Prospects for Classical Biological Control of Torpedo grass, *Panicum repens* L. (Poaceae), in the United States of America

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**INTRODUCTION**

Selecting a weed as a target for classical biological control is probably the most critical step of a research program. If the wrong target is selected and the project fails, millions of dollars may be invested in research and development with little or no return on the investment. To minimize the risk of failure, specific criteria for ranking weeds as suitable targets for classical biological control should be identified and carefully considered (Pearson 1990). Several quantitative methods that have been developed recently for selecting and prioritizing new targets for biological control (McCay 1989, Peschken and McCoy 1995, Palmer and Miller 1990) allow the researcher to objectively rank potentially invasive native weeds for their suitability as targets for classical biological control. This approach is especially relevant to high-risk grass weed taxa such as Torpedo grass, Panicum repens L. (Poaceae or Grasses).

**Description**

Torpedo grass is an invasive perennial with robust, creeping, sharply pointed rhizomes (Fig. 1a). Other distinguishing characteristics include stiff, erect stems, folded or flat alternate leaves that are sparingly hairy on the upper surface; open terminal panicles with many, ascending branches; and pale green or yellow spikelets often tinged with purple (Figs. 1b). Although torpedo grass produces flowers and seeds year-round, reproduction is mainly by rhizome extension and fragmentation (Horn et al. 1977).

**Importance**

Torpedo grass causes problems because it spreads rapidly by producing abundant rhizomes and is allelopathic (Peeraer et al. 1996). It thrives in agricultural and natural settings in aquatic, wetland, and terrestrial habitats, and is considered an invasive weed in the Gulf Coast Region of the southeastern U.S. and some areas of Hawaii (Figs. 2a & b). The ability of Torpedo grass to tolerate a broad range of environmental conditions led to the introduction of this species into Florida during the early 1900s. Since then, Torpedo grass has become a troublesome forage grass that is used to a limited extent today by cattle ranchers. However, the aggressive spreading habit of torpedo grass coupled with low palatability in comparison to many domestic forage grasses is not beneficial. The introduction of Torpedo grass in Florida occurs in Lake Okeechobee, Barataria Bay (Louisiana) in 1992 near 600 ha (15,000 acres) of native sedge and rush communities along the northern shore of Lake Okeechobee. These populations were invaded and replaced by monoculture stands of torpedo grass (Fig. 3) (Fenner et al. 1997).

Torpedo grass has become one of the most costly weeds to control in Florida’s agricultural and natural areas. In flood control systems, the cost for Torpedo grass management is estimated to be $2 million per year (Schmitt and Schnitz 1990). An effective strategy for long-term Torpedo grass management has been difficult to achieve in Florida because of the plant’s general resistance to conventional herbicides. Therefore, the purpose of this study was to examine whether Torpedo grass is an appropriate target for classical biological control.

**OBJECTIVES**

1. Quantitatively evaluate the suitability of Torpedo grass as a target for classical biological control using an objective scoring system.
2. Identify the native range and potential natural enemies of Torpedo grass.

**MATERIALS AND METHODS**

**Objective 1**

The literature on torpedo grass was reviewed to determine what is known about the weed, including its biogeography, distribution, economic importance (undesirable and beneficial attributes), and ecoliminology. The scoring system of Peschken and McCoy (1995) was then used to determine the suitability of Torpedo grass as a possible target for classical biological control. The Peschken-McCoy scoring system consists of 2 sections. The first section examines various economic, biological, and environmental aspects of the target weed in the following categories: economic importance, biotic interactions (including pathogens, parasites, and other natural enemies), and impact on the environment.

**Objective 2**

The geographical origin of torpedo grass, and the existence of potential arthropod natural enemies were determined from the published literature. A list of countries was compiled where the plant is present or native. The literature on potential natural enemies of the plant was reviewed, and information on their taxonomy, abundance, geographical location, and host plant relationships (feeding niche) was examined.

**RESULTS**

The suitability of Torpedo grass as a target for classical biological control based on the scoring system of Peschken and McCoy (1995) is shown in Table 1. The maximum score is 100 points. Torpedo grass received a composite score of 75.

**REFERENCES**
