

AQUATIC PLANT MANAGEMENT  
LAKE BOON  
STOW/HUDSON, MASSACHUSETTS  
BIOLOGICAL SURVEY REPORT  
September 2006

## **Introduction**

As part of Lycott's continued aquatic plant management services to the LBC, we have initiated an experimental plant management study in Lake Boon. The study consists of five (5) tasks. Briefly, the tasks include: 1) Biological Survey of the Lake Boon study area, 2) Removal of the non-native plants Fanwort and Variable-leaf Milfoil from selected study sites, 3) Planting of native plants from within Lake Boon to the newly cleared sites, 4) Monitoring the re-vegetated areas for native plant establishment and replanting where necessary, and 5) Aid LBC in the permitting process.

The following is a progress report on tasks 2 & 3.

## **Methods**

Once sites were selected and staked out, mesh benthic barrier panels were installed at the two treatment sites (sites 1 & 2) to cover all plants within the treatment areas. Areas of ca. 2500 square feet were covered at each site. Panels were left in place until all vegetation was cleared (ca. 6 weeks).

In September 2006, all barrier panels were removed from Lake Boon and a 50' x 50' nylon rope grid was installed on the lake bottom at the two treatment sites. Each grid consists of 16, 12.5' x 12.5' cells (figure 5) . The grid overlay will aid in follow-up plant surveys.

*Potamogeton robbinsii* plants were collected from the northeastern basin and transported in water directly to the treatment site for replanting. Each cell in the grid was randomly assigned one of three density levels for replanting; zero, low (n=10), and high (n=25).

## **Preliminary Results**

The benthic barrier was very effective at eliminating plants in site 2, but was not as effective at site 1. As a result, not all 16 cells were available for replanting at site 1. Nonetheless, we believe enough of the area was cleared that the study could continue as planned. However, visibility is very limited at site one and dense algal growth remains over the study area.

At the control site, plant distributions were similar to that observed in June 2006. However, the individual species densities had changed at this site between June and September 2006. *C. carolinia* (fanwort) was more common in all cells in the later survey. Fanwort largely displaced the milfoil that was originally in the shallower areas and also extended further into the deeper section of the lake beyond the quadrat.

Follow-up surveys will measure plant density in each cell at each site. Once plant data is gathered, a formal statistical test will help determine if there is any difference in plant distribution and abundance within the study areas relating to plant replacement densities. The 'zero plant' cells should indicate the effect of removing the invasive species only, with no other effort. The two remaining density levels will allow us to determine the level of replanting effort required for successful establishment assuming the study is completed successfully. The control site, where no management activity was conducted, will be used to compare against the treatment sites.

Figure 1. Study site locations.






<p><b>Lake Boon</b> <b>Eastern Basin</b> Proposed control and plant removal sites  June 2006</p>		<p>MassGIS Orthophoto 1-meter resolution</p>	<p><b>Lycott Environmental Inc</b> 600 Charlton Road Southbridge, MA 01551 Ph. 508-765-0101 Fax. 508-765-1352 www.lycott.com lycott@aol.com</p> 
<p>Scale 1:4005 50 0 50 100 Meters</p> 			

Figure 2. Map of plant distribution in proposed treatment site 1 in Lake Boon.

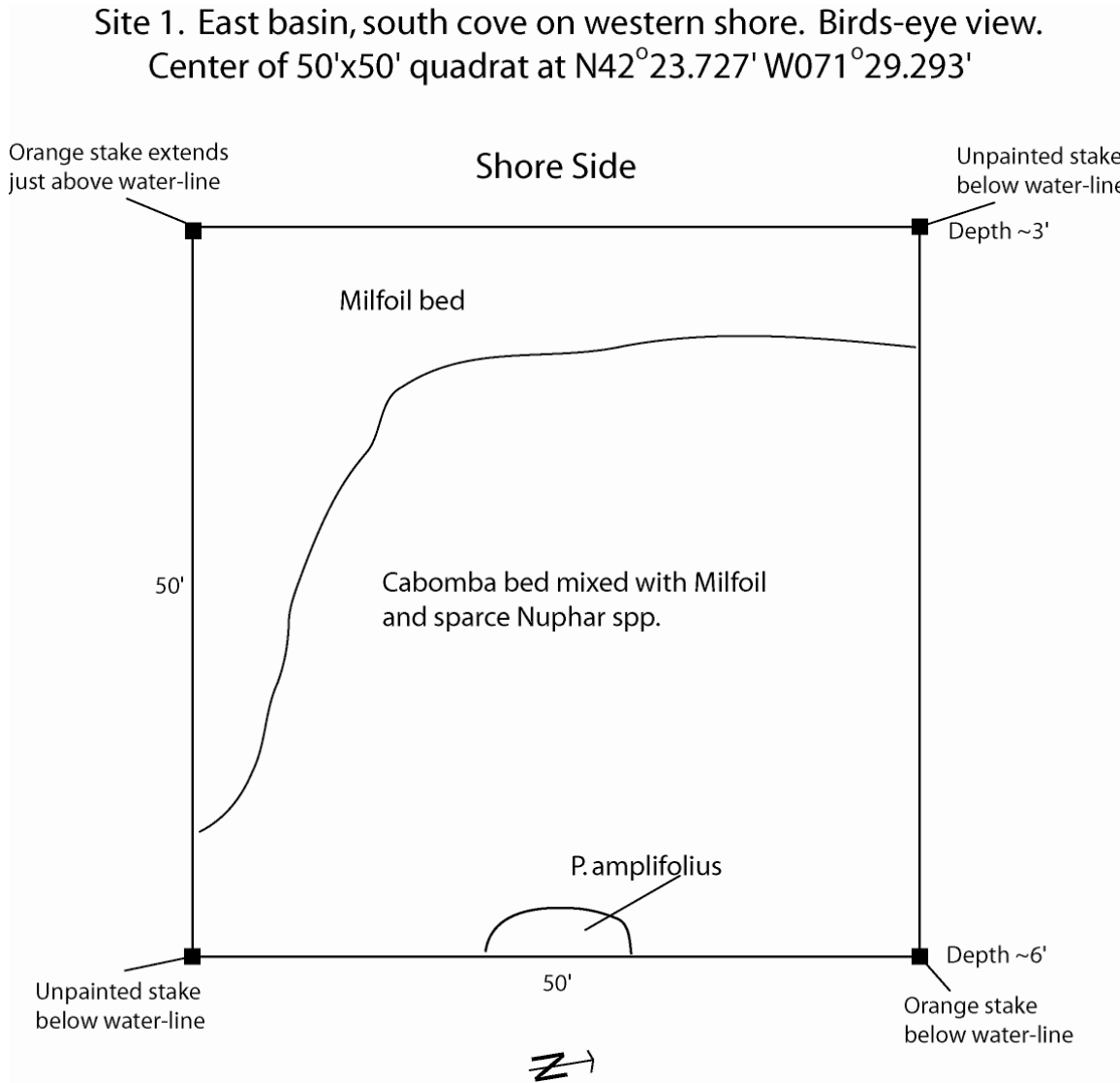


Figure 3. Map of plant distribution in proposed treatment site 2 in Lake Boon.

Site 2. East basin, northeast cove on southern shore. Birds-eye view.  
Center of 50'x50' quadrat at  $N42^{\circ}23.869'$   $W071^{\circ}29.328'$

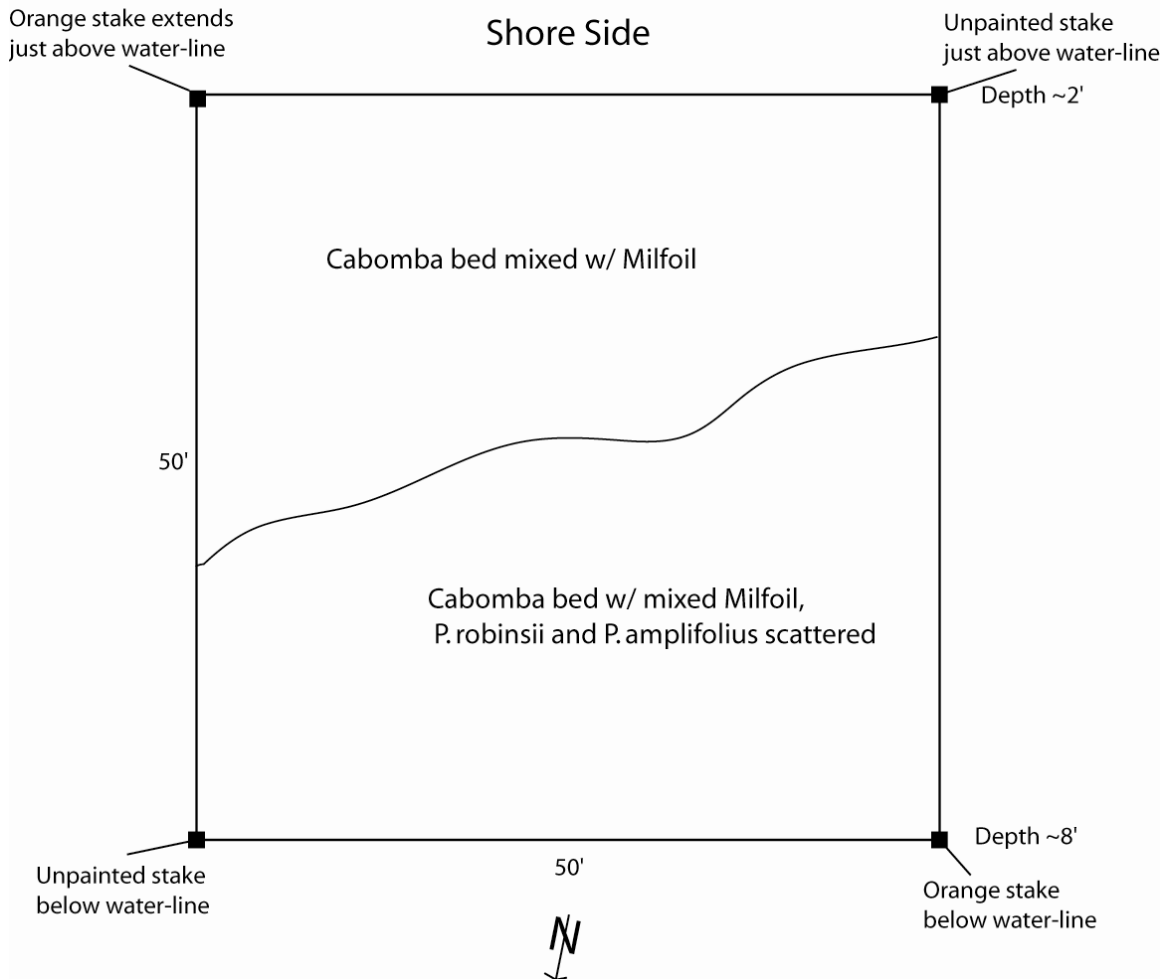


Figure 4. Map of plant distribution in proposed control site 3 in Lake Boon.

Site 3. East basin, deep bay on southern shore. Birds-eye view.  
Center of 50'x50' quadrat at N42°23.752' W071°29.370'

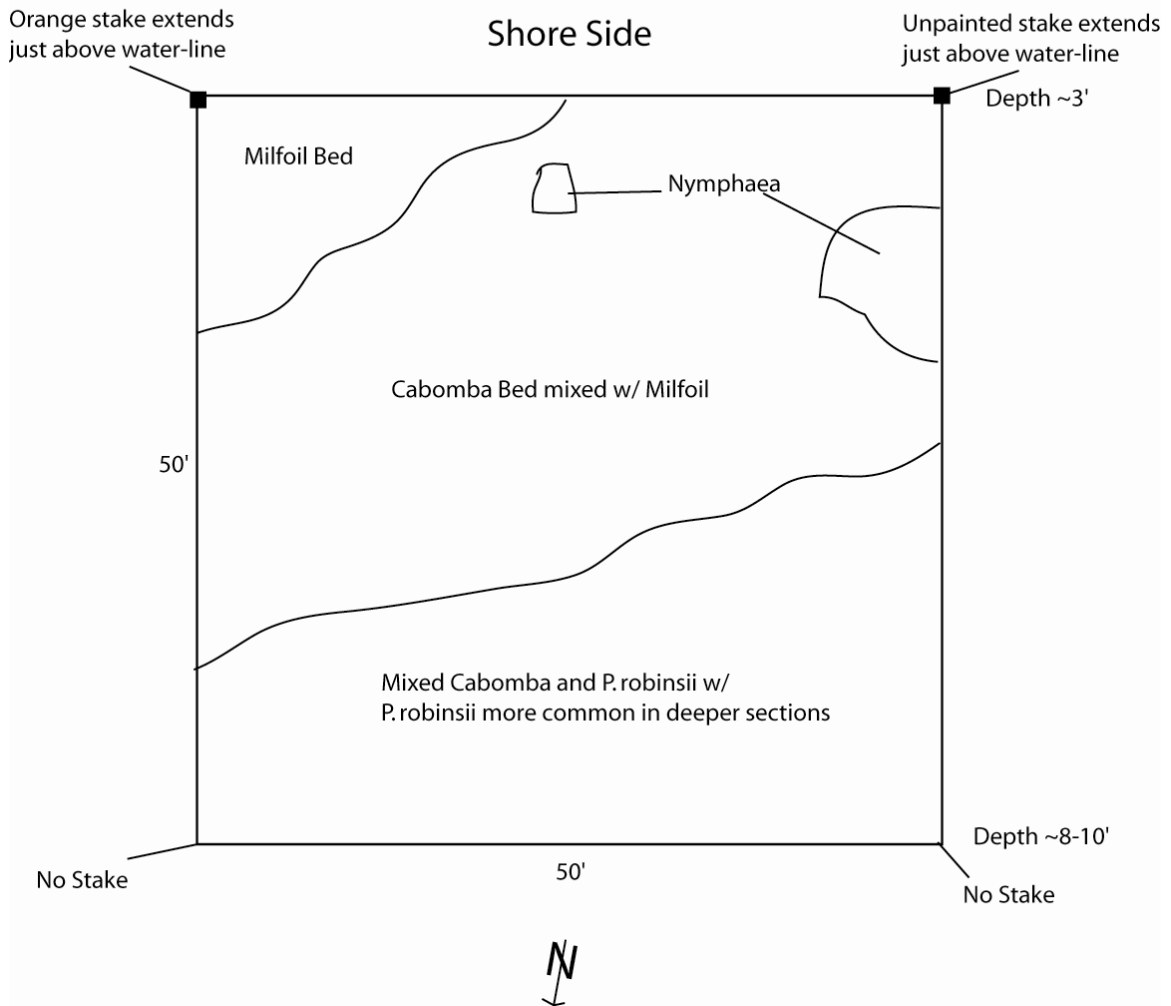


Figure 5. Grid overlay on site 3 vegetation map.

Sample grid overlay on quadrats. Birds-eye view.

