



Volunteer-Driven Restoration within the Maryland Chesapeake Bay National Estuarine Research Reserve



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Removal of the Invasive Species Purple Loosestrife at Jug Bay

The tidal freshwater marshes of Jug Bay are located in the upper reaches of the Patuxent River and constitute one of the largest systems of their kind on the U.S. East Coast. This unique ecosystem is characterized by a diverse community of plants that provide food, habitat, and protection to a wide range of organisms. Purple loosestrife (PL), an invasive species, has been recorded in Jug Bay for over 30 years. An expansion within the marshes, however, has been observed during the past 8 to 10 yrs. In response to this threat, the Maryland Chesapeake Bay National Estuarine Research Reserve (CBNERR-MD) initiated efforts in 2007 for the monitoring and mechanical removal of this species. As part of this effort, in 2008 CBNERR-MD partnered with the National Aquarium in Baltimore to provide a restoration field-experience opportunity to undergraduate students. During a three-day period students participating through the Aquarium's Minority Student Summer Conservation Work-Study Program removed purple loosestrife from the marshes of Jug Bay while contributing to the conservation of this important ecosystem.

About Purple Loosestrife

- Scientific name: *Lythrum salicaria*.
- Native to Eurasia.
- First reported in USA in 1814.
- There is no North American herbivores or pathogens
- Found in disturbed areas within wetlands, marshes, bogs, sedge meadows, drainage ditches.
- Blooms in July and August; large patches of purple color are clearly visible.



Impacts:

- Native seedlings are suppressed.
- Purple loosestrife crowds out and shades until it forms monospecific stands.
- Habitat Degradation.

Distribution of purple loosestrife in Eastern US.



Objectives of Removing Purple Loosestrife

- Eradicate or control the expansion of purple loosestrife in Jug Bay.
- Monitor the success of removal.
- Provide an educational experience to volunteers in the mechanical control of invasive species.
- Create an awareness of the potential impacts of invasive species in natural systems.

Removal Sites



Removal Site A at Mataponi Creek and Site B at Western Branch. T refers to Treatment (all PL plants were removed and R refers to Reference (no PL presence).

Mechanical Removal: Worth the Effort!



Volunteers at Work

Total Number of Plants Removed

Removal Site	Treatment	Reference
Site A (Mataponi Creek)	320	0
Site B (Western Branch)	55	0
TOTAL	375	0

Next Steps

- Continue with the removal of purple loosestrife by engaging volunteers.
- Determine the success of the 2008 removal by revisiting established monitoring plots.

We Can Make a Difference!!

Maryland is at the advancing edge of purple loosestrife infestation:

- Take action, control this invader while we still can.
- Do nothing, allow purple loosestrife to continue to spread, with detrimental effects to Maryland's natural communities.

Mapping Stands of Common Reed (*Phragmites australis*) at Otter Point Creek

The Otter Point Creek (OPC) component of CBNERR-MD is located within the Bush River watershed and includes freshwater tidal marshes, riparian forest, upland hardwood forests and shallow, open estuarine waters. The tidal freshwater marshes at OPC if formed by a wide range of species such as spatter dock, arrow head, arrow arum, and cattail among many others. Common reed or Phragmites, an invasive species, is also found in some areas within the marsh. These stands of Phragmites have been present for several years, but there is a concern that they are expanding. In an effort to determine if existing areas are growing, CBNERR-MD in collaboration with the National Aquarium in Baltimore (Minority Student Summer Conservation Work-Study Program) set to the task of mapping most of the major Phragmites stands. Baseline information collected on their location and size will be of great value for future comparative surveys. The sole knowledge of knowing if Phragmites populations are/or not expanding could prompt efforts to control this invasive species in OPC.

About Common Reed

- Scientific Name: *Phragmites australis*.
- Native to U.S., but more invasive strains originated in Europe and Asia.
- Introduced during late 1800s.
- During the last century common reed has become dominant in many mid-Atlantic marshes.



Impacts/Problems:

- Decreases species diversity and wildlife habitat.
- Provides little food and shelter for wildlife.
- Increases difficulty of managing habitat for wildlife.
- Difficult to control once it is established.
- Control options are limited and costly.

Positive attributes:

- Soil stabilizer through root growth and thatch Accumulation.
- Enhance water quality through nutrient cycling.
- In highly polluted or disturbed areas it may be the only plant that can survive.

Objectives of Mapping Common Reed

- Determine location of stands.
- Estimate the current area covered by common reed.
- Create baseline to determine if stands are expanding.
- Provide an educational experience to volunteers in simple mapping techniques using GPS.
- Create an awareness of the potential impacts of invasive species in natural systems.

In the Field!



Getting to the sites

Tracking the stands by using a hand-held GPS unit

What We Found...

An estimated total of 3,000 m² or 0.7 acre of *Phragmites*.



Next Step

- Continue to monitor all stands of common reed to determine if they are expanding.

From 1995 – 1997 in Maryland:

Greatest extent of *Phragmites* in natural marshes:

- Lower Eastern Shore (Nanticoke River south to the Pocomoke River)
- Eastern Bay and Chester River area
- Baltimore Harbor, C&D Canal
- Aberdeen Proving Grounds

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State(s) where reported invasive*: CO, CT, DC, DE, GA, IN, KY, MD, MI, NC, NH, NJ, NY, OH, PA, TN, VA, VT, WI