



Salt Marsh Restoration: Lessons learned and looking forward

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Presenting for: Erin McLaughlin, MDNR

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History

- In 1912, ditching to control mosquito populations began in New Jersey
 - Originally restricted to metropolitan areas
 - 1933, ditching was greatly expanded with C.C.C. labor crews
 - Standard specifications: 20 in. wide by 20 in. deep at 150 ft intervals





Maryland/Virginia border

- By 1938, approximately 90% of the tidal marshes between Maine and Virginia had been ditched

- Bourn and Cottam (1950), USFWS
 - Before ditching, >90% of vegetation was *Spartina alterniflora* (smooth cordgrass)
 - 3 years after ditching, *S. alterniflora* occupied only the lowest areas of its original range
 - high marsh species had greatly expanded their range
 - 5 years after ditching, marsh elevation had dropped an average of 2 to 4 inches



DNR's Solution: Ditch Plugging

- Design

- Install vinyl sheeting across ditch
- Borrow material from upstream to pack around the sheeting
- Plant the plug, if necessary



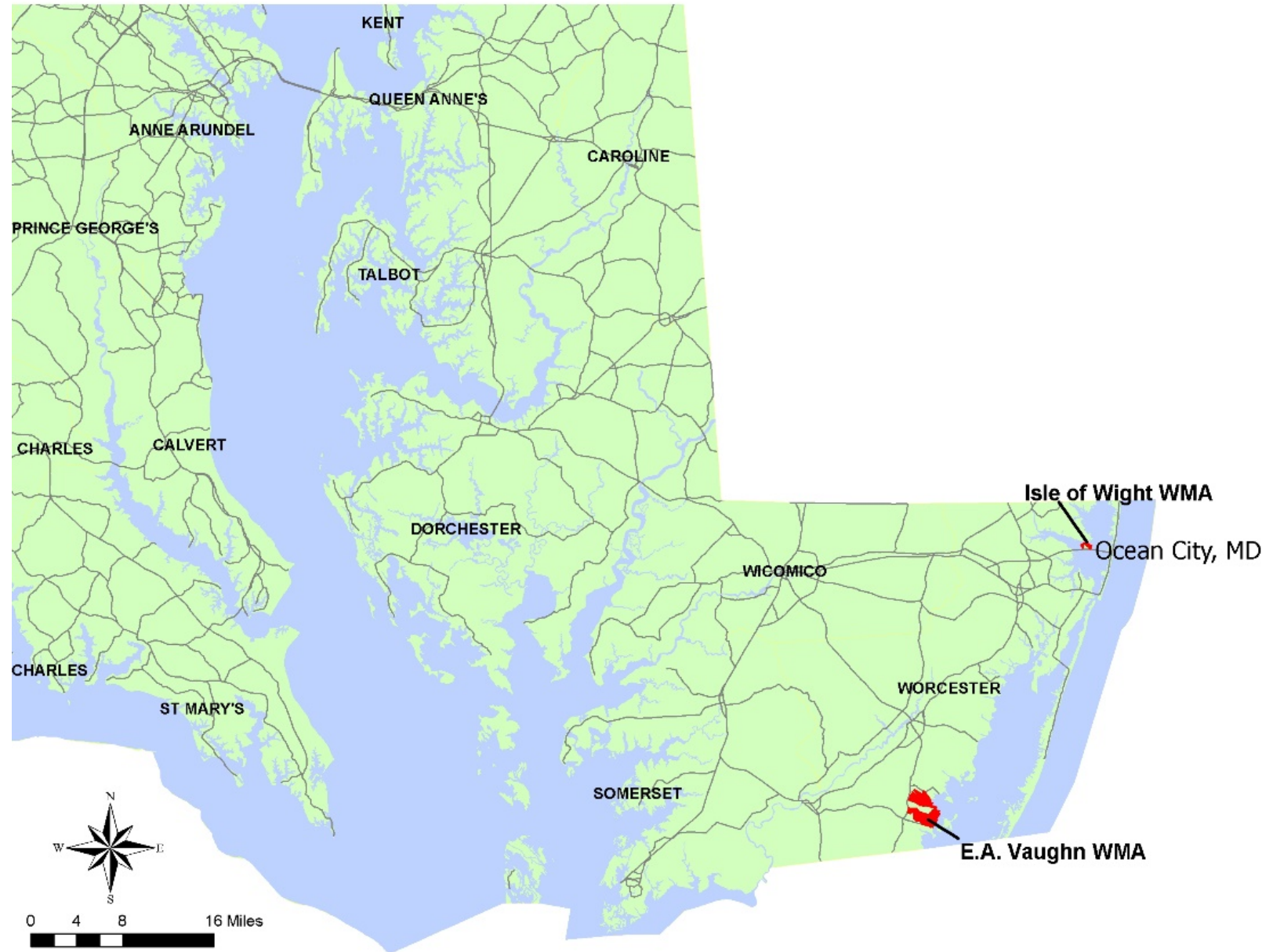
Goals

- Restore natural marsh hydrology
- Restore marsh ponds for wildlife
 - Shallow foraging habitat
 - SAV

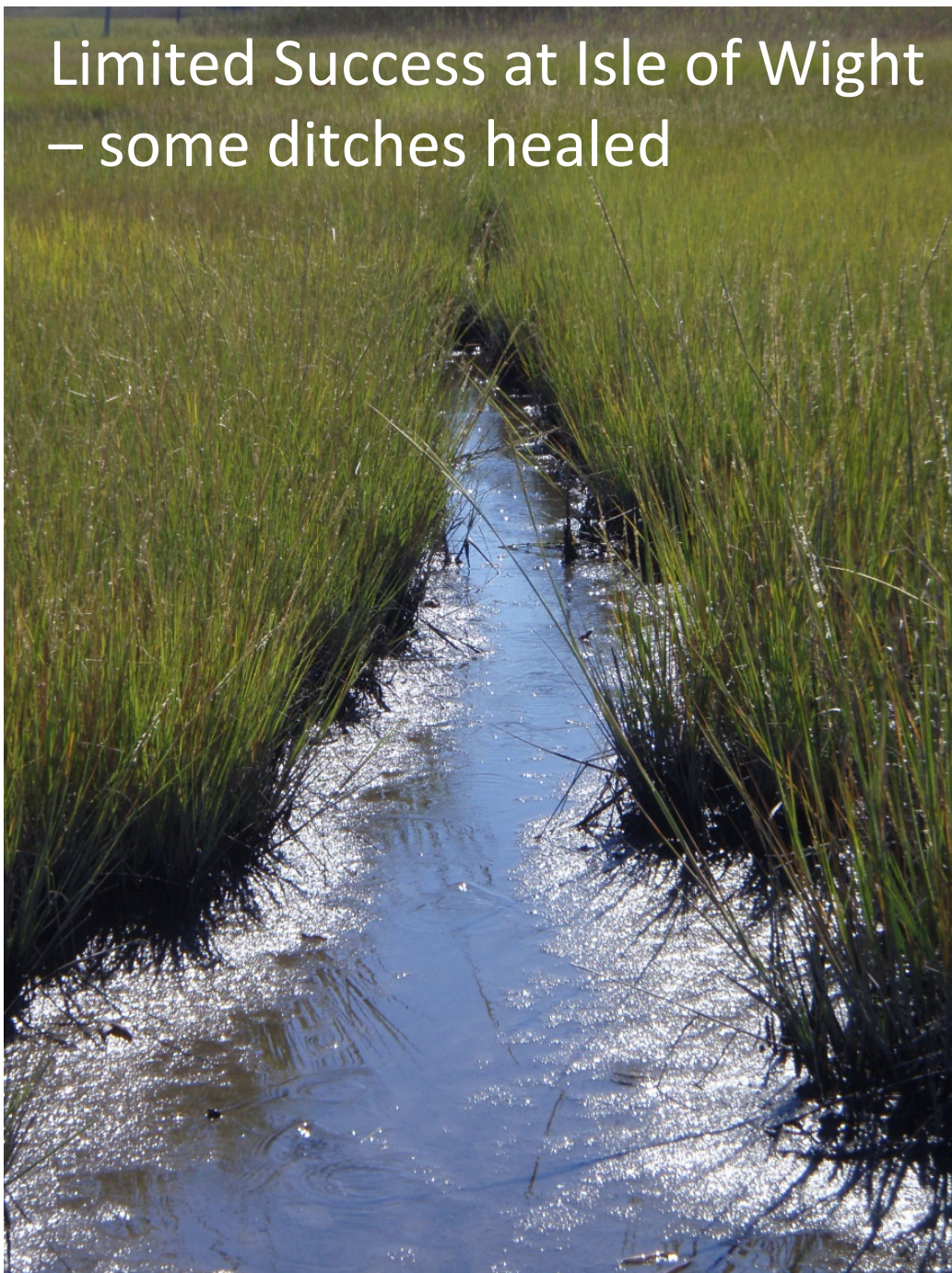


Completed Projects

- E.A. Vaughn WMA (2008)
- Isle of Wight WMA (2009)



Limited Success at Isle of Wight
– some ditches healed



Large areas of unvegetated marsh



Reports from New England

- DON'T PLUG DITCHES!!!
- Plugged ditches (compared to ditched marsh, natural pools, and natural creeks)
 - Higher Water levels
 - Higher Salinity
 - Lower redox potential
 - Lower organic content
 - Lower sediment strength
 - Significantly lower biomass



EA Vaughn WMA post-restoration

✗ High edaphic stress + vegetation die back → low sediment trapping + collapse of root zone → subsidence + habitat instability

Assateague Island National Seashore

- “Unlimited sand”
- Filled grid ditches with sand starting upstream
- Plywood plugs rather than vinyl sheeting
- Lesson learned – plan for sand settling when filling ditches (overflow)
- They have observed areas of unvegetated marsh forming, but not to extent of DNR projects (lower water elevations)



New England

- Hand push mowers “mow” marsh grasses next to ditch
- Grass cuttings are rolled into bundles and staked in the ditches or just raked into the ditch
- Water filters through plant material - sediments settle and fill ditches *slowly* over time
- Cut material provides a seeds for revegetation



Photo credit: Margie Brenner, USFWS

Looking forward

- To help a marsh succeed, focus on sediment trapping
 - Understand that the high points in the marsh are typically along the ditches and the creek banks
- To save saltmarsh sparrows, University of Connecticut researchers suggest extending the grid ditching into the high marsh - improve drainage and flushing
- DNR is planning to remove the ditch plugs at EA Vaughn and Isle of Wight



Questions?