Aquatic Plant Identification and Management Workbook, *Series 3*

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

Water Stargrass

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 water stargrass, 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.

WATER STARGRASS

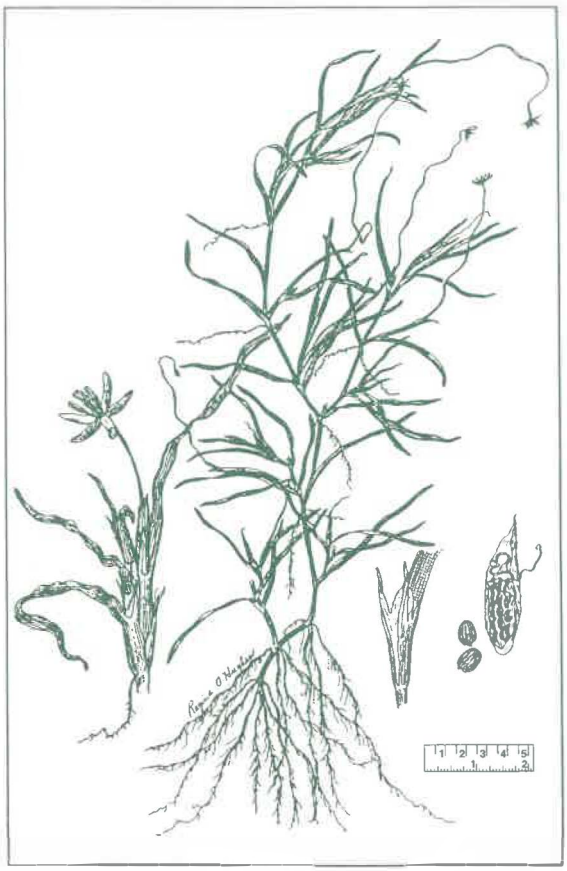
(Heteranthera dubia)

Water stargrass obviously derived its name from its conspicuous, pale-yellow, starshaped flower that protrudes above the water's surface when in bloom. Also known as mud plantain, water stargrass has small, linear leaves 2 to 4 inches long and less than 1/4 inch wide. The plant is a perennial usually firmly rooted in the sediment and, when given the opportunity, can develop into dense, but patchy beds.

The plant primarily grows in ponds, lakes, and slow-moving freshwater areas in clay or calcareous soils, but can grow in gravel streams. The plants provide good cover for small fish and invertebrates, and the seeds and leaves are occasionally eaten by waterfowl. It does not have a high wildlife utilization value.

IDENTIFICATION

Water stargrass is a submersed lime-green



Credit: IFAS, University of Florida, Gainesville

Submersed Vegetation: Water Stargrass

UM-SG-MAP-96-07

delicate plant that has alternating branching stems. The leaves do not possess a distinct midvein, and the base of the leaf makes a sheath, tipped on each side, that wraps around the stem. The flower is perfect (has both male and female parts on the same flower), solitary, develops from a terminal spathe (encasing sheath), and extends above the water. Flowers that do not reach the surface remain encased within the spathe and are self pollinating. The mature seed capsule is usually not seen, and develops about 15 seeds. The seeds overwinter on the pond or stream bottom, and germinate the following spring. Flowers can be seen from early summer through September.

Asexual reproduction can occur throughout the growing season by fragmentation. Over winter the remaining stems or stem tips remain in the sediment until the following spring, whereupon new growth is initiated.

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 water stargrass is first sighted. 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.

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

Water Stargrass (*Heterandria* spp.)

Chemical Name	Chemical Type	Application	Restriction	Comments
Aquathol	Dipotassium salt of endothall	2-3 ppm 2 ppm = 54 lb/acre ft 3 ppm = 81 lb/acre ft	irrigation, spraying, drinking – 7 days fishing – 3 days swimming – 24 hours	can be used for spot treatments
Aquathol K	Dipotassium salt of endothall	2-3 ppm 2 ppm = 1.3 gal/acre ft 3 ppm = 1.9 gal/acre ft	irrigation, spraying, drinking – 7 days livestock – 7 days fishing – 3 days swimming – 24 hours	dilution prior to spreading improves distribution
Aqua-Kleen	2,4-D	100 lb/acre irrigation, spraying,	do not use water for livestock, or drinking	best when plants are actively growing
Navigate	2,4-D butoxyethel	100 lb/acre	do not use water for irrigating, dairy animals, or domestic uses	control drift during application; may be toxic to fish

REFERENCES AND FURTHER READING

Godfrey, Robert L. and Jean W. Wooten. 1979. Aquatic and wetland plants of the southeastern United States. The University of Georgia Press, Athens.

Hurley, Linda, M. 1990. Field guide to the submerged aquatic vegetation of Chesapeake Bay. U.S. Fish and Wildlife Service, Chesapeake Bay Estuary Program, Annapolis, MD.

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.

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

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
Telephone: (410) 827-8056

Maryland Sea Grant Extension
University of Maryland
Chespeake 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 a grant NA46RG0091, awarded by the National Oceanic and Atmospheric Administration to the University of Maryland Sea Grant College Program.

Publication Number
UM-SG-MAP-96-07

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