

# **Water Chestnut Management Program 2002**

## **Summary of the Third Year Efforts of the New York State Canal Corporation in the Lake Champlain Basin**

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## **Introduction**

Since 1982, over 3 million dollars has been spent to control the advance of water chestnuts (*Trapa natans*) in Lake Champlain. With limited funding, over the past two years, NYSDEC and NYSCC have spent over \$300,000 in the control of this invasive weed. Water Chestnut, an aggressive, aquatic plant that is native to Europe and Asia was introduced to New York State in the late 1800's. The water chestnut infestation spread rapidly northward in the Hudson River Basin and into the southern end of Lake Champlain. The continued northward advance of the infestation prompted a renewed control effort by both the New York State Department of Environmental Conservation (NYSDEC) and State of Vermont Department of Environmental Conservation (VTDEC) in the early 1990's on Lake Champlain.

The water chestnut plants are 90% water and decompose quickly once harvested with the exception of the seedpods or "nuts" which are covered in a tough outer coating. The outer coating becomes more resilient as the nuts mature and drop from the plant to the bed of the water body to sprout into a new plant the following season. It is not uncommon to see a dozen or more nuts produced by one plant making the job of controlling this prolific species more difficult.

Harvesting activities are generally of two types, mechanical and hand harvesting. Most of the harvesting done by the NYSCC has utilized a mechanical harvester. The harvester cuts through the dense beds of the plant, removing the floating mass of plant material by cutting the shoots attached to a previous years nuts buried in the sediment floor. The weed mass is collected by the mechanical floating harvester and transported to the shore for disposal. Hand harvesting is by hand pulling and collection of the plant. This technique is normally used in very shallow water or areas with sparse growth. This can be accomplished by using divers in deeper water.

Harvesting is typically scheduled for the middle part of the plant's growing season. This is to prevent the nuts from maturing and detaching from the plant. Care is taken not to start the harvesting too early to prevent the mature nuts on the water body floor from re-germinating after the weed canopy above is removed.

In 1993 an application was made jointly by the NYSDEC and VTDEC to the Adirondack Park Agency (APA) to allow for the collection of water chestnuts in Lake Champlain with disposal in upland locations in Vermont. In August of 1994, Project Permit 94-208 was issued for a seven-year period for harvesting activities in the Lake Champlain Basin. In July 2001, APA granted a new permit (2001-47) for a 10-year continuation of hand

and mechanical harvest control program of water chestnuts in the southern basin of Lake Champlain.

### **Description of Calendar Year 2002 Activities**

The 2002 Weed Harvesting program for water chestnuts started in early August and continued until late September. The areas harvested by the NYSCC in 2002 totaled approximately 90 acres (see figure #1) compared with 92 acres harvested the prior year.

The capacity of the harvester unit is approximately 450 cubic feet or 16.7 cubic yards. Based on calculations, the average load contains a wet volume of about half or 8.2 cubic yards per load.

The weed harvesting for 2002 was 905 loads compared with 781 for the prior year. The wet volume for 2002 calculates to 7421 cubic yards. Costs including equipment rental and fuel is \$189.67/load or a total cost of \$23.13/cubic yard or \$1905.17 per acre. This is an increase of 100% compared to the prior year. This increase primarily occurred since new equipment was purchased to improve the transport of harvested materials to the shore. Labor cost increased slightly due to the learning curve of new equipment and inadequate staffing for the new equipment. Labor cost was \$53.70/load compared to \$48.99/load in 2001, \$6.55/cubic yard to \$5.97/cubic yard in 2001 or \$539.36/acre harvested compared to \$417.24/acre harvested. Fuel costs were \$0.0735/cubic yard.

### **Observations**

During the 2002 activities, there were operational difficulties observed that should be addressed for the continued success and expansion of the harvesting activities in the south end of Lake Champlain.

First is the need for additional disposal sites closer to the harvesting activities. Permission was obtained to use private lands for disposal of the harvested material, but only ½ day of disposing was done on this property. This was due to the fact that the landowner wanted the material stockpiled and then spread and tilled into the land only once or twice, but the permit required a daily spreading and tilling of the material. Additional sites are needed in order to allow additional loads of harvested material to be transported. This will maximize productivity in the harvesting activities. Permitting activities associated with application of the weed material onto adjacent farmland should continue to be initiated early in the planning process, since the properties are within the APA.

Second is the need for additional staff and a dedicated crew to operate the harvester and ancillary equipment. The operation of the harvester is quite involved due to the need to properly load the harvester conveyor, preventing the cut weeds from becoming dislodged. The ability to accomplish this is gained by on-the-job training of the operators. If weeds escape during the harvesting operation they can drift in the water body and possibly root

again in other locations, depending on the time of season. The training gained from the previous year operation is not passed on through the use of seasonally hired operators.

Third is the need for different land transport equipment. The trucks currently being used are smaller dump trucks but can only handle one harvester load. The transporter, which works in conjunction with the harvester, holds two loads. Therefore, two dump trucks are required for each load. Also, the current travel distance is 23.5 miles round-trip takes considerable time for the trucks to return to the loading site. While the transporter is quicker in getting harvested material from the harvester to the shore quickly, there is a delay in unloading the weeds from the transporter.

### **Recommendations**

With the continuation of the harvesting program in 2003, the following two options appear to be the most viable for increased production and effectiveness of the program.

Option 1: Increasing of the budget for harvesting to include additional personnel for the harvester, transporter and trucks for the 2003 calendar year, which would increase production.

Option 2: Harvesting operations continue to be funded at least at the current level as they were for the calendar year 2002. This option will limit the area of harvesting to approximately the same as accomplished this year. Weather and lake conditions will determine if extended operations will be warranted.

Option 3: Strongly look at adjoining landowner site for disposal of the harvested material in order to efficiently harvest the weed. Once we have agreement from the landowners, start the APA permitting process early.