



Incorporating Vegetation Data into GSMB Modeling for the Ashtabula Harbor Beneficial Use Project

ERDC Dredging Operations Technical Support Program (DOTS)

U.S. ARMY CORPS OF ENGINEERS

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Response Summary:

The Buffalo District requested technical support to improve the GSMB model through incorporation of species specific vegetation data. This was accomplished through the development of 16 species based plant fact sheets and associated resources from published literature.

Period of Performance:

June 16, 2020 – Oct 7, 2021

Benefits of the Response to the USACE Dredging/Navigation Program:

ERDC developed individual fact sheets reporting vegetation data for a variety of species that occur in Great Lakes wetlands and are candidate species for inclusion in restoration design. The information included growth form, habitat, depth ranges, stem/culm height, rhizome characteristics, typical density, wetland plant indicator status rating, leaf morphology and characteristics, substrate preferences, and planting techniques. Literature citations were also provided in the fact sheets. These data were incorporated into the GSMB model to improve estimates of sediment dynamics and associated hydrodynamic forcings.

Deliverable:

The product, 16 fact sheets and supporting literature information, is being used to improve the GSMB model. The fact sheets can further help improve the design and implementation of the wetland creation project when determining planting plans, target plant densities, and other activities.



Providing environmental and engineering technical support to the U.S. Army Corps of Engineers
Operations and Maintenance navigation and dredging missions

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<p>Softstem bulrush <i>Schoenoplectus tabernaemontani</i></p> <p>Growth form/habit: a rhizomatous emergent aquatic perennial</p> <p>Habitat: occurs in deep or shallow water, or in muddy or marshy ground around lakes, ponds, streams, and wooded wetlands</p> <p>Substrate: adaptable to coarse, medium, and fine textured soils; pH from 5.4 to 7.5</p> <p>Water depth: typically 0.4 meters but up to 1 meter</p> <p>Stem/culm density: ranging from approximately 40-80 per square meter</p> <p>Stem/culm diameter: 3mm to 20mm thick</p> <p>Stem/culm height: 2.7 meters</p> <p>Rhizomes/roots: scaly, stout rhizomes</p> <p>Planting: propagated by bare root, container, seed, and sprigs. Planting units spaced 0.3-1 meters.</p> <p>Wetland rating: OBL</p> 		<p>Three-square rush <i>Schoenoplectus pungens</i></p> <p>Growth form/habit: Graminoid</p> <p>Habitat: floodplains, ditches, streams and marshy areas and along margins of ponds and lakes</p> <p>Substrate: in fine silty clay loam to sandy loam soil; pH from 3.7-7.5</p> <p>Water depth: 10-15 cm</p> <p>Stem/culm diameter: 2-6 mm</p> <p>Stem/culm height: 1.5-10 dm</p> <p>Leaves: Leaves are flat to slightly rounded near the base, and become more cylindrical toward the tip</p> <p>Flex under wind and/or water: limited amount of wave action and gusts of wind are tolerated</p> <p>Planting: propagated by cuttings, plugs (spaced 0.6-1.2 meters), and seeds</p> <p>Wetland rating: OBL</p> 	
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Figure 1. Example fact sheets developed to support the beneficial use and wetland creation project near Ashtabula, OH.



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