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

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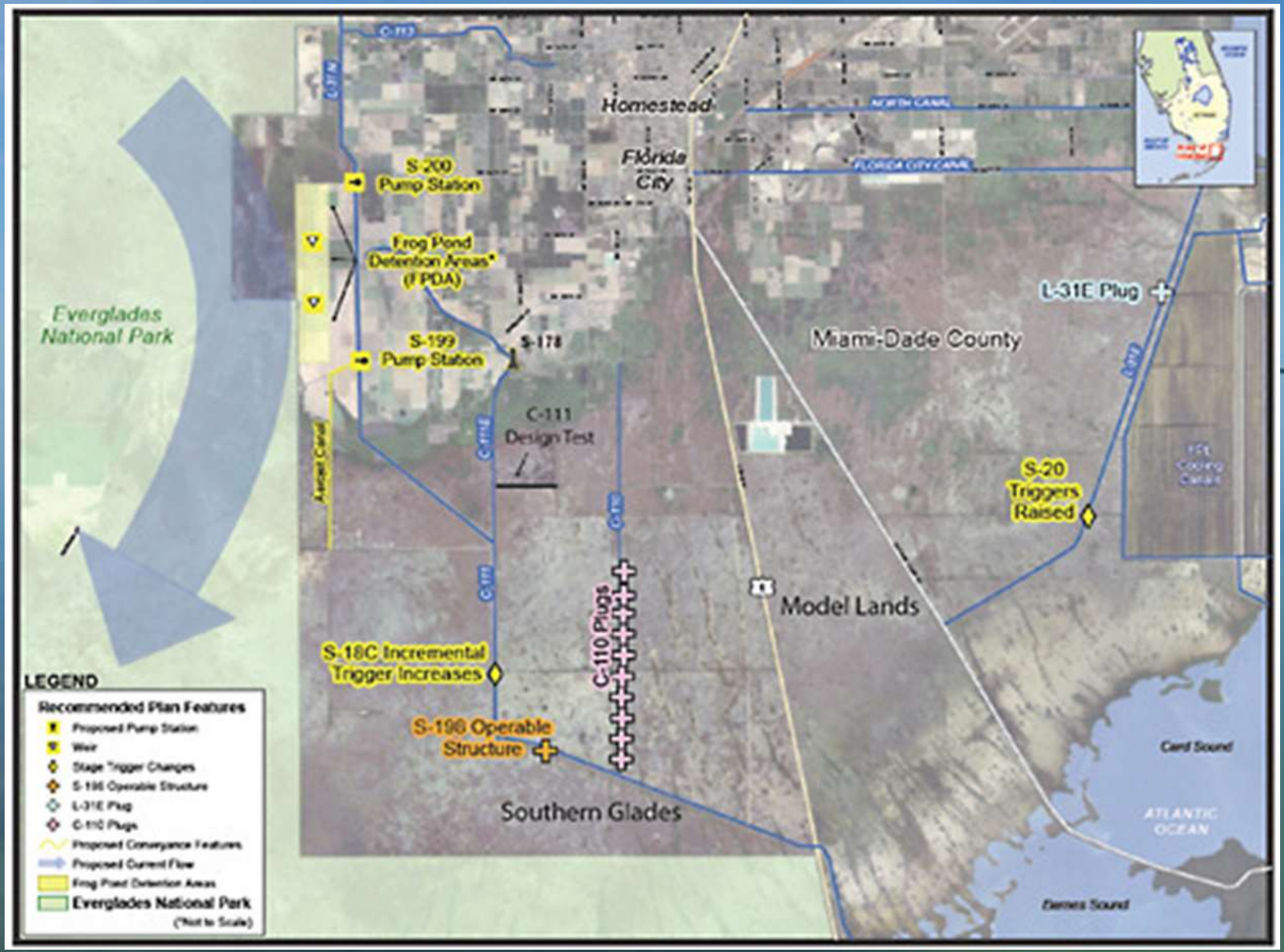
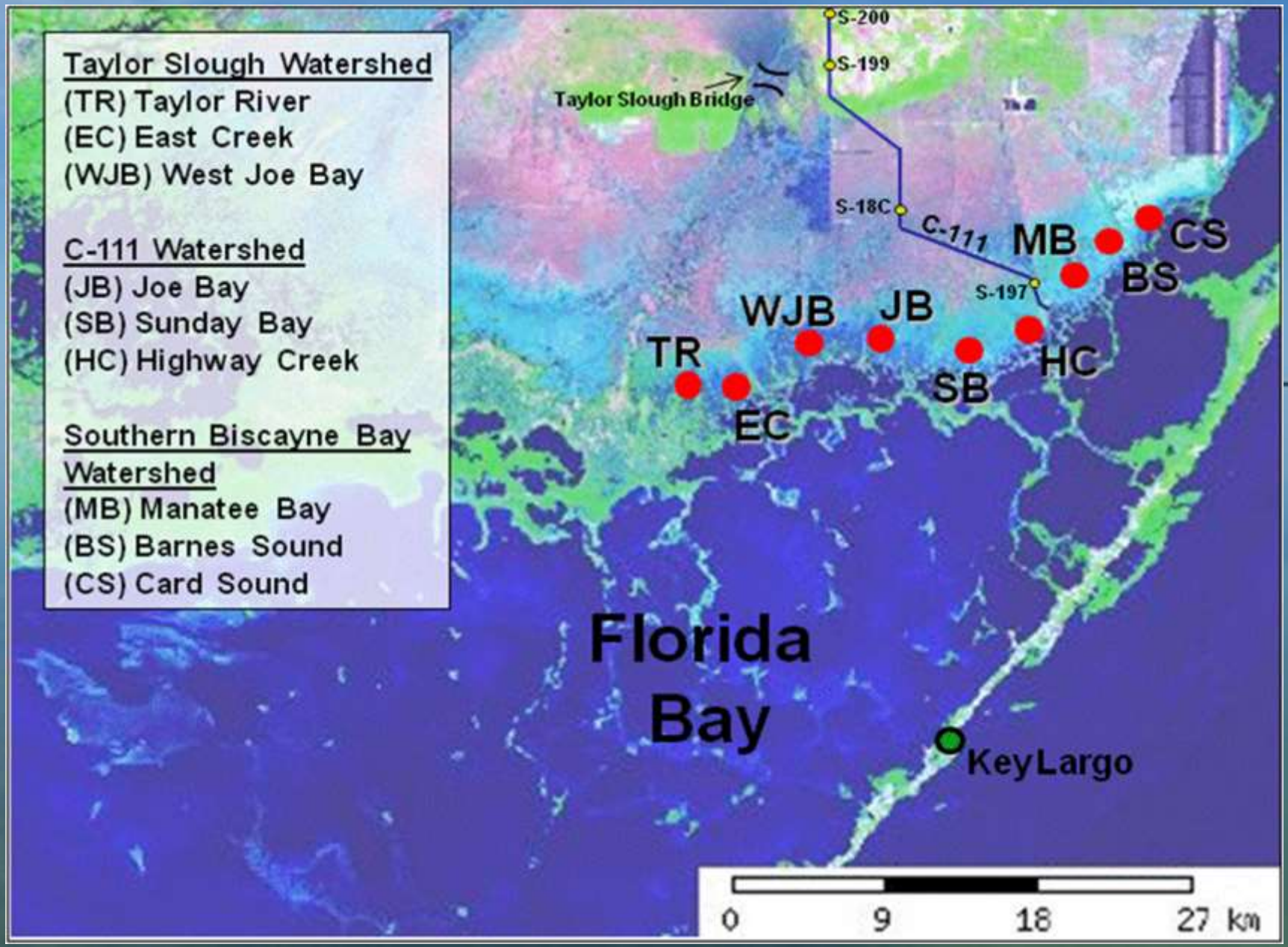
Audubon FLORIDA

C-111 Spreader Canal Western Project



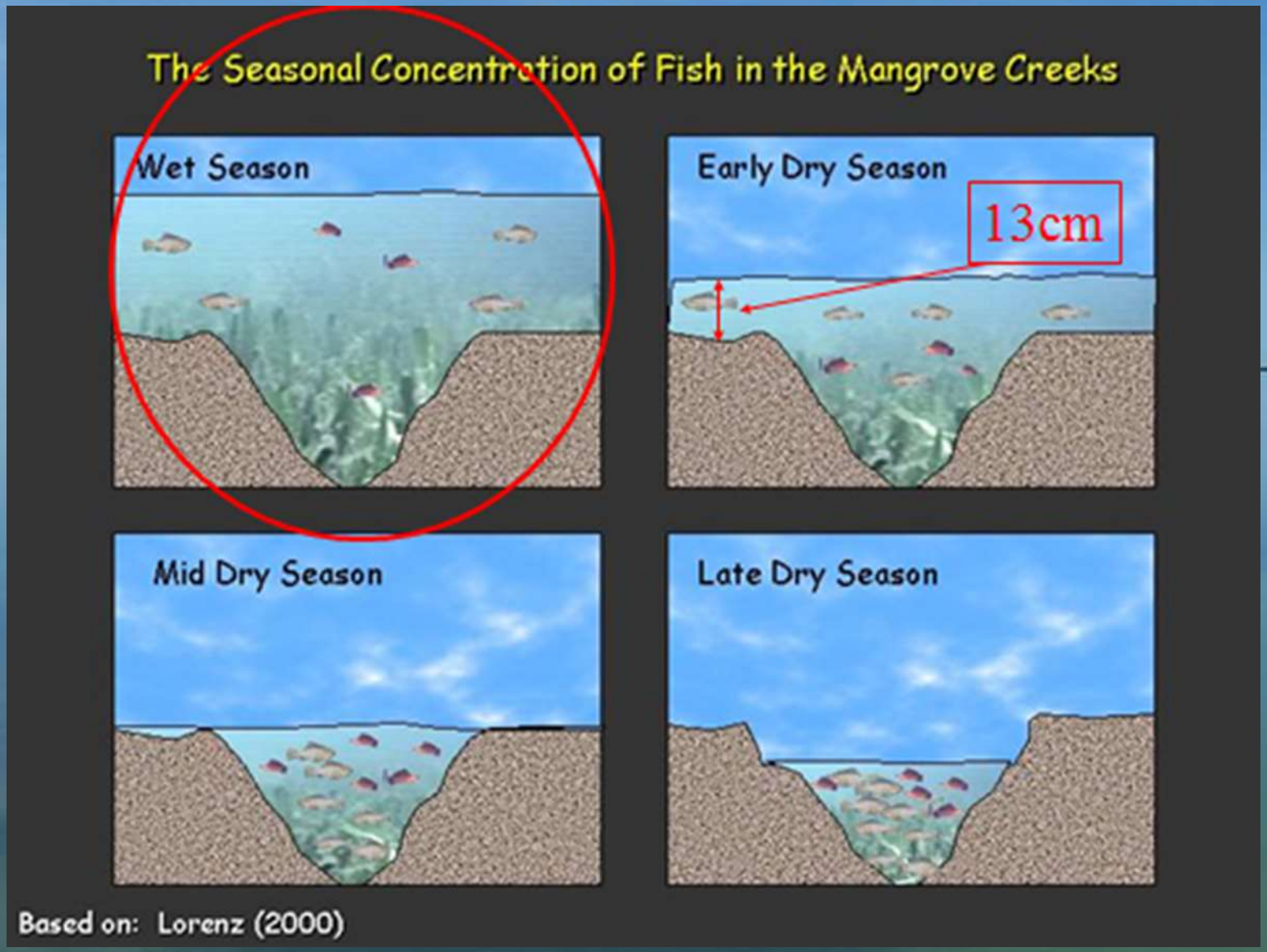
Everglades Science Center Monitoring Sites



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



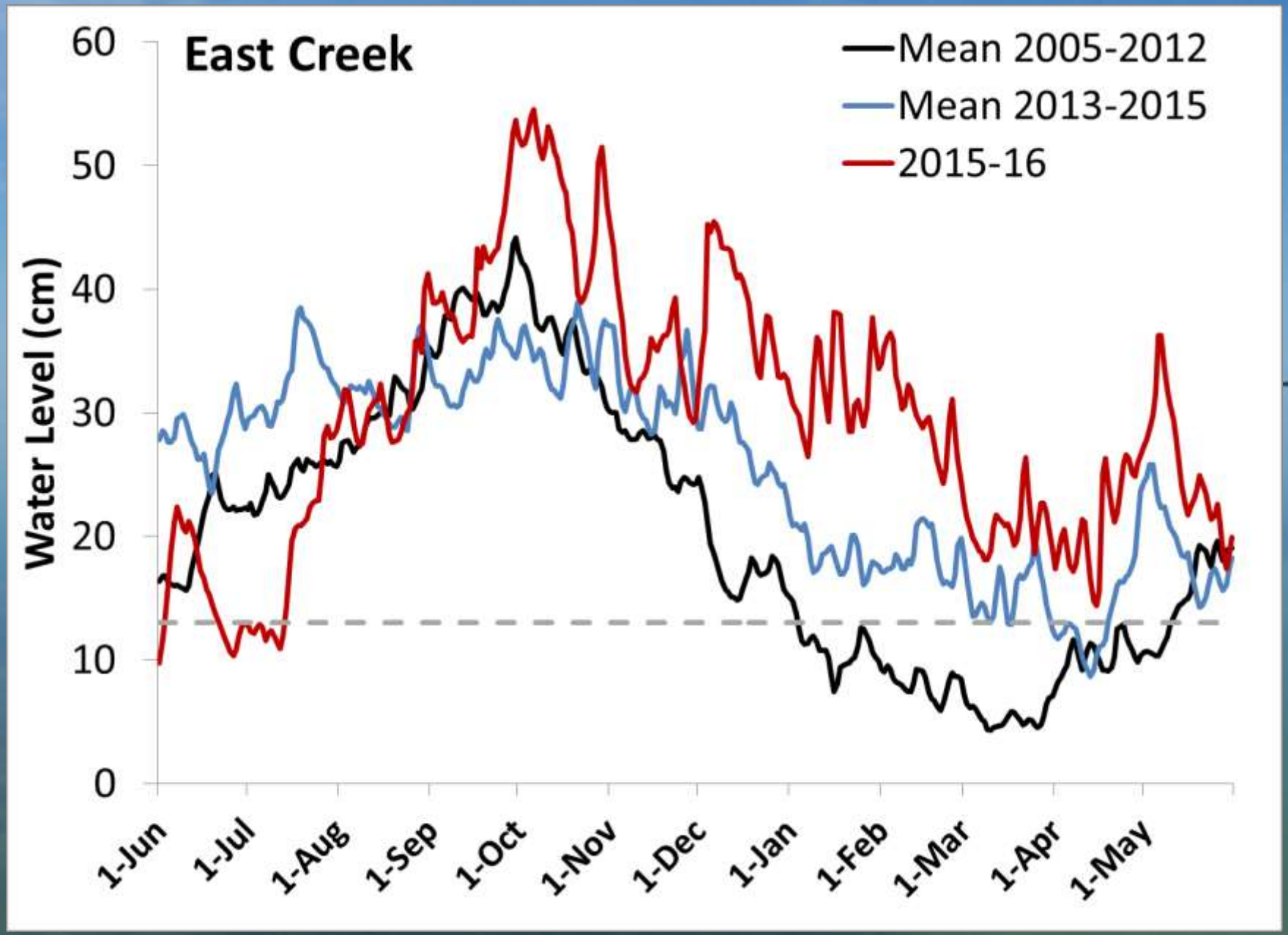
Goals of the C-111SCWP

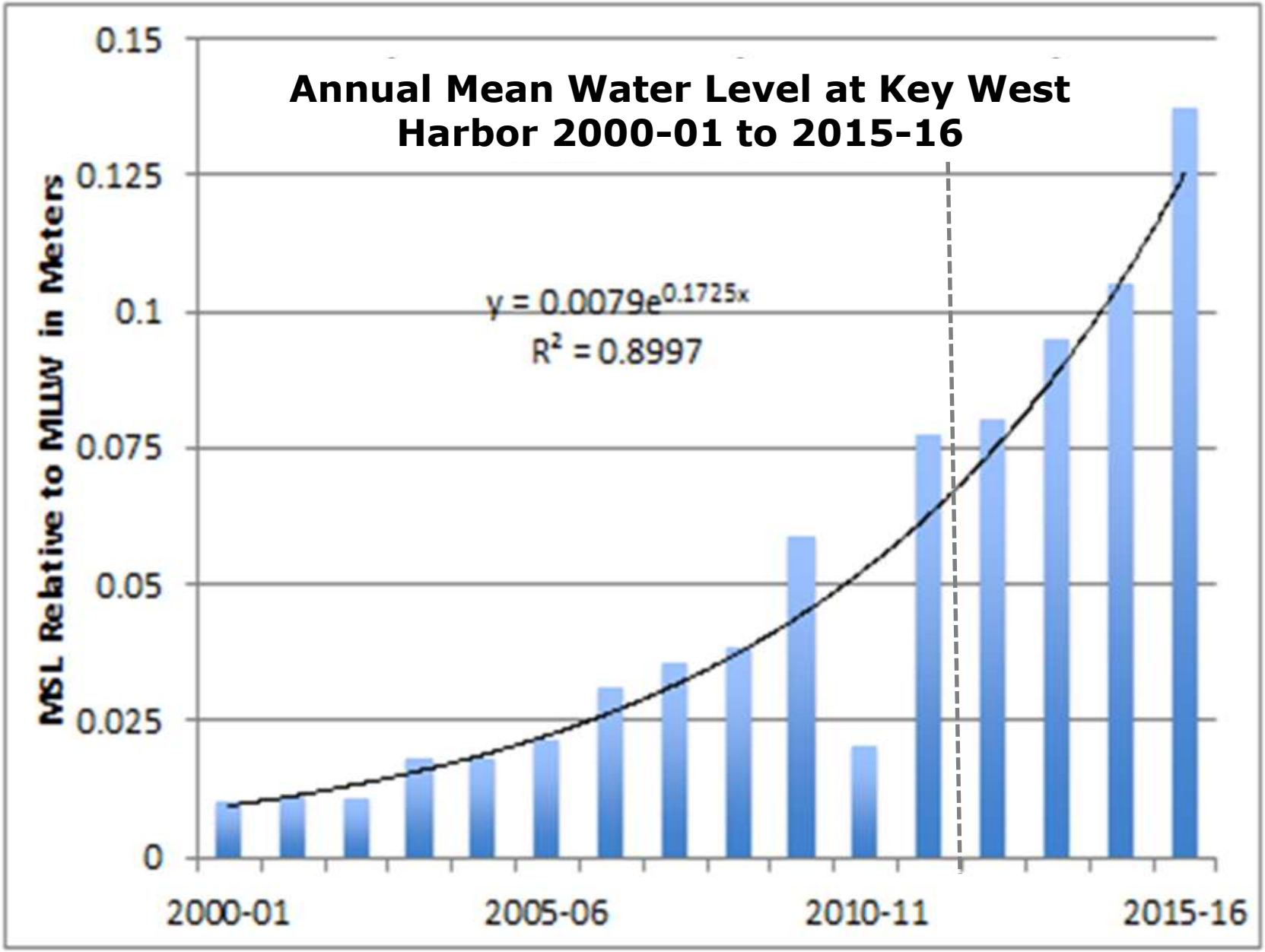
2. Increase freshwater conditions

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

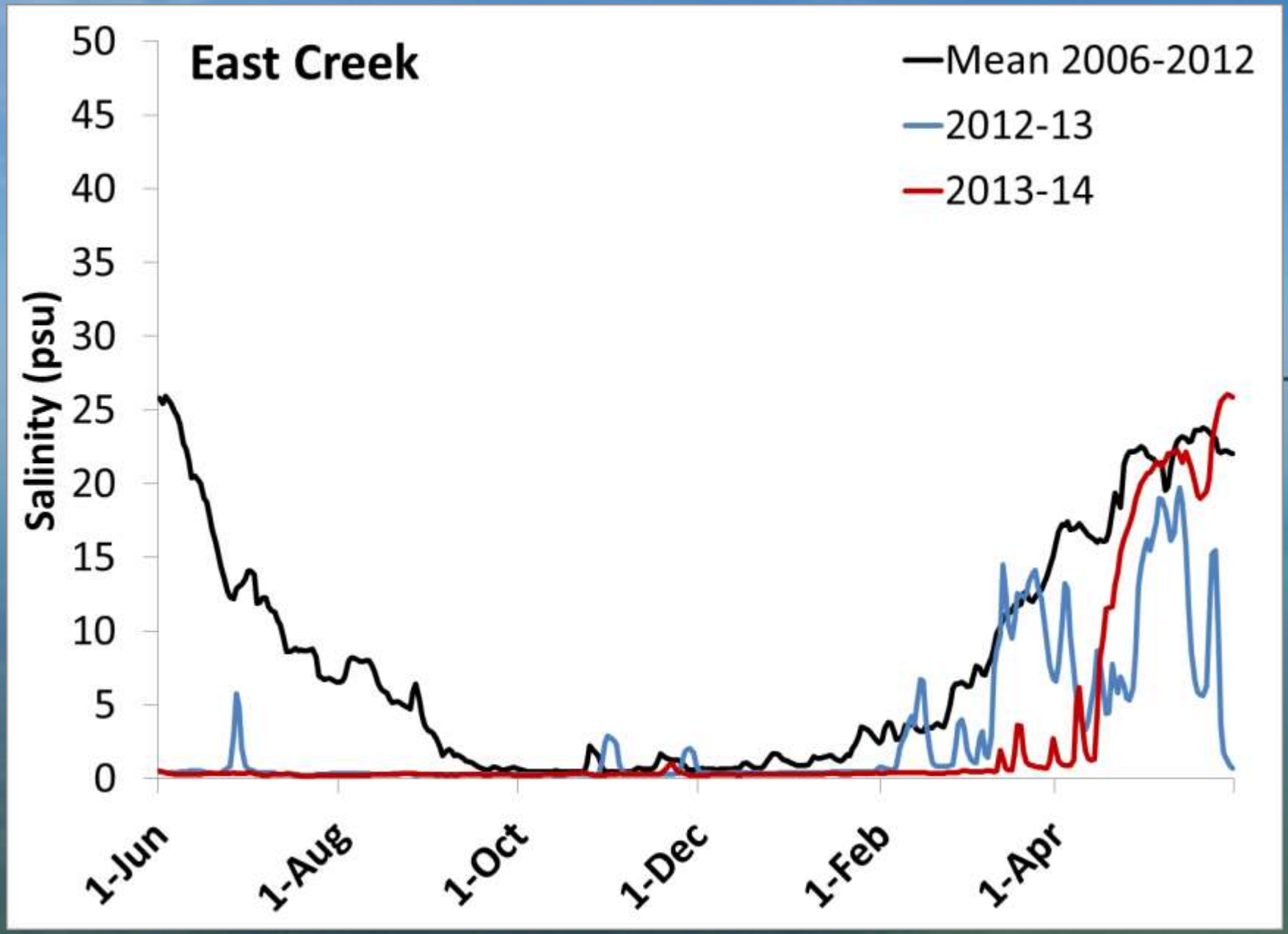
4. Increase the abundance of freshwater fish
   - Freshwater fish communities are more diverse, have higher density and biomass levels
     - Lorenz and Serafy, 2006

1. Increase the Hydroperiod

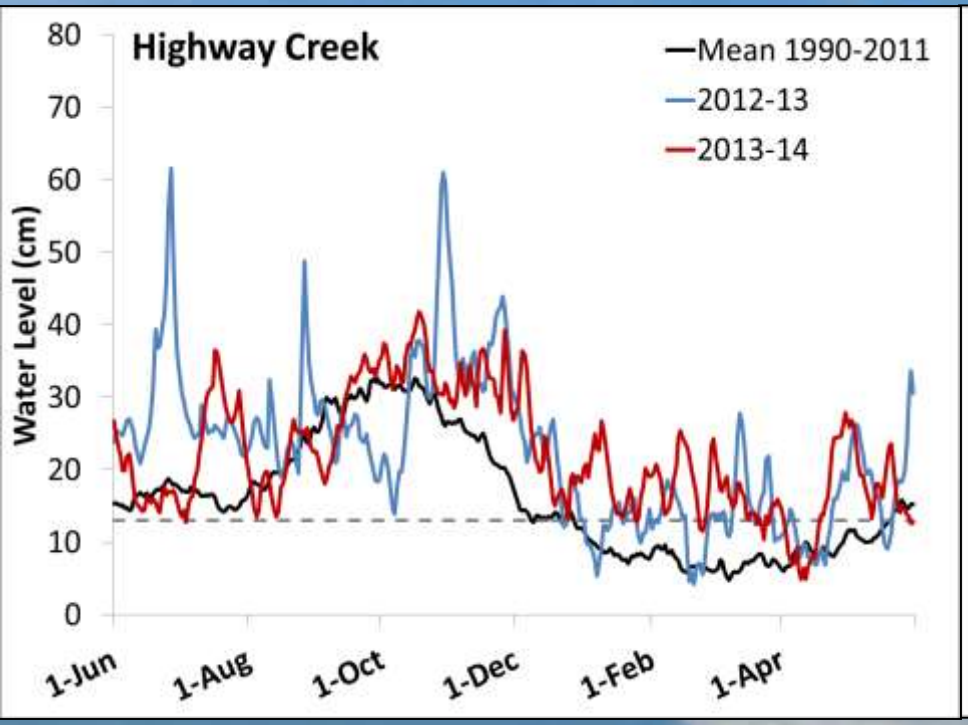


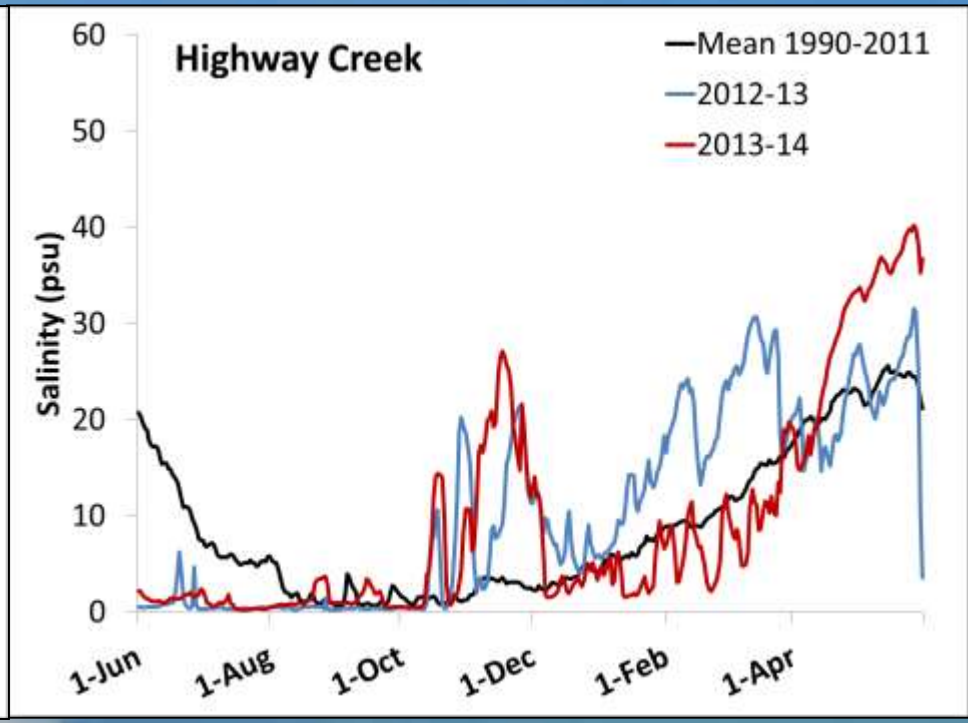

Annual Mean Water Level at Key West Harbor 2000-01 to 2015-16
MSL Relative to MLLW in Meters
0.15
0.125
0.1
0.075
0.05
0.025
0
y = 0.0079e^0.1725x
R² = 0.8997
2000-01
2005-06
2010-11
2015-16

2. Increase Freshwater Conditions



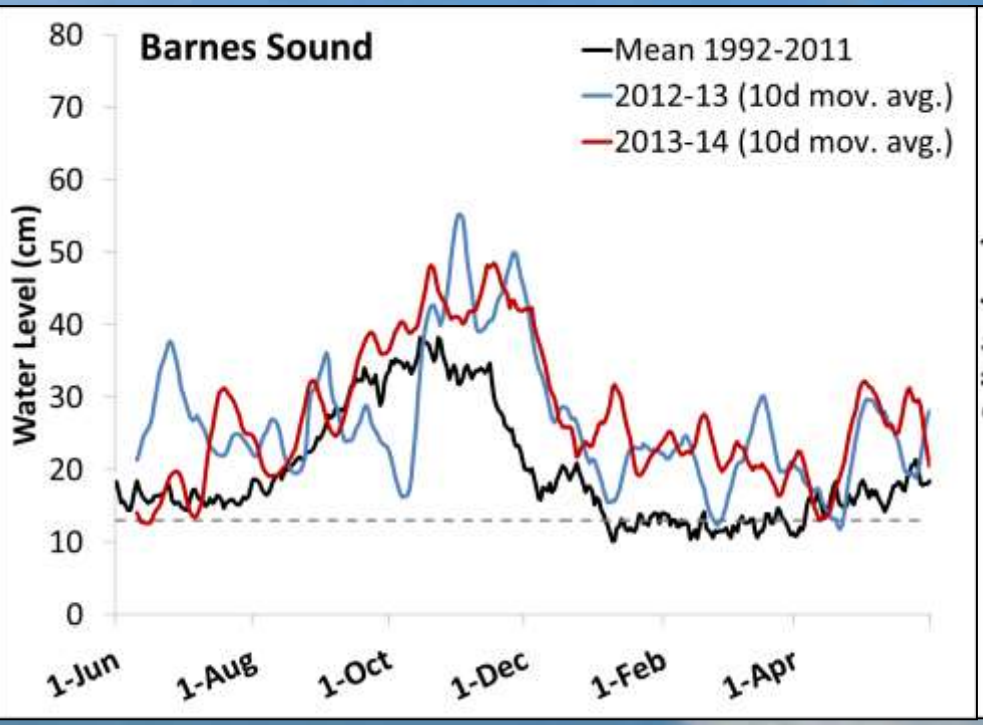
2. Increase Freshwater Conditions

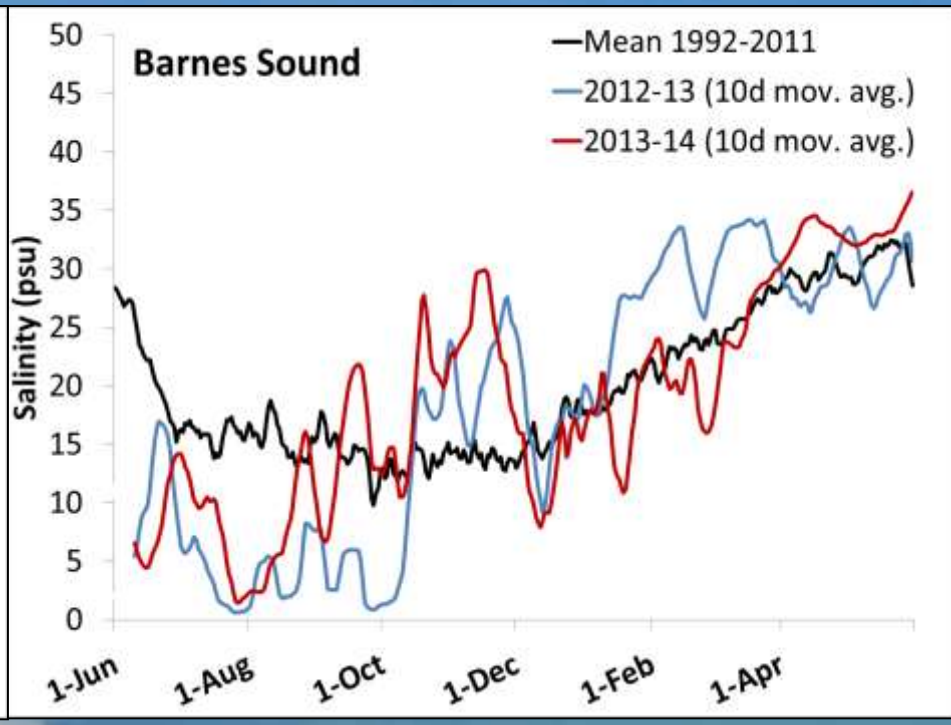




- The 4 sites directly effected by C-111SCWP show high water levels; low salinities
- Sites outside of Taylor Slough show high water levels; high salinities

2. Increase Freshwater Conditions





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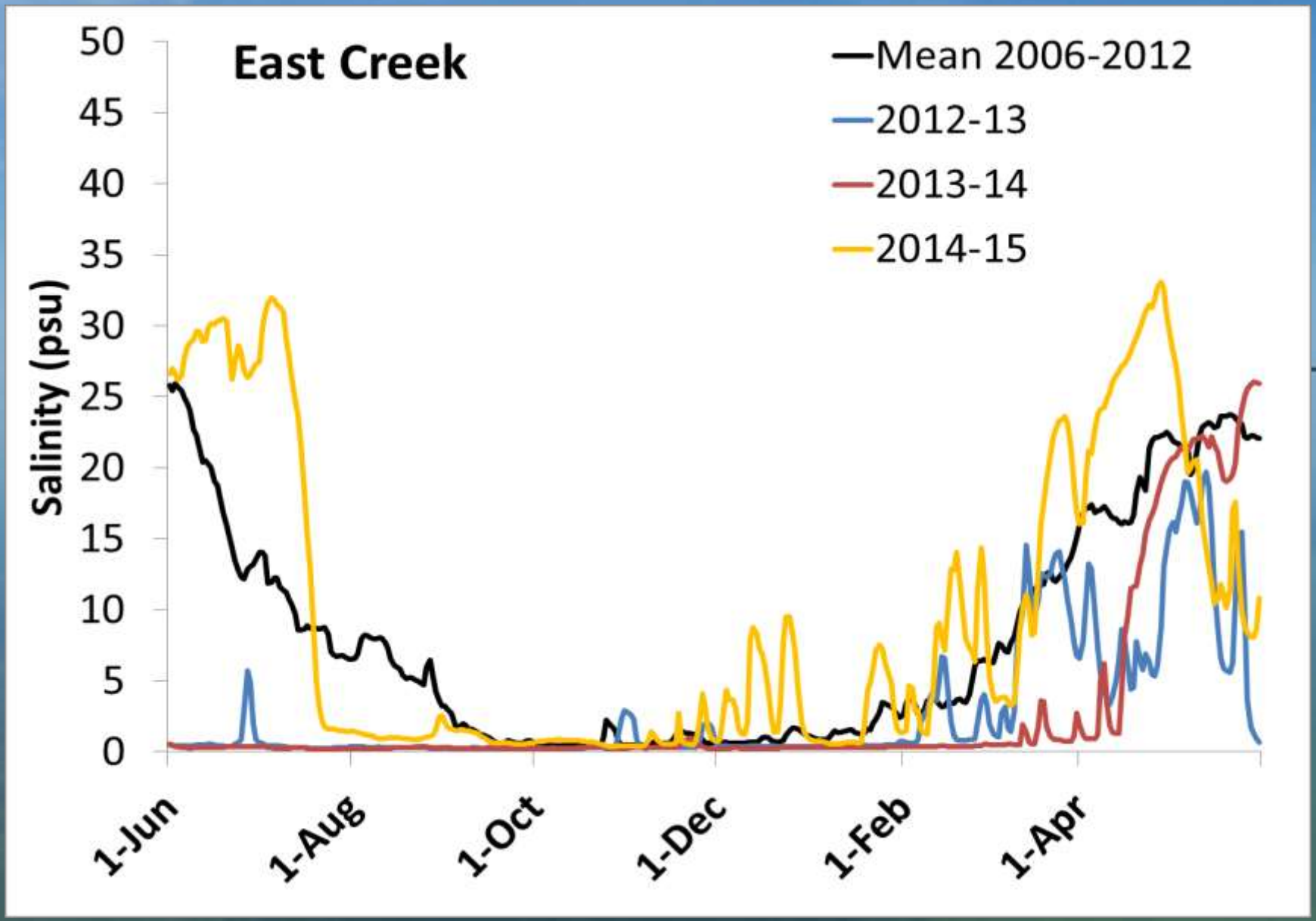

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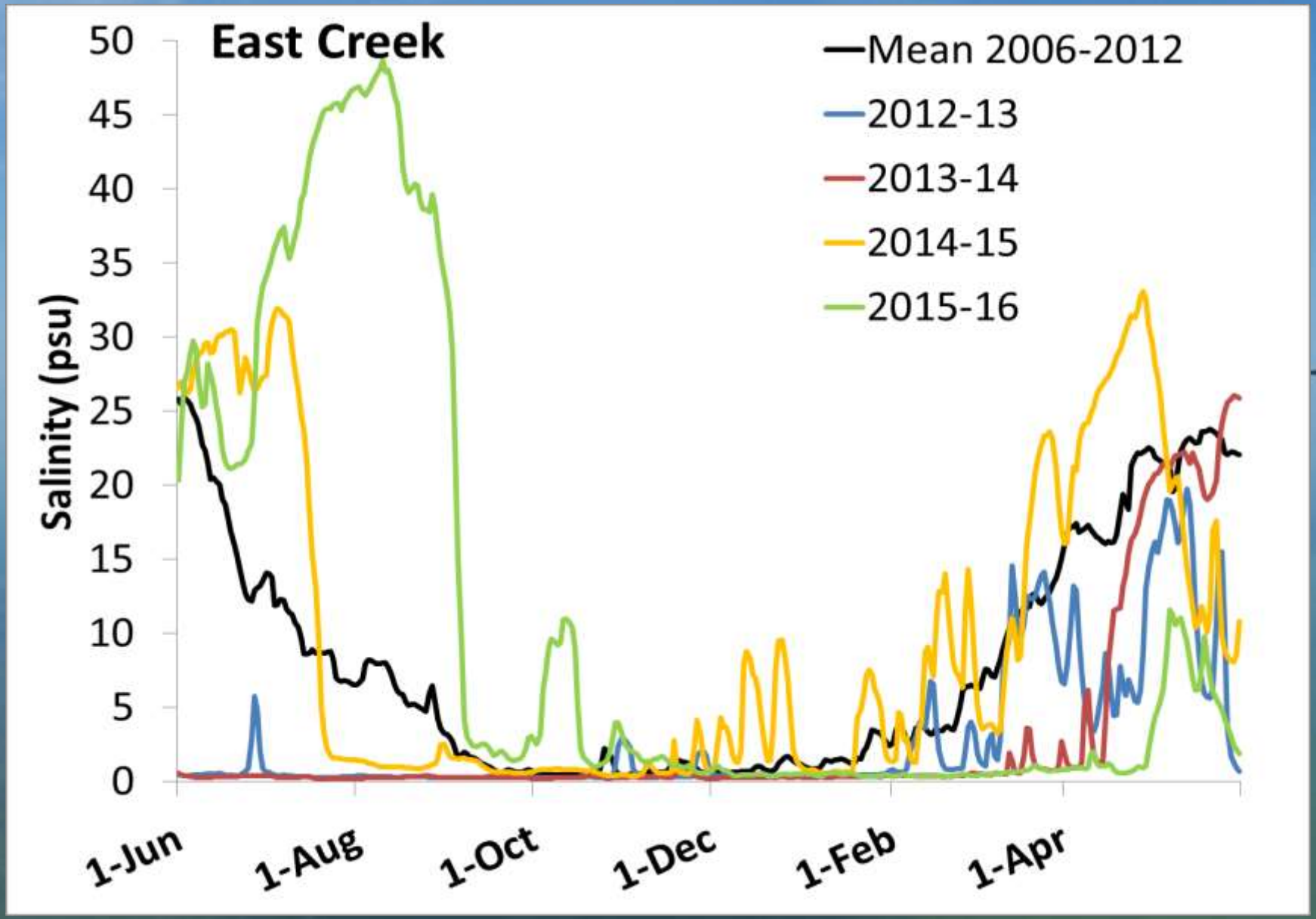
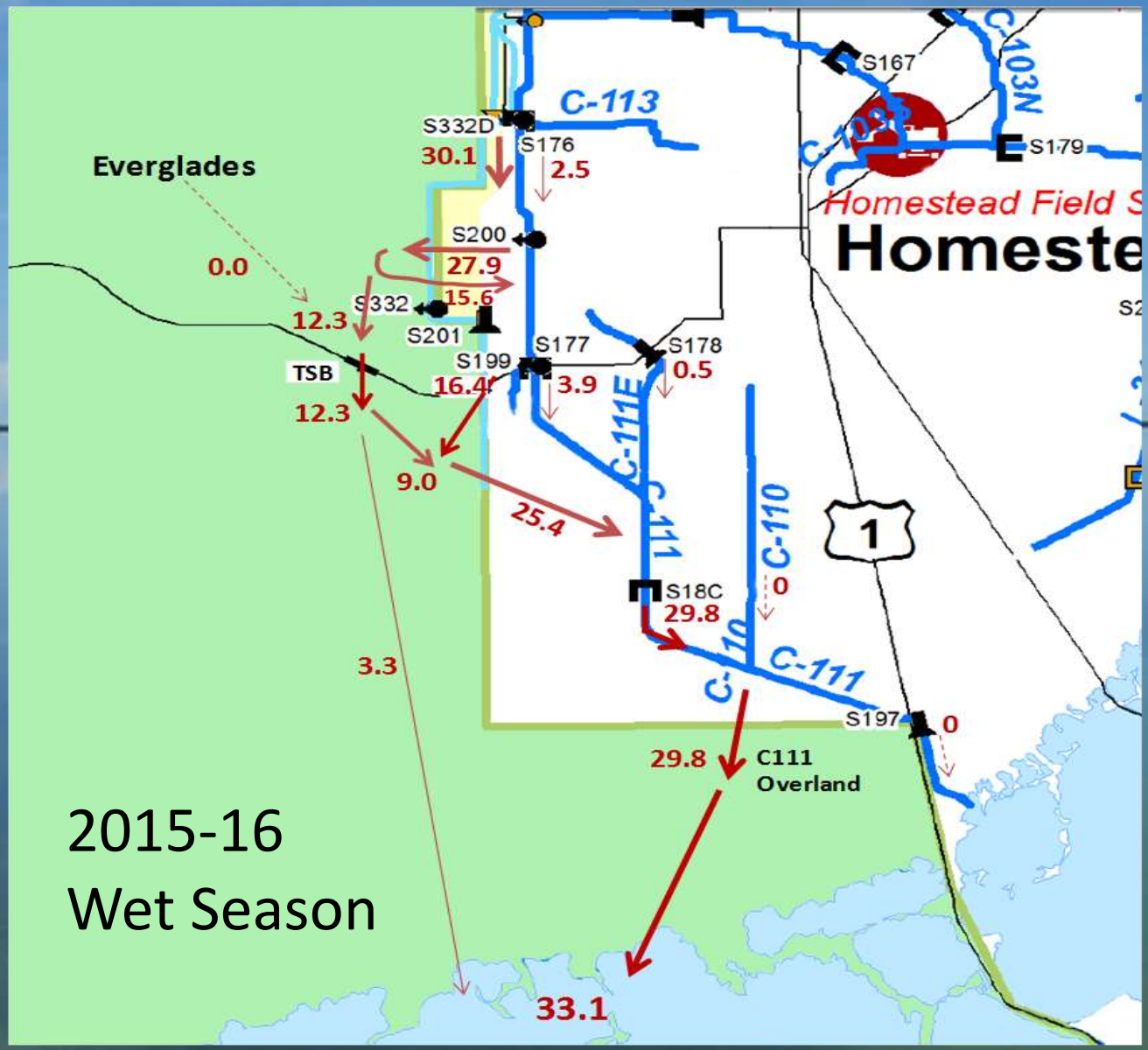
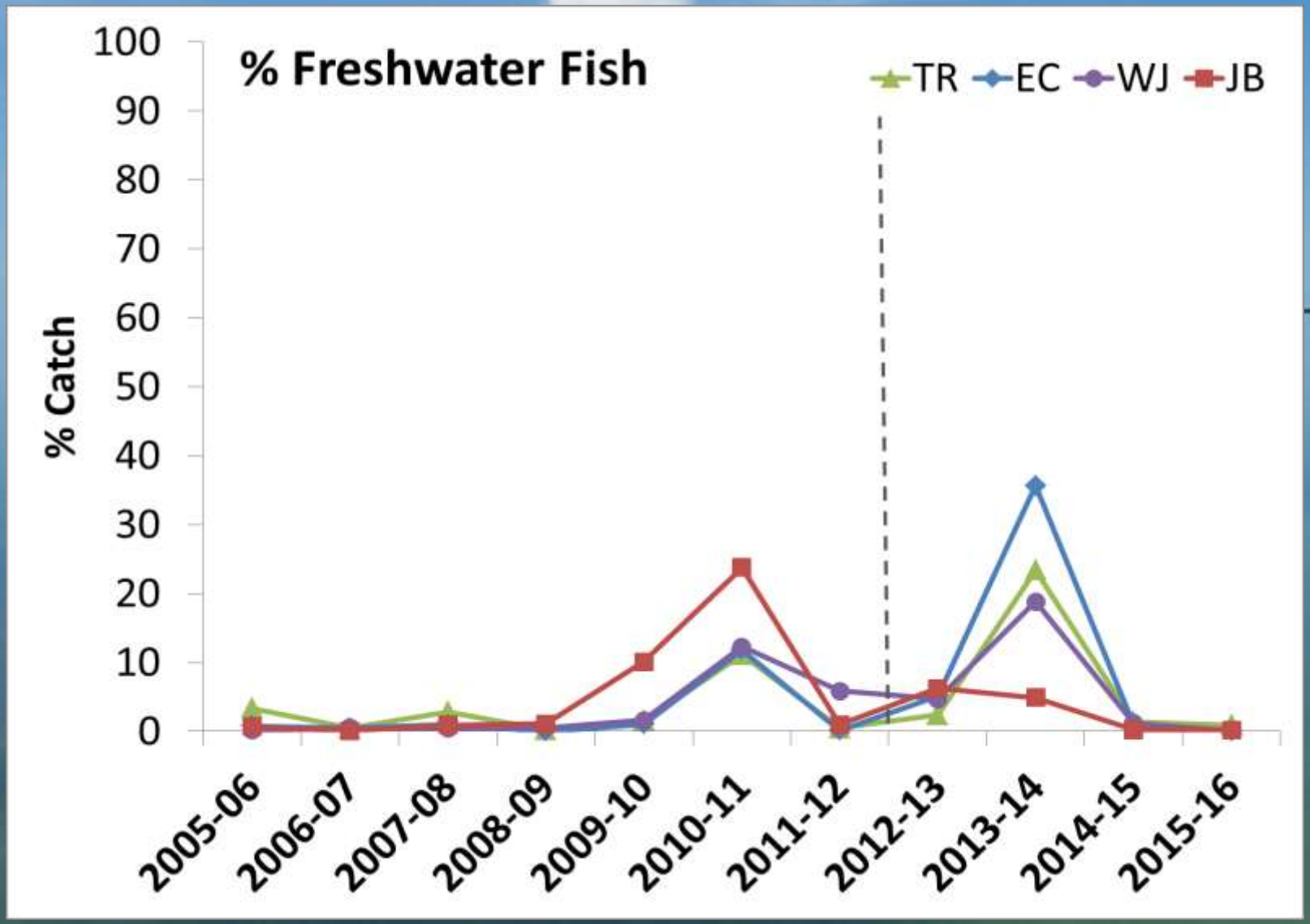
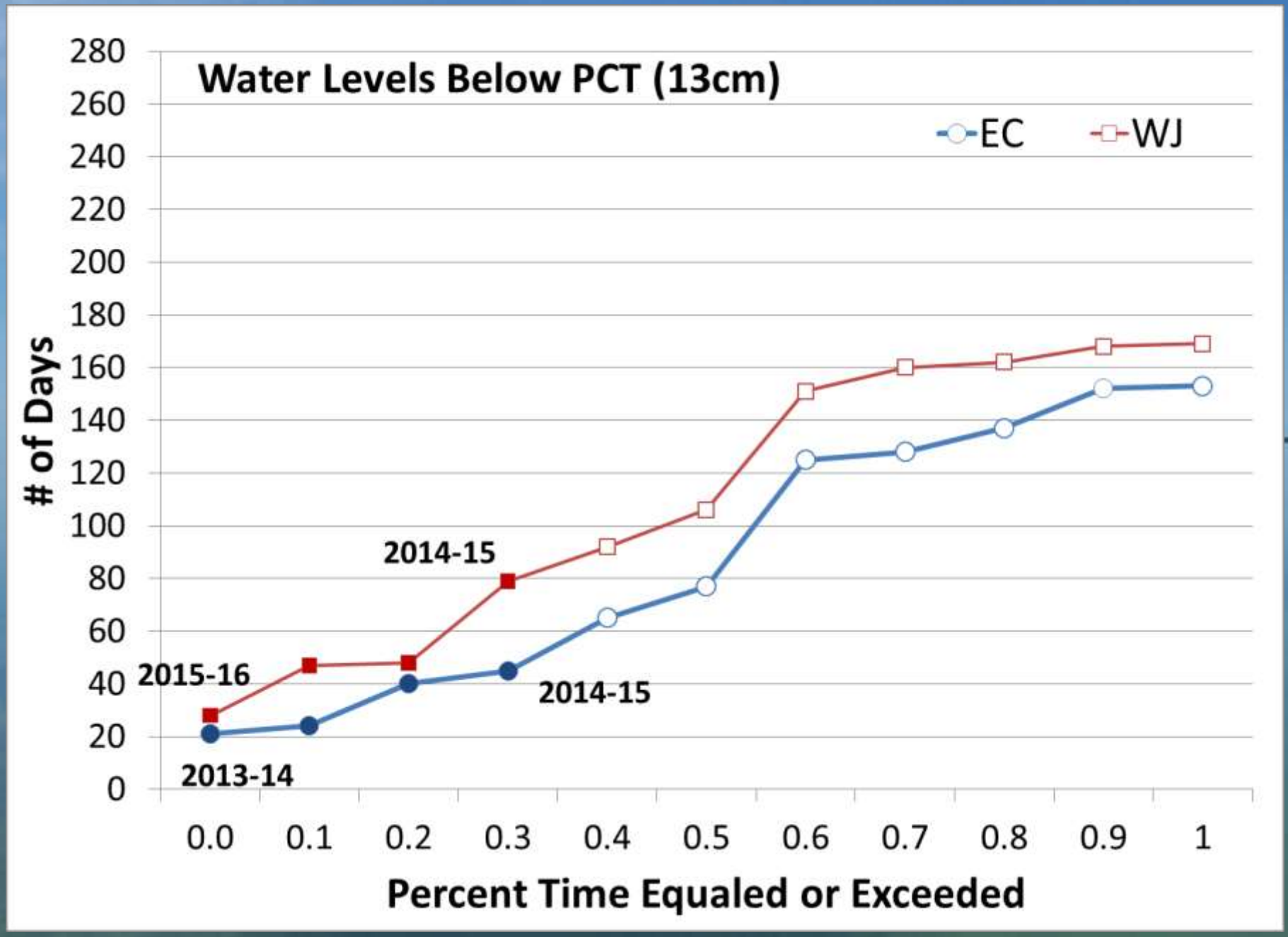


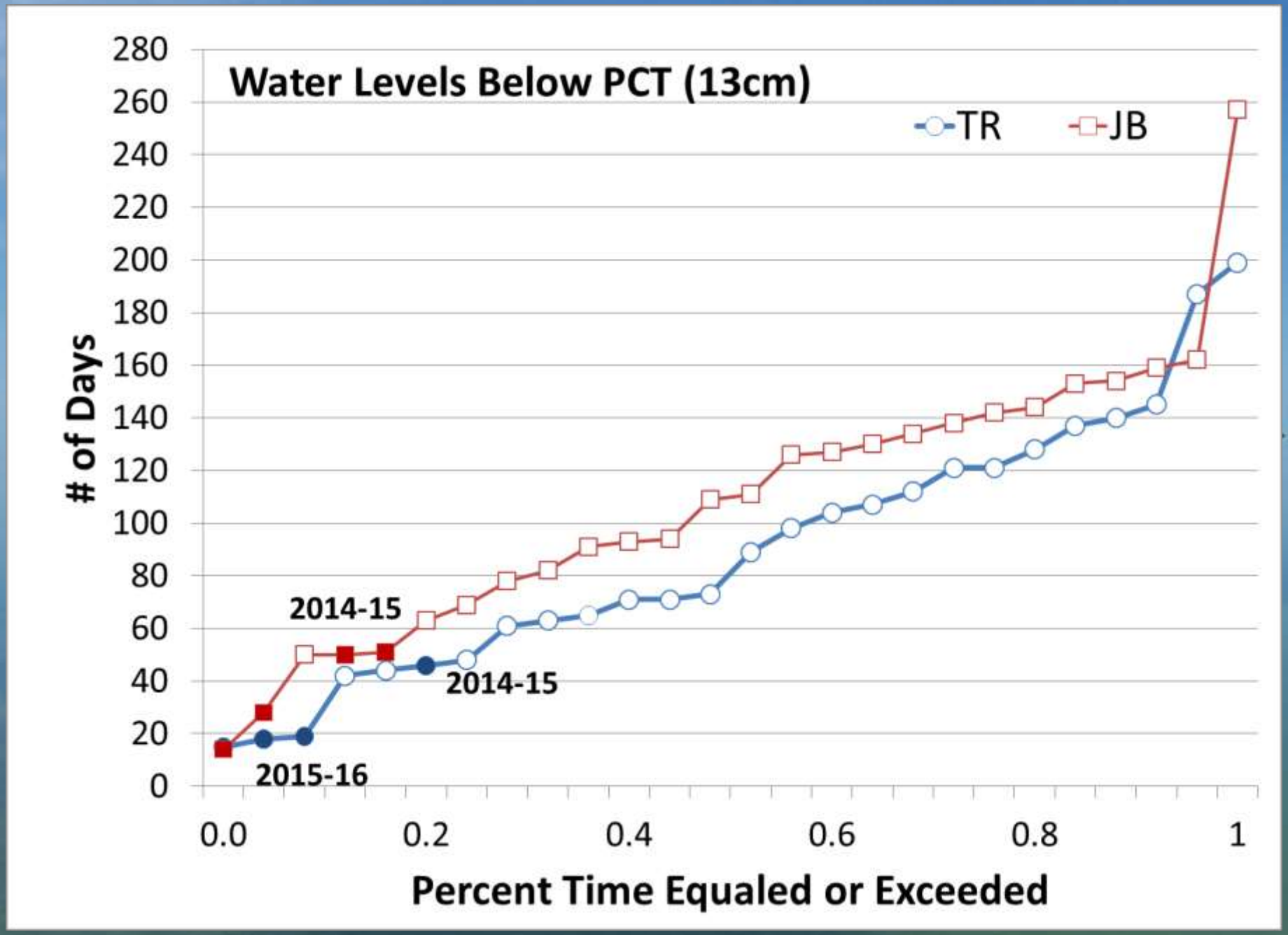
C-111 Spreader Canal Western Project

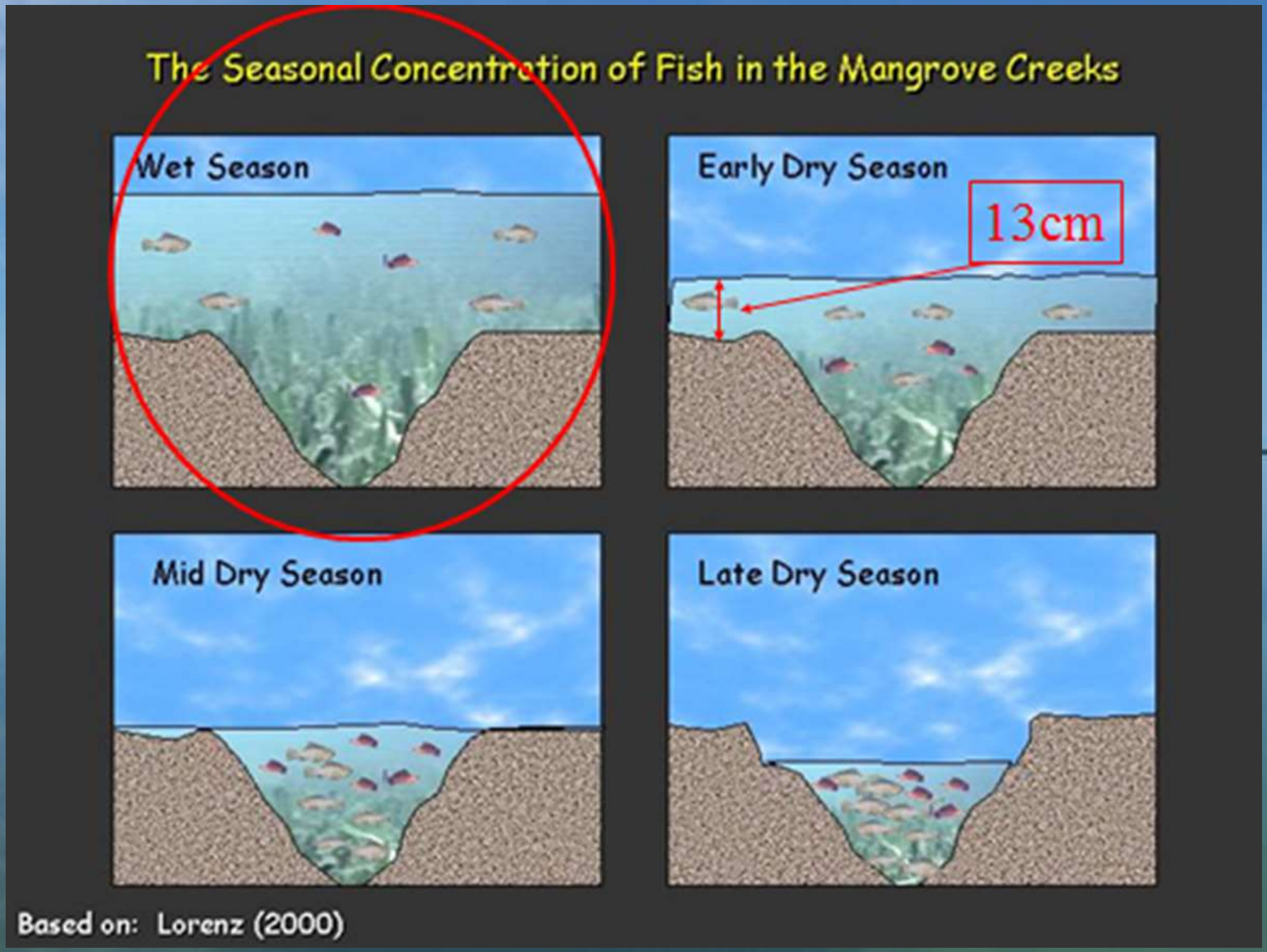


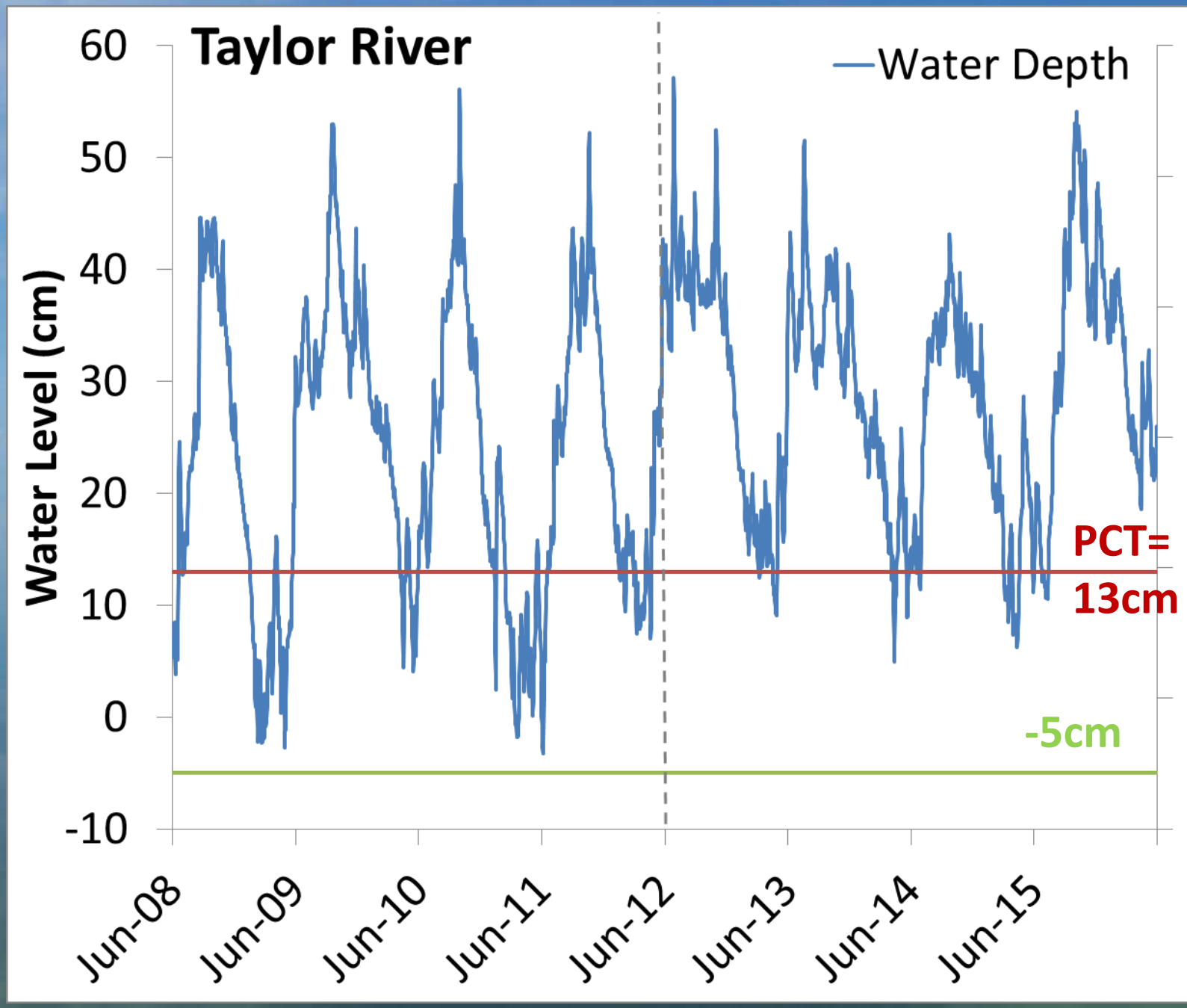
4. Increase Abundance of Freshwater Fish

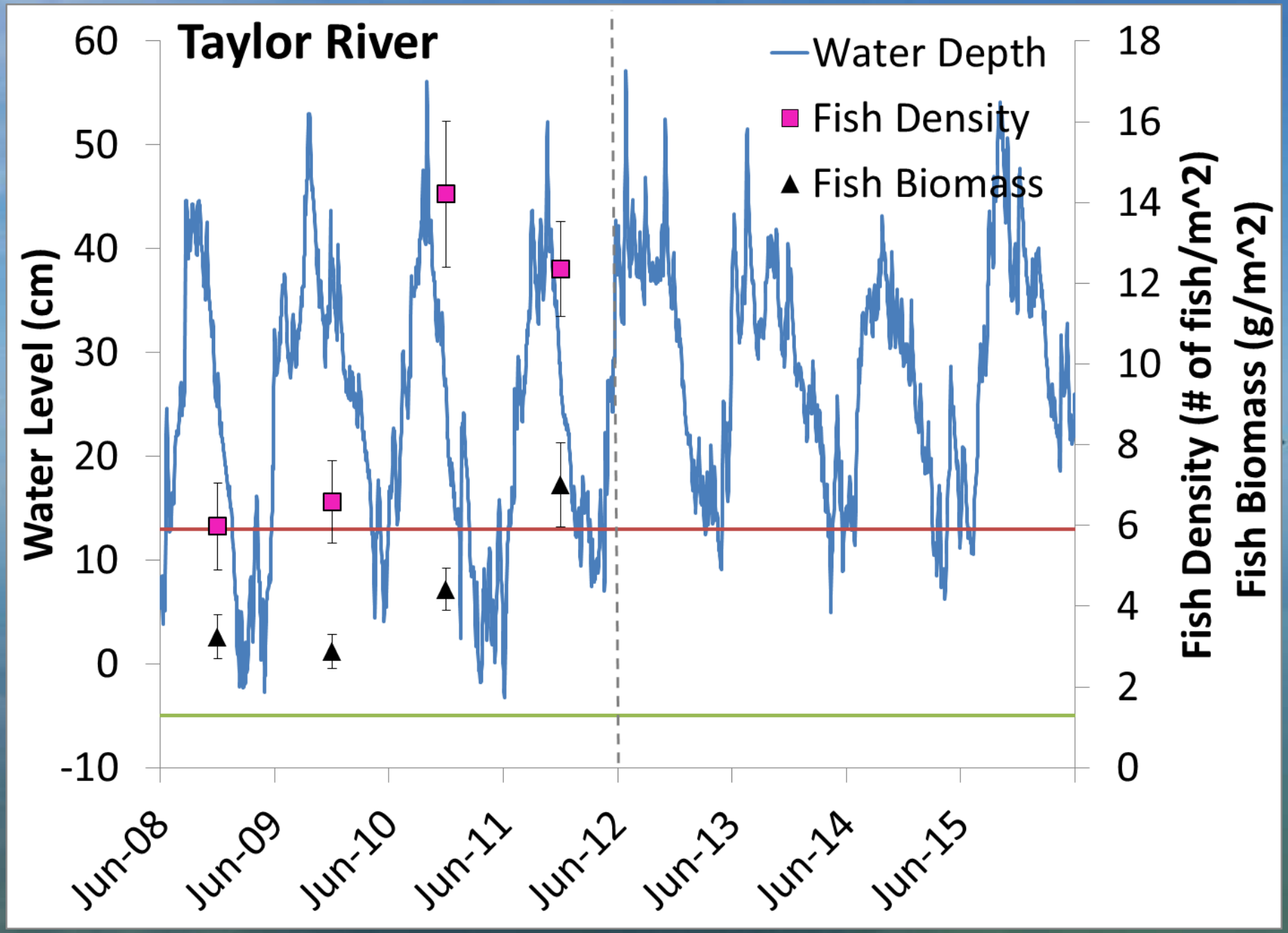


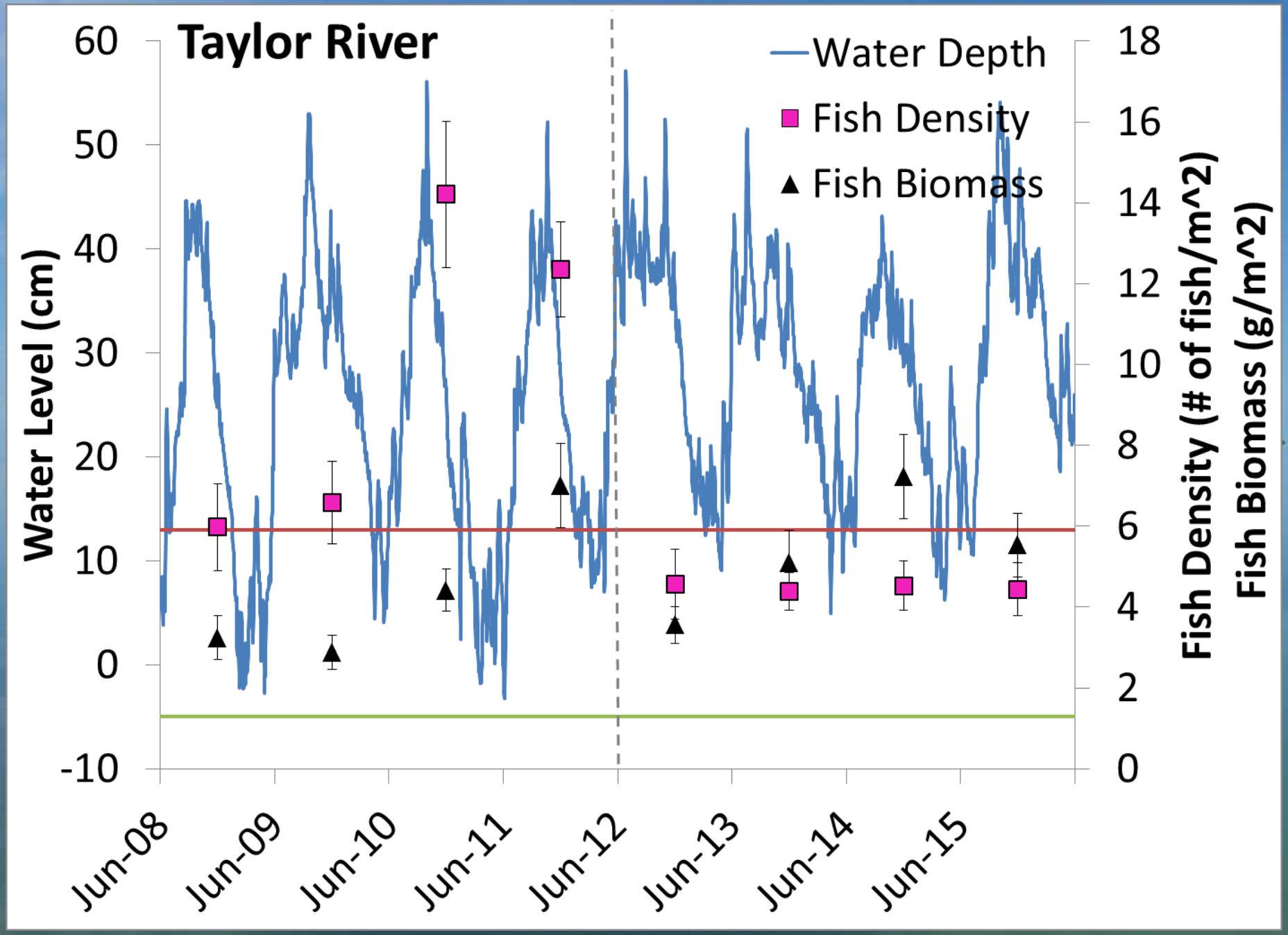

Water Levels Below PCT (13cm)
EC
WJ
# of Days
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
2014-15
2015-16
2014-15
2013-14
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Percent Time Equaled or Exceeded


Water Levels Below PCT (13cm)
TR
JB
# of Days
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
2014-15
2014-15
2015-16
0.0
0.2
0.4
0.6
0.8
1
Percent Time Equaled or Exceeded

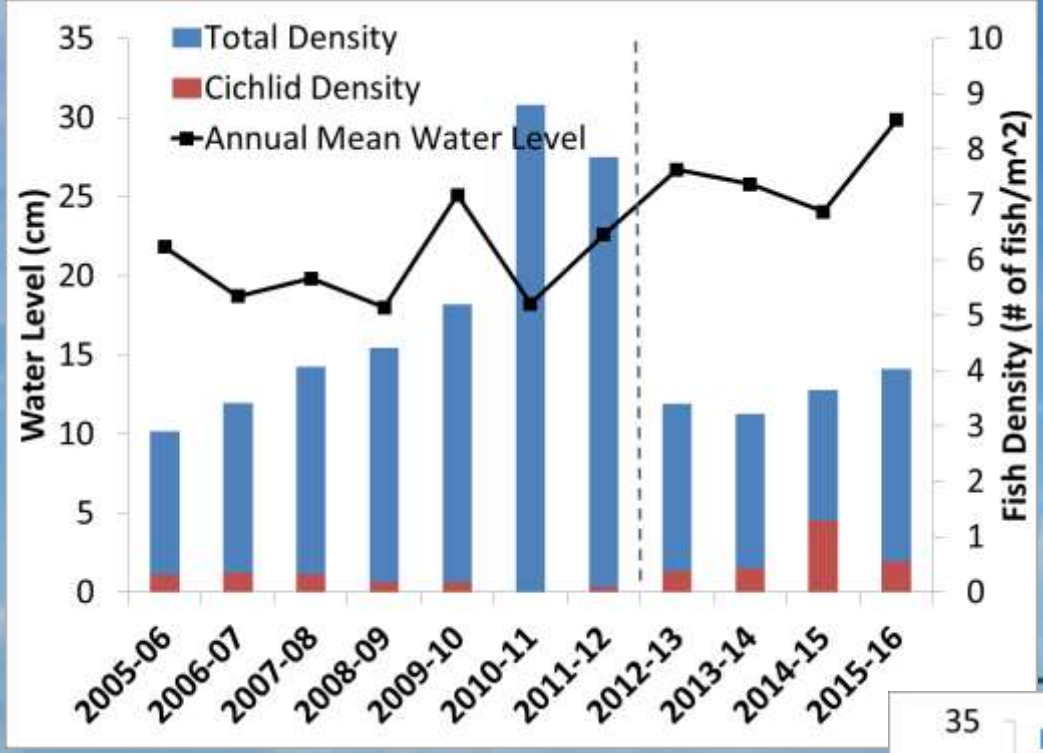

The Seasonal Concentration of Fish in the Mangrove Creeks
Wet Season
Early Dry Season
13cm
Mid Dry Season
Late Dry Season
Based on: Lorenz (2000)


Taylor River
Water Depth
Water Level (cm)
60
50
40
30
20
10
0
-10
PCT=
13cm
-5cm
Jun-08
Jun-09
Jun-10
Jun-11
Jun-12
Jun-13
Jun-14
Jun-15


Taylor River
Water Depth
Fish Density
Fish Biomass
Water Level (cm)
Fish Density (# of fish/m^2)
Fish Biomass (g/m^2)
60
50
40
30
20
10
0
-10
18
16
14
12
10
8
6
4
2
0
Jun-08
Jun-09
Jun-10
Jun-11
Jun-12
Jun-13
Jun-14
Jun-15

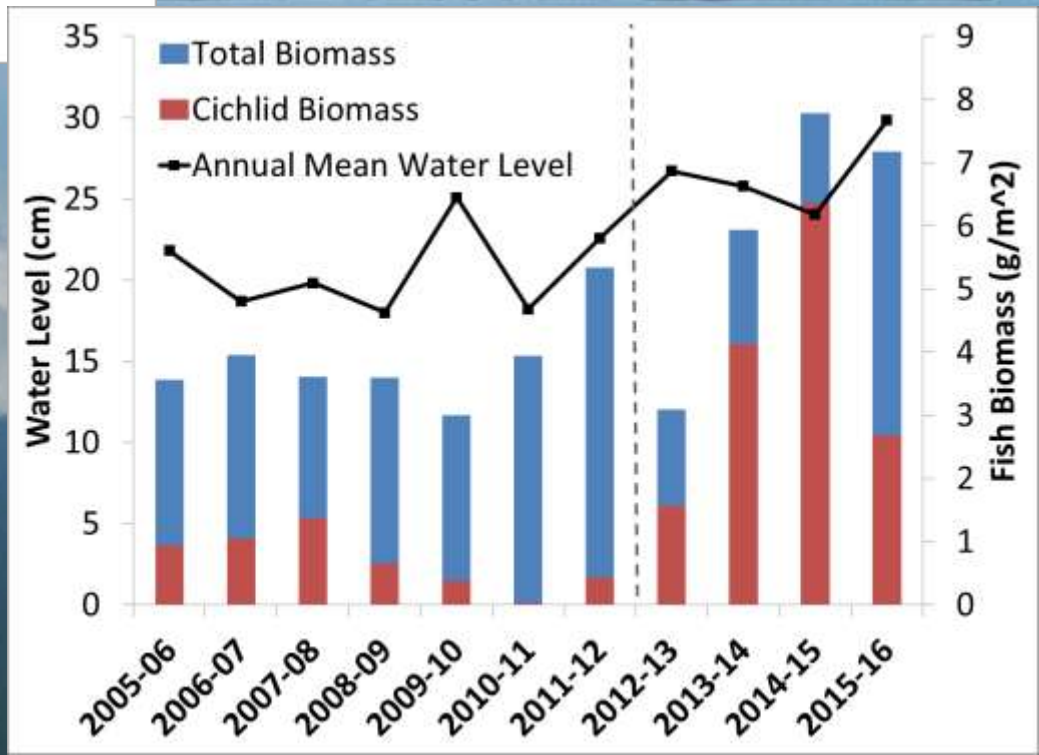

Taylor River
Water Depth
Fish Density
Fish Biomass
Water Level (cm)
Fish Density (# of fish/m^2)
Fish Biomass (g/m^2)
60
50
40
30
20
10
0
-10
18
16
14
12
10
8
6
4
2
0
Jun-08
Jun-09
Jun-10
Jun-11
Jun-12
Jun-13
Jun-14
Jun-15

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.