Stewardship Account for Fragrant Popcornflower

Plagiobothrys figuratus

Prepared for the
Garry Oak Ecosystems Recovery Team
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by

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STEWARDSHIP ACCOUNT

Plagiobothrys figuratus (Piper) I.M. Johnst. Ex M.E. Peck

Species information:

Kingdom: Plantae
Subkingdom: Tracheobionta
Superdivision: Spermatophyta
Division: Magnoliophyta
Class: Magnoliopsida
Subclass: Asteridae
Order: Lamiales

(Above from U.S.D.A. Plants Database)

Family: Boraginaceae
Subfamily: Boraginoideae
Tribe: Eritrichieae
Genus: *Plagiobothrys*
Section: Allocarya
Species: *figuratus*

Plagiobothrys figuratus (Piper) I.M. Johnst. *ex* M.E. Peck
Fragrant Popcornflower
(Douglas *et al*., 1998; Dellavalle-Sanvictores, 2000)

Synonyms: (from Hitchcock *et al*., 1959)

Allocarya figurata Piper
Plagiobothrys hirtus var. *figuratus* Johnst.
Allocarya dichotoma Brand

Taxonomists have been debating the species within the genera of *Allocarya* and *Plagiobothrys* since the early 1900's. Hitchcock *et al*. (1959) follows Johnston's 1923 treatment using minor variations in the nutlets as the basis for establishing species within *Plagiobothrys*. In a recent communication with Mary Dellavalle Sanvictories, she follows the one stream of thought that Johnston combined too many species and Piper split the species too much. However, since no one has done any testing of the species treatments in the genus she feels it is still one expert's opinion against the others (M. Dellavalle Sanvictories, 2000).

Additionally, *P. figuratus* maybe reduced into *P. hirtus*, and furthermore, *Allocarya scouleri* (= *Plagiobothrys scouleri*) has been erroneously applied to this species (Hitchcock *et al*., 1959). Dellavalle-Sanvictores (2000) states that this paraphyletic group needs revision specifically to retest the monophyly of the genus.

The genus name is from the Greek "plagios" placed sideways, and "bothros" meaning pit or excavation, in reference to the position of the scar on the nutlet (Hitchcock *et al*. 1959).

Description

Plagiobothrys figuratus is a sparsely to moderately strigose, (also sometimes with slender spreading hairs), erect annual herb with a simple or branched stem 10-40 cm tall from fibrous roots. There are few basal leaves and stem leaves are oblong to linear, entire, 0.5-8 cm long, and 3-8 mm wide. The lower 2-4 pairs of leaves are opposite, and the others are alternate. The inflorescence is composed of several, coiled, narrow, elongating, often paired bractless spikes. The flowers are large (the corolla limb is 5-10 mm wide) and showy with white petals that are fused at the base into a tube. The throat has 5 yellow bulges (nectaries?). The fruiting calyces are densely ascending-hairy, often with reddish-brown hairs, and 3-4 mm long. There are 4 ovate, rugose or rugose-tuberculate nutlets (some of which may abort), each 1.2-1.7 mm long (Douglas *et al*., 1998).

Illustration: see page 63 of Douglas *et al*., 1998.

P. figuratus can be confused with *Plagiobothrys scouleri* (Scouler's popcornflower) and *P. tenellus*, both which occur in similar habitats. Also, it has often been confused with *Cryptantha intermedia* var. *grandiflora* (*C. hendersonii*) (Hitchcock *et al*., 1959).

Range and Known Distribution:

Plagiobothrys figuratus occurs in Canada in southwestern British Columbia. In the U.S. it occurs in southwestern Alaska where, according to Hulten (1968), it is introduced at Mendendhall (Alaska Panhandle). It is found in Washington in Klickitat Co., (Hitchcock *et al*., 1959) and Oregon mainly west of the Cascade Mountains in the Puget trough and Columbia gorge and in the Willamette valley (in Jackson and Josephine counties {Oregon Natural Heritage Program web site, 2001}). In Canada, this species is restricted to southwestern B.C., where it is known only from the southeast coast of Vancouver Island (Nanaimo or Wellington {RBCM herbarium records}) and Hornby Island (Douglas *et al*., 2002; RBCM objects database).

It also occurs as an exotic species in Arkansas (Smith, 1994), Illinois, in St. Clair Co. (Mohlenbrook, 1975); North Carolina in Durham and Orange Counties (Radford, 1968); and Michigan (NatureServe web site, 2001).

Habitat Description:

In British Columbia, the species has been collected from wet places, often ephemeral areas (including in cultivated fields) that dry up later in the growing season (BC CDC HERB database, 2001). Douglas *et al*. (2002) describes the habitat as moist to mesic

coastal bluffs. Douglas *et al*. (1998) describe the habitat as moist to mesic sites in the lowland Coastal Douglas-fir zone. **Elevation:** Hitchcock *et al*. (1959) describes the habitat as meadows, low ground and moist fields. Peck (1961) describes it growing in damp open ground.

According to Welsh (1987), in southeastern Alaska it is a weedy species of disturbed soils. In Washington, grows on low ground that is very wet during the winter, and very dry in the summer (Gilkey and Dennis, 1967).

Status of Species:

Global rank: G4T4
Canada Heritage Rank: N1
British Columbia: S1
Alaska and Washington: SR
Arkansas, Illinois, Michigan, North Carolina: SE
Oregon: S4

Habitat ownership/protection:

The Hornby Island location at Cape Gurney, Whaling Station is privately owned, and there is no protection, no management plan nor any government responsibility for this site.

Plagiobothrys tenellus (slender popcornflower) is red-listed in British Columbia where it occurs on mesic to dry sites in the lowland zone and only found on southeastern Vancouver Island and the Gulf Islands (Douglas *et al*., 2002).

There are no known uses of this species and no horticultural species (Bailey and Bailey, 1976).

Life History:

a) General – Annual potentially requiring wet winters and spring, followed by dry summers.
b) Phenology – Flowers in May – June. Potentially a winter annual.
c) Pollination Biology – Nothing known. Potentially an outcrosser and *Plagiobothrys figuratus* maybe a derivate selfer of *P. diffusus/P. reticulatus* group. (Kelch, pers. comm.).
d) Reproductive ecology – Annual, producing four to two nutlets.
e) Survival – Nothing known.
f) Physiology – Nothing known.
g) Dispersal – Nutlets are smooth therefore no dispersal mechanism.

h) Nutrition & Interspecific Interactions - Although no information has been obtained to suggest that *Plagiobothrys figuratus* is toxic to livestock, an unknown species of *Plagiobothrys* has been shown to have toxic concentrations of nitrates in silage (Tucker 1961, as cited in Kingsbury 1964).

i) Behaviour/Adaptability – Nothing known.

How the species is at risk:

There is only one site for this species in Canada therefore further inventory is required in additional potential habitats. There is also little known about the biology of the species and therefore the population trends and survival mechanisms are unknown.

Management Recommendations:

Although not enough is know about this species at this time, the protection of this one site is an obvious management recommendation.

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Annual Reviews of Plant Physiology: http://plant.annualreviews.org/search.dtl

Arkansas Heritage Program: http:/www.naturalheritage.org/heritage.html

Botanical Electronic News: http://www.ou.edu/cas/botany-micro/ben/ben-srch.html

Canadian Journal of Botany (through e-journals)

Center for Urban Horticulture: http://depts.washington.edu/urbhort/

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International Organization for Plant Information: http://iopi.csu.edu.au/iopi/

Internet Directory for Botany: http://www.botany.net/IDB/

IUCN Species survival commission: http://iucn.org/themes/ssc/index.htm

Missouri Botanical Garden: http://www.mobot.org/welcome.html

National Agriculture Library: http://www.nal.usda.gov/

Native Plants Journal: http://nativeplants.for.uidaho.edu/

Nature Conservancy (NBII), National Biological Information Infrastructure: http://www.nbii.gov/search/sitemap.html

New York Botanical Garden Press (publications): http://www.nybg.org/bsci/spub/

Oregon Flora Project: http://www.oregonflora.org/index.html

Oregon Natural Heritage Program: http://www.abi.org/nhp/us/or/index.htm

Oregon's Rare and Endangered plants:
http://www.orst.edu/dept/botany/herbarium/info/re:html

Oregon State University Herbarium: http://www.orst.edu/dept/botany/herbarium

Search Index for American Literature (New York Botanical Garden):
http://scisun.nybg.org:8890/searchdb/owa/www/ABL.searchform

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http://nmnhwww.si.edu/botany/pubs.htm

Synonymised Checklist of Vascular Flora of the United States, Canada and Greenland:
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University of British Columbia, Herbarium: http://www.botany.ubc.ca/herbarium/

USDA Forest Service, Rare Plants: http://www.fs.fed.us/biology

USDA NRC Plant Materials http://plant-materials.nrcs.usda.gov/

US Fish and Wildlife Threatened and Endangered species systems (TESS):
http://ecos.fws.gov/webpage/

US Fish and Wildlife Service, Endangered Species Program: http://endangered.fws.gov/

US Fish and Wildlife, journals on-line: http://www.fws.umn.edu/affiliate/journals.html

US Fish and Wildlife Service, Threatened and Endangered Plants and Animals:
http://www.fws.gov

Washington Natural Heritage Program: http://www.wa.gov/dnr/htdocs/fr/nhp/wanhp.html

Washington Rare Plant Care and Conservation: http://depts.washington.edu/rarecare/

US Parks, Species in Parks: http://ice.ucdavis.edu/nps/

Authorities Consulted/Personal communications:

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