



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.

EMERGENT VEGETATION

Sedges

Reginal M. Harrell and Richard E. Bohn

University of Maryland Cooperative Extension Service, Sea Grant Extension Program

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 sedges, a group of emergent plants.

As a group, emergent plants are usually found rooted in shallow waters and all or part of the plant extends above the water line or hydrated soil. Some plants are not truly aquatic, and may be found in dry fields completely removed from a water source. The plants are usually rooted to the bottom of a pond, have a rigid cell structure, and are not dependent on the water column for support.

SEDGES

(*Carex* spp. *Cyperus* spp.)

The sedge family is one of the largest grass-like plant groups in

the world and includes the caric sedges (*Carex* spp.), bulrushes (*Scirpus* spp.), spikerushes (*Eleocharis* spp.), nutgrasses or flat sedges (*Cyperus*), and several other types of sedges or rushes. The largest genera, *Carex* contains well over 1,000 species worldwide (over 500 species in the United States). Most of these plants are perennials and are found in damp meadows, swamps, and fresh, brackish, and salt water marshes. They have leafy stems that range in size from a few inches to over five feet high.

Rarely do sedges outcompete other native vegetation or grow to be a serious problem in aquatic situations, although they can be a problem where rice is cultivated. Sedges are of value to wildlife with the seeds eaten



Emergent Vegetation: Sedges

by a variety of birds including waterfowl, marshbirds, rails, upland gamebirds, grouse, songbirds, sparrows, and buntings. Deer also feed on the stems and leaves.

IDENTIFICATION

The sedges are very difficult to identify and almost always require the flower and/or fruit for positive identification. The cover line drawing of flat sedge (*Cyperus odoratus*) is common in Maryland, often growing in gardens and coastal fields. In general the sedges are grass-like herbaceous plants that have solid triangular stems and alternate, 3-ranked leaves. Each leaf consists of a blade and a closed sheath, or a bladeless closed sheath (the

spikerushes). Toward the top of the plant, there are upright to dangling clusters of flowers called spikelets (a type of flower arrangement found in grasses and sedges). These spikelets contain closely packed individually inconspicuous flowers, usually partially hidden by greenish, yellow, brown, purple, or blackish scales.

Some sedges are monocious, that is, they have separate male and female flowers in different spikelets or different parts of the same spikelet. In those plants with the male and female flowers in different spikelets, the male flowers are at the top of the stems while the female flowers are found in different looking spikelets further down the

plant. Each female flower will contain one ripe seed called a nutlet or an achene and is enclosed in a perigynium (sac-like structure).

Flowers can be found May through September. Reproduction is usually by seeds.

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

CHEMICAL CONTROL. The following is a table of chemicals labeled to treat sedges. 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.**

Flat Sedges (<i>Cyperus</i> spp.)				
Chemical Name	Chemical Type	Application	Restriction	Comments
Weed RHAP A-4D	Dimethylamine salt of 2,4-D	2.5-4.5 pt in 50-100 gal water/acre	do not use water for irrigation or domestic purposes	vapors may harm nearby crops at temperatures above 95° F
912 Aquatic Weed Killer	Diquat dibromide	1 pint in 100 gal water	livestock watering, spraying, irrigation, swimming – 10 days drinking – 14 days	do not use in muddy water
Weedtrine D	Diquat dibromide	5 gal/acre with non-ionic surfactant in water	livestock watering, spraying, irrigation, domestic uses – 14 days	do not use in muddy water
Rodeo	Glyphosate	4.5 pts/acre as a 0.75% solution with ionic surfactant in water	do not apply within 1/4 mile of potable water intakes	treat in late summer
Watrol	Diquat dibromide	ratio of 3 gal in 10 gal water/acre as a top spray; wet plants thoroughly	livestock watering, spraying, irrigation, or swimming – 14 days	do not use in muddy water

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 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

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.

Lorenzi, Harri J. and Larry S. Jeffrey. 1987. Weeds of the United States and their control. An AVI Book, Van Nostrand, Reinhold Co., New York.

Radford, Albert E., Harry E. Ahles, and C. Ritchie Bell. 1968. Manual of the vascular flora of the Carolinas. The University of North Carolina Press, Chapel Hill.

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:

Maryland Sea Grant Extension
University of Maryland
Wye Research and Education Center
P.O. Box 169
Queenstown, MD 21658
Telephone: (410) 827-8056

Maryland Sea Grant Extension
University of Maryland
Chesapeake Biological Laboratory
P.O. Box 38
Solomons, MD 20688
Telephone: (410) 326-7356

Maryland Sea Grant Extension
University of Maryland
Cooperative Extension Service
NOAA Chesapeake Bay Office
410 Severn Ave., #107A
Annapolis, MD 21403
Telephone: (410) 267-5674

ACKNOWLEDGEMENTS

This fact sheet was funded in part by the University of Maryland Center for Environmental Science and through grant NA46RG0091, awarded by the National Oceanic and Atmospheric Administration to the Maryland Sea Grant College Program.

Publication Number
UM-SG-MAP-96-15

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.

Illustration on page 1 provided by the Information Office of the University of Florida, IFAS, Center for Aquatic Plants, (Gainesville) 1990.

The University of Maryland is equal opportunity. The University'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 disability. 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, and the Americans With Disabilities Act of 1990; or related legal requirements should be directed to the Director of Personnel/Human Relations. Office of the Dean, College of Agriculture and Natural Resources, Symons Hall, College Park, MD 20742.

Printed on recycled paper with soy-based ink.



COOPERATIVE EXTENSION SERVICE

UNIVERSITY OF MARYLAND, COLLEGE PARK

UNIVERSITY OF MARYLAND EASTERN SHORE
