



# Research Colloquium 2011 Proceedings



Photo by Kathryn Martell

Pacific Forestry Centre  
Canadian Forest Service  
506 West Burnside Road  
Victoria, BC  
Canada

February 11, 2011

## **PROGRAM**

**8<sup>th</sup> ANNUAL RESEARCH COLLOQUIUM**  
**February 11<sup>th</sup>, 2011**  
**Pacific Forestry Centre, Victoria**

**9:00 Opening remarks.** Mike Meagher, retired Chair of GOERT Research RIG

**9:10 Welcome to Pacific Forestry Centre.** Kami Ramcharan, Director General,  
Pacific and Yukon Region, Canadian Forest Service

**9:15 PRESENTATIONS.** Moderator: Chris Junck, Species at Risk Outreach  
Specialist, GOERT

**Robin Annschild, Salt Spring Island Conservancy [CANCELLED]**  
Mt. Tuam Garry Oak Ecosystem Special Management Area

**Marian McCoy, Saanich Parks**  
Research opportunities in District of Saanich park natural areas

**Elizabeth Cronin, UVic Biology Student / GORP / Parks Canada**  
Effects of fire on broom density on Mt. Tolmie

**10:15 Announcements and Break**

**10:30 PRESENTATIONS**

**Marilyn Fuchs, Carrina Maslovat, Colleen Long**  
Mill Hill Restoration Project: What have we learned in 9 years?

**Terry McIntosh, Consultant, Vancouver, BC**  
New Observations of Rare Vascular Plants and Bryophytes in Garry  
Oak Ecosystems

**Ron Carter, ISA Certified Arborist**  
Oak vs. Palm: the Classic Battle

**Peter Arcese, University of British Columbia**  
Maintenance of Genetic Variation in *Plectritis congesta*

**12:00 Announcements and Lunch Break**

**1:15 PRESENTATIONS**

**Gary Slater, Ecostudies Institute (presentation by Lisa Dumoulin, GOERT)**  
Reintroduction of Western Bluebirds to San Juan Island, Washington

**Devin Methven, Trinity Western University**

The Hypothesized Induction of Condensed Tannins in Garry Oak (*Quercus garryana*) Foliage by the Propertius Duskywing (*Erynnis propertius*)

**Todd Kohler, David Tanner, Rob Underhill, Parks Canada**

Camas Meadow at Fort Rodd Hill National Historic Site: Planning and Propagation

**2:15 Break**

**2:45 PRESENTATIONS**

**Dave Polster**

Removal of Douglas-fir in-growth and encroachment at Mt. Tzuhalem

**Thiago Gomes, University of Victoria**

Restoring the Gardens at K'djis, Chatham Islands, BC

**Alice Cang, University of British Columbia**

Defining historical baselines for conservation: ecological changes since European settlement on Vancouver Island, Canada

**3:45 Announcements**

**4:00 Closing Remarks**

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**SUBMITTED ABSTRACTS**

**COMPARING ENDANGERED STREAKED HORNED LARK (*EREMOPHILA ALPESTRIS STRIGATA*) FECUNDITY TO OTHER GRASSLAND BIRDS**

Jeffrey Anderson, MSc. Candidate, Evergreen State College

**RESTORING A GARRY OAK WOODLAND ON THE SEQUIM PRAIRIE**

Bill Wood, Sequim Oak Site Project Leader

**OAK WOODLAND RESTORATION AT ELK ROCK ISLAND NATURAL AREA:  
A PARTNERSHIP BETWEEN PORTLAND ENVIRONMENTAL SERVICES AND PARKS CITY NATURE**

Claire A. Puchy and Mark Griswold Wilson, City of Portland

## **Presenters**

### **Jeffrey Anderson**

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## **Presentations**

### **MILL HILL RESTORATION PROJECT: WHAT HAVE WE LEARNED IN 9 YEARS?**

**Marilyn Fuchs, Colleen Long, and Carrina Maslovat**  
CRD Parks

Mill Hill Regional Park is home to 13 plant species at risk, which occur at about 180 different locations in the park. The large and ongoing Mill Hill Restoration Project was initiated in 2002. Project objectives are a) to protect and restore the Garry oak ecosystems in Mill Hill Regional Park by removing invasive species and b) to protect rare plants from inappropriate recreational access by improving and modifying trails. In addition to invasive species removal by paid staff and volunteers, and trail modification by paid staff, project activities include rare plant and vegetation plot monitoring by consulting botanists to track the performance of the species at risk and their habitats in relation to restoration actions. Over the 9 years of the project, we have treated and retreated polygons with a cumulative area of 37.1 hectares, all within 16 hectares of the park, and have removed 57.6 metric tonnes of invasive plant biomass, mostly Scotch broom and daphne. Treatment protocols have been refined as the project has proceeded, primarily due to the extent and rapidity of regrowth, and include:

- cutting only - no pulling, even for small shrubs, to minimize soil disturbance
- emphasizing to staff and volunteers to “have a light touch on the land”, to minimize soil disturbance
- emphasizing to staff and volunteers to cut low, below the root collar, to minimize resprouting
- giving staff and volunteers focused, one-on-one field instruction on cutting technique; one leader to every 10-15 volunteers worked well to implement this
- maintaining treated areas before we take on any new areas
- adding an ongoing spring follow-up removal of flowering broom, to prevent subsequent input into the seed bank.

Volunteer involvement in the project has always been strong. In 2010, 166 volunteers contributed 617 hours towards invasive species removal. Park neighbours, including nearby schools, have shown increasing interest in participating. One local high school used the event as a fundraiser, in which 40 students were sponsored for the number of hours spent removing broom and thereby raised \$6500.00. Monitoring of rare plants and vegetation plots suggest that the ongoing shrub removal in Mill Hill Regional Park is beneficial to both species at risk and native plant communities. White-top aster (*Sericocarpus rigidus*) showed much greater increases in the number of shoots in areas where Scotch broom had been removed compared to areas that have never been treated. Monitoring plots with broom removal had higher total numbers of species and more native species present than control plots.

## OAK VS. PALM: THE CLASSIC BATTLE

**Ron Carter**

ISA Certified Arborist

“The Chinese Windmill Palm is the tree of the future.” “With Climate change, the Garry oak is heading north.” “As a resident of Oak Bay, I would like to see potted palms placed along Oak Bay Avenue and at Cattle Point.”

These are all quotes from Michael Prescott, a resident and Palm Tree enthusiast and originator of Oak Bay Tourism’s Annual Palm Tree Sale on the lawn of the Oak Bay Municipal Hall. Mr. Prescott and Tourism Oak Bay’s claim is that Oak Bay is the Palm Tree Capital of Canada as winner of the annual palm tree counts as well as the fact that over 2000 Windmill palm trees have been sold over the last few years. The reason I’m here is that I am a resident of Oak Bay, worked there for quite a few years and was telling Mike Meagher about how I had attended the palm days and tried to balance the event by handing out a combined total of about 200 Garry oak seedlings in both the spring of 2007, uninvited, and again on invite in 2008. I had learned about the sale a year before and so dropped in to ask if they were selling Garry oaks as well, I figured since the proceeds were going to the 5<sup>th</sup> Garry Oak Scout Group and the event was permitted on the lawn of the Oak Bay Municipal Hall by Oak Bay Council, supported by Oak Bay Tourism and Oak Bay Rotary Club I thought some of our namesakes would also be offered. But, alas, Oak Bay Tourism was not promoting oaks at this event nor was there any mention of the namesake. This talk discusses the Oak Bay Tourism Palm Tree sale and my efforts to subvert or prevent that event. Are palms the tree of the future for this area?

# THE MAINTENANCE OF GENETIC AND PHENOTYPIC POLYMORPHISM IN ISLAND POPULATIONS OF *PLECTRITIS CONGESTA*

**Peter Arcese**

Centre for Applied Conservation Research  
Faculty of Forestry, UBC

Despite rapid advances in the study of genetic variation in free-living species relatively little is known about mechanisms that maintain spatial variation in polymorphisms known to affect fitness. I test a new hypothesis for the maintenance of variation at the fruit wing locus in *Plectritis congesta* (Valerianaceae) based on the distribution of mammalian herbivores. Surveys of 29 islands showed that the frequency of wingless, homozygous recessives in populations varied from 0 to 100%, but averaged 94% on islands with resident herbivores versus 10% where herbivores were absent ( $r^2 = .81$ ).

Comparing 2781 progeny from 30 populations grown in a common garden showed that where herbivores were absent plants were taller, narrower, bloomed earlier and had more inflorescences than in populations with herbivores, but had fewer inflorescences relative to height. Parental phenotype and progeny genotype also predicted plant height and phenology, but not shape. Because herbivory predicted floral density and plant shape better than parental phenotype or progeny genotype, loci not closely linked to the fruit wing locus probably also influence the striking differences between *P. congesta* populations described here. Fruit wing frequencies were stable for up to 5 yrs within populations, but a heterozygote excess in populations without herbivores was absent in populations with herbivores present. The fitness of recessive genotypes was only 61% of that for heterozygotes in populations without herbivores but was 9% higher than heterozygotes where herbivores were resident, indicating that the fitness advantage of heterozygotes was eliminated in the presence of herbivores. Outcrossing rates averaged .62 (range = .39 – .86) in 10 well-sampled populations but did not vary with herbivory. Overall, these results support the hypothesis that spatial variation in natural selection maintains polymorphism at the fruit wing locus within and among *P. congesta* populations because fruit wing genotype is linked to phenotypic traits that affect the fitness of plants differently in the presence and absence of herbivores.

# REINTRODUCTION OF WESTERN BLUEBIRDS TO SAN JUAN ISLAND, WASHINGTON

**Gary Slater**  
Ecostudies Institute

Avian reintroductions are an important conservation tool, but landbird reintroductions are relatively rare compared to other avian taxa. We report on an ongoing reintroduction of Western bluebirds (*Sialis mexicana*) to their historic range in the prairie-oak ecosystem on San Juan Island, Washington. Further, we assess preliminary reintroduction success and discuss the feasibility of further bluebird reintroductions. The Western Bluebird, a secondary cavity-nester, was considered common in prairie-oak habitats of the San Juan Island Archipelago during the early 1900's, but disappeared due to habitat loss and fragmentation and competition for nest sites. Traditional conservation strategies of land protection, habitat management, and outreach have been implemented, yet bluebirds have not returned. With natural recolonization unlikely to occur due to the long distance (165 km) and large area of unsuitable habitat (i.e., urban Seattle and Puget Sound) between San Juan Island and the closest source population in south Puget Sound, we initiated a 5-year reintroduction program. The goal of the project was to establish a viable self-sustaining population. We released 80 adults and 26 juveniles from 2007 to 2010 using a variety of soft-release techniques, and we collected demographic data on the reintroduced population to evaluate the success of the project. Most individuals were placed in outdoor aviaries in suitable habitat and held for one to three weeks. Using preferred release methods, approximately, 47% of released adults established a territory and bred. Demographic measures of productivity and annual return rates in the reintroduced population were similar to other northwest populations. Annual counts of adults indicated that the population grew in each year of the project and that growth from 2008 to 2010 was, on average, 59%. The population index reached 35 individuals in 2010. The program achieved preliminary criteria of success: 1) individuals were safely translocated to the release site, and released individuals established breeding territories; 2) both translocated individuals and their offspring reproduced successfully; and 3) the reintroduced population grew each year. However, challenges remain, most notably a male-biased

sex ratio in the population. Future plans include one more year of translocations and continued demographic monitoring. Ultimately, we aim to estimate population growth rates to evaluate long-term success. Community involvement has been critical to the success of this project and the reintroduction has generated tangible accomplishments towards conservation of prairie-oak habitats through education and habitat protection. Based on results to date, translocation of bluebirds to other former parts of their range, such as Whidbey Island, Washington and Vancouver and Gulf Islands, British Columbia appear defensible.

# **THE HYPOTHESIZED INDUCTION OF CONDENSED TANNINS IN GARRY OAK (*QUERCUS GARRYANA*) FOLIAGE BY THE PROPERTIUS DUSKYWING (*ERYNNIS PROPERTIUS*)**

**Devin Methven and David R. Clements**  
Department of Biology, Trinity Western University

During the summer of 2010 we set out to develop a greater understanding of Garry Oak (*Quercus garryana*), leaf phytochemistry and its relationship to the preferred location of *Erynnis propertius* (Lepidoptera: Hesperiiidae), the Propertius duskywing. During field studies conducting in 2009 it was observed that larvae of this specialist butterfly were primarily found at the obtuse region of *Q. garryana* foliage. With this observation it was hypothesized that lower concentrations of condensed tannins were induced as a result of herbivore activity. In an attempt to evaluate this possible correlation, 6 test samples were established on Trinity Western University's the Crow's Nest Ecological Research Area (CNERA) on Salt Spring Island. On June 23<sup>rd</sup> 2010, three different regions of *Quercus garryana* leaves were physical damaged using a single hole puncher, in attempt to model Lepidoptera feeding. Of each of the sample sets, three different regions of *Q. garryana* leaves were purposefully damaged; at the obtuse region, along the side of the leaf and sporadically across the area of the leaf. On September 22<sup>nd</sup> 2010, each sample set was collected along with an undamaged leaf. The collected foliage was stored at TWU at -78°C until further analysis in the fall of 2010. At this time leaves were analyzed for their relative concentrations of condensed and hydrolyzable tannins, using Folin-Ciocalteu methods. This study enabled the comparison between leaf area and leaf damage as well as the concentration of condensed tannins as a result of foliage damage. It was determined that there was no significance between total leaf area and the residual area of leaf damage following the induction technique. Furthermore, it was found using a one-way ANOVA and Tukey test that condensed tannin concentration were significantly higher in the foliage damaged along the side opposed to sporadically across the leaf or at the obtuse region. When applied to the preferred location of *Erynnis propertius* larvae on *Q. garryana* foliage it is evident that the obtuse region where the majority of larvae reside, is less sensitive to the induction

of the condensed tannin biosynthetic pathway opposed to along the sides of the foliage.

# **REMOVAL OF DOUGLAS-FIR INGROWTH AND ENCROACHMENT AT MOUNT TZUHALEM ECOLOGICAL RESERVE**

**David F. Polster**  
Polster Environmental Services Ltd.

Mount Tzuhalem Ecological Reserve (#112) was dedicated in 1984 to preserve outstanding Garry oak – wildflower stands. At that time it was believed that all that was needed for the preservation of these ecosystems was to put a fence around them and prevent the housing developments that were moving up the hill beside the reserve from paving over the beautiful meadows. However, with the housing developments came the Scotch Broom and invasive grasses and within a decade the reserve was covered by broom. Fortunately, the Cowichan Valley Naturalists Society led by reserve warden Syd Watts, recognized the degradation caused by the broom and mounted a counter-attack. Over the next 10 years, Syd and his dedicated crew of volunteers removed most of the broom from the meadows. The flower meadows, including the species at risk, thrived and the show of spring wildflowers is spectacular. Behind the beautiful meadows, another threat was lurking. Timber harvesting in the area of the reserve in the 1940's as well as a lack of landscape level fires has resulted in the establishment of dense stands of second growth Douglas-fir. This presentation describes the treatments that have been developed to address this issue.

# RESTORING THE GARDENS AT K'DJIS, CHATHAM ISLANDS, BC

**Thiago Gomes (MSc Candidate)**  
School of Environmental Studies  
University of Victoria

The Inner Channels, off Oak Bay, between Juan de Fuca and Haro Straits, harbours islands and islets representing small but important Garry oak ecosystem remnants in the region. Discovery Island Marine Park, Oak Bay Islands Ecological Reserve, Chatham Islands and adjacent islets comprise of Garry oak sensitive ecosystems, supporting a wide diversity of habitats for plant and wildlife communities. Most of these islands are under provincial protection and BC Parks supervision, except for Chatham Islands, Songhees First Nation territory.

Historically, all of the islands and islets in Juan de Fuca and Haro Straits were Strait Salish's. First Nations peoples developed a highly adaptive ecological knowledge through an intimate reciprocal relationship with the land – islands, waters and ecosystems. The very oak savannas are a result of aboriginal intentional burning and harvesting. Rapid environmental and social change is leading to an unprecedented loss of biocultural diversity.

Songhees elder Joan Morris, being born and raised by her grandparents and other elders on Chatham I [*K'djis*], dreams of “bringing back” the gardens and orchards systems, as well as re-establishing ecological integrity and the relationship between her people and the land. Along with Joan Morris and members of the Songhees community, ethnoecological restoration investigation will be carried to address these objectives. This research aims to combine qualitative, quantitative and participatory approaches in order to successfully (1) Document Traditional Ecological Knowledge (TEK) associated with *K'djis* orchards and gardens, including the use and cultural significance of natural resources, especially plant species, traditional management practices, trade, as well as social and environmental change in Chatham Islands, (2)

Evaluate how change in this social-ecological system has influenced ecological and social systems, as well as the resulting implications for restoration, (3) Develop a framework for ethnoecological restoration in *K'djis*.

These approaches combined will allow assessing the assertion that the revitalization of TEK and practices respond in positive feedback to ecological restoration and vice-versa. Feasible outcomes from this project will be (1) Revitalization of TEK in Chatham Islands, regarding the traditional “way of life”, with emphasis in the orchard and garden systems, through video interviews and “mapping” of elder Joan Morris’ memories, (2) Understanding of how environmental change in Chatham Islands have influenced social-ecological relationships, (3) Generate a historical reference for restoration, (4) Propose ethnoecological restoration strategies for the orchards and gardens in *K'djis*, Chatham Islands, and (5) Development of a framework for restoration in cultural landscapes.

# DEFINING HISTORICAL BASELINES FOR CONSERVATION: ECOLOGICAL CHANGES SINCE EUROPEAN SETTLEMENT ON VANCOUVER ISLAND, CANADA

**Alice Cang, Anne Bjorkman, and Mark Vellend**  
University of British Columbia

Conservation and restoration goals are often defined by historical baseline conditions that occurred prior to a particular period of human disturbance, such as European settlement in North America. Nevertheless, if ecosystems were heavily influenced by native peoples prior to European settlement, conservation efforts may require active management rather than simple removal of or reductions in recent forms of disturbance. We used pre-European settlement land survey records (1859–1874) and contemporary vegetation surveys to assess changes over the past 150 years in tree species and habitat composition, forest density, and tree size structure on southern Vancouver Island and Saltspring Island, British Columbia, Canada. Several lines of evidence support the hypothesis that frequent historical burning by native peoples, and subsequent fire suppression, have played dominant roles in shaping this landscape. First, the relative frequency of fire-sensitive species (e.g., cedar *Thuja plicata*) has increased, whereas fire-tolerant species (e.g., Douglas-fir *Pseudotsuga menziesii*) have decreased. Tree density has increased 2-fold, and the proportion of the landscape in forest has greatly increased at the expense of open habitats (plains, savannas), which today contain most of the region's threatened species. Finally, the frequency distribution of tree size has shifted from unimodal to monotonically decreasing, which suggests removal of an important barrier to tree recruitment. In addition, although most of the open habitats are associated with Garry oak (*Quercus garryana*) at present, most of the open habitats prior to European settlement were associated with Douglas-fir, which suggests that the current focus on Garry oak as a flagship for the many rare species in savannas may be misguided. Overall, our results indicate that the maintenance and restoration of open habitats will require active management and that historical records can provide critical guidance to such efforts.



## **Submitted abstracts**

# **COMPARING ENDANGERED STREAKED HORNED LARK (*EREMOPHILA ALPESTRIS STRIGATA*) FECUNDITY TO OTHER GRASSLAND BIRDS**

**Jeffrey K. Anderson**  
Evergreen State College

The Streaked Horned Lark (*Eremophila alpestris strigata*) is a critically endangered subspecies which breeds on prairie remnants in Washington and Oregon. Dramatic losses in grassland habitat have pushed the lowland Puget populations to the brink of extinction, with projected population losses at 40% a year. In order to investigate potential mechanisms driving this decline, I conducted a case study of Streaked Horned Larks at 13<sup>th</sup> Division Prairie, Fort Lewis, Washington over a two year period, 2007 and 2009. I analyzed nesting data of all species comprising the grassland ground nesting guild, and compared Streaked Horned Lark fecundity with those of the larger guild to determine if the breeding site itself is a sink, or if low fecundity is specific to Larks. I compared fecundity in two separate groups: (1) Larks vs. the ground nesting guild and (2) Larks vs. Savannah Sparrows (*Passerculus sandwichensis*). In these comparisons, Streaked Horned Larks had significantly lower values in all measures of reproductive success when compared to both the guild and Savannah Sparrows. Furthermore, the Streaked Horned Lark's low egg hatching rate of 44% suggests that inbreeding depression may be playing a role in the decline of Larks at 13<sup>th</sup> Division Prairie. Although analyses of nest site habitat variables confirmed that Streaked Horned Larks have unique nesting preferences, cross-year, interspecific comparisons of vital rates and nest site characteristics did not indicate site-wide environmental causes driving Streaked Horned Lark declines. Since these findings are based on a case study of a single breeding site, I recommend further monitoring of this site and other remaining breeding sites, with emphasis on potential inbreeding depression.

## **RESTORING A GARRY OAK WOODLAND ON THE SEQUIM PRAIRIE**

**Bill Wood**  
Retired Biologist

This project was initiated in 2003 within the Sequim Prairie on the north Olympic Peninsula in Washington State. It was established on eight hectares of former pastureland/hayfield now owned by the Washington State Department of Fish and Wildlife. Project objective was restoration of the Garry oak overstory by planting and maintenance of approximately 2,200 oak seedlings and acorns in prepared plots. Initial funding was provided by the Natural Resource Conservation Service, U. S. Fish and Wildlife Service, and Washington Department of Fish and Wildlife.

Installation of irrigation infrastructure and plantation layout was completed in the summer of 2003. Planting commenced in November of 2003, and continued each fall for two additional years. Existing vegetation consisted primarily of introduced agrarian species. Volunteers completed the majority of planting and maintenance work, contributing over 2700 hours since project inception.

Plant stock originated from acorns produced by remnant stands of Garry oak presently found on the Sequim prairie. The majority of planting stock was one and two year old seedlings. Some plots were planted with acorns to compare survival and growth rates with seedlings and to assess cost effectiveness of re-establishing oak stands using acorns. Spatial distribution of planting plots generally followed those observed in natural Garry oak (Oregon White) stands in the Puget lowlands and Willamette valley. Stem densities ranged from 247 to 642/hectare. These planting densities allowed for an expected 50% mortality over a several year period. Plots were scalped of existing vegetation to the bottom of the root zone (approximately 10 cm). Planting holes were excavated to about 60 cm using a tractor powered 30 cm diameter auger. Reportedly biodegradable pots containing the one-two year old plants supplied by a local nursery were placed in each hole at root crown level and filled with excavated material. Each planting plot was dusted with dolomite lime prior to being mulched with 8-10 cm of bark mulch.

Browse protectors were installed over each plant to prevent browsing by deer and elk. These consisted of a tubular polyethylene 4 cm mesh stretched over a metal frame anchored to the ground. A variety of devices were tested to prevent feeding on the seedlings by the principal rodent, *Microtus oregoni*. Fifteen-20 cm lengths of 10 cm diameter PVC tubes were found to be most effective. In addition to the protective structures installed at each plant, surrounding vegetation was mowed once annually to reduce population buildup of *M. oregoni*.

Drip Irrigation to each plant was metered through 3.8 lph woodpecker drip emitters in weekly six hour blocks during the period mid-April through July for total weekly irrigation of 23 liters. Irrigation was gradually reduced during August to facilitate hardening off of the plants.

Annual maintenance of the plants consisted of weeding within the perimeter (approximately 2/3 m<sup>2</sup>) of the browse protector, checking emitter function, and maintaining the integrity of the browse and rodent protection devices.

Survival to date of trees introduced as seedlings has exceeded 80%. Where evaluated, survival of plants introduced as acorns was 41% to leaf bearing shoot by the following spring. However, multiple acorns planted in each plot resulted in 71% of all acorn planted plots showing viable shoots by the following spring.

Annual increase in height over a seven year period averaged 7 cm for seedlings planted in fall of 2003. Growth of individual plants was highly variable, ranging from less than 1 cm to 19 cm annually. Variables affecting growth rate were believed to be care exercised in planting, local soil type, adequacy of irrigation, and the rate of decomposition of the “biodegradable” pots. Recently it was found that the plastic liner of these pots had not degraded over periods as long as seven years and in most cases impeded root development, access to soil nutrients, and for some plants blocked irrigation water from reaching the plant. Recent maintenance efforts have focused on extracting these liners from affected plants.

# **OAK WOODLAND RESTORATION AT ELK ROCK ISLAND NATURAL AREA: A PARTNERSHIP BETWEEN PORTLAND ENVIRONMENTAL SERVICES AND PARKS CITY NATURE**

**Claire A. Puchy and Mark Griswold Wilson**  
City of Portland

As documented in *Urbanizing Flora of Portland, Oregon* (2009), about 150,000 acres of Oregon oak woodland (*Quercus garryana*) and oak savannah prairie were recorded in the core of the Portland metropolitan area in the early 1850s. Few stands remain and the State and City of Portland consider oak habitats as having special status; oaks, and their associated plants and animals, are now high priorities for conservation and restoration. A 2008 assessment of oak woodland conditions on Elk Rock Island, a 13-acre Parks managed natural area, revealed that:

- Douglas fir (*Pseudotsuga menziesii*) and grand fir (*Abies grandis*) were overtopping and shading oaks resulting in oak mortality, and poor mast production and seedling survival
- Conifer shading was also resulting in the conversion of oak associated shrubs and native groundcover grasses and forbs to a conifer associated plant community

Oak release work (i.e., conifer removal, girdling, topping) was performed by Aquatic Contracting, LLC in September 2010. Initial project planning began in 2004 with annual surveys of the island's vegetation and the initiation of invasive species control. In the spring of 2010 a baseline avian survey was conducted and all recent vegetation survey data were compiled and compared to records from vegetation surveys of oak woodlands conducted locally in the early 1900's. The records of species that once grew beneath the oaks provided clues about historic site conditions (i.e., oak spacing, understory light and species composition) and guided preparation of long term restoration and monitoring plans for the woodland. More information about this project is found at [www.oregonlive.com/environment/index.ssf/2010/09/saving\\_the\\_oaks\\_of\\_portlands\\_e.html](http://www.oregonlive.com/environment/index.ssf/2010/09/saving_the_oaks_of_portlands_e.html).