Purple loosestrife. Photo by Cory Brant

APPENDIX 5: PURPLE LOOSESTRIFE (LYTHRUM SALICARIA): A TERRESTRIAL PLANT CASE IN THE GREAT LAKES BASIN

THE DISCOVERY

Purple loosestrife was first introduced to the northeastern United States in the early 19th century. While no one vector has been identified as the initial pathway of introduction, it is hypothesized that it was brought over via a number of pathways including ship ballast, bedding, feed, for beekeeping, and ornamental purposes. By the early 20th century the plant spread throughout the Great Lakes and by the latter half of the century, dispersed extensively throughout the continental United States. It wasn't until decades after the invasion of purple loosestrife into North American freshwater wetlands when scientists discovered the destructive potential of these invasive semi-aquatic weeds to wetlands: growing dense colonies, lowering decomposition rates and nutrient cycling ability, reducing wetland plant diversity, lowering pollination and seed output of the native plants, and reducing habitat for native and rare wetland birds (Blossey et al. 2001).

THE POLICY RESPONSE

Although awareness of purple loosestrife concurrently expanded with the geographic range of the plant, it wasn't on the federal radar until the US Fish and Wildlife Service (USFWS) published a purple loosestrife alert in 1980, notifying land managers to keep an eye out for the early signs of an invasion. At the state level, Minnesota was the first to establish a control program in 1987, simultaneously classifying purple loosestrife as a noxious weed and making it illegal to sell in the state. The primary policy responses directly related to purple loosestrife occurred at the state level. All Great Lakes states have some form of policy in place that classifies purple loosestrife as a harmful plant and prohibits all, or most, of its sale, transportation, or propagation—listed as a noxious weed in 30 states. Currently no single authority is in charge of regulating, preventing, or controlling this weed.

ACTION TAKEN

Early research for control options included repeated mowing, water level manipulation, plowing, and hand pulling for smaller infestations when combined with another control method. Before the rise in Roundup (glyphosate) in the early 80s, herbicides were regarded as a semi-effective short term control tool. Following the rise in popularity of glyphosate, research was conducted to refine the effectiveness of herbicidal control. Scientists found that Rodeo, a wetland approved glyphosate based broad spectrum herbicide, and triclopyr, a selective herbicide sold as Garlon 3A, were the two most consistently effective herbicides against purple loosestrife (Thompson et al. 1987).

European and American researchers worked collaboratively to find a suitable biological control agent. Four insects were discovered as effective controls for purple loosestrife. A root boring weevil *(Hylobius transversovittatus)* and two leaf eating beetles *(Galerucella calmariensis and G. pusilla)* were approved for release in the United States by the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (USDA APHIS) in 1992, and were promptly released in New York, Pennsylvania, Maryland, Virginia, Minnesota, Oregon, and Washington state (Malecki et al. 1993). Two years later another insect, a flower eating weevil *(Nanophyes marmoratus)*, was approved and released in New York and Minnesota. Biological control currently stands as the best option for long term management of purple loosestrife populations, particularly in large populations.

CURRENT STATUS

Purple loosestrife is still widely dispersed across the continent—common in 47 U.S. states and Ontario. Despite the many available control methods, no one method has proved effective for larger infestations on a longer term scale. Hand pulling, mowing, and herbicide are seen as options for small populations. Biological control still remains the most viable option for long term management of larger infestations that are still relatively isolated.

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Purple loosestrife. Photo by Cory Brant