COASTAL MAINE BOTANICAL GARDENS
PINK LADY'S SLIPPER SURVEY—June, 2011

FINAL REPORT 2011

The 14th annual survey of the Pink Lady's Slippers took place over a two-week period in late May and early June in a study area of about one acre near the north end of the Coastal Maine Botanical Gardens' property. This research project was begun by volunteers in 1998 to investigate an unusually large population (239) of flowering Pink Lady's Slippers found in a small area of woods near the Shoreland Trail. Although no gardens had been planted anywhere on the property at that time, this population put on a wonderful show for our visitors, and we wanted to try to keep that show going. Prior to our arrival in this area, the canopy was opened up and the underbrush cleared so that the previous owner, a development group, could show potential buyers the view down to the water. Pink Lady's Slippers are "early successional colonizers" that naturally appear when areas of the forest canopy open up when one or more trees fall. They apparently took advantage of the extra sunlight to establish this large population. If left to grow completely naturally, these plants would have gradually disappeared as the woods grew back and eliminated the needed light. So, we began to try to figure out how to keep our population of these fascinating orchids thriving, assessing our efforts through annual surveys of plants and flowers.

The 2011 survey results continue to impress! At 683, the total number of flowers in the one-acre study area at the north end of the Shoreland Trail is nearly as high as the previous year's record-breaking 692. Before 2010, the highest number of flowers recorded was 579 in 2002. This year's numbers are still close to three times the number of flowers seen when we started in 1998. Flowers eaten or knocked off the stalk continues to be uncommon compared to the number in 2005, just before the deer fence was installed, when we lost 62.1% of the 493 flowers counted. This year we lost 1.8% which is up only slightly from last year's 1.6%. An unusual occurrence this year included three flowering plants in the same clump with double flowers.

After last year's abnormally early flowering season, with Pink Lady's Slipper flowers maturing about two weeks earlier than in previous years, we were closer to normal this year. As the graph (below) shows, our upper area showed a marked increase in flowering while the middle and lower areas decreased slightly. The decrease in these areas over last year may be due to the return of a normal weather pattern after the strange 2010 spring season or to the reemergence of some low growing cover that needs to be removed again. This graph demonstrates the importance of long-term (>20 years) studies. Change generally comes slowly in a temperate forest, and with the numbers still rising, we are now wondering just how many Pink Lady's Slipper plants this small area can support under the right conditions.

Each year we note the plants we have seen before but are unable to locate. While the amount of these missing plants this year went up by 11 plants or about .3%, a positive facet of this year's results is the addition of 146 new plants in our intensively studied

area, compared with 100 last year and 67 in 2009. 79, or over half of the 146 new plants, were in flower. In our study, we have been looking at how Pink Lady's Slippers form clumps by branching underground. Many of these new shoots are similar in size to earlier shoots. In 2011, 65 of the new plants appeared in such clumps after branching off one or more existing plants, 49 of which were in flower. New flowering plants that surfaced some distance from other plants could have been dormant since before our study began. However, the new non-flowering independent plants generally had fewer and smaller leaves suggesting that they had germinated from seeds, perhaps from hand-pollination experiments begun a few years earlier.

So it appears that our management practices, e.g., keeping the areas open and cutting back competitors such as spruce, eliminating deer, and hand-pollinating individual plants in the Middle site, have a very positive effect on flowering overall.

Documenting this fascinating (and ongoing) journey for our Pink Lady's Slipper population would simply not have been possible without the hard work of the CMBG staff and many volunteers over the years. Many thanks to the outstanding effort by the 2011 group of 11 volunteers who donated their time! We look forward to sharing the interesting results of our research in this natural area of Coastal Maine Botanical Gardens.

Thank you again for your help and support.

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2011 Survey volunteers:

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Graph showing the continuing increase in flowering in the Upper area, but declines in Lower and Middle area for Pink Lady's Slippers recorded in the May, 2011 survey. This resulted in a net decline of only 9 flowers since the 2010 high of 692.