MIDDLE PENINSULA

CHESAPEAKE BAY PUBLIC ACCESS AUTHORITY

DISCUSSION DOCUMENT OF THE PRINCIPLES FOR ESTABLISHING GUIDELINES TO HARVESTING AND TRANSPLANTING SALTWATER WETLAND VEGETATION

Approved PAA 1/12/24

This document describes the practices and techniques of harvesting and transplanting saltwater vegetation. These methodologies create guidelines to carry out the harvesting of saltwater wetlands on PAA lands.

I. Terms and Conditions

A. Purpose: The purpose of this document is to set guidelines for the responsible harvesting and transplanting techniques of wild saltwater wetland vegetation on Public Access Authority (PAA) lands.

B. Goals and Objectives: The PAA recognizes the shortages of saltwater plugs and timely wait for nurseries to produce more; the PAA will therefore develop a framework for harvesting and transplanting wild saltwater wetland plants.

1. Establish a framework for harvesting and transplanting wild saltwater wetland vegetation in an effective manner with no harm to the surrounding wetland.
2. Allow contractors to have an efficient alternative of obtaining these plants without relying solely on nurseries.
3. Create new business opportunities by leveraging PAA holdings

C. General Processes: Several recommended harvest practices include the simple use of a shovel and a bucket to dig and extract the plant from the marsh system. While this technique may seem "labor intensive" to some, it provides a simple and effective way to obtain plants. This technique is very accurate and allows for minimal harm to the plants and the surrounding wetland. Harvesting can take place at any time of the year. When harvesting, it is important to note that no more than 1 ft2 of plant material should be taken from a 4 ft2 area. The plant material should be harvested to about 5 inches deep. These perimeters allow for enough root mass to be harvested for plants to have success at the new living shorelines site, while ensuring the surrounding 4 ft2 area the plant was harvested from can grow back in on growing season. When harvesting, do not remove the soil from the roots. The soil contains beneficial organisms to the marsh grass and increase the establishment rate by 30%. Any potential weeds should be moved at this time. Plants should be transported in Styrofoam coolers with added water to cover the root system. When transplanting the plants, the plant should be cut with a shovel into four to six individual plugs. This will help maximize the number of plugs taken from each 4 ft2 area.

The use of a low-ground pressure excavator has also been documented and used to extract saltwater plants from the marsh. Low-ground pressure excavators allow for minimal damage to the marsh surface, while providing a much less labor-intensive alternative. Depending on the

size of the bucket used to harvest the marsh grass, plugs or marsh grass sod mats can be harvested and transplanted.

II. Supporting Studies:

1. "Use of Greenhouse Propagated Wetland Plants Versus Live Transplants to Vegetate Constructed or Created Wetland", authored by J. Chris Hoag and Michael E. Sellers, details specific techniques and procedures used to harvest and transplant saltmarsh vegetation. Hoag and Sellers write, "live plant collections were made by digging no more than 0.37 m2 of plant material from any 1.1-1.5 m2 area, so the native plants could spread back into the hole in one growing season. The plants were dug down to a depth of about 15 cm which included a large percentage of the root mass. The above ground biomass was clipped off at a height of 25 cm to reduce root stress (Hollis Allen, WES, personal communication). Plants were transported in Styrofoam coolers. Enough water was added to the coolers to cover the root system. Temperatures were maintained at under 29°C (85°F). Ice was added to the coolers when external ambient temperatures were above 35°C (95°F)" (3). Hoag and Sellers also detail how to transplant saltmarsh vegetation, "shovels were used to divide the 0.37 m2 samples of wild collected plant material into five or six individual plugs. The plugs were 6 x 6 cm with healthy rhizomes and tops. Any weeds which were found in the plugs were removed by hand. Wild collected plants were transplanted in July and August. Greenhouse plants were transported to the ponds and planted in August and September. Every effort was made to keep the soil on the roots. Four plugs (plants) from each collection site (accession) were planted 46 cm (18 inches) apart in a square called a "quad". Each "quad" was then randomly replicated 5 times. Each "quad" was 46 cm from a neighboring "quad". Border rows of the same species were planted between each species "block" so that potential interspecific root competition would not affect the test quads. Border rows were also planted around the outside of each "block" so all the test plants would have the same amount of intraspecific competition on all sides to prevent the "edge effect". One pond was dedicated to the greenhouse grown "moist group", One to the wild collected "moist" group, one to the greenhouse grown "standing water group," and one to the wild collected "standing water" group" (4).
   https://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/idpmcarwproj7.pdf
2. J. Chris Hoag et al. in the "Description, Propagation, and Establishment of Wetland – Riparian Grass and Grass-like Species in the Intermountain West" detail the transplantation of several species of wild wetland grasses to new wetland systems. J. Chris Hoag et al. also explain the exact perimeters needed when harvesting for regrowth after the plants are extracted. "Wildland harvested wetland plants are easily transplanted because of their well-developed root systems. A rule-of-thumb is to dig no more than 1 ft^2 of plant material from a 4 ft^2 area. It is not necessary to harvest deeper than 5 to 6 inches. This depth provides enough root mass to ensure good establishment at the project site while retaining enough of the transplants' root system below the harvest point to allow the plants to grow back into the harvest hole in approximately one growing season

or less. Transplants, or wildings, can be taken at almost any time of the year." "Do not remove soil from the plug. Leaving soil on the plug increases the establishment rate by about 30%. Beneficial organisms commonly found on the roots of wetland plants are important in the nitrogen and phosphorous cycles. These organisms may not be present at the planting site. Conversely, leaving soil on the plug will increase the volume and weight of material transported to the planting site." "Four to six individual plant plugs can be obtained from a 1 ft^2 harvested clump. The plugs can either be chopped with a shovel very rapidly or they can be cut accurately with other tools so they will easily fit into predrilled, set diameter holes. Make sure the length of the plug is related to the saturation zone at the planting site. The bottom of the plug should be in contact with the saturation zone. Match the amount of water, or hydrologic zone, with the wetland plant species."
https://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/idpmctn10749.pdf

3. Brian L. Howes in "Effects of Sampling Technique on Measurements of Porewater Constituents in Salt Marsh Sediments" details three extraction methods of vegetated salt marsh sediments to study porewater. A polycarbonate core barrel, a sharpened polycarbonate core tube, and a glass capillary tube with a perforated Teflon sleeve were shoved into the ground in order to collect porewater. These techniques can potentially lead to future plug devices to remove plugs of marsh grass.
https://aslopubs.onlinelibrary.wiley.com/doi/pdf/10.4319/lo.1985.30.1.0221
4. Karlo Berger in "Spades of Work to Save Our Salt Marshes" writes about two methodologies of wetland extraction: spade shovels and low-ground pressure excavators. These two practices are used to create runnels for drainage purposes within the Rhode Island salt marshes. While the primary goal is to create runnels in the marshes, they "are also creating new habitat by utilizing chunks of the shoveled marsh soil to make slightly higher areas, enabling high marsh grasses to recolonize the area." Berger also details the use of a new, modern technological technique to extract wetland material: a low-ground pressure excavator. Berger explains how a low-ground pressure excavator was used to dig and extract salt marsh vegetation without "damaging the surface of the marsh".
https://www.savebay.org/saving-our-salt-marshes/