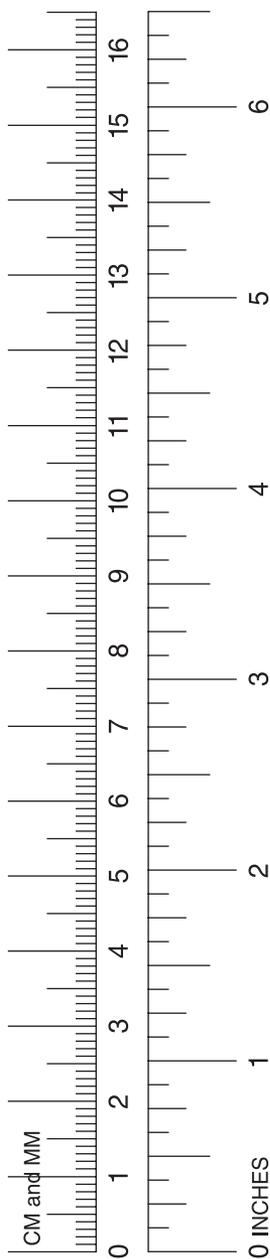


**Species at Risk  
in  
Garry Oak and  
Associated Ecosystems  
in  
British Columbia**

Garry Oak Ecosystems Recovery Team

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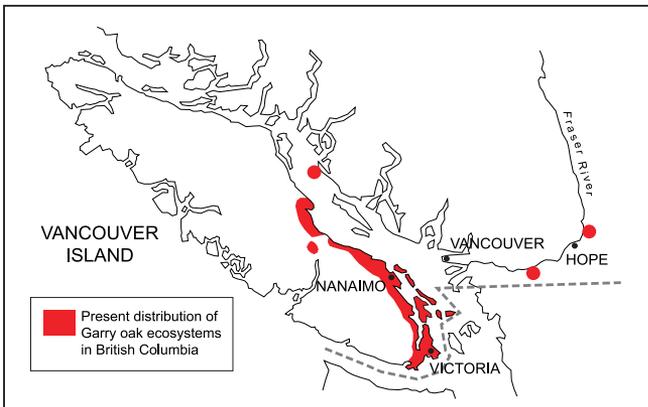
## What are Garry Oak and Associated Ecosystems?

A Garry oak ecosystem is one with naturally occurring Garry oaks (*Quercus garryana*) and some semblance of the ecological processes and communities that prevailed before European settlement. In British Columbia, these ecosystems range from closed-canopy woodlands to open meadows with scattered trees. Garry oaks sometimes also form mixed-canopy stands with other trees, primarily arbutus (*Arbutus menziesii*) and Douglas-fir (*Pseudotsuga menziesii*). The understories of Garry oak woodlands vary from open fields of grasses and forbs to dense layers of shrubs such as snowberry (*Symphoricarpos albus*). Garry oak ecosystems are inhabited by diverse assemblages of native flora, including dazzling displays of spring wildflowers and other forbs as well as shrubs, grasses and bryophytes. They are also home to many lichens and fungi, and a suite of fauna that are dependent on the varied structural characteristics of these ecosystems.

Garry oak woodlands form mosaics with associated ecosystems that lack any oak cover. These associated sites share many characteristics with Garry oak ecosystems, including disturbance regimes and ecological processes. Some of the species that occur in associated ecosystems are also common to Garry oak woodlands, while others have more specialised requirements that restrict them to particular habitats. Associated ecosystems are highly varied in character and include rocky outcrops and coastal bluffs, maritime meadows and treeless grasslands, and vernal pools and other ephemeral wetlands.

## Where do Garry Oak and Associated Ecosystems Occur?

In Canada, Garry oak ecosystems occur only in British Columbia. They are found along the narrow coastal strip of southeast Vancouver Island, as well as on the adjacent islands and at two sites in the lower Fraser River Valley. The current global distribution of Garry oak ecosystems ranges from southwestern British Columbia to southern California.



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### **Why are Garry Oak and Associated Ecosystems Important?**

Together, Garry oak and associated ecosystems are home to more plant species than any other terrestrial ecosystem in coastal British Columbia. Many of these species occur nowhere else in Canada. At this time, approximately 100 species of plants, mammals, reptiles, birds, butterflies and other insects, and an earthworm, are officially listed as “at risk” in these ecosystems. Several taxa have already been lost in British Columbia, including fragrant popcornflower (*Plagiobothrys figuratus*), the Georgia Depression population of the western bluebird (*Sialia mexicana*), and the island large marble butterfly (*Euchloe ausonides insulanus*). Collectively, Garry oak ecosystems are among the most endangered in Canada — less than 5% of the original habitat remains in a near-natural condition. Despite this rarity, if we retain their components Garry oak ecosystems may be “the ecosystems of the future.” If regional warming trends continue, these ecosystems could conceivably expand in range to cover larger areas of southwestern British Columbia.

*Garry oak and associated ecosystems are important for their biological diversity and their possible role in the future.*

## Introduction

This manual is intended to increase field recognition of rare species in Garry oak and associated ecosystems, to encourage awareness of their habitats and distribution, and to provide guidance regarding their management and protection. Distribution and other information presented here for each individual species is current at the time of writing (2002-03), but is clearly subject to change over time. In some cases, significant historic records are also shown on the distribution maps.

We hope that readers will contact the Garry Oak Ecosystems Recovery Team (GOERT; contact information below) with information about additional occurrences of species at risk or corrections to the information presented in this manual so that these updates can be incorporated into future editions.

## Intended audience

This manual is intended for use by public and private land managers, land stewards, and field staff who are involved in the management and restoration of Garry oak ecosystems and their associated species at risk. Many of the recommended management practices are general in nature and should not be embarked upon without first conducting careful assessment and planning in consultation with experts.

## “What you can do for this species” sections

The individual species accounts may or may not include specific management suggestions. Since best management practices have not been determined for many of the species covered in this volume, and since best management practices will likely change with new information even for the better-known taxa, we suggest the following considerations:

Management practices should be tailored to the needs of the site and the species. Potential management tools will depend on specific circumstances and may require experimentation prior to implementation. **Before taking any action, expert advice should be obtained, and no action taken without it.** Expert advice can be obtained from university researchers, specialised consultants, local stewardship groups, or government biologists.

We also recommend that you incorporate the following activities and guidelines into management of Garry oak ecosystems:

- Contact the British Columbia Conservation Data Centre (BC CDC; [srmwww.gov.bc.ca/atrisk/](http://srmwww.gov.bc.ca/atrisk/)) to determine if the land you own, steward or manage has any documented occurrences of rare species;
- Restrict use of pesticides and herbicides in the vicinity of these and other sensitive ecosystems;
- Limit human access in particularly sensitive areas (e.g., vernal pools, moss- or lichen-covered bluffs);

- Restrict land use and management practices to appropriate times of year and appropriate sites.

You can also assist by monitoring populations of species at risk in your area and reporting changes in their status to the BC CDC. Any new occurrences should also be reported. You should make sure that key individuals (e.g., land owners, or conservation staff working in protected areas) are aware of the locality and sensitivity of existing populations of species at risk.

A companion manual, *Invasive species in Garry oak and associated ecosystems in British Columbia*, provides an additional source of management and scientific information for many of the invasive non-native species in these ecosystems. An electronic version of the companion volume is available at [www.goert.ca](http://www.goert.ca).

### **Taxonomic authorities**

Nomenclature for plants in this manual follows Douglas et al. (2002) unless otherwise noted. Common and scientific names of vertebrates are based on the listings of the BC CDC at the time of publication. Nomenclature for butterflies follows Guppy and Shepard (2001).

### **Further information**

For more information, contact the Garry Oak Ecosystems Recovery Team or view the website at [www.goert.ca](http://www.goert.ca).

For the complete and current lists of rare and endangered species in British Columbia, see the BC CDC's website at [srmwww.gov.bc.ca/atrisk/](http://srmwww.gov.bc.ca/atrisk/). Further information for species elsewhere in their range may be obtained from the NatureServe database at [www.natureserve.org/explorer](http://www.natureserve.org/explorer).

In the coming years, we intend to develop further species accounts as part of this series. Therefore the pages comprising the species accounts are not numbered, but are instead arranged alphabetically by scientific name within the taxonomic groupings. Additional sheets will be distributed as they are produced and can be added to your binder. All species accounts will also be posted on GOERT's website.

Please refer to the glossary at the end of this introduction for descriptions of important terms.

## References

We used the following as important general references in the preparation of the species accounts. Refer to the "References" section of the individual fact sheets for other sources. Species stewardship accounts prepared for the Garry Oak Ecosystems Recovery Team were used as the primary sources of detailed up-to-date information for most of the taxa covered in this manual. These stewardship accounts are available on-line at [www.goert.ca](http://www.goert.ca).

Douglas, G.W., D. Meidinger and J. Penny. 2002. *The rare plants of British Columbia*. BC Ministry of Sustainable Resource Management and BC Ministry of Forests, Victoria, British Columbia.

Douglas, G.W., G.B. Straley (Vols. 1 & 2), D. Meidinger and J. Pojar. 1998-2002. *Illustrated flora of British Columbia*. Vols. 1-8. BC Ministry of Environment, Lands and Parks and BC Ministry of Forests (Vols. 7 & 8: BC Ministry of Sustainable Resource Management and BC Ministry of Forests), Victoria, British Columbia.

Fraser, D.F., W.L. Harper, S.G. Cannings and J.M. Cooper. 1999. *Rare birds of British Columbia*. BC Ministry of Environment, Lands and Parks, Victoria, British Columbia.

Guppy, C.S. and J.H. Shepard. 2001. *The butterflies of British Columbia*. Royal BC Museum and UBC Press, Victoria, British Columbia.

## Glossary

**Blue-listed** – Provincial designation for a taxon or plant community that is considered to be at risk, but is not Extirpated, Endangered, or Threatened. British Columbia's Blue List includes all taxa considered to be Vulnerable in the province.

**COSEWIC** – Committee on the Status of Endangered Wildlife in Canada; a national body existing at arm's length from government and providing science-based assessments on the conservation status of native Canadian taxa. The scientific assessments are based on status reports commissioned by COSEWIC.

**Endangered** – Facing imminent extirpation or extinction.

**Extirpated** – No longer existing in the wild in a given jurisdiction or locality, but still occurring elsewhere.

**Non-native species (alien species, exotic species)** – A species that occurs in an ecosystem only as a result of human assistance, whether deliberate or accidental.

**Occurrence (element occurrence)** – An area where a species is or was present as an ecologically distinct unit. An element occurrence has practical conservation value as it represents a habitat that sustains or contributes to the persistence of the element.

**Red-listed** – Provincial designation for a taxon or plant community that is considered to be Extirpated, Endangered, or Threatened.

**Threatened** – Likely to become Endangered if limiting factors are not reversed.

**Vulnerable** – Of special concern due to characteristics causing particular sensitivity to human activities or natural events.

## Definitions of Species Ranks

The ranking system used by the international Natural Heritage Network assigns status ranks according to standardised criteria. Each assessed taxon is given a global rank (G-rank); a national rank (N-rank); and a subnational rank (S-rank) for each state, province, or territory in its range. Canadian N-ranks are under review and have not been included in all species accounts. The ranks are defined as follows:

- 1 critically imperilled
- 2 imperilled
- 3 vulnerable to extirpation or extinction
- 4 apparently secure
- 5 demonstrably widespread, abundant, and secure
- X Presumed Extinct or Extirpated
- H Possibly extirpated (Historical)
- U Unrankable due to lack of information or conflicting information
- ? Unranked – rank not yet assessed
- R Reported
- Q Indicates uncertainty about taxonomic status
- T Status of infraspecific taxon (e.g., subspecies, population), assigned in conjunction with a global rank. A listed population may be given a T rank; Q is then used after the T-rank to indicate the population's informal taxonomic status (e.g., G5T?Q).
- E Exotic
- Z Zero Occurrence – NZ or SZ rank usually applies to a non-breeding population, e.g, migrating birds

## Acknowledgements

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