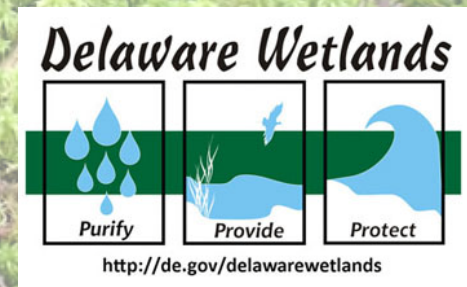


# A Tool for Rating Wetland Values in DE

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# What's in place now?

## Delaware Rapid Assessment Procedure

- DERAP scores are based on multiple wetland functions and are supported by level 3 comprehensive data
- DERAP stressor weights have been validated against comprehensive functional scores and adjusted accordingly
- DERAP is condition-based and measures how disturbance impacts wetland functions
  - 40m Assessment Area and 100m Buffer
- Wetland “values” are currently not assessed



# Why have value-based metrics?

- Capture non-condition related wetland benefits such as flood storage, habitat provision, supporting rare species, diversity, education, recreation
- Provide consistency in decision making and reporting
  - Standardized and supported by reference data
- Improve mitigation and goal setting
- Help prioritize protection
- Tool to pair with condition assessments



# What are Wetland Values?

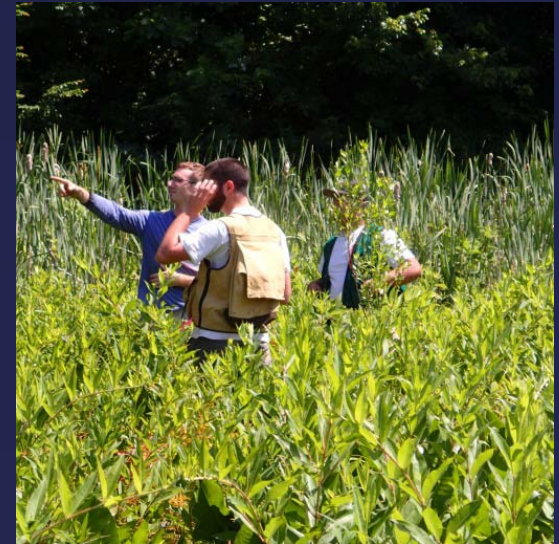
- DERAP condition scores estimate how well a wetland performs various functions
  - Opportunity to provide a function
  - Local significance of that function
- Societal benefits from wetlands
  - An impaired wetland in an urban setting may be as valuable as an undisturbed rural wetland





# What information is necessary?

- Field visit
- GIS
  - 2007 state wetland maps
  - NHD flow line
  - Recent aerals
  - Dissolved 2007 SWMP layer
  - Delaware Ecological Network (DEN)



# Delaware Value Assessment Metrics

1. Rarity/Uniqueness
2. Wetland Polygon Size
3. Wildlife Habitat Availability
4. Delaware Ecological Network
5. Habitat Structure and Complexity
6. Flood Storage and Water Quality
7. Education



# Scoring Potential

Metric	Maximum Score possible
Uniqueness/Significance	30
Wetland Size	10
Habitat Availability	10
DEN	14
Habitat Structure/Complexity	19
Flood Storage/Water Quality	12
Educational	5
Total	<b>100</b>

# Metric 1: Uniqueness/Significance

- *Data Source: 2007 SWMP modifiers and aerals*
- Wetlands that are ecologically significant in DE (10,100 ha; 8%)
  - Coastal plain ponds, bald cypress swamps, white cedar swamps, interdunal swales, acidic fens, groundwater seepage wetlands
- Wetland is rare for a given landscape
  - Last wetland pocket in an urbanized area
  - Last wetland area in a farmed landscape
- Restored, created, enhanced wetlands
- 30 possible points

Score	
20	Wetland represents an ecologically significant type in DE
5	Wetland is rare in a particular area
5	Wetland has been restored, created, or enhanced





# Metric 2: Wetland Polygon Size

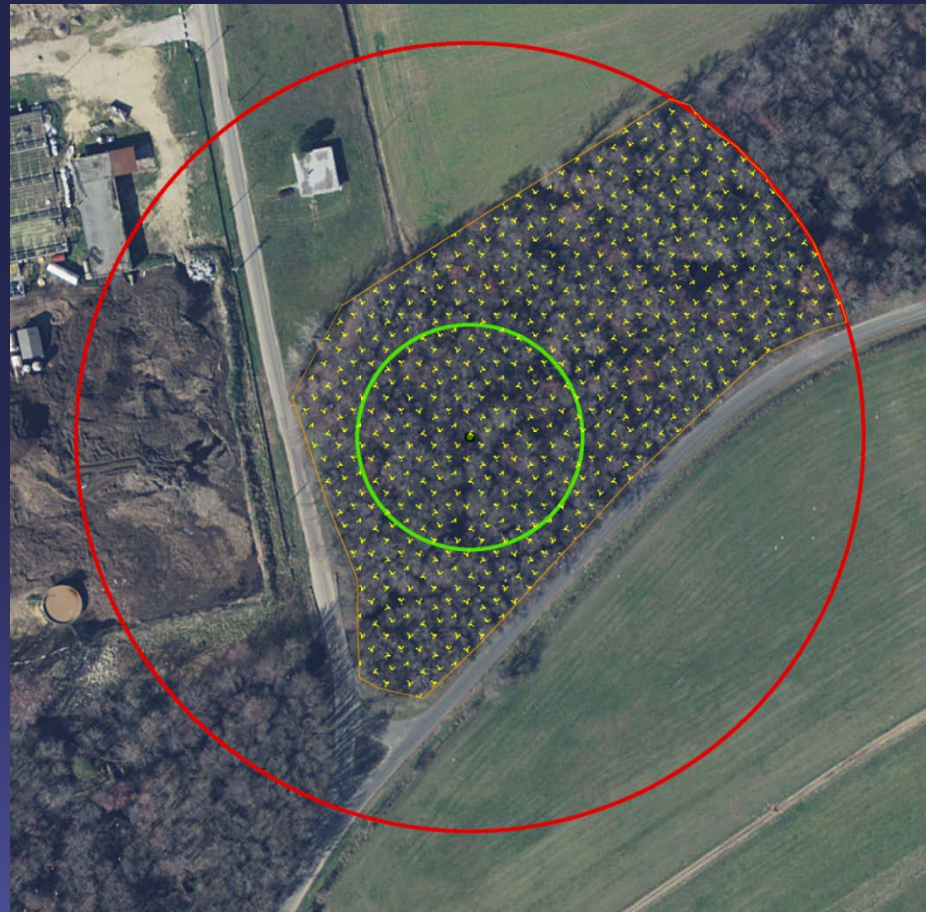
- *Data Source: Dissolved 2007 SWMP layer (will be made public)*
- Awards wetlands that are part of a larger wetland complex
- Adjacent wetland polygons were dissolved

Score	
10	≥ 300 ha
8	≥ 150 to < 300 ha
6	≥ 50 to < 150 ha
4	≥ 15 to < 50 ha
2	≥ 5 to < 15 ha
0	< 5 ha



# Metric 3: Habitat Availability

- *Data Source: 2012 aerial maps*
- Measures the percent of unfragmented habitat within 100m buffer around the Assessment Area for wildlife dispersal
- Awards for having greater proportion of buffer in contiguous natural habitat
- Buffers include:
  - Forest
  - Wetlands under natural cover
  - Open water
  - Regenerating scrub/shrub or forest
- Barriers to Buffer include:
  - Development
  - Elevated roads
  - Train tracks
  - Ag fields
  - Mowed areas



# Metric 4: Delaware Ecological Network

- The Delaware Ecological Network (DEN) identifies relatively intact lands that are ecologically important and can support an array of plants and wildlife.
- The DEN is comprised of core areas and corridors
- Metric awards for:
  - AA and buffer in a core area
  - for containing an ETC species
  - for a high DEN final score (function of forest, stream and wetland features for that ecoregion)
- 14 possible points

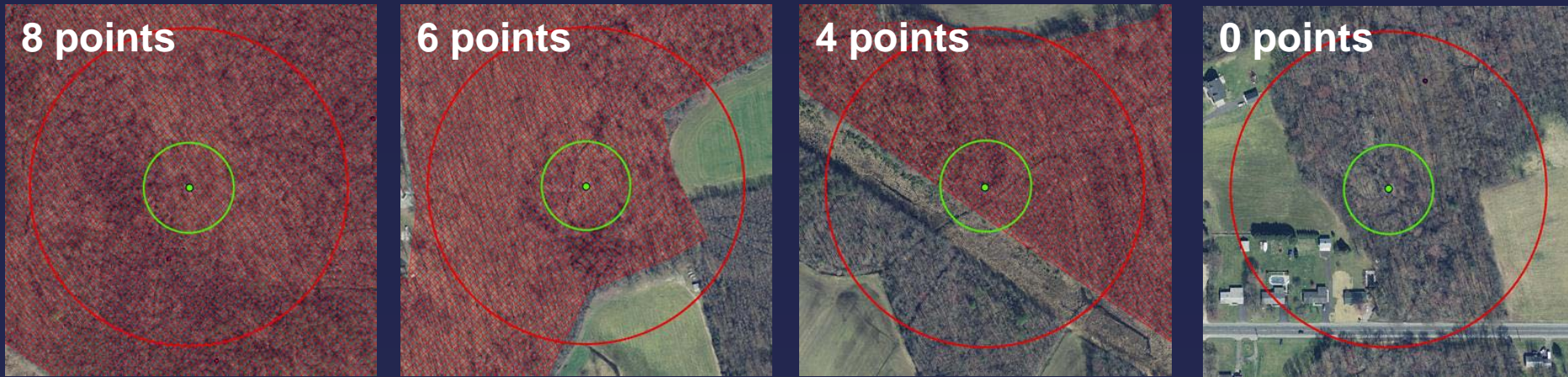


Wetlands (orange hatching) in central Delaware. The large forest tract is identified by DEN as a core area (red hatching).



# Metric 4: Delaware Ecological Network

- Is the 40m assessment area and 100m buffer in a core area?



- Does the core area polygon contain a species of interest (element occurrence)?
- Did the core area polygon receive a high final score? 0-1.0

# Metric 5: Habitat Structure and Complexity

- *Data Source: site visit*
- 19 possible points



Standing snags



Large downed wood and coarse woody debris



Microtopographic relief (hummock and hollows)



Surface water for amphibians/macroinvertebrates



Surface water for fish



Forest canopy gap dominated by herbs and saplings



# Metric 6: Flood Storage/Water Quality

- *Data source: 2007 SWMP, NHD flow line, site visit*
- Wetlands that slow and store water are providing flood storage (floodplains)
- Wetlands that buffer surface waters are improving water quality (floodplains and ponds)
- Rates ability of a wetland to provide ecosystem services based on its position within in the landscape





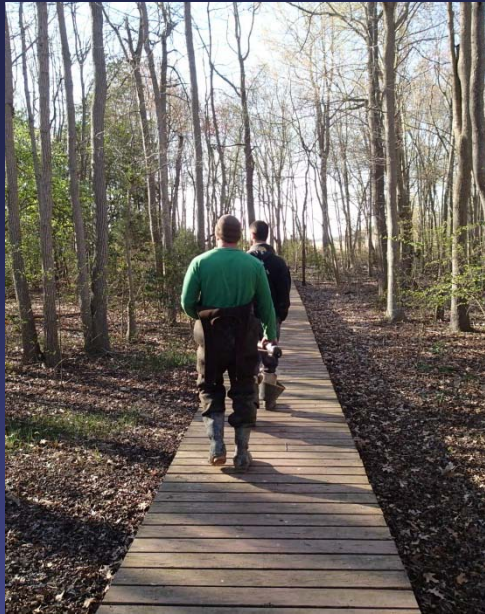
# Metric 6: Flood Storage/Water Quality

- 2007 SWMP provides the water regime, SR and SWD rankings
- NHD line determines if wetland is adjacent to surface water
- Site visit shows vegetation, evidence of pooling and wrack deposits
- 12 points possible



# Metric 7: Education

- *Data source: site visit*
- Rates a wetland for being accessible and conducive to providing educational opportunities (public, visible, parking, trails)
- 5 possible points





# How can we use results?

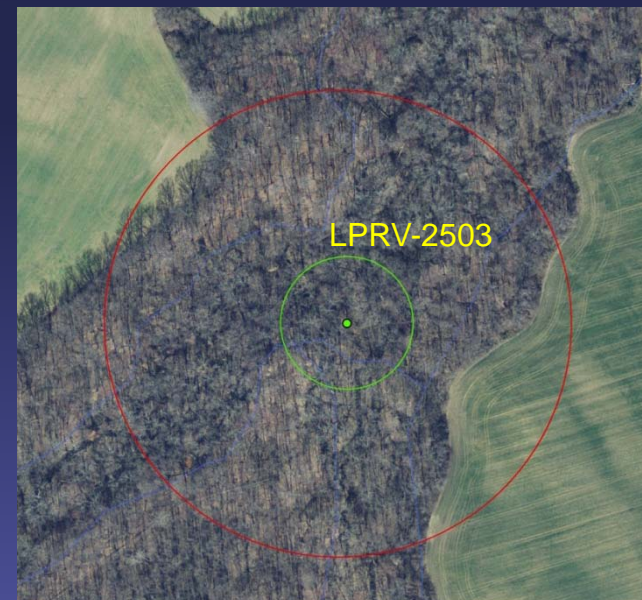
- Using the 2 assessment results side by side
  - Condition & Value scores
  - Standardized result classification
  - How does this site compare to others?
  - Site specific management implications

Value	Management Implications and Recommendations
Rich	Protect, acquire, use as reference; strongly consider projects that will impair existing wetland values; enforce strong mitigation or compensation ratios for unavoidable impacts. Wetlands that also scored high for condition should receive elevated importance.
Moderate	Supports moderate wildlife, habitat, hydrological and educational values. Value results should be paired with condition results to possibly identify restoration opportunities.
Limited	Consider restoration opportunities especially if wetland is in good condition. Wetlands in good condition should also be protected.



# Site Examples- High/High

- Site LPRV-2503 “Black Ash Seep”
  - Ecologically significant “Groundwater Seep”
  - 46 ha, 87% landscape availability
  - DEN core area
    - 18 Element Occurrences, final score 0.08
  - 6 habitat structure components
  - All 6 flood storage/water quality components
- Value Score = 63, ‘High value’
- DERAP condition score = 85
  - “Minimally Stressed”
- Elevated protection and avoidance
- Enforce stronger mitigation ratios
- Use as reference site for restoration goals
- Consider acquiring



# Site Examples- high/low

- Site LPDP-1536 “Little Creek WMA”
  - Restored ~1950s, enhanced 1968-1992
  - 168 ha, 74% habitat availability
  - 12 habitat structure components
  - 3/6 water quality/flood storage components
  - High education potential
- Value Score = 56, ‘High value’
- DERAP condition score of 35
  - “Severely Stressed”
- Rewards a manipulated site for other traits
- Condition impacts likely permanent
- Values may increase with time





# Next Steps

- Continue to build reference data (156 sites)
  - Target high quality sites
  - Use in Appoquinimink watersheds in 2015
- Provide training and assistance
- Perform outreach, share with Mid-Atlantic states
- Post online for sharing
- Incorporate into watershed health reports





- Data and protocol are available upon request



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