. A. Habit. B. Flower, female stage, all twelve stamens recurved (sepals removed). C. Flower, early male stage, six stamens erect, anthers dehiscent (sepals removed). D. Stamen. E. Flower. F. Dehiscent capsule (top view, sepals removed). Drawn from fresh specimens.

to base of stamens or style; locules 6, placentation axile; fruit a loculicidal capsule; ovules 11–36 (45); seeds dark brown, widely cuneate, 4.0–4.5 mm long, 2.0–3.0 mm wide; funiculus fleshy, forming a prominent aril almost as long as seed and slightly narrower.

Other specimens examined: OREGON. Jackson Co., Mt. McLoughlin. 5.5 mi W of Fourmile Lake Rd (350) via Mt. McLoughlin Trail, $\frac{1}{2}$ mi S of Rd 3361, 3 mi N of Hwy 140, 31.5 mi W of Klamath Falls, T36S, R4E, S13, 14, *Crosby* 929 (OSC), *Lu & Mesler* 792, 801 (HSC); Beaver Dam Campground, 5 mi S of Hwy 140 on Rd 3706, T37S, R4E, S32, *Lu & Mesler* 793 (HSC); Mt. McLoughlin, ca 35 mi (56 km) E of Medford on Hwy 140, 3 mi from the base of the Mt. McLoughlin trail head on Fourmile Lake Rd (3650), T36S, R4E, S13, *Lu & Mesler* 811 (HSC); High Cascades E of Medford, *Heckner* 14846 (DS, WILLU). Klamath Co., Lake of the Woods, *Applegate* 973 (DS); ca 40 mi E of Medford along Hwy 140, 1 mi E of rd to Fish Lake along stream on Rd 3650, ca 1 mi from junction with Hwy 140, T37S, R5E, S30, *Lu & Mesler* 781 (HSC); at junction of Rd 3667 and Hwy 140, T36S, R4E, S36, *Lu & Mesler* 791 (HSC).

Habitat and distribution. Locally common but restricted to the vicinity of Mt. McLoughlin in the Cascades of southwestern Oregon. In understory of white fir and red fir forests and in open boulder fields at the edges of mountain hemlock forests near timberline (Franklin & Dyrness, 1973). Elevation from 1512 to 3165 m. Common associates are *Linnaea borealis* L., *Trillium ovatum* Pursh, *Clintonia uniflora* (Schult.) Kunth, *Vancouveria hexandra* (Hook.) Morr. & Dec., *Chimaphila umbellata* (L.) Barton, *Orthilia secunda* L., *Vaccinium* sp., and *Berberis nervosa* Pursh. This species should be protected as a rare endemic of Oregon (Siddall et al., 1979).

Asarum wagneri is clearly distinct from *A. caudatum*. Even in the description of var. *viridiflorum*, Peck noted that it should probably be given species rank. It is not simply a green-flowered form of *A. caudatum*. The two species differ in many other ways, and where sympatric, they remain distinct with no intergradation. Yearly increments of shoot growth are shorter in *A. wagneri* (5–20 mm vs. 14–60 mm) with the result that individual plants form a small clump, never the extensive clone typical of *A. caudatum*. The leaves of *A. wagneri* are deciduous, light green, widely reniform (up to twice as wide as long) and on the upper surface are pubescent only along the veins. *Asarum caudatum* has dark green, usually persistent cordate-reniform leaves that are sparsely pubescent on the upper surface. The flowers of *A. wagneri* are green with red-maroon only at the base of the shorter (0.8–2.0 cm) bent calyx lobes. The ultimate segment is linear triangular, not attenuate. The flowers of *A. caudatum* are dark red-maroon, infrequently with a green calyx tube and only rarely with green calyx lobes that typically are unbent and longer (4.1–7.6 cm). The stamen filaments of *A. wagneri* are red-maroon as is the top of the ovary to the base of the stamens (not white). Flowers of *A. wagneri* produce a faint foul odor. No floral fragrance is produced by *A. caudatum*. The ginger compounds in leaves and rhizomes of *A. wagneri* smell weaker and different than those of *A. caudatum*. This apparent difference in secondary chemistry is recognized by slugs in the garden which readily eat *A. wagneri* but generally ignore *A. caudatum*.

We name this species in honor of Professor Warren H. Wagner, Jr. of the University of Michigan, in recognition of his many contributions as a teacher of botany.

Acknowledgments

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