

**Plant inventory of wetlands with
potential for *Phragmites australis*
invasion on the shores of Grand
Traverse Bay, Michigan**

Alex de Sosa, Dave Mahan, and Ken Sytsma

07/13/2011 01:29



- **Background**

What is *Phragmites*? Effects on native wetland habitats and private landowners that lead to removal

- **Question**

Which native wetland plant species are appropriate replacements for *Phragmites* in Grand Traverse Bay wetland communities?

- **Study**

Inventory of six wetlands along the Grand Traverse Bay, evaluation using the Floristic Quality Assessment

- **Conclusions**

Meaningful inventory, important notes for the Land Conservancy

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***Phragmites australis* is
an invasive grass,
propogates quickly and
densely in wetland
habitats**

Haslam 1972, Minchton & Bertness 2003,
Saltonstall 2005, Getsinger et al 2007

**Can grow up to 10
meters high in one
growing season, with 60
meter rhizomes!**

Saltonstall 2005



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Presence of *Phragmites* leads to decreased biodiversity, native species richness, and ecosystem functionality

Ailstock et al. 2001, Bertness 2004, Minchton et al. 2006, Simpson & Bertness 2006, Silliman and Trebitz 2007

Obstructs scenic views, inhibits recreation, and lowers property values; creates fire hazard

Getsinger et al 2007

Removal is "one step toward a greater goal of restoring native wetland plant communities and protecting fish and wildlife habitat"

U.S. Fish and Wildlife Service (Getsinger et al 2007)

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BUT...Removal is not enough

Phragmites propagates well in disturbed, sandy soils—removal is a disturbance

Minchton & Bertness 2003, Tulbure & Johnston 2010

Seeding or transplanting native wetland species prevents reestablishment

Wilcox and Whillians 1999, Ailstock et al. 2001, Tulbure and Johnston 2010

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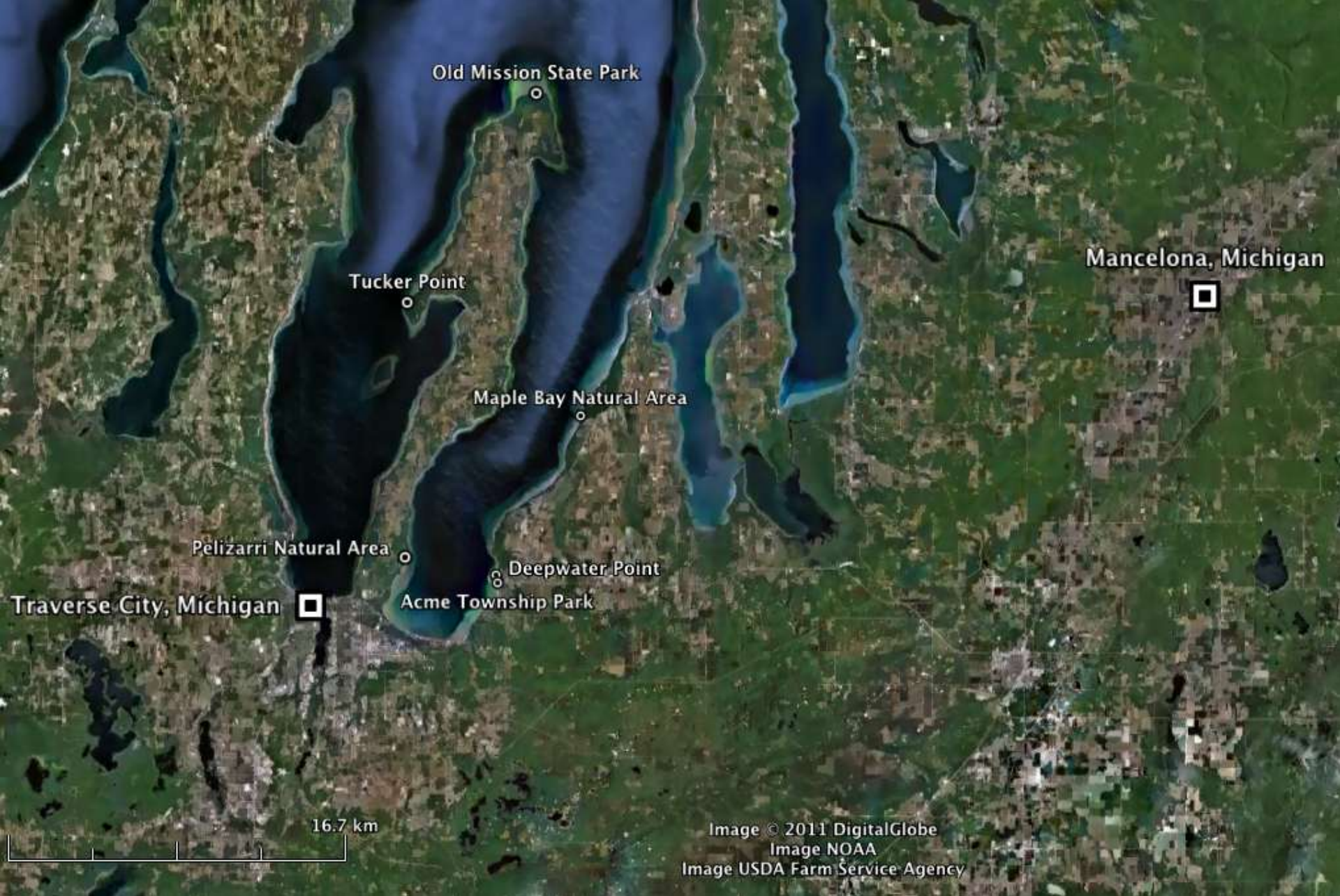


Figure 1. Wetland inventory sites, Grand Traverse Bay, Michigan. Imagery courtesy Google Earth.

Materials and Methods

Transects

Site walk-throughs

Identification



Floristic Quality Assessment

- Coefficient of Conservatism (*C*)
 - Value from 0-10, given to each species
 - Indicates probability a species will be found in a habitat unaltered from pre-settlement conditions
 - Can be averaged for entire sites
- Floristic Quality Index (*FQI*)
 - Based on *C*, takes into account number of species
 - Allows for site comparison
 - $FQI > 35$ = exceptional, > 50 or higher = super exceptional, rare
- Wetness Index (*W*)
 - Value from -5 to 5, given to each species
 - Indicates probability species found in wetland
 - Can be averaged for site

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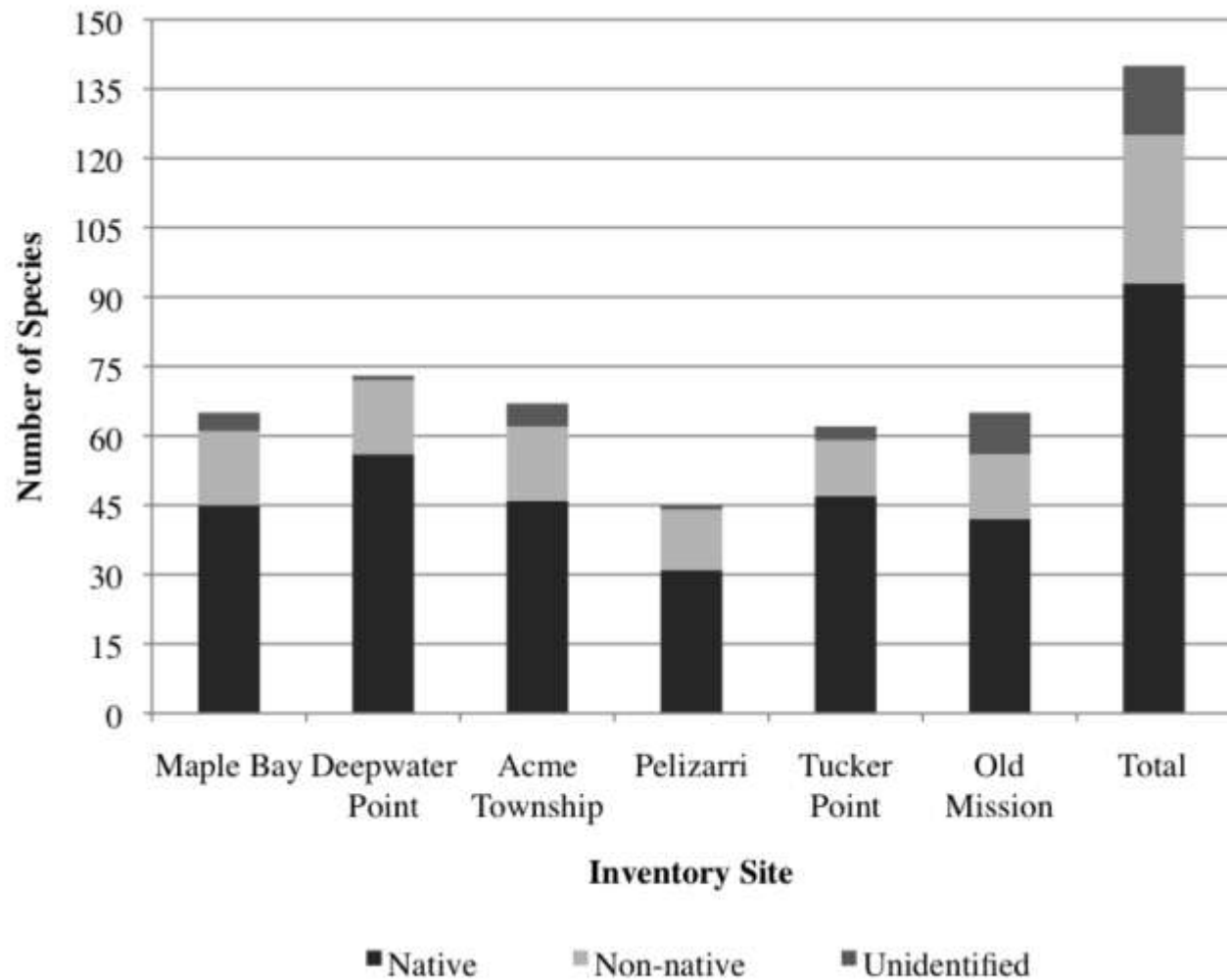
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Results

- 140 species recorded
 - 93 native
 - 32 non-native
 - 15 unidentified
- *Phragmites* found at 3 sites
- Average C of all sites = 3.6
- FQI ranges from 20 to 28
- Mean W less than zero for all sites

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Figure 2. Wetland species counts for all inventory sites and overall inventory, Grand Traverse Bay.

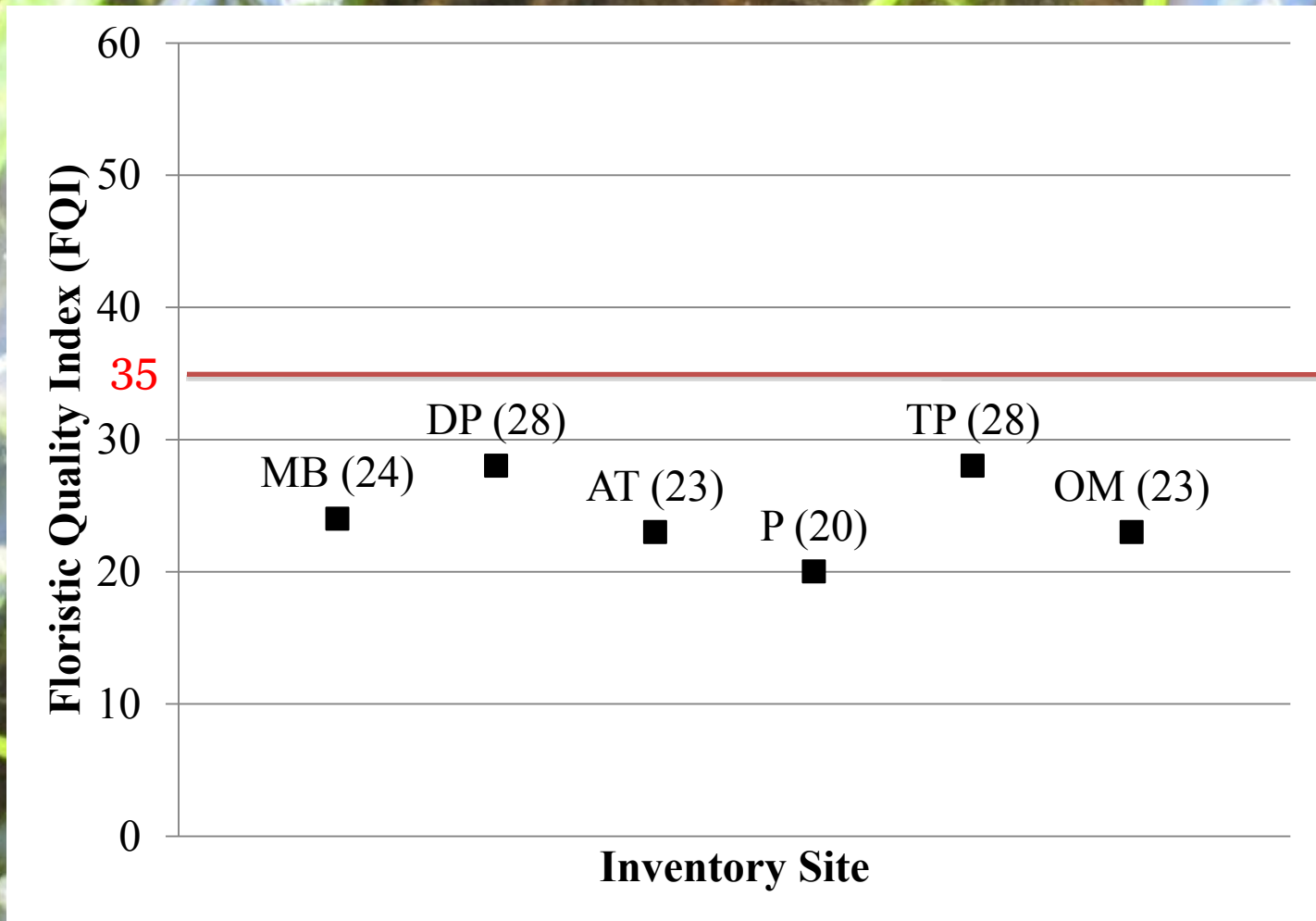


Figure 3. Floristic Quality Index (FQI) values for all wetland inventory sites, Grand Traverse Bay.

Inventory Conclusions

- Low average C
 - All sites have been disturbed
- $FQIs$ in a similar range, below 35
 - Inventory represents common quality
- Mean W less than zero
 - Transects and walk-throughs included correct areas

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Conclusions for the Conservancy

- Based on *FQI* values, Tucker Point (28) and Deepwater Point (28) are best physical models for landowners
- Several other non-native/invasive species present
- Inventory can aid future research, restoration plans, and monitoring

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Acknowledgments

A photograph of a pond with green reeds, water lilies, and a frog. The water is dark and reflects the sky. The reeds are tall and green, and the water lilies are small and green. A frog is visible in the water, partially obscured by the reeds.

- **Dave Mahan**
- **Abby Gartland**
- **Ken Sytsma**
- **Randy Van Dragt**
- **Sam Riffel**
- **Rob Keys**
- **Britt Eaton**
- **Au Sable Staff and Students**

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