Further Incites into the Effectiveness of the C-111 Spreader Canal Western Phase Project

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C-111 Spreader Canal Western Project
Goals of the C-111SCWP

1. Increase the Hydroperiod

2. Increase Freshwater Conditions

3. Increase Abundance of SAV

4. Increase Abundance of Freshwater Fish
1. Increase the Hydroperiod
Goals of the C-111SCWP

2. Increase freshwater conditions

3. Increase abundance of SAV
   - Plant biomass is negatively correlated with variable salinities
     - Montague and Ley, 1993
     - Frezza and Lorenz, 2003

4. Increase the abundance of freshwater fish
   - Freshwater fish communities are more diverse, have higher density and biomass levels
     - Lorenz and Serafy, 2006
1. Increase the Hydroperiod
Annual Mean Water Level at Key West Harbor 2000-01 to 2015-16

\[ y = 0.0079e^{0.1725x} \]

\[ R^2 = 0.8997 \]
2. Increase Freshwater Conditions
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- The 4 sites directly effected by C-111SCWP show high water levels; low salinities
- Sites outside of Taylor Slough show high water levels; high salinities
2. Increase Freshwater Conditions

- The 4 sites affected by C-111SCWP show high water levels; low salinities.
- Sites outside of Taylor Slough show high water levels; high salinities.
2. Increase Freshwater Conditions
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4. Increase Abundance of Freshwater Fish
The Seasonal Concentration of Fish in the Mangrove Creeks

Based on: Lorenz (2000)
Taylor River

- Water Depth
- Fish Density
- Fish Biomass

Water Level (cm)

Fish Density (# of fish/m²)

Fish Biomass (g/m²)

Jun-08  Jun-09  Jun-10  Jun-11  Jun-12  Jun-13  Jun-14  Jun-15
Fish Biomass

Fish Density

Total Fish Density and Biomass vs. Mayan Cichlid Density and Biomass

Fish Density

Fish Biomass
Goals of the C-111SCWP

1. Increase the Hydroperiod
   ▪ Above average water levels greatly increased the length of the hydroperiod most likely due to SLR.

2. Increase Freshwater Conditions
   ▪ Currently C-111SCWP is a rainfall driven system, in years with low rainfall it doesn’t function properly to create the desired freshwater conditions.

4. Increase Abundance of Freshwater Fish
   ▪ Higher percentages of freshwater fish species only occur when freshwater conditions are maintained for long periods of time.
   ▪ To create more diversity and higher density levels, a normal wet season/ dry season cycle must occur.