British Columbia's Coast Region Species and Ecological Communities of Conservation Concern

SOUTH COAST CONSERVATION PROGRAM

Protecting and Restoring at Risk species and Ecological Communities on BC's South Coast

SPECIES PROFILE: Phantom Orchid (*Cephalanthera austiniae*), Family Orchidaceae "orchids"
Status Global: G4 Provincial: S2 SARA: 1-Threatened BC List: Red

A member of the family Orchidaceae ("orchids"), phantom or "snow" orchid as it is sometimes referred to is the only species of the genus Cephalanthera found outside of Europe and Asia. A "myco-heterotrophic" species it lacks chlorophyll and is unable to photosynthesize. Phantom orchid obtains nutrients through a three-way partnership with fungi in the family Thelophoraceae and a tree species (presently unidentified). To facilitate this unique and complex relationship, the majority of the plants structure is underground; exact occurrences and distribution can be variable and difficult to predict from year to year as conditions change. As well plants may become dormant for a period of time making definitive distribution and occurrence locations problematic.


Phantom Orchid

Characteristics (things to look for)

Height up to 65 cm. Phantom orchid is a white, non-photosynthetic, rhizomatous perennial. Flowering stems have 5-20 vanilla scented white flowers, each with a yellow gland on the lower lip. The 2-5 bract-like leaves are present along the stem. The stems turn yellowish or brownish as they age. After flowering, dry, seed-bearing capsules may form.

Looks like (Similar)

Indian pipe (*Monotropa uniflora*) is a similar looking, white, non-photosynthetic perennial that occurs in the same types of habitats as phantom orchid. The two species can easily be distinguished because phantom orchid has numerous upright flowers on each stem and the flowers bear a yellow gland on the lower petal. In comparison, Indian pipe bears only a single drooping, bell-shaped flower on each stem and the flowers are pure white. Also, phantom orchid flowers are fragrant while those of Indian pipe are not.

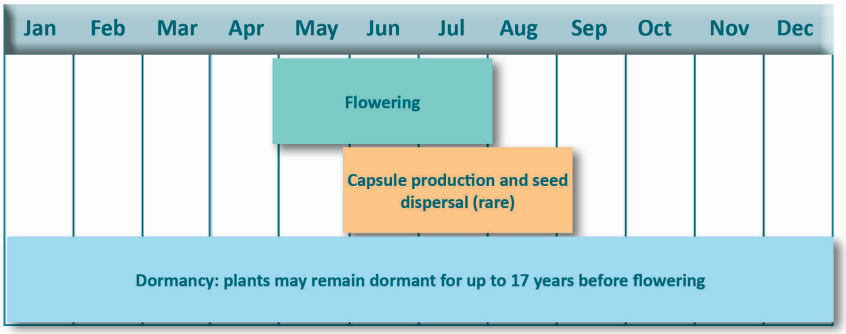

Indian Pipe

Habitat

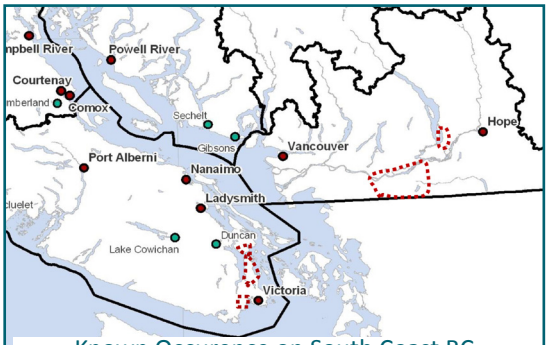
Phantom Orchid occurs in moist to mesic, shaded forests. It is usually found in association with mature and old-growth coniferous or mixed forests but is also found in deciduous forests dominated by Bigleaf Maple. Phantom Orchid can occur in association with Douglas-fir, Western Redcedar, Bigleaf Maple and Paper Birch. Plants are often found in sites with a sparse understory where there is little competition and a lack of large woody debris, often on south or west aspects. As with other members of its genus, this species appears to prefer limestone/ calcareous soils and has been found on old shell middens, limestone tailings and compost piles rich in lime. This species has a unique association with a fungus, which in turn forms an association with a tree species. While little is known about exactly which tree species play a role in this relationship, Phantom Orchid has been observed growing in close proximity to Bigleaf Maple. The fungal partner is a forest-dependent shade loving species that is restricted to intact mature forests, which further limits growing conditions for the orchid. The relationship with each partner is symbiotic. Health of the fungus and the partner tree is integral to the health and viability of the orchid population.

Life Cycle

Capsule and seed production is rare after flowering in BC populations. This may be due to climatic constraints and/or a scarcity of suitable pollinators.



Range



Known Occurence on South Coast BC (red-dotted line)

Endemic to the Pacific Northwest, the Phantom Orchid occurs in California, Oregon, Washington, Idaho and British Columbia at low to middle elevations. In Canada this species is known only from a total of eight existing and two historical populations. In BC it was in four locales: the Victoria/Saanich Peninsula on Vancouver Island, Saltspring Island (Gulf Islands), the Abbotsford-Mission-Chilliwack area in the Fraser Lowlands, and south of Harrison Lake.

Threats

- This species has limiting recovery and recolonization potential due to the unique relationship between the orchid, fungus and tree species which inhibits the artificial propagation.
- Negative effect of disturbance activities that impact either the partner tree or the fungal partner, whether the orchid is visible or not or dormant on local population persistence.
- Habitat modification and destruction resulting from urban development, timber harvesting and recreational activities such as mountain biking.
- Harvesting of plants by collectors and hobbyists can damage or destroy plants and reduce wild populations.

Conservation/ Management

Apply conservation and management objectives as set-out in "the National Recovery Strategy for the Phantom Orchid (*Cepalanthera austiniae*) in Canada (Draft in review)." and "Develop with Care Phantom Orchid. Factsheet #15. Environmental Guidelines for Urban and Rural Land Development in British Columbia." Limit collection activities and apply practices identified in the Province's "Voucher Specimen Collection, Preparation, Identification and Storage Protocol: Plants & Fungi." Inventory activities should consider approaches and references identified in E-Flora's Protocols For Rare Vascular Plant Surveys.

This species is listed under the Federal Species at Risk Act (SARA) and may be subject to protections and prohibitions under the BC Wildlife Act. Habitat for this species may also be governed under provincial and federal regulations including the Fish Protection Act and Federal Fisheries Act as well as Regional and local municipal bylaws.

Sources

BC Conservation Data Centre. 2015. [Internet] Species Summary: *Cephalanthera austiniae*. BC Ministry of Environment - BC Ministry of Environment. 2014. [Internet] Develop with Care Phantom Orchid. Factsheet #15. Environmental Guidelines for Urban and Rural Land Development in British Columbia. - BC Ministry of Environment, Lands and Parks Resources Inventory Branch. 1999. [Internet] Voucher Specimen Collection, Preparation, Identification and Storage Protocol: Plants & Fungi. Standards for Components of British Columbia's Biodiversity No. 4b. - E-Flora. 2010. [Internet] Electronic Atlas of the Plants of British Columbia. - Fairbarns, Matt. 2010. Aruncus Consulting [Pers. Communication]. - Klinkenberg, Brian. 2003-2008. [Draft in review] National Recovery Strategy for the Phantom Orchid (*Cepalanthera austiniae*) in Canada, Phantom Orchid Recovery Team and the BC Ministry of Environment, Surrey. - Schmidt-Ostrander, Ingrid. 2010. [Internet] The Phantom Orchid (*Cephalanthera austinae)*. COC the Canadian Orchid Congress. - Proulx, Gilbert et al. 2003. A Field Guide to Species at Risk in the Coast Forest Region of British Columbia. Published by International Forest Products and BC Ministry of Environment. Victoria (BC). - Taylor DL & Bruns TD. 1997. [Internet] Independent, specialized invasions of ectomycorrhizal mutualism by two nonphotosynthetic orchids. Proceedings of the National Academy of Sciences USA 94: 4510-4515. - Taylor DL, Bruns TD, Leake JR & Read DJ. 2002. [Internet] Mycorrhizal specificity and function in myco-heterotrophic plants. Chptr. 15 In: The Ecology of Mycorrhizas. Ecological Studies vol. 157. Ian R. Sanders and Marcel van der Heijden, eds. pp 375-414. Berlin: Springer Verlag.

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Every effort has been made to ensure content accuracy. Comments or corrections should be directed to the South Coast Conservation Program: info@sccp.ca. Content updated March 2015.

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