Long-term Monitoring 2010-2011 Report

In 2010 SPES Conservation Programs began 5 new long-term monitoring programs as a result of the release of the State of the Park Report for the Ecological Integrity of Stanley Park (SOPEI). The report found that aquatic ecosystems were in poor shape and on a declining trend, while baseline data was non-existent or limited in these areas.

As a result, the following programs were created and undertaken by SPES staff and volunteer team leaders. Our first year of data collection not only provided meaningful work experience for volunteers, but also provided a sound basis for future monitoring of these important ecosystems. These are the results from June 2010 to July 2011.

Click on the following link to go directly to the update report for the specific programs:

1. **Water Quality**
2. **Amphibian / Reptile**
3. **Bats**
4. **Freshwater Fish**
5. **Intertidal**

STANLEY PARK ECOLOGY SOCIETY

Water Quality


Photo: Peter Woods

Goal: To create and undertake activities that will allow for the regular collection of water testing parameters so that assessments can be determined on the current state and future trends of these important habitats.

Methods: At least once a month, volunteer team leaders guide volunteers to Lost Lagoon and Beaver Lake to collect water quality data. Using LaMotte water testing kits the following parameters are tested: dissolved oxygen, turbidity, temperature, salinity, pH, nitrogen, and phosphorous.

2010-2011 Results:

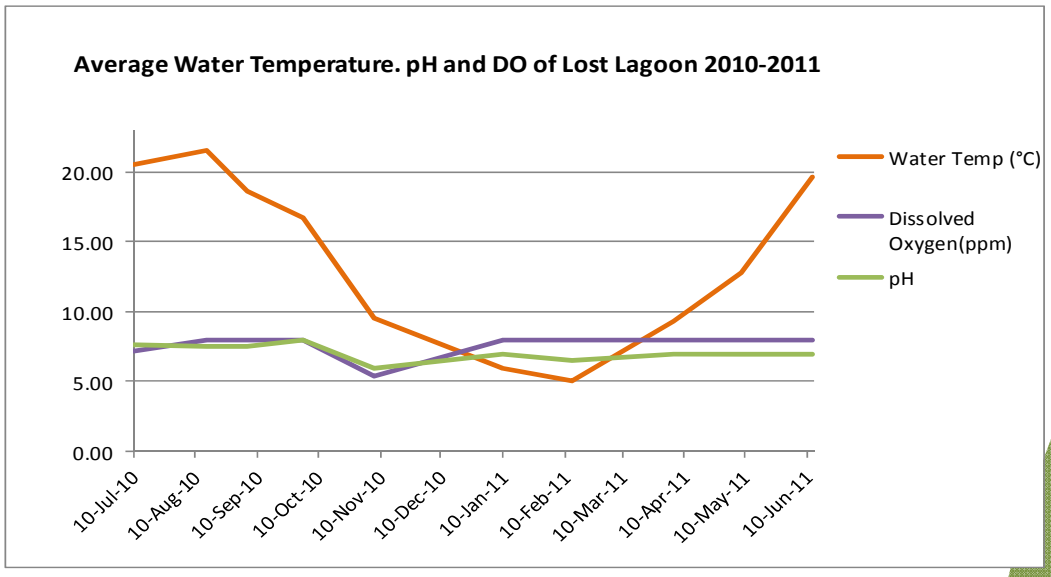
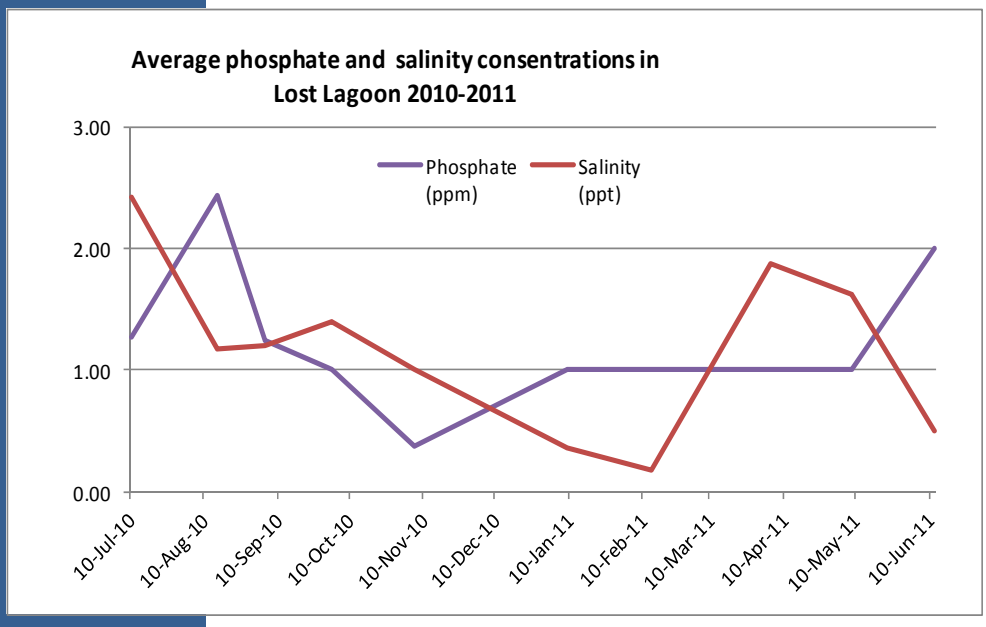


Figure 1,2: Average readings of several parameters measured at Lost Lagoon. Multiple sites were tested and multiple water samples are taken to produce average results.



Amphibian / Reptile

Goal: Set up and undertake an amphibian and reptile monitoring program that will be ongoing, long-term and volunteer-driven to provide information on these key species for SPES, the public and Park Managers.

Methodology: There are several methodologies applied depending on the time of year.

- In early spring, visual searches of the park's ephemeral and permanent pond sites are conducted to look for the presence of pond breeding amphibians and reptiles.
- Throughout spring, summer and fall, coverboard checks are conducted to look for the presence of terrestrial amphibians and reptiles at all SPES long-term monitoring stations.
- In most years, trapping sessions will take place in Beaver Lake, Lost Lagoon and other larger wetlands during the breeding season to look for the presence and abundance of pond-breeding amphibians and their larvae.

2010-2011 Results:

- Northwestern salamanders are the only native pond-breeding species that have been found to date in Beaver Lake, Beaver Creek and small ponds in the miniature train area.
- No native or invasive pond-breeding species have been found in any of the small permanent or ephemeral ponds in the park
- Ensatina salamanders are the only species found during regularly conducted surveys at 10 long-term monitoring stations. No amphibians or reptiles have used the coverboards.
- Only one native reptile has been located in the Park since the monitoring began. An incidental sighting of a juvenile garter snake was documented near the works yard.

Bats

Goal: To create and undertake a bat monitoring program in Stanley Park involving volunteer monitors and aimed at assessing species diversity, population status and identifying roost sites.

Methodology: The methodology for this program varies depending on the time of year.

At least once per month, throughout the year volunteer team leaders guide volunteers through the park to conduct regular acoustic surveys using a simple bat detector. The purpose of this is to see where in the park bats are active and what time of year they are active.

In the summer, bat monitoring volunteers set up outside of the bat maternity colony. The volunteers arrive near sunset and count the bats as they emerge from their roost. The total number of bats using the colony is the desired information and this will be tracked year to year to see trends in the colony size and productivity.

2010-2011 Results:

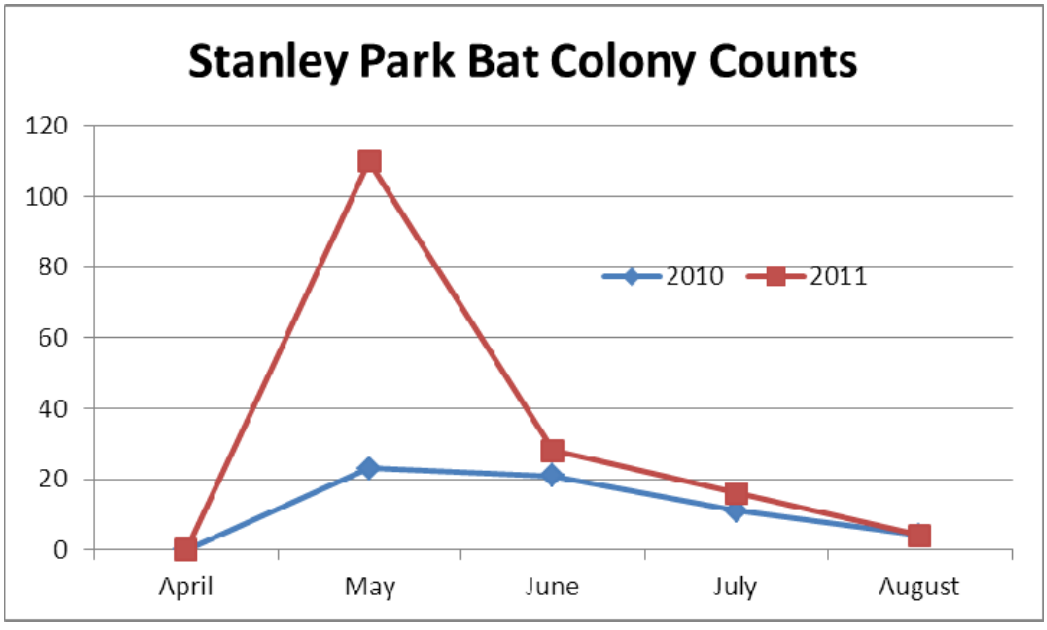


Figure 3: Total number of bats counted as they emerged from an established maternity colony.

Freshwater Fish

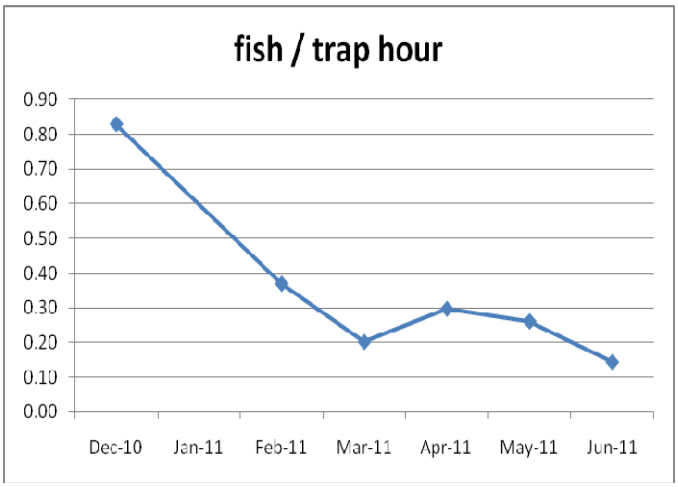


Figure 4: Total number of fish per trap hour caught in all survey areas in 2010-201. A total of 1403 fish were caught in 3850 trapping hours

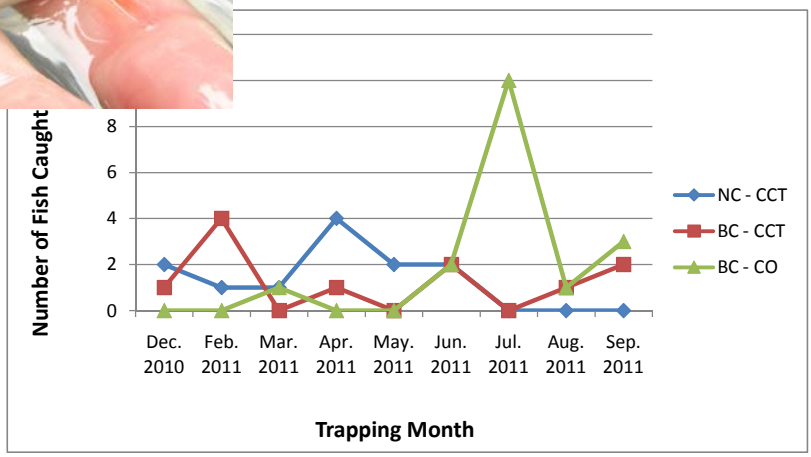
Goal: To provide a detailed description of the fish population within the Beaver Lake watershed.

Methodology: Minnow trapping takes place at a number of locations within the watershed and will include trapping in Beaver Lake as well as in the surrounding tributaries. Trap locations will be set in a variety of habitats such as in weeds, beach areas, under overhanging vegetation, or among submerged logs.

Major findings to date:

- North Creek is home to a resident (landlocked) coastal cutthroat trout population.
- Beaver Lake is home to a healthy population of threespine sticklebacks. No coastal cutthroat trout or coho salmon have been observed or caught in Beaver Lake; this may be due to the shallow warm waters low in dissolved oxygen and high in turbidity.
- Beaver Creek is home to both coastal cutthroat trout and coho salmon. The coho salmon are mainly present as a result of the Department of Fisheries and Oceans Salmonid in the Classroom program which sees nearly 1800 coho fry released into the creek annually.

Figure 5: Coastal Cutthroat Trout (CCT) and Coho Salmon (CO) numbers in Beaver Creek (BC) and North Creek (NC).



Intertidal

Goal: Set up and undertake an intertidal monitoring program that is ongoing, long-term, and volunteer-driven to provide information on this key habitat and its species for SPES, Park Managers, and the public. Collected data will establish a baseline upon which changes can be followed over time.

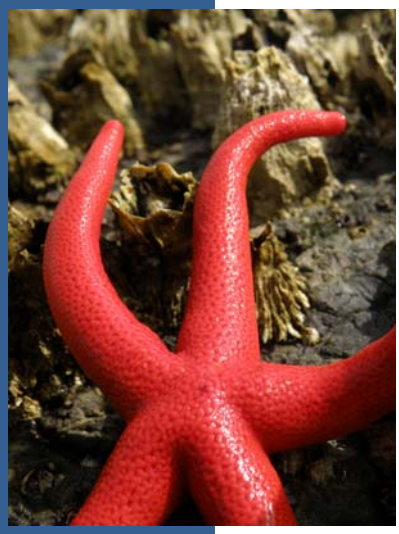
Methods: At least once per month, during periods of suitable tides (Spring and Fall) volunteer team leaders guide volunteers to intertidal areas to use the following survey methods:

Vertical transects are used to monitor the effects of rising sea levels as a consequence of global warming. Long-term monitoring along fixed vertical transects can identify changes in the distribution of species as well as zonation patterns.

Total Counts are used to detect changes in abundance over time by counting larger invertebrates such as sea stars and anemones in a permanent area; also helpful in monitoring "keystone" species abundance.

Major findings to date:

- Seven sites of varying habitat types have been surveyed: cobble beach, mixed gravel, sandy beach, and mud flat.
- A total of 36 quadrats have been examined throughout the study period.
- In the summer of 2010, 41 species were found through the surveys and 32 were found in 2011.



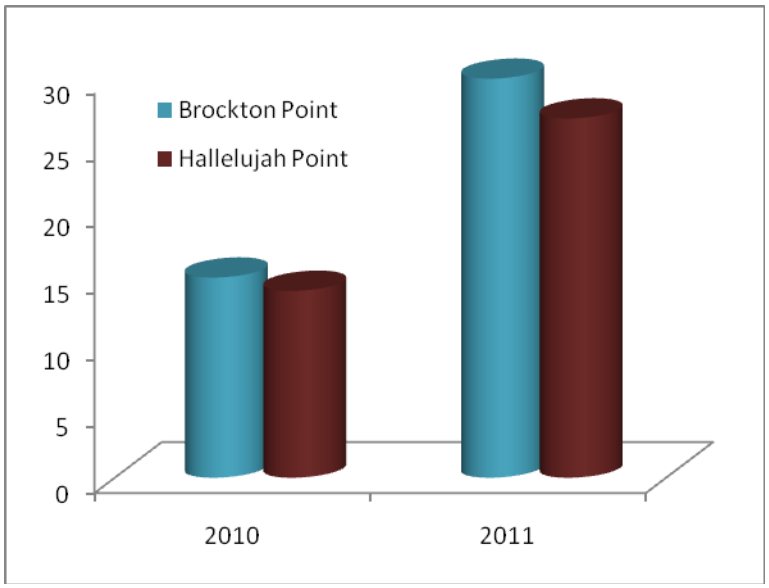


Figure 6: Number of intertidal species recorded at two sites over two years. Methodology was repeated, but months when surveys were carried out differed.