Mapping Reed Canary Grass in Wisconsin – Phase Two

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Outline

• Project Goal
• Pilot Study Review
• Methodology
• Results
• Statistics and Uses for Data
Project Goal

- Produce a statewide map showing wetland areas dominated by invasive reed canary grass (*Phalaris arundinacea*)
Pilot Study (Phase One) Results from 2001

- **Red**: Reed Canary Grass Dominant
- **Green**: Other Wetland Vegetation Dominant
- **Yellow**: Codominant
Pilot Study (Phase One)  
Conclusions

• Provide coarse filter, first cut at wetland health, not intended to be site-specific
• Satellite sensors can’t pick up reed canary grass as understory in forested wetlands
• The codominant category will be eliminated in future efforts
• It is feasible to expand this methodology to cover the state.  Phase Two
Landsat Scenes Purchased

Total Purchase Price = $2980

The scenes chosen were selected for minimal cloud cover (≤ 10%) and dates were within the range of Oct 09-Oct 31, 1999-2003. Ten percent cloud cover was accepted if the clouds were in an area of overlap with another scene, or outside of the Wisconsin border.
Our Volunteer Ground-Truthers

Tom Bernthal, WDNR and Jon Motquin, East Central Wisconsin Regional Planning Commission

Dan Pubanz, Wolf River Forestry, LLC

Doug Cox, Menominee Indian Tribe of Wisconsin

Shirley Griffin, Glacial Lakes Conservancy
269 sites were visited. At each site, multiple plots were ground-truthed. Once finished, half of the plots were used for classifying the satellite image and the other half were used for accuracy assessment. There were 1388 plots total.
This is a field sheet with the satellite scene overlaid on an aerial photo. The grid marks off 90m intervals to help in geolocating the position with the GPS. Photos taken in the field help later in the classification process to remember the vegetation present in the area.

Photo A: cattail marsh

Photo B: sedge meadow
Step 1: Get the GPS signal.

Step 2: Using the field map and the GPS readings, get geolocated and scout out the vegetation on the site.

Step 3: Create a polygon of the area and record the vegetation characteristics.
Example of Manual Recolor Process

Assigning the value of either 1) RCG dominant (RED) or
2) Other wetland vegetation dominant (GREEN)

Path 25 Row 29
Mosaic Solution Based on Overall Accuracy Statistic for Each Scene (RCG User’s Accuracies in parentheses below the Overall Accuracies)

61% (89%)

78% (82%)

75% (60%)

83% (89%)

83% (75%)
Phase Two Results
Statistics:

- There are **510,000 Acres** of Reed Canary Grass Dominated Wetlands in Wisconsin

- **26.3%** of Wisconsin’s Open Canopy Wetlands are Dominated by Reed Canary Grass
Example Areas of High Reed Canary Grass Dominance
La Crosse River
A Lesson Learned

• Our satellite image was masked using the wetland class from WISCLAND.
• WISCLAND received its information from the Wisconsin Wetland Inventory (WWI).
• Therefore, any inaccuracies in either of those, results in compounded errors in our project.
Recommendations

• Keep an eye on data currency.
  – WISCLAND is 15 years old.
  – The WWI ranges in age depending on the county from 7-29 years old.
  – Landsat scenes were from 1999-2003.
  – Aerial photography from 2005.

• Know your data sources.
  – WISCLAND was made using the WWI.

• Try to have your field collection done as close in time to your satellite scene capture as possible.

• Having a two-person team, one in the field and one in the office, would maximize time efficiency during field season.
Promising Uses for Data

• As a Health Gauge for Wetlands
• As an Educational Tool for Spreading the Word about Invasive Species
• To Support Efforts of such groups as the Wisconsin RCG Working Group http://phalaris.pbwiki.com
• To Determine Areas for Restoration and Rehabilitation
• To Help Determine…
  1. Rate of Infestation
  2. Characteristics of Sensitive Areas Vulnerable to Infestation
  3. Areas where RCG is an Imminent Threat to Species Diversity
Questions?