

Purple Loosestrife: A Coordinated Education, Mapping, and Control Effort

Carri B. Pirosko, California Department of Food and Agriculture, Plant Health and Pest Prevention Services, Integrated Pest Control Branch, Redding, CA 96002

In 1999 the Integrated Pest Control Branch of the California Department of Food and Agriculture (CDFA) was awarded a grant by the CALFED Bay-Delta Program to conduct a purple loosestrife prevention, detection, and control program. Purple loosestrife (*Lythrum salicaria*) is a non-native, invasive but showy ornamental that has escaped home gardens and nurseries and moved extensively throughout the wetlands of the United States causing immense ecological destruction. Purple loosestrife is listed by the CDFA as a “B” rated noxious weed, which means it is to be excluded from entry into the State and eradicated from nurseries throughout the State, and eradicated from local areas at the discretion of the local County Agricultural Commissioner. Purple loosestrife is also listed by the California Exotic Pest Plant Council as a “B” rated weed, which means it is considered a “species with potential to spread explosively”. Based on historic records and recent surveys, the current distribution of purple loosestrife in California is in multiple, mostly small and scattered populations.

The geographical focus of the program is on the Sacramento-San Joaquin Delta watershed where there are a number of threatened and declining species due to a multitude of environmental stressors. The project is an extensive collaborative effort with State and Federal Agencies, County Agricultural Commissioner’s Offices, watershed groups, and local Weed Management Area groups.

The purple loosestrife project objectives are five-fold. (1) A broad education and training campaign- To date, over 75 talks and training sessions have been given to cooperating agencies, Weed Management Area groups, homeowners associations, California Native Plant Society Chapters, garden clubs, and the general public. A brochure has been printed and distributed widely and a website has been launched. (2) Extensive surveying and mapping- During the first field season of the project, all purple loosestrife sites were mapped using GPS and then taken back to the CDFA Geographical Information System laboratory and made into maps. Overall project maps and detailed regional distribution maps have been developed. During survey and delimitation of waterways, both positive and negative finds were recorded with GPS. In addition, control and monitoring layers have been added to the maps to assist in tracking project successes. (3) Collaborative assessment meetings of regional cooperators to develop site-specific adaptive management plans- Based on distribution maps developed during the first season of the project, a series of cooperator meetings were held to develop site-specific adaptive management plans. Regional plans outline site goals, available control options, and benchmarks for measuring control outcomes. Regional management plans will be reassessed on an annual basis. (4) Comprehensive local control and eradication efforts- Based on regional adaptive management plans, control methods were carried out during the 2001 field season. Methods of

control included: mechanical removal, spot treatment with Rodeo[®] (glyphosate), and concentrated releases of biological control agents. (5) Project and water quality monitoring- Overall project successes will be measured against regional adaptive management plans. The California Department of Fish and Game's Pesticide Investigations Unit was contracted out to collect and analyze water quality samples for the herbicide (Rodeo[®]) and surfactant (R-11). Representative sites were selected within the CALFED Bay-Delta project area. Sites included the end of a slough, a pond, and a flowing river. In addition to analyzing samples for the presences/levels of Rodeo[®] and R-11, toxicity tests were carried-out.

Prevention and early detection are the most economically and environmentally viable options in noxious weed eradication. Eradicating single isolated plants or small patches early on before a population gets firmly established and builds up a seed bank, is the best way to control purple loosestrife. Hand removal of small populations (<100 plants) is feasible in some circumstances. Mechanical control is often an option for localized, homeowner pond infestations. However, many sites in the Sacramento-San Joaquin Bay-Delta are difficult to control mechanically due to an impenetrable rocky substrate and unstable accessibility from a boat.

For large sites, and where mechanical removal is not an option, chemical control may be the best tool though herbicide options are limited. In the literature, 2,4-D has been reported to have inconsistent control results. Rodeo[®] (glyphosate) has been shown to be the most effective means of control. Spot treatment is recommended to preserve the surrounding vegetation, which provides competition and helps prevent reinvasion by purple loosestrife or other invasive species. While treatment success with Rodeo[®] has been noted throughout flowering, the best time to treat is when the stand is in full bloom, as the plant is easily seen and skips are avoided. It has also been noted that a follow-up treatment may be necessary for large, bushy plants or clumps (plants greater than 3 feet tall and clumps greater than 2 feet wide). A third herbicide, Garlon[®] 3A (triclopyr) has yet to be registered for aquatics use in California. If registered, Garlon[®] 3A would likely be a very effective tool in controlling purple loosestrife due to its selectivity for broadleaves, thus allowing surrounding aquatic vegetation (e.g. cattails and reeds) to be preserved.

Several biological control agents have been approved for release in California. Since 1998, a root weevil (*Hylobius transversovittatus*), a seed/flower weevil (*Nanophyes marmoratus*), and two leaf-eating beetles (*Galerucella californiensis* and *G. pusilla*) have been released at several locations throughout the state (Siskiyou, Shasta, Butte, Nevada, and Kern counties). To date, very limited establishment has been recorded. However, states in the northeastern United States and other western states have reported great success with the leaf-eating beetles. Due to successes elsewhere, in 2001 concentrated releases of higher numbers of leaf-eating beetles were released in Shasta, Butte, and Kern counties. Similar releases will

continue in 2002. It will take several more years of releases and monitoring to determine if biological control is a viable option for purple loosestrife control in California.

In 2002, the project will enter its last year of current funding. Two proposals that would continue funding for the project are currently pending. Through continued education, survey, and eradication efforts, eradication of local populations is possible and containment and/or eradication of widespread populations are achievable.