NEWPORT RESTORATION ADVISORY BOARD
Project Committee Report: Dredging
November 16, 2005

This month I am presenting two topics of interest under "Dredging, "from different parts of the world, both in terms of place and technology.

One report is from China, and describes the use of plants, called "hyper accumulators" to remove arsenic from polluted soils. Statistics show that in China 20% of the farmland is polluted by heavy metals. One wonders how much of R.I. is suffering from a similar fate.

The other article refers to divers with hoses attached to small dredges to remove plants from sediment. in lakes and streams. This is important with certain invasive species and when herbicide use is not an option.

It is interesting to note that not all the dredging that is taking place around the world is for Ports and Container Ships, although that type of dredging continues and is very costly and controversial.

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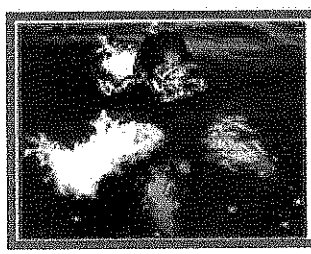

Aquatic Plant Management
Diver Dredging

Description of Method

Diver dredging (suction dredging) is a method whereby SCUBA divers use hoses attached to small dredges (often dredges used by miners for mining gold from streams) to suck plant material from the sediment. The purpose of diver dredging is to remove all parts of the plant including the roots. A good operator can accurately remove target plants, like Eurasian watermilfoil, while leaving native species untouched. The suction hose pumps the plant material and the sediments to the surface where they are deposited into a screened basket. The water and sediment are returned back to the water column (if the permit allows this) and the plant material is retained. The turbid water is generally discharged to an area curtained off from the rest of the lake by a silt curtain. The plants are disposed of on shore. Removal rates vary from approximately 0.25 acres per day to one acre per day depending on plant density, sediment type, and diver efficiency. Diver dredging is more effective where softer sediment allows easy removal of the entire plants, although water turbidity is increased with softer sediments. Harder sediment may require the use of a knife or tool to help loosen sediment from around the roots. In very hard sediments, milfoil plants tend to break off leaving the roots behind and defeating the purpose of diver dredging.

Diver dredging has been used in British Columbia, Washington, and Idaho to remove early infestations of Eurasian watermilfoil. In a large scale operation in western Washington, two years of diver dredging reduced the population of milfoil by 80 percent (Silver Lake, Everett). Diver dredging is less effective on plants where seeds, turions, or tubers remain in the sediments to sprout the next growing season. For that reason, Eurasian watermilfoil is generally the target plant for removal during diver dredging operations.

Advantages

- Diver dredging can be a very selective technique for removing pioneer colonies of Eurasian watermilfoil.
- Divers can remove plants around docks and in other difficult to reach areas.
- Diver dredging can be used in situations where herbicide use is not an option for aquatic plant management.

Disadvantages

- Diver dredging is very expensive.
- Dredging stirs up sediments. This may lead to the release of nutrients or long-buried toxic materials into the water column.
- The tops of plants growing in rocky or hard sediments may removed leaving a viable root crown behind to initiate growth.
- In some states, acquisition of permits can take years.

Permits

Permits are required for many types of projects in lakes and streams. Diver dredging requires Hydraulic Approval from the Department of Fish and Wildlife. Diver dredging may require a Section 404 permit from the U.S. Army Corps of Engineers. Check with them before starting the project. Also check with your city or county for any local requirements before proceeding with a diver dredging project.

Costs

Depending on the density of the plants, specific equipment used, and disposal requirements, costs can range from a minimum of $1,500 to $2,000 per day.

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Tryouts conducted to remove heavy metal from soil

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BEIJING, Nov. 5 (Xinhuanet) -- Chinese scientists have launched the world's first expe project for sucking poisonous arsenic from soil.

Chen Tongbin, a senior researcher with the Chinese Academy of Sciences (CAS) Inst Geographic Science and Resources, said here Saturday in an interview with Xinhua that three experimental sites in Hunan, Zhejiang and Guangdong provinces, for tryouts in ren metal elements from soil.

The one-hectare experimental site in Chenzhou, central Hunan Province, are planted a kind of arsenic-sucking plant, with a scientific name of Pteris vittata L. The plant could percent of arsenic from the soil in one year, Chen said.

Soil recovery technology depends on poison-acccumulating plants, widely regarded as accumulators" in academic circles. The heavy metals accumulated by those plants are to The primary targets of the technology are arsenic, copper and zinc.

A global leader in technology for collecting arsenic from soil, Chen's team, which is sp the state hi-tech development program, proved that Pteris vittata L., a brake fern widely f southern China, has a strong ability to draw arsenic from the soil.

After Pteris vittata L., Chen's team found another dozen of hyper-accumulators, which in the future for soil cleaning.

His team have applied for more than 20 patents, with two invention patented and one being granted.

Since the 1980s, global scientists have blazed a new way in cleaning polluted soil with accumulators. Decontamination by plants and recycling technologies would make heavy lessen vironmentally damaging.

Statistics showed that 20 percent of China's farmland was polluted by heavy metals, w 10 million tons of crop losses annually.

It is estimated that soil recovery technologies through plants might have a market worl US dollars in the coming two years. Enditem

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