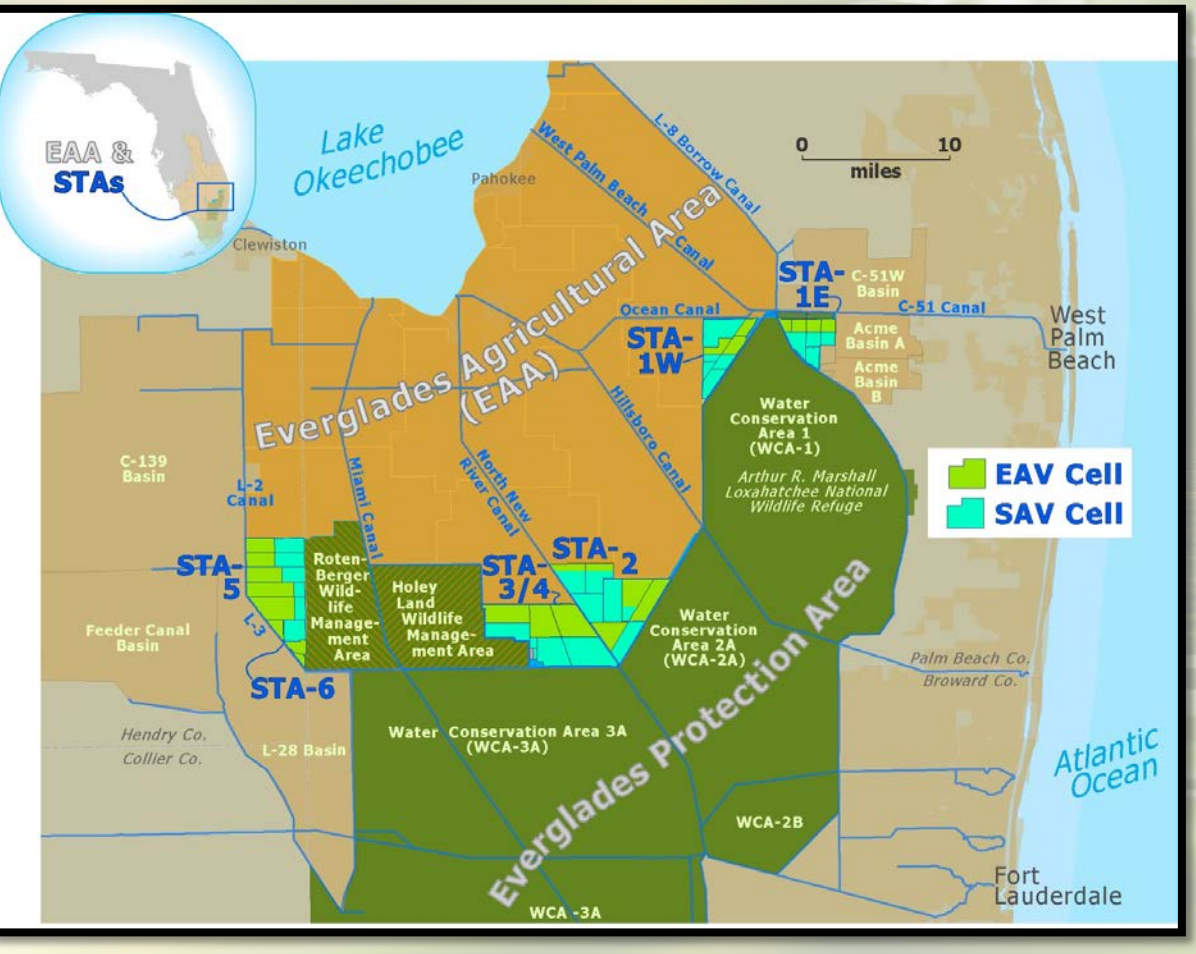
Quarterly Communications Meeting on the Long-Term Plan for Achieving Water Quality Goals for the Everglades Protection Area Tributary Basins

2013 Everglades Snail Kite Nesting

Brian Garrett
O&M Wildlife Coordinator
South Florida Water Management District

Snail Kite Nesting in the STAs



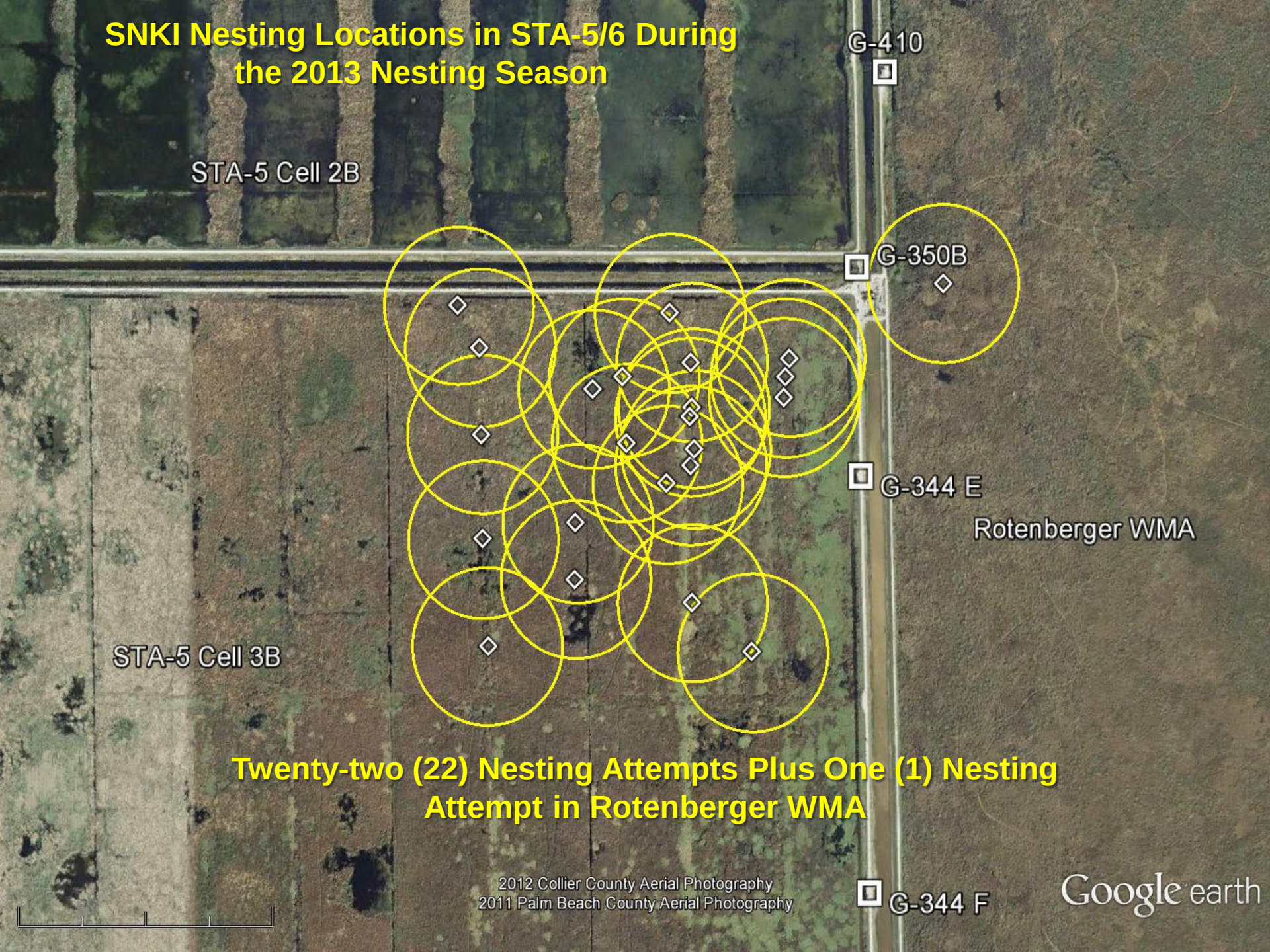
- **2010 - 29 Everglade snail kite nests established in STA-5/6, Cells 1A and 2A**
- **2011 - one failed kite nest observed in STA-3/4, Cell 1B**
- **2012 - one successful kite nesting in STA-5/6, Cell 2A**

2013 Snail Kite Nesting in STAs

- This season snail kites were observed foraging within STA-1E, STA-3/4, and STA-5/6.
- There were 45 nesting attempts observed within STA-1E and STA-5/6 during 2013. No nesting was observed in STA-3/4.
- Nesting was first confirmed on January 22nd in STA-1E and nesting in the STAs was considered complete on November 7th.

2013 Snail Kite Nesting in STAs

In STA-5/6 nesting began in early-May and was complete as of October 14th


SNKI Nesting Locations in STA-5/6 During the 2013 Nesting Season
G-410
STA-5 Cell 2B
G-350B
G-344 E
Rotenberger WMA
STA-5 Cell 3B
Twenty-two (22) Nesting Attempts Plus One (1) Nesting Attempt in Rotenberger WMA
2012 Collier County Aerial Photography
2011 Palm Beach County Aerial Photography
G-344 F
Google earth

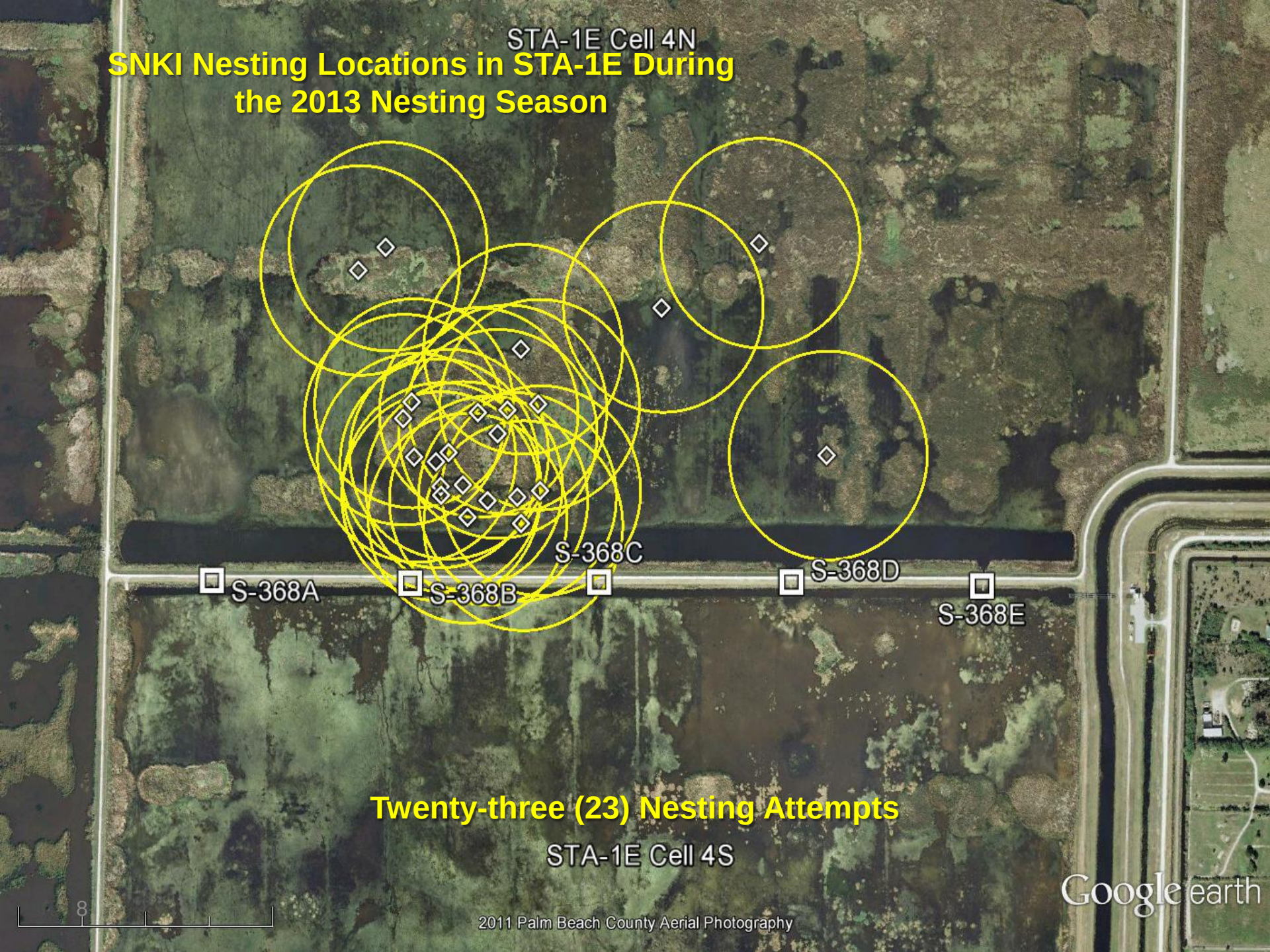
2013 Snail Kite Nesting in STAs

Conditions conducive to nesting in STA-5/6?

- **Cell 3B has been operational for a few years allowing snail population to increase**
- **Majority of kites nested in defoliated willow. This willow had been treated several months before nesting began**
- **Proximity to STA-5/6 Cell 2B - one of the older STA cells and likely to have plenty of available prey**

2013 Snail Kite Nesting in STAs

The Rotenberger WMA Snail Kite Nest was in a Cabbage Palm Tree – They Must Have Learned from the Local Crested Caracaras


STA-1E Cell 4N
SNKI Nesting Locations in STA-1E During the 2013 Nesting Season
S-368A
S-368B
S-368C
S-368D
S-368E
Twenty-three (23) Nesting Attempts
STA-1E Cell 4S
8
2011 Palm Beach County Aerial Photography
Google earth

2013 Snail Kite Nesting in STAs

Conditions conducive to snail kite nesting in STA-1E?

- **Snail kites have been observed around this cell for several years, but no nesting had been observed until this year**
- **The population of exotic apple snails in STA-1E Cell 4S was, and still is, extremely high**

Exotic Apple Snails in the STAs

- The snails and lowered water levels have attracted even more foraging by snail kites, limpkins, and other birds

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STA 1E – Exotic Apple Snail Issue

Larry Gerry
Principal Environmental Scientist
Office of Everglades Policy and Coordination

Background

- In July 2013 a decline in outflow water quality was documented for cell 4S in STA – 1 East
- The proximate cause was the almost complete loss of SAV due to a population explosion of exotic apple snails (*Pomacea maculata*)
- Efforts to identify a possible cause included vegetation type, water quality, water level stabilization, and lack of fish and macroinvertebrate predators

Exotic Apple Snails STA-1E

Apple Snail egg masses on Cattails

Apple Snail egg masses on Cattails in STA-1E

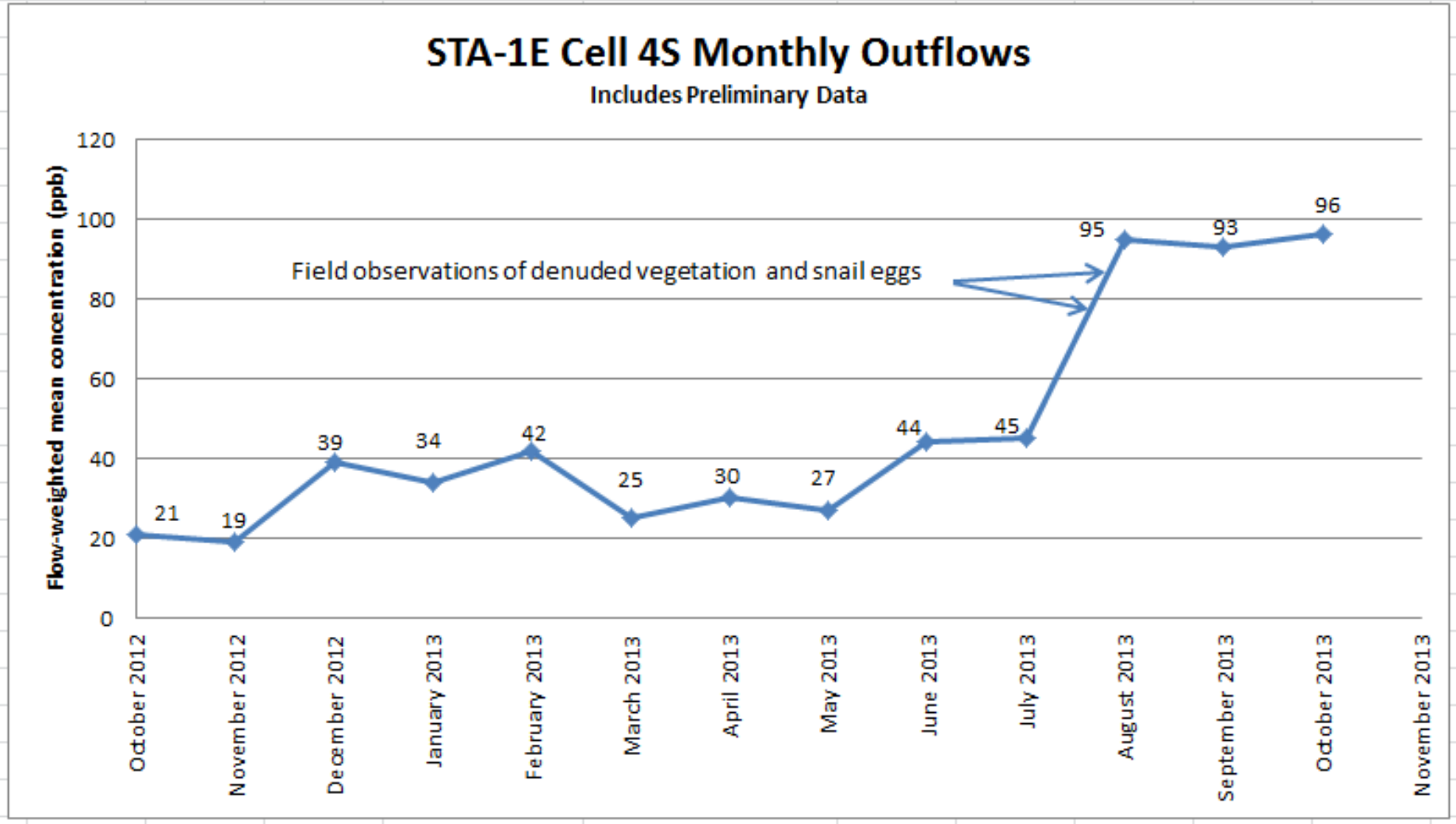
Exotic Apple Snails STA-1E

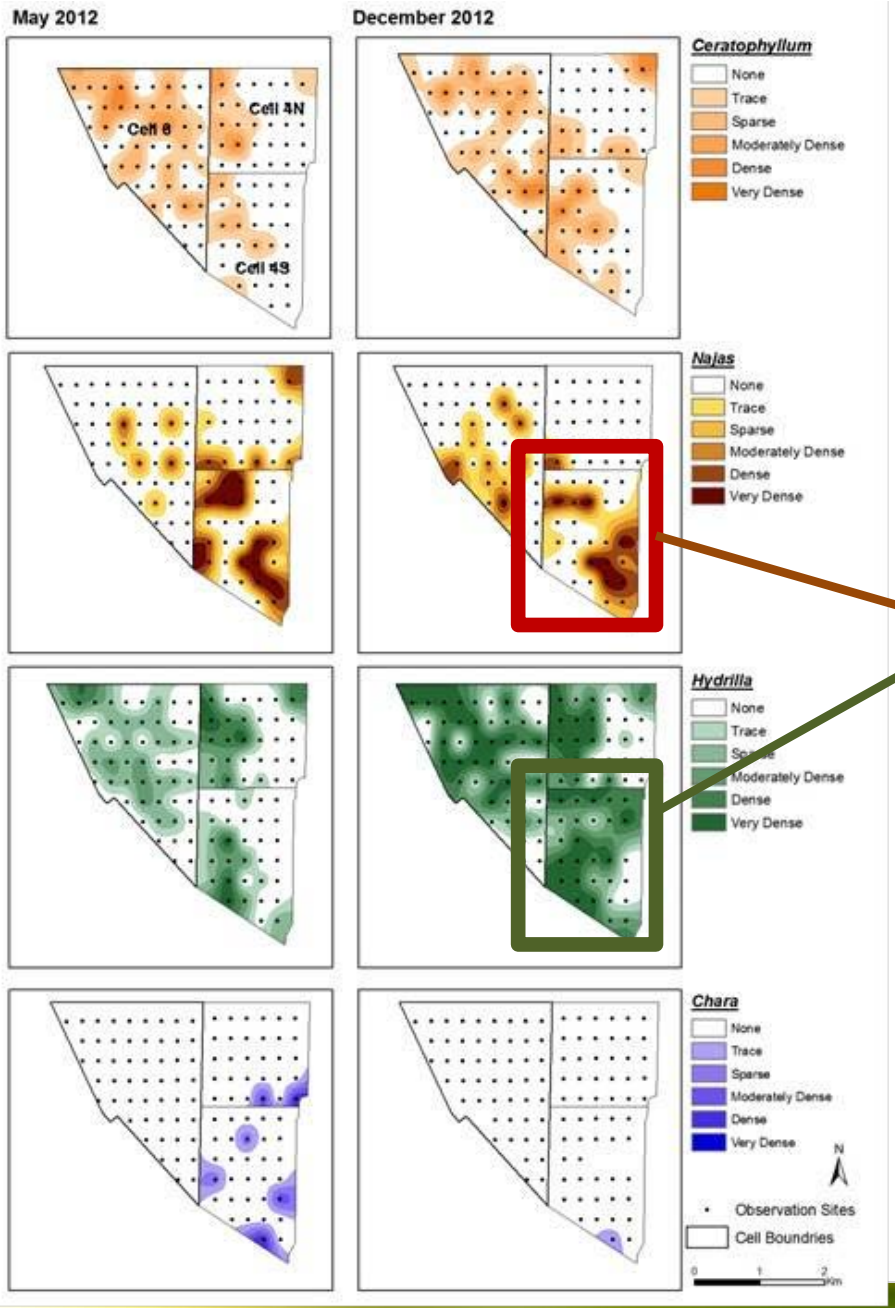
Defoliated Submerged Aquatic Vegetation

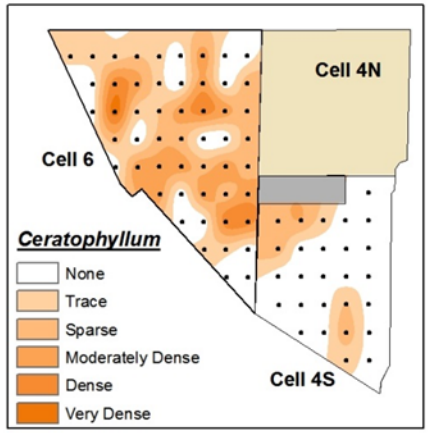
Healthy Submerged Aquatic Vegetation

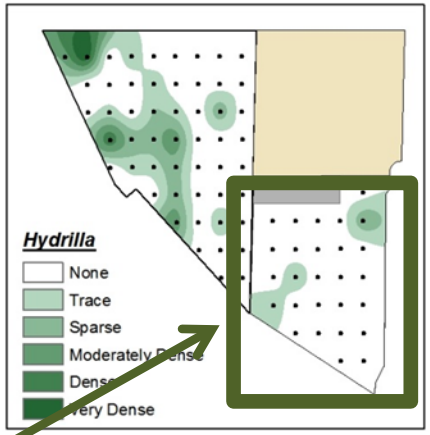
Dense clutches of exotic apple snail eggs located in STA 1 E (cells 4s, 6)

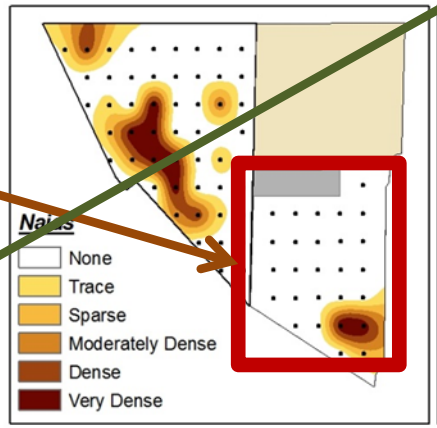
STA 1E, Cell 4S Outflow Data

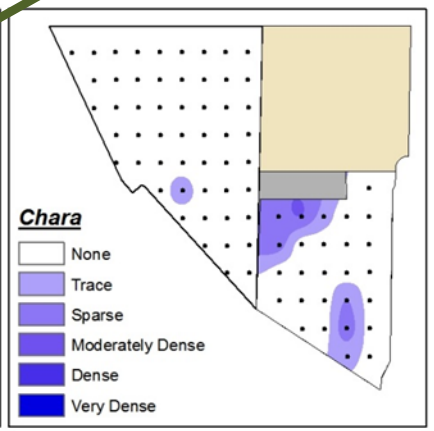


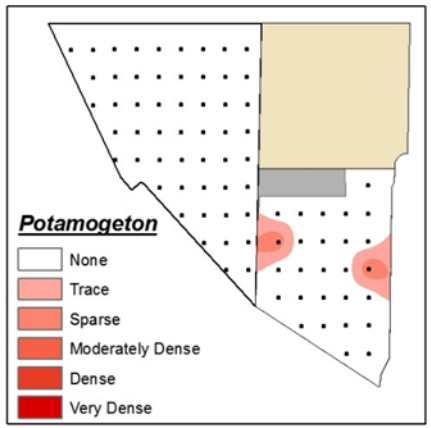


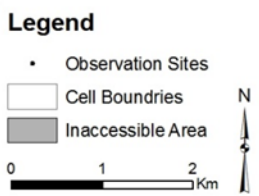






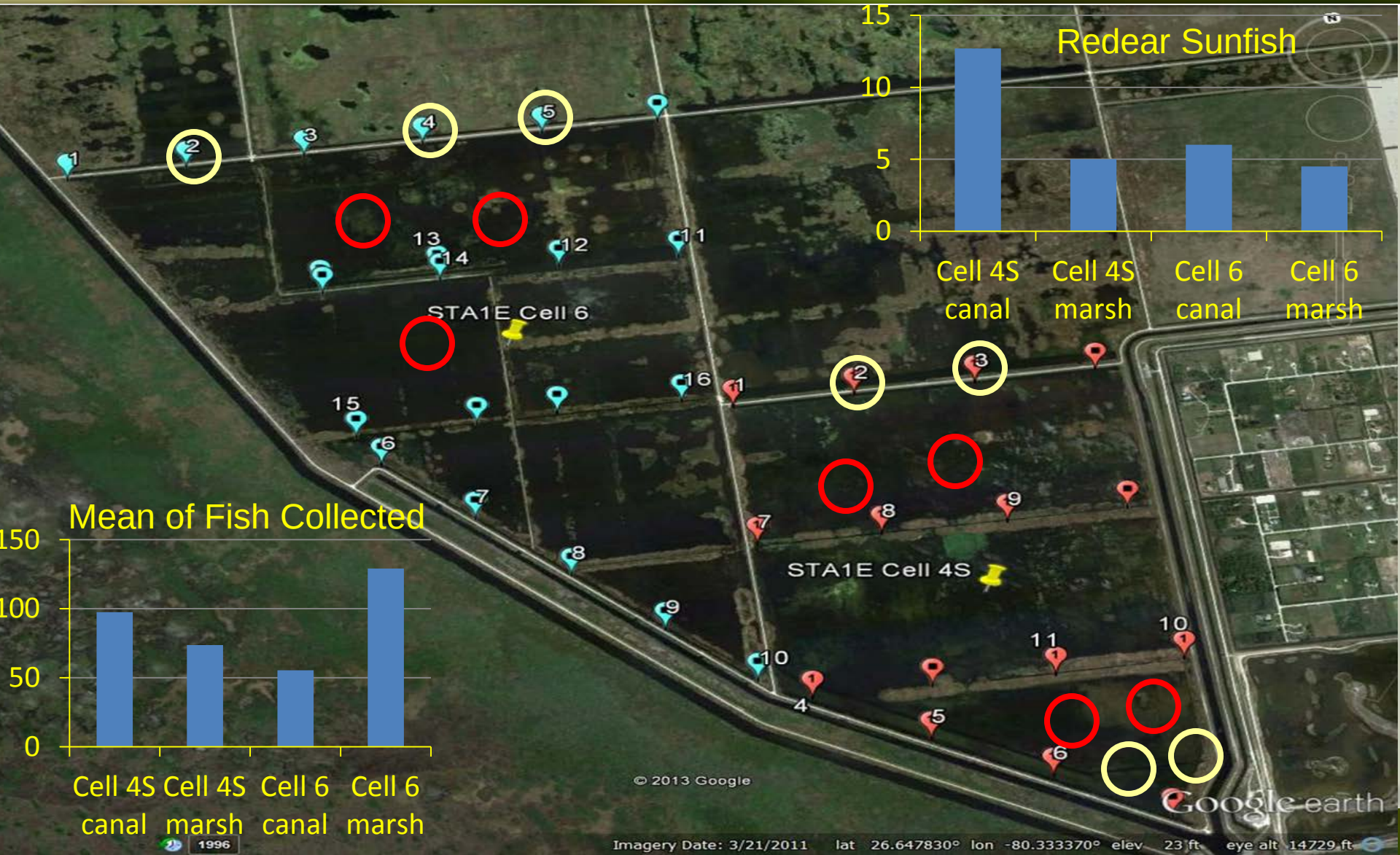




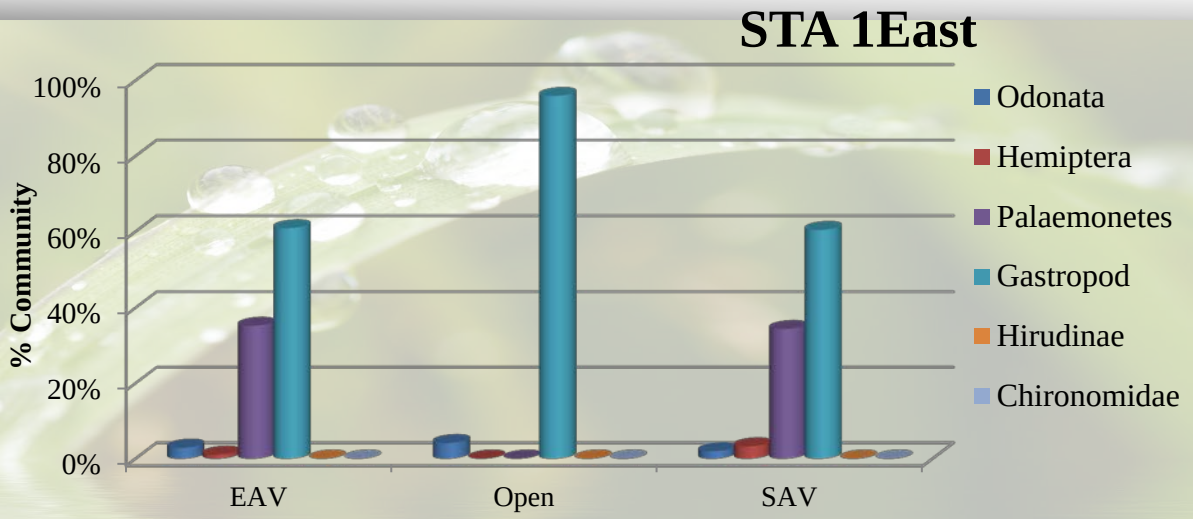


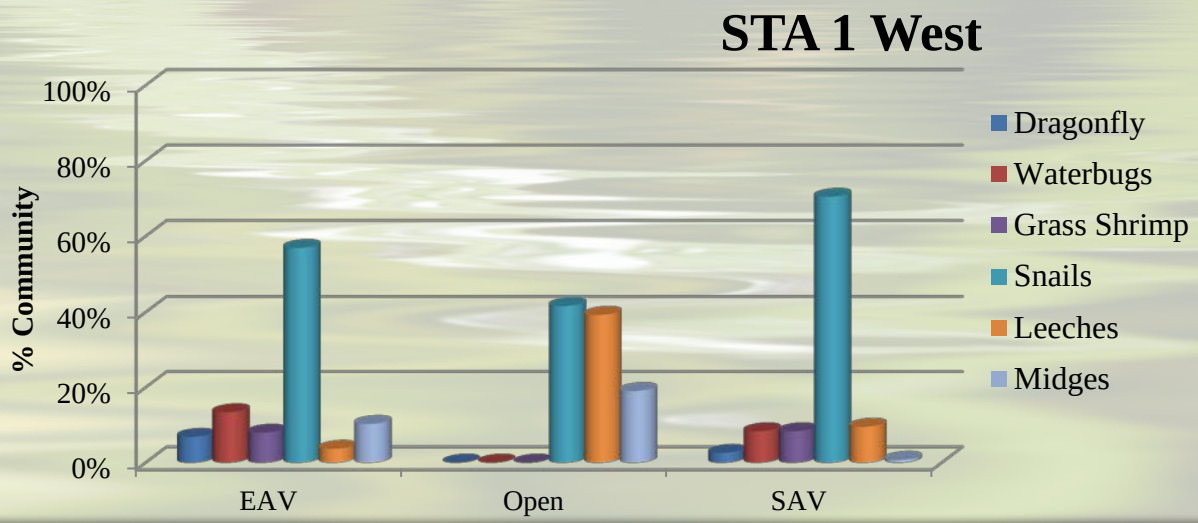
September 2013

Fish Sampling 9/25/13

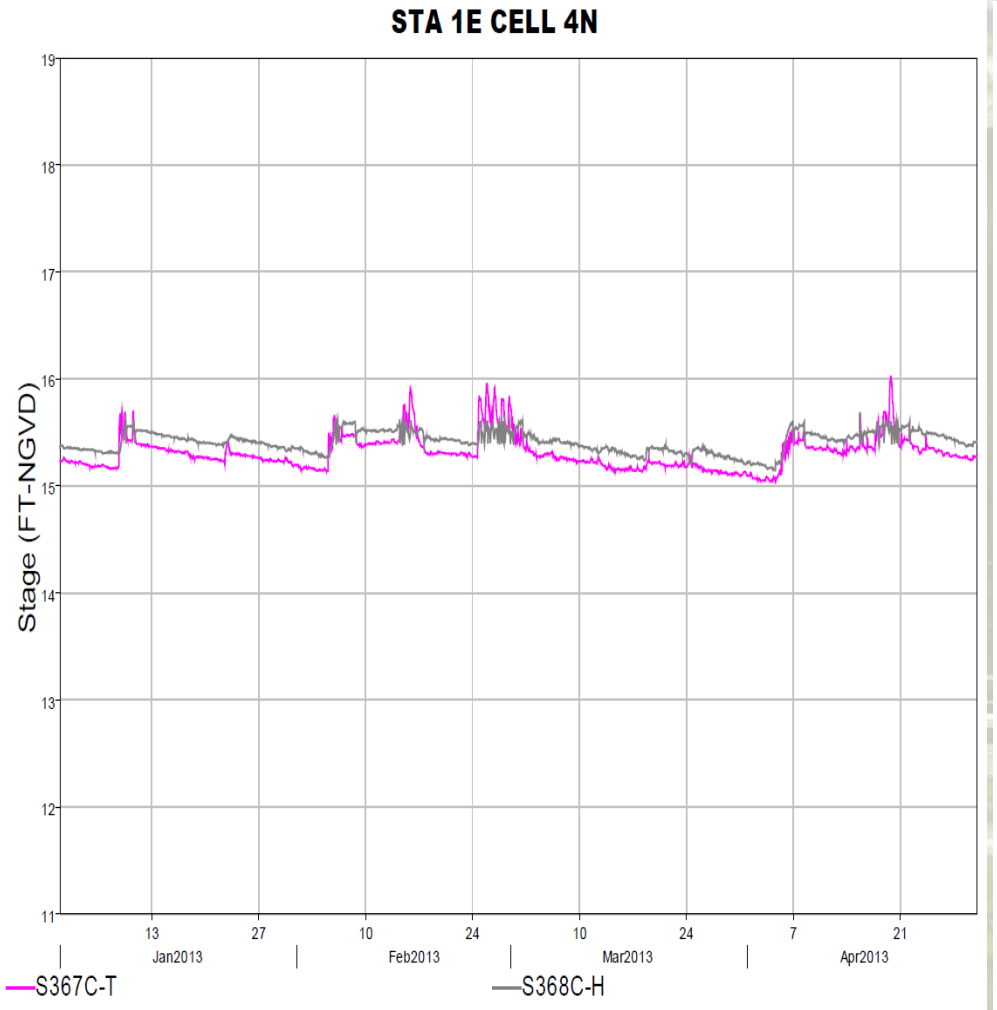


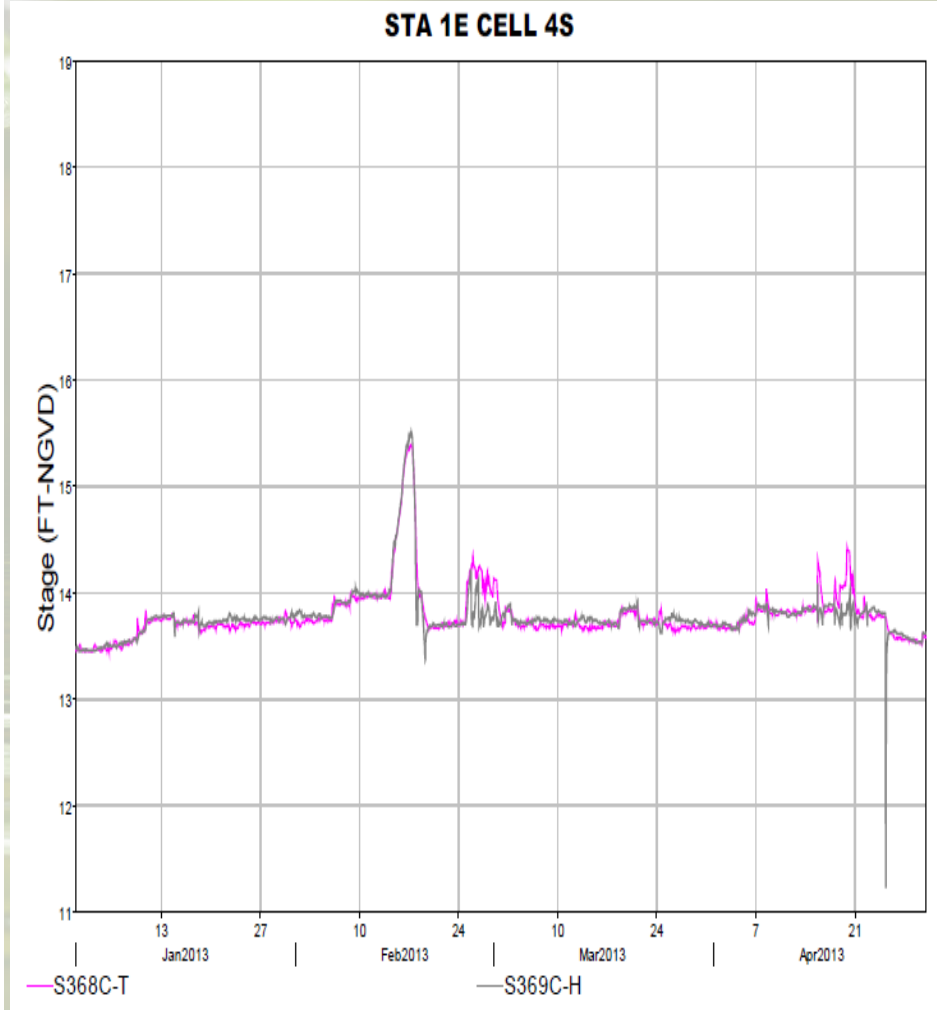
Macroinvertebrate Community





Stage Fluctuations





Summary

- No evidence of hydrologic or water quality factors as cause of snail population
- Hydrilla and southern naiad were most affected by snail grazing followed by chara
- No significant differences between fish species or populations although numbers of fish appeared to be depressed in cell 4S marsh
- Although predatory macroinvertebrate populations (especially leeches) were depressed in cell 4S it is unclear whether these were sufficient to explain the exotics' rapid population growth

Management Actions

- Reduce water level in cell 4S to consolidate flocculate material, stimulate SAV regrowth and encourage bird predation on remaining snails
- Investigate risk of reoccurrence of exotic snail population explosion
- Investigate additional control measures such as chemical treatment, mechanical destruction or drowning of egg clutches