COOPERATIVE EXTENSION SERVICE
University of Maryland System • Maryland Sea Grant Extension Program

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.

A L G A E

Muskgrass

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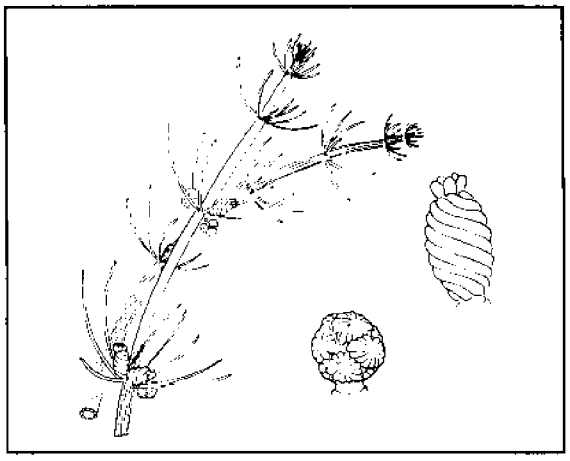
Muskgrass is one of several kinds of algae that occur in Maryland's fresh and brackish water ponds. Some algae can be beneficial, often serving as a primary or secondary food supply for fish; even these, however, can become too plentiful: they can blanket the entire surface of a pond or spread throughout the bottom to create severe water quality problems and noxious odors.

Because some vascular plants in ponds can have the same appearance as algae, it is important to first correctly identify whether you have algae or vascular plants before you chemically treat a pond as chemical control is generally specific to each group. (Workbooks in this series describe other types of algae and noxious aquatic plants.)

MUSKGRASS

This workbook describes *Chara*, a branched muskgrass algae that can be found in fresh and brackish waters. There are approximately thirty-five species of muskgrasses, which include Nitellas and two Tolypellas (not pictured here). Muskgrass is called by this name because when crushed in your hand it has a distinctive ill-smelling musky odor. Usually yellow-green to grayish-green, it often carries calcareous (lime) deposits on the branches which feel gritty or bristly. The short, even-length branches occur in whorls, 6-16 of them, radiating from each joint or node. The branchlets are never forked in *Chara*. Generally *Chara* is found in alkaline or hard waters and can become a nuisance, covering the entire pond bottom. In some areas, it may grow as high as three feet. Dense growths may hinder waterflow and even interfere with fishing.



Karen Tenamura

Algae: Muskgrass Chara *Sp.*

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 muskgrass algae 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.

CHEMICAL CONTROL. The following is a table of chemicals labeled to treat Muskgrass *(Chara)*. 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.**

Muskgrass *(Chara)*

Chemical Name	Chemical Type	Application	Restriction Periods	Comments
Mogul Ag-431	Elemental Copper 7.1%	1.5 gal/acre-ft dilute w/ 10-20 parts water for application	none	apply on sunny day, water temperature >60° F, if alkalinity <50 ppm, toxic to fish
A&U-70 Plus	Elemental Copper 8.0%	1.25 gal/acre-ft dilute w/ 10-20 parts water for application	none	apply on sunny day, water temperature >60° F, if alkalinity <50 ppm, toxic to fish
K-TEA	Elemental Copper 8.0%	1.7—3.4 gal/acre-ft dilute w/ 10-20 parts water for application	none	apply on sunny day, water temperature >60° F, if alkalinity <50 ppm, toxic to fish
Cutrine-Plus	Elemental Copper 9.0%	1.2 gal/acre-ft dilute w/ 10-20 parts water for application	none	apply on sunny day, water temperature >60° F, if alkalinity <50 ppm, toxic to fish
Cutrine-Plus Granular	Elemental Copper 9.7%	1 lb/720 ft² 60 lb/surface acre	none	slow release granular formula for bottom growing algae, if alkalinity <50 ppm, toxic to fish
Aquatrine	Elemental Copper 9.0%	1.2 gal/acre-ft dilute w/ 10-20 water for application	none	apply on sunny day, water temperature >60° F, if alkalinity <50 ppm, toxic to fish
Cooper Control	Elemental Copper 8.5%	1.6—3.2 gal/acre-ft dilute w/ 10-20 parts water for application	none	apply on sunny day, water temperature >60° F, if alkalinity <50 ppm, toxic to fish
Kocide	Copper Sulfate Penthydrate	3.9-5.32 lb/acre-ft	none	if alkalinity <50 ppm, toxic to fish
Casoron	Dichlobenil-10%	100-150 lb/acre	none	if alkalinity <50 ppm, toxic to fish
Norosac 10-G	Dichlobenil-10%	100-150 lb/acre	irrigation, livestock watering, human use > 1 year, fishing—1 year	non-selective weed control
Aquashade	Blue & Yellow Dye	0.25 gal/acre-ft	not for human consumption	less effective within 2 feet of surface
Aquazine	Simazine	4.25 lb/acre-ft	swimming—4 hours, irrigation, livestock, human consumption—12 mos.	non-selective systemic herbicide
Hydrothol 191 liquid	Endothol 53.0%	0.6-2.2 pts/acre-ft	fish harvest —3 days, all others, up to 25 days	fish toxicity 0.3 ppm
Hydrothol 191 Granular	Endothol 11.2%	3-11 lbs/acre-ft—light 27-82 lbs/acre-ft—heavy	fish harvest —3 days, all others, up to 25 days	fish toxicity 0.3 ppm

REFERENCES AND FURTHER READING

Harrell, Reginal M. and John N. Hochheimer. 1985. Aquatic Vegetation control. Fact Sheet 415. Cooperative Extension Service, University of Maryland, College Park, Maryland.

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

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. Aquatic Plant Research and Control, Tallahassee, Florida.

Wellborn, Thomas L. 1985. Aquatic weed identification and control: Algae. Information Sheet Number 1035 Extension Service Mississippi State University, Mississippi State, Mississippi.

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

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