

BC's Coast Region: Species & Ecosystems of Conservation Concern

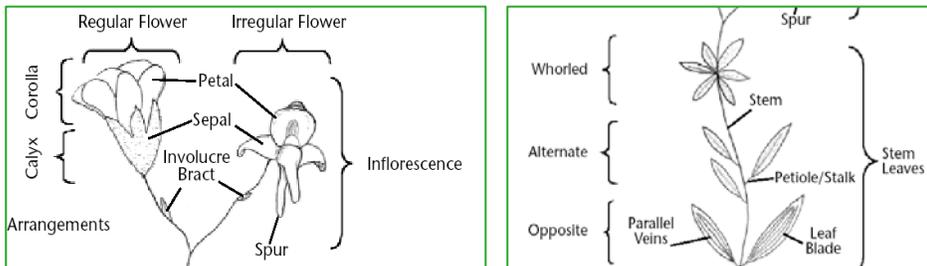
Phantom Orchid (*Cephalanthera austini*)

Global: G4 Provincial: S2 COSEWIC: T BC List: Red



Notes on *Cephalanthera austini*: 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 (e.g. bigleaf maple). 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.

Plant Anatomy



Description

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.

Look's Like?

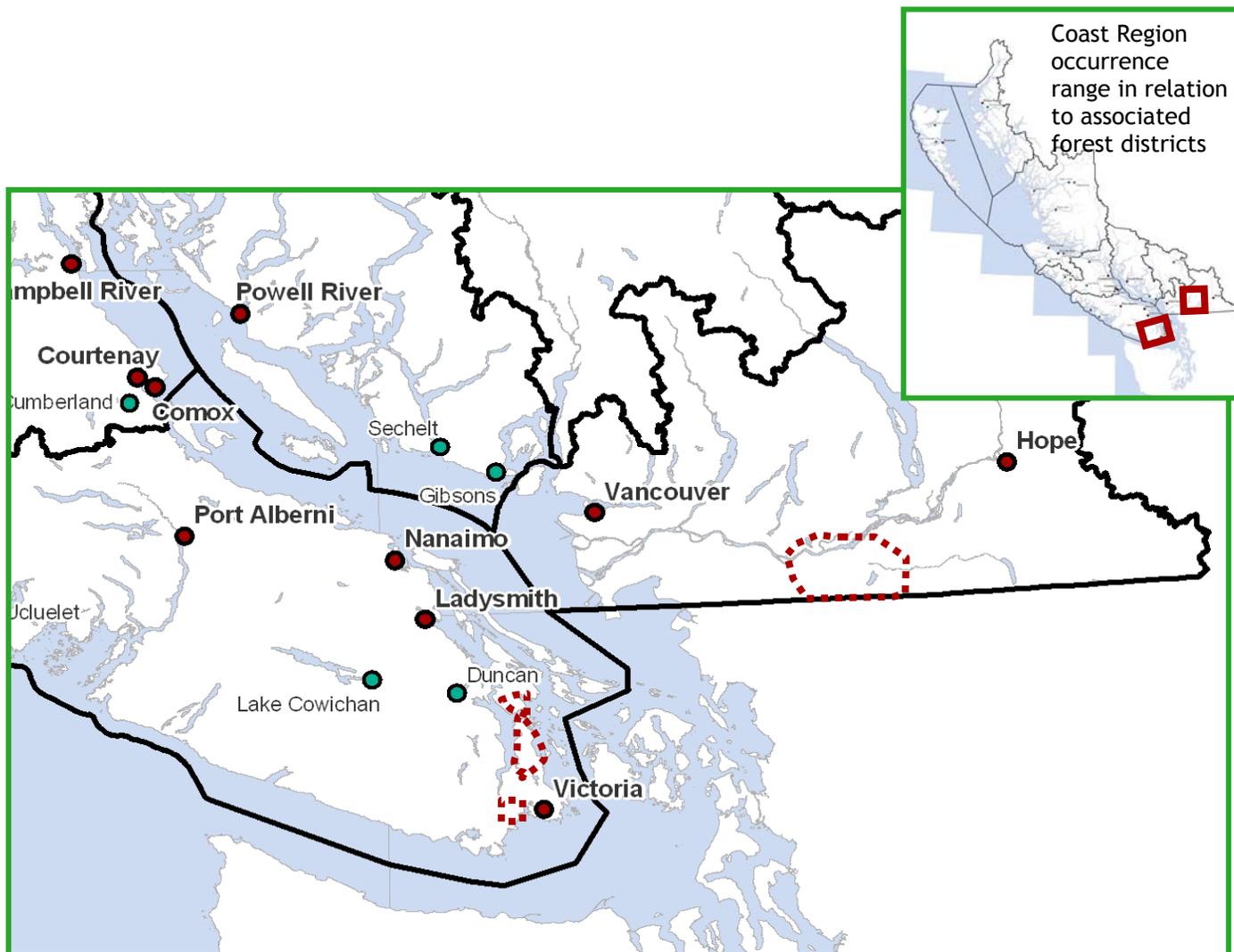
Indian pipe is a similar looking, white, non-photosynthetic perennial that occurs in the same types of habitats as phantom orchid. The two species can easily be distinguished because phantom orchid has numerous upright flowers on each stem and the flowers bear a yellow gland on the lower petal. In comparison, 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

Distribution

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 focused in three locales: the Victoria / Saanich Peninsula on Vancouver Island, Saltspring Island (Gulf Islands), and the Abbotsford-Mission-Chilliwack area in the Fraser Lowlands.



Phantom Orchid (*Cephalanthera austiniæ*), known range of population occurrences (red-dotted line) for the Coast Region

Habitat Preferences

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.

Critical Features

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.



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.

Seasonal Life Cycle

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
				Flowering			Capsule production and seed dispersal (rare)				
Dormancy: plants may remain dormant for up to 17 years before flowering											

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.

Threats

- ◆ The unique relationship between the orchid, fungus and tree species inhibits the artificial propagation or transplant of this species - limiting recovery and recolonization potential.
- ◆ Disturbance activities that impact either the partner tree or the fungal partner, whether the orchid is visible or not or dormant, may negatively affect 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 who attempt to cultivate it can damage or destroy plants and reduce wild populations.

Conservation & Management Objectives

- ◆ Meet objectives for the conservation and management of this species as set out in the National Recovery Strategy for the Phantom Orchid (*Cepalanthera austiniae*) in Canada (in Draft)."
- ◆ Collection activities should be limited 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.

Specific activities should include:

- ◆ Fill gaps in knowledge about this species distribution and population dynamics, symbiotic relationships, growth, dormancy, flowering, pollination and dispersal requirements.
- ◆ Protect naturally occurring limestone deposits and outcrops (e.g. karst) which often represent unique or rare habitat and species associations.
- ◆ Predictability of occurrence can be difficult, further study is needed to identify the range of buffer requirements to protect both the orchid plant and the extended fungal network necessary for the orchid to persist.
- ◆ Minimize invasive species spread and establishment into upland and riparian forested through awareness programs that reduce opportunities for yard waste dumping or direct planting of invasive species by residents.
- ◆ Implement integrated pest management approaches that protect populations from herbicide spray drift or fertilizer application from land clearing and land management activities.
- ◆ Avoid trampling and soil compaction (e.g. from intensive recreational activities such as mountain biking) as this species has a narrow threshold for changes in soil conditions.
- ◆ Encourage public engagement in the conservation of this species through continued support of landowner contact and awareness programs.
- ◆ Anecdotal information indicates that allowing light grazing can be beneficial to this species by reducing competition and/or adding critical nutrients to the soil. Grazing and other clearing methods such as mowing must be managed carefully and restricted to periods prior to seasonal appearance of the plant.

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.

Content for this Factsheet has been derived from the following sources

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¹Original account prepared by Cindy Sayre.

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 August 2010.

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