The effects of CERP, increasing Freshwater flows in to the oligo-haline and poly-haline areas of Marshes of North East Florida Bay

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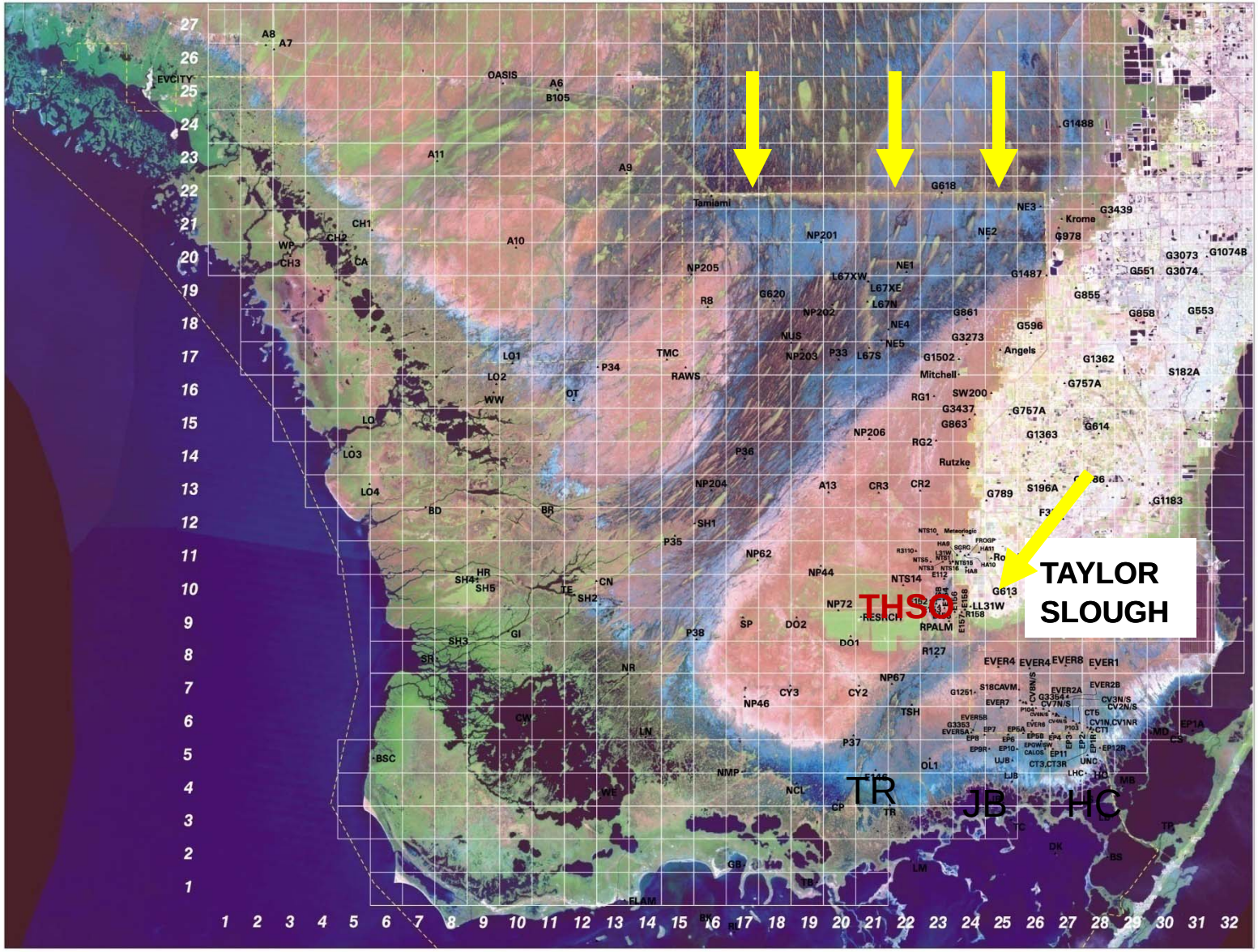
Stage and Flow Monitoring Stations

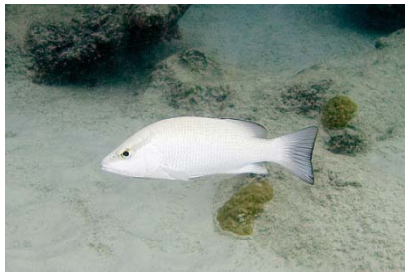


Significant prey species

- Most of the thrust of the SE performance measures has been related to maintain a stable salinity regime in NE FL bay
- In developing these salinity regimes, there is a connectivity dividend that is realized .
- This is improvement of the upstream areas and marshes .
- This slide show will discuss these and CERP implementations to get this discussion going.

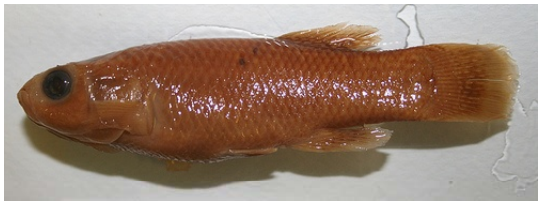
Major Mobile taxa Common to both NE FL Bay and Taylor Slough

Gambusia



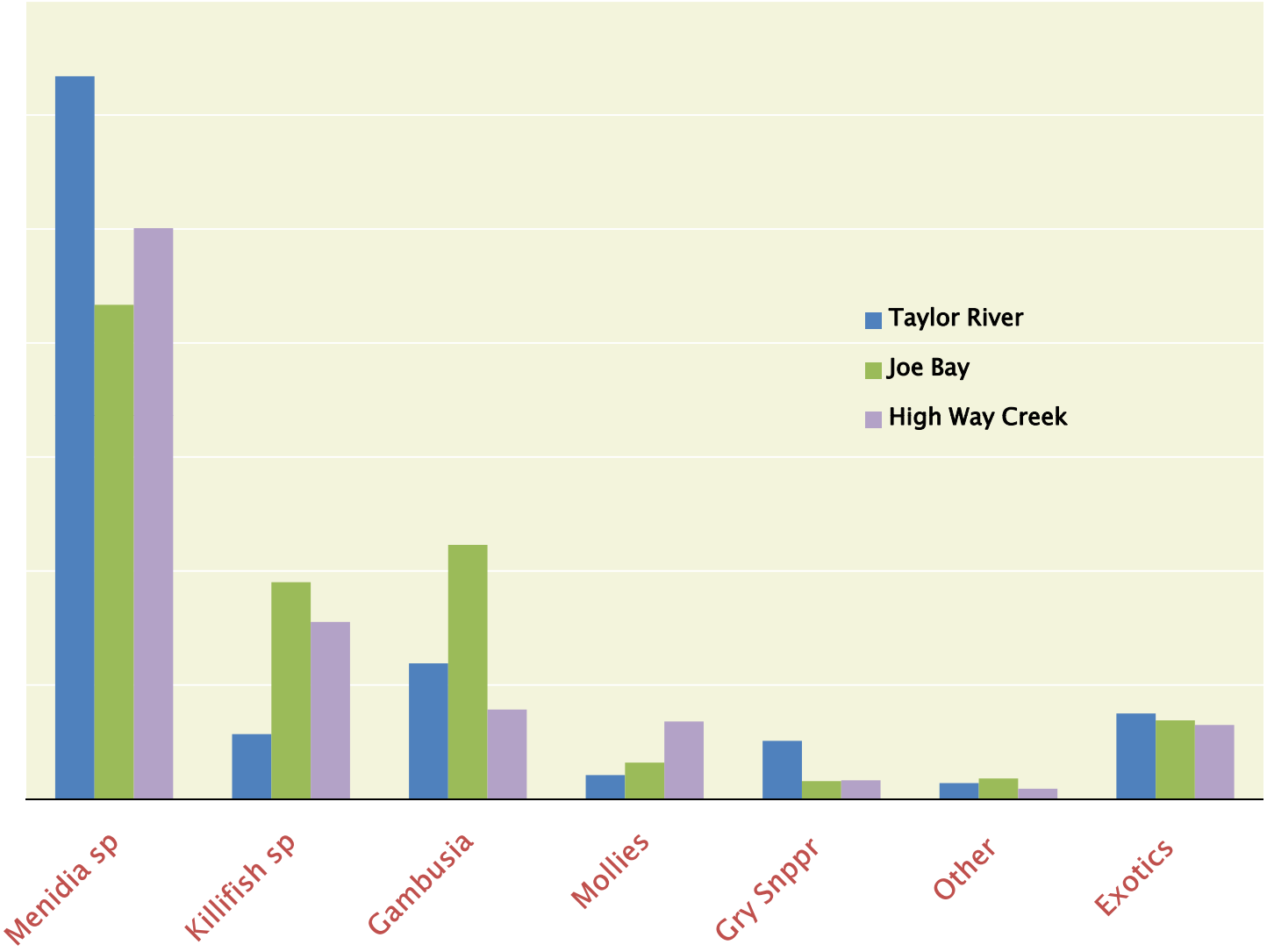
Gray Snapper

Sheeps head minnow

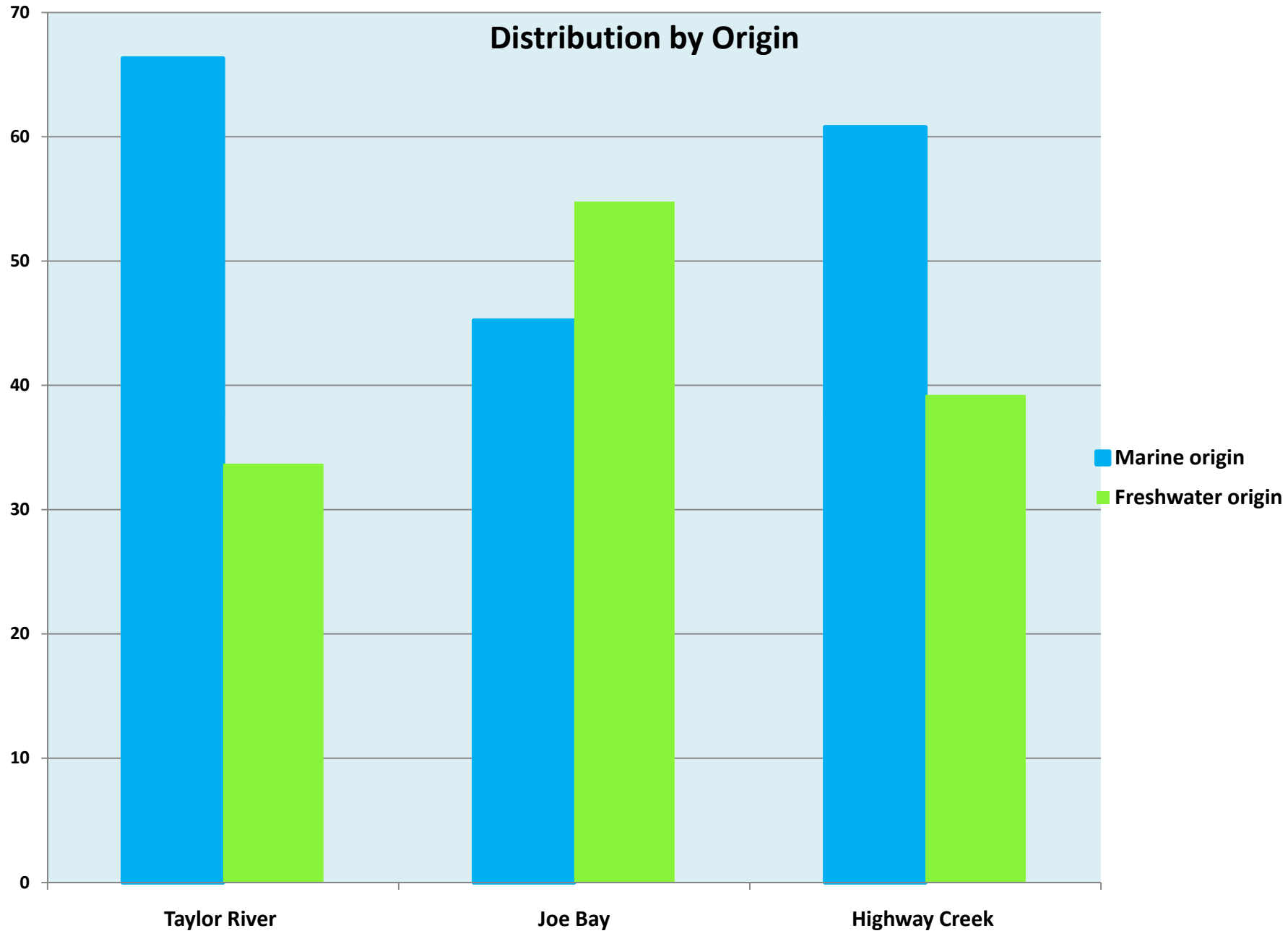


Lets look at the numbers…

Distribution of Major Fish Species in North East Florida Bay



Data source : Faunce et al " Wetlands Ecology and Management 13 p 377-394 (2004)


Distribution by Origin
70
60
50
40
30
20
10
0
Taylor River
Joe Bay
Highway Creek
Marine origin
Freshwater origin

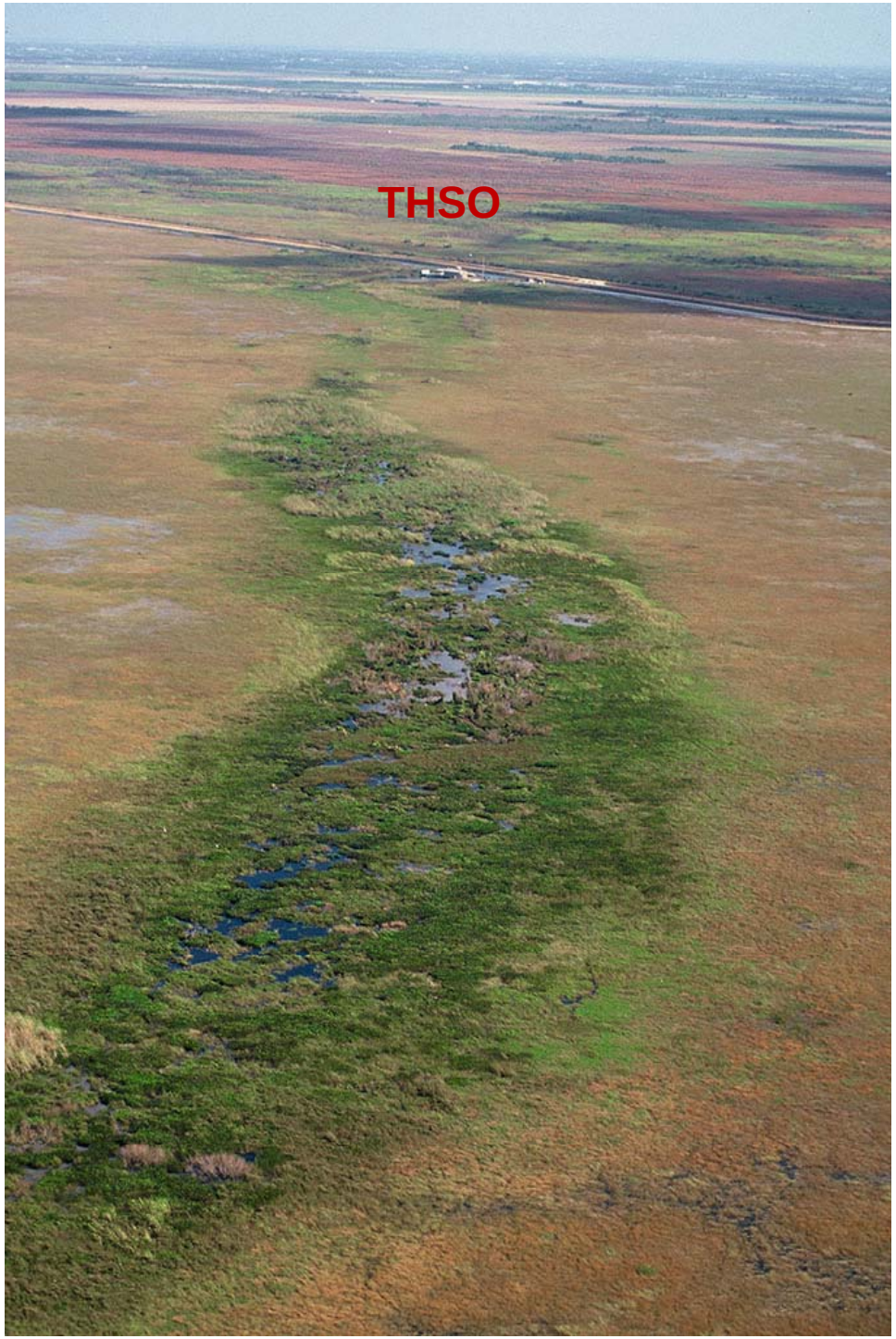
Conclusion from Southern Coastal 2009 Systems Status Report

Lastly, ANOVA was performed on fish biomass by the sample classification. Lorenz and Serafy (2006) found the samples classified as freshwater and transitional had significantly greater biomass than the other categories. They concluded lower salinity leads to a fish community of greater biomass in these habitats. An ANOVA of fish biomass by sample classification for the three reporting years of our study supports their finding that samples with freshwater and low salinity species tend to have greater biomass (**Figure 20**). We conclude increased freshwater flow to the ecotone reduces salinity and results in a fish community of greater biomass, thereby supporting the spoonbill conceptual model (**Figure 2**). Increased flow also leads to higher water levels and longer hydroperiods, thereby supporting the effect of water level on the fish abundance component of the conceptual model.

Lets look at where the freshwater comes from …
Taylor Slough

There's the THSO gauged station for SFWMM

This is where all the water is supplied by CERP



CERP Effects on Taylor Slough

- CERP Provides for Updated Modeling of Everglades

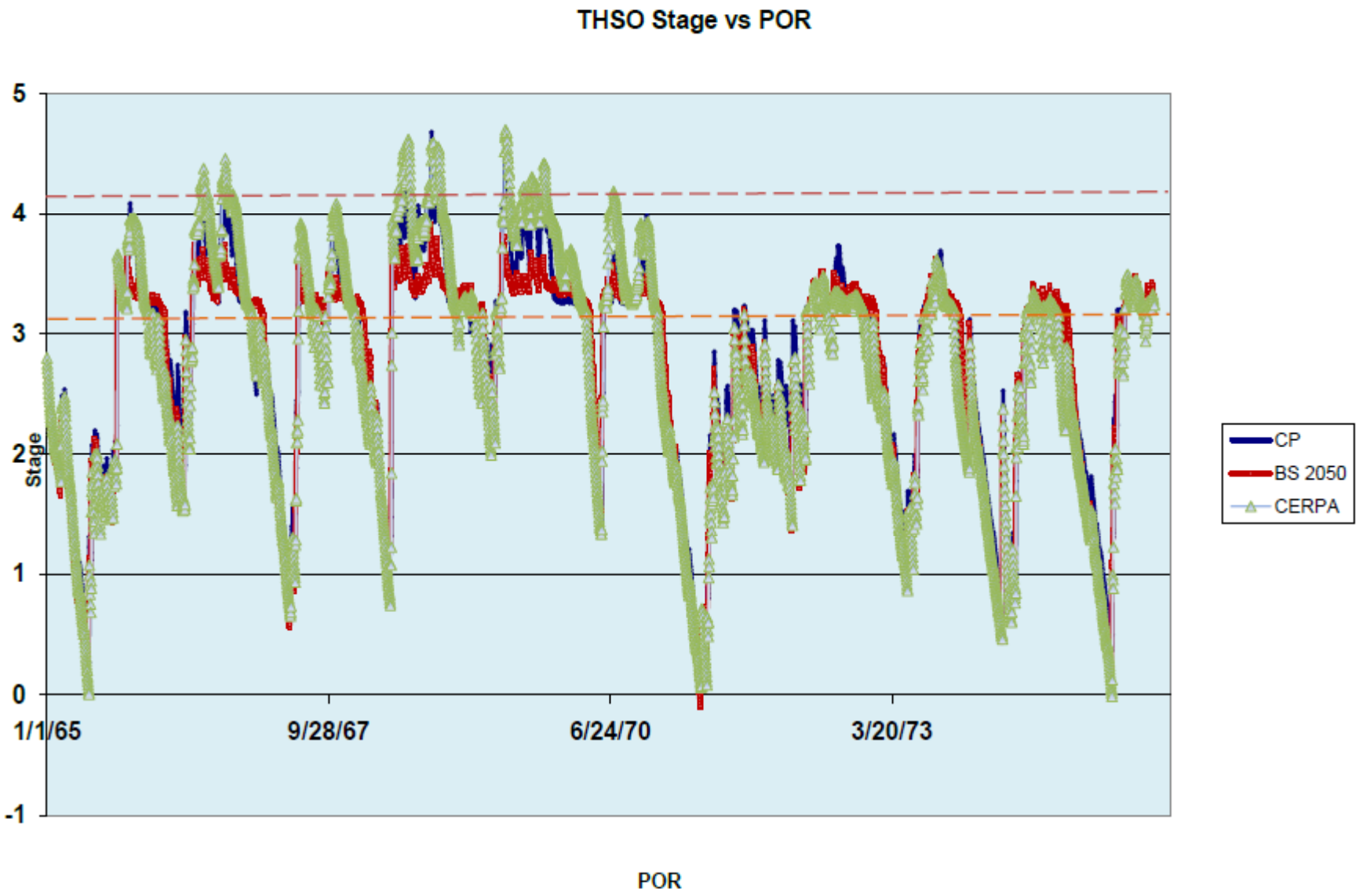
- SFWMM is used as it allocates water from LO to the Natural System.

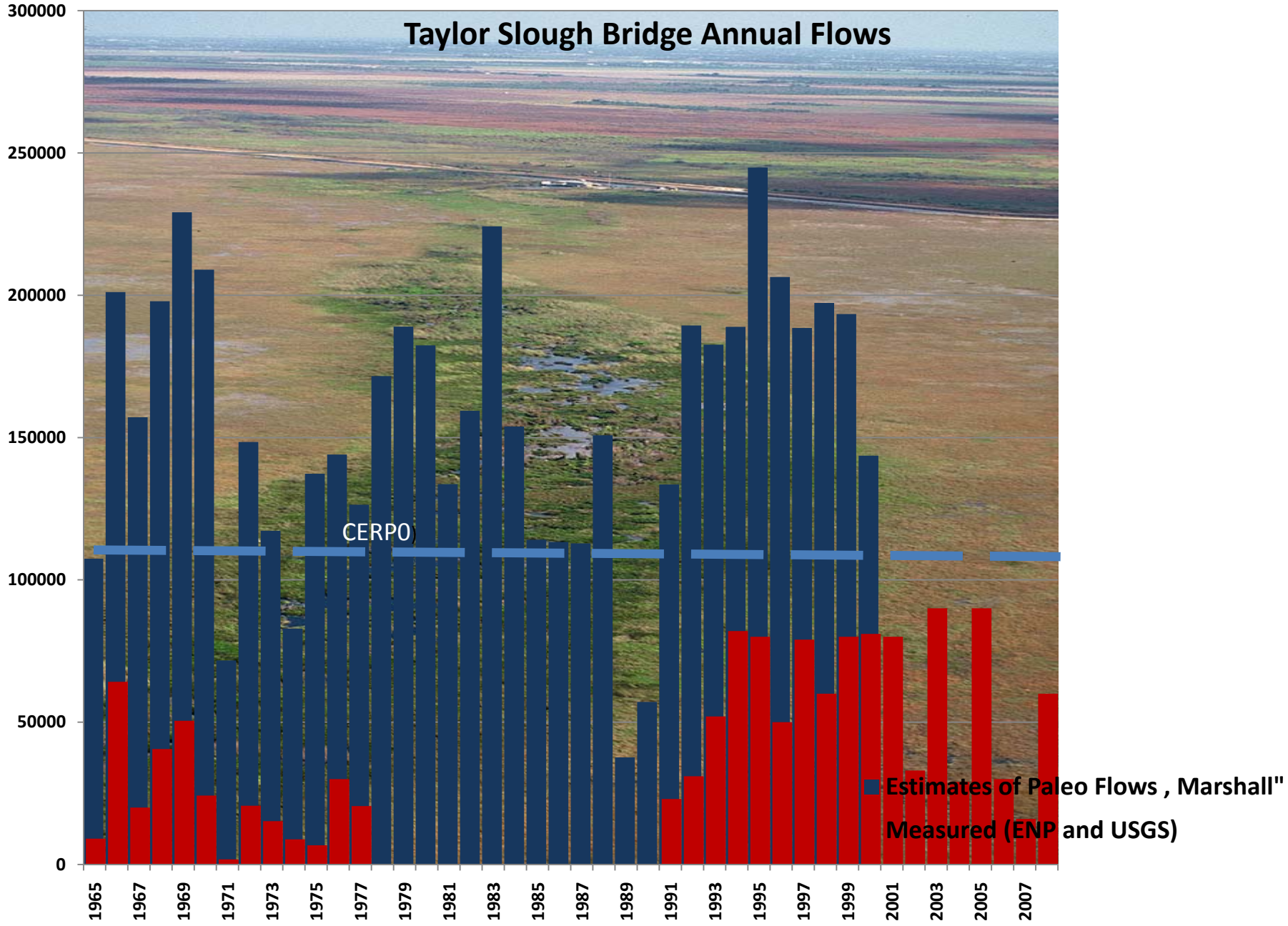
- Modeling updates are used to determine effects of increased demands upon the natural system.

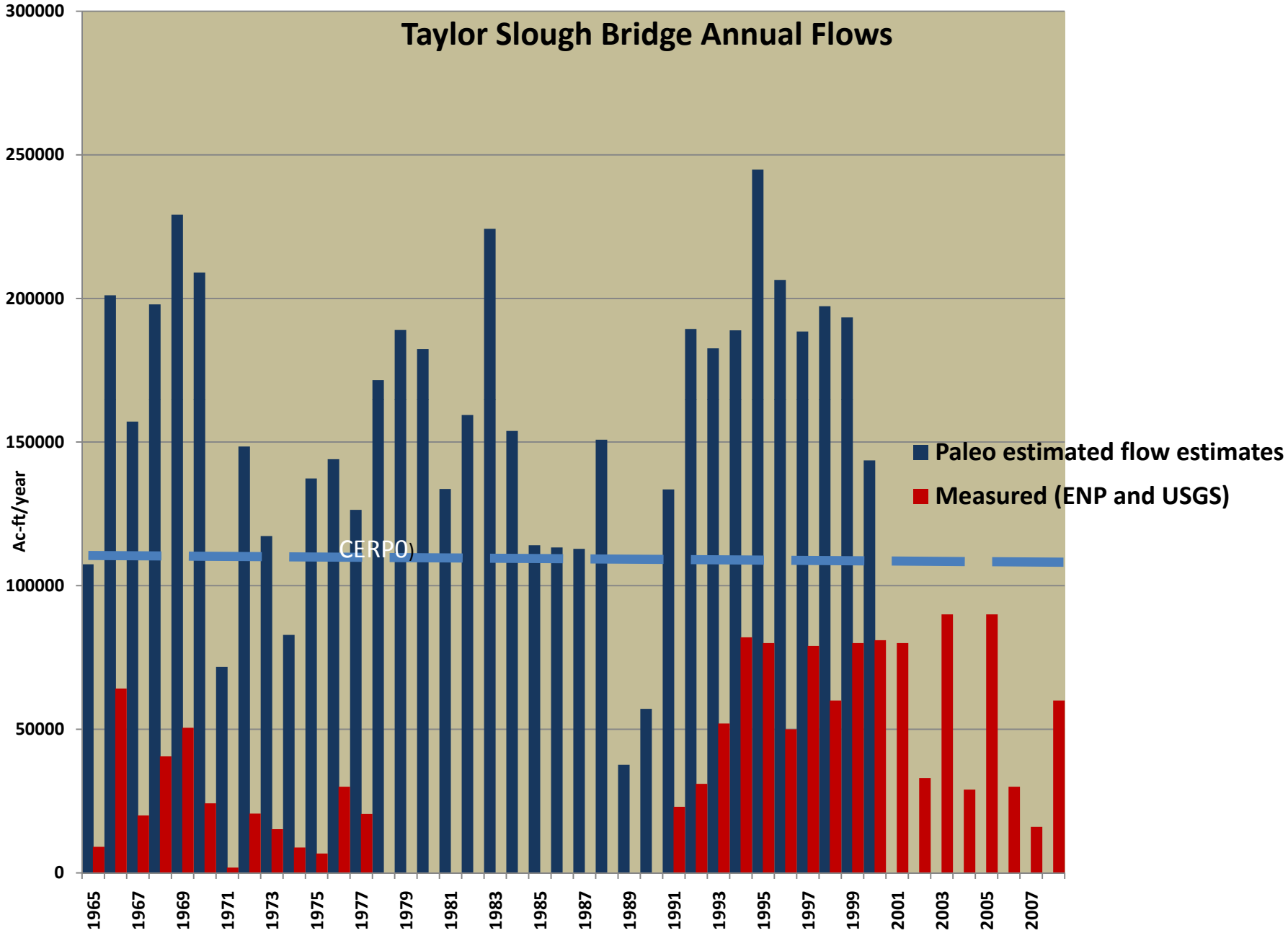
- It is “top focused” and determines availability of water at locations through out the Glades.

- SFWMM model stages at THSO. This is used as it is close to where water is supplied to Taylor Creek Slough

- The next 3 slides show effects of phased CERP upon the system over simulated 40 year period 1965-2000


THSO Stage vs POR
5
4
3
2
1
0
-1
Stage
1/1/65
9/28/67
6/24/70
3/20/73
POR
CP
BS 2050
CERPA


Taylor Slough Bridge Annual Flows
300000
250000
200000
150000
100000
50000
0
CERPO
Estimates of Paleo Flows , Marshall"
Measured (ENP and USGS)
1965
1967
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007


Taylor Slough Bridge Annual Flows
Ac-ft/year
300000
250000
200000
150000
100000
50000
0
CERPO
Paleo estimated flow estimates
Measured (ENP and USGS)
1965
1967
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007

Conclusions & Discussion

- Fresh water species are a sizable component of prey food in NE FL Bay

- Increased Connectivity would improve the prey supply as well as salinity improvement

- The system dries out every dry season even with CERP 0

- Estimates of Paleo- flows to NE FL Bay are significantly higher

- This limits connectivity between the upstream freshwater marshes and NE Florida Bay

- This argues for higher flows to this area.