



Aquatic Plant Identification and Management Workbook, Series 1

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 separate fact sheet, in color, displays each of the aquatic plants in this series and is available from the Maryland Sea Grant Extension Program or your local Cooperative Extension Office.

SUBMERGENT VEGETATION

LOAN COPY ONLY

Redhead Grass

CIRCULATING COPY
Sea Grant Depository

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

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, submergent, emergent and terrestrial. This workbook focuses on redhead grass, a submergent plant.

Submergent 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.

REDHEAD GRASS (*Potamogeton perfoliatus*)

Redhead grass is found in fresh to moderately brackish water. It is most often found in slow moving or standing waters and is generally not very competitive when there are other plants in the pond. Heavy concentrations of redhead grass can interfere with boat traffic and hinder fishing. Most of the *Potamogetons* produce fruits, tubers

and roots, which are good sources of food for waterfowl; redhead grass fits into this category. In some areas, this plant is intentionally planted for waterfowl habitat enhancement.

IDENTIFICATION

Potamogetons, better known as pondweeds, are the most abundant group of aquatic seed plants and are found in fresh water usually high in calcium, or in moderately brackish waters. Many of them have leaves that float on the surface; others are completely submerged except for the flowering spikes. Redhead grass can be separated from the other pondweeds primarily by the shape of its leaves. The plant has submerged, alternate, thin, translucent, broad oval to lance-shaped leaves with 11-13 nerves in each leaf. The leaf is rounded at the base where it is attached to half to three-quarters of the circumference of the stem. The plant also has whitish or pinkish rhizomes. The flowers (June-September) are spikes which



Karen Teramura

Submergent Vegetation: Redhead Grass.

are short-cylindric, and have 2-8 whorls. The fruit is obovate, light brown or tan, and round on the back with a prominent beak. Reproduction can occur from seeds, rhizomes or detached winter buds.

CONTROL

When chemicals are used to control aquatic vegetation, certain precautions must be followed. Always read the label and follow

CHEMICAL CONTROL. The following is a table of chemicals labeled to treat redhead grass. 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.

Redhead Grass				
Chemical Name	Chemical Type	Application	Restriction Periods	Comments
Weed Boomer	Diquat dibromide	8 gal/acre	livestock watering, spraying, irrigation—10 days, drinking—14 days	do not use in muddy water
Hydrothol 191	Mono salt of endothal	27-136 lb/acre ft (0.5-2.5 ppm concentration)	do not use water for irrigation use fish—3 days	toxic to fish (0.3 ppm)
Aquathol	Dipotassium salt of endothal	use 2.0-3.0 ppm concentration 2.0 ppm=215 lb/acre 3.0 ppm=323 lb/acre	irrigation, spraying drinking—7 days, use fish—3 days, swim—24 hours	
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
Diquat	Diquat dibromide	1-2 gal/acre irrigation, drinking—14 days	livestock watering, spraying,	do not use in muddy water
Norkem 500	Diquat dibromide	20-40 gal/acre irrigation, drinking—14 days	livestock watering, spraying,	do not use in muddy water
Ultimate	Diquat dibromide	10-20 gal/acre irrigation, drinking—14 days	livestock watering, spraying,	do not use in muddy water
Watrol	Diquat dibromide	48 gal/acre irrigation, drinking—14 days	livestock watering, spraying,	do not use in muddy water
Sentry	Diquat dibromide	Depth 1 ft 7-14 gal/acre 3 ft 21-42 gal/acre 5 ft 35-70 gal/acre	livestock watering, spraying, irrigation, drinking—14 days	do not use in muddy water
912 Aquatic Weed killer	Diquat dibromide	20 gal/acre	swimming, spraying, irrigation,	do not use in muddy water drinking—14 days
Aquaquat	Diquat dibromide	1/4-1/2 ppm cation, dilute 10:1 w/water	livestock watering, spraying, irrigation, drinking—14 days	do not use in muddy water water
Weedtime-D	Diquat dibromide	5-10 gal/acre	livestock watering, spraying, irrigation, drinking—14 days	do not use in muddy water
Aquashade	Acid Blue 9 Acid Yellow 29	1 gal/4 acre ft	no swimming until after dispersal, do not use water for human consumption	
Aquazine	Simazine	3.4-6.8 lb/acre ft	irrigation, spraying, drinking—12 months	do not apply more than 10 lb/acre where striped bass fry or fingerlings will be cultured immediately
Aquathol K	Dipotassium salt of endothal	1.0-2.0 ppm concentration level 4 ft 2.6 gal 1.0 ppm 5.1 gal 2.0 ppm	livestock watering, spraying, irrigation, drinking—14 days, use fish—3 days, swim—24 hours	
Kocide Copper Sulfate Pentahydrate Crystals	Copper sulfate	1.6-2.4 lb/per cubic ft pentahydrate 99%	concentration cannot exceed per second per day	may be toxic to fish 1 ppm if water is used as a potable source

Chemical Name	Chemical Type	Application	Restriction Periods	Comments
Norosec 10G	Dichlobenil	100-150 lb/acre	do not use water for irrigation, livestock watering, or drinking, use fish—90 days	do not use in commercial fish or shellfish waters
Casoron 10G	Dichlobenil	100-150 lb/acre	do not use for irrigation, livestock watering, or drinking, use fish—90 days	do not use in commercial fish or shellfish waters

the directions. It is best to spot treat areas where the redhead grasses are first sighted instead of waiting until they take 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 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

Godfrey, R.K. and J.W. Wooten. 1979. Aquatic and wetland plants of the southeastern United States. University of Georgia Press, Athens.

Hotchkiss, Neil. 1972. Common marsh, underwater and floating-leaved plants. Dover Publications, Inc., New York, New York.

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 FURTHER INFORMATION

Maryland Sea Grant Extension
University of Maryland Cooperative
Extension Service
Talbot County Office
P.O. Box 519
Easton, Maryland 21601
Telephone: (301) 822-1166

Maryland Sea Grant Extension
University of Maryland
Horn Point Environmental Lab
P.O. Box 775
Cambridge, Maryland 21613
Telephone: (301) 228-8200

Maryland Sea Grant Extension
University of Maryland
Cooperative Extension Service
Harford County
2335 Rock Spring Road
Forest Hill, Maryland 21050
Telephone: (301) 838-6000

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

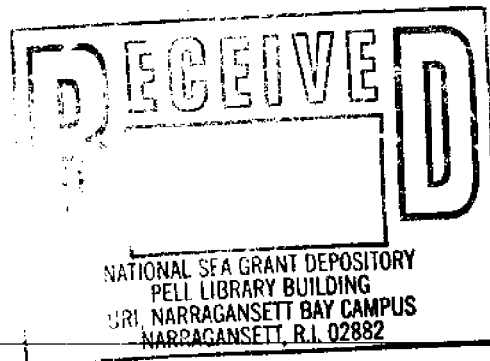
ACKNOWLEDGEMENTS

This fact sheet was funded in part by a grant from the United States Department of Agriculture under the Renewable Resources Extension Act to the University of Maryland Cooperative Extension Service. Additional funding was provided by the University of Maryland Center for Environmental and Estuarine Studies and through grant NA86AA-D-SG-006, awarded by the National Oceanic and Atmospheric Administration to the University of Maryland Sea Grant College Program.

Publication Number
UM-SG-MAP-89-11

Copies of this Maryland Sea Grant Extension publication are available from: Sea Grant College, University of Maryland, 1224 H.J. Patterson Hall, College Park, MD 20742

Line drawing © 1989 Karen Teramura. All rights reserved. This illustration is reprinted from *Chesapeake Bay, Nature of the Estuary: A Field Guide* by Christopher P. White with illustrations by Karen Teramura, published by Cornell Maritime Press, Inc., \$12.95.



The University of Maryland System is an equal opportunity system. The system's policies, programs and activities are in conformance with pertinent Federal and state laws and regulations on nondiscrimination regarding race, color, religion, age, national origin, sex and handicap. Inquiries regarding compliance with Title VI of the Civil Rights Act of 1964, as amended; Title IX of the Educational Amendments; Section 504 of the Rehabilitation Act of 1973; or related legal requirements should be directed to the Director of Personnel/Human Relations, Office of the Vice Chancellor for Agriculture and Natural Resources, Symons Hall, College Park, MD 20742.