



Cape May Plant Materials Center FY2023 Annual Progress Report of Activities

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<https://www.nrcs.usda.gov/wps/portal/nrcs/main/plantmaterials/pmc/northeast/njpmc/>



The New Jersey Plant Materials Center (NJPMC) provides plant solutions for natural resource conservation concerns pertaining to coastal shorelines, sand dunes, critical areas, and coastal grassland habitat serving the Mid-Atlantic region. Significant accomplishments and major activities or findings from FY2023 are covered in this report.

Bushy Bluestem Seedling Vigor Study Completed

NJPMC staff initiated and completed a [bushy bluestem](#) (*Andropogon glomeratus*) seedling vigor study that evaluated 34 wild collections via length of time until emergence, seedling height, root length, biomass, and survival rate. Although commercial sources of seed are extremely rare, the bushy bluestem plant guide recommends the species for 14 NRCS conservation practice standards that are included in the electronic Field Office Technical Guide of Mid-Atlantic and Northeast states. Regardless of the practice implemented, establishment via direct seeding is usually more economical than vegetative transplanting. Seedling vigor is a vitally important attribute for successful direct seeding establishment. Statistically significant differences were found between wild collections based on rate of height increase, root length, biomass, and survival rate. Results from this study may be used to rank and select superior collections for further field testing for NRCS conservation practice standard applications where seedling vigor is a consideration. Furthermore, results from this study and additional field trials may contribute to the selection and development of a conservation plant release intended for distribution for use in NRCS conservation practice standard direct seeded applications. A draft Final Study Report is currently under review and should be published in fiscal year 2024.



The bushy seed heads of bushy bluestem. Photo Credit: USDI Bureau of Land Management, United States, Nevada, Clark Co.

NJPMC Staff Target Two Species for Conservation Plant Releases in 2024

A [sea oats](#) (*Uniola paniculata*) conservation plant release edged closer to release this past year as a draft Release Brochure was updated to include results from study plots established in 2017 comparing the developmental collection to commercially available collections from North Carolina and South Carolina. A sea oats release that is adapted to and has long term survival in the Mid-Atlantic region would be valuable to expand the planting options of dune vegetation establishment projects and increase plant diversity on dune systems. With information from trials conducted by NJPMC staff that began in 1982 and more recently conducted studies started in 2013 and 2017, NJPMC staff intend to release a sea oats conservation plant during fiscal year 2024.



A robust sea oats plant at a trial planting site on the dunes of Cape May Point, NJ.

NJPMC staff established a seed production field of two [Virginia saltmarsh mallow](#) (*Kosteletzkya virginica*) collections in 2021 to increase seed stock in preparation for a composite conservation plant release. The two collections, originating from Delaware and North Carolina, were selected for superior performance in saline environments, a longer flowering period, and greater seed yield. These traits suggest that these collections could have beneficial applications for conservation purposes involving saltwater intrusion adaptations and wildlife habitat improvement.

In the last two years, genetic analysis work was conducted by Shaun Bushman at the USDA-Agricultural Research Service Forage & Range Research Lab, Logan Utah. Samples of the two selected collections and six other collections originating from a range of coastal areas from Louisiana to Maryland were collected and analyzed. A phylogenetic tree and principal component analysis indicated that the tested collections split into two broad groupings with the Delaware collection in one group and the North Carolina collection in the other. These results

suggest that the North Carolina collection is genetically more similar to the Louisiana and Florida collections while the Delaware collection is genetically more similar to the Maryland and South Carolina collections.



A Virginia saltmarsh mallow bloom providing a source of pollen to a foraging bee.

A commercially available conservation plant release of Virginia saltmarsh mallow could be used for NRCS Conservation Practice Standards Wildlife Habitat Planting (420), Herbaceous Weed Treatment (315), Restoration of Rare or Declining Natural Communities (643), and Conservation Enhancement Activity (E327A), Conservation cover for pollinators and beneficial insects.

New Field Office Staff Training

The NJPMC staff organized and offered a four-day training session for recently hired NRCS and Conservation District field staff at the end of August this year. The training introduced participants to the Plant Materials Program and provided a brief history of the NJPMC. Training topics covered included plant biology and identification, seed cleaning methods and equipment, reduced/no-till management, irrigation, farm equipment and pesticide safety, conservation cover, crop rotation, critical area stabilization, brush management, and agroforestry. Participants were treated to a full tour of the NJPMC facility and grounds that included an overview of current studies/trials and conservation plant production methods and practices. Hands on experience and activities provided to participants included tractor driving, beach plum and bayberry seed harvest, conservation cover establishment, and sample collections for laboratory soil tests and forage quality analysis. With so many newly hired field staff in NJ and Mid-Atlantic states and many additional new hires expected, these multiday, small group, in person field trainings will likely be offered by NJPMC once or twice a year for at least the next few years.



Don Donnelly, acting NJ NRCS State Resource Conservationist, leads training on brush management and agroforestry.



Scott Snell, NJPMC Study Leader, leads training on seed cleaning.



Bryan Stimpson, acting NJ NRCS State Agronomist, leads training on agronomic topics: reduced/no-till, conservation cover, crop rotation, and critical area stabilization.

Plant Distributions to Assist Partners

The NJPMC provided plant materials to assist several partners in conservation this past year. The Narragansett Tribe was struggling to find a source of the culturally significant plant sweetgrass (*Hierochloe odorata*). Through a chain of connections built in part from past tribal work with the Mashpee Wampanoag Tribe, the NJPMC received a request for plants. Sweetgrass plants were provided to an organic grower in Rhode Island that has a history with and collaborates closely with the Narragansett Tribe. The plants will be grown out and increased vegetatively at the Narragansett Tribal farm for use in ceremonial events.



Sweetgrass plants provided to the Narragansett Tribe in Rhode Island for propagation and use in ceremonial events.

At the request of District Conservationist, Freddie Rodriguez, the NJPMC provided plants for a raised bed urban garden that was established at the region's first [Urban Service Center in Philadelphia](#).

Potted switchgrass, Canada goldenrod, butterfly milkweed, and New England aster plants were provided and established in the raised bed garden prior to a visit from NRCS Chief Terry Cosby and Farm Service Agency Administrator Zach Ducheneaux. The meeting was a demonstration of unified commitment to provide services and programs to customers in urban areas.



NRCS Chief Terry Cosby (left) with District Conservationist Freddie Rodriguez (right).

Collaborative Project Between Universities and Plant Materials Centers Examining Plant Technology to Mitigate Saltwater Intrusion on Agricultural Land Using Coastal Riparian Herbaceous Buffers Coauthored by Shawn Belt, Natalie Howe, Chris Miller, and Scott Snell

With research partners from University of Maryland, George Washington University and University of Delaware, the MDPMC and NJPMC staff continued to evaluate the function and use of conservation plants experiencing saltwater inundation, collecting data on biomass, forage quality, and weed pressure. The research plots were established in 2021 using bare root propagules harvested from Cape May and Beltsville PMCs and planted at two farms in Somerset County, Maryland where saltwater intrusion presents a growing threat to crop production. Based on our conversations with Maryland state biologist and input from Bob Glennon, Virginia Tech Conservation Management Institute Private Lands Biologist and former Plant Materials Program employee, we are planning a project to evaluate pollinator seed mixes to develop recommendations for conservation cover plantings in conditions of saltwater inundation. To better understand variations in establishment success between species under these environmental conditions, this project proposes the evaluation of a variety of species: bushy bluestem (*Andropogon glomeratus*) Pennsylvania smartweed (*Polygonum pennsylvanicum*), tall white beardtongue (*Penstemon digitalis*), plain coreopsis (*Coreopsis tinctoria*), yarrow (*Achillea*

millefolium), spotted St. John's wort (*Hypericum punctatum*), New England aster (*Symphyotrichum novae-angliae*), swamp rose mallow (*Hibiscus moscheutos*), Virginia saltmarsh mallow (*Kosteletzkya virginica*), bearded beggarticks (*Bidens aristosa*), nodding bur marigold (*Bidens cernua*), seaside goldenrod (*Solidago sempervirens*), common sneezeweed (*Helenium autumnale*), purple coneflower (*Echinacea purpurea*) path rush (*Juncus tenuis*), and buttonbush (*Cephalanthus occidentalis*).

Publications, Presentations, and Outreach

- [Cape May Plant Materials Center 2022 Annual Progress Report of Activities](#)
- [Release Brochure for Monarch Germplasm seaside goldenrod \(*Solidago sempervirens*\) \(revised\)](#)
- [Release Brochure for 'Cape' American beachgrass \(*Ammophila breviligulata*\) \(revised\)](#)
- [Release Brochure for 'Avalon' saltmeadow cordgrass \(*Spartina patens*\) \(revised\)](#)
- [Advancing the Science and Plant Selection of Coastal Riparian Buffers at The Soil Erosion Research Under a Changing Climate Conference](#)
- [EDS Salinity Management for Soil and Water Training Session \(NRCS-NEDC-000156\)](#) (link for NRCS staff only - directed to Aglearn page to sign up for the class)
- [One Delmarva: Panel on Resiliency - Delmarva Restoration & Conservation Network annual meeting](#)
- NJ Field Office Staff Training at NJPMC (28-31 August 2023)

Cape May Plant Materials Center

The Cape May Plant Materials Center (NJPMC) was established in 1965 and is operated by the United States Department of Agriculture, Natural Resources Conservation Service. Approximately 80 acres of land are leased from the State of New Jersey for production and field studies while all infrastructure is situated on 4 acres of federally owned land. The NJPMC was added to the Plant Materials Program network of plant materials centers to address coastal restoration needs and to mitigate the impacts of future coastal storms following Hurricane Donna (1960) and the Ash Wednesday Storm (1962 nor'easter). The NJPMC is ideally located to focus on coastal ecosystem conservation concerns given the location of the center near tidal marshes, coastal dune communities, and extensive wetlands.

Program Emphasis

The mission of the Plant Materials Program (PMP) is to find plant solutions to solve conservation problems through the development of plants and plant technology. The Plant Materials Program uses an integrated approach to transfer developed plant products and plant technology utilizing all NRCS staff levels, other government agencies, academic institutions, and private groups.

The NJPMC provides plant solutions for natural resource conservation concerns pertaining to coastal shorelines, sand dunes, mined lands and critical areas, and coastal grassland habitat serving a nine-state area, including parts of Connecticut, Delaware, Maryland, Massachusetts, Long Island-New York, New Jersey, North Carolina, Rhode Island, and Virginia.

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