Roseau Cane Die-Offs: Status of Research and Funding

CPRA Meeting

May 16, Baton Rouge

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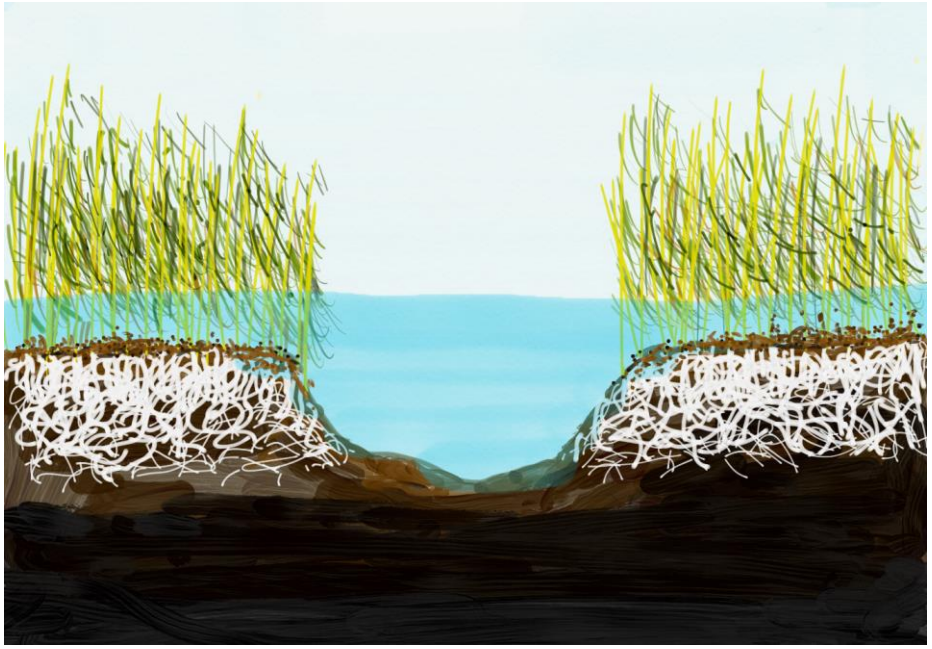
Roseau cane in Louisiana provides several ecological services including erosion control

- Habitat for wildlife: fishing, duck hunting
- Protection of oil infrastructure
- Protection of navigation channels

Roseau cane can grow up to 9-12 feet tall, 2/3 of the biomass is in the rhizomes



- Survives at deep water, 3 to 4 feet
- Reduces wave action

What are Roseau cane die-offs?

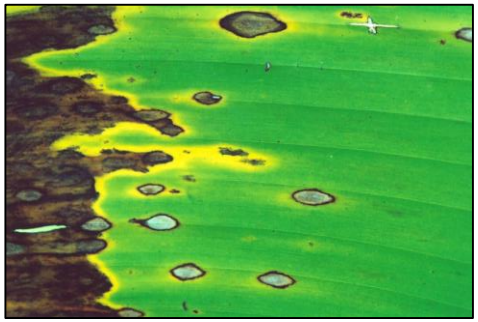
Tall plants, thick stems, high density of stems

Smaller plants, thin stems, less dense stands; leading to open water

LDWF efforts May 4th 2018: Due to stress, lots of dead cane washing up on islands in Pass-A-Loutre. This is only seen after storms.

What factors could be responsible for die-offs?

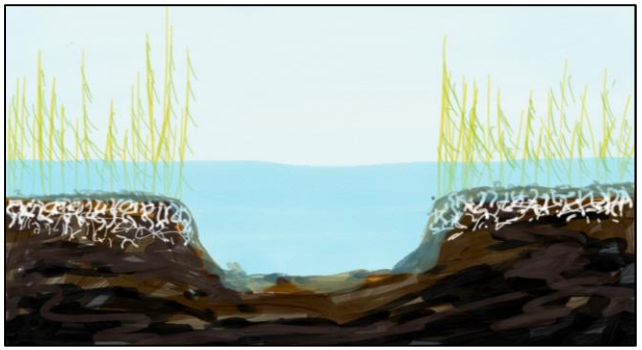
Outbreak of scale insect



Plant pathogens

Toxins in sediments

Changes in salinity



Extended high water

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Objective: Describe the current state of the project and future opportunities

- Since the last year, we have learned a lot. We are adapting our approaches as new knowledge is gained.
- Research is needed to avoid undertaking ineffective response actions. We don’t want to waste your money.
- We are identifying response actions based on research findings as they become available. Sanitation.

Timeline of the events

- Earlier than 2015: Roseau under some stress.
- September 2016: Dying plants detected—scale found.
- March 2017: Scale identified by USDA scientist.
- June 2017: Roseau cane die-off team formed, field surveys began.
- Fall 2017: $300,000 in funds received.
  - $50,000 CPRA; $50,000 LA Ag&F; $100,000 LDWF; $100,000 CWPPRA.
- October 2017: LA-39 – funds secured for revegetation trial.
- April 2018: $425,000 in Federal funds secured.

How the initial funding is being used?

1. Education and outreach

- Initiated: April 2017
- Website, Distribution (public survey), Educational materials, Presentations by team, Webinars.
- Upcoming “State of the Coast”
- How this helps? Facilitate communication with stakeholders

Effort led by Madeline Gill, Ian Knight, Rodrigo Diaz

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How the initial funding is being used?

2. Insecticide efficacy trials

- Initiated: Fall 2017
- Challenges of foliar applications
- Evaluating application methods, planned greenhouse experiments, ongoing field studies conducted in terrestrial Roseau cane.
- Anticipated initial results: Summer 2018 **(Preliminary)**
- How this helps? Deliver control option for suitable sites

Effort led by Blake Wilson, Ian Knight

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How the initial funding is being used?

3. Role of salinity and scales on plant stress

- Initiated: May 2018
- Open field experiment, two levels of salinity and scales
- Anticipated initial results: Fall 2018
- How this helps? Separate the importance of stressors on cane health.

Effort led by Ian Knight and Jim Cronin

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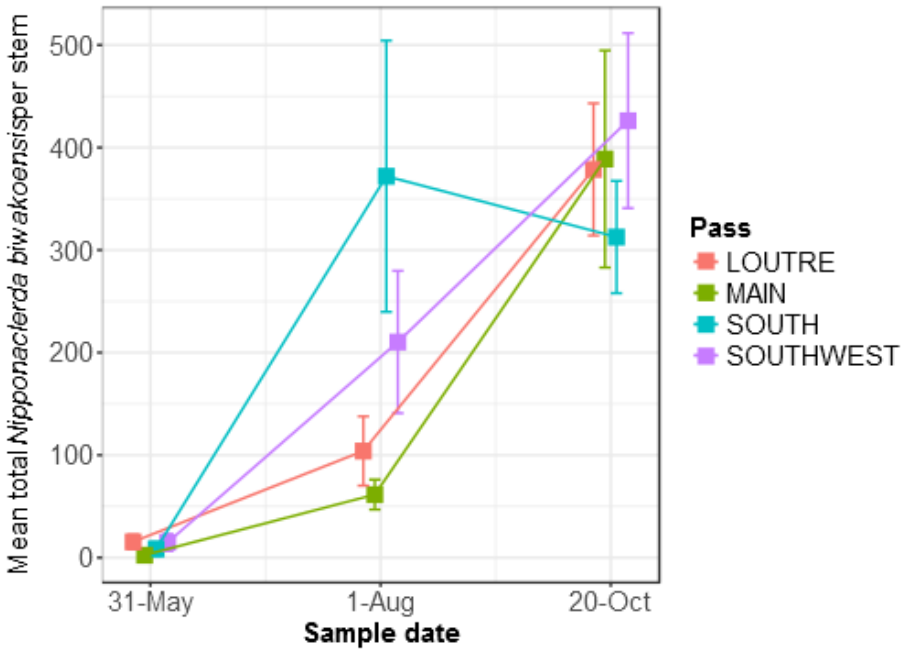
How the initial funding is being used?

4. Field surveys on scale and plant responses



- Initiated: Winter 2017
- Intensive survey in Plaquemines
- Monitor sites every 2-3 months
- Less intense survey Coastwide
- Anticipated initial results: Spring 2018
- How this helps? Timing of monitoring, levels of natural control.

Effort led by Ian Knight, Jim Cronin, Andy Nyman, Rodrigo Diaz

How the initial funding is being used?

5. Scale host range and Roseau varietal resistance

- Initiated: Fall 2017
- Scale survival on crop grasses and wetland plants
- Greenhouse experiments in 2017 and 2018
- Anticipated initial results: Summer 2018
- How this helps? Selection of plants for restoration, risks to crop grasses.

Effort led by Leslie Aviles, Jim Cronin, Rodrigo Diaz

LA-39: Marsh restoration in Lower Plaquemines

Effort led by Andy Nyman, Jim Cronin, Todd Baker, Quin Kinler

- Funded in CWPPRA
- Transplantation of 3 roseau varieties, *Schoenoplectus californicus*, *Zizaniopsis miliacea*, *Spartina patens*, *S. alterniflora*
- 12 sites: different water depth and plant recovery levels.
- Status: Contract awarded, 30 May collection of rhizomes, Fall planting
- How this helps? Species suitable for restoration, speed of recovery.

How the federal funds will be used?

Toxins in sediments

Plant pathogens

Genetics of Roseau

Genetics of scale

- $425,000 in Omnibus Bill allocated for research
- Administered by USDA-APHIS
- Soil: Characterization of chemical and physical properties. Field surveys and greenhouse trials.
- Pathogens: Identification of pathogens from cane tissues.
- Roseau and scale genetics: what species we have and how related they are.
- How this helps? Adapt our management plan.

Effort led by Jim Cronin, Rodrigo Valverde, Laura Meyerson and Scott Schneider

If more funds become available, additional projects to develop a management plan

Phase 1: Current work

Phase 2: Revegetation trails funded by CWPPRA

Phase 3: Federal Funded Projects

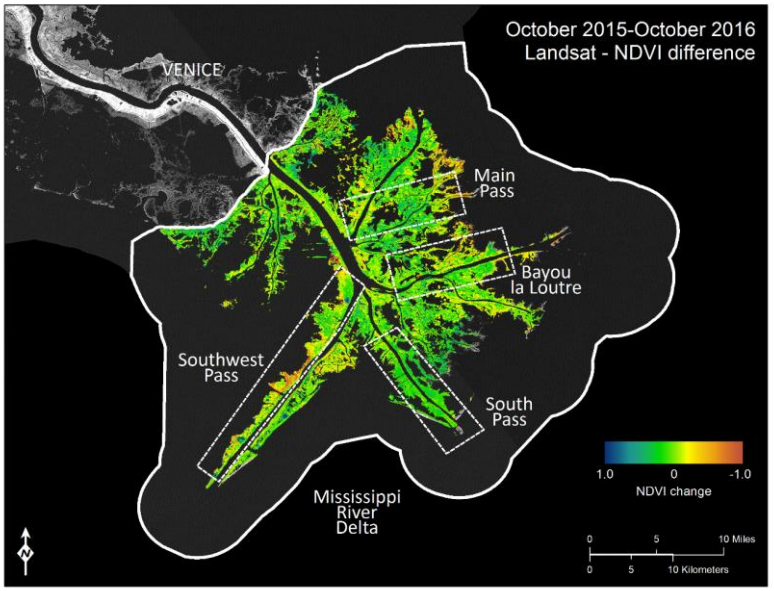
Phase 4: Remote sensing and modeling of impact

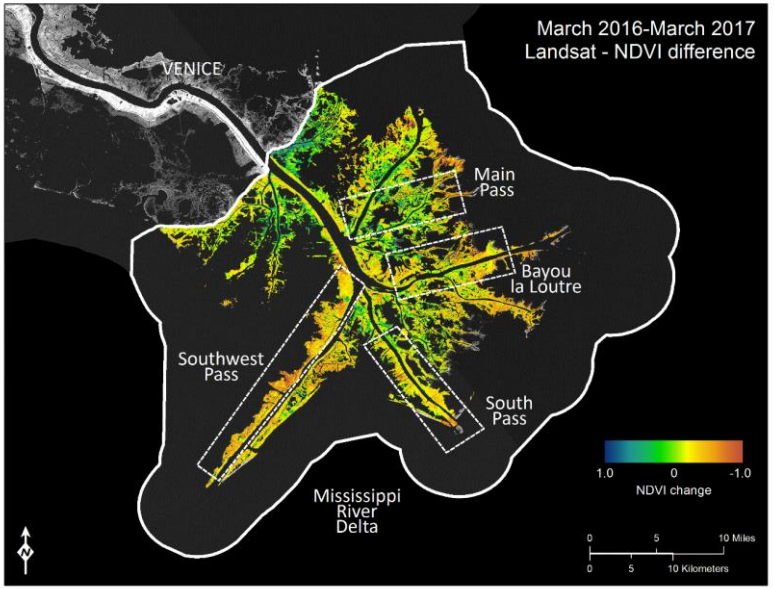
Phase 5: On-site sanitation efforts

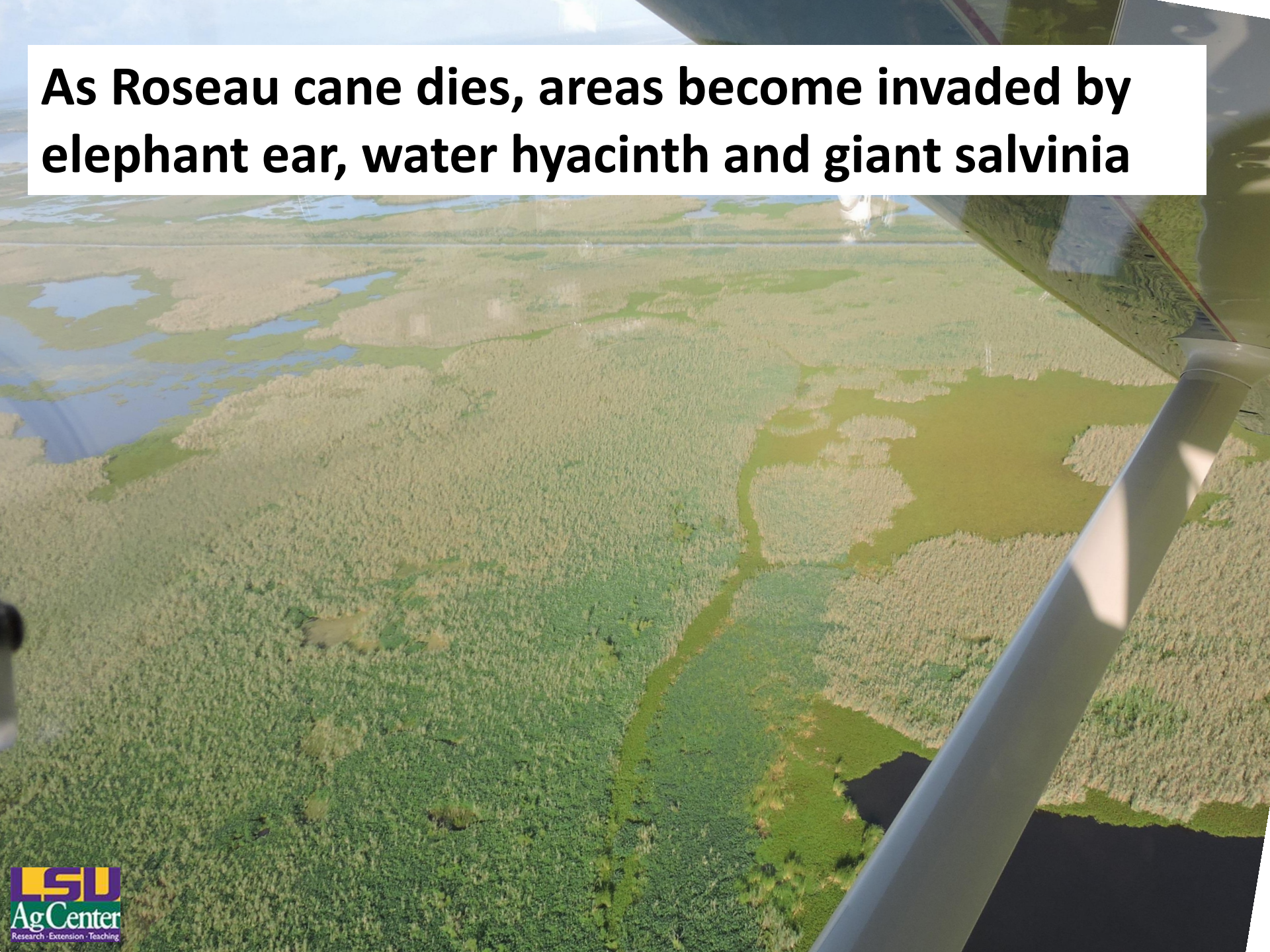
Gap 1: Where is the problem and how fast Roseau is dying?

- Importance of coastwide remote sensing effort
- Historical satellite images
- Two levels of resolution: 30 m vs 2 cm
- How this helps? Adapt our management actions based on local conditions

Led by Andy Nyman, R. F. Keim and Maurice Wolcott





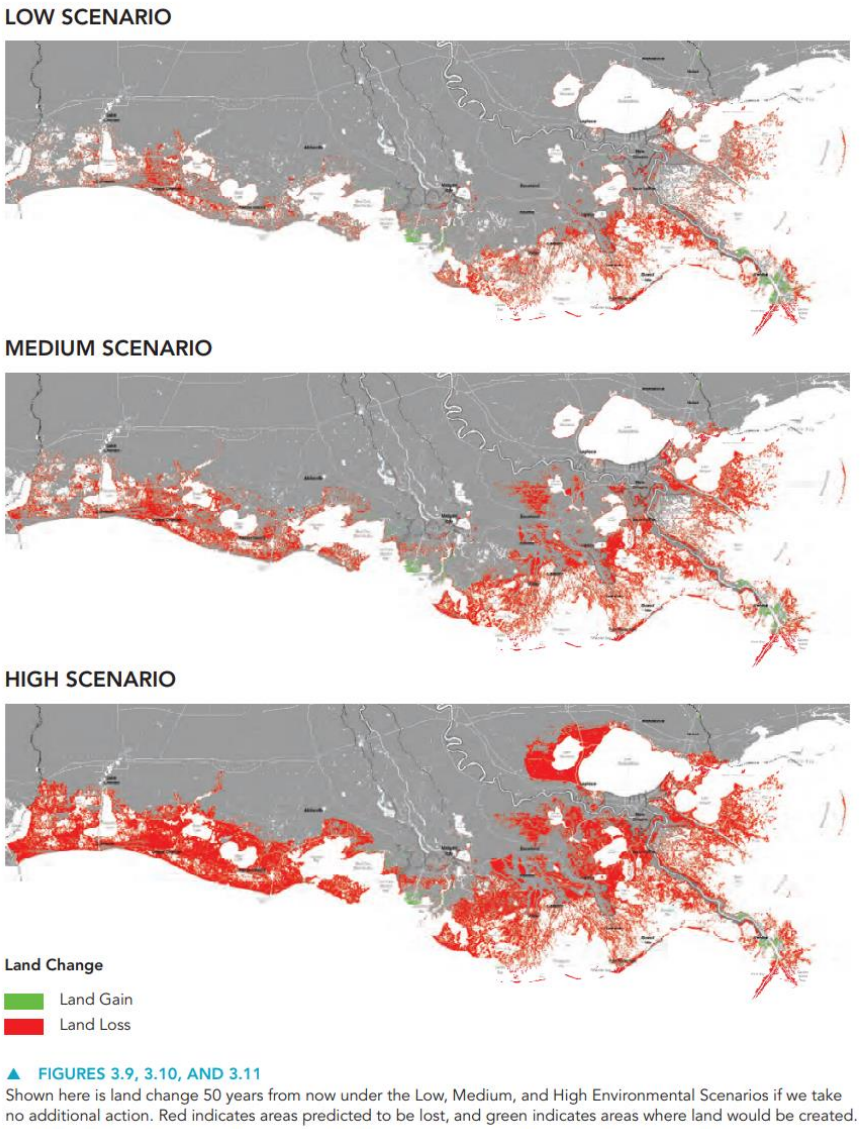

As Roseau cane dies, areas become invaded by elephant ear, water hyacinth and giant salvinia

LDWF efforts

Gap 2: What are the implications of die-offs?

- Coastal Master Plan developed without Roseau cane die-offs
- Modeling effort
- “Proposal to Simulate Effects of Various Degrees of Roseau Cane Dieback on Navigation Dredging in the Bird’s Foot Delta”

Effort led by Andy Nyman and Ehab Meselhe



▲ FIGURES 3.9, 3.10, AND 3.11
Shown here is land change 50 years from now under the Low, Medium, and High Environmental Scenarios if we take no additional action. Red indicates areas predicted to be lost, and green indicates areas where land would be created.

What we can do now?

- Evaluation of sanitation approaches
  - Goal: Develop tools for a manager's toolbox
  - Mowing: Depends on water depth
  - Burning: Time in late Fall or Winter
  - Replacement with native plants: Species adapted to local conditions

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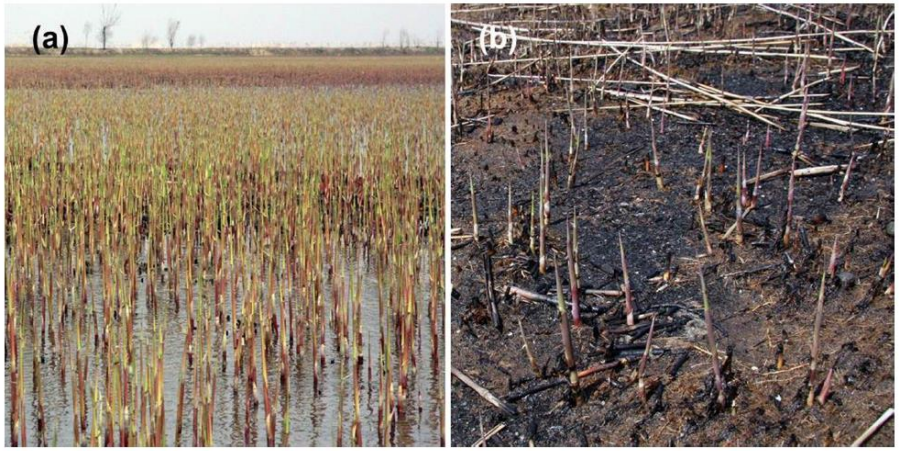
What we can do now?

- How? Demonstration sites
- Shallower-water demonstration sites outside birdsfoot delta
  - Cutting/mowing: Depends on water depth and soil strength
  - Burning: Next burn window opens in fall 2018
- In the birdsfoot delta
  - Transplantation: Scheduled for fall



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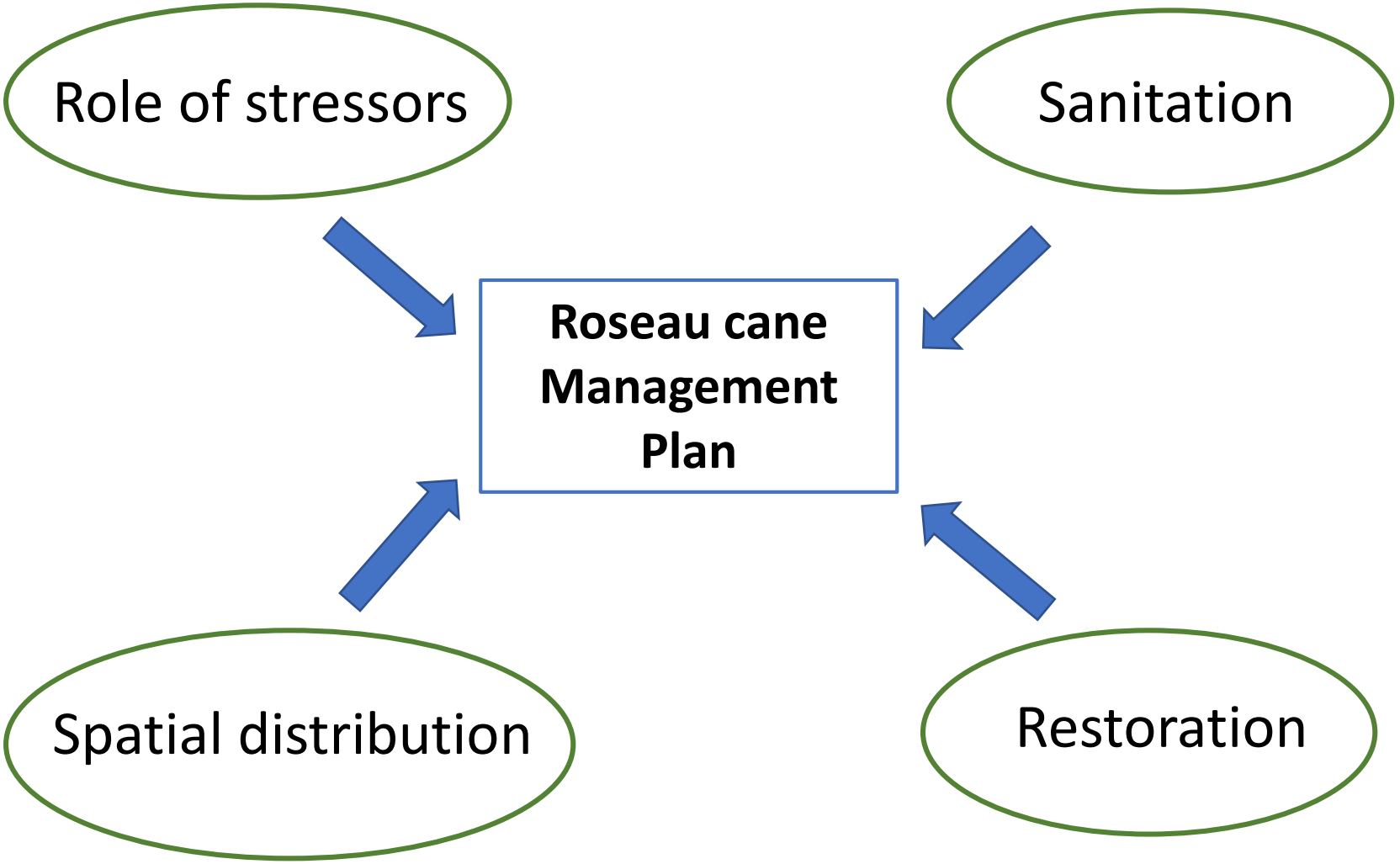
How we will use this information?



We thank agencies and people who are contributing to this effort

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Partners and Logistical Support

Mr. Earl Armstrong

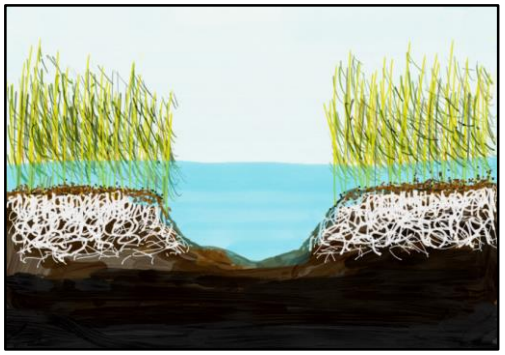
Summary

Developing a management plan for Roseau cane must be a multidisciplinary effort

Die-off is probably the result of multiple stresses

We need to know spatial distribution and implications

Sanitation should be evaluated



As funding becomes available, new lines of research will be explored

Thanks for your attention!