



Delaware Wild Lands

Odessa, Delaware

A photograph showing a dense canopy of green leaves against a bright blue sky. The perspective is looking up through the trees.

**50+ Years of Protecting
Delaware's Landscape**



Context for DWL Story

When others think of Delaware:



When we think of Delaware:



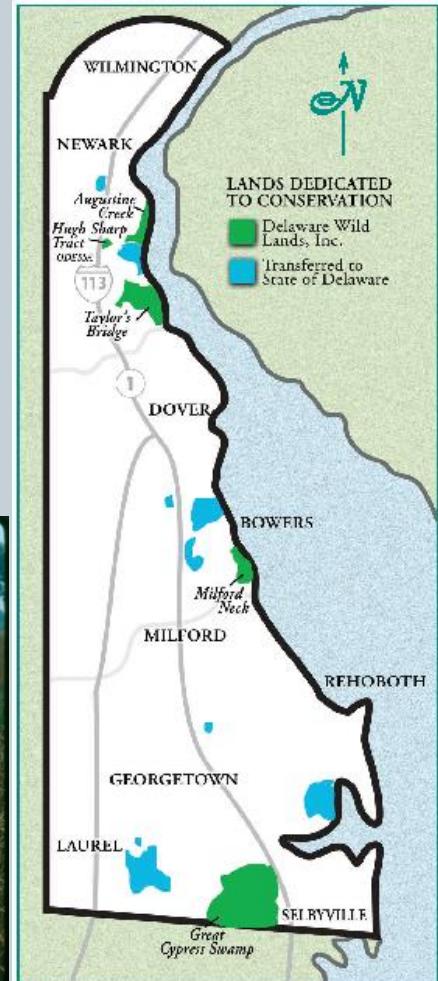


Delaware Wild Lands

- Started in 1961, founders of Delaware's land conservation movement
...our focus and geography is Delaware-centric.
- Helped protect 30,000 acres in Delaware, 20,000 which we now own and manage
...making us the largest non-profit, non-government landowner in Delaware.
- Strong commitment to economic and environmental productivity of land and maintaining traditional uses of landscape
 - *...with active forestry, farming, and hunting programs on our properties.*



DWL's First & Current Landholdings





Who We (Really) Are





Delaware DWL-Style New Castle County





Delaware DWL-Style

Kent County





Delaware DWL-Style Sussex County





So what?



- Existence value
- Reserve for wildlife habitat
- Pressures are changing
 - Large-scale intensification of use
- Face of conservation is changing
 - Human interface
- Outcomes and impacts
 - Economic and environmental productivity
 - Provide clean water and air
 - Produce safe food
 - Foster sense of safety and security





Case Study: Native Plants in Agri-Industry



Changes in DWL's Milford Neck Property

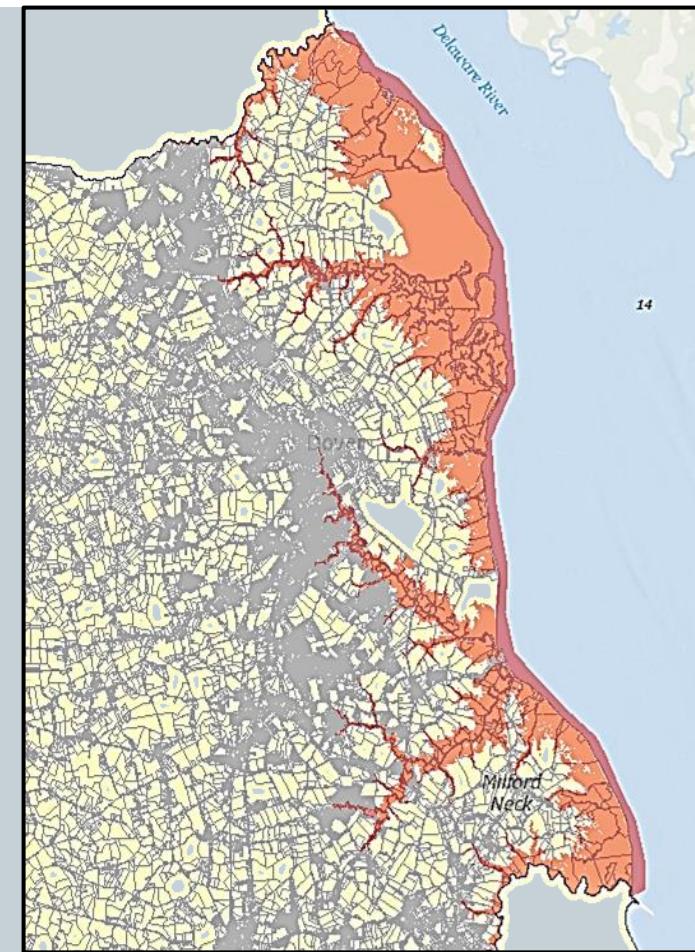
- **3,500 acres coastal saltmarsh, dune, upland forest and ag lands**
- **Increasing salinity in soils from storm over-wash and extreme tides**
- **DWL and other properties, including coastal farmland**
 - Decreasing productivity and profit
 - Die-off of trees
 - Conversion of freshwater wetlands
 - Erosion of marsh
- **Changes in wildlife, waterfowl, species utilizing site**



Investigating Options



- Options: berm, dikes, ditches, pump, abandon fields/forests, alternative crop
- UD research team (UD Cooperative Extension, DE Sea Grant Program, DENIN) working on seashore mallow as alternative crop
 - Work in Middle East
- Ecosystem services identified
 - Roots absorb nutrients, control spread of phrag, air and water filtration, food source for pollinators, carbon sequestration
- Economic benefits?
- Extent of issue in DE
 - DNREC 0.5 meter SLR scenario and 2007 LU/LC data (w/ ag lands) used to approximate impacted areas



Areas in Kent County affected by 0.5 meter rise in sea level.

Seashore Mallow



- Native to the US East and Gulf Coasts
- Non-invasive
- Perennial (10 years)
- Also drought-tolerant and water log-tolerant
- No known diseases
- Multiple potential products



Potential Uses for SSM



- Seed is 18-20% oil (similar to soybean, corn, and cottonseed)
 - Similar composition to other seeds used for biodiesel
- Meal is protein rich (30%), potential for feed stock?
- Milled stem material is highly absorbent
 - Kitty litter
 - Bioabsorbent for organic liquids (oil spills)
 - Hydromulch for erosion control
 - Small animal bedding...



Dr. Jack Gallagher standing next to cut and baled Seashore Mallow straw. Researchers have observed that the stems have adsorptive characteristics that would make for an ideal bedding for small animals.

Photo by Evan Krape (UD).

Potential Use: Poultry Bedding?



- Pine shavings used throughout the Delmarva Peninsula
 - 3-4” bedding material absorbs moisture from broiler feces and provides scratch material
 - Cost is increasing (~\$3,500 for an average house), availability is decreasing
 - SSM research shown to have excellent absorbent capacity and resists compaction
 - Locally sourced
- If viable as bedding material, SSM could be viable ag crop grown on salt-impacted lands in DE and region

KEY QUESTION: Impact of new bedding material on bird development and growth?

SSM/Pen Study



Paw quality assessed by severity and extent of *Foot Pad Dermatitis*.

Left - Birds participating in the poultry bedding pen study at the UD Lasher Laboratory in Georgetown, DE.
Right - Researchers scoring paws for Foot Pad Dermatitis.

Photos by Gary Emeigh (The News Journal).



Left - healthy paws. Right - paws afflicted with Foot Pad Dermatitis.
Photo by M. Czarick and B.D. Fairchild (University of GA).

Next Steps



- **Pen studies are promising!**
 - Performing as good as or better than pine and switchgrass
- **Challenges**
 - Equipment
 - Plant improvements (determinant blooming, maturation)
- **Needs**
 - More acreage planted
 - Cooperator with interest and enthusiasm
 - Farmers; plant (year 1), tend, harvest, bale, provide fertilizer/herbicide



- Flows into Pocomoke River, tributary to Chesapeake Bay
- Pine plantation
- SFI-certified sustainable forest management and ecological restoration plan
- Increase biodiversity, sell timber, use proceeds to fund restoration
 - Harvests and restoration contribute to local economy

Cypress Swamp





Pollinator Projects: Sharp Farm (NCC) & Great Cypress Swamp

- Bees, bats, butterflies
 - WNF, CCD, neonicotinoids
- State bat survey partner
- Honey bees at Sharp Farm
- UD native bee research
- Increase and enhance habitat





Questions?

Thank you!

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