



Aquatic Plant Identification and Management Workbook, Series 2

The *Aquatic Plant Identification and Management Workbook Series* is designed to acquaint pond owners in Maryland with naturally-growing aquatic plants and the general means for managing their growth. Aquatic plants play an important role in the natural ecology of ponds: they provide food and shelter for many fish, aquatic animals and other wildlife, and they provide oxygen, which can benefit fish production.

Sometimes, however, growth gets out of hand and the plants become so numerous they interfere with the intended use of the

pond, for example, fishing, swimming, boating — they are then called aquatic weeds. When this occurs, control measures often become necessary.

The suggested chemical controls in this workbook are intended as guidelines and must not replace directions on chemical labels. A list of fact sheets describing a variety of aquatic plants and their management is available from the Maryland Sea Grant Extension Program or your local Cooperative Extension Office.

SUBMERSED VEGETATION

Elodea

Reginal M. Harrell and John N. Hochheimer
Maryland Sea Grant Extension

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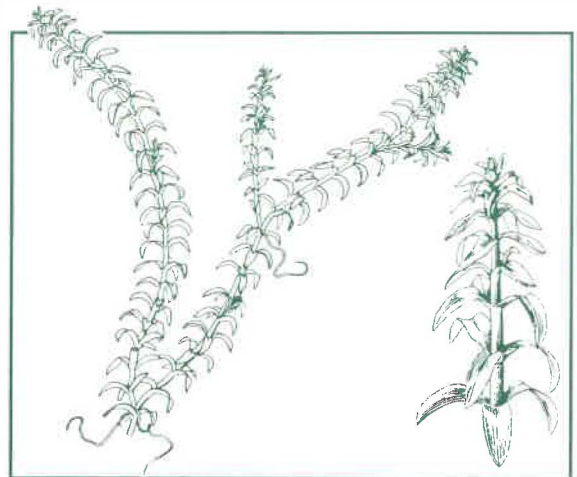
INTRODUCTION

Vascular flowering aquatic plants are seed-bearing and are characterized by a system of conductive and supportive tissue. They can be classified into several broad categories of vegetation: floating, submersed, emergent and terrestrial. This workbook series focuses on elodea, a submersed plant.

Submersed plants are underwater vegetation, usually found in deeper waters. Completely submersed, they are usually rooted to the bottom, lack rigid cell structures (making them appear limp), and often grow up to the water surface. Flowers, when present, often extend above the water surface in spikes.

ELODEA (*Elodea canadensis*)

Elodea is a native of North America and is often confused with Brazilian elodea (*Egeria densa*), which was introduced from South



Submersed Vegetation: *Elodea*

Rebecca Haefner

America. Both are found in similar habitats, and both were spread throughout their range by way of the aquarium trade. Elodea is a perennial and prefers quiet, still and fresh to slightly brackish waters. It is a prolific producer of oxygen and can grow into some of the thickest mats of aquatic vegetation in North America.

In dense growths, the plant can prohibit fishing and boat movement through the water just by its biomass, the mass of living matter in a given area. While this biomass can provide protective cover to small

CHEMICAL CONTROL. The following is a table of chemicals labeled to treat elodea. The table was compiled from information gathered from the aquatic chemical industry. Inclusion in the table does not imply endorsement by the University of Maryland nor by the authors. Omission of chemicals is a result of oversight on the authors part or of new label registration. The table is for comparison purposes only and is not intended to replace the chemical label. Do not use the table for treating aquatic plant problems.

Elodea				
Chemical Name	Chemical Type	Application	Restriction	Comments
Weed Boomer	Diquat dibromide	8 gal/acre	livestock watering, swimming, spraying, irrigation-10 days drinking-14 days	do not use in muddy water
Sonar A.S.	Fluridone	Depth < 3 ft 0.5-0.75 qt/acre 3-5 ft 0.75-1.0 qt/acre > 5 ft 1.0-1.5 qt/acre	irrigate established tree crops-7 days/new crops and turf-30 days	do not use in tidewater or brackish water or where crayfish are farmed
Sonar 5P	Fluridone	Depth < 3 ft 10-15 lb/acre 3-5 ft 15-20 lb/acre > 5 ft 20-30 lb/acre	irrigate established tree crops-7 days/new crops and turf-30 days	do not use in tidewater or brackish water or where crayfish are farmed
Sonar SRP	Fluridone	Depth < 3 ft 10-15 lb/acre 3-5 ft 15-20 lb/acre > 5 ft 20-30 lb/acre	irrigate established tree crops-7 days/new crops and turf-30 days	do not use in tidewater or brackish water or where crayfish are farmed
Diquat Herbicide-H/A	Diquat dibromide	2 gal/acre	livestock watering, spraying, irrigation, drinking-14 days	do not use in muddy water
Norkem 500	Diquat dibromide	40 gal/acre	livestock watering, spraying, irrigation, domestic purposes-14 days	do not use in muddy water
Ultimate	Diquat dibromide	20 gal/acre	livestock watering, swimming, spraying, irrigation-14 days drinking-24 days	do not use in muddy water
Watrol	Diquat dibromide	48 gal/acre	livestock watering, drinking, swimming, spraying, irrigation-14 days	do not use in muddy water
Sentry	Diquat dibromide	Depth 1 ft 42-70 gal 3 ft 126-201 gal 5 ft 201-350 gal	livestock watering, drinking, swimming, spraying, irrigation-14 days	do not use in muddy water
912 Aquatic Weed Killer	Diquat dibromide	20 gal/acre	livestock watering, swimming, spraying, irrigation-10 days drinking-14 days	do not use in muddy water
Aquaquat	Diquat dibromide	1/4-1/2 ppm cation	livestock watering, spraying, irrigation, drinking-14 days	do not use in muddy water
Weedtrine-D	Diquat dibromide	10 gal/acre	livestock watering, spraying, irrigation, drinking-14 days	do not use in muddy water
Casoron 10G	Dichlobenil	100-150 lb/acre	do not use water for irrigation, livestock watering, drinking use fish-90 days	do not use in commercial fish or shellfish waters
Norosac 10G	Dichlobenil	100-150 lb/acre	do not use water for irrigation, livestock watering, drinking use fish-90 days	do not use in commercial fish or shellfish waters

fishes, its growth can sometimes result in an unbalanced population. The stems and leaves of Elodea are sometimes used as food by ducks and coots.

IDENTIFICATION

Elodea and Brazilian elodea (*Egeria densa*) are often confused with *Hydrilla* because the general appearance is the same: all have fleshy stems, and the leaves appear in whorls. *Hydrilla* has obviously serrated (toothed) leaf margins, while elodea and Brazilian elodea leaf margins are smooth to finely serrated. The leaves of elodea are in whorls of three, while Brazilian elodia and hydrilla are in whorls of four to six. While the lower leaves of elodea are opposite each other, all three have leaves that bunch up toward the tip end of the stems.

Elodea is a weakly rooted, multi-branched plant that will grow up to 10 feet in length. The flowers are dioecious (male and female flowers), located at the end of a single threadlike pedicle (stalk). Male plants are rare and have thin linear leaves. There may be two to four flowers from a single stalk. The flowers are white, have three petals and appear from July through September. Reproduction is primarily by fragmentation.

CONTROL

When chemicals are used to control aquatic vegetation, certain precautions must be followed. Always read the label and follow the directions. It is best to spot treat areas where the elodea is first sighted instead of waiting until it takes over a pond completely. Determine the water uses and any use restrictions associated with the chemical control. Obtain all of the necessary permits. Make sure that you have properly identified the aquatic plant and have chosen the correct chemical control. Mix and

apply the chemical according to the label directions. Keep the necessary record — it is required by law. Finally, monitor the water for dissolved oxygen and pH shifts after treatment to determine the effectiveness of the treatment and whether any fish kills occur. Heavy plant die-off can cause oxygen depletion while heavy growth can cause pH shifts on a daily cycle.

REFERENCES AND FURTHER READING

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NOTE: Because of the ecological role and sensitivity of aquatic vegetation, as well as Baywide efforts to restore this important resource, the state does not permit the use of chemical control in tidal waters, and greatly restricts their use in nontidal, flowing waters. Acquaint yourself with all regulations governing plant control activities, and obtain all necessary permits. Nonchemical means should be utilized where practicable.

FOR FURTHER INFORMATION

Maryland Sea Grant Extension
University of Maryland
Cooperative Extension Service
Wye Research and Education Center
Queenstown, Maryland 21658
Telephone: (410) 827-8056

Maryland Sea Grant Extension
University of Maryland
Horn Point Environmental Laboratory
P.O. Box 775
Cambridge, Maryland 21613
Telephone: (410) 228-8200

Maryland Sea Grant Extension
University of Maryland
Cooperative Extension Service
Hartford County
2335 Rock Spring Road
Forest Hill, Maryland 21050
Telephone: (410) 638-3255

Maryland Sea Grant Extension
University of Maryland
Cooperative Extension Service
St. Mary's County
P.O. Box 663
Leonardtown, Maryland 20650
Telephone: (301) 475-4485

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