

Restoring British Columbia's  
**Garry Oak**  
Ecosystems

PRINCIPLES AND PRACTICES

**Garryoak**  
ecosystems recovery team



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### Project Team

The idea to embark on the development of this guide came out of the April 2007 meeting of the Restoration and Management Recovery Implementation Group (RIG) of the Garry Oak Ecosystems Recovery Team. Coordinated by Don Eastman and Conan Webb, the hard work of the project team has finally brought this idea to life!

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## Lead Authors



### Brenda Costanzo, M.Sc., P.Ag.

Brenda is the Senior Vegetation Specialist with the Ecosystems Protection and Sustainability Branch in the BC Ministry of Environment. She is the co-author of *Native Plants in the Coastal Garden* (2002), with April Pettinger, published by Whitecap Books. Brenda began learning about native plant gardening and propagation while at the Royal BC Museum in the late 1970s. In the mid-1980s she designed and installed the first phase of the native plant garden at Swan Lake Christmas Hill Nature Sanctuary in Victoria. In the mid-1990s she worked with students at the University of Victoria to design the first native plant garden on campus. As well, she has co-instructed a Restoration of Natural Systems course at UVic entitled “Selection and Propagation of Native Plants for Ecosystem Restoration,” and has instructed community education classes on native plant propagation. Brenda has been with GOERT since its inception.



### Don Eastman, Ph.D., R. P. Bio.

Don is a (mostly retired) wildlife biologist with more than 35 years experience in wildlife research and conservation. He graduated with a Master’s degree in Natural History from the University of Aberdeen in 1964, and received a doctorate in Plant Science from the University of British Columbia in 1977. For most of his career (1965-1997), Don worked at the BC Ministry of Environment as a wildlife research biologist, studying the ecology and conservation of a wide range of vertebrates across B.C., with particular reference to impacts of land use activities. Also during this period he represented B.C. on the national committee that developed the Canadian Biodiversity Strategy. After retiring from the provincial government, he worked for five years as the Faculty Coordinator of the Restoration of Natural Systems Program at the University of Victoria. Don is an Adjunct Associate Professor at the university and has taught courses on wildlife conservation and ecological restoration; he continues his university involvement through graduate students. Since his second retirement, he has remained engaged in a variety of conservation and ecological restoration activities, especially in those dealing with species and ecosystems at risk.



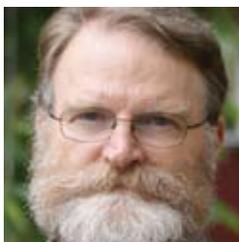
### Christian Engelstoft, M.Sc., R.P.Bio.

Christian has over 20 years of experience in wildlife inventories and environmental studies in British Columbia and internationally and is the co-owner of Biolinx Environmental Research Ltd. (Sidney, BC). He has developed and implemented inventory and monitoring protocols for a variety of wildlife, including deer, otters, marine birds, the Northern Goshawk, turtles, reptiles, amphibians, and gastropods. He has particular interest in the Endangered Sharp-tailed Snake and other reptiles on the Gulf Islands and Vancouver Island. He has also worked closely with local conservation groups with public education and outreach. Currently, he is a member of GOERT's Restoration and Management RIG and the Western Painted Turtle Recovery Team, and is the scientific advisor to the Sharp-tailed Snake Recovery Team.



### Richard Hebda, Ph.D.

Richard has a Ph.D. in Botany from the University of British Columbia and has been a Curator (Botany and Earth History) at the Royal British Columbia Museum for more than 31 years and an adjunct faculty member (Biology, Earth and Ocean Sciences, Environmental Studies) at the University of Victoria for more than 26 years. He was the first faculty coordinator of the Restoration of Natural Systems Program at UVic and the Province of B.C.'s expert advisor on Burns Bog (purchased as a globally unique ecosystem). He studies vegetation and climate history of British Columbia; Ethnobotany of B.C. First Nations; climate change and its impacts; restoration of natural systems and processes; ecology and origins of Garry Oak and alpine ecosystems; and botany of grasses. Richard, with his graduate students, is author of 100+ scientific papers; 200+ popular articles mainly on bulbs and native plants and climate change; (co) author of four books and major reports; and (co) editor of three books.



### Fred Hook

Fred is the Environmental Technician for City of Victoria Parks. He worked in the City's nurseries for more than 10 years growing exotic and native plants before taking on the job of looking after Victoria's natural areas. He has a Bachelor of Fine Arts from UVic in sculpture, a diploma in Education, a diploma in Cultural Resource Management (restoration of heritage landscapes) and is currently working on a Restoration of Natural Systems diploma at the University of Victoria. Fred's botanical knowledge is self-taught. In the process of making more than 1000 collections for the Devonian Botanic Garden at University of Alberta, Fred and his wife honed their skills at keying out plants and assessing the ecological characteristics of a site.



### Michelle Gorman, Ph.D.

Michelle is an entomologist with more than 30 years of experience in integrated pest management and insect and plant interactions, including vectoring plant diseases and invasive species management. She graduated from the University of Victoria with a B.Sc. in 1975, from Montana State University in 1979 with a M.Sc., with a major in Entomology and a minor in Plant Physiology, and from North Dakota State University in 1982 with a Ph.D. in Entomology and a minor in Plant Pathology. Michelle works for City of Victoria Parks as the Integrated Pest Management (IPM) Coordinator, and she co-chairs the Municipal Committee of the B.C. Plant Protection Advisory Council. She is a member of the Restoration and Management RIG of GOERT and co-chairs its Invasive Species Steering Committee. She looks for the delicate balance of pest management in context with environmental conservation.



### Ted Lea, R.P. Bio. (Ret.)

Ted is a terrestrial vegetation ecologist who worked for 35 years with the BC Ministry of Environment. He has been involved in ecosystem mapping, including historical ecosystem mapping, species at risk and ecosystem at risk conservation and management, and invasive species management. He has done historical ecosystem mapping for the Garry Oak ecosystem areas of Vancouver Island, as well as historical ecosystem mapping in the Okanagan and Similkameen valleys, where he mapped using 1938 air photographs and extrapolated ecological conditions back to pre-European settlement time.



### Carolyn MacDonald

Carolyn is an Environmental Education Officer with the District of Saanich. Her work with Saanich includes leading public invasive species programs, ecological restoration projects and other education and outreach programs. She chaired and coordinated the Garry Oak Restoration Project (GORP), [www.saanich.ca/gorp](http://www.saanich.ca/gorp), for almost ten years and has served on the GOERT Restoration and Management RIG since 2007. Carolyn is on the Board of GOERT and the Invasive Plant Council of BC. She enjoys writing and has worked on a number of manuals, including co-authoring and leading the partnership project for *Garry Oak Ecosystems of BC: An Educator's Guide* (2006). Carolyn's background is in education, environmental education, and ecological restoration.



#### Dave Polster, M.Sc., R.P. Bio.

Dave is a plant ecologist with over 30 years of experience in vegetation studies, reclamation and invasive species management. He has developed a wide variety of reclamation techniques for mines, industrial developments and steep/unstable slopes, as well as techniques for the re-establishment of riparian and aquatic habitats. Dave has provided on-site design and direction in the development of reclamation and bioengineering systems for restoration of severely damaged ecosystems. He pioneered the concept of successional reclamation where the aim of the reclamation program is the re-integration of the disturbed site into the natural processes of vegetation succession. He has applied his knowledge of ecology to solving problems of unwanted and invasive vegetation. He has authored numerous papers and teaches graduate level courses on these topics.



#### Shyanne Smith, M.Sc.

Shyanne has more than 9 years' experience working on species and ecosystems at risk recovery and conservation in Canada. She has worked closely with a variety of stakeholder groups as a team or project lead, and has authored or co-authored several species at risk recovery planning documents. An ecologist with a background in biogeography, species at risk inventory, recovery planning and field botany, Shyanne completed her M.Sc. on historical stand dynamics in Garry Oak ecosystems in 2007. Shyanne was the RIG Coordinator with GOERT for three years before taking on the roles of Program Manager and recovery team co-chair in December 2008. She currently oversees the Garry Oak ecosystems recovery program (see [www.goert.ca](http://www.goert.ca)) supported by six core staff. Key project areas include species at risk landholder contact, recovery planning, local government and First Nations outreach, recovery project implementation and support, and public communications.



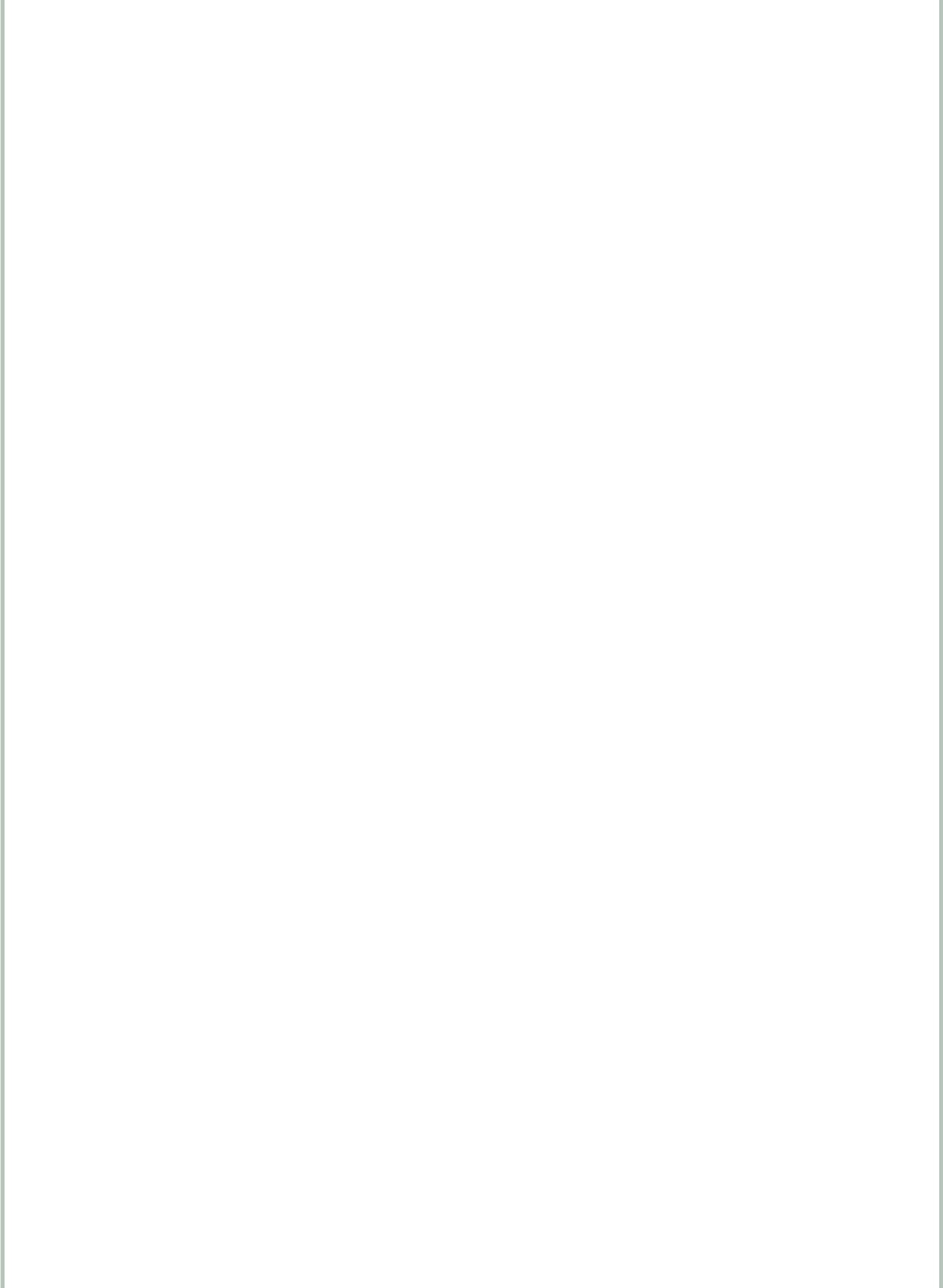
### Kersti Vaino, B.Sc.-E.S.

Kersti specializes in terrestrial biology and has experience in species at risk biology, vegetation and habitat ecology, and invasive species management. In 2001, she completed a degree in environmental science at Royal Roads University. She spent the following years working in a number of positions in the environmental field where she gained a range of experience in field biology, including inventory of species at risk, assessing habitat use by grizzly bears, and studying the effects of salmon farming on sea lice infestations in wild salmon populations. Kersti spent two years working with GOERT where she helped coordinate the recovery of plant species at risk in these sensitive ecosystems. Her work involved mapping of species at risk occurrences and their habitat, coordinating restoration projects, preparing documents for recovery planning, and preparing resources for restoration practitioners and land managers. Kersti also has an interest in GIS and has developed geodatabases to track the occurrence of species and ecosystems at risk. In 2010, she relocated to Squamish, B.C. where she works with Cascade Environmental Resource Group.



### Conan Webb, B.Sc.

Conan has been working on the conservation of rare species and ecosystems since 2002. His work has been focused primarily on Garry Oak ecosystems and rare plants found therein; however, he has also worked with other species in various capacities. Conan has spent the last few years working for the Species at Risk program at Parks Canada focusing on Garry Oak restoration at Fort Rodd Hill National Historic Site and Gulf Islands National Park Reserve, including species at risk and invasive species research and management. He is a member of GOERT and chairs the Restoration and Management RIG. His current position with Parks Canada is focused on recovery planning for species at risk in Garry Oak ecosystems.





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**Chapter 11** Conclusion and Glossary





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