

# Preliminary Results WRLCM RocOn COS and PA Analysis

28 March 2019

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# RocOn with Newman

Using equations from Newman (2003) to incorporate the following effects on smolt survival:

- Smolt Size
- Log flow at Hood
- Exports
- DCC Gate Position
- Sacramento Indicator

# Abundance and CRR Metrics

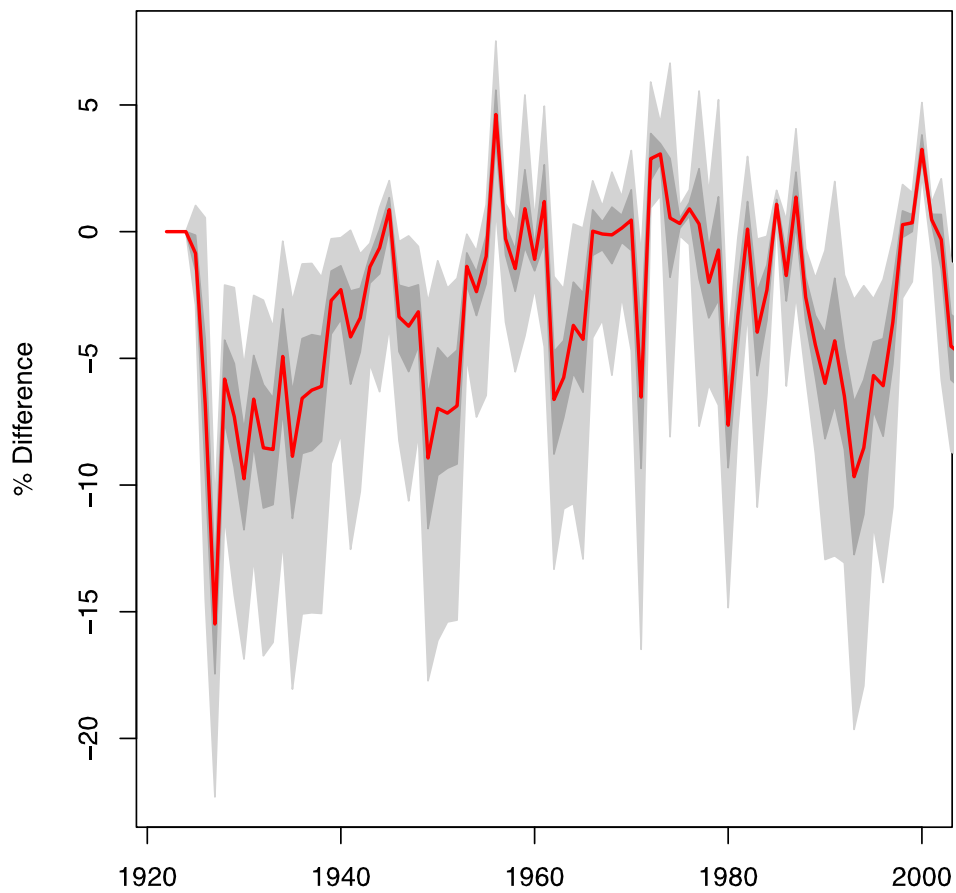
## Abundance

| Probability PA > COS in final Year (Year 79) | Percent difference in abundance of PA relative to COS in final year (Year 79) | Probability PA > COS across all years | Percent difference in abundance of PA relative to COS across all years |
|--|---|---------------------------------------|--|
| 0.998  | 3.33%   | 0.03                                  | -3.03%   |

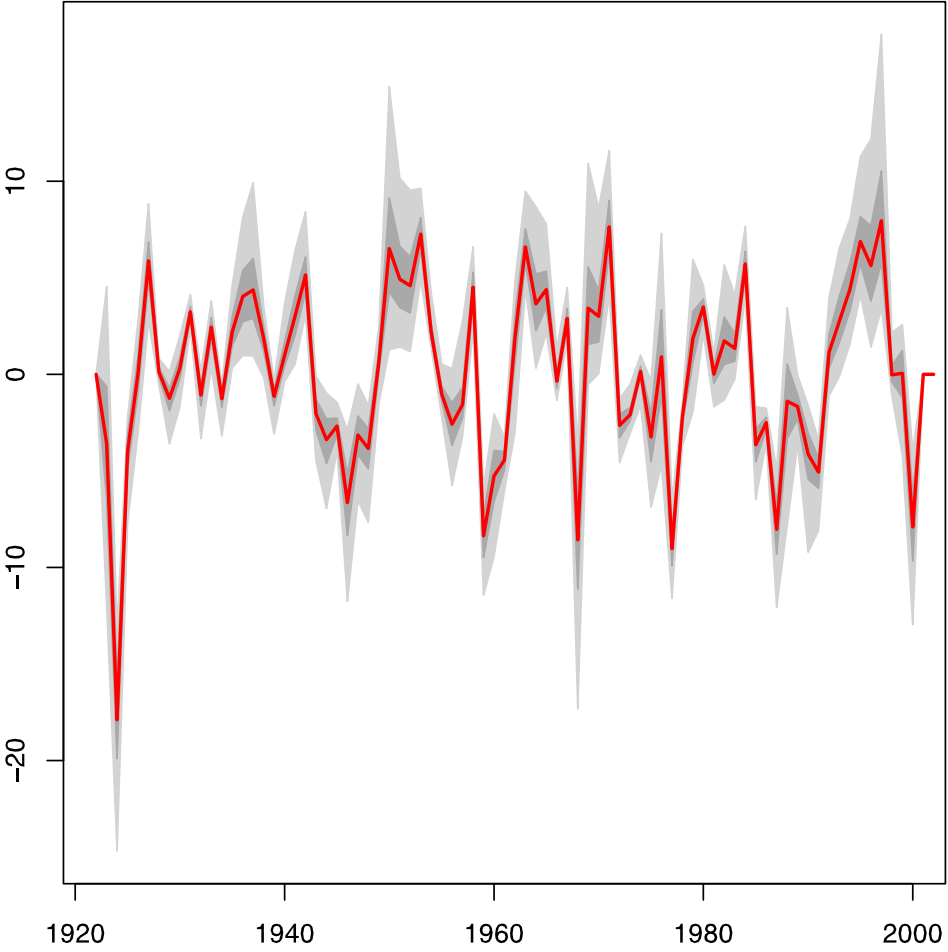
## Cohort replacement rate

| Probability that CRR PA > COS | Percent difference in CRR of PA relative to CRR of COS |
|-------------------------------|--|
| 0.028                         | -0.326%  |

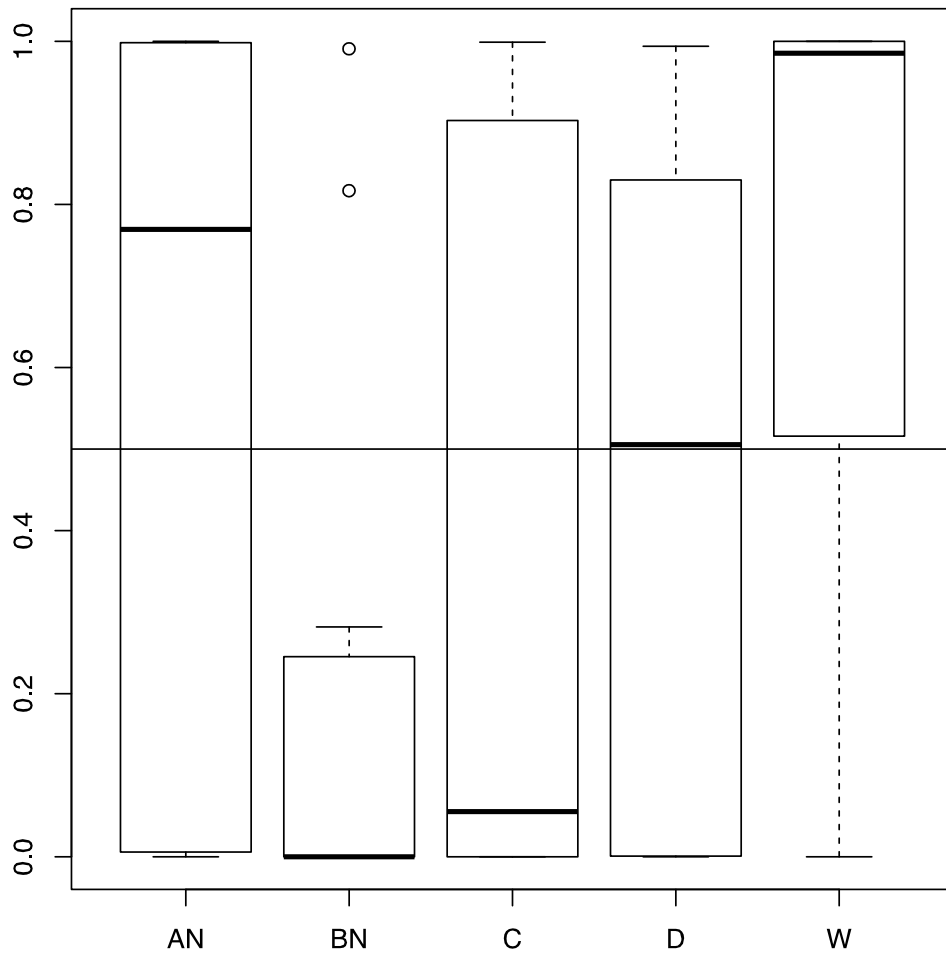
# Annual Percent difference in abundance 100% $(PA - COS)/COS$



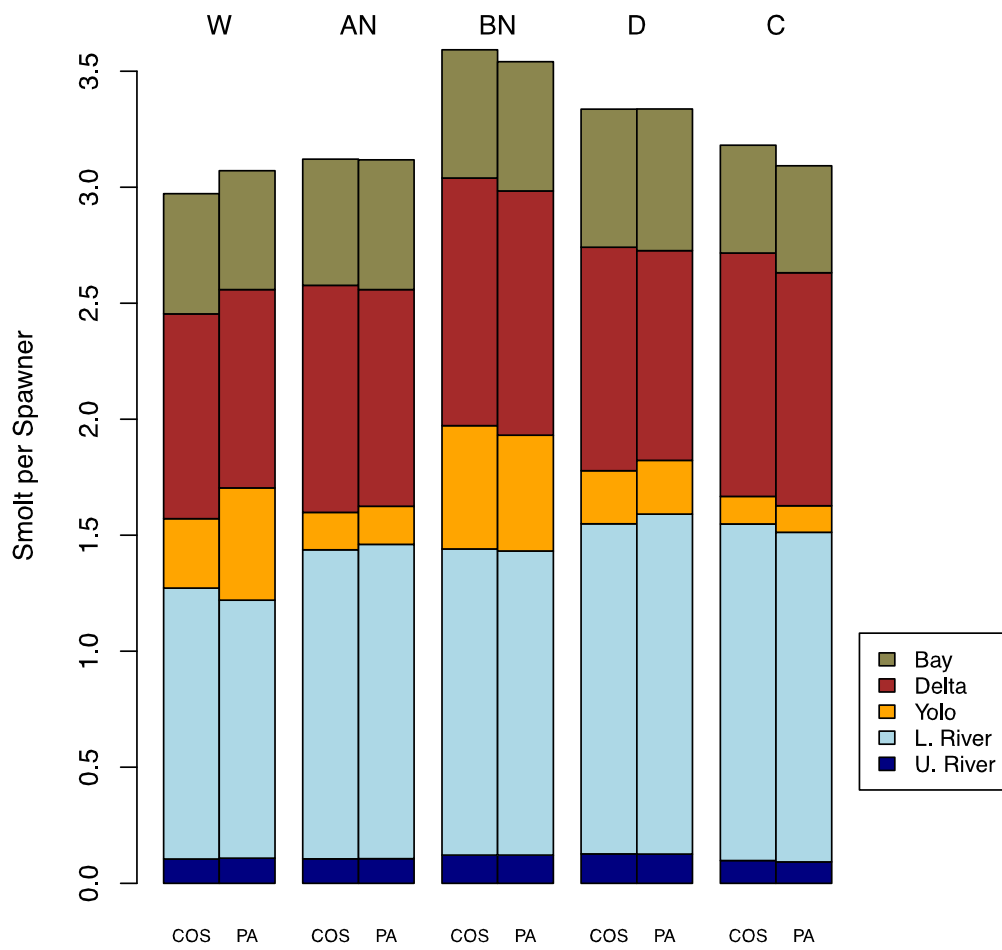
# Annual Percent difference in CRR $100\% (PA - COS)/COS$



# Probability of higher CRR in PA relative to COS by WYT



# Freshwater productivity

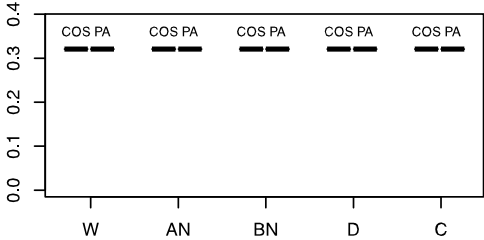


Survival rates by stage

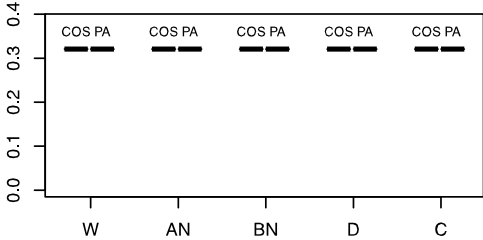


# Egg to fry survival

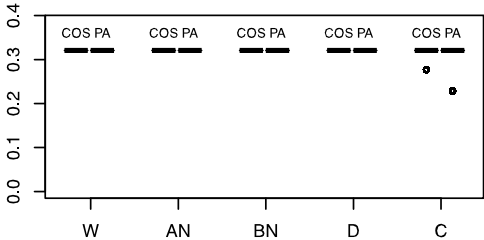
Egg Survival for Spawning in Apr



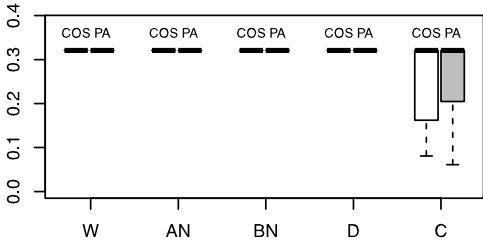
Egg Survival for Spawning in May



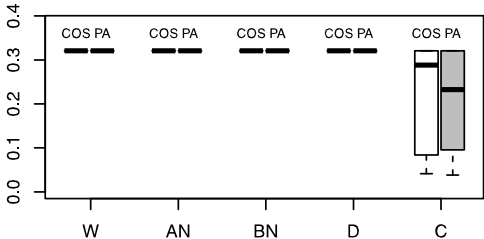
Egg Survival for Spawning in Jun



Egg Survival for Spawning in Jul

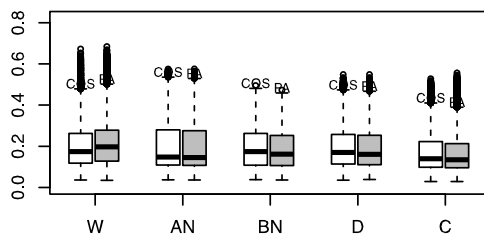


Egg Survival for Spawning in Aug

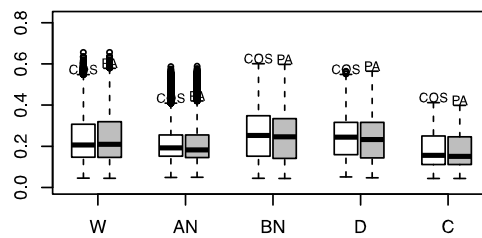


# Upper River smolt survival

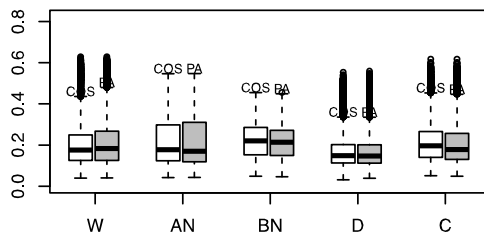
Upper River Smolt Survival (origin to Chipps) in Jan



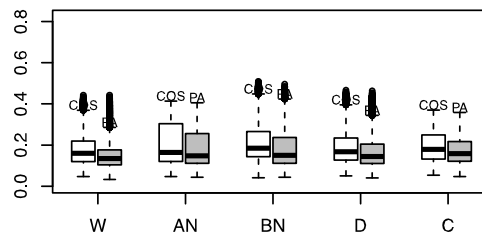
Upper River Smolt Survival (origin to Chipps) in Feb



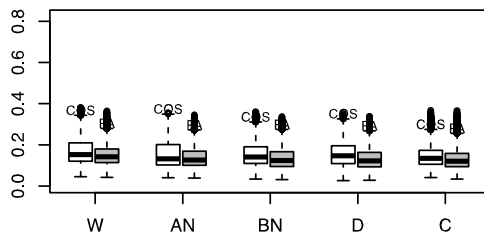
Upper River Smolt Survival (origin to Chipps) in Mar



Upper River Smolt Survival (origin to Chipps) in Apr

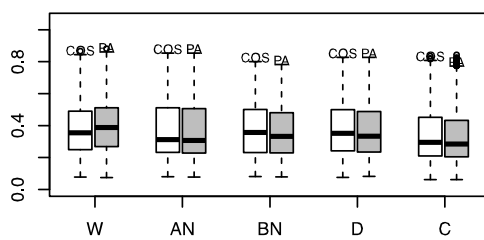


Upper River Smolt Survival (origin to Chipps) in May

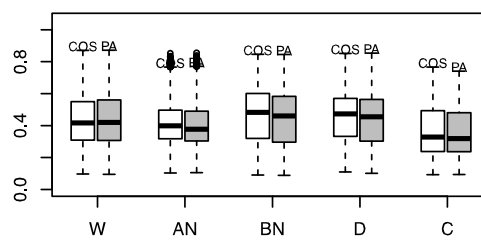


# Lower River smolt survival

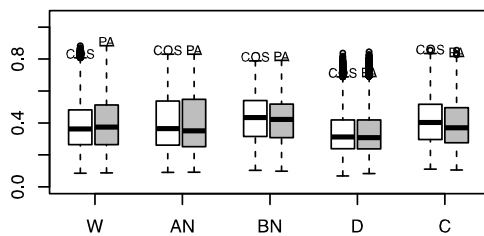
Lower River Smolt Survival (origin to Chipps) in Jan



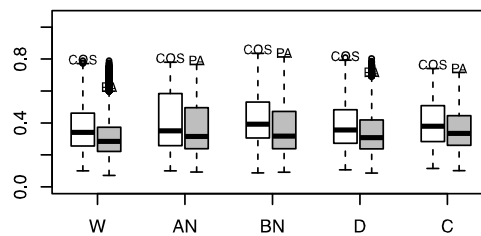
Lower River Smolt Survival (origin to Chipps) in Feb



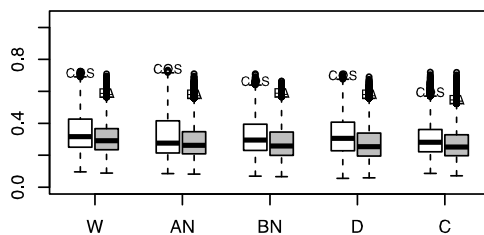
Lower River Smolt Survival (origin to Chipps) in Mar



Lower River Smolt Survival (origin to Chipps) in Apr

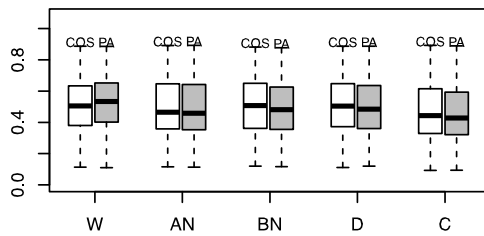


Lower River Smolt Survival (origin to Chipps) in May

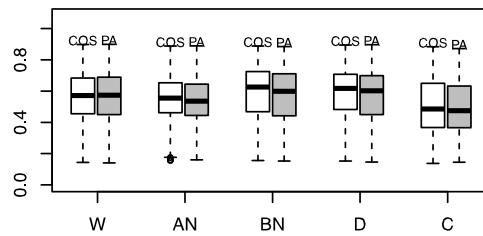


# Yolo survival

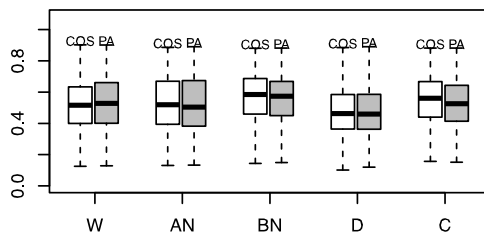
Yolo Smolt Survival (origin to Chipps) in Jan



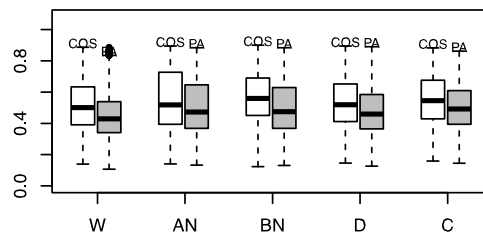
Yolo Smolt Survival (origin to Chipps) in Feb



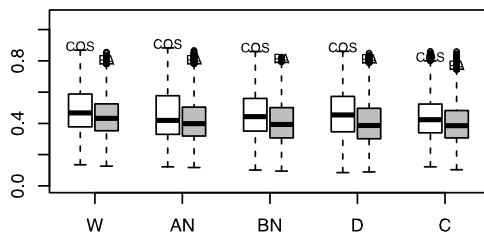
Yolo Smolt Survival (origin to Chipps) in Mar



Yolo Smolt Survival (origin to Chipps) in Apr

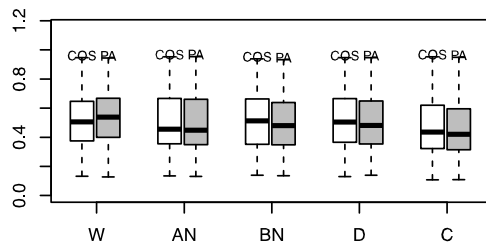


Yolo Smolt Survival (origin to Chipps) in May

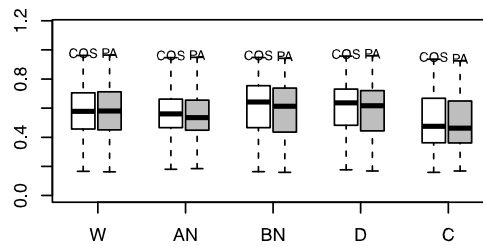


# Delta smolt survival

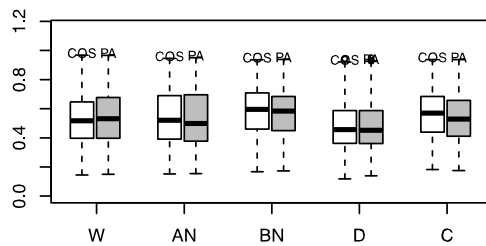
Delta Smolt Survival (origin to Chipps) in Jan



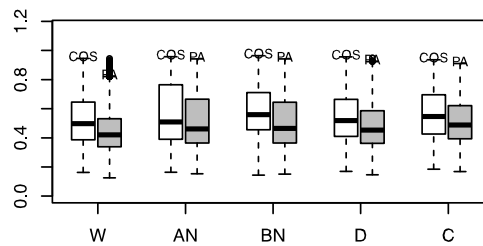
Delta Smolt Survival (origin to Chipps) in Feb



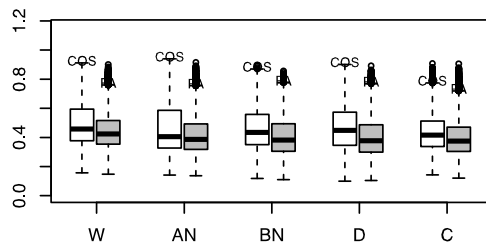
Delta Smolt Survival (origin to Chipps) in Mar



Delta Smolt Survival (origin to Chipps) in Apr



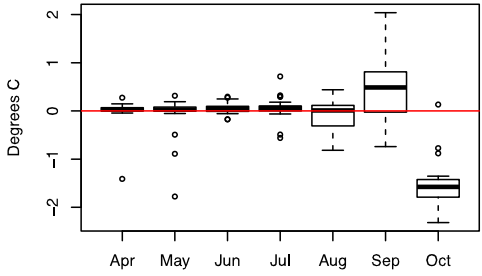
Delta Smolt Survival (origin to Chipps) in May



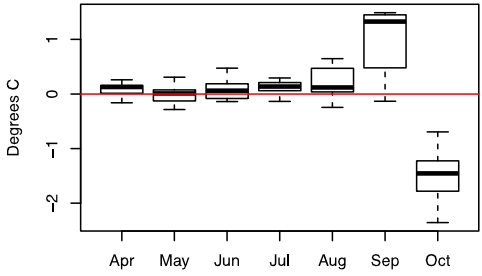
# Physical Drivers

# Keswick Temperature (PA-COS)

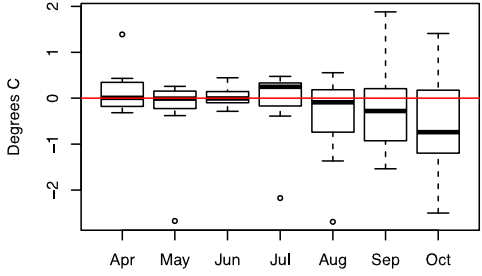
WY Type W



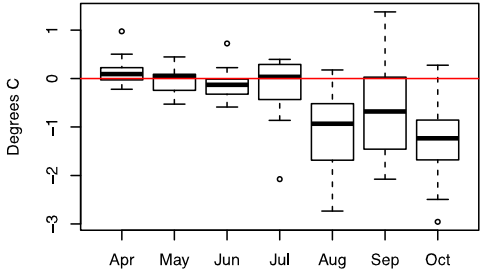
WY Type AN



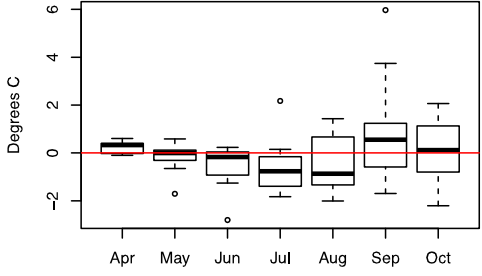
WY Type BN



WY Type D



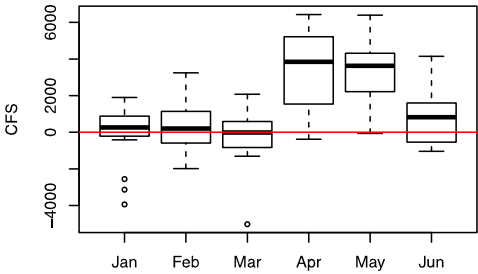
WY Type C



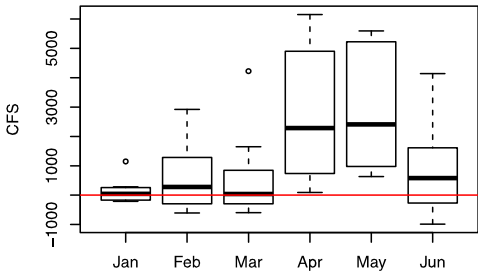
Keswick Temp,  
Absolute Difference  
(PA-COS)

# Exports (PA - COS)

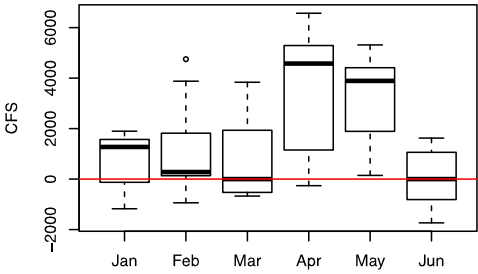
WY Type W



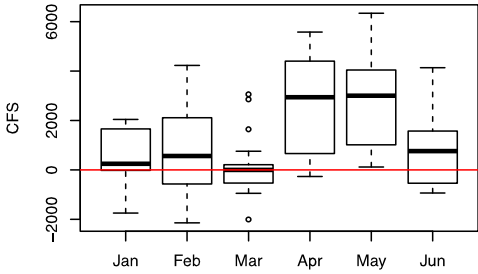
WY Type AN



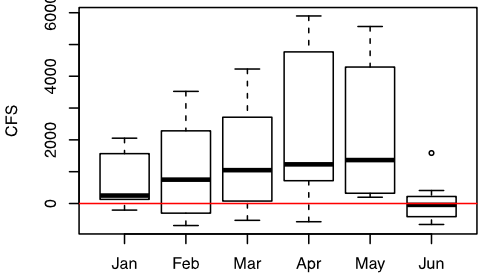
WY Type BN



WY Type D



WY Type C

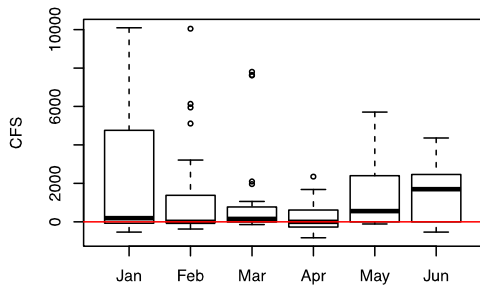


Exports,  
Absolute Difference  
(PA-COS)

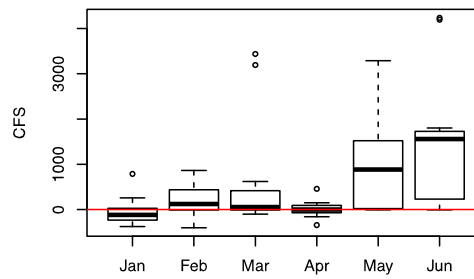


# Freeport flow (PA – COS)

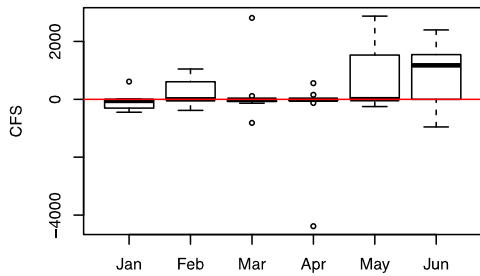
WY Type W



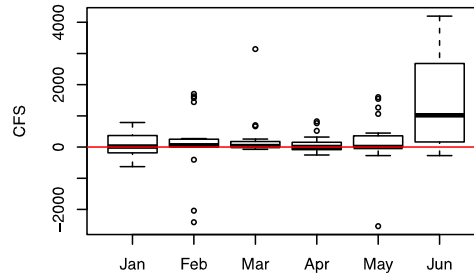
WY Type AN



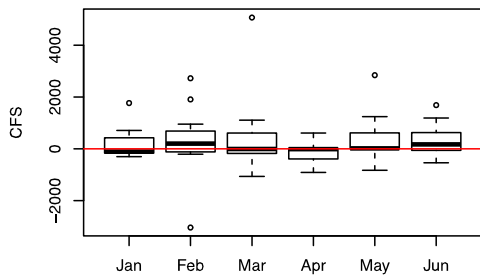
WY Type BN



WY Type D



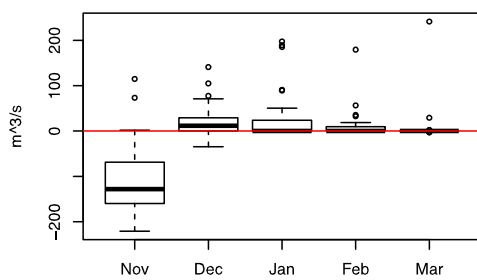
WY Type C



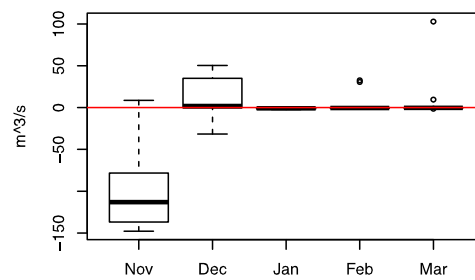
Freeport Flows,  
Absolute Difference  
(PA-COS)

# Wilkins Slough (PA – COS)

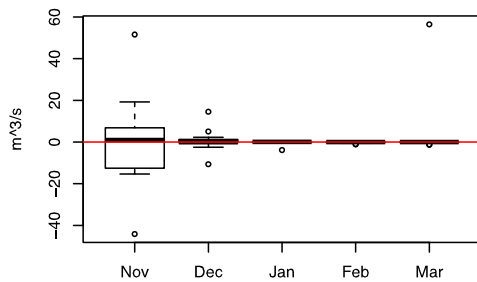
WY Type W



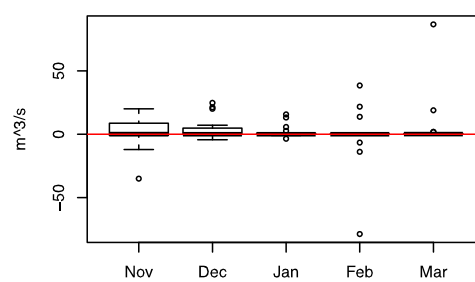
WY Type AN



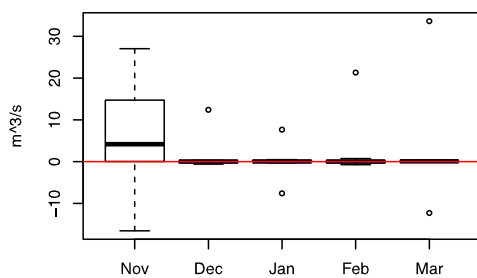
WY Type BN



WY Type D



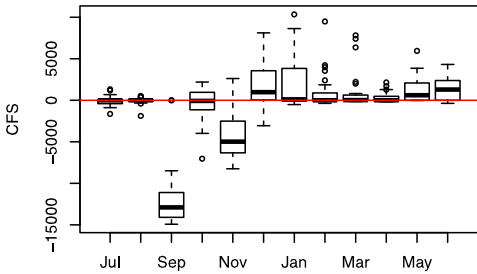
WY Type C



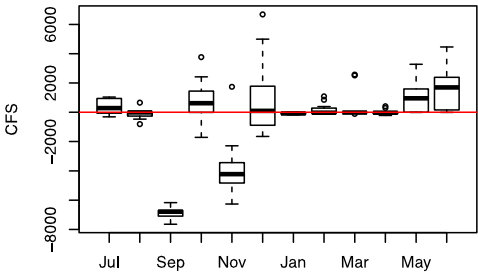
Wilkins Slough Flows,  
Absolute Difference  
(PA-COS)

# Verona Flow (PA – COS)

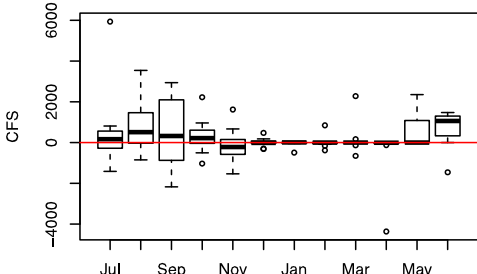
WY Type W



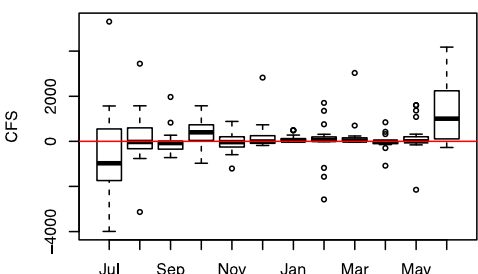
WY Type AN



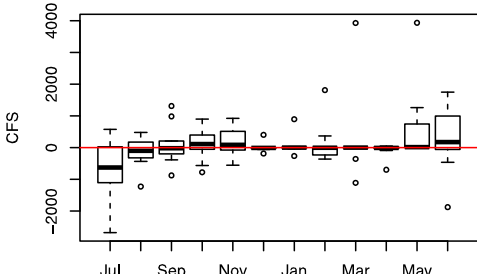
WY Type BN



WY Type D



WY Type C



Verona Flow,  
Absolute Difference  
(PA-COS)