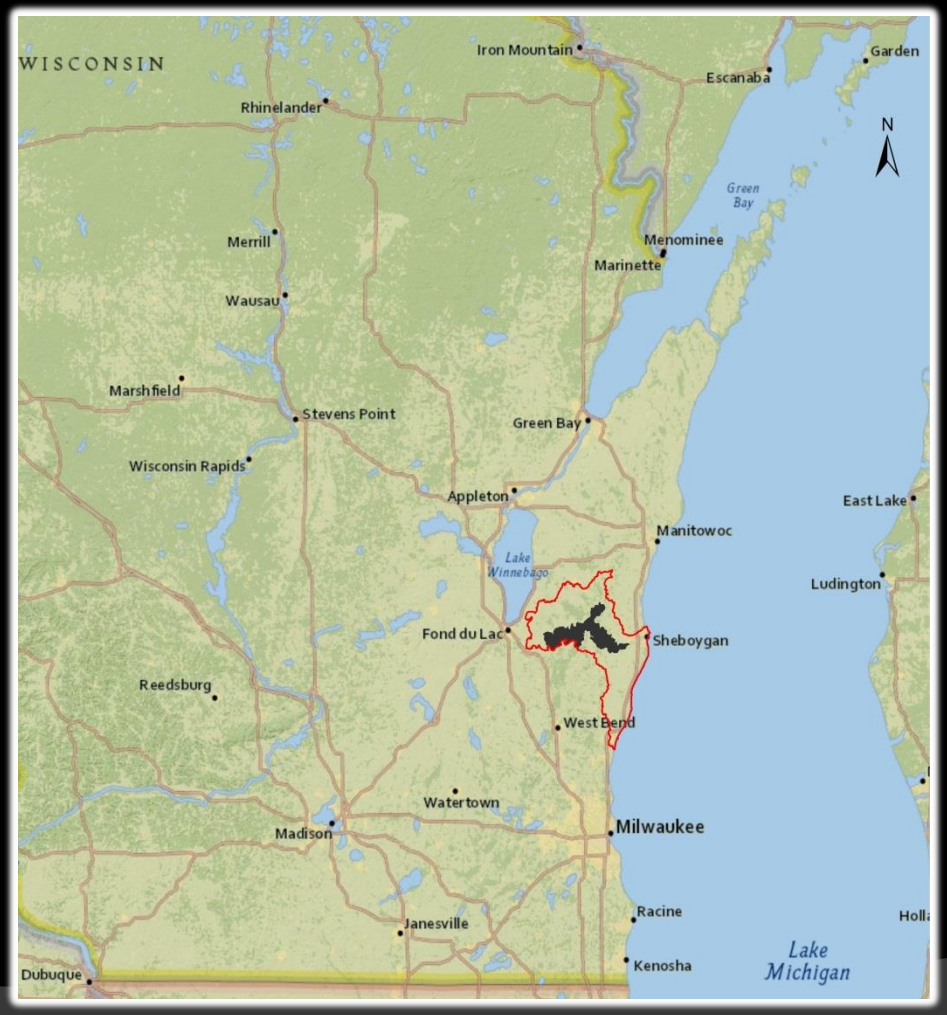
A Framework for a Multi-benefit Functional Assessment of Wetland Restoration Opportunities: Mullet River Watershed, WI



Laura Flessner

NOAA Digital Coast Fellow
The Nature Conservancy &
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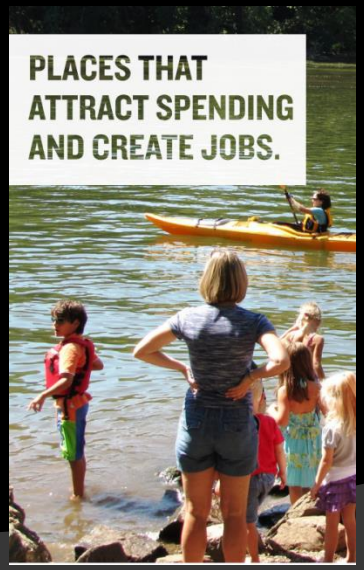
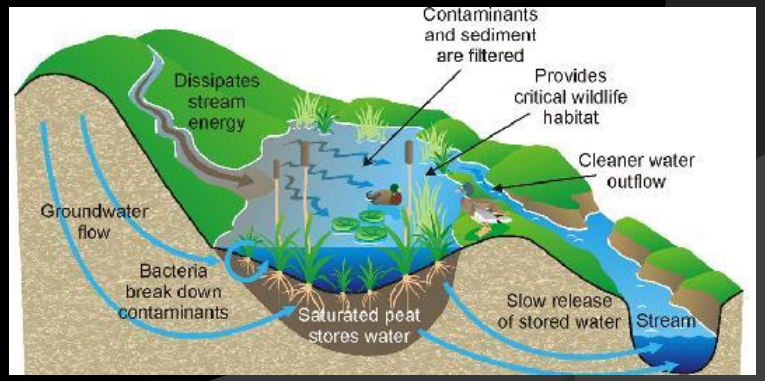
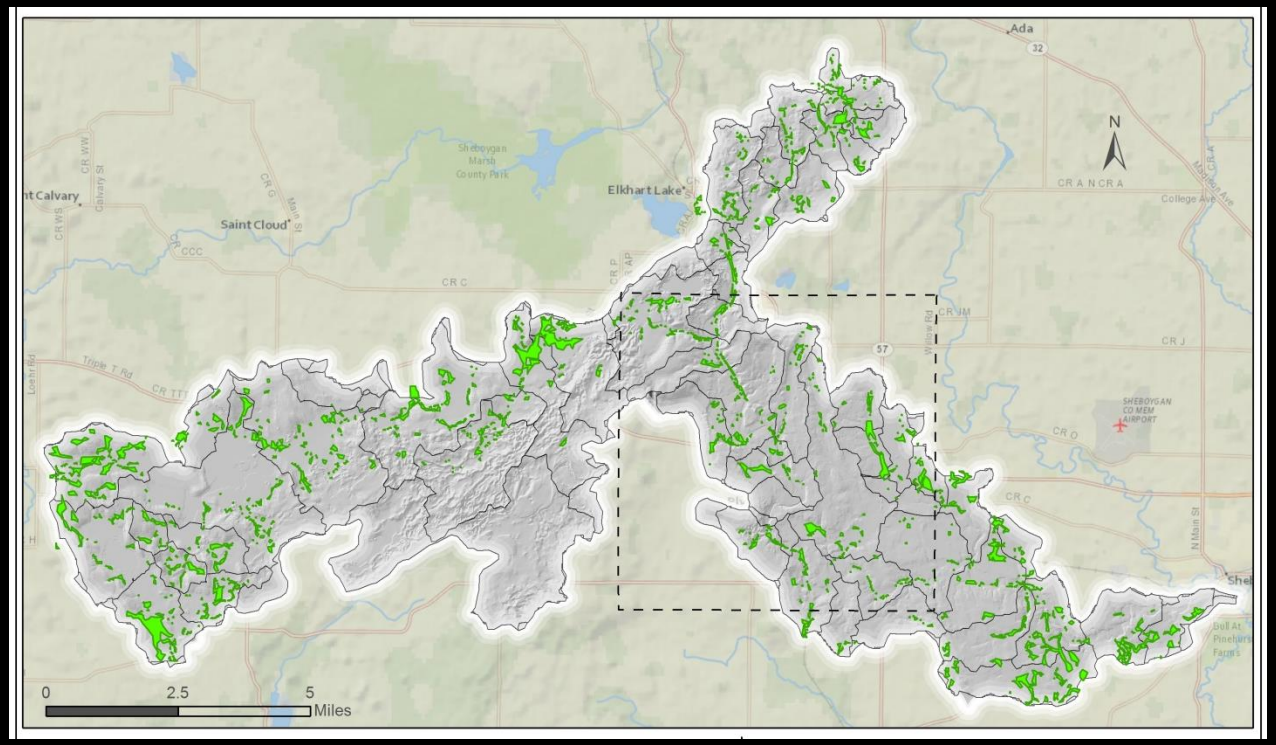
Wetlands Benefit Communities





Plymouth, WI



“Potentially Restorable Wetlands (PRW):”
Areas not currently classified as wetlands, have hydric soils, and occur on agricultural lands.

1. Identify PRWs that offer multiple benefits in terms of:
   a) Water quality: phosphorus capture
   b) Flood abatement: storage potential

Process & Take Away

TWO MAPS
- Natural Resources
- Hazards

1. ID protected lands
   - Natural Resources

2. ID currently developed land
   - Natural Resources (road density)

3. ID land to be conserved
   - Hazards

4. ID land to be developed
   - Natural Resources (CURRENT)
   - Hazards (FUTURE 20yr)

   Issues? Adjustments?

5. ID land to be restored
   - Both

TAKE AWAY

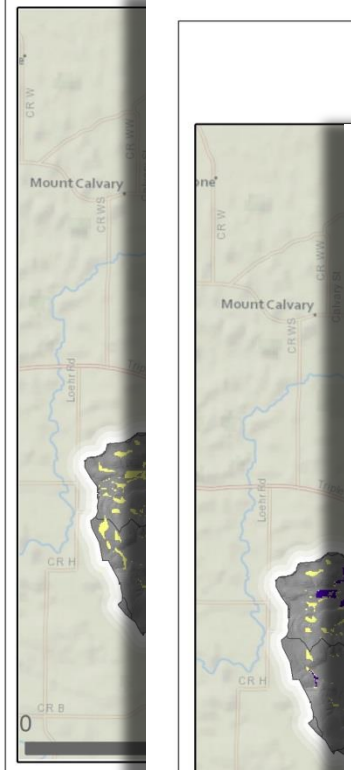
How can we use natural resources to mitigate socio-economic risks?

SERVICE 1: FLOOD ABATEMENT	
PARAMETER	**CRITERION**
Slope	Slopes within the PRW site's catchment exceed 15%
Floodplain	PRW is located within either the 500yr or 100yr FEMA designated floodplain
Reduce Risk to Downstream Developed Areas	PRWs that are upstream and connected to the City of Plymouth (flood prone developed area).
NON-sloped, depressional wetland	PRW not located on slopes >5%
Impervious surfaces	>10% of PRW site's catchment is impervious
Runoff Hotspot (L) expected	PRW that intersect areas that contribute statistically significant amounts of runoff (L)

SERVICE 2: PHOSPHOROUS REDUCTION / WATER QUALITY	
PARAMETER	**CRITERION**
Headwater connectivity	PRW adjacent to headwaters (stream order <= 3)
Prevented plant	PRW adjacent to prevented plant areas (areas where it is repetitively too wet for viable crop planting).
High Phos (mg) contribution areas	PRW that intersect areas that contribute statistically significant amounts of phosphorus (mg)
NON-sloped, depressional wetland	PRW not located on slopes >5%
impervious surfaces	>10% of PRW site's catchment is impervious
Row Crop	Row crops cover >42% of PRW catchment.

Potential for Wetlands to Provide Water Quality Protection Services

Mullet River Watershed



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Potential for Wetlands to Provide Flood Abatement Services

Mullet River Watershed

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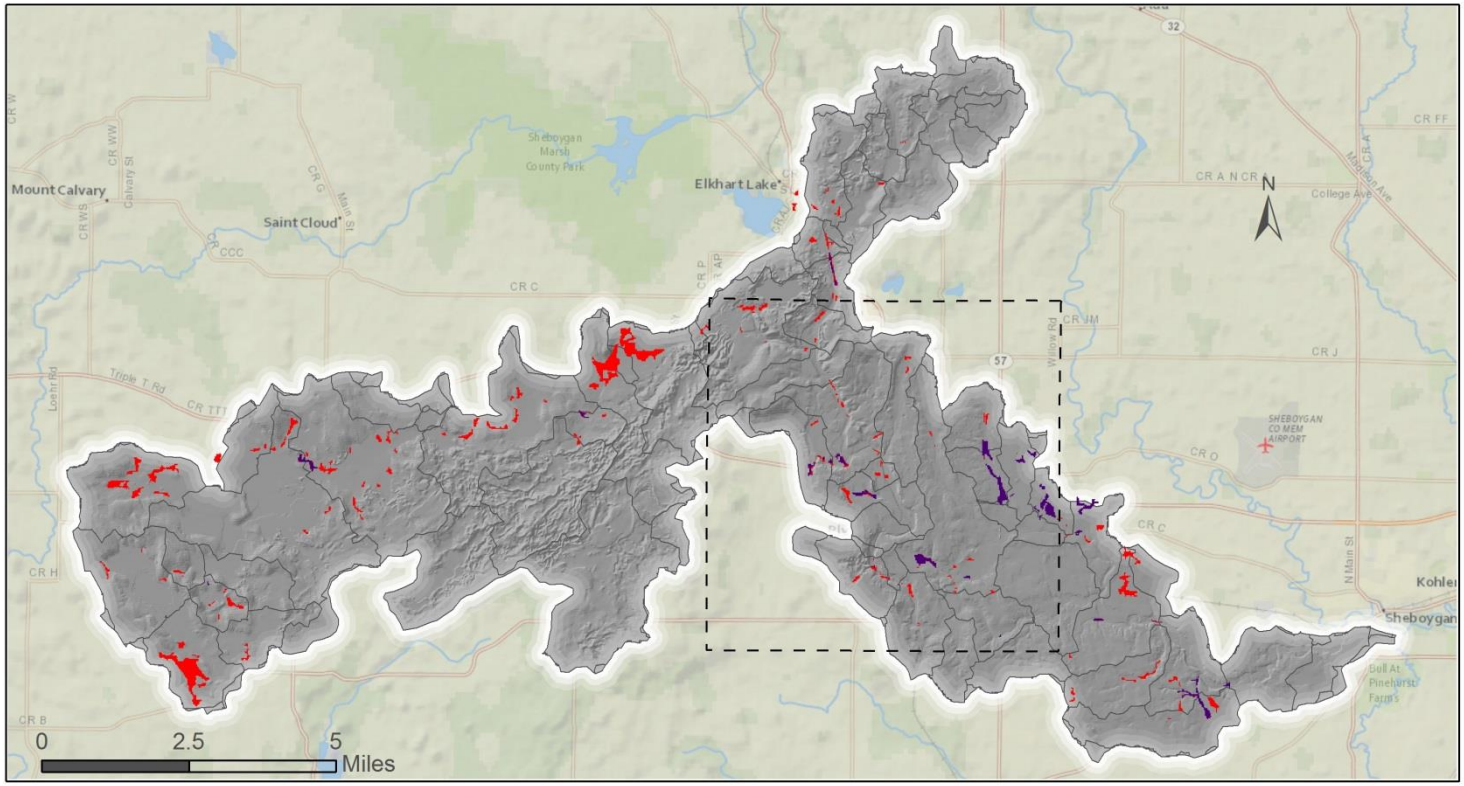
PRW Sites that Provide Services at Exceptional or High Levels

Mullet River Watershed



Map created, June 2014 by Laura Flessner,
NOAA Digital Coast Fellow
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- 2 Services
- 1 Service
- HUC14 Catchments
- Plymouth Township

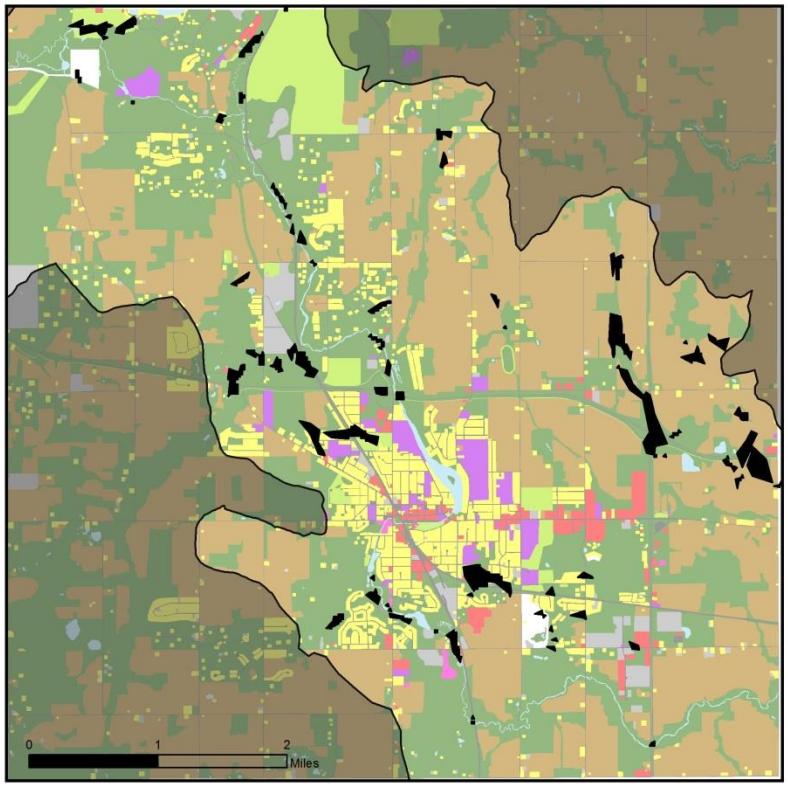
This map represents only "Potentially Restorable Wetlands" (PRW)and does not pertain to existing wetlands. PRW are defined as restorable wetlands or destroyed wetlands that are under a "restorable" land use (e.g., agriculture, not developed areas) with hydric soil characteristics.

PRW that perform multiple services should be prioritized as key restoration opportunities

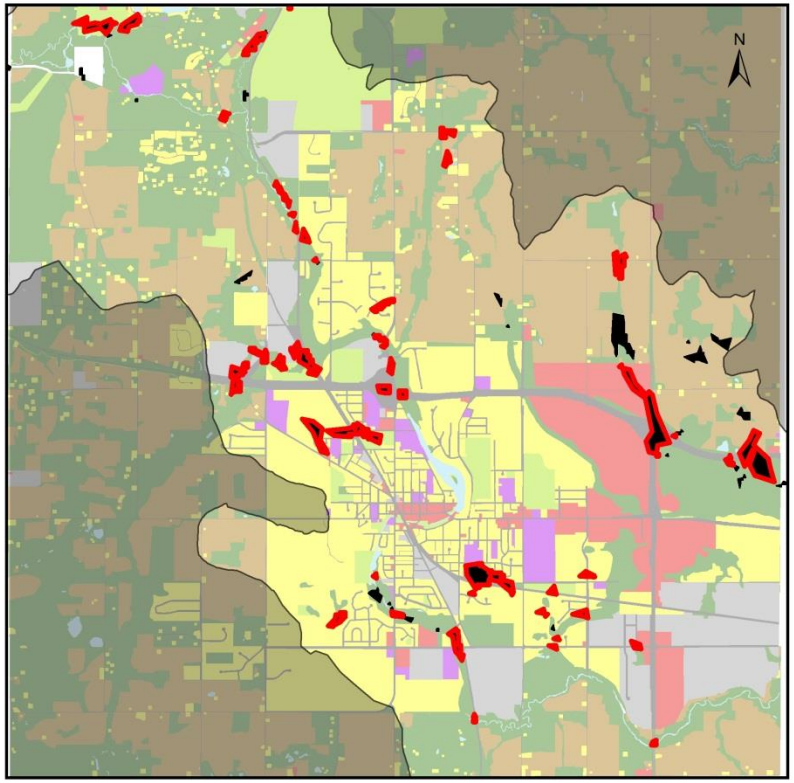
Potential Development Pressures on Multi-Beneficial PRW

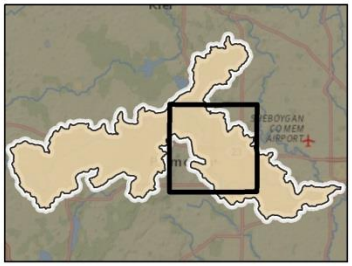
Plymouth, WI

Current Landuse



Projected Landuse in 20 yrs

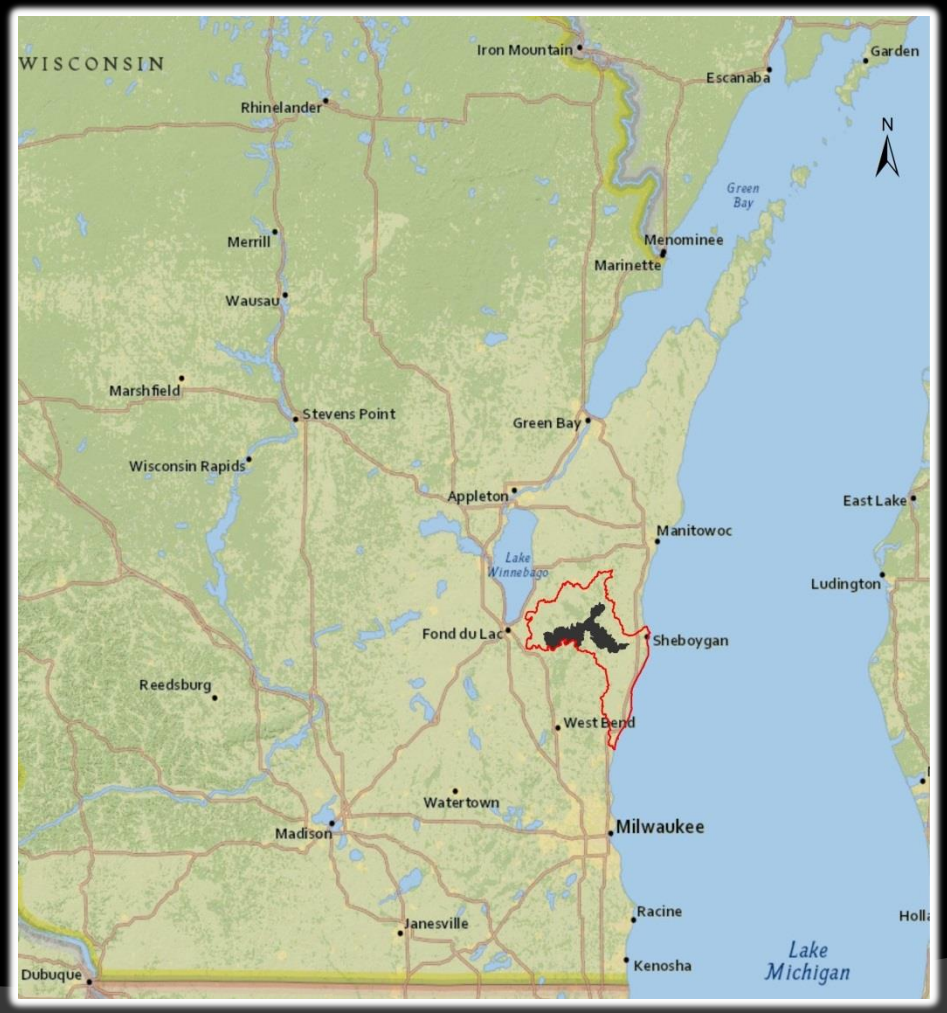




- Residential
- Commerical
- Industrial
- Roads & Transportation
- Communitation/Utilities
- Governmental/Institutional
- Parks & Recreation
- Open Space, Wetlands, Woodlands
- Agricultural
- Water Features
- Valuable Multiple Benefit PRW
- Mullet Watershed
- Priority PRW that Intersect Development

Of 154 acres of PRW within Plymouth that were identified as multi-beneficial by the assessment, 120 acres (nearly 78%) could be potentially threatened by future development expected to occur within the next two decades.

Thank You!



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