Aquatic Plant Identification and Management Workbook, *Series 4*

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 series are intended as guidelines and must not replace directions on chemical labels. Separate fact sheets display each of the aquatic plants in this series and are available from the Maryland Sea Grant Extension Program or your local Cooperative Extension Office.

SUBMERSED VEGETATION

Brazilian Elodea

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Vascular flowering aquatic plants are seedbearing 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 fact sheet focuses on Brazilian elodea, a submersed aquatic plant.

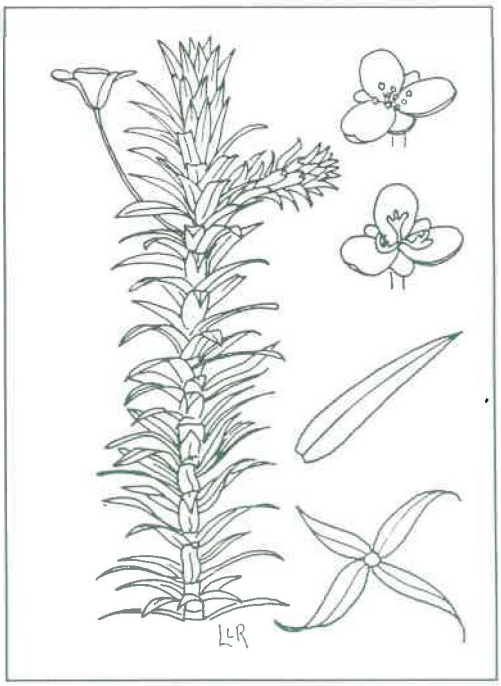
Submersed plants are underwater vegetation usually found in deeper waters. Completely submerged, they are usually rooted to the bottom, lack rigid cell structures (making them appear limp), and often grow up to the water surface. Flowers, when present, often extend above the water surface in spikes.

BRAZILIAN ELODEA

(Egeria densa)

Brazilian elodea, or egeria, is an exotic (native to South America), submersed, perennial, aquatic herb, usually rooted in bottom mud. Probably introduced through the aquarium trade, the plant is normally found in quiet waters of ponds, lakes, and in slow-moving streams. It is commonly found in the same waters as Canadian elodea (*Elodea canadensis*), African elodea (*Lagarosiphon* spp.), and hydrilla (*Hydrilla verticillata*). Populations of this species have probably been established throughout the world, and have been found in dense growths in Maryland.

Growing as tall as 6 feet, and branching at every double node, which is commonly found on the stems, the stands of this plant can become so abundant that they can impede navigation, water flow, and recreational fishing. The plant can also become a serious problem in fish hatcheries if it gets introduced early in the springtime by birds or surface waters used to fill some ponds.



Credit: IFAS, University of Florida, Gainesville

Submersed Vegetation: Brazilian Elodea

Regarding wildlife value, Brazilian elodea provides protectional cover for many small aquatic inver-

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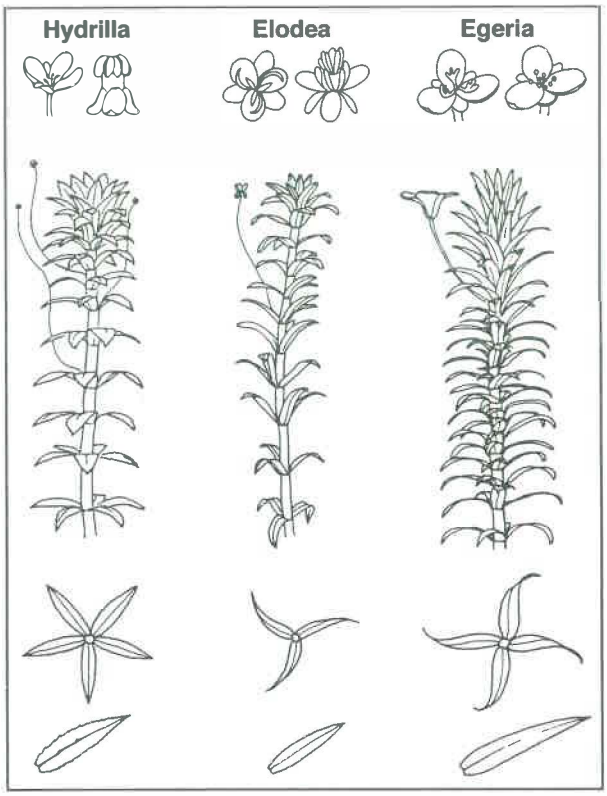
tebrates and fish. However, in heavily infested areas, the growth can be so dense that it prevents larger predators from eating smaller fish; therefore the fish populations can become unbalanced. Both the stems and leaves are food for waterfowl, coots, and gallinules.

CHEMICAL CONTROL. The following is a table of chemicals labeled to treat brazilian 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. Labels are subject to change; therefore, always check the label for treatment sites, rates, and precautions before purchasing or applying any chemical. **Do not use the table for treating aquatic plant problems.**

Brazilian elodea (*Egeria* spp.)

Chemical Name	Chemical Type	Application	Restriction	Comments
Komeen	Copper 8%	8-16 gal/acre	10-14 days between treatments	may be toxic to fish
Casoron 10G	Dichlobenil	70-150 lb/acre	do not use water for irrigation, livestock, or drinking waters no fishing – 90 days	do not use in commercial fish or shellfish
Diquat Herbicide- H/A	Diquat dibromide	2 gal/acre	livestock watering, spraying, irrigation, domestic use – 14 days swimming – 1 day	do not use in muddy water
Aquashade	Blue & Yellow Dye	0.25 gal/acre ft	not for human consumption	more effective in depths over 2 ft
Sonar SRP	Fluridone	3.2-25 lb/acre depending on pond depth	no irrigation of established tree crops – 7 days new crops and turf – 30 days	do not use in tidal or brackish water or on farmed crayfish
Sonar 5P	Fluridone	Pond Depth < 3 ft 10-15 lb/acre 3-5 ft 15-20 lb/acre > 5 ft 20-30 lb/acre	no irrigation of established tree crops – 7 days new crops and turf – 30 days	do not use in tidal or brackish water or on farmed crayfish
Sonar AS	Fluridone	Pond 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	no irrigation of established tree crops – 7 days new crops and turf – 30 days	do not use in tidal or brackish water or on farmed crayfish
912 Aquatic Weed Killer	Diquat dibromide	20 gal/acre	livestock watering, spraying, irrigation, swimming – 10 days drinking – 14 days	do not use in muddy water



Credit: IFAS, University of Florida, Gainesville

Submerged Vegetation: Brazilian Elodea

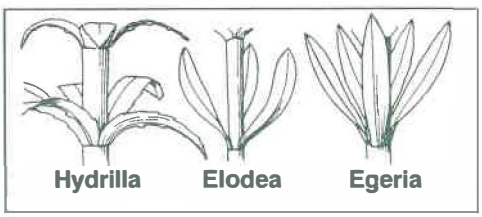
IDENTIFICATION

Not only is egeria commonly found with other types of elodea and hydrilla, it is often confused as being one of the other species. Drawings in this fact sheet are helpful in distinguishing the different species. In general, the leaves of egeria are 1/2 to 1-1/4 inches long and in whorls of four to eight. Canadian elodea has whorls of three. Hydrilla leaves have very distinctive large teeth on the margins of the leaves (see the fact sheet on hydrilla) while the serrations of Canadian elodea and egeria are very fine, and a magnifying glass may be required to see them. Likewise, there is less distance between nodes in egeria than in hydrilla, giving it a more leafy appearance than the latter.

Canadian elodea and egeria are smooth to the touch while hydrilla is rough. Egeria branch at locations where the nodes of the stem double and the number of leaves at this location are usually double that of non-branching single nodes; in Canadian elodea the number of leaves at the branching and non-branching nodes are about the same.

The male (staminate) flowers of egeria are large (1/2 to 3/4 inch wide) and showy, while the male flowers of Canadian elodea are rarely more than 1/3 of an inch wide. Hydrilla's flowers are small and inconspicuous. The flowers are found on stalks 1 to 4 inches long that bring the flower to the water's surface. There are three small green sepals and three white spreading petals up to 1/3 of an inch or longer.

Only male flowering plants have been introduced into the United States thus far. Flowers have been seen throughout the growing season (May through October), but are most common in spring and early summer. Because only male plants have been found in the U.S., reproduction is by fragmentation. Each piece of a plant that contains a double node can develop into another plant. This form of reproduction, common to the elodeas and hydrilla, is one reason why these plants can be so successful in colonizing a body of water.



Submerged Vegetation: Brazilian Elodea

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 egeria is first sighted or wait until the summer when the plant is in bloom. Determine the water uses and any use restrictions associated with the chemical control.

Obtain all necessary permits. Make sure 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 records – they are 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 kill occurs. Heavy plant die-off can cause oxygen depletion, while heavy growth can cause pH shifts on a daily cycle.

REFERENCES AND FURTHER READING

Aulbach-Smith, Cynthia A., Steven J. de Kozlowski, and Lawrence A. Dyck. 1990. Aquatic and wetland plants of South Carolina. South Carolina Aquatic Plant Management Council and South Carolina Water Resources Commission, Columbia.

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Traver, David P., John A. Rodgers, Michael J. Mahler, and Robert L. Lazor. 1978. Aquatic and wetland plants of Florida. Special Publication, Florida Department of Natural

Resources, Bureau of Aquatic Plant Research and Control. Tallahassee, Florida.

FOR FURTHER INFORMATION

For general information about the Maryland Sea Grant Extension Program, visit the web:

http://www.mdsg.umd.edu/MDSG/Extension/index.html

For technical questions, contact an extension agent or specialist at one of these locations:

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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. Non-chemical means should be utilized where practicable.

FOR ADDITIONAL COPIES

Copies of Maryland Sea Grant Extension workbooks on aquatic plants, including color photographs for use in identifying species, are available on the web at:

http://www.mdsg.umd.edu/MDSG/Extension/Workbooks

Additional copies of printed workbooks are available from the Maryland Sea Grant College Program, 0112 Skinner Hall, University of Maryland, College Park, MD 20742-7640.

Illustrations on page 1 provided by the Information Office of the University of Florida, IFAS, Center for Aquatic Plants (Gainesville).

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