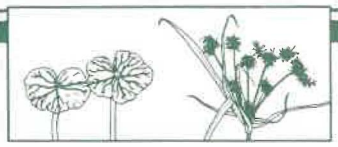

Aquatic Plant Identification and Management Workbook, *Series 4*

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

Smartweeds

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 smartweeds, 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.

SMARTWEEDS

(Polygonum spp.)

The smartweeds belong to the same family as knotweeds and buckwheats. Smartweeds are widely found throughout the freshwater areas of the country, yet only one species is strictly aquatic: water smartweed, *P. amphibium*. The remainder do quite well in moist soils and along water margins such as pond and ditch banks. They also grow well in cultivated fields during heavy spring and winter

Credit: IFAS, University of Florida, Gainesville

Emergent Vegetation: Smartweeds

UM-SG-MAP-96-16

rains that soak the ground. In some areas smartweed growth can become so dense that it can completely cover several acres of land.

Most kinds of smartweeds have upright, branched stems with lance-shaped or oval leaves, long-lasting flowers, and brown or black seeds. The smartweeds provide an impor-

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

Smartweed (*Polygonum* 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 uses	vapors may harm nearby crops at temperatures above 95° F
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
Weedar IVM 44	2,4-D	2-4 pt/acre	do not use water for spraying, irrigation, or domestic uses	best when weeds are actively growing
Weedar 64	Dimethylamine salt of 2,4-D	0.5-2 pt/acre in at least 10 gal water	irrigation, spraying, domestic uses – 3 weeks do not eat fish from treated waters	best when weeds are actively growing
912 Aquatic Weed Killer	Diquat dibromide	1 pint in 100 gal water as a top dressing	livestock watering, spraying, irrigation, swimming – 10 days drinking – 14 days	do not use in muddy water
Rodeo	Glyphosate	1.5-2.5 pt/acre with ionic surfactant in 100 gal water	do not apply within 1/4 mile of potable water intakes	use as a top spray

tant food source for many waterfowl as well as song and upland gamebirds. The seeds and plants are also eaten by muskrats, nutria, and even squirrels.

There are over 20 species of smartweed although only a few have considerable value to wildlife. The more important species for wildlife include (1) water smartweed, which comes in two forms, a marsh and floating-leaf form; (2) marsh smartweed (*P. coccineum*); (3) nodding smartweed or willow-weed (*P. lapathifolium*); (4) swamp smartweed (*P. hydropiperoides*); and (5) southern or denseflower smartweed (*P. desiflorum*). Smartweeds can become dense enough to impede both boat navigation through shallow waters and drainage capabilities.

IDENTIFICATION

Smartweeds are herbaceous annuals or perennials that will grow in waters as deep as four feet. The leaves are alternate with a characteristic sheath at the base. The leaves can either be smooth or have short hairs on the veins, and grow to be over 10 inches long. The stems are usually round, lie horizontally on the ground where they root at the nodes then branch upward as high as 8 feet in some species. The nodes can be up to 3/4 inch and dark-green to reddish-brown in color. In some plants, the stems and underside of the leaves come armed with downward pointing prickles that can be painful if grabbed the wrong way.

The blooms are found on numerous erect, axillary, elongated (2-4 inches) structures called racemes, which have small stalked flowers. The flowers do not have petals and the sepals are pink, greenish, or white. Some smartweed flowers contain an oil which can sting the tongue and lips of animals. Blooms are found July through October. The fruit is an achene (small, hard, dry seed or nutlet). It can be flat or triangular in shape, dark brown to black in color, and up to 1/8 of an inch long.

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 smartweeds 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.

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.

Lorenzi, Harri J. and Larry S. Jeffery. 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

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.

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-96-16

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.

COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF MARYLAND, COLLEGE PARK
UNIVERSITY OF MARYLAND EASTERN SHORE