Changing Cape Sable seaside sparrow habitat conditions, and their implications for Everglades restoration

Jay P. Sah, Michael Ross, Pablo Ruiz, Susana Stoffella

Southeast Environmental Research Center

Working to Restore and Protect our Unique Environment

&

Jim R. Snyder
US Geological Survey
Southeast Ecological Science Center, Ochopee, FL
Cape Sable seaside sparrow sub-populations

A

B

C

D

E

F

Cape Sable seaside sparrow (Photo by David LaPuma)
Management/Restoration Activities

Hydrology

Marl Prairie Vegetation

Soil characteristics

CSSS in its habitat
Hyroperiod (days) within CSSS habitat

9-Year EDEN data
(May 1, 2000 to April 30, 2009)

Fire frequency (fire/year) within CSSS habitat
(1981-2005)
Muhlenbergia wet prairie (WP)
Schizachyrium WP
Schoenus WP
Cladium WP
Paspalum-Cladium marsh
Cladium marsh
Rhynchospora-Cladium marsh
Eleocharis-Rhynchospora marsh
Vegetation types at Census sites during 1981-2007
Vegetation inferred hydroperiod & Surface soil organic matter within Sub-population habitat
Between 2005 and 2009, vegetation change in Sub-population A is spatially differentiated responding to changes in hydrology.
Flow through the culverts and bridges on the Forty Mile bend to Monroe Station section of Tamiami Trail has increased after 1992 (Source: Kotun et al. 2009)
After 1993, water level (adjusted for elevation difference) at P34 is consistently higher than NP205
Differences in water level between NP205 & P34 are relatively high in dry season when S12s get closed to maintain NP205 6ft.
Change in Hydroperiod (2005 to 2009) & CSSS Counts

Legend
Change in Hydroperiod (days)
- <30
- 30 - 20
- 20 - 10
- 10 - 5
- 5 - 5
- 5 - 10
- 10 - 20
- 20 - 30
- >30

Kilometers
Vegetation in eastern populations, such as Sub-population-E has become wetter in response to changes in water management activities.
2 weeks after fire

4 years after fire

Census site mahog-011 (B-11-03) in Pop-B

15 months after fire

18 months after fire
Relationship between post-fire hydrologic conditions and vegetation recovery at sites burned in Aug, 2005.
Conclusions

- Vegetation in CSSS habitat tracks the spatial variation in changes in hydrologic conditions.

- In western part of sub-population A, change toward wetter habitat conditions has continued in recent years, and is probably caused by increased run-off from upstream basin and flow across the FMB-Monroe section of the Tamiami Trail.

- Hydrologic conditions immediately after fire affect the course of post-fire vegetation recovery.
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