Invasive Vegetation Management in Lake Okeechobee

Mike Bodle – Sr. Scientist, Vegetation Management Section
Invasive plants managed in 100,000 acres of marsh in 466,000 acre lake - 90% funded by Florida Invasive Plant Management Trust Fund as administered by Florida Fish and Wildlife Conservation Commission.
Okeechobee gourd
(*Cucurbita okeechobeensis*)
Federal and State-listed endangered species
Lake Okeechobee, “Bay Bottom”

Are these conditions our goals?
**Lake Okeechobee Melaleuca Control Costs Equal Expenditures of SFWMD and State**

<table>
<thead>
<tr>
<th>Year</th>
<th>Cost</th>
<th>Year</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>211,159</td>
<td>2003</td>
<td>630,100</td>
</tr>
<tr>
<td>1994</td>
<td>538,841</td>
<td>2004</td>
<td>565,850</td>
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<tr>
<td>1995</td>
<td>573,859</td>
<td>2005</td>
<td>140,709</td>
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<tr>
<td>1996</td>
<td>1,064,216</td>
<td>2006</td>
<td>502,628</td>
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<tr>
<td>1997</td>
<td>1,042,037</td>
<td>2007</td>
<td>362,235</td>
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<tr>
<td>1998</td>
<td>1,074,813</td>
<td>2008</td>
<td>1,435</td>
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<tr>
<td>1999</td>
<td>1,166,497</td>
<td>2009</td>
<td>149,547</td>
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<tr>
<td>2000</td>
<td>1,119,369</td>
<td>2010</td>
<td>26,930</td>
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<tr>
<td>2001</td>
<td>664,280</td>
<td>2011</td>
<td>35,170</td>
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<tr>
<td>2002</td>
<td>1,046,783</td>
<td>2012</td>
<td>11,754</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>10,922,212</strong></td>
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Melaleuca spreading from Rim Canal plantings

Lake Okeechobee
Moore Haven Marsh View, 1992

Lake Okeechobee
Moore Haven Marsh View, 2007
The Lake’s “Last” Melaleuca, 2013

The Original Okeechobee Melaleuca Nukers - Francois Laroche and Amy Ferriter
However...
<table>
<thead>
<tr>
<th>Plant Treated</th>
<th>Acres Treated</th>
<th>Total Cost, $</th>
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<tbody>
<tr>
<td>Torpedograss</td>
<td>21,331</td>
<td>3,036,128</td>
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<tr>
<td>Cattail</td>
<td>10,451</td>
<td>1,085,332</td>
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<td>Brazilian pepper</td>
<td>2,153</td>
<td>1,034,053</td>
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<tr>
<td>Tropical Watergrass</td>
<td>3,528</td>
<td>590,367</td>
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<tr>
<td>Melaleuca</td>
<td>12,742</td>
<td>522,785</td>
</tr>
<tr>
<td>Christmas Cassia</td>
<td>31</td>
<td>3,035</td>
</tr>
<tr>
<td>Indian Rosewood, Australian pine</td>
<td>27</td>
<td>9,695</td>
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</table>
Ground Application

- Hack/Squirt
- Cut/Stump
- Back-Pack Spraying
- Hand pulling
Aerial Application

- “Thru valve” boom, very low pressure and drift
- 20 GPA, concentrated solution
Slough prior to torpedoglass infestation

Torpedoglass, *Panicum repens*
Jan. - Feb. treatments onto buttonbush (*Cephalanthus occidentalis*)
Dog fennel in former torpedograss plots

Torpedograss treatments in de-watered marsh

Cattail re-growth in Moonshine Bay
Bay Bottom, April 04 Treatment

Treated Cattail
Precise treatment onto cattail

Trail from Monkey Box to Cochran’s Pass

Moonshine Bay treatment, view northwest

Moonshine Bay cattail treatments

Aerial application readily avoiding native willow head
2012-13 South Lake O Cattail Treatments

Create openings for:

- Improved navigation
- Fish and wildlife habitat
- Recreational access
Invasive aquatic grasses

**Hymenachne amplexicaulis**
(West Indian marsh grass)
- Spreads widely
- Dense mats
- Prolific seed production

**Luziola subintegra**
(Tropical American Watergrass)
- First found in 2007 in Lake O, new to N. America
- Uncertain means of spread – birds from Cuba?
- Spreading broadly in Fisheating Bay
- Multiple treatments aim to prevent spread and Fall flowering
- Unusual seed produced
Stigonematales - Toxic blue-green algae grows upon Hydrilla

- 1994: Hydrilla-feeding coots in SC develop fatal disease (Avian Vacuolar Myelinopathy - AVM); >100,000 dead
- “New” blue-green algae
- Now found from TX to Carolinas
- Coot-feeding bald eagles also develop fatal AVM, 100s dead
- Only FL site to date: Lake Tohopekaliga
  - AVM induced in chickens fed “Stig”- infested hydrilla and “Stig”- fed apple snails

“Stig” growing upon hydrilla
Acknowledgements

Helicopter Applicators, Inc.
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SFWMD Watersheds Management Divisions
Florida Exotic Pest Plant Council