

STOP THE PURPLE INVADERS

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Have you noticed stands of fresh bright purple plumes along the roadside during your mid summer afternoon walks? This striking purple plant, purple loosestrife, matures fast, multiplies prolifically, spreads like wildfire, and often crowds out native species. This purple invader has been swept into the category of nuisance species and is now a resident of the Boquet River Watershed.

Purple loosestrife, *Lythrum salicaria*, an herbaceous perennial weed is now considered one of the worst invasive non-native species in North American wetlands. It accidentally arrived as a traveler in European ship ballast in the early 1800's. Sediments, sand and rocks were dredged from the bottom of European bays and used to maintain the balance of ships during the long voyages across the turbulent seas. Upon reaching the Americas the ballast water and sediments were released into the virgin waters of North America. Many of the sediments used in the ballast contained purple loosestrife seeds, which began the current epidemic. Purple loosestrife also made its way into America through sheep and raw wool imports, as herbal remedies, and as garden plants.

The spread of purple loosestrife across the United States has been swift and continuous. The earliest known herbarium records are from eastern Massachusetts, Long Island and the Hudson River Valley in New York, and the Delaware River Valley in Pennsylvania and New Jersey. Destruction of wetland and riverine ecosystems along with construction and increased use of inland canals and road systems further facilitated the inland spread of this invasive weed. From the Hudson Valley it migrated northward to the southern end of Lake Champlain by 1889. It reached the northern end of Lake Champlain four years later. By the early 1900s purple loosestrife had spread across the entire state of New York. By the 1930's purple loosestrife was recognized as an invasive weed, when its extreme growth became a nuisance in the floodplain pastures of the St. Lawrence River. Purple loosestrife has now established dense mono-specific (single plant species) stands throughout wetlands in the United States and adjacent Canada. Large stands of this invasive plant threaten the biodiversity, habitat quality, and even some endangered species such as bog turtle and dwarf spikerush. In New York, purple loosestrife invasion is responsible for the declining abundance of marsh-dependent birds, such as the black tern, least bittern, American bittern and Virginia rail.

Over the last 50 years many efforts have been made to control and limit the spread of purple loosestrife. The efforts include burning, mowing, hand-pulling, water level manipulation, chemical application and biological control. Mowing and burning do not result in permanent control. Damaged stands can quickly regenerate new growth. Water level manipulation should only be considered with heavy infestations of loosestrife because it may alter the natural community composition and threaten some desirable or native species. Hand pulling is effective in small infestations, but care must be taken to

remove the perennial rootstock as well as the plants. It is easiest to remove young plants from moist soil. The plants should be pulled prior to seed production, in the early summer. Plant materials can be dried and burned. Chemical application has demonstrated high effectiveness of control. However, most chemicals are not target-plant specific, and the effects of herbicides on ecosystems are not fully understood.

Another alternative is biological control. Biological control works by using a plant's natural enemies against it. The selection of biological control agents includes vigorous testing using the target plant, plants related to it, plants that commonly grow near it, and economically important plants. After extensive trials, five insect species, which feed on purple loosestrife in Europe were approved and introduced as biological control agents by the US Department of Agriculture's Animal and Plant Health Inspection Service. For large mature stands of purple loosestrife, biological control is considered as an effective control strategy. Thirty-five states (AK, CA, CT, DE, IA, ID, IL, IN, KS, MA, MD, ME, MI, MN, MO, MT, ND, NE, NH, NJ, NY, OH, OR, PA, RI, SD, TN, UT, VA, VT, WA, WI and WV), and all Canadian provinces have chosen to use biological control in the fight against purple loosestrife. The New York Department of Environmental Conservation has released two species of leaf-eating beetles (*Galerucella pusilla* and *Galerucella californiensis*) to control purple loosestrife. Both larval and adult forms *G. pusilla* and *G. californiensis* can cause significant damage to purple loosestrife plants. Adults emerge in the spring and start feeding on the leaves and buds of purple loosestrife immediately. Larvae feed at the tips of the plants, and destroy growing tissue. As the larvae mature they begin "window-pane feeding" on the leaves and stem and leave a "skeletonized" leaf. The effects of biological control are often not seen until 3-8 years after the release. It is believed by many biological control experts that *Galerucella pusilla* and *Galerucella californiensis* may be able to reduce purple loosestrife density by about 90%. Also, once the beetle populations are established, the beetles will continue to control loosestrife on a long-term self-sustaining basis. The cost after release is relatively minimum.

Purple loosestrife is a prolific invader, and will continue to spread if nothing is done to stop it. You could help control the purple invader by hand pulling small isolated plants prior to seed production. Be sure to completely remove the whole plant, roots and all. Dry and burn the plant material after pulling. Also, ask your local garden center, nursery, or pet shop to stop selling purple loosestrife and other exotic or invasive plants. Many invasive plants catalogs including water hyacinths, water lettuce and purple loosestrife are available at the local stores and mailing. If you spot patches of purple loosestrife, please report the locations to Robin Ulmer at the BRASS or contact Melinda Wu via phone (518-564-4036) or via email (wum@plattsburgh.edu). It is time to stop the purple invaders and it requires efforts including yours.
