

HAND REMOVAL OF AQUATIC MACROPHYTES (PLANTS)

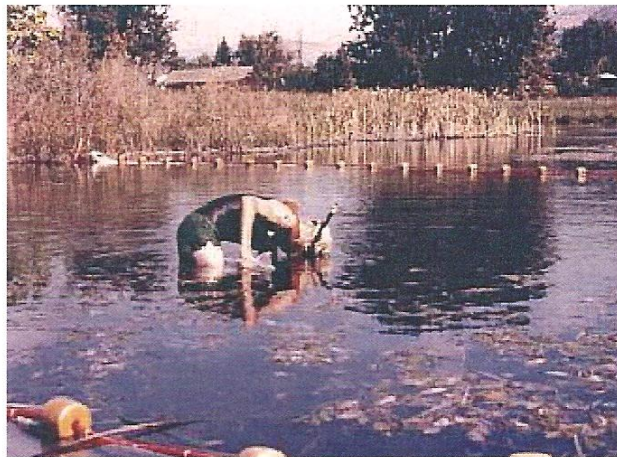
HANDPULLING This method involves removing the entire plant (stems and roots) either with your hands or with the help of a spade or long knife. Garden wizards, hay baling or logger's pulp hooks can help with pulling up well-rooted plants. Handpulling is easiest in shallow water. In water more than 3 or 4 feet deep, a mask and snorkel or scuba equipment will be needed. Collect the uprooted plants and dispose of them well away from shore so they don't have a chance to wash back into the lake and regrow. This is the most appropriate method for new infestations and small colonies of non-native species.

HAND CUTTING This manual method differs from handpulling in that plants are cut below the water surface but the roots generally are not removed. Since the entire plant is usually not removed, hand cutting does not provide long-term control, it is generally not recommended for small areas of new infestations where the goal is elimination. Depending on the growth rate of the plant species, cutting may have to be done several times each year. Like handpulling, this technique results in the immediate removal of nuisance plants, and costs are low.

HANDPULLING AND THE LAW Handpulling, handcutting or raking of non-native, exotice species like Eurasian Watermilfoil and Curly-Leaf Pondweed do not require a permit, no matter where they occur in a lake. However, if you want to use any mechanical or chemical methods, or you want to remove native aquatic species in areas other than the 30 foot wide corridor in front of your property, you will need to contact the WDNR Aquatic Plant Specialist for your county about a permit.

Hand Pulling Techniques

During hand pulling, you can dig around and beneath the plant roots with your hands or with a tool and gently lift the entire plant out of the sediment. The ease of removal is dependent on sediment type. Milfoil plants can be readily removed from loose or flocculent sediments. In hard sediments or rocky substrate, hand tools must be used to loosen the root crown before the plant can be dislodged.



Sometimes fine roots are left behind; these will not regrow, but it is important to remove the root crown (the fleshy, fibrous roots at the base of the stem). Once plants are removed, place them into bags for transportation to the surface and shore. You may need to make several passes through an area to ensure that all plants have been located and removed.

People have developed several different techniques for removing plants. One way is to grab hold of the top of the plant and wind it around the hand as you move down the stem toward the bottom. Then with the other hand dig up the roots and transfer the whole plant to the "goodie" bag. Another method is to carefully locate the bottom of the stem, loosen the roots and then wind the rest of the plant around the hand. Yet another method of capturing a fragmenting plant is to use the "goodie bag" as a butterfly net and cast the open bag carefully over the entire plant, dropping it down to the bottom and then free up the root system. Each method is effective under different conditions.

If using divers or snorkelers, people in a support boat should ^{MARK} make the locations of milfoil plants. An accurate location is important since the areas need to be resurveyed a few weeks later. There have been instances when small fragments or plants have been overlooked and have become large plants upon resurvey. Removed plants can be used for compost rather than having to be discarded as solid waste.

Special care must be taken to prevent the release of milfoil fragments. At certain times of the year (here, usually early fall), milfoil plants can fracture into hundreds of fragments, each having the potential to form a new plant. To help contain the fragments, individual plants may be covered with a mesh bag before they are pulled. The driver of any support or survey boat must also be careful not to create additional fragments by keeping the boat and propeller out of the milfoil plants. People should use net skimmers to retrieve any fragments accidentally released.

Milfoil fragments can be wind blown into very shallow water and be hidden behind logs, sticks, rocks or shore grass. Note of the wind direction should be made, as wind direction may indicate the next place one will find new plants.

GENERAL IMPACTS OF HANDPULLING Handpulling allows the selective removal of individual nuisance plants; desirable plants can be left alone. Control may last more than one season where complete removal (roots included) has been achieved. Because this technique can be labor-intensive and time-consuming, it is most appropriate for small areas with low plant density. Handpulling can be very useful for aggressive control of sparse or small patches of Eurasian watermilfoil (*Myriophyllum spicatum*).

Hand pulling may increase turbidity in the area of removal. This can affect the efficacy of handpulling if the turbidity interferes with the ability to see the milfoil plants.

FOLLOW UP Follow-up is essential to ensure the success of eradication. Even a few milfoil fragments left in the lake can start a new infestation or boaters may reintroduce milfoil into the lake. Diver and surface inspections should continue at least twice a year during the growing season. Survey work should be as frequent as can be afforded since small milfoil plants or fragments may be easily overlooked. Follow-up assessments are priority in areas where turbidity reduced visibility after pulling only a few plants or in areas where sediments did not release the roots and only the stems were removed.

SITUATIONS NOT APPROPRIATE TO HANDPULLING Hand pulling may not be the best method if the size of the area colonized by the non-native of plant species is too large for the number of volunteers to pull in a reasonable time. If the characteristics of the site would make it unsafe for volunteers to pull (such as a steep drop off), cutting or raking could be considered. While this method does not generally remove the root, cutting or raking a few times during the growing season can reduce the vigor of the plants.

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