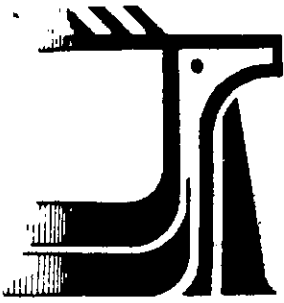


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Committee  
on the Status  
of Endangered  
Wildlife  
in Canada

Comité sur le  
statut des espèces  
menacées  
de disparition  
au Canada

Ottawa, Ont. K1A 0H3  
(819) 997-4991

**STATUS REPORT ON THE PHANTOM ORCHID**  
**CEPHALANTHERA AUSTINAE (A. GRAY) HELLER**



**BY**

**BRIAN KLINKENBERG**

Reçu le 12 FÉV. 1993

**AND**

**ROSE KLINKENBERG**

**STATUS ASSIGNED IN 1992**  
**VULNERABLE**

**REASON: FEW SITES, SMALL POPULATION SIZE AND HISTORIC LOSS AT ONE SITE. ASPECTS OF ITS BIOLOGY SUCH AS PERIODS OF DORMANCY AND ERRADIC APPEARANCE OF FLOWERING SHOOTS INDICATES A POTENTIAL VULNERABILITY TO SITE DISTURBANCE AND DEVELOPMENT.**

PL  
88

**OCCURRENCE: BRITISH COLUMBIA.**

73  
V. 6

COSEWIC — A committee of representatives from federal, provincial and private agencies which assigns national status to species at risk in Canada.

CSEMDC — Un comité de représentants d'organismes fédéraux, provinciaux et privés qui attribue un statut national aux espèces menacées de disparition au Canada.

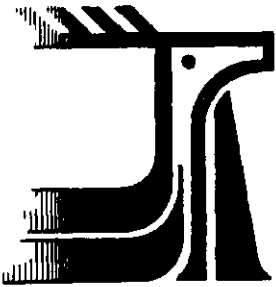
**STATUS REPORT  
ON ENDANGERED WILDLIFE  
IN CANADA**

**Phantom Orchid**



**COMMITTEE ON THE STATUS  
OF ENDANGERED WILDLIFE  
IN CANADA**

**COSEWIC**



Committee  
on the Status  
of Endangered  
Wildlife  
in Canada

Comité sur le  
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JUNE 1990

Ottawa, Ont. K1A 0S3 (819)  
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3. Additional copies of this report may be obtained at nominal cost from Canadian Nature Federation, 453 Sussex Drive, Ottawa, Ontario, K1N 6Z4.

### DEFINITIONS

**SPECIES:** "Species" means any species, subspecies, or geographically separate population.

**VULNERABLE SPECIES:** Any indigenous species of fauna or flora that is particularly at risk because of low or declining numbers, occurrence at the fringe of its range or in restricted areas, or for some other reason, but is not a threatened species.

**THREATENED SPECIES:** Any indigenous species of fauna or flora that is likely to become endangered in Canada if the factors affecting its vulnerability do not become reversed.

**ENDANGERED SPECIES:** Any indigenous species of fauna or flora that is threatened with imminent extinction or extirpation throughout all or a significant portion of its Canadian range.

**EXTIRPATED SPECIES:** Any indigenous species of fauna or flora no longer known to exist in the wild in Canada but occurring elsewhere.

**EXTINCT SPECIES:** Any species of fauna or flora formerly indigenous to Canada but no longer known to exist anywhere.

**STATUS REPORT ON THE PHANTOM ORCHID**  
**CEPHALANTHERA AUSTINAE (A. GRAY) HELLER**  
**IN CANADA**

**BRIAN KLINKENBERG**  
**DEPARTMENT OF GEOGRAPHY**  
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**VANCOUVER, BRITISH COLUMBIA**  
**V6T 1W5**

**1991**

**STATUS ASSIGNED IN 1992**

**VULNERABLE**



## ABSTRACT

The phantom orchid (*Cephalanthera austinae*) is a saprophyte with a restricted distribution in western North America. In Canada it is a peripheral species occurring at the edge of its range, with few recently confirmed populations. The species has been reported to have a dormancy period of seventeen years, which may complicate its conservation management.

It is recommended that this species be designated as threatened in British Columbia and Canada.

[This species was designated only as vulnerable by COSEWIC because there are at least eight recent sites known (post 1980), six of which have been confirmed. Two sites occur in a park and a reserve and three sites are on private lands where the plants are protected by the landowners. Although there would appear to be few plants at each site and the flowering shoots appear sporadically, additional sites and plants are thought to occur.]

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## SECTION I: SPECIES INFORMATION

### 1. Classification and nomenclature

Scientific name:

*Cephalanthera austinae* (A. Gray) Heller

Bibliographic citation:

**Catalogue of North American Plants.** ed. 2. 4. 1900

Type specimen:

GH

Pertinent synonyms:

*Eburophyton austinae* (A. Gray) Heller  
*Serapias austinae* (A. Gray) A. A. Eaton  
*Epipactis austinae* (A. Gray) Wettstein  
*Cephalanthera oregana* Reichenbach

Common names:

phantom orchid, snow orchid, ghost orchid

Family names:

Orchidaceae

Major plant group:

Angiosperm

Current alternative taxonomic treatment:

*Eburophyton austinae* (Gray) Heller (Hitchcock and Cronquist, 1981).

### History of taxon:

The type locality and collection for this species is "Banks of a wooded ravine in the Sierra Nevada Mountains, near Quincy, Plumas County, California" (Correll, 1950).

"Almost a century ago it was described and named independently and nearly simultaneously by Heinrich Gustav Reichenbach of Germany and Dr. Asa Gray of the United States. Reichenbach named the species for the state in which it was found, and Gray named it for Rebecca Merritt Austin, a contemporary botanist" (Luer, 1975)

## **2. Description**

### **a) Local field characters**

An almost totally white ('ghost-like') saprophyte up to 65 cm tall. White sheaths up to 10 cm long clasp a smooth leafless stock topped by a loose raceme composed of up to 20 white flowers. The noticeably aromatic flowers have a yellow throat. Thick fibrous roots branch from a short rhizome.

### **b) Illustrations**

See: Hitchcock and Cronquist, 1981; Luer, 1975; Petrie, 1981; figure 1.

## **3. Biological and economic significance**

*C. austinae* is the only North American representative of the genus *Cephalanthera*, and it is the sole saprophytic species of the genus. The genus is taxonomically one of the more primitive Orchidaceae in habit and floral structure ("factors which make them unique amongst European orchids" Davies, Davies and Huxley, 1983). These features indicate that this species is botanically noteworthy. Nevertheless, no taxonomic or ecological studies appear to have been conducted on this species. The study of this rare species might assist in the understanding of other rare species and their management.

No economical significance recorded. Attempts at cultivating this species in gardens have not been successful (Correll, 1950; Wiley, 1968).

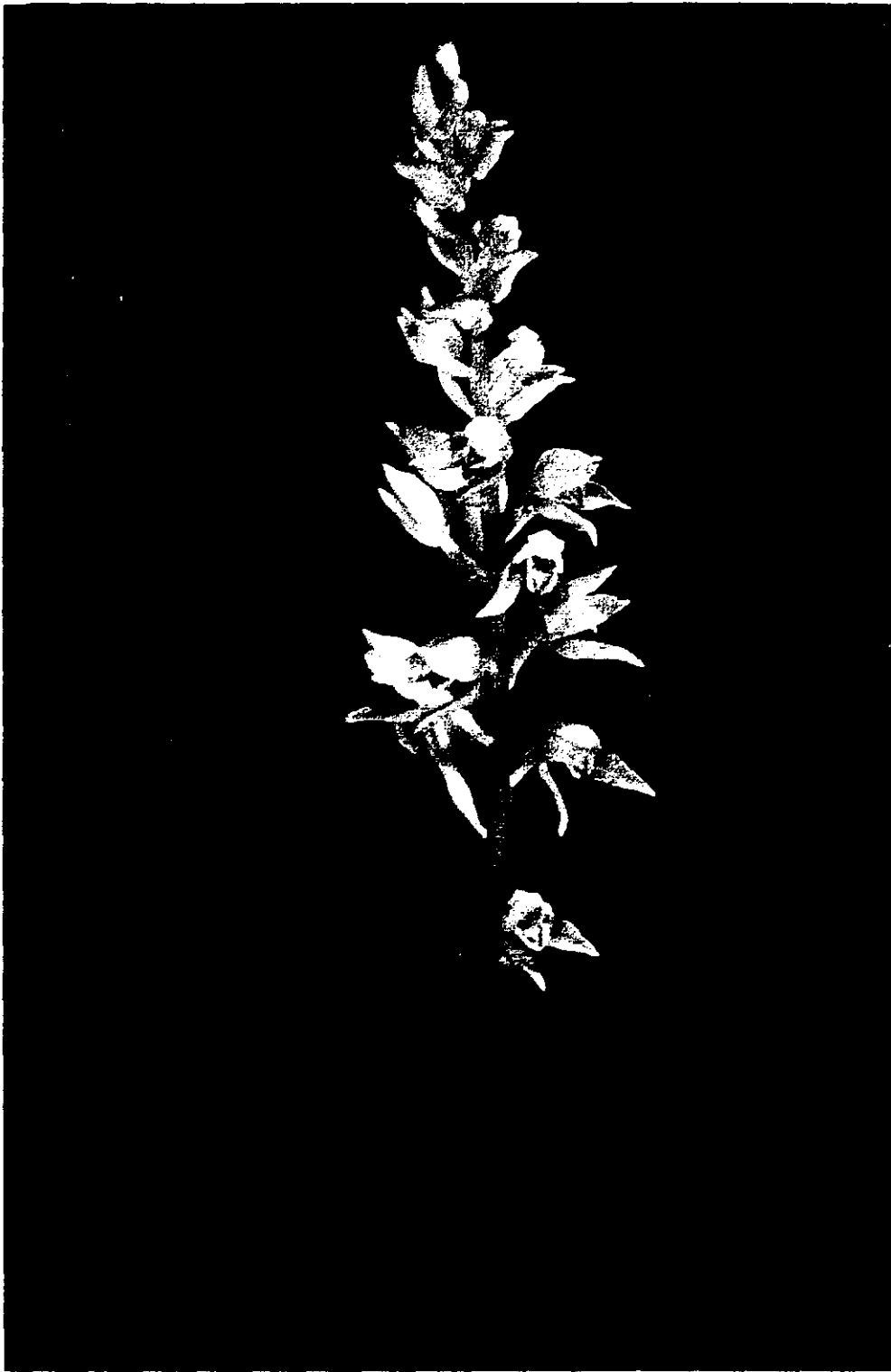


Figure 1 - *Cephalanthera austinae* (Photograph by Stan Pavlov)

## 4. Distribution

### a) Summary

The genus *Cephalanthera* is found in tropical Asia, the northern hemisphere, and tropical Africa (Dressier, 1981). Dressier (1981) considers the Neottieae tribe, of which the *Cephalanthera* are the most primitive member, a relic northern group. In North America the single species, *Cephalanthera austinae*, is endemic to the Pacific northwest, and is reported from Idaho, California, Oregon, Washington and British Columbia (figure 2). In British Columbia it is reported from twelve sites, six of which were confirmed in 1988/90 (figure 3; table 2).

### b) Locality citations

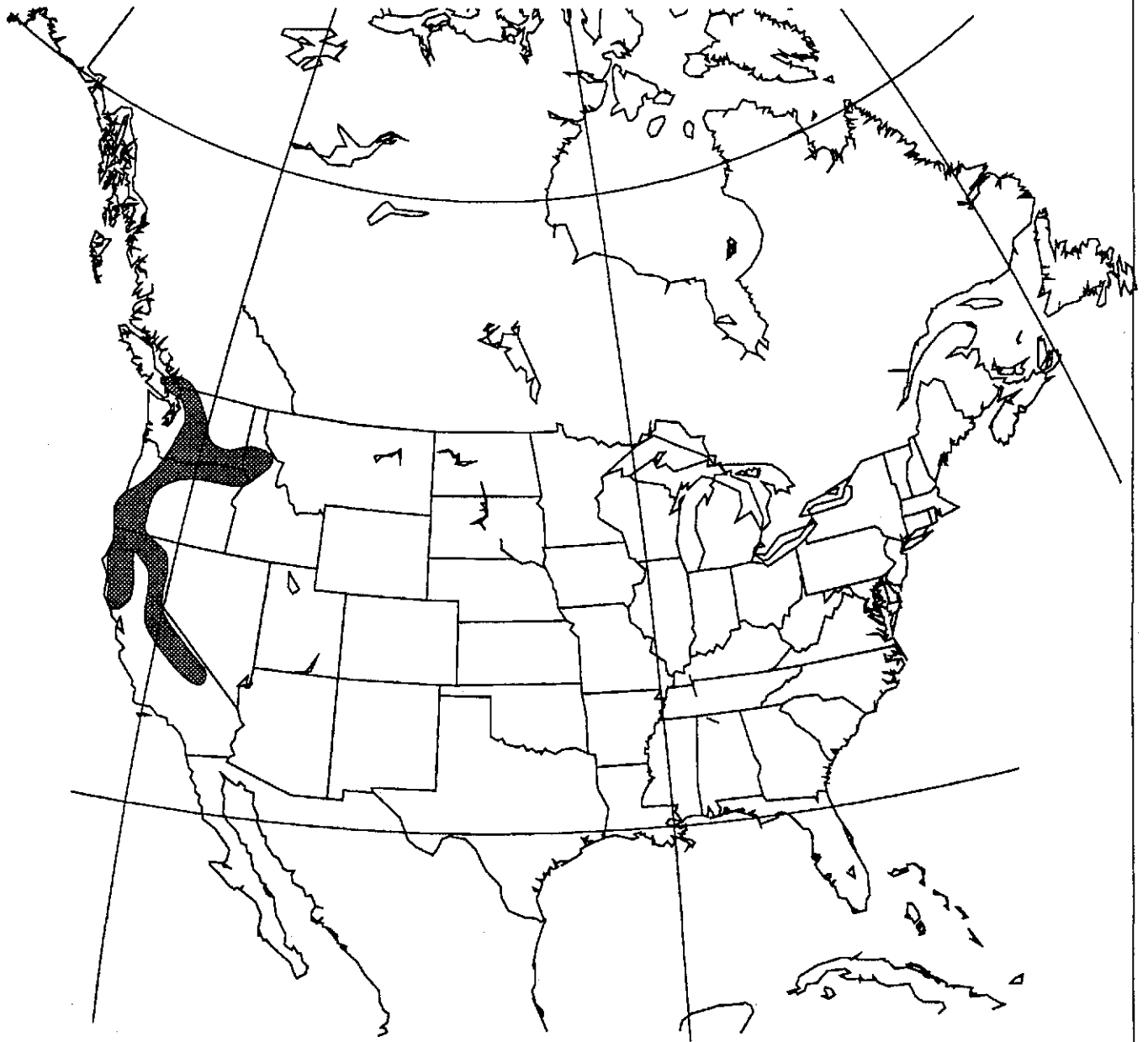
#### (i) Extant Populations currently or recently verified in British Columbia:

1. **Cultus Lake Provincial Park:** Extensive records of this species in the Park have been kept by Park staff, including park naturalists Barbara Budd and Debora Soutar. During **1989** fieldwork by the authors and Gerald Straley (UBC Botanical Gardens) **3** plants were recorded. In **1990** Debra Soutar recorded **10** plants.
2. **Sky Meadows Ecological Reserve:** This population was discovered and monitored by Mrs. Kathleen Tye, now deceased. Some information on the population dynamics for this site is known from the literature (table 1, table 2). It is possible that in some years isolated plants occur outside of the reserve boundary on private property. This site is regularly monitored by Doug May, volunteer warden.

In **1988**, the authors along with Ron and Marilyn Long and Doug May counted **15** plants on the site, ten on the open weedy ridge on the SE corner of the reserve, and five scattered throughout the woods beneath a 85% - 90% closed canopy.

In **1989**, **3** plants were found by the authors and Gerald Straley, one on a wooded slope in the interior of the reserve and two on the weedy ridge adjacent to the fence which runs behind the old Tye house.

Figure 2  
The distribution of  
*Cephalanthera austinae*  
in North America



*Cephalanthera austinae*



TABLE 1

Sky Meadows Populations -- 1964 to 1978

Date	# of plants	Date	# of plants	Date	# of plants
1964	8	1969	85	1974	9
1965	35	1970	60	1975	12
1966	75	1971	15	1976	22
1967	100+	1972	7	1977	18
1968	50	1973	0	1978	11

(source: Long, 1979)

3. **Exron Road (private property):** Doug May, the volunteer warden for the Sky Meadows Reserve, reported the occurrence of **1** plant in **1988** growing at the base of a Douglas Fir tree. Approximately 3 miles from Sky Meadows.
4. **Southside Road (1) (private property):** **4** plants were observed by Doug May at this site in **1989**, "**4 or 5**" plants in **1990**, "at the bases of large cedar trees, very devoid of vegetation". There is no previous record of occurrence. Photographed and confirmed by Doug May. 2 1/2 miles as the crow flies from Sky Meadows.
5. **Southside Road (2) (private property):** **One** plant in **1988** reported by Sara Heyenes "at the base of a large fir". Confirmed by Doug May. Heyenes didn't look for it in 1989. Still present according to May.
6. **Saltspring Island:** This site was visited by the authors in June, **1989** with Ron and Marilyn Long. **8** plants were counted, **7** in one location and **1** approximately 50 feet away. The first group of plants was located on a small parcel of Crown Land (designated park) in the midst of a subdivision development adjacent to a boat launch, and the second group (1 plant) was located immediately adjacent to footpaths which provide access to the boat launch on a lot then listed for sale.

TABLE 2

## Summary of species occurrence in British Columbia

Site	1990	1989	1988	1987	1985	1982
Sky Meadows Reserve	n/a	3	15	n/a	n/a	n/a
Cultus Lake Provincial Park	10	3	29	25	n/a	n/a
Columbia Valley	n/a	n/a	n/a	11	n/a	6
Exron Road	n/a	1	n/a	n/a	n/a	n/a
Southside Road (1)	n/a	4	5	n/a	n/a	n/a
Southside Road (2)	1	n/a	1	n/a	n/a	n/a
Mission	n/a	n/a	n/a	n/a	n/a	15
Saanich Peninsula	n/a	0	n/a	n/a	n/a	4
Saltspring Island	n/a	8	3	n/a	1	n/a

n/a = information not available

(ii) Populations possibly dormant

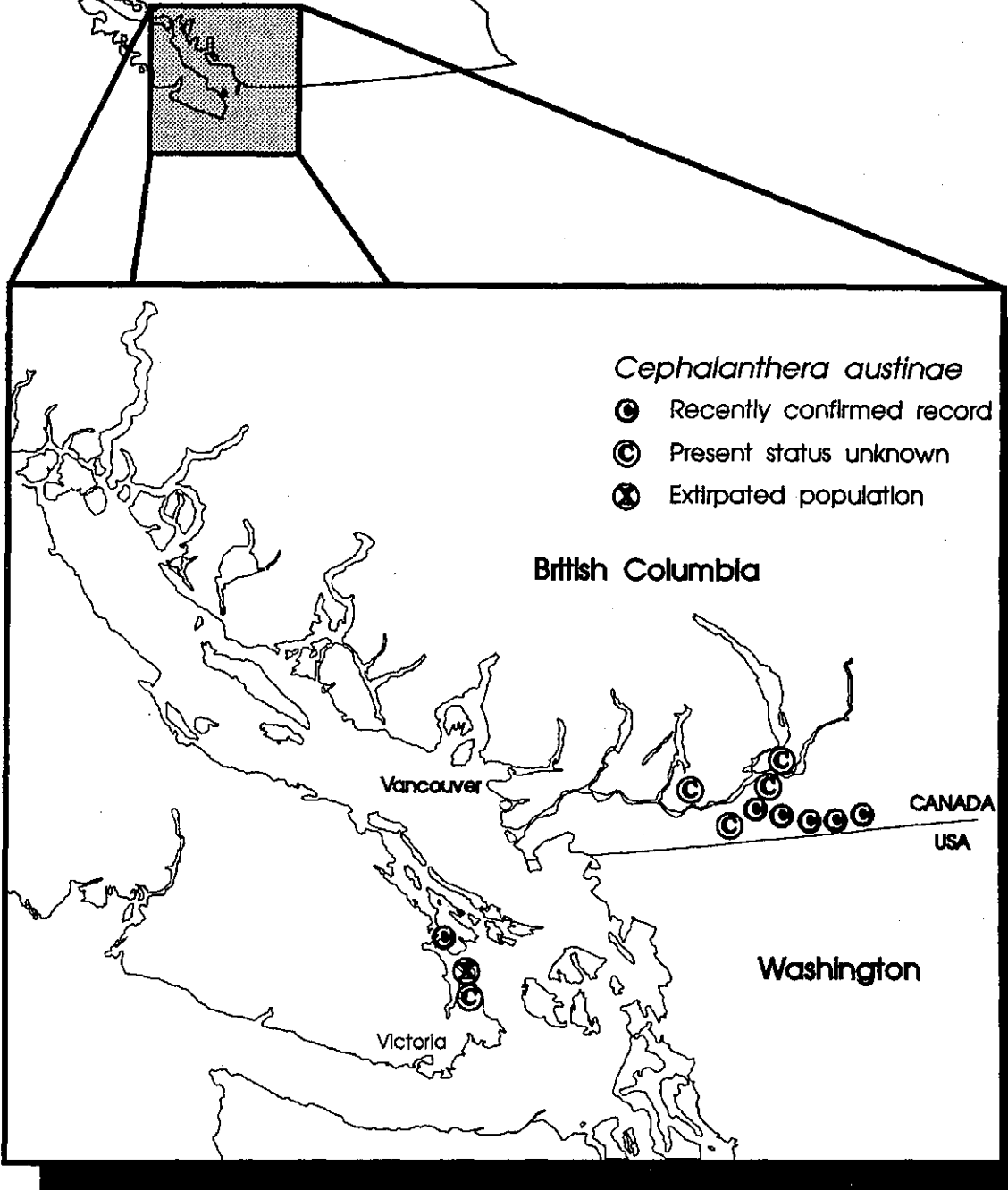
**Saanich Peninsula:** 4 plants were reported at this site in 1984 by Hans Roemer and Derek Fletcher. However, during our 1989 visit to the site with Hans, no plants were found. None were reported for 1990. Confirmed by Hans Roemer.

(iii) Recently reported populations (post 1980) where current status unknown

1. **Mission,** 15 plants were observed and documented at this site in July, 1984, by Kathleen Van Der Sande (nee Edley). Correspondence and photographs of three plants were sent to Roy Taylor at the UBC Botanical Gardens, however the photos have not been located.
2. **Columbia Valley** (private property): Located approximately 3 miles (as the crow flies) from the Cultus Lake population, this population was reported by Debora Soutar, a naturalist at Cultus Lake Provincial Park. Six orchids were recorded in 1982 and **eleven** in 1987. The site was not reported to the authors until September, 1990. Debra Soutar indicates that **the** owners are interested in protection of the site.



Figure 3  
The distribution of  
*Cephalanthera austinae*  
in Canada



(iv) **Populations which are extirpated:**

**Saanich Peninsula:** 2 plants were found in 1968 by Hans Roemer at a site which was subsequently destroyed (voucher at UVIC).

(v) **Historically known populations where present status unknown:**

1. **Agassiz**, wooded hillside, voucher at UBC, collected by Herbert H. Ross, n/d.
2. **Chillwack**, singly at several places in woodland, collected by A. B. Morkill, June 25, 1945 (voucher at UBC).

(vi) **Locations believed likely to support other natural populations:**

Because suitable habitat for this species exists throughout the Chillwack/Sardis region of BC, it is likely that additional populations may be discovered there in the future. Wooded hills or knolls of similar geomorphological structure as those at Sky Meadows, Cultus Lake and Columbia Valley occur throughout the region.

In addition, the Saanich Peninsula area of Vancouver Island should be searched during the flowering season for additional populations. Because of the tendency of this species not to flower for many years, it is likely that the known Saanich Peninsula population will recur and that others may occur in the vicinity.

Finally, extensive apparently suitable habitat exists throughout Saltspring Island. Repeated searches for additional populations should be carried out there.

(vii) **Locations known or suspected to be erroneous:**

This species was reported from a park in Victoria, BC. In discussions with the woman who reported it, she has indicated that the plant had later been identified as Indian Pipe.

## 5. General environment and habitat characteristics

It would appear that this species is best adapted to coniferous forest habitat, gaining nourishment from the acid coniferous humus in which it is most often found. *C. austinae* may flower only very occasionally—possibly related to changes in the light level (comments in Davies et al., 1983 with respect to *C. rubra*)—existing in a purely vegetative state within the loose humus for many years.

Associated subcanopy species vary from site to site, with little consistency reported.

## 6. Land ownership and management responsibility

Cultus Lake Provincial Park:	Ministry of Parks and Environment
Sky Meadows Ecological Reserve:	" " "
Saltspring Island:	Crown land & Private land
Saanich Peninsula:	Private land
Exron Road Property:	" "
Southside Road Properties:	" "
Columbia Valley:	" "
Mission:	" "

## 7. Management practices and experiences

### a) Summary

Other than direct protection from disturbance through fencing, no active management has been carried out for this species, and none may be required.

**b) Habitat management**

Factors which alter *C. austinae*'s preferred substrate (a loose humus layer), such as logging (which would significantly disturb the humus layer and introduce competition), or fire (which could destroy the humus layer), are probably detrimental to this species (c.f. Wiley, 1968). However, as with some other orchid species, some disturbance may in fact be beneficial to this species (e.g., grazing). In order to determine which type of habitat management should be practiced with this orchid, scientific research needs to be conducted.

The species has been reported as having a dormancy period that may be as long as seventeen years. Thus, any management would have to be long-term.

**c) Current management practices and actions**

At the Sky Meadows Reserve, a fence was constructed in 1988 to ensure that adjacent land tilling did not encroach on the orchid population.

**8. Evidence of threat to survival**

**a) Summary**

Of the six recently verified populations/sites for this species, only the Saltspring Island site appears directly threatened by development activities. At the other private sites, landowners are interested in the orchids and this offers an informal, if tenuous, form of protection. On public sites the only potential threat to survival is plant succession. However, the degree of this threat would have to be assessed further. The Cultus Lake Provincial Park population occurs under relatively closed canopy, but with little competition from ground layer species. The Sky Meadows population occurs in both closed and semi-open canopy, but there is more ground cover. The Saanich peninsula site, where the orchid has not recently been seen, has closed canopy with little ground cover. Conditions are unchanged and the only threat would be in the landowners clearing property. This doesn't seem to be planned for the site.

**b) Habitat destruction and modification**

Most of the privately owned sites for this species are presently receiving protection through the interest of the landowners. Although this is informal, somewhat tenuous and does not provide legal protection to the species,

the responsible approach to land stewardship shown by the owners to date would serve to indicate that the orchids are facing no immediate threat of habitat destruction or modification, unless the properties are sold.

#### Threatened sites

- (i) The Saltspring Island population is threatened. Subdivision development will significantly impact on the small populations here. The site where the single plant was recorded in 1989 will likely be eliminated as a result of development of the lots, while the site with the greater number of plants will be in jeopardy of trampling and other impacts associated with the close proximity of a developed subdivision.
- (ii) The Sky Meadows population may be in jeopardy as a result of natural succession on the site. Although unknown at the present time, continuous disturbance such as that provided by grazing cattle, may have contributed to the success of the population to date.
- (iii) The Saanich Peninsula population, although not seen in several years, likely still exists but in a dormant state. The major potential threat here lies in any decision by the landowners to clear or alter their property. This doesn't seem likely at present, but if changes are planned it would be more difficult to protect a dormant population through landowner cooperation than one that is visibly flowering.

#### **c) Overutilization of species**

Not applicable.

#### **d) Inadequacy of existing regulatory mechanisms**

At the Saltspring Island site, although part of the area where the orchid grows is now Crown Land, it is surrounded by a subdivision development (temporarily on hold). Although it is Crown Land there is no direct protective measure being taken to ensure that if the subdivision goes ahead the orchid will not be subject to picking or trampling. Dumping has occurred within 25 feet of the larger clump and a footpath down to the water bypasses the smaller clump. This site needs to be examined in detail in order to determine the appropriate measures necessary for long-term protection of the population.

The Saltspring site has not been made an ecological reserve and thus the plants have no formal protection. Protection under an Endangered Species Act would serve to flag the significance of the site to the developers.

**e) Other natural or manmade factors**

Because this species is known to lie dormant for periods of up to seventeen years, its survival on sites where it has not been seen in recent years may be in jeopardy. For example, because the plant has not been reported and is not now 'present' at the Saanich Peninsula site, no restriction is likely to be imposed on or asked of the landowner of the Saanich Peninsula site. An Endangered Species Act which would recognize the species biology and associated swings in the visible populations of this species would serve to protect its critical habitat until it is known if the species is likely to recur. The Saanich Peninsula population may well recur over time as growing conditions and yearly climate etc., fluctuate, or it may in fact be extirpated. The European *C. rubra* is also "notorious for its tendency to disappear then mysteriously reappear in a known locality" (Davies et al., 1983).

**9. Present legal or other formal status**

**a) International status**

No specific International status exists for *C. austinae*. However, it does receive some protection—as do all orchids—under the Convention on International Trade in Endangered Species (CITES) (Dressler, 1981).

**b) National status**

Listed in Argus and Pryer (1990) as N2 (imperiled because of rarity). It is not currently listed as rare or otherwise in the United States.

**c) Provincial or state status**

In British Columbia this species is listed as a rare species by Straley, Taylor and Douglas (1985).

It is currently listed in Idaho with a Heritage Rank of G4/S2 (a species occurring peripherally in the state likely to be classed as state priority 1 if habitat conditions deteriorate) and with an Idaho Native Plant Society rank of 2 (threatened) (Mosely and Groves, 1990). It is also listed as a Forest

Service 'sensitive plant.'

This species is currently not listed in California (Smith and Berg, 1988), in Washington (Sheehan et al., 1987), or in Oregon (O.N.H.D.B., 1989). It was previously listed (1970's) on Oregon's official list of rare, threatened and endangered plants, but was subsequently delisted.

## **SECTION II: ASSESSMENT INFORMATION**

### **10. General assessment**

In spite of the initial feeling that this species was endangered in BC and Canada with only one or two known populations, current findings indicate that it is actually a threatened and not an endangered species. Nine locations post 1980 are known for the species. Of the six recently confirmed populations, it is formally protected in two sites (Provincial Park and Ecological Reserve), protected by interested landowners in three sites, and actually endangered in only one. However, because of the tenuous and non-legal protection provided by private stewardship in BC, all privately held sites must be considered to be under some degree of threat (i.e., if landownership changes). The very low numbers at each site means that the possibility of the species being extirpated as a result of succession, climate change, or ownership change should be considered.

### **11. Status recommendation**

Because this species is known from relatively few sites in Canada, **AND** because it is formally protected at only two sites, **AND** because of the relatively low numbers present at any one site, we recommend that the Phantom Orchid be classified as a **THREATENED** species in BC and Canada. Our populations of the species in no way seem to match the populations in the US where both numbers of individuals and numbers of sites are higher. As a peripheral species occurring at the edge of its limited range in North America (found in four US states and one Canadian province), it is worthy of protection and monitoring. Loss of any one site will significantly reduce the total numbers of the species in BC and Canada.

### **12. Recommended critical habitat**

Because of the saprophytic and dormant nature of this species, in order to adequately protect existing populations a buffer of 200 m around any given

population would seem to be critical for its continued survival. Specific site maps should be prepared for each location.

### 13. Conservation recommendations

- a. An Endangered and Threatened Species Act needs to be established in BC to provide protective measures for dealing with rare, threatened and endangered species. *C. austinae* should then be officially listed as threatened in BC.
- b. The Saltspring Island population should be mapped and official notification of its significance and status should be provided by the province to the developer involved. Fencing the site may not be appropriate because the species may well thrive on some degree of disturbance. Perhaps notification by signage on site ("This location contains rare and threatened plant species, please do not pick the wildflowers.") would be sufficient to encourage protection of the species.
- c. Landowners with properties which currently support populations of the orchid should be approached as part of a landowner awareness program for rare, threatened and endangered species. Stewardship by the owners, who presently are sympathetic to protection, should be encouraged and acknowledged by the BC government. If possible, a more formal land stewardship program should be initiated for rare, threatened and endangered species, similar to the Ontario program, which would provide a more formal degree of protection to species on private property.
- c. The Saanich Peninsula population should be monitored annually for recurrence of the species, with the willing involvement of the landowners. Similarly, the Mission and Columbia Valley populations should also be confirmed / monitored.
- d. In order to learn more about the role of disturbance in the ecology of this species, a small research project should be established. Vegetation monitoring of each site should be compiled annually. This information will help to determine if active hands-on management is necessary for the species. Information on this should also be obtained from the US where the species is more prolific within its restricted range.



## SECTION III: INFORMATION SOURCES

### 14. References used in the preparation of this report

See bibliography in Appendix A

### 15. Other pertinent publications

Included in Appendix A

### 16. Collections consulted

UBC, UVIC

### 17. Fieldwork

Fieldwork on this species was carried out by both authors in the summers of 1988 and 1989. The Sky Meadows population was visited in both years, while all other populations were visited in 1989. Field trips participants were: Ron and Marilyn Long (Sky Meadows, Saltspring Island, Saanich Peninsula); Doug May (Sky Meadows); Gerald Straley (Cultus Lake Provincial Park).

### 18. Knowledgeable individuals

Ron Long, Naturalist and Photographer  
8 Brackenridge Place  
Port Moody, BC V3H 4G4

- has studied the phantom orchid at all sites in BC and has photographic records; has particularly monitored the Saltspring Island population

Gerald Straley, Research Scientist  
The Botanical Garden  
University of British Columbia  
6804 SW Marine Drive  
Vancouver, BC V6T 1W5

- is COSEWIC rare plant committee representative in BC, has visited the Cultus Lake population

Hans Roemer, Botanist,  
Ecological Reserves Program  
Ministry of Environment and Parks  
4000 Seymour Place  
Victoria, BC V8B 1X5

- collected specimen for the now extirpated site on the Saanich peninsula; is familiar with BC rare plants

Doug May, Warden,  
Sky Meadows Reserve  
47955 Exron Road  
Sardis, BC V2R 1B1

- has monitored the Sky Meadows population for several years, watching out for potential site damage

Derek Fletcher, Naturalist  
42-1224 Balmoral Road  
Victoria, BC V8T 1B3

- has monitored the Saanich Peninsula populations for several years until 1984

Debra Soutar  
45615 Marshall Avenue  
Chilliwack, BC V2P 3J5

- knowledgeable about the Cultus Lake and Columbia Valley sites

## SECTION IV: AUTHORSHIP

### 19. Initial authorship of the report

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Rose Klinkenberg  
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University of British Columbia  
Vancouver, BC

### 20. Maintenance of status report

This report will be maintained by the authors. Any new information, revisions, or corrections should be sent to them at the either of the above addresses.

### Appendix A -- Bibliography

Argus, George W. and Kathleen M. Pryer. 1990. Rare Vascular Plants in Canada: Our Natural Heritage. Rare and Endangered Plants Project, Botany Division, Canadian Museum of Nature, Ottawa.

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