Parrotfeather [*Myriophyllum aquaticum* (Vellozo) Verdecourt]

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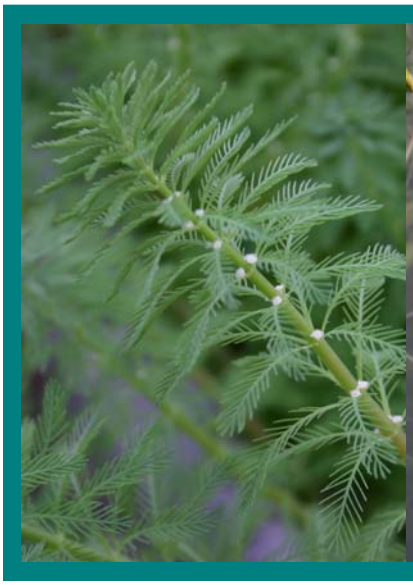

Fig. 1. Parrotfeather showing emergent leaves, shoots and white flowers in leaf axils. Photo by John D. Madsen.

Fig. 2. Adventitious root growth spreads from parrotfeather rhizomes. Photo by Ryan M. Wersal.

Fig. 3. A typical infestation of parrotfeather in a small wetland near Lake, Mississippi chokes out other aquatic plants. Photo by Victor Maddox.

Introduction

Problems caused

Infestations of parrotfeather can choke streams and impede runoff forcing the flooding of adjacent lands. In South Africa parrotfeather infests all of the major river systems where it poses a direct threat to the water supply. In addition, parrotfeather provides mosquito larvae a refuge from predation that may promote the spread of mosquito born disease.

Regulations

Although parrotfeather is not listed on the federal or state noxious weed list, it can cause problems in shallow ditches, streams, ponds, and shallow lakes.

Description

Vegetative growth

Parrotfeather has both an emergent and submersed growth form. Emergent leaves are whorled, stiff, and usually have 20 or more linear divisions on each leaf. The leaves appear feather-like and grayish green. Vegetative reproduction occurs solely by fragmentation of emergent and/or submersed shoots. Submersed shoots are comprised of whorls of four to six filamentous, pectinate leaves arising from each node. When the submersed shoots reach the water surface, plant growth changes to a horizontal pattern with extensive lateral branching followed by vertical growth of the stem. The horizontal growth results in the senescence of aerial leaves as they become submersed, followed by the growth of emergent shoots and adventitious roots from the rhizome (the original emergent stem) after leaf senescence. Parrotfeather lacks specialized structures for storage, dispersal, and reproduction (e.g. tubers, turions, and winter buds) and therefore rhizomes serve all these functions.

Flowering

Flowers are produced in the axils of emergent leaves. Parrotfeather is a dioecious species (meaning there are separate plants that produce pollen-bearing and ovule-bearing flowers), however only pistillate (ovule-bearing) plants are found outside of South America. Pollen-bearing (staminate) plants are rare even in native populations of South America. For this reason, seed production is not known to occur and reproduction is exclusively vegetative.

Dispersal mechanisms

The brittle nature of the stems results in many stem fragments that root easily in moist soil to establish new colonies.

Spread by

Parrotfeather is widely used in the horticultural and water gardening trade, as well as an aquarium plant. It is also spread by human activity, on boats and equipment, and by water flow.

Habitat

Parrotfeather grows well in shallow wetlands, slow moving streams, irrigation reservoirs or canals, edges of lakes, ponds, sloughs, or backwaters. Parrotfeather is not seriously affected by frost or frequent inundation of salt water; the latter may promote root growth. Parrotfeather requires rooting in bottom sediment, so environments where light can penetrate to the bottom generally favor colonization, in general, depths of under 3 feet are optimum.

Distribution

Parrotfeather has been introduced into Southeast Asia, Australia, New Zealand, Japan, South Africa, and North America. The earliest specimen recorded in the United States was collected in 1890, in Haddonfield, NJ. Since then, parrotfeather has spread to 26 states including Hawaii. The current distribution is as far north as New York on the east coast, Washington on the west coast and in nearly every southern state. Parrotfeather is found widely in AL, AR, LA, MS, and TN.

Control Methods

Biological

Grass carp (*Ctenopharyngodon idella*) and a leaf feeding beetle (*Lysathia spp.*) have been tried for control of infestations. Grass carp are not effective against parrotfeather because the fish do not prefer the plant. The leaf-feeding beetle could be an effective biological control; in South Africa it has significantly reduced emergent shoot biomass.

Herbicide	Trade name	Application rate	Type of Chemical	Effectiveness
2,4-D	DMA-4 IVM	2-4 quarts/acre	Selective systemic	Excellent
	Aqua-Kleen	100-200 lbs/acre		
	Navigate	100-200 lbs/acre		
	Hardball	10-20 quarts/acre		
Diquat	Reward	8 quarts/acre	Broad spectrum contact	Good
Endothall	Aquathol K	4-8 quarts/acre-foot	Broad spectrum contact	Fair
	Auquathol Super K	8-13 pounds/acre-foot		
Glyphosate	Rodeo	2-5 quarts/acre	Broad spectrum contact	Good
	AquaPro	2-5 quarts/acre		
Imazapyr	Habitat	1-3 quarts/acre	Broad spectrum systemic	Excellent
Triclopyr	Renovate 3	3-8 quarts/acre	Selective systemic	Fair

Table 1. Recommended herbicides and rates for parrotfeather.

Chemical

Herbicides are the most common and effective means of controlling parrotfeather. Generally, only broadcast treatments have been applied to parrotfeather and little information is available on subsurface applications. Currently, no herbicide has been shown to be totally effective in controlling parrotfeather without repeated applications over time. Always read and follow label instructions when applying herbicides. Foliar applications to emergent plant portions should use 0.25% v/v of a nonionic surfactant.

Mechanical and Physical

Hand pulling and harvesting may offer temporary control on small infestations of less than one acre. Raking may not be feasible due to the rapid biomass production of parrotfeather—the dense, heavy mats may damage equipment. All plant parts and fragments must be removed or re-growth will occur. Drawdown may offer control in some situations, however, complete drying of bottom sediments must occur since parrotfeather will root and survive in moist soil. Dredging is generally very expensive and not feasible for most management situations.

References

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