



# Water Hyacinth Management Experiences of SFWMD

## Lessons For Lake Tana

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# Context Of Experience Sharing

- Lake Tana is Suffering from encroachment of invasive weed – Water hyacinth
- The weed is known for
  - its fast propagation physically as well as by seed
  - Disrupting lake ecology
    - competes oxygen supply,
    - evaporates water at faster rate,
    - destroy fish breeding areas,
    - obstruct navigation etc.
- Stakeholders of Tana Visited lake Okeechobee – Epicenter of Water hyacinth with 130+ years experience
  - Head of environmental protection
  - Global Coalition for Lake Tana (NGO)



- This presentation is experience sharing to wider audience since would be a major treat of water resources any where not to mention GERD that is hydrologically connected to Tana

# Lake Okeechobee



## Water hyacinth in South Florida

- Imported from Amazon to South Florida / Louisiana as backyard flower.
- In 1899, the United States Rivers and Harbors Act authorized the construction and operation of “crusher boats” to remove water hyacinth from navigable waterways.
- Three years later the Rivers and Harbors Act Amendment allowed for the extermination of water hyacinth by mechanical, chemical, or any other means.
- Since then all management techniques were attempted

**Lesson 1. Strategy shifted from eradication to managing it**

# Current Water Hyacinth Management Methods at SFWMD

## ➤ Mechanical

- Barriers
- Harvesters/Shredders

## ➤ Biological

- Planthopper
- Weevil
- Moth

## ➤ Chemical

- Selective / non-selective
- Systemic /Contact

## ➤ Additional Approaches

- Nutrient Reduction
- Best Management Practices

## Mechanical

- Barriers (vegetative for small canals)
- Berms (for water ways as wide as 150 ft) :

Lesson 2: Berms would avoid transport of water hyacinth from Tana to GERD



## Aquatic Harvesters and shredders

- Used for creating an alley / access for air boats - SFWMD is in charge of activities
- Costly and spread water hyacinth via fragmentation and relocation ( immediate disposal is also an issue)
- Lake Tana has more than 5 harvesters: **Concern-** expectation is to harvest all using these machineries

**Lesson 3: Reset the purpose of harvestors /Shredders - only to open up alleys**

**Lesson 4: Having 5+ harvests / Shredders is enough for alley/access creation**



## Biological control (Weevil and moths)

- Bio controls are applied upstream of the water currents for ease of propagation to downstream – USDA is in control of research and application
- They are applied where water hyacinth is dispersed with other vegetation and neither physical nor chemical approach is applicable
- Because of its slow process to eat out the water hyacinth and reduce its photosynthesis it is applied in places where strategic importance is less. However it is a must for a long term

Weevils and Moth larvae

Research on adaptability weevils that do not harm crops



## **Advantages of biological control**

- low cost (long term)
- Self sustaining
- High efficacy once adapted

## **Disadvantages**

- Slow process
- Could be washed to the wrong direction
- Start up costs

**Lesson 4: Long term investment,**

**It can't cope with the propagation rate of water hyacinth**

# Chemical control

The chemicals are EPA approved and proven to have no effect on fishery and other fauna if used at suggested rate

Active Ingridient	Product Name	Selectivity
<b>Contact Herbicides</b>		
Diquat	Reward	Non selective
<b>Systemic</b>		
Flumioxazin	Clipper	Some selectivity
Glyphosate	Rodeo	Non Selective
Imazapyr	Habitat	Non Selective
Triclopyr	Renovate	Some selectivity
Penoxsulam	Galleon	Some selectivity
Bispyribac sodium	Tradewind	Some selectivity
2,4 D	Weedar64	Some selectivity



Private sector is given contract -- SFWMD regulates

# Mode of Application

- All concentrations are as per EPA's ruling and labeled on the product
- Florida Department of Environmental Protection (FDEP) certifies contractors involved in responsibility

## Technologies

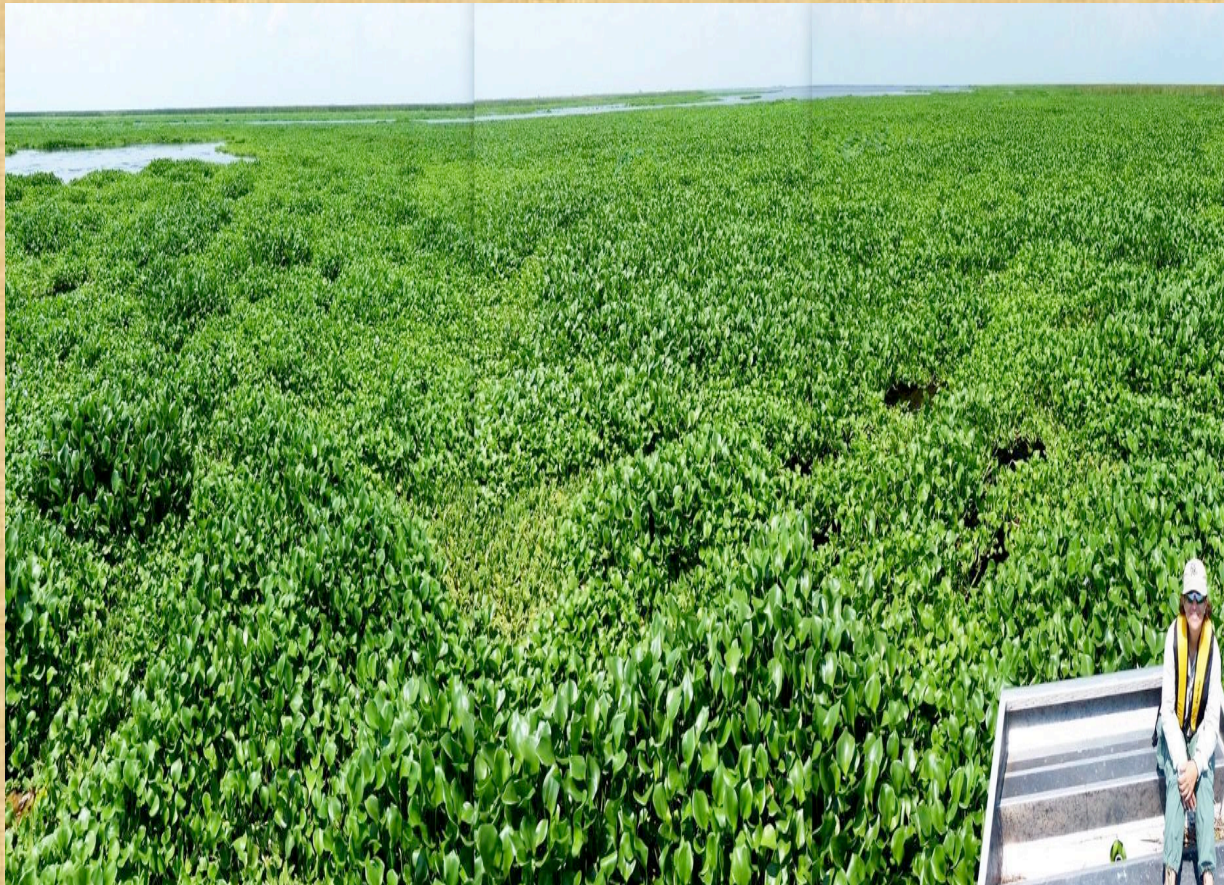
1. Air boats are used to apply herbicides (Dayqat) following the alleys
  - They can maneuver on shallow waters (below 40cm)
  - Each boat costs up to 15 K (USD)



2. Diqat is widely used and trained contractors are permitted to apply on the area they are given

Lesson: Proven chemical control methods shall be tested at pilot level and adopted for lake Tana

**Before treatment**



**After Dyqat treatment**

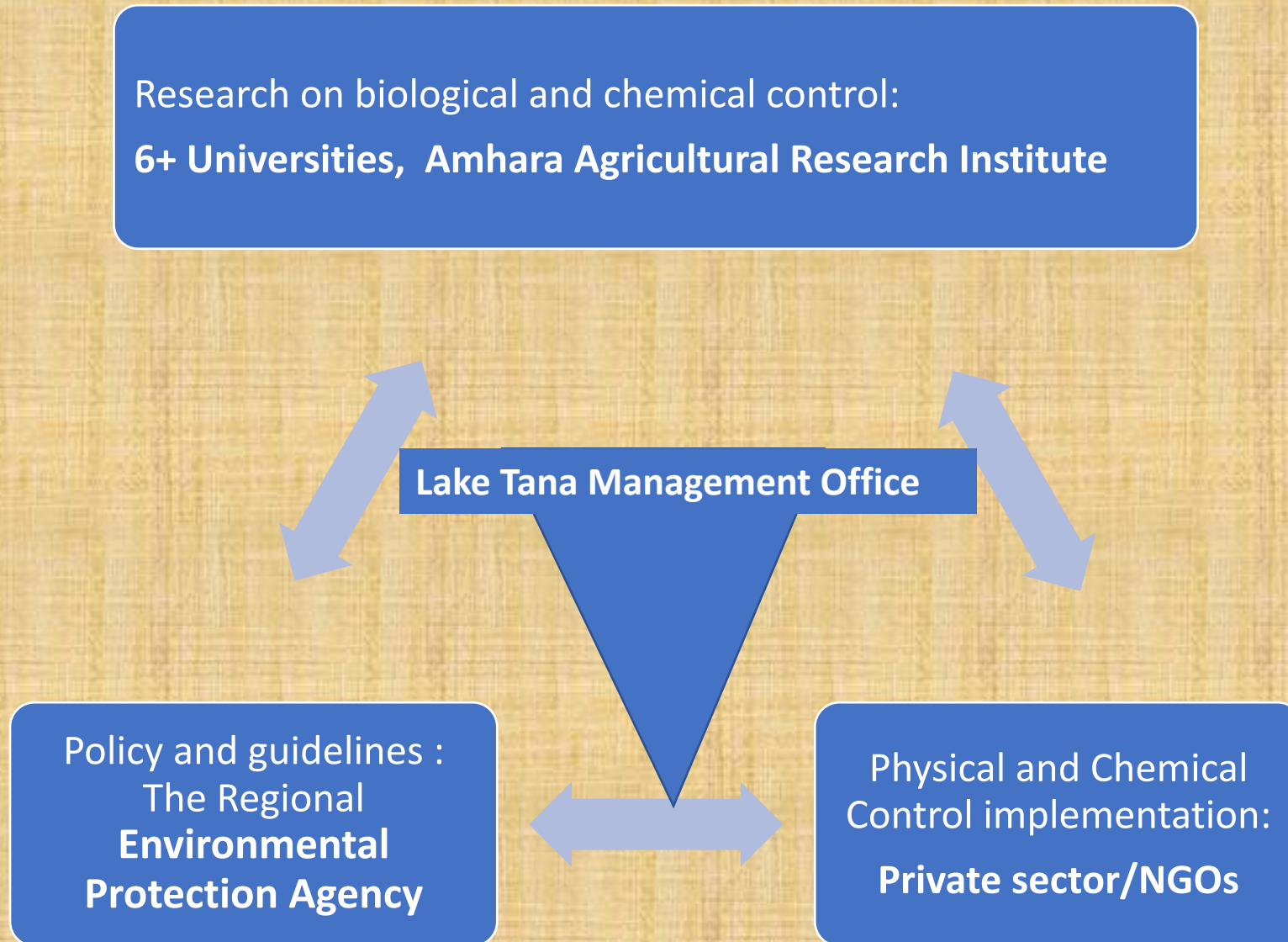


# Additional Approaches

## ➤ Nutrient Management

- Watershed treatment
  - Soil and water conservation
- Reduce inputs into the Lake
  - Water treatment areas to arrest nutrient inflow- demands space and does not seem applicable to Lake Tana
  - **Isolate inputs - Water treatment facilities** – Not applicable given the cost

## Institutional arrangements



# Existing situation of lake Tana

<https://www.facebook.com/solomon.kibret/videos/10223571085809256/?t=0>

Special Thanks to Mr. Francio, head of Invasive Weed Management, SFWMD, who gave us access to the centers of  
USDA, FFWS, FDEP, and SFWMD stations

