

Impact of Invasive Plant Species on Golf Courses

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Coming to Terms

Turf managers are familiar with ‘weeds’ since they are an ongoing burden requiring seasonal herbicide applications. However, ‘invasive species’ may be a less familiar term. A weed may or may not be an invasive species. Weeds that are particularly aggressive can be called invasive species. Invasive plant species may be native or non-native. Non-native invasive plants are often called ‘exotic invasives.’ These species are often targeted because they are not part of our natural heritage and in many cases have proven to be very aggressive and difficult to control. Any golf course superintendent familiar with cogon grass might agree.

The Costs

Nationally, approximately 50,000 non-native species have been introduced into the United States. The estimated economic impact of these species is around \$137 billion per year. However this includes all invasives, not just invasive plant species. Although the number of actual introductions is much higher, somewhere around 5000 plant species have escaped in the United States. Some are less important economically while others are much more significant. For example, the estimated annual cost associated with just purple loosestrife is \$45 million. Currently, there are only two known populations of purple loosestrife in Mississippi. Annual control costs for weeds in lawns, gardens and golf courses in the United States have been estimated at \$1.5 billion. The impact of aquatic weeds is independent of that figure with an annual cost estimated at \$110 million. This is important since many golf courses have associated lakes and streams under management.

There are no accurate estimates on the total costs of invasive plant species in the mid-south, although it was estimated that over \$24 million was spent in 1995 on weed control products associated with the turf industry in Mississippi. For just Mississippi golf courses, the estimate was over \$1 million in 1995.

Legal Issues

There has been increased emphasis in recent years on invasive species both at the federal and state level. Recently, the state of Mississippi established a noxious weed law which includes eight plant species (Table 1). It is illegal to transport any of these species within the state of Mississippi. Some are also Federal Noxious weeds which also makes interstate transport illegal. The list includes both terrestrial and aquatic species.

Web Tools

When an invasive has spread over a large area managed by different land managers, tracking and monitoring movement can be more difficult. The GeoResources Institute (www.gri.msstate.edu) at Mississippi State University has initiated the development of a regional invasive species web database which will provide access to georeferenced maps and information for golf courses and other land managers on invasive species within the mid-south region. Alabama, Arkansas, Louisiana, Mississippi, and Tennessee are all part of this region. In addition to retrieving database information, superintendents can also provide information about known locations of invasive species.

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Table 1. Plant species on Mississippi’s noxious plant list with habitat, general location of occurrence in Louisiana and Mississippi, and Federal noxious weed status.

Common Name	Scientific Name	Habitat	LA ¹	MS ¹	Noxious ²
Brazilian satintail	<i>Imperata brasiliensis</i>	Terrestrial	?	?	X
Chinese tallow tree	<i>Triadica sebifera</i>	Terrestrial	Statewide	Mostly S	
cogongrass	<i>Imperata cylindrica</i>	Terrestrial	SE	Mostly S	X
giant salvinia	<i>Salvinia molesta</i>	Aquatic	S, W	SE	X
hydrilla	<i>Hydrilla verticillata</i>	Aquatic	Statewide	S, E	X
itchgrass	<i>Roettboellia cochinchinensis</i>	Terrestrial	Mostly S	S	X
kudzu	<i>Pueraria montana lobata</i>	Terrestrial	Statewide	Statewide	
tropical soda apple	<i>Solanum viarum</i>	Terrestrial	?	S	X

¹ S=South, SE=Southeast, and W=West part of state. ?=Distribution in state unknown.

² X=Federal noxious weed, in addition to state noxious.

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This database will offer management information for superintendents and can be an important tool for tracking and monitoring important invasive species. This is especially the case for new and emerging invasives that have the potential to spread and impact large areas of the region or country. For example, another database (www.gri.msstate.edu/cactus_moth) developed by the GeoResources Institute in collaboration with federal agencies is currently being used to monitor and track the spread of the invasive cactus moth. The host, pricklypear (*Opuntia* spp.), are native in Mississippi and Louisiana, but not as common as they are in the southwest. The movement of this invasive moth into the southwest would be devastating to the southwestern ecosystem and ornamental plantings on golf courses and home landscapes. Cactus moth was last found at Ft. Morgan in Alabama. Dauphin Island, Alabama is the furthest known point west.

Team Approach

Thus, invasive species have a major direct economic impact upon golf courses. With an increasing number of golf courses establishing natural areas, invasives may potentially impact natural heritage, as well. Superintendents are encouraged to be familiar with all plants under their management and utilize non-invasive plants. If you see unusual plants that appear to be invasive, please contact your county extension office or representative for identification and information. There are also many websites which offer information on invasives. If anyone is interested in volunteering information on invasive species for one or both databases, please contact the author at vmaddox@pss.msstate.edu or 662-325-2313, or John Madsen at jmadsen@gri.msstate.edu or 662-325-2428. The more people become involved, the higher the probability that an invasive will be detected early and eradicated before significant impacts occur. ■