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

Slender Pondweed

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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 slender pondweed, a submersed aquatic plant.

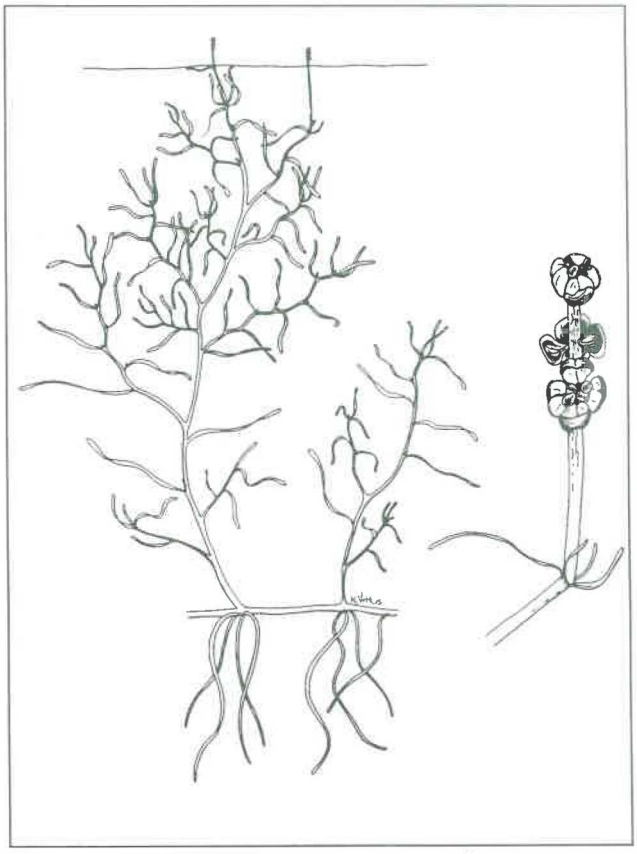
Submersed plants are underwater vegetation usually found in deeper waters. Completely submerged, they are usually rooted to the bottom, lack rigid cell structures (making them appear limp), and often grow up to the water surface. Flowers, when present, often extend above the water surface in spikes.

SLENDER PONDWEED

(Potamogeton pusillus)

The Potamogetons, or pondweeds as they are commonly known, are made up of a variety of different species that vary in size, form, and shape. Almost all have an important value as a food source for wildlife, especially waterfowl. This group of plants has two basic forms of leaves: a floating leaf, which is tough and leathery, and a submersed leaf, which is thin, delicate, and often translucent. Many species have both forms of leaves on the same plant. Most of the Potamogetons can also become a serious aquatic weed problem in shallow water ponds.

Slender pondweed is a perennial submersed Potamogeton that does not



Credit: IFAS, University of Florida, Gainesville

Submersed Vegetation: Slender Pondweed

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

Slender Pondweed (*Potamogeton* spp.)

Chemical Name	Chemical Type	Application	Restriction	Comments
Casoron 10G	Dichlobenil	70-150 lb/acre	do not use water for irrigation, livestock, or drinking waters no fishing – 90 days	do not use in commercial fish or shellfish
Diquat Herbicide H/A	Diquat dibromide	2 gal/acre	livestock watering, spraying, irrigation, domestic uses–14 days swimming – 1 day	do not use in muddy water
Weedtrine D	Diquat dibromide	5-10 gal/acre	livestock watering, spraying, irrigation, domestic uses – 14 days	do not use in muddy water
912 Aquatic Weed Killer	Diquat dibromide	20 gal/acre	livestock watering, spraying, irrigation, swimming – 10 days drinking – 14 days	do not use in muddy water
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
Hydrothol 191 Liquid	Endothall 53.0%	0.4-1.1 gal/acre ft (0.3-0.8 ppm)	fishing–3 days all other uses, up to 25 days	toxic to fish at 0.3 ppm
Hydrothol 191 Granular	Endothall 11.2%	light–3-11 lb/acre ft heavy–27-82 lb/acre ft	fishing – 3 days all other uses, up to 25 days	toxic to fish at 0.3 ppm
Aquashade	Blue & Yellow Dye	0.25 gal/acre ft	not for human consumption	more effective in depths over 2 ft
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
		> 5 ft 20-30 lb/acre	crops – 7 days new crops and turf – 30 days	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

have a floating leaf, nor does it have rhizomes (underground stems). The plant can be found in water over 6 feet deep and is often found in association with other submersed aquatics such as *Hydrilla, Egeria densa, Najas minor,* and *N. guadalupensis*. It usually occurs in waters of high hardness (high calcium), and can grow in slightly brackish waters where it forms a thick mat of dark-colored vegetation on the bottom close to shore. Both the seeds and the foliage are eaten by waterfowl.

IDENTIFICATION

Slender pondweed has narrow, linear, grass-like leaves that are 1-2 inches or more in length, and have entire (smooth) edges with pointed tips. The leaves of slender pondweed, like most Potamogetons, are arranged alternately. The leaves may have a pair of small, inconspicuous glands at the base, and are free of stipules (paired structures found at leaf bases).

The flower stalks (1/2 to 3 inches long) arise from the upper leaf axils and support short, headlike spikes. The flowers are in whorls of three to five along the spikes and are 1/4 to 1/2 inch long. Flowering occurs from June through September, and fertilization takes place underwater.

Slender pondweed forms an egg shaped fruit about 1/8 of an inch long. Reproduction is by seeds and stem sections. During certain seasons the plants form a cormlike, smooth-leaved winter bud that is made up of dense aggregations of leaves that later drop off and overwinter to form new plants in the spring.

Often confused with other similar appearing plants, *Potamogeton pusillus* can be separated from *Najas guadalupensis* (southern naiad) by its alternating, entire leaves, and small flowers and fruits produced on peduncles in the leaf axils. It can be separated from *Potamogeton diversifolius* (variable-leaf pondweed) when it occurs without its floating leaves by the presence of the glands at the base of the leaf, the free stipules, and the smooth fruit which lacks a keel in slender pondweed.

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 slender pondweed are first sighted in the spring. 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 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.

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Riemer, Donald N. 1984. Introduction to freshwater vegetation. The AVI Publishing Company, Westport, Connecticut.

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:

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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.

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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.

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