Report on

Biodiversity in Stanley Park Symposium and Public Forum, Saturday, October 4th, 2008

Co-sponsored by the Entomological Society of British Columbia and the Stanley Park Ecology Society.

See attached program for details of the speakers and the day's activities. Originally we had planned for two federal scientists to participate in the symposium but when the federal election was called, their participation was withdrawn by their management group in Ottawa. I transferred the paper I planned to give at the ESBC AGM on Friday October 3rd to fill this gap. The Abstracts of Dr. Jon Sweeney and Dr. Lee Humble were included in the program (see page 9 of the program).

Attendees: 71 persons registered on the morning of the Symposium. Their affiliations are as follows (unknown and non-stated were classified as Public)

Public	20
University of British Columbia	15
Stanley Park Ecology Society	8
British Columbia Institute of Technology	5
Agriculture and Agrifood Canada	4
BC Ministry of Forests and Range	4
Vancouver Parks and Recreation	4
Canadian Food and Inspection Agency	3
Simon Fraser University	3
High School Students	2
Department of Fisheries and Oceans	1
Vancouver Natural History Society	1
BC Ministry of Environment	1
Total	71

Lunch Time Bus Tours
Two buses were supplied by the Vancouver Trolley Company. The tour guides were Jim Lowden and Bill Stephen from Vancouver Parks and Recreation. Both buses were at capacity and the tours lasted just over an hour. Three main stops/slow drive-by locations showed the challenges in removing a large volume of fallen timber and the subsequent rehabilitation and replanting of the sites. The main locations were Pipe Line Road east of Beaver Lake; the Merilees Trail area near Prospect Point and the southern border of the treed area of the park on the north side of Lost Lagoon. The tours gave participants a common experience of Stanley as it is today which greatly helped the afternoon discussions. Several very favourable comments were received from the Symposium members who participated in these tours.

Public Forum:
Five sessions were set up in the afternoon to discuss various aspects of the management of biodiversity in Stanley Park. The session topics (and leaders) were:

Management of the forest habitats (Greg Farnden)
Management for small vertebrates (Robyn Worcester)
Invasive weeds and their impact on biodiversity (Jillayne Peers)
Management of the biodiversity in aquatic habitats (Karen Needham and Rex Kenner)
How do we engage the public in monitoring for invasive insects in Stanley Park
(Troy Kimoto)

Groups discussed their specific areas of interest for about an hour. The Group leaders reported back to the general assembly (now about 35 persons) and summary comments were offered by Dr. Geoff Scudder who was the lead speaker in the morning's symposium.

Summary Synopses from break-out sessions

Management of the forest habitats (Craig Farnden)

Threats and management challenges for ecosystems in Stanley Park are heavily influenced by several factors:

1. There are seven million human visitors per year, imposing a high degree of stress on park ecosystems and infrastructure. Forest areas are regularly impacted by factors such as ad hoc trails, garbage deposition, infrastructure development and management actions to protect public safety.
2. There are increasing populations of invasive species that are difficult to eradicate and in many cases are highly shade tolerant.
3. The park is isolated from other areas of similar forest, thus limiting migration of native species.

Of primary concern is the long term viability of forest ecosystems in a set of conditions that reflects natural variability. Small but incremental degradation to both the extent and health of Stanley Park's forests will continue to be a major threat.

One of the major initiatives required to manage and protect forest ecosystems is a consensus on a vision for what the forests should be. This will require ongoing consultations such as those that have occurred with the Recovery Plan and the Forest Management Plan currently under development, and should involve the public, Parks staff and the academic community.

Management for small vertebrates (Robyn Worcester)

What do Park users value about Stanley Park?

Although there are many different user groups in Stanley Park and they all value it for different reasons, we have determined that there are four major values: recreational, educational, health and wellness, and nature appreciation. **Recreational values** include the use of the park for sports activities, family outings, community events (i.e. parades and walks), picnics, etc. School groups, community groups and other people use the Park as an outdoor classroom and make use of its **educational value**. The park has a **health and wellness value** for many people who use it as a place to get exercise, to reconnect with nature, or for general relaxation and serenity. Nature enthusiasts, photographers, bird watchers, and others use the park for its **nature appreciation value**. It is a place where natural processes and wildlife can be readily observed and appreciated.

What are some threats to vertebrate biodiversity in Stanley Park?

There are many different internal and external threats that may affect the diversity of vertebrate species in the park. It suffers from the negative effects of **fragmentation** and **isolation** as it is a patch of forest bordered on all sides by ocean or human development. The **extirpation of native species** that are a part of the food web may have negative impacts on the species that remain. **Invasive species** may pose the greatest risk to native biodiversity as they can push native species out of their habitat and consume park resources that would otherwise be available to native wildlife. Past and present human influences on the park's landscape include **human developments** such as facilities, roads and trails, as well as the **suppression of natural processes** such as windstorms, insect outbreaks and fire. The **increasing human population** in the areas surrounding Stanley Park may put more pressure on it in terms of visitor use and will also affect air and water quality in the region. The **uninformed public** can cause negative impacts such as the effects of off-leash dogs, wildlife feeding, off-trail use, illegal mountain bike trails and other park user problems.

Climate change is a large scale problem that may have negative effects on the park's vertebrate populations. We may see the **c**hange or disappearance of native plants and associated communities, as well as the increased spread or establishment of new invasive species. If sea levels rise the park may once again become an island and whether our climate becomes drier or wetter we will see changes to its hydrology. We may experience the increased severity and frequency of winter storms and there may also be an increased fire risk.

What are some of the gaps in knowledge about the Stanley Park's vertebrate wildlife?

There are many gaps in knowledge about the vertebrate species inhabiting the park. Aside from the obvious lack of **recent inventory data** and **baseline information** on many vertebrate taxa, there is also little known about **historical species composition** prior to the European or First Nations colonization's of the area. We know little about the **natural disturbance** or **forest health history** of the park prior to 1888. One thing that we will never be certain of is **the future,** but modeling may help us to understand it.

What are some recommendations for maintaining or enhancing the diversity of vertebrate species in the Park ?

There are several ways that managers and other interested parties may be able to positively effect vertebrate populations in the Stanley Park. One essential component is the **education** of visitors through programming and/or signage so that they become aware of their potential impacts and can help rather than hinder the park's wildlife. There may need to be **restrictions** in the park to **control the concentrations of people into certain areas** and to reduce the impacts of park visitors or park management activities. One way to help the vertebrate wildlife in the park would be to **reduce the amount of fragmentation** by decommissioning some trails, not adding new trails and by creating corridors (i.e. overpasses and underpasses). Another recommendation would be to **reduce the amount of invasive species** already existing in the park and even more importantly, to **prevent the establishment of new invasive**s.

Invasive weeds and their impact on biodiversity
(Jillayne Peers)

The discussion on invasive plants and their impact on biodiversity focused on identifying issues with invasive plants as well as finding solutions to some of these issues.

The issues that were identified could be divided into two broad categories: impacts of invasive plants on ecosystems, and concerns as well as challenges with respect to managing invasive plants. Although the majority of the discussion focused on invasive plant management issues, the group did talk about the current extent of invasives, expansion of aquatic invasives in the Park, as well as potential shifts in invasive species distribution will occur with climate change.

With respect to management issues and concerns regarding invasive plant management, a number of issues were raised. First and foremost, there is a lack of education and understanding on invasives issues on the part of managers, parks workers as well as the general public. Another identified issue was the need for better management practices by the Park Board, as there are concerns that many activities as they are currently performed in the Park are facilitating the spread of invasives in the Park (e.g. brushing along trails and maintenance of plantation areas). Inconsistent management practices (due to shifting paradigms) and a lack of long-term invasives initiatives were also identified as major issues in the discussion.

The discussion on solutions focused on education, as many of the other raised issues require education in order to address them. To form a stronger management system through education, the group spoke about: having a sound definition of invasive plant species; the need for documentation such as management plans in place with realistic expectations (which would be followed!); clear messaging and transparent/accurate

reporting on programs; and taking an integrated approach to invasives management with more communication between organizations such as the Park Board and SPES.

Management of the biodiversity in aquatic habitats (Karen Needham and Rex Kenner)

Our group discussed at length possible rehabilitation of Beaver Lake and Beaver Creek after it became clear that both are lacking in aquatic insect biodiversity when compared with a similar water body (Jericho Pond in Jericho Park). Strategies focused on creating more open water by removing vegetation, especially water lilies, and increasing the depth of the pond by dredging. Removal of non-native predators, such as bullfrogs and carp, was also discussed, as this may give native species a better chance of establishing healthy populations. Educating the public to the dangers of these non-native introductions via signage and pamphlets might also be of benefit.

This type of aquatic habitat rehabilitation is especially critical since climate change scenarios predict wetter winters and drier summers for the Lower Mainland. Water levels in the pond and creek already reach dangerously low levels in the summer, so even drier summers could lead to the pond drying out completely, with the associated loss of biodiversity.

How do we engage the public in monitoring for invasive insects in Stanley Park (Troy Kimoto)

Canada is a large country with forest ecosystems from coast to coast. Due to the vast expanse of forested ecosystems and the high tree species diversity within Canadian forests it can be very difficult to detect invasive alien forest insects, especially when they are at low populations levels. The Canadian Food Inspection Agency (CFIA) plays an important role in protecting Canada's plant resource base from invasive forest pests. Although the CFIA conducts ground (*i.e.* visual) and semiochemical-based surveys some invasive forest pests, such as the Asian longhorn beetle in Toronto, have been detected by the public.

The purpose of this breakout session was to explore possible ways to engage the public in surveillance of invasive alien forest insects in general and within Stanley Park in particular. The following summarizes the outcome of this session which focused on groups based in Metro Vancouver. The 1st section explores potential groups who could become involved in surveillance projects. The 2nd discusses how these groups could be contacted to participate in a surveillance program and the last section outlines some activities that they could participate in.

1. Who could be involved in surveillance projects?
   a. General public
   b. Societies
      i. Nature Vancouver
      ii. other naturalist societies
   c. School programs
      i. Develop directed studies projects for undergraduate students
      ii. Middle/high school programs
   d. Invasive plant councils/groups
      i. These groups actively participate in detecting and managing invasive plants. It might be possible, to contact these groups to gauge their interest in monitoring for invasive forest insects.
   e. City park staff
      i. Maintenance staff, especially arborists, could be trained to notify park management/CFIA if unusual or unknown tree dieback or mortality is occurring within Stanley Park.
   f. Research scientists
      i. Scientists (*e.g.* entomologists and pathologists) could be informed to notify park management or CFIA if trees are exhibiting unknown symptoms of decline or if non-indigenous insects are detected while conducting their research trials.

2. How would these groups be contacted?
   a. Pamphlets, newsletters and websites could be used to increase awareness of invasive forest insects.
   b. CFIA to give school presentations on invasive forest insects
      i. Middle/high school
      ii. Undergraduate university programs
   c. Signage
      i. Develop signage introducing the concept and impacts of invasive forest insects to increase awareness.
      ii. Develop interpretive signs depicting photographs of some potential invasive insects (*e.g.* nun moth, pink gypsy moth, *etc.*) which could assist in detection.
   d. Collaborate with Stanley Park Ecological Society
      i. Develop interpretive programs with the Society
      ii. Develop insect displays
         1. Native insects
         2. Non-indigenous insects
   e. Advertisement within the park
      i. Display readily identifiable invasive forest insects on trolley cars, carriage rides, *etc*.
   f. Increase awareness with park staff
      i. Develop programs to train park staff on identification of easily distinguishable invasive forest insects.

g. Telephone/web hotline
  i. Develop website where photographs of potential invasives can be uploaded and then analyzed by taxonomists
  ii. Develop a general invasive alien species hotline to direct the caller to certain websites or provide other pertinent information.

3. What activities could these groups participate in?
  a. Digital photography
    i. Naturalists can submit photographs of unusual insects for analysis by taxonomists or photos can be referenced with insect collections at interpretive stations/centres.
  b. Directed studies/school programs
    i. Integrate a surveillance related project into an undergraduate course
    ii. Work with middle/high school class on a basic biosurveillance project within Stanley Park
  c. Monitoring park lights for moths
    i. Groups could collect insects found at lights during the night time and compare with reference collection
  d. Reporting on tree decline
    i. Enquire with park staff to develop programs to train maintenance staff/arborists on being aware and report unusual tree decline or insect activity
    ii. Develop signage to engage public to report tree decline
  e. Develop interpretation programs
    i. Develop educational signs discussing basic concepts and impacts of invasives
    ii. Develop photographs and interpretive stations for readily distinguishable invasive forest insects
    iii. Develop reference collection of common native and non-indigenous forest insects
    iv. Provide pamphlets, guidebooks and other literature at interpretive centres.

Epilogue (John McLean)

Stanley Park is appreciated as a place to stroll and appreciate nature. It is a highly diverse environment where trails to accommodate human passage intersect with life requirements of plants and animals that live their whole life in the park. Food webs that support the native flora and fauna are at risk from invasive species that smother habitats. Natural processes of succession will also change habitats over time – something that is especially true for Beaver Lake which is being fully invaded by water lilies and silting up on its way to becoming a marsh/wetland without open water. Invasive species such as

bull frogs and carp disrupt natural food webs and greatly reduce the biodiversity of the aquatic habitat.

Stands in several areas were badly affected by the winter storms of 2006/07. Recovery plans have removed excessive inventories of coarse woody debris. Extensive clearings have been replanted and will go through a shrub succession as the new trees struggle for light and eventual dominance. These processes will be monitored by a series of sixty permanent plots that have been set up around the park. Fine woody debris adjacent to trails has been cleared to reduce the risk of fires. The successional patterns will need to be followed carefully to ensure that invasive and exotic species do not take over the habitats. It will be important that exercises such as trail clearing do not inadvertently create colonization corridors for weed species. Field staff need to be made aware of the risks as they are on the front line in this battle. Food webs will re-establish in the recovering areas to support both the invertebrate and vertebrate components of the ecosystems.

Over the last two years, a start has been made in compiling some baseline inventories of both the forest itself and the organisms dependent on it. Our moth survey in 2007, for example, inventoried 190 species that included 30 species rated as introduced and 3 as non-native migrants. Three species were recorded for the first time in North America and one species was a first record for BC. This alerts us to the need for vigilance on account of the proximity of Stanley Park to the Port of Vancouver. Future surveys will be able to compare the species richness of the day with what we have been able to record for 2007. Baseline inventories are also being assembled for other groups.

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