

CH1ManuscriptCode

Ana Silverio

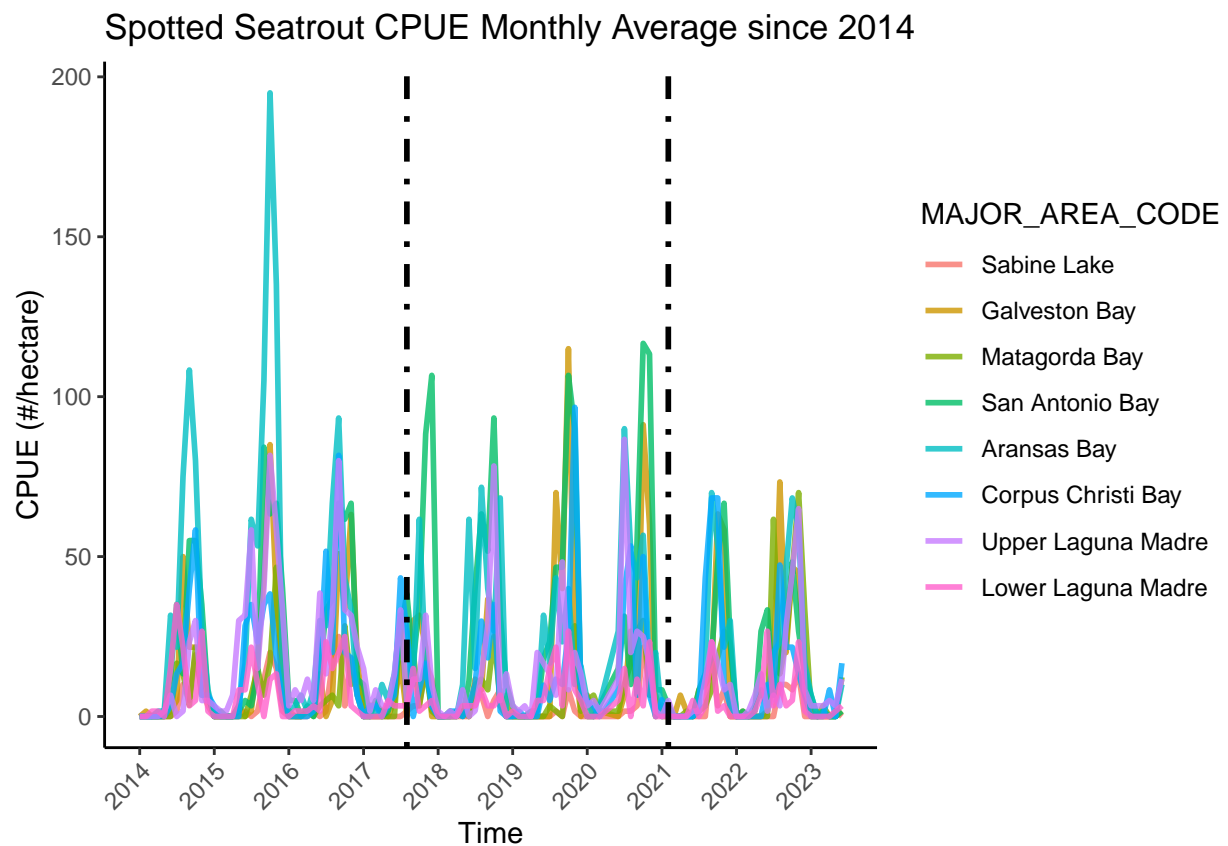
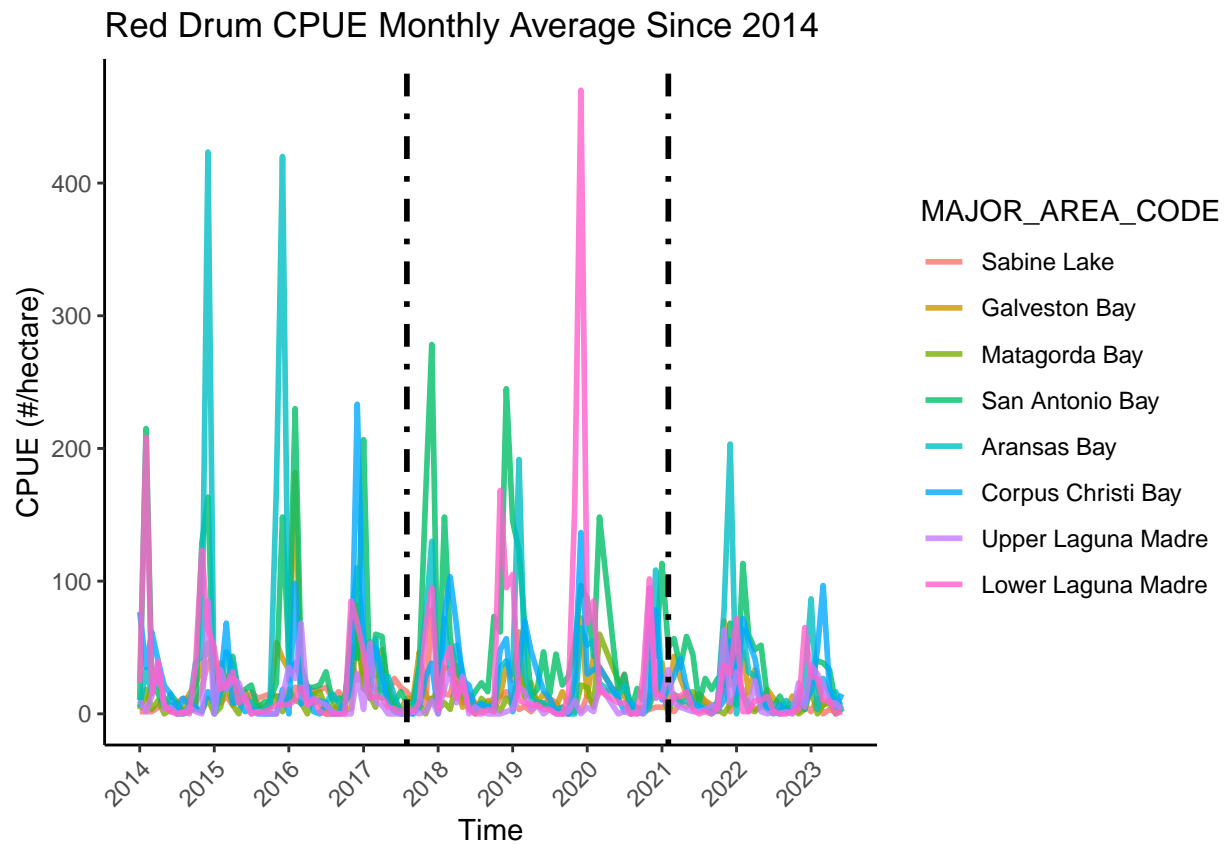
2024-07-30

Manuscript titled: “Assessing the Resistance and Resilience of Important Recreational Fish Species to Extreme Events in Coastal Texas”

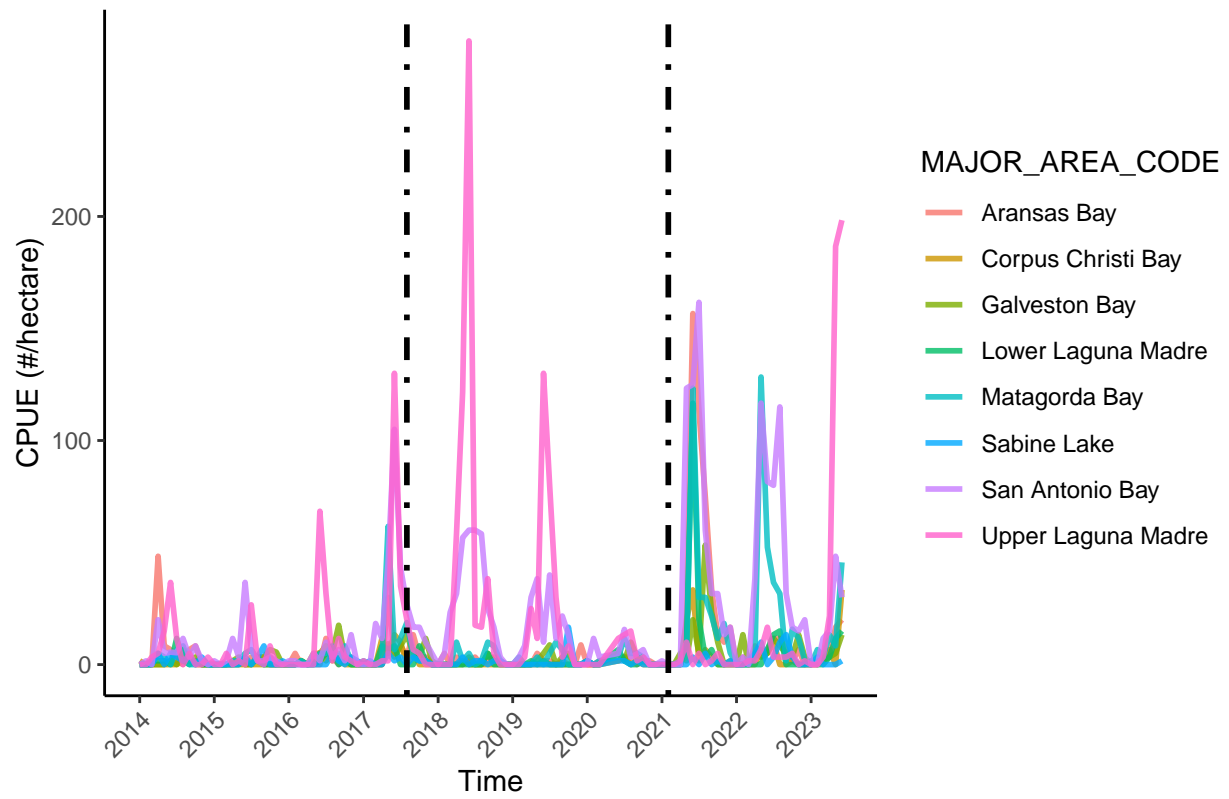
Co-Authors: Ana C. Silverio, Mariah C. Livernois, Dakus Geeslin, Nathan Furey, and Easton R. White

The following is code for all figures and tables and respective calculations in the above mentioned manuscript submitted to AFS Marine and Coastal Fisheries on 11/11/2024. R Code for the calculations, figures and tables within the supplemental can be found in the separate file “Supp_MaterialCH1” in the repository.

Time series of each species



Black Drum CPUE Monthly Average since 2014



Southern Flounder CPUE Monthly Average since 2014

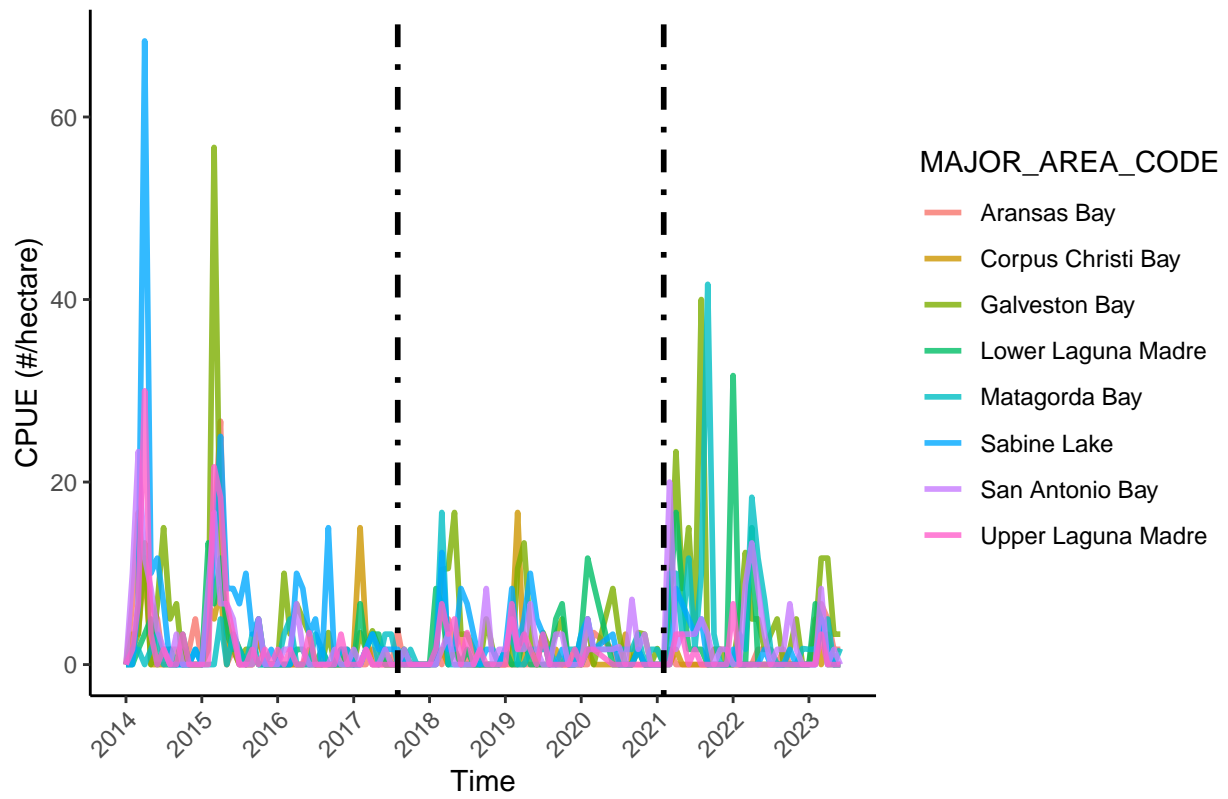


Figure 2

Pine Lake Matagorda Bay Aransas Bay Upper
 Preston Bay San Antonio Bay Corpus Christi Bay Lower

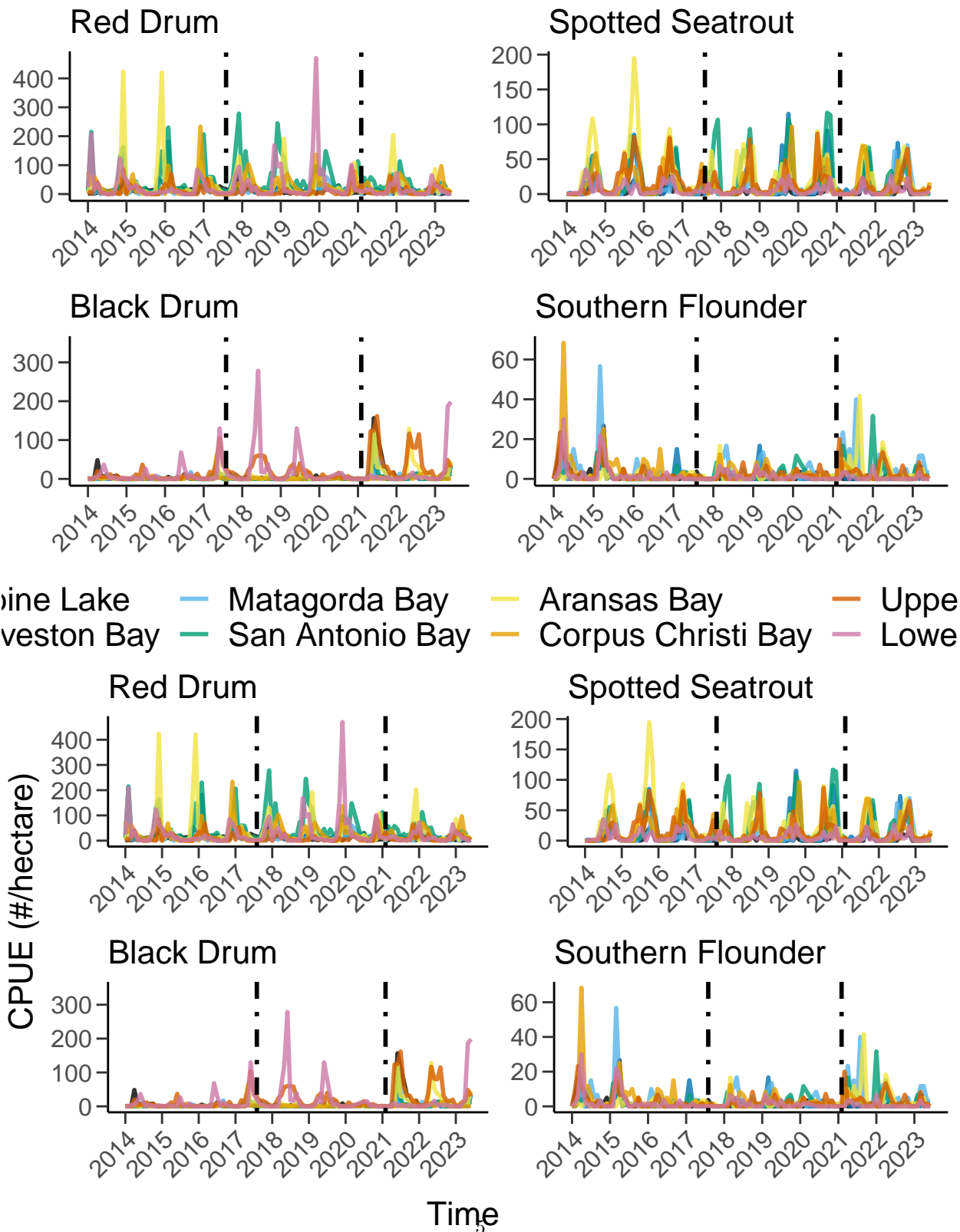


Table 1

Major Bay	Average Depth (m)	Max Depth Dredged (m)	Surface Area (ha)	Volume (km ³)	Average Temp (Celsius)	Average Salinity (ppt)
Aransas Bay	2.0	6.1	46279	0.93	23.96±6.62	20.26±8.41
Corpus Christi Bay	2.4	13.7	44451	1.15	24.1±6.07	29.46±5.77
Galveston Bay	2.1	9.1	143153	2.91	23.69±6.73	16.85±8.97
Laguna Madre	1.1	3.7	214545	2.57	25.45±6.17	33.93±9.19
Matagorda Bay	2.3	13.7	101368	2.13	24.01±6.59	19.04±8.55
Sabine Lake	1.8	12.0	17798	0.33	22.78±6.87	7.04±6.04
San Antonio Bay	1.4	9.4	56162	0.75	24.32±6.49	21.58±9.52

Table 2

Species	Recruitment Window	Spawning Season	Citation
Red Drum	October - May of the followinig year	mid August - mid October	Neiland and Wilson 1994 & Rooker 1998
Spotted Seatrout	June - December	April - October	Rooker 1998 & Murphy and McMichael Jr 2002
Black Drum	April - October	Febuary - April	Neiland and Wilson 1993
Southern Flounder	February - July	November - December	Matlock 1991 & Stokes 1977

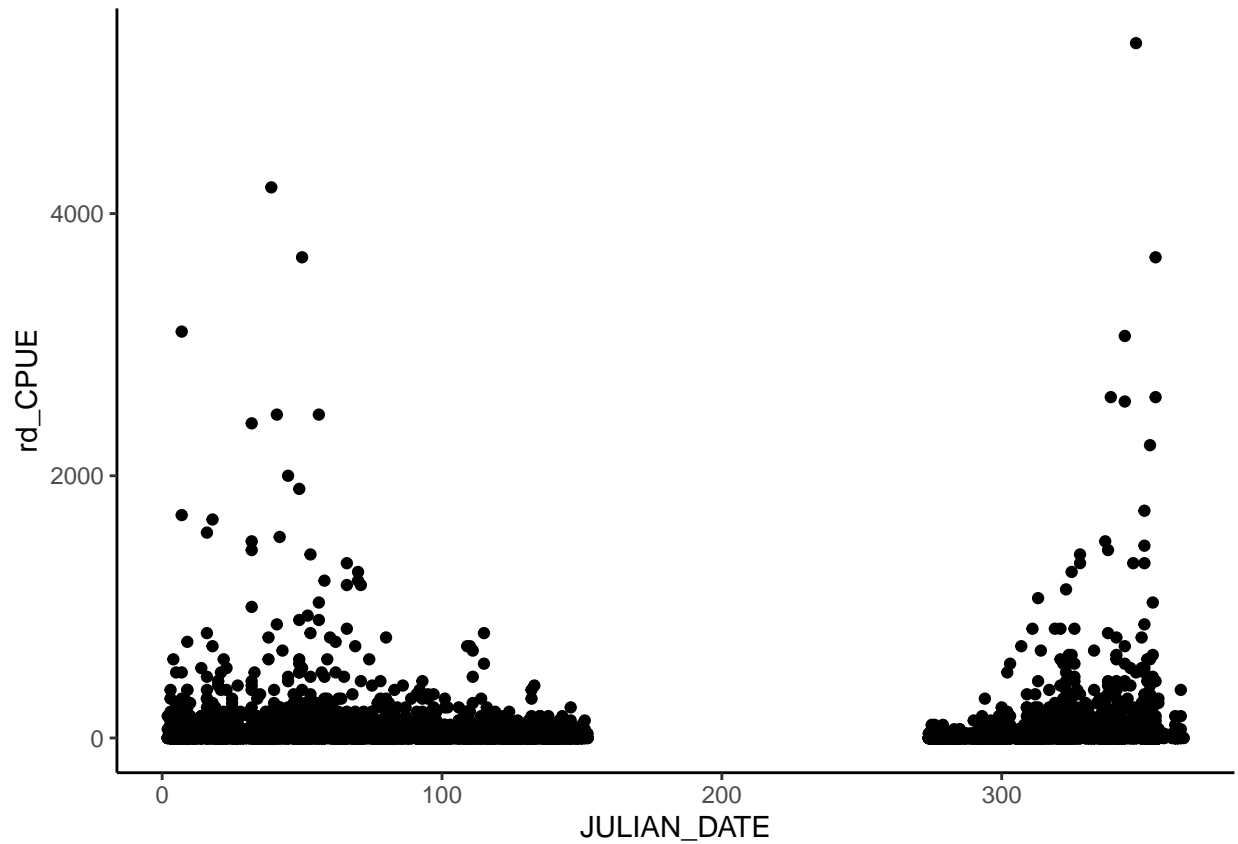
Species	Recruitment Window	Spawning Season	Citation
Red Drum	October - May of the followinig year	mid August - mid October	Neiland and Wilson 1994 & Rooker 1998
Spotted Seatrout	June - December	April - October	Rooker 1998 & Murphy and McMichael Jr 2002
Black Drum	April - October	February - April	Neiland and Wilson 1993
Southern Flounder	February - July	November - December	Matlock 1991 & Stokes 1977

Baseline Calculations

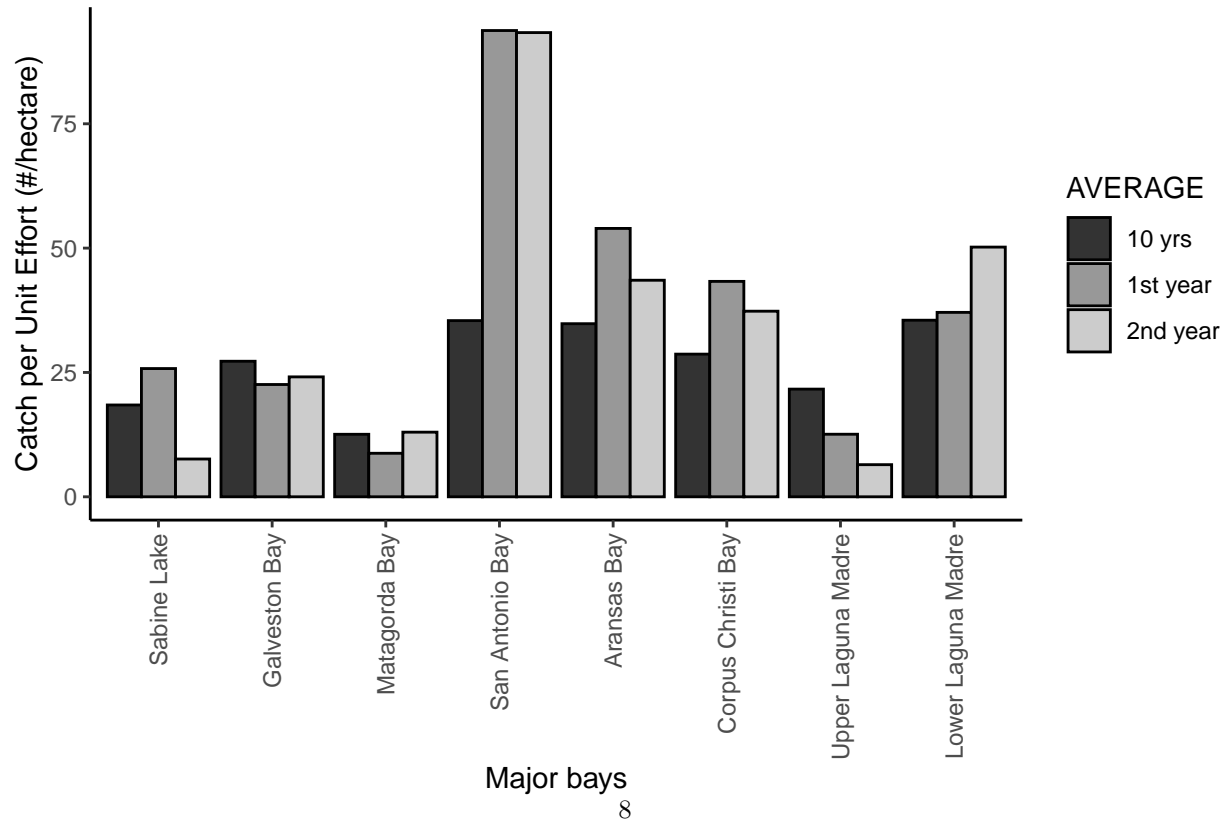
In the order of Hurricane, Freeze for each

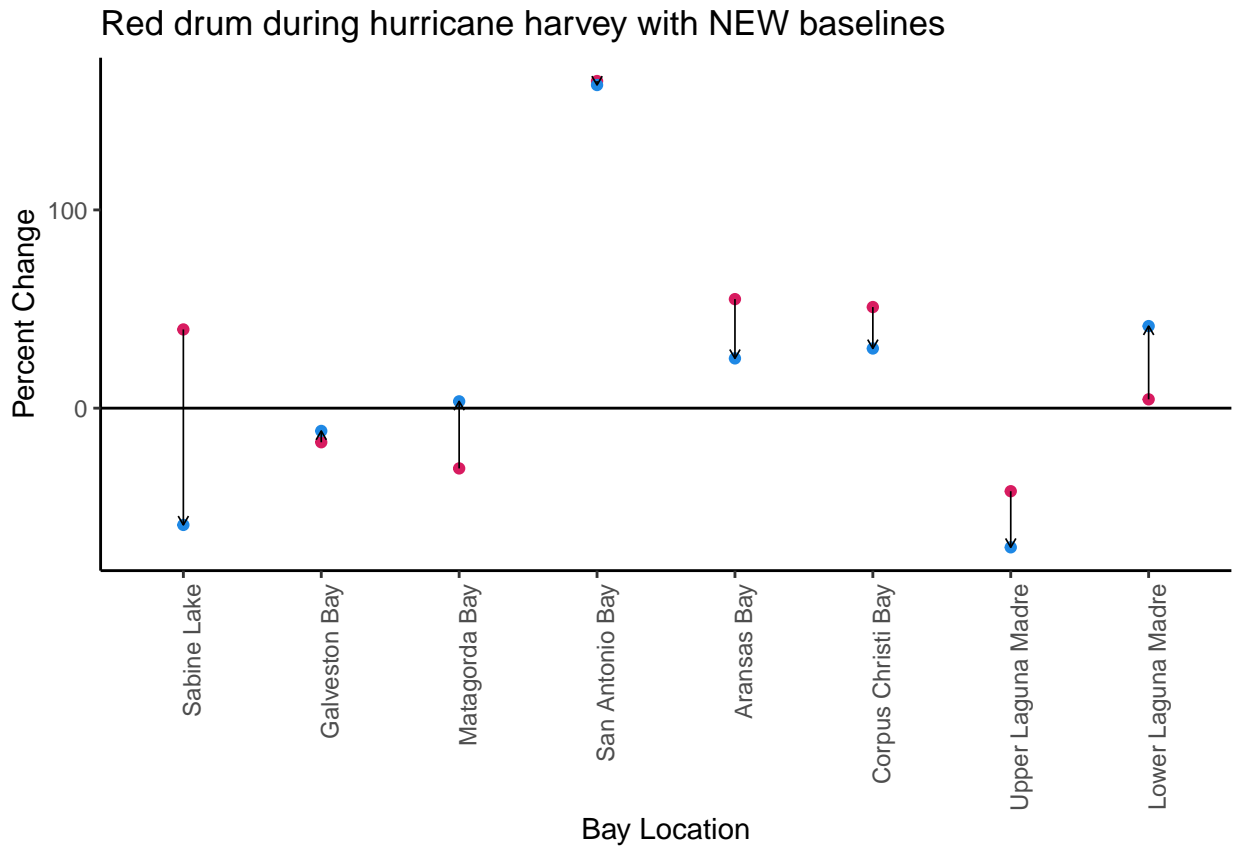
- Red Drum
- Spotted Seatrout
- Black Drum
- Southern Flounder

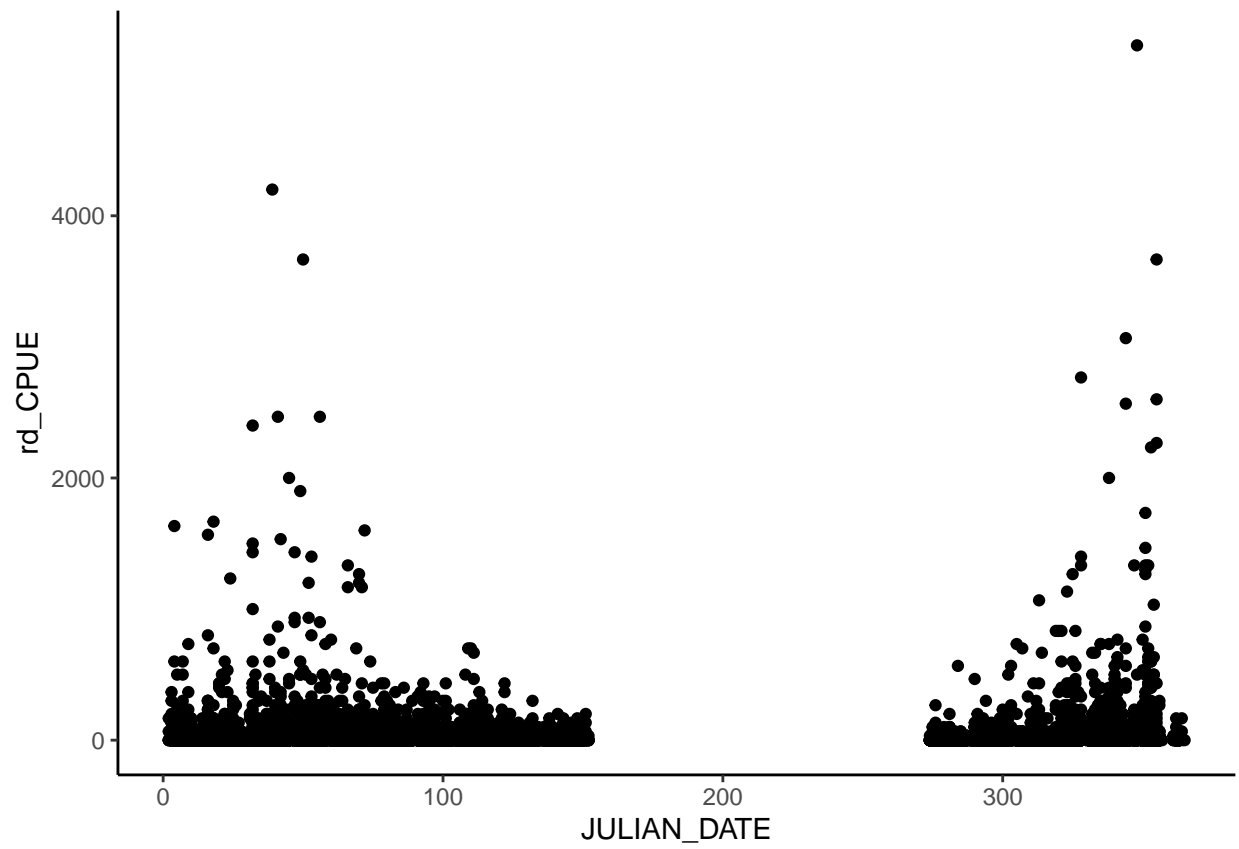
Red Drum

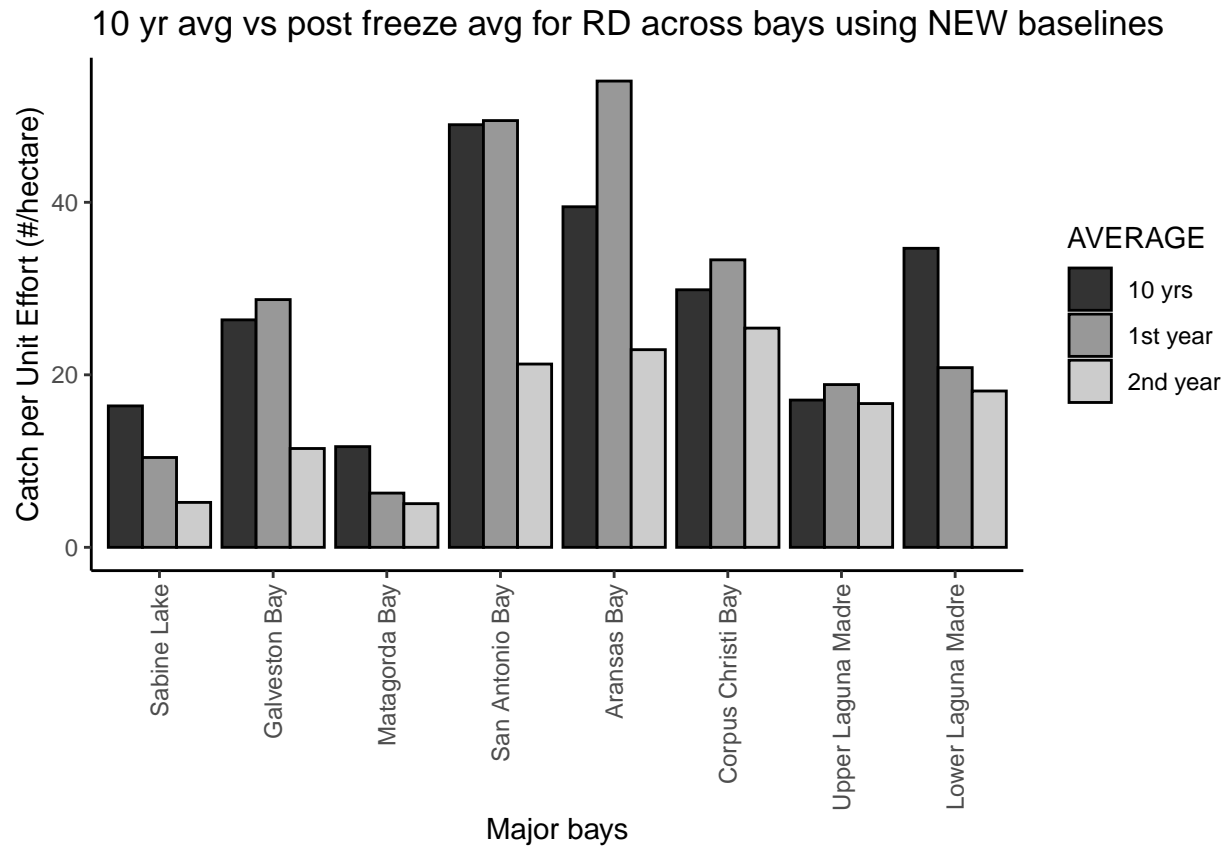


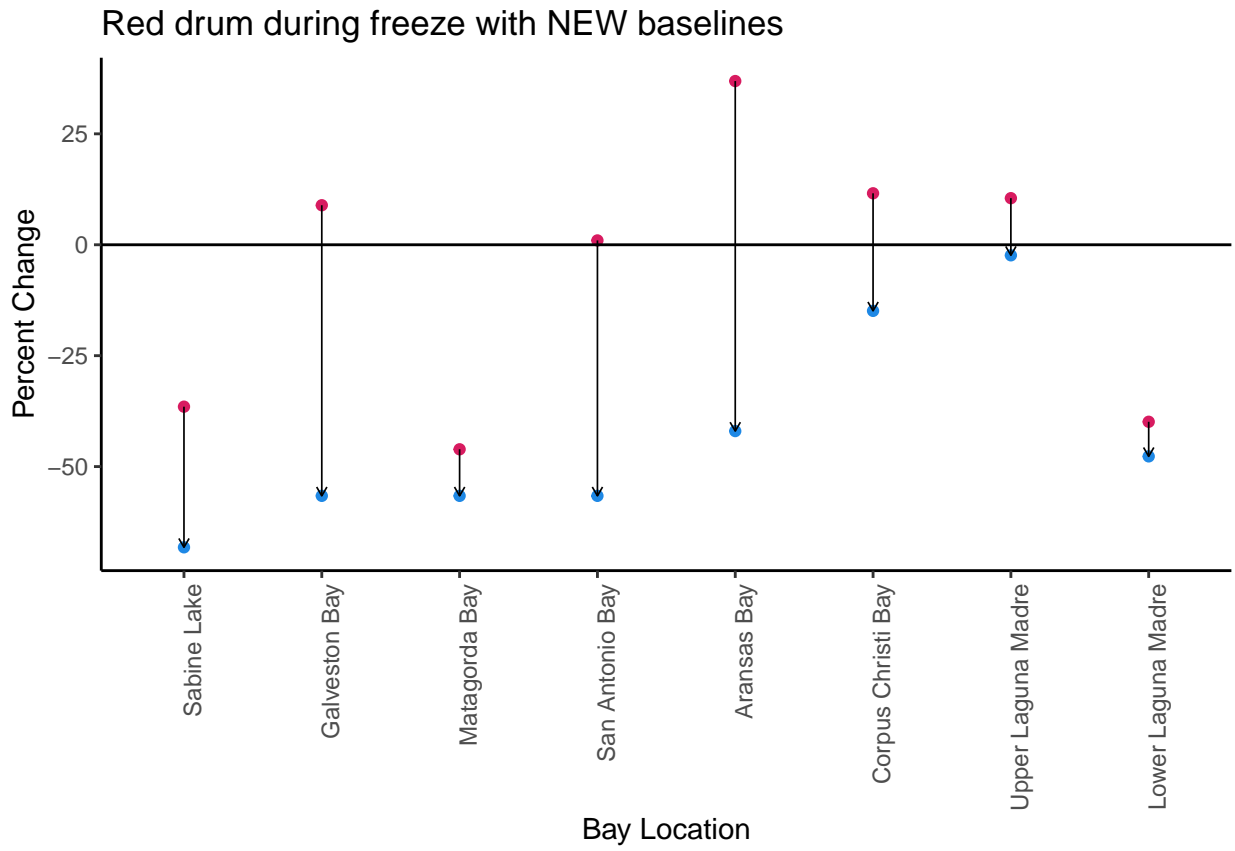
10 yr avg vs post storm avg for RD across bays using NEW baselines



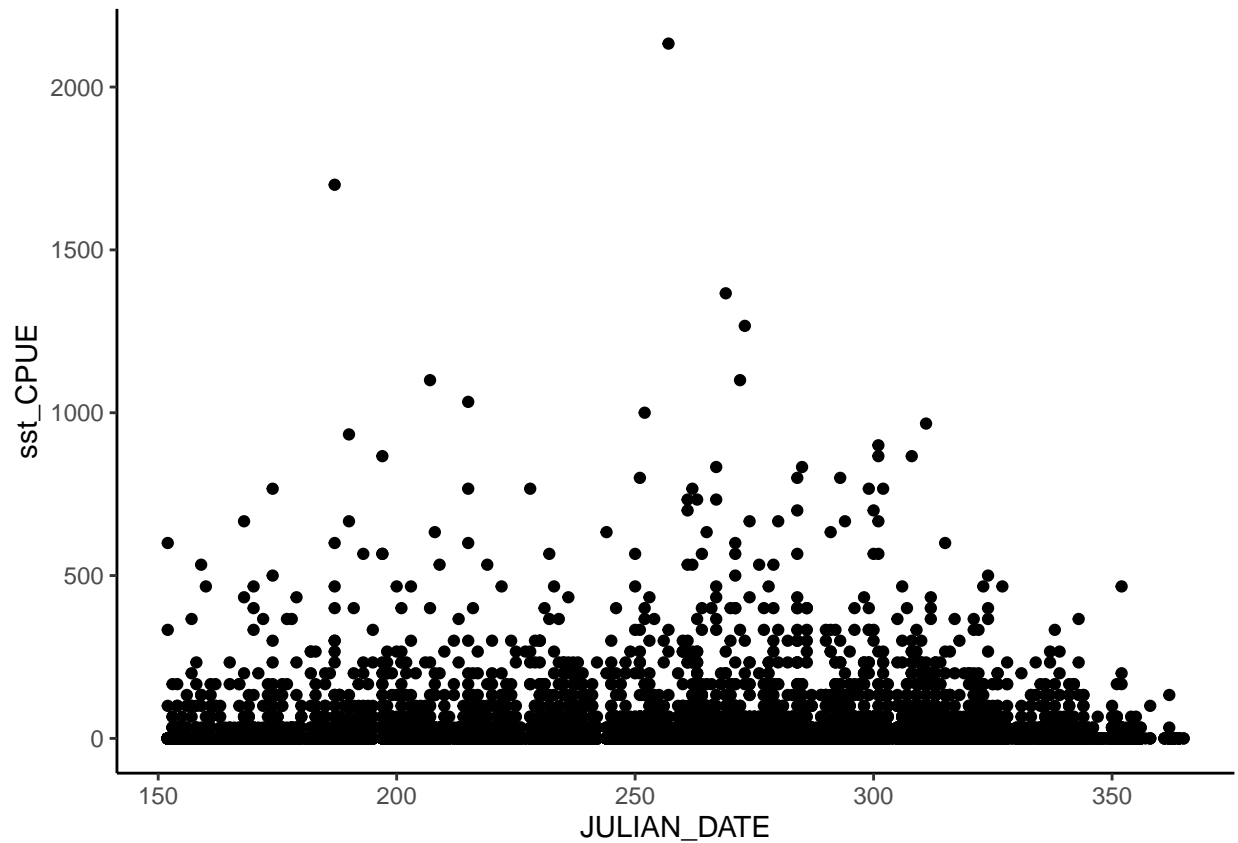




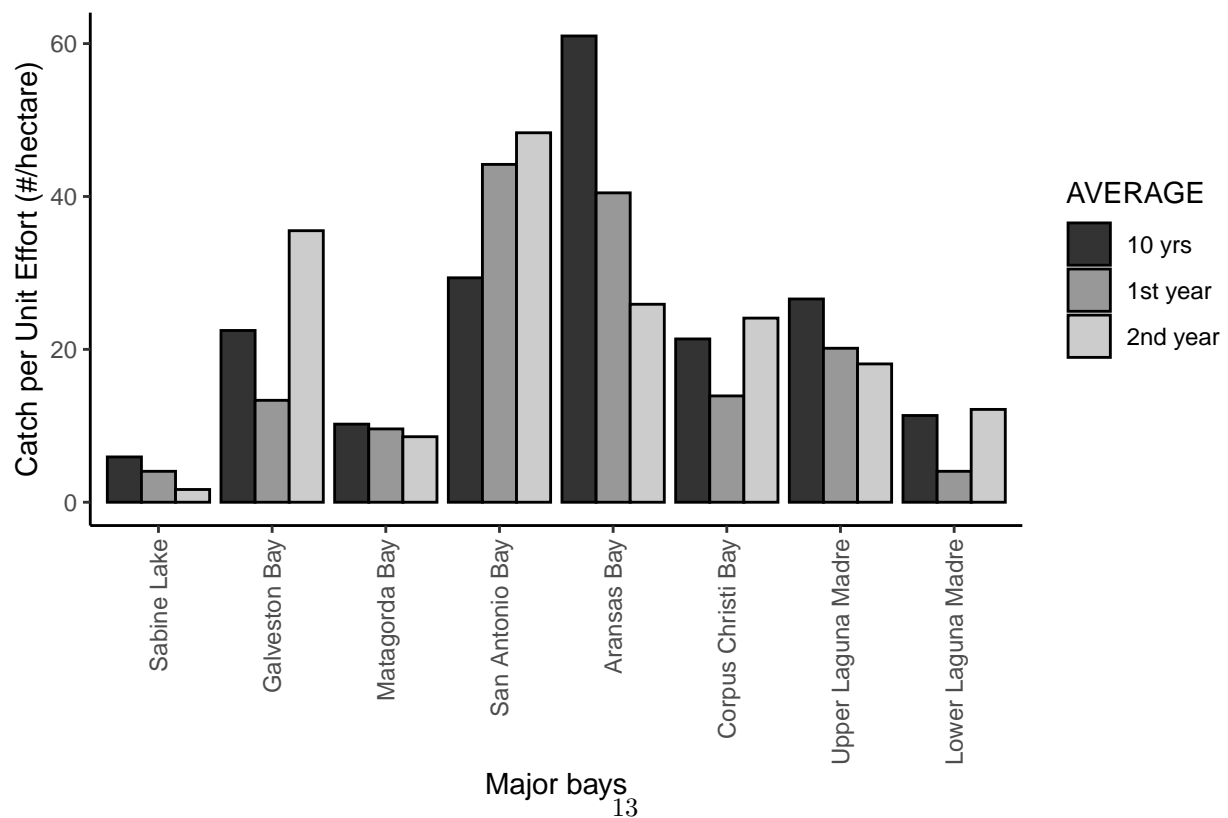


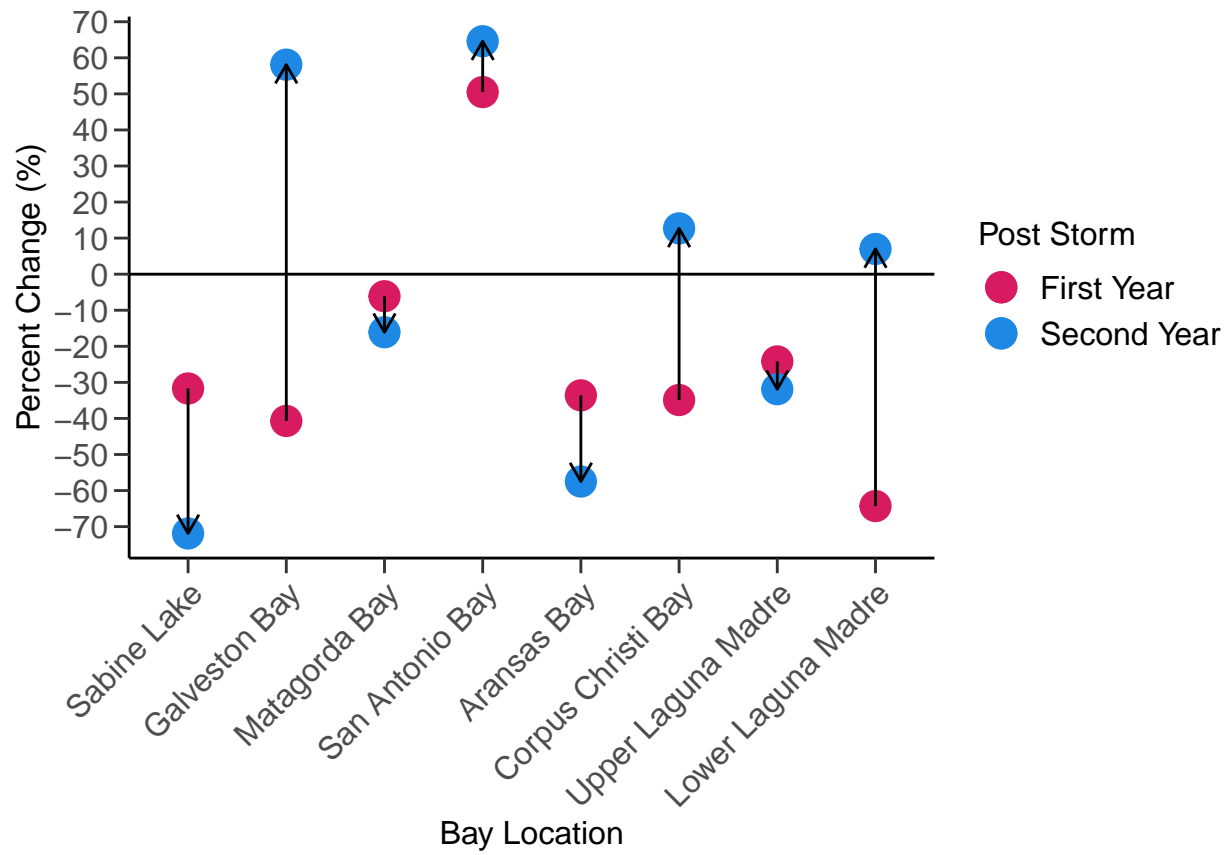


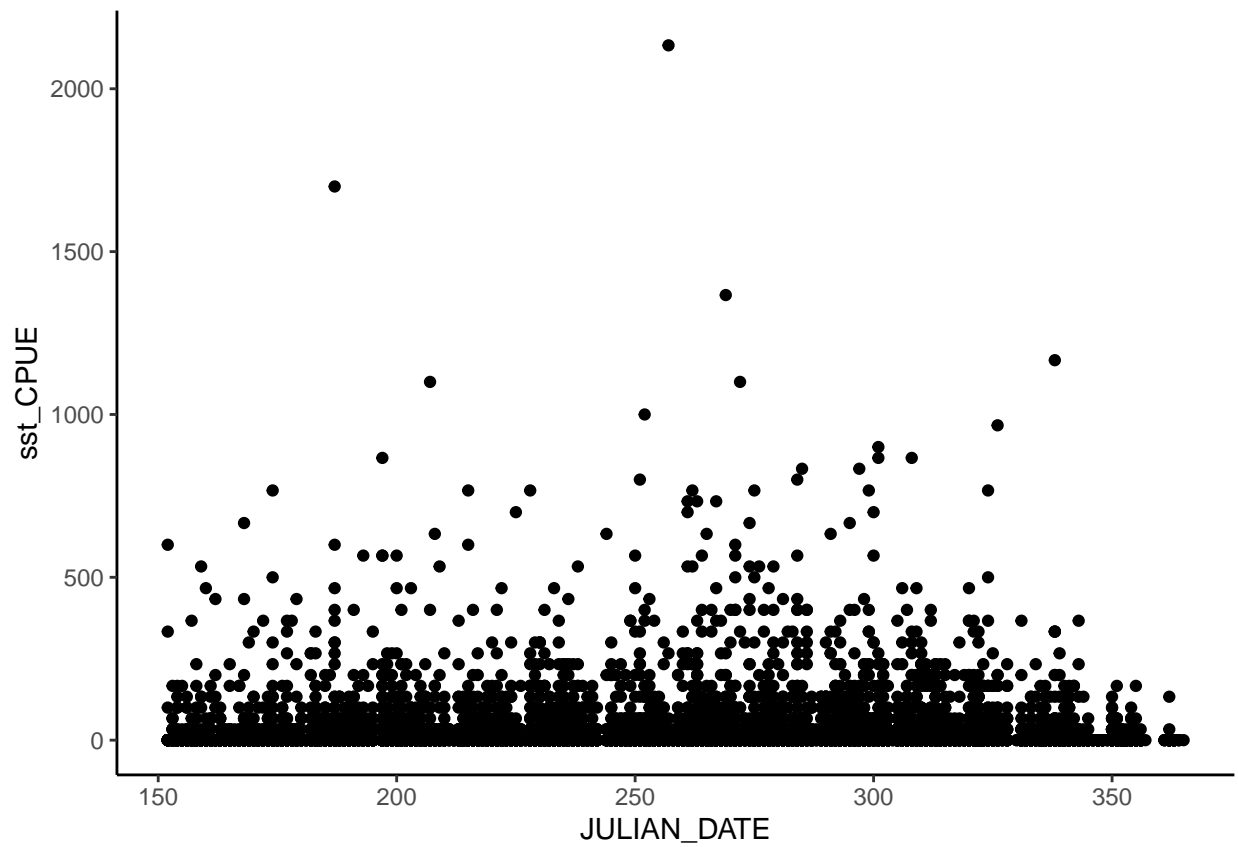
Spotted Seatrout



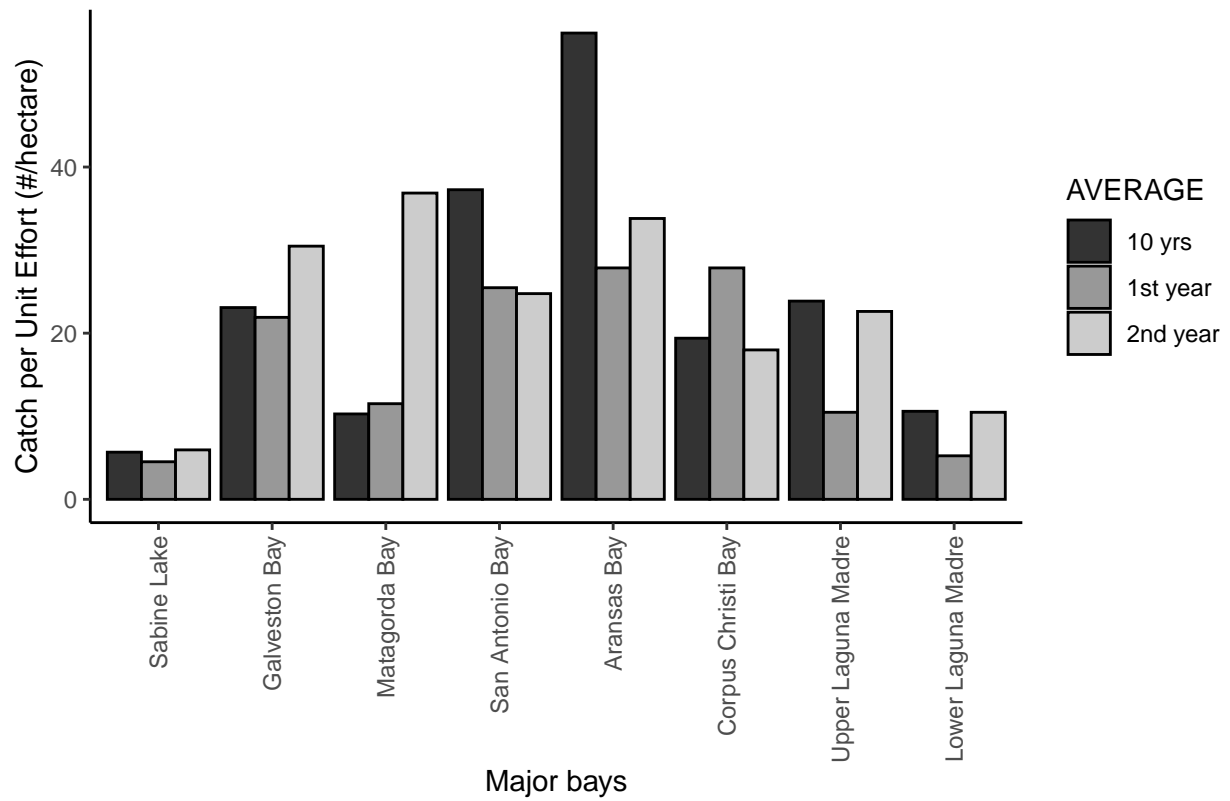
10 yr avg vs post storm avg for SST across bays using NEW baselines

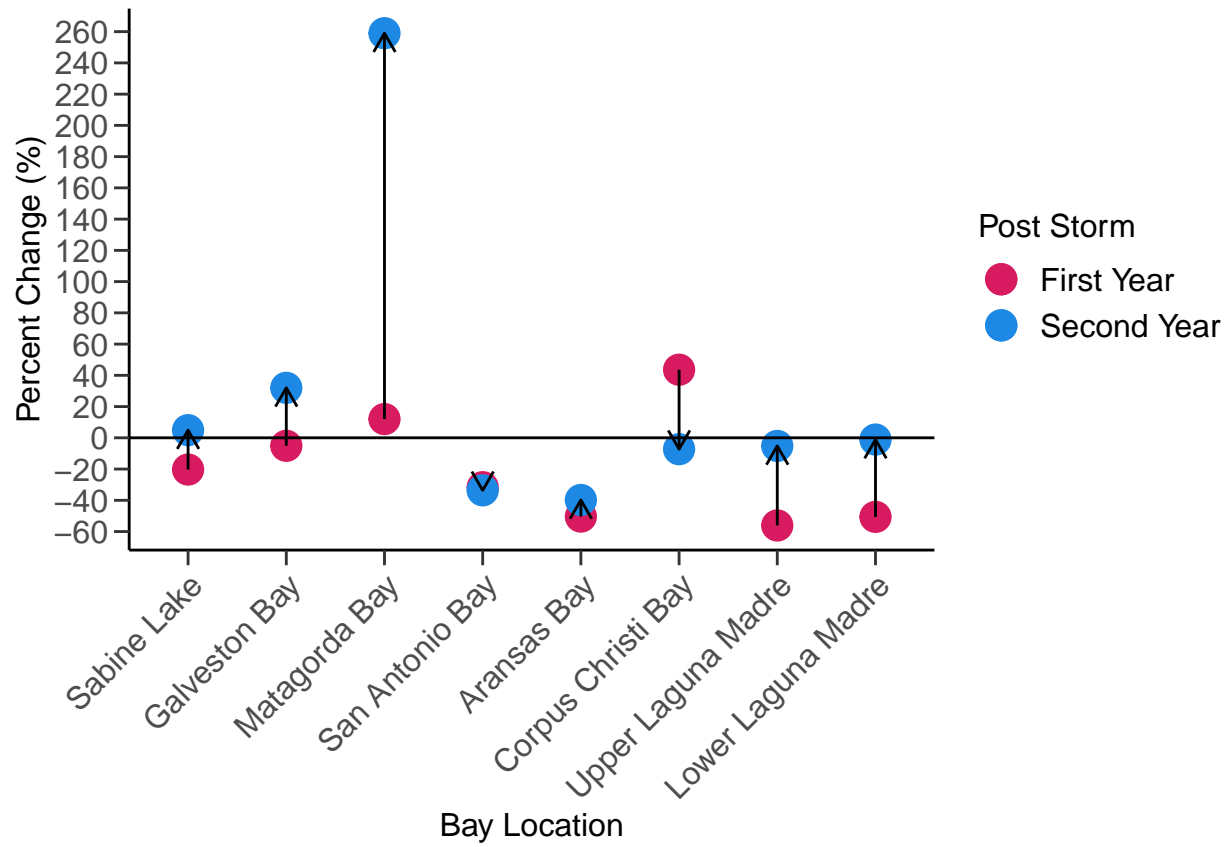




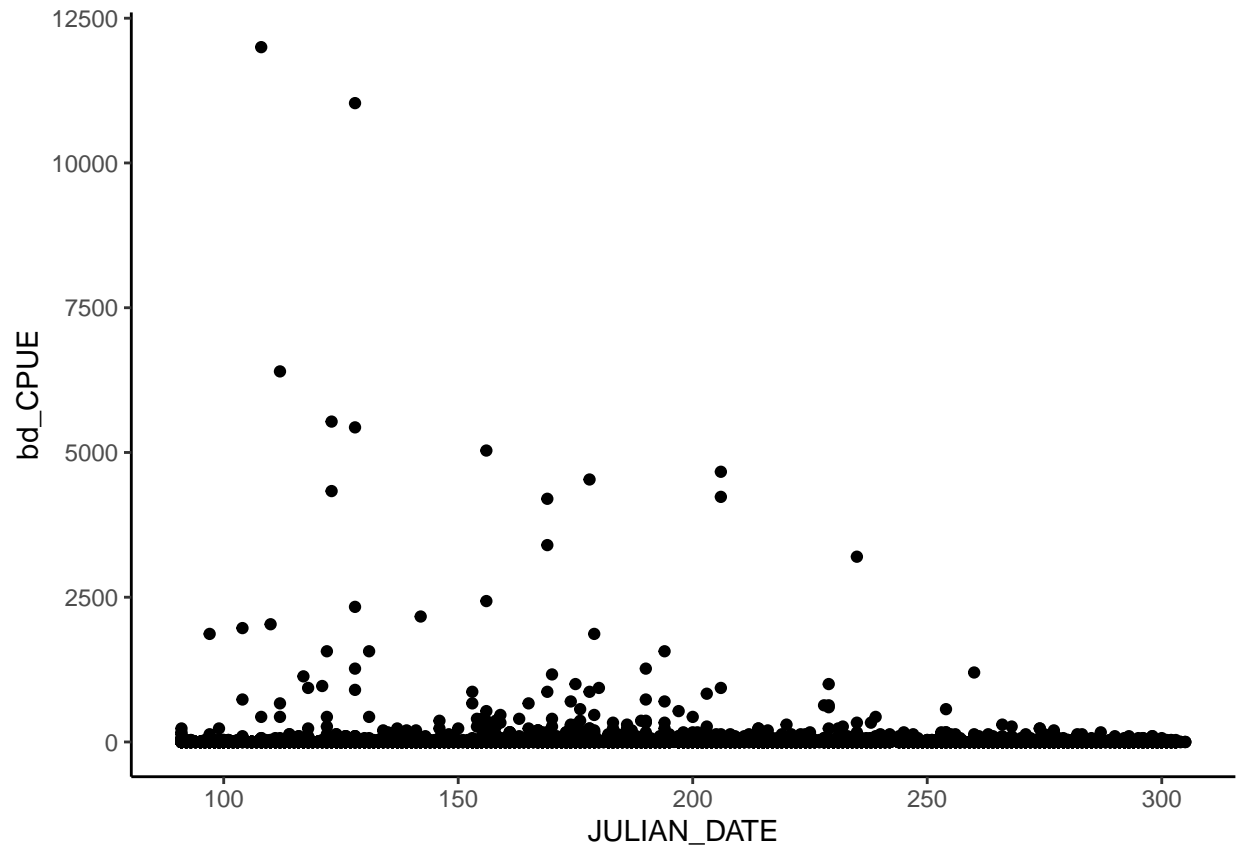


10 yr avg vs post storm avg for SST across bays using NEW baselines

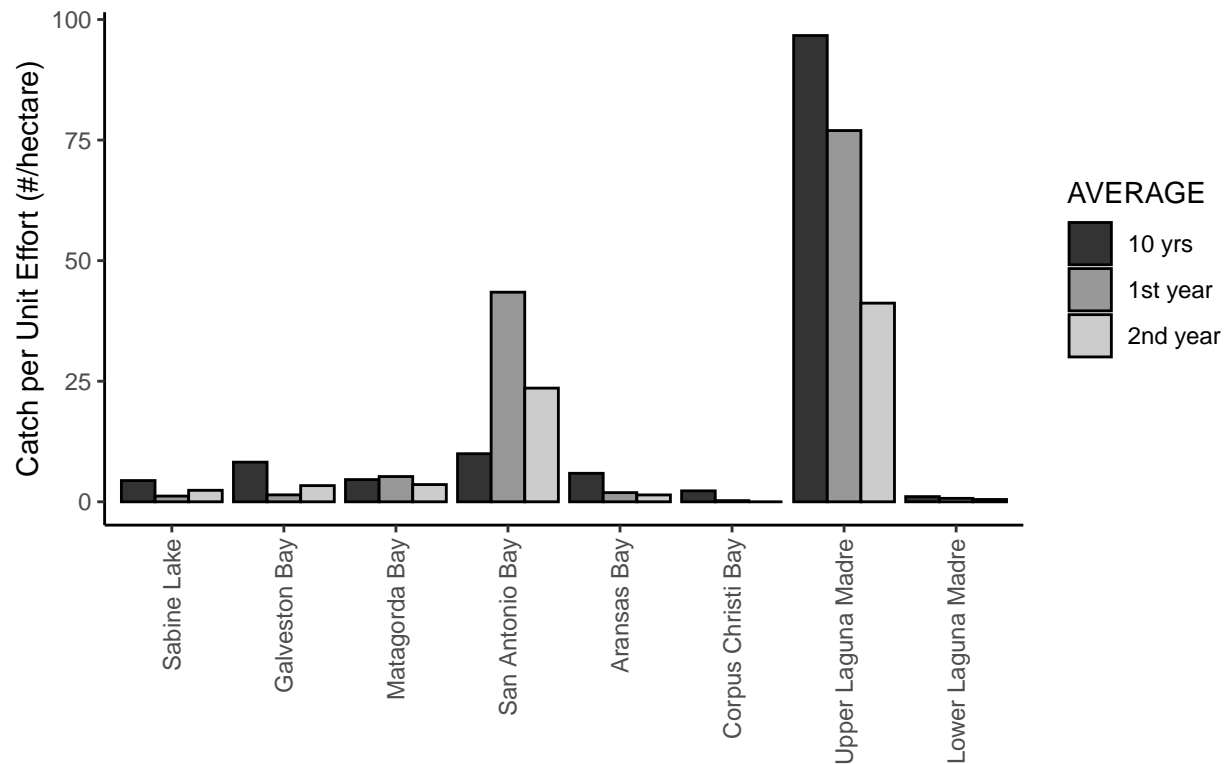


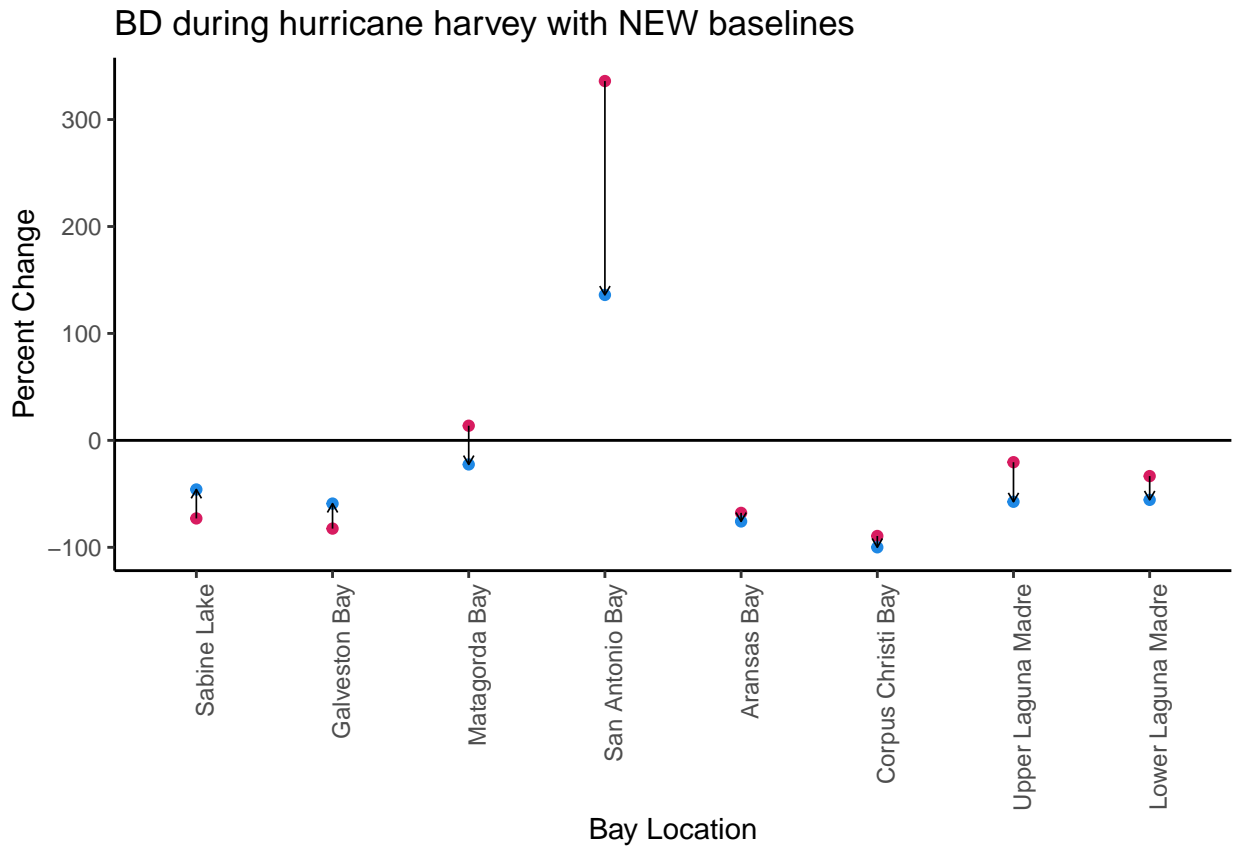


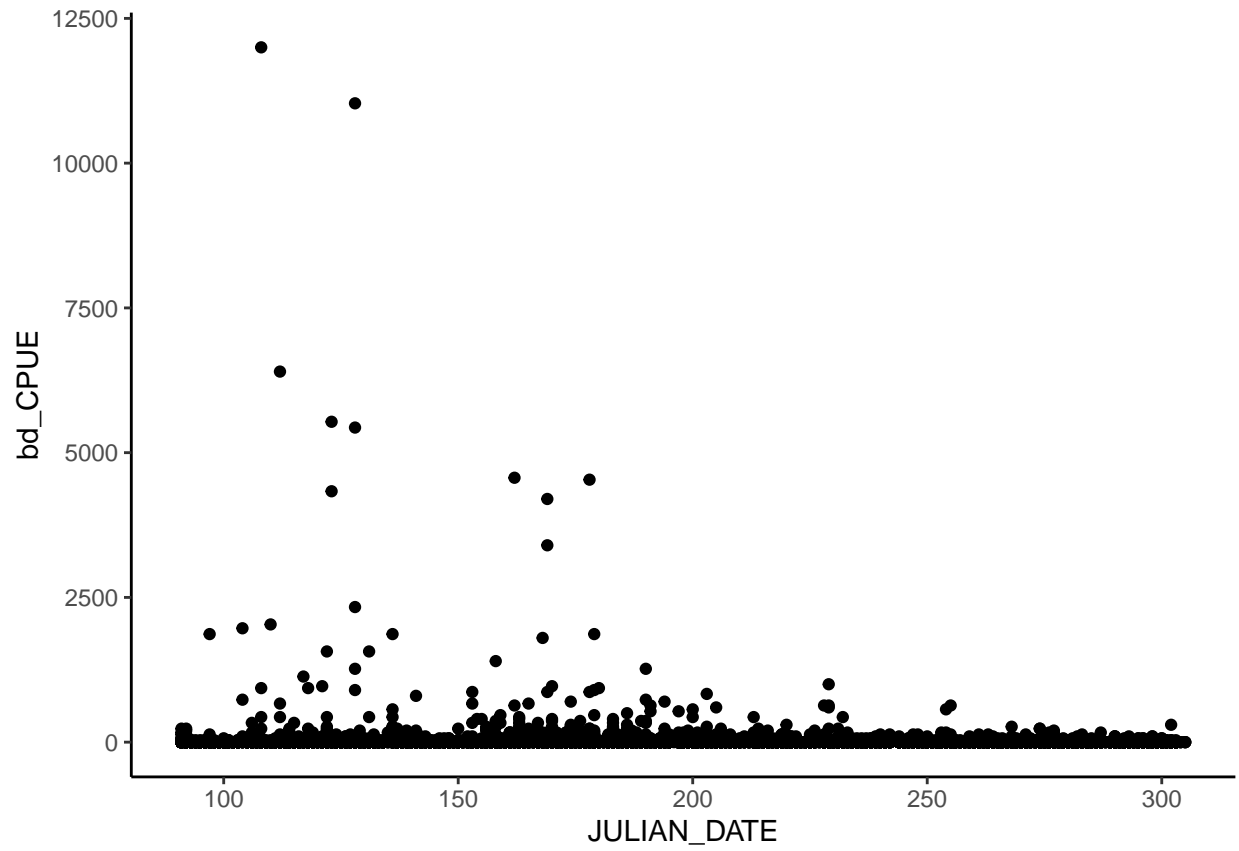
Black Drum



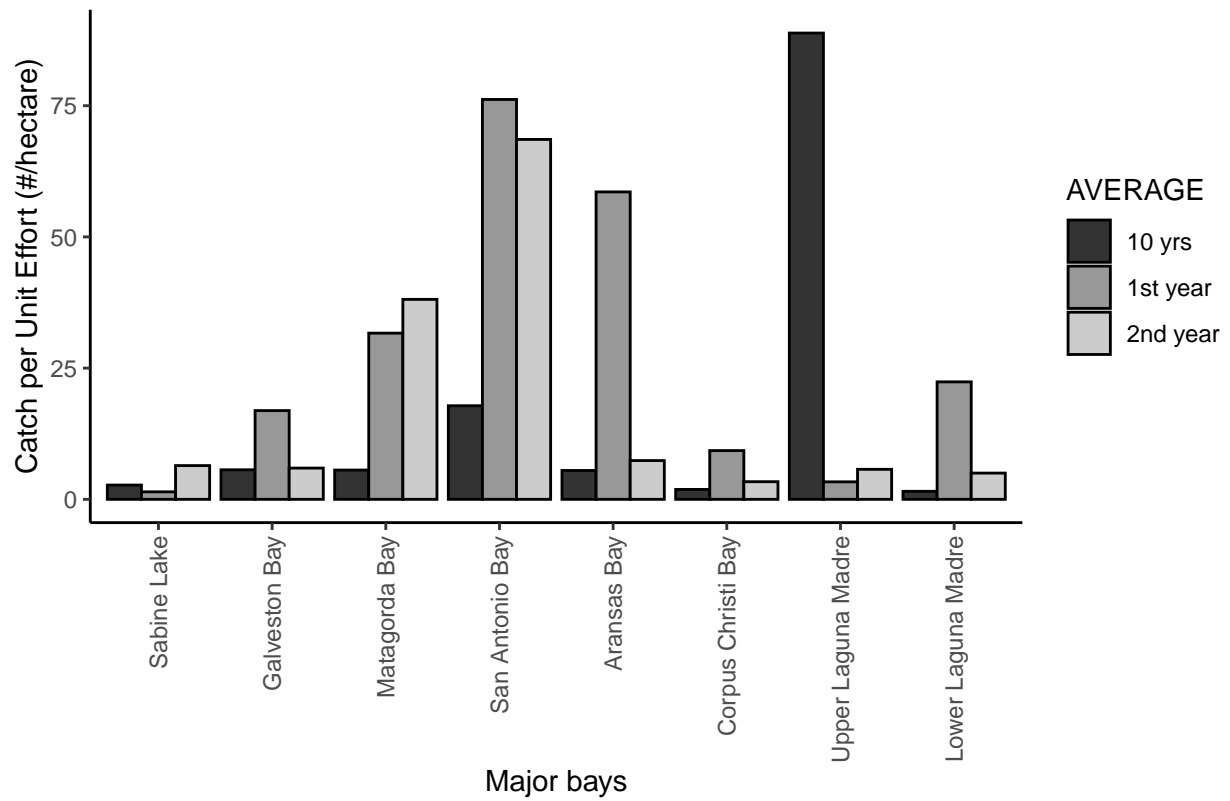
10 yr avg vs post storm avg for BD across bays using NEW baselines

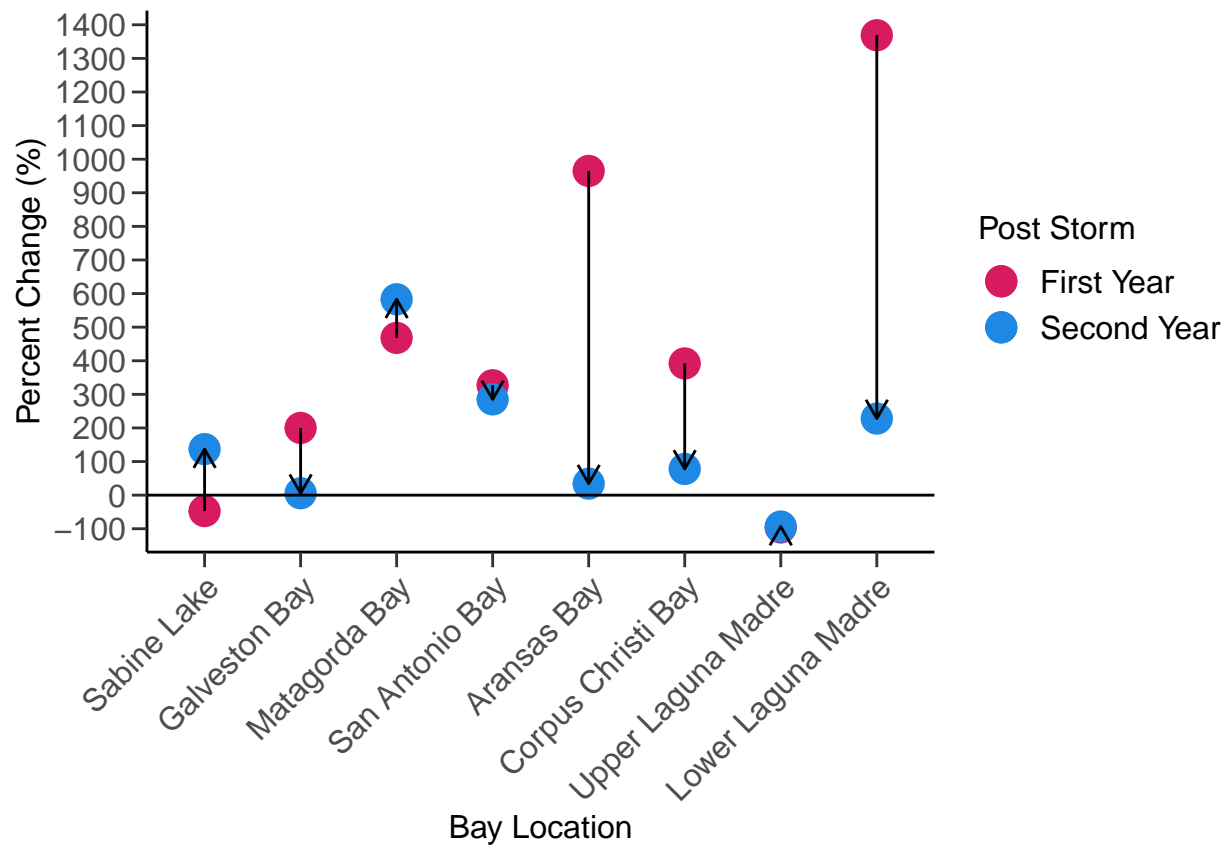




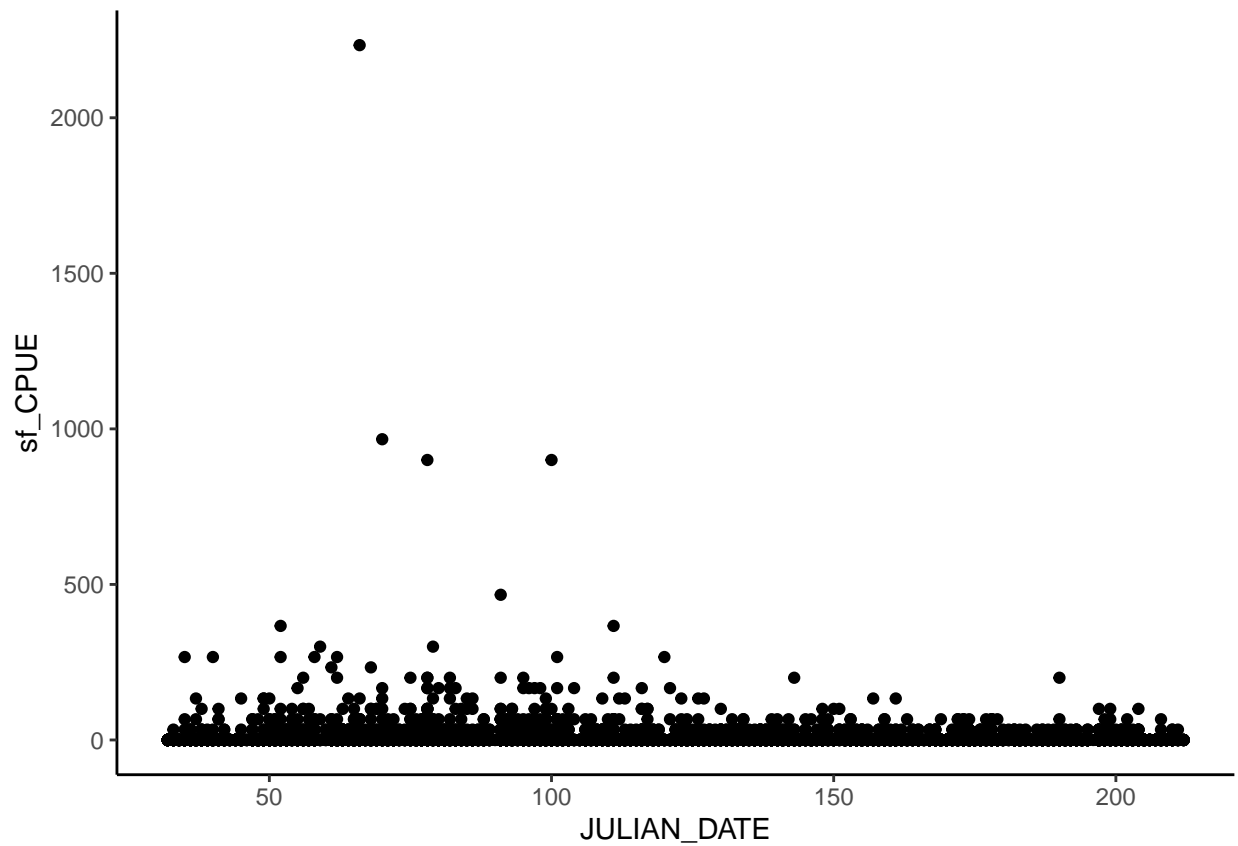


10 yr avg vs post storm avg for BD across bays using NEW baselines

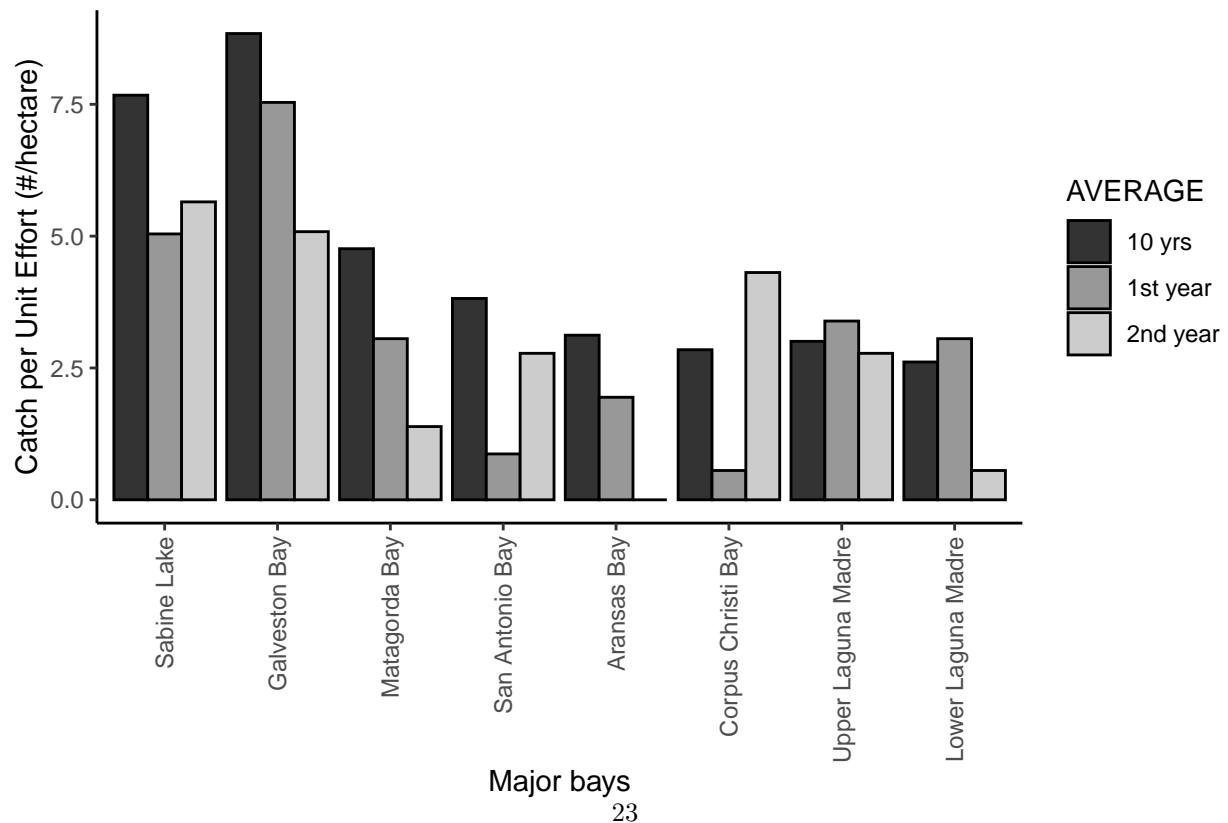


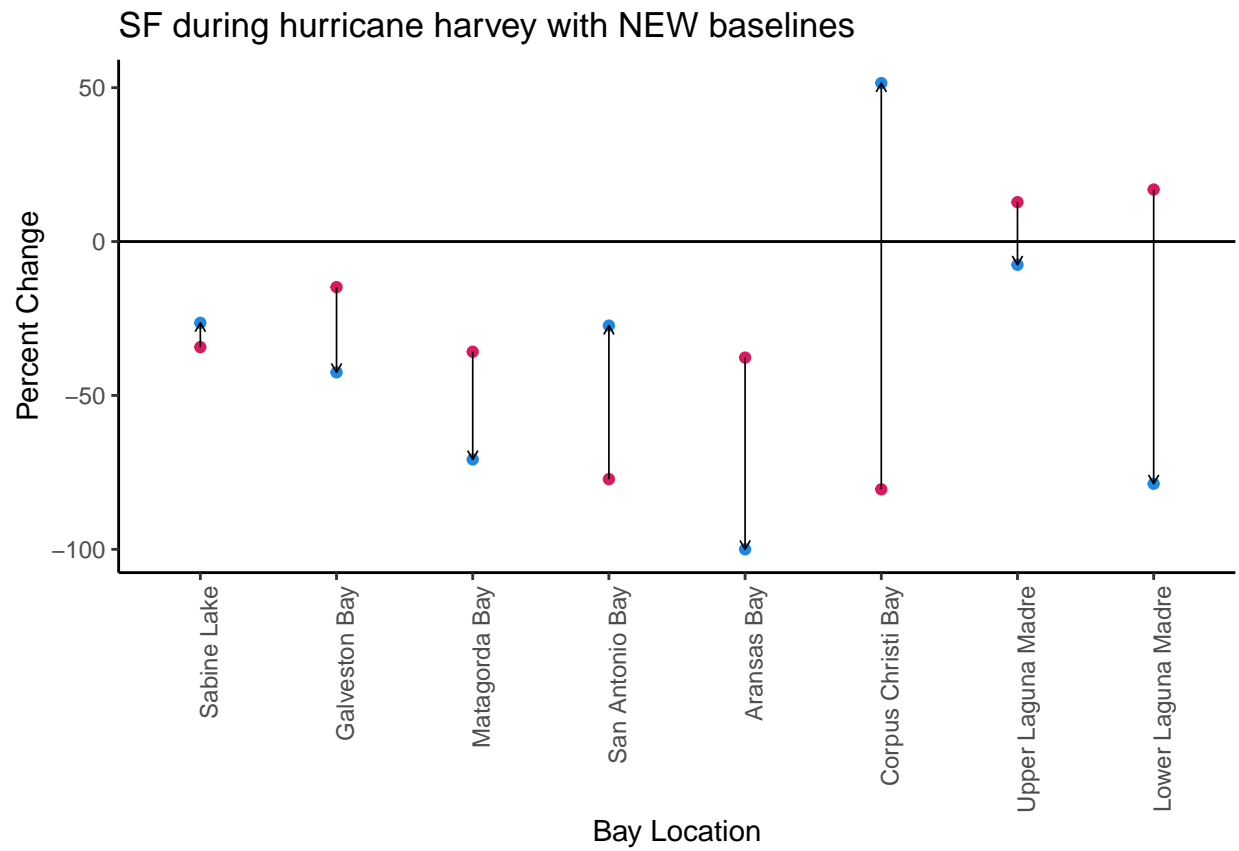


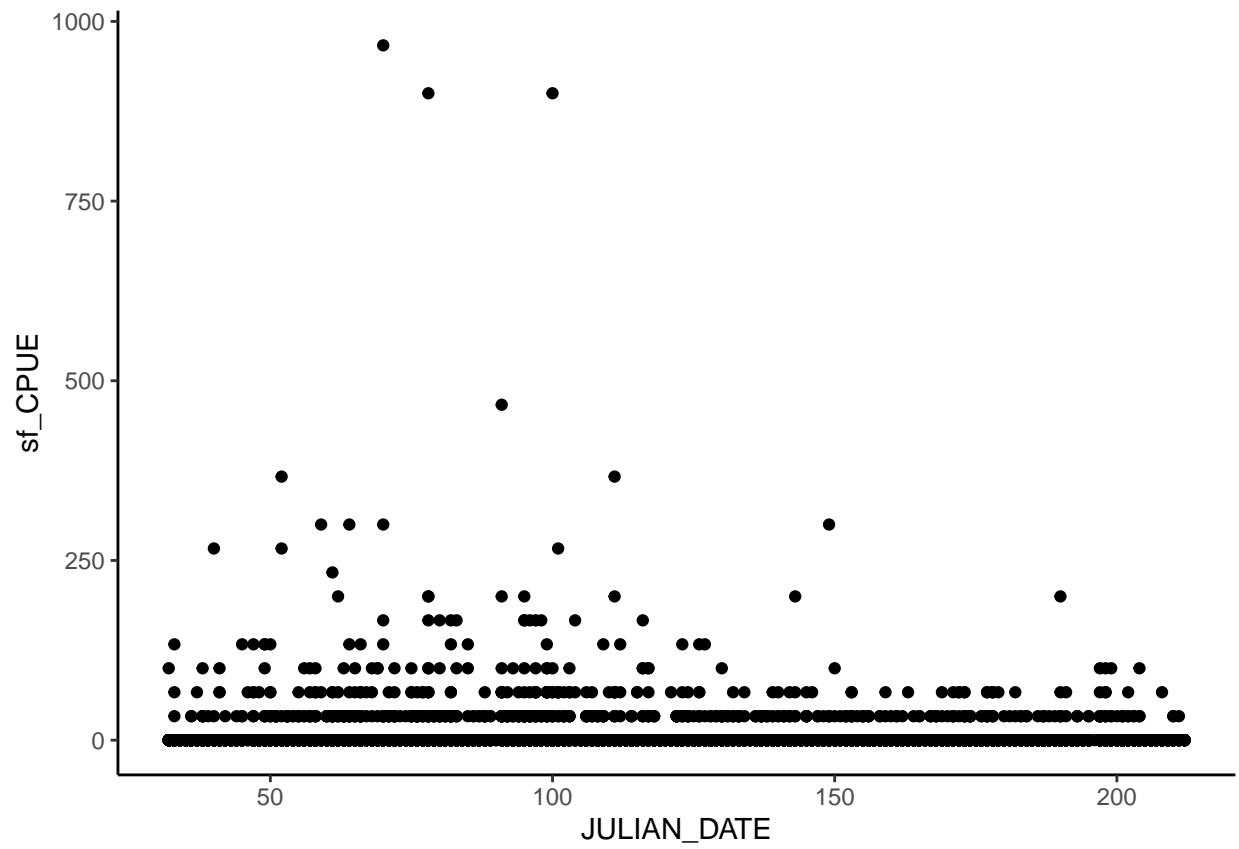
Southern Flounder



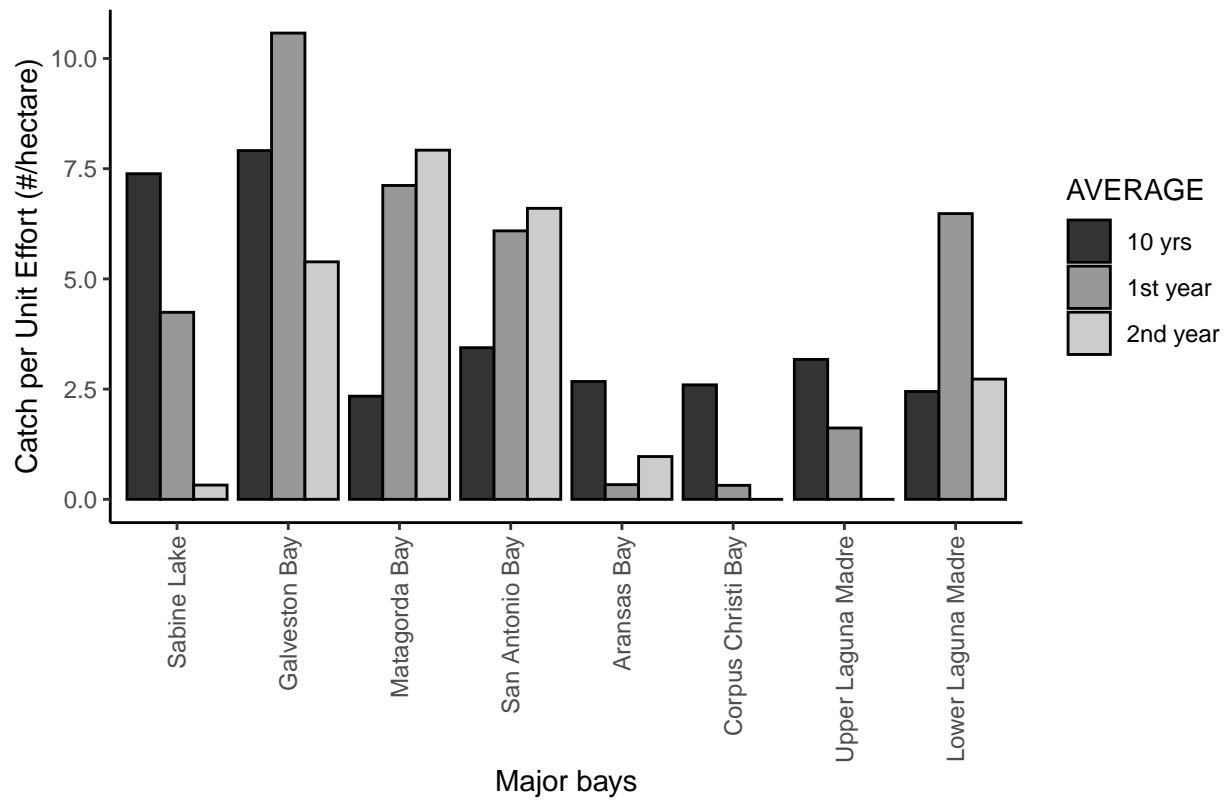
10 yr avg vs post storm avg for SF across bays using NEW baselines

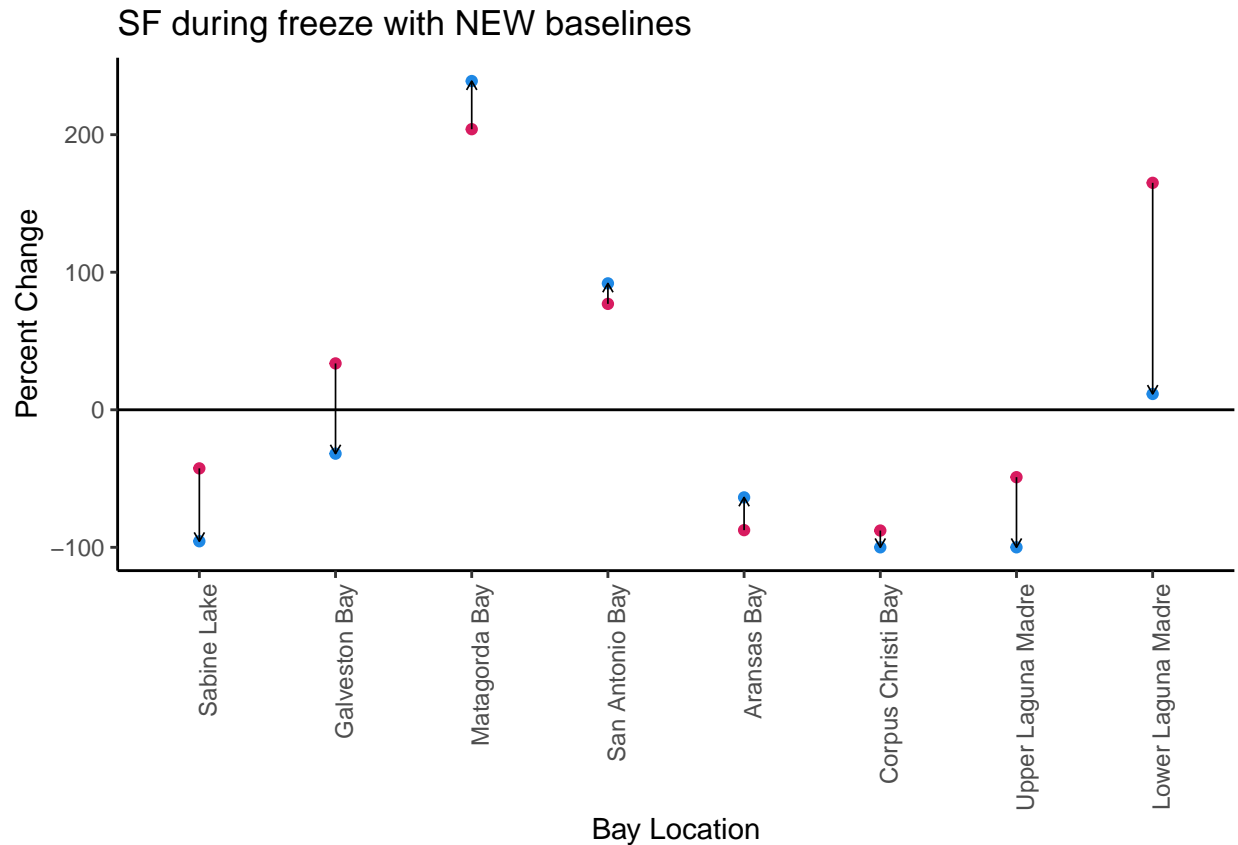






10 yr avg vs post storm avg for SF across bays using NEW baselines





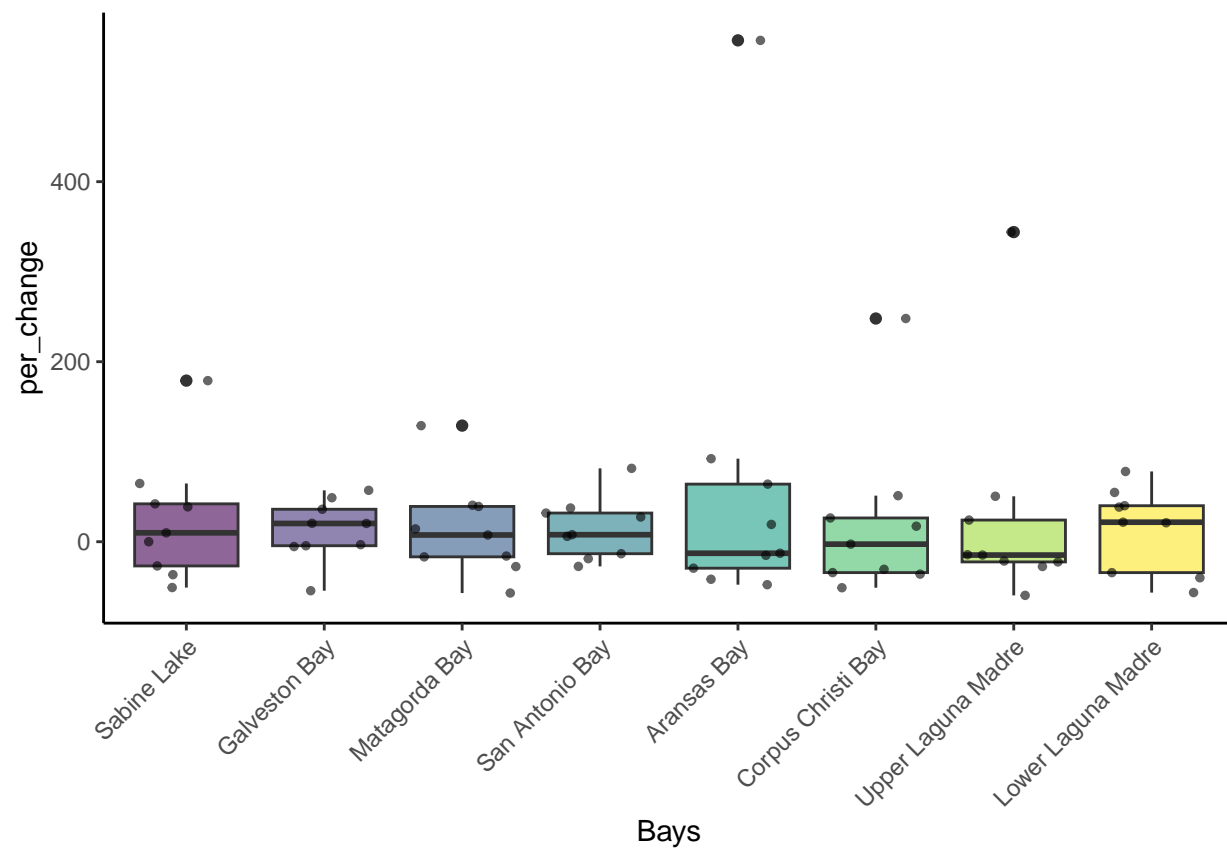
Accounting for annual variaiton Analysis

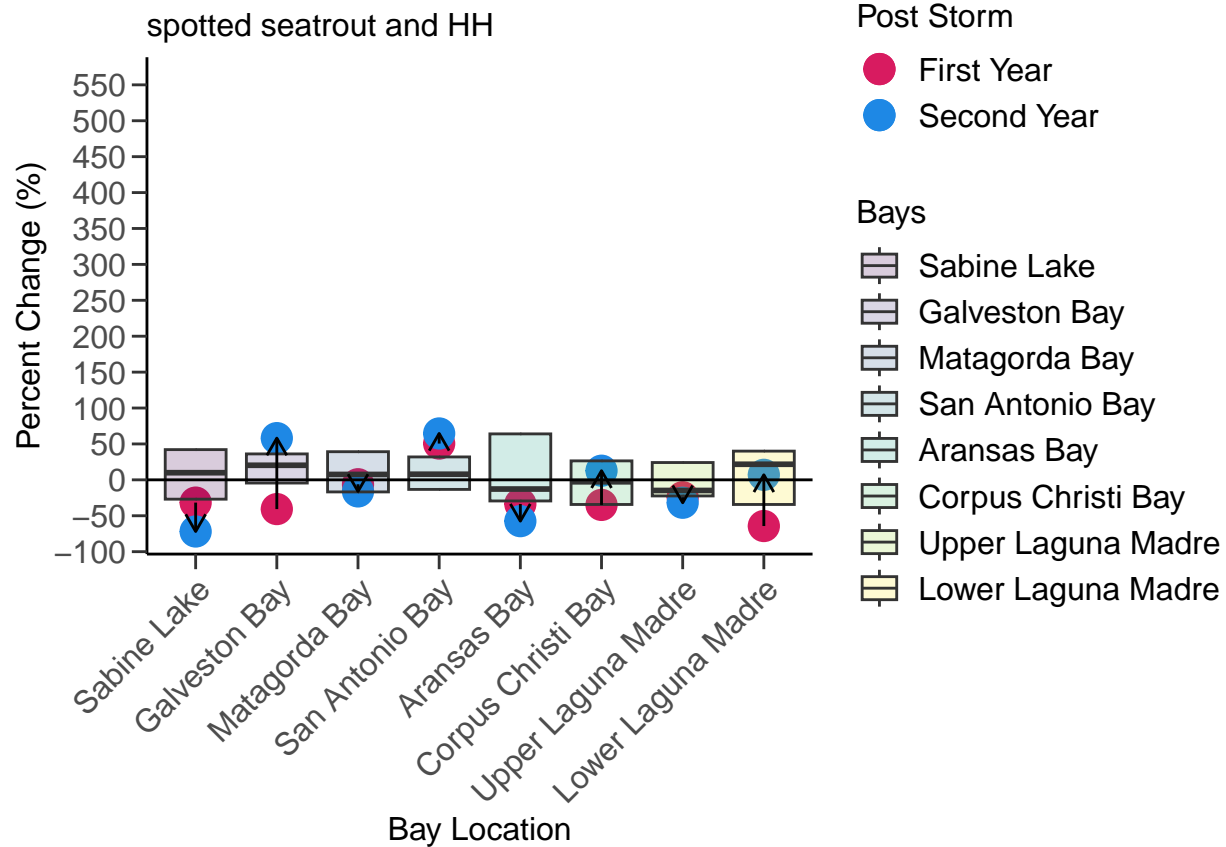
Here we calculate the year to year percent change in the 10 year baseline period. From these numbers we created boxplots and then put thme on top of the percent change figures to give a range of expected interannual variability.

This is organized by species: - Spotted seatrout and Hurricane - Spotted seatrout and Freeze - Black Drum and Hurricane - Black Drum and Freeze - SF and Hurricane - SF and Freeze - RD and Freeze - RD and Hurricane

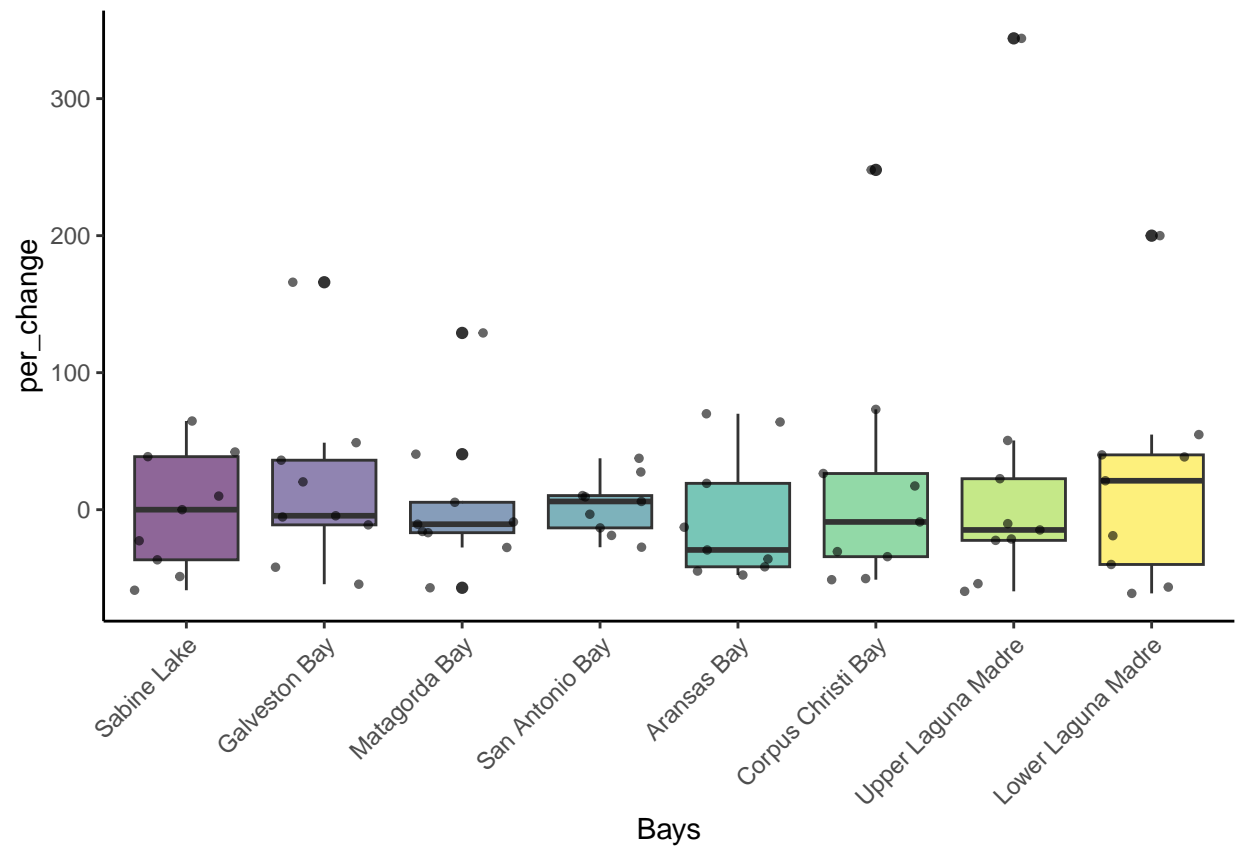
Spotted seatrout Added Boxplot

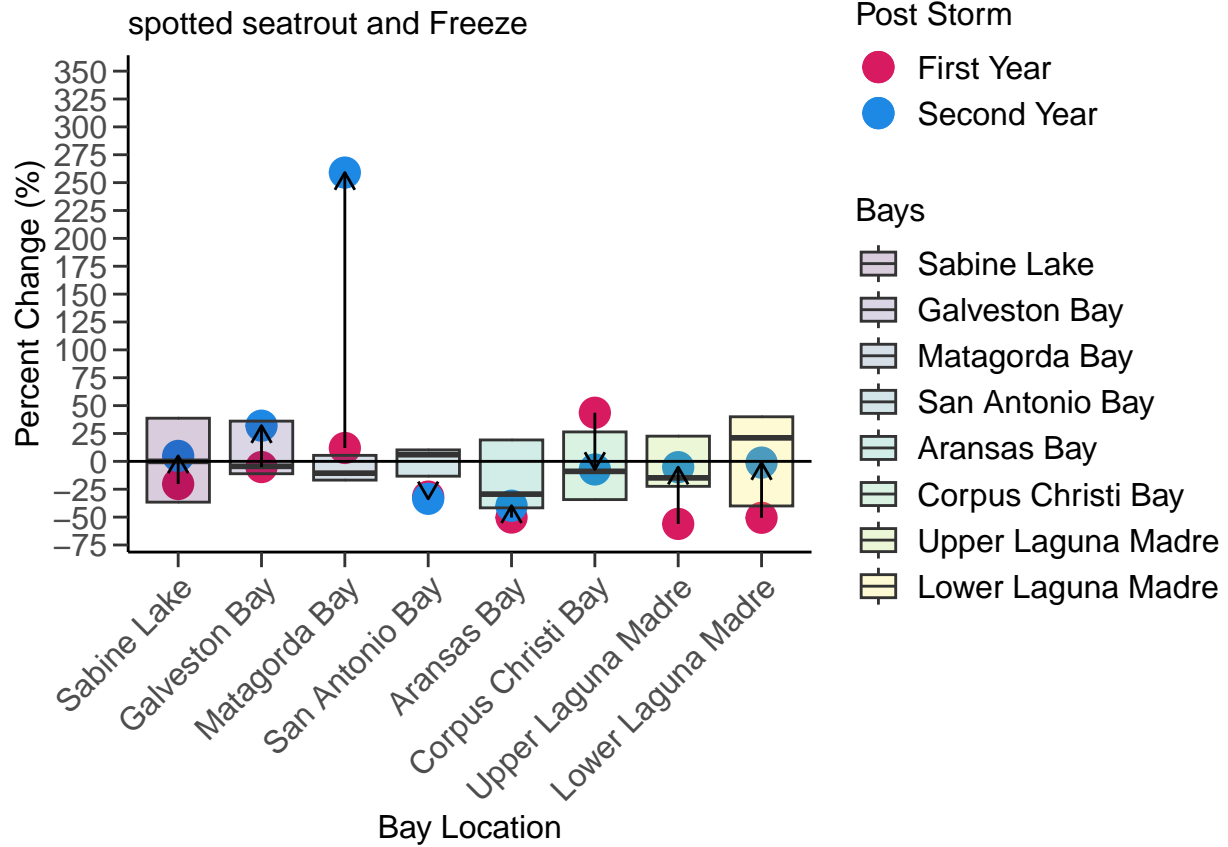
```
## [1] "AransasBay"      "CorpusChristiBay" "GalvestonBay"     "LowerLagunaMadre"
## [5] "MatagordaBay"    "SabineLake"       "SanAntonioBay"    "UpperLagunaMadre"
```





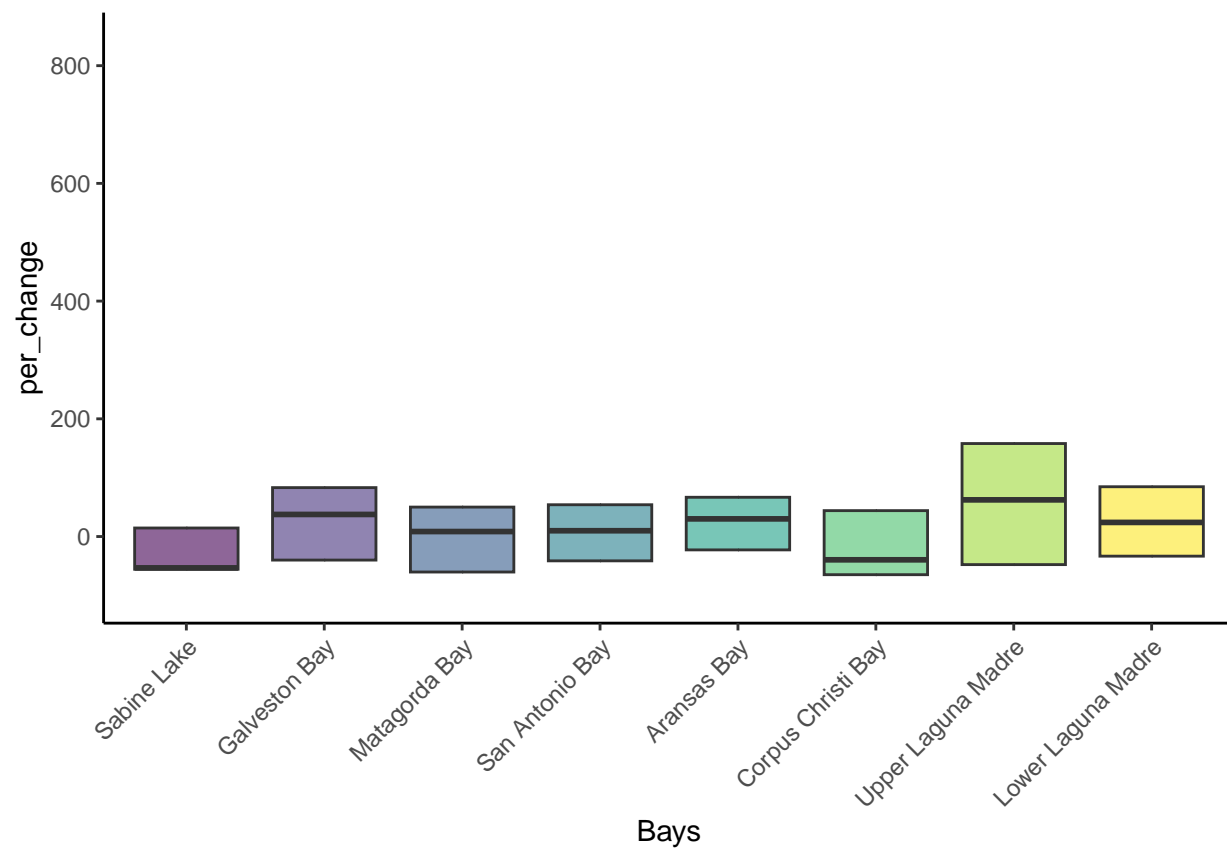
```
## [1] "AransasBay"      "CorpusChristiBay" "GalvestonBay"     "LowerLagunaMadre"
## [5] "MatagordaBay"    "SabineLake"       "SanAntonioBay"    "UpperLagunaMadre"
```

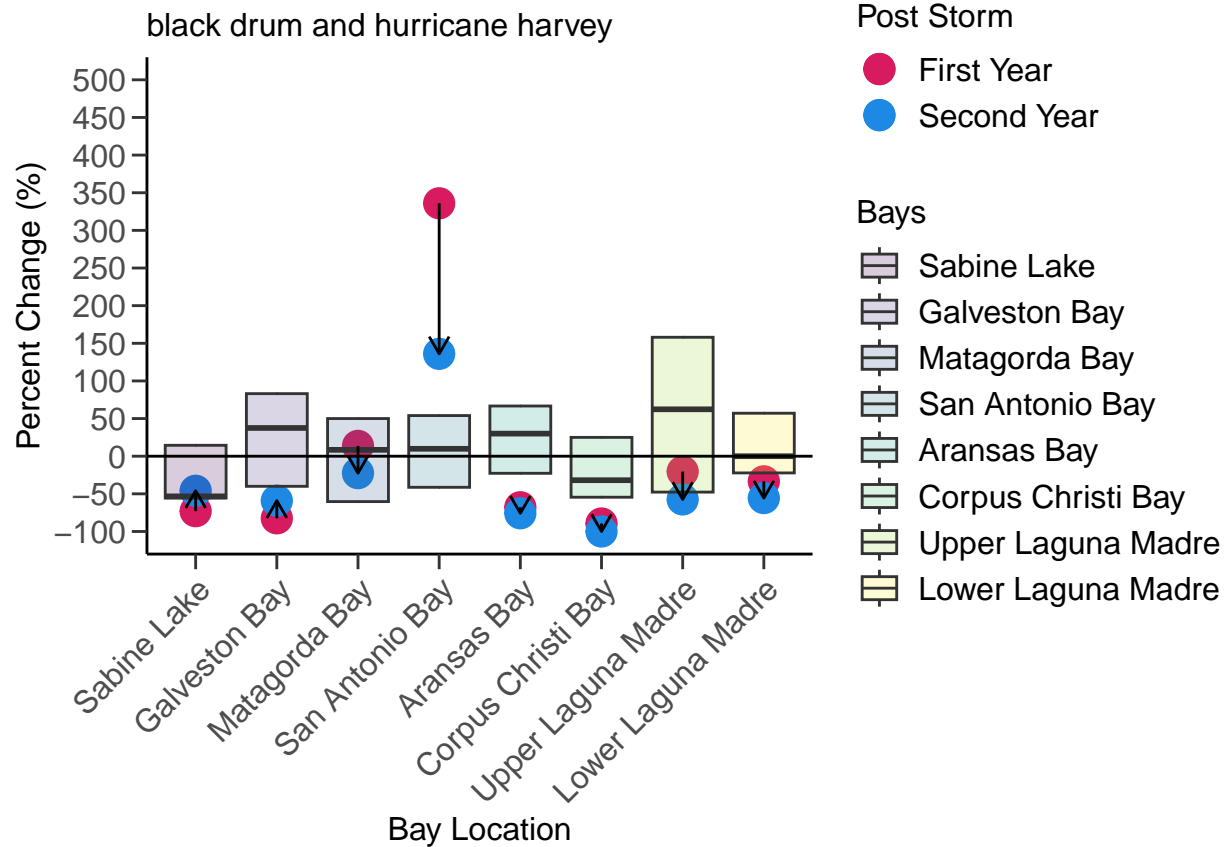




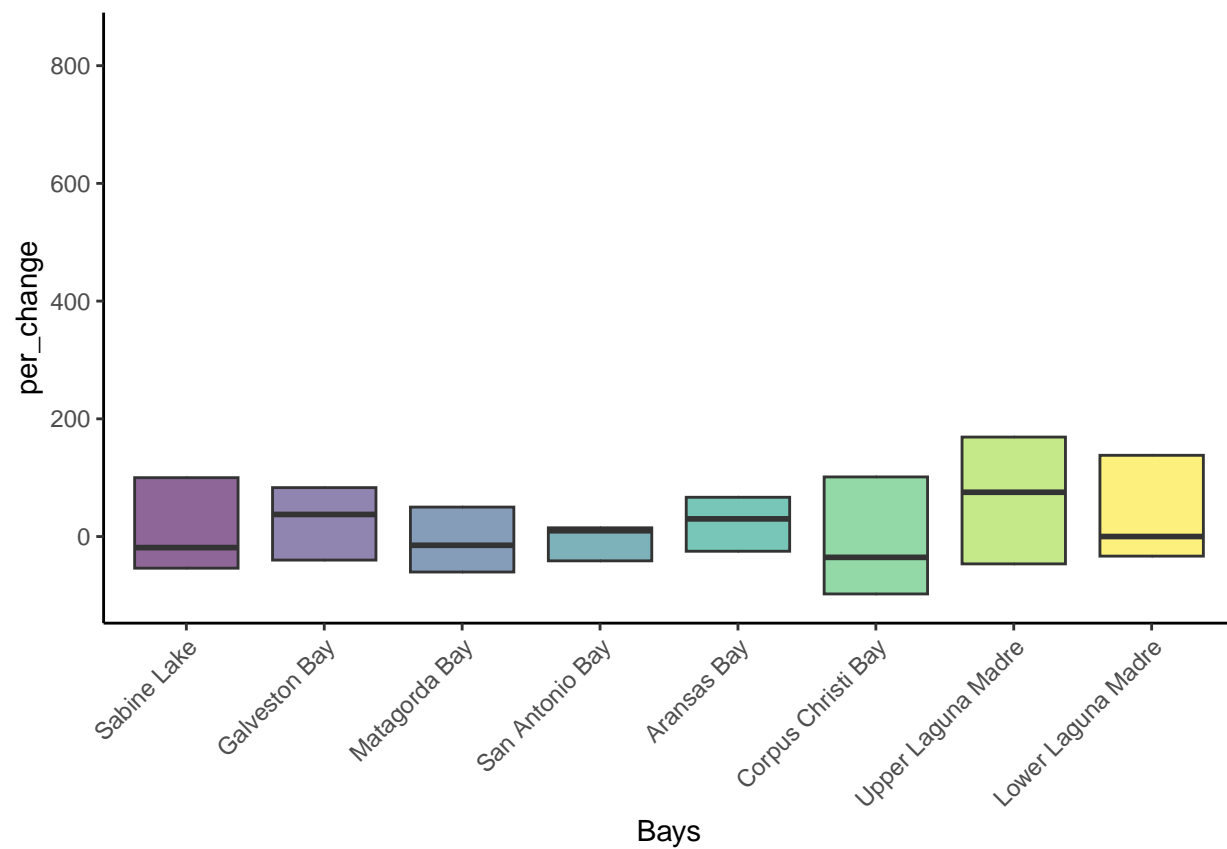
#Black drum added boxplot

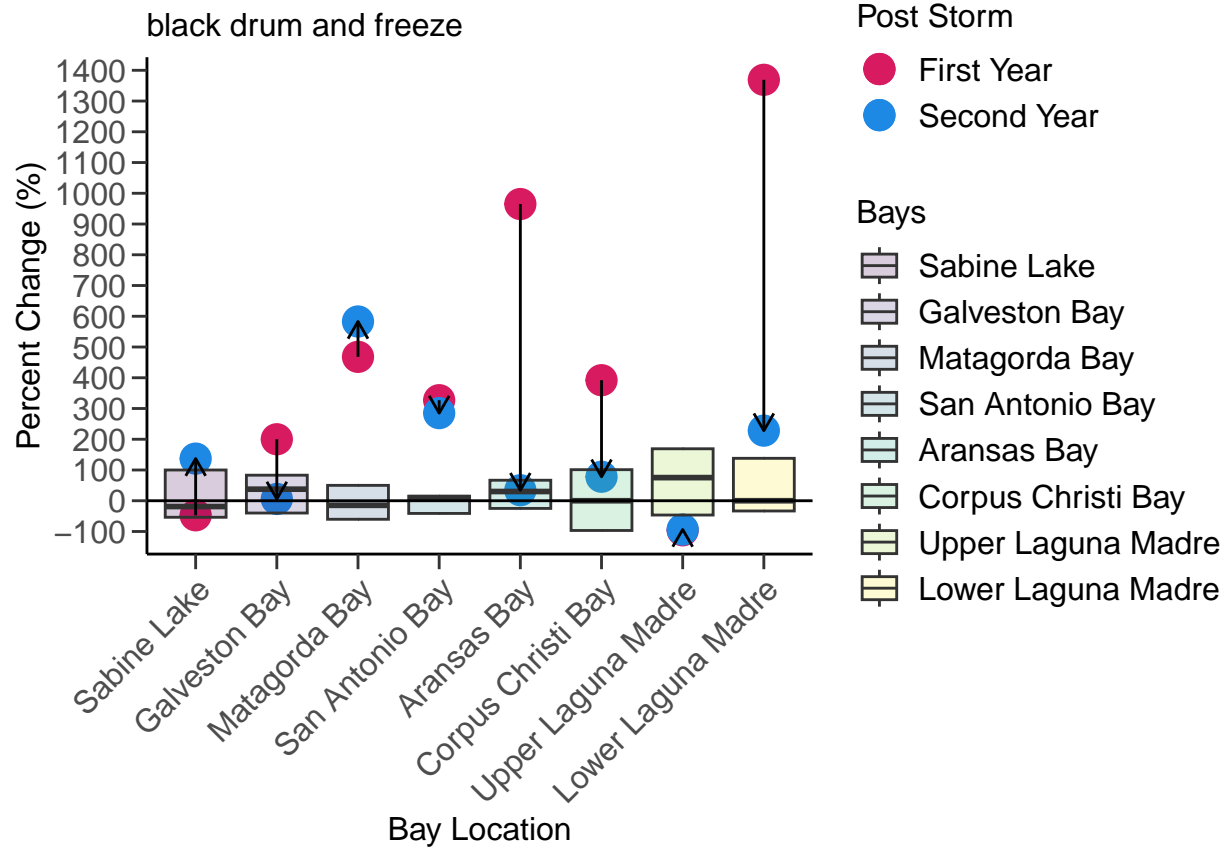
```
## [1] "AransasBay"      "CorpusChristiBay" "GalvestonBay"     "LowerLagunaMadre"
## [5] "MatagordaBay"    "SabineLake"       "SanAntonioBay"    "UpperLagunaMadre"
```





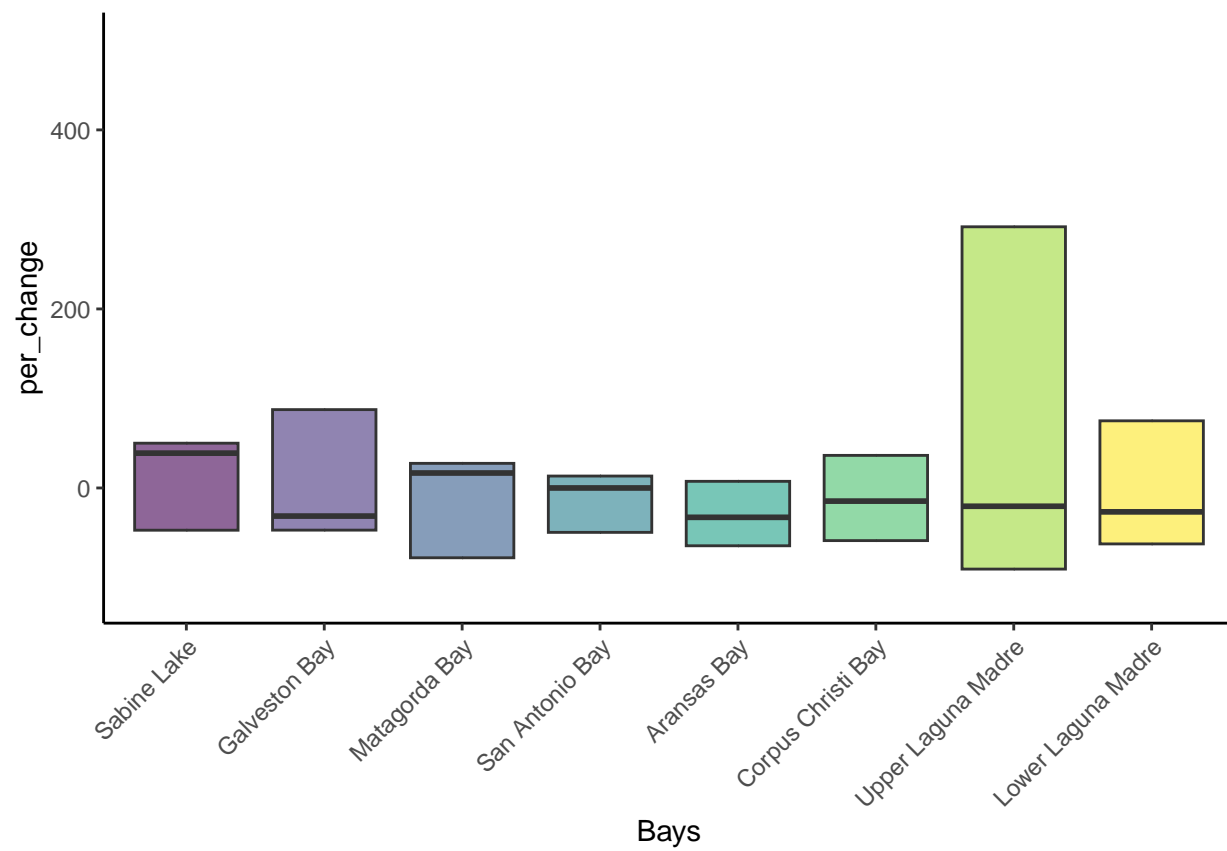
```
## [1] "AransasBay"      "CorpusChristiBay" "GalvestonBay"    "LowerLagunaMadre"
## [5] "MatagordaBay"    "SabineLake"       "SanAntonioBay"   "UpperLagunaMadre"
```

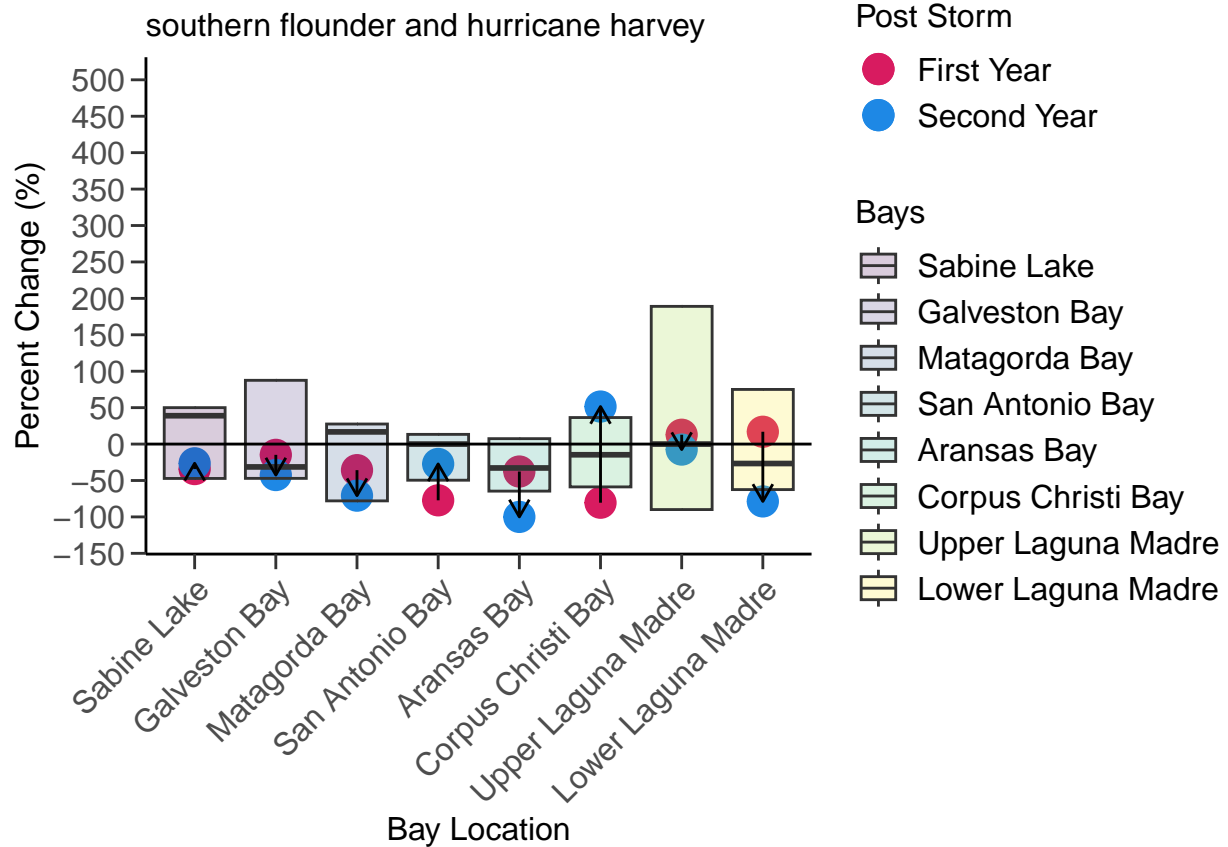




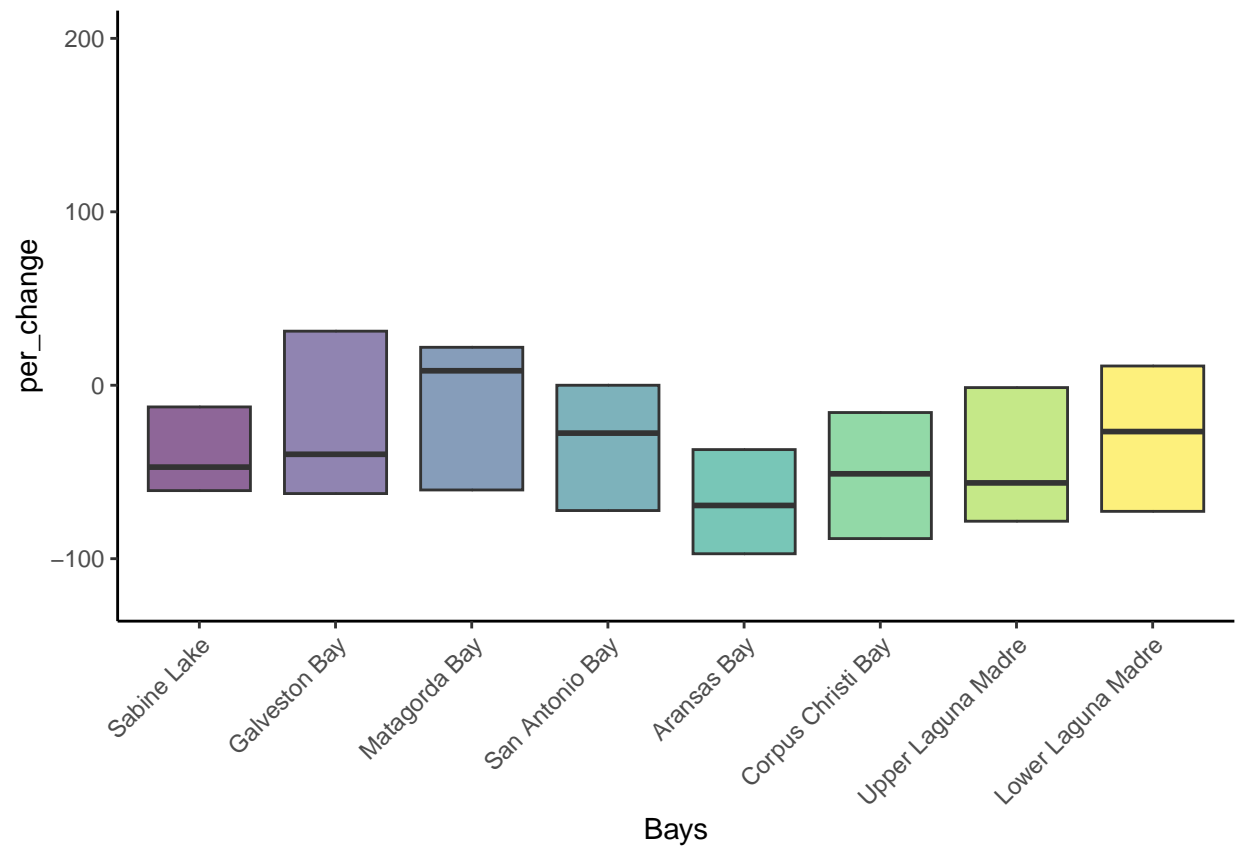
Southern Flounder added box plots

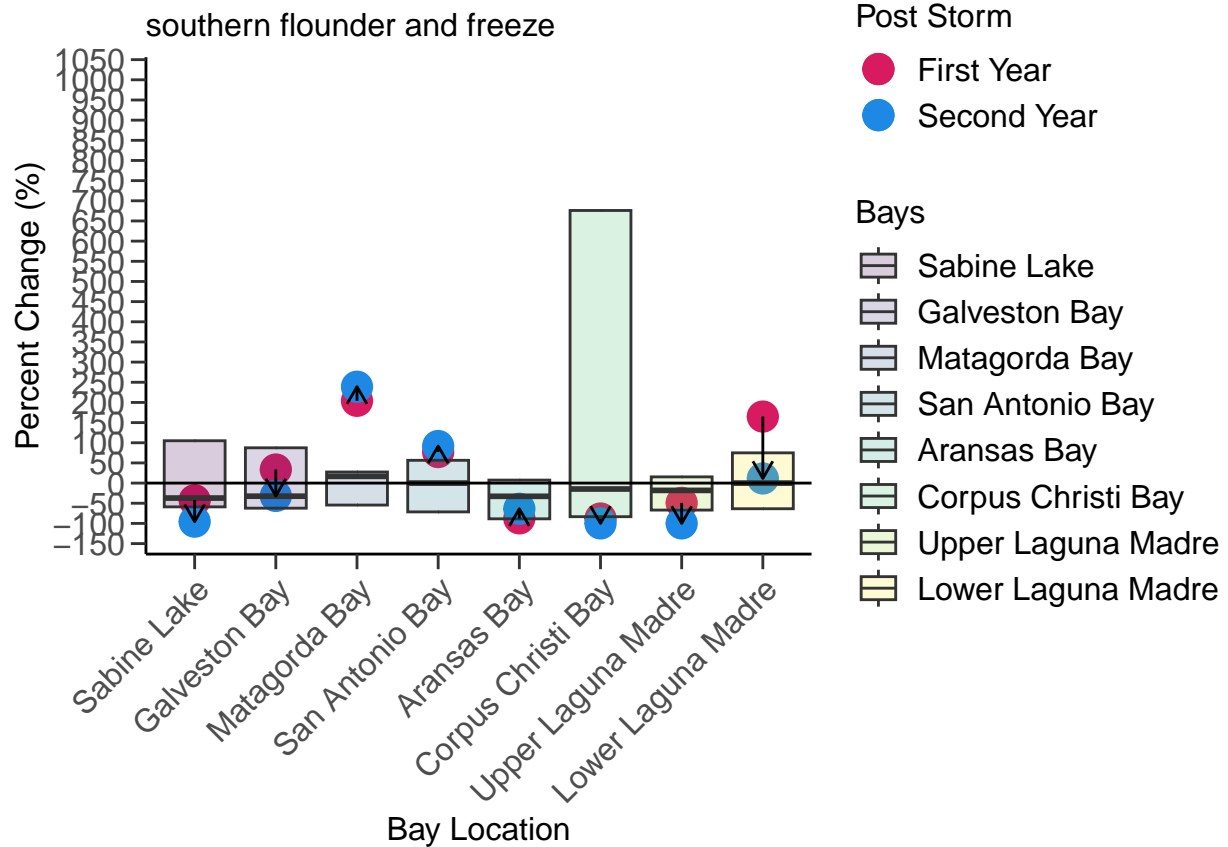
```
## [1] "AransasBay"      "CorpusChristiBay" "GalvestonBay"     "LowerLagunaMadre"
## [5] "MatagordaBay"    "SabineLake"       "SanAntonioBay"    "UpperLagunaMadre"
```





```
## [1] "AransasBay"      "CorpusChristiBay" "GalvestonBay"    "LowerLagunaMadre"
## [5] "MatagordaBay"    "SabineLake"       "SanAntonioBay"   "UpperLagunaMadre"
```

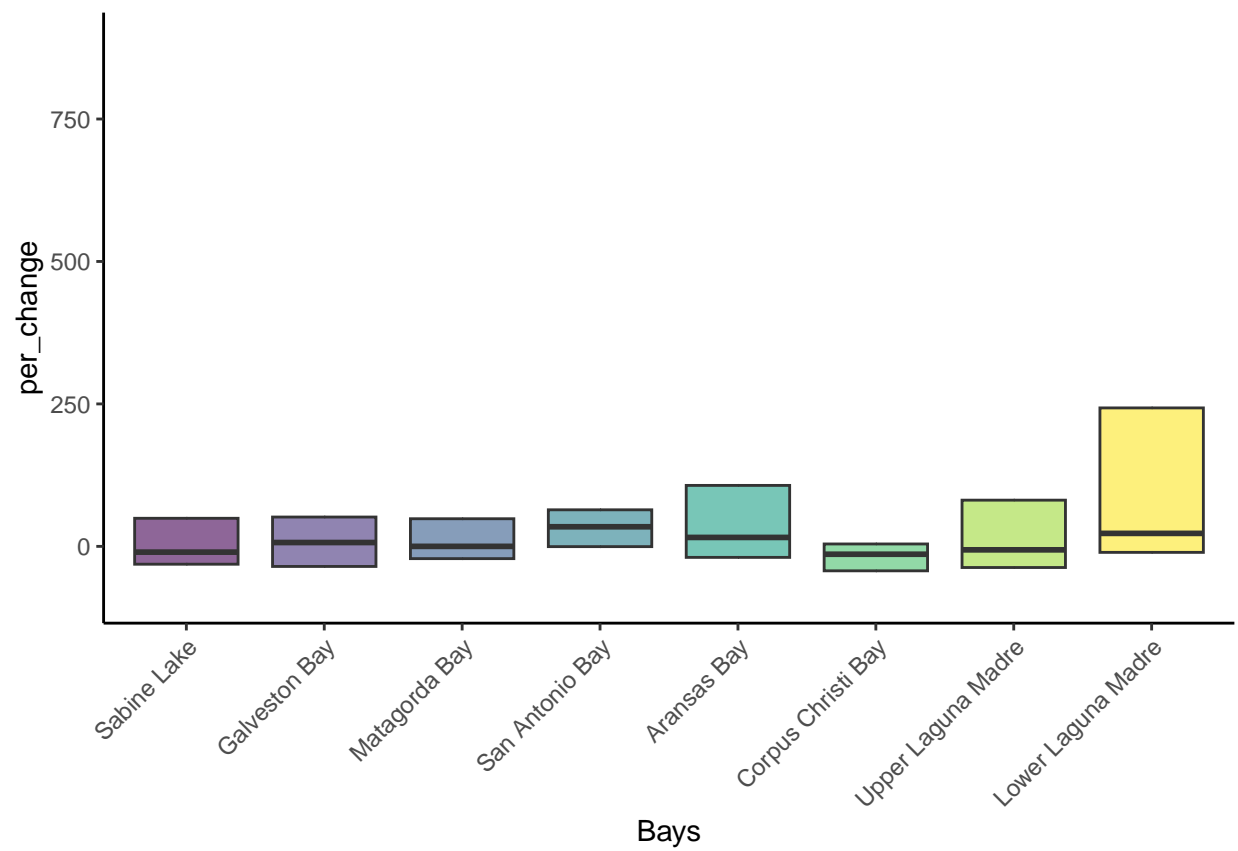


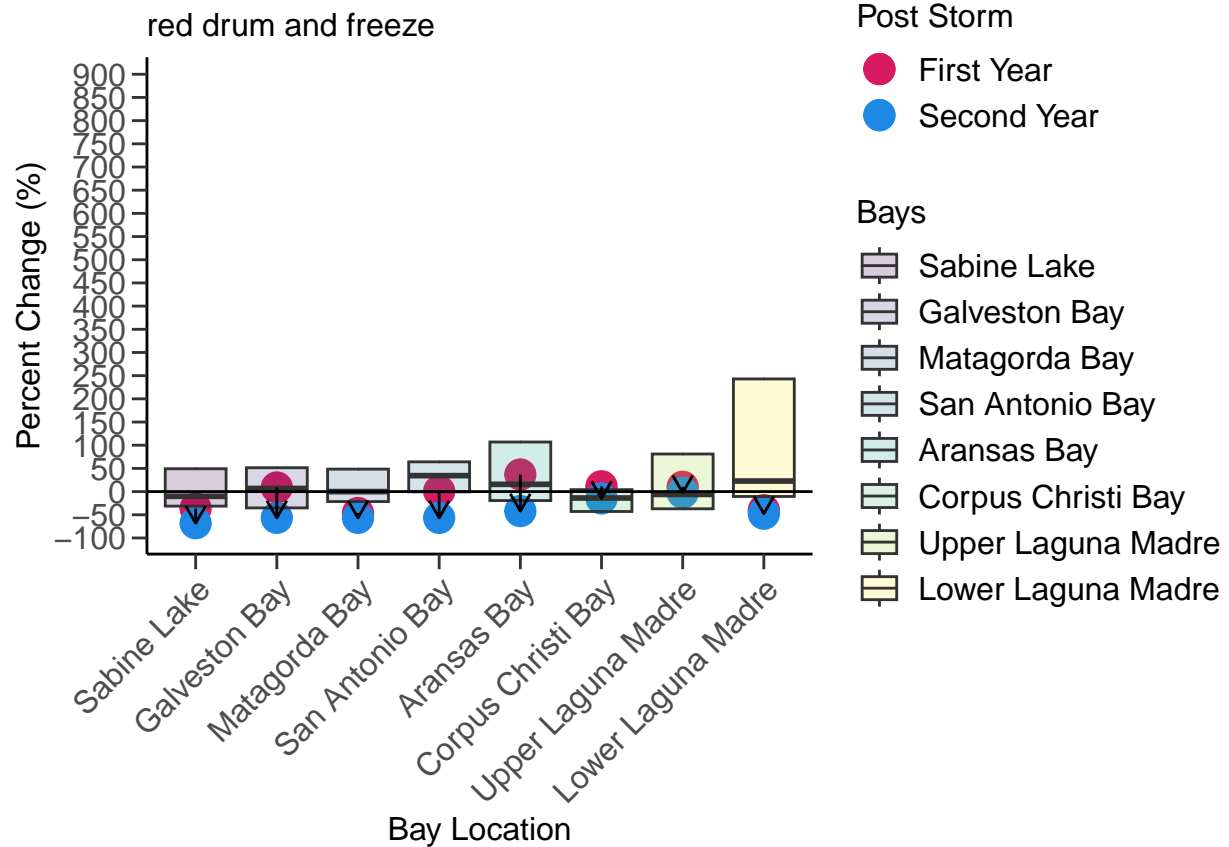


Red Drum added boxplots

```
## [1] "Year 1" "Year 2" "Year 3" "Year 4" "Year 5" "Year 6" "Year 7"
## [8] "Year 8" "Year 9" "Year 10"
```

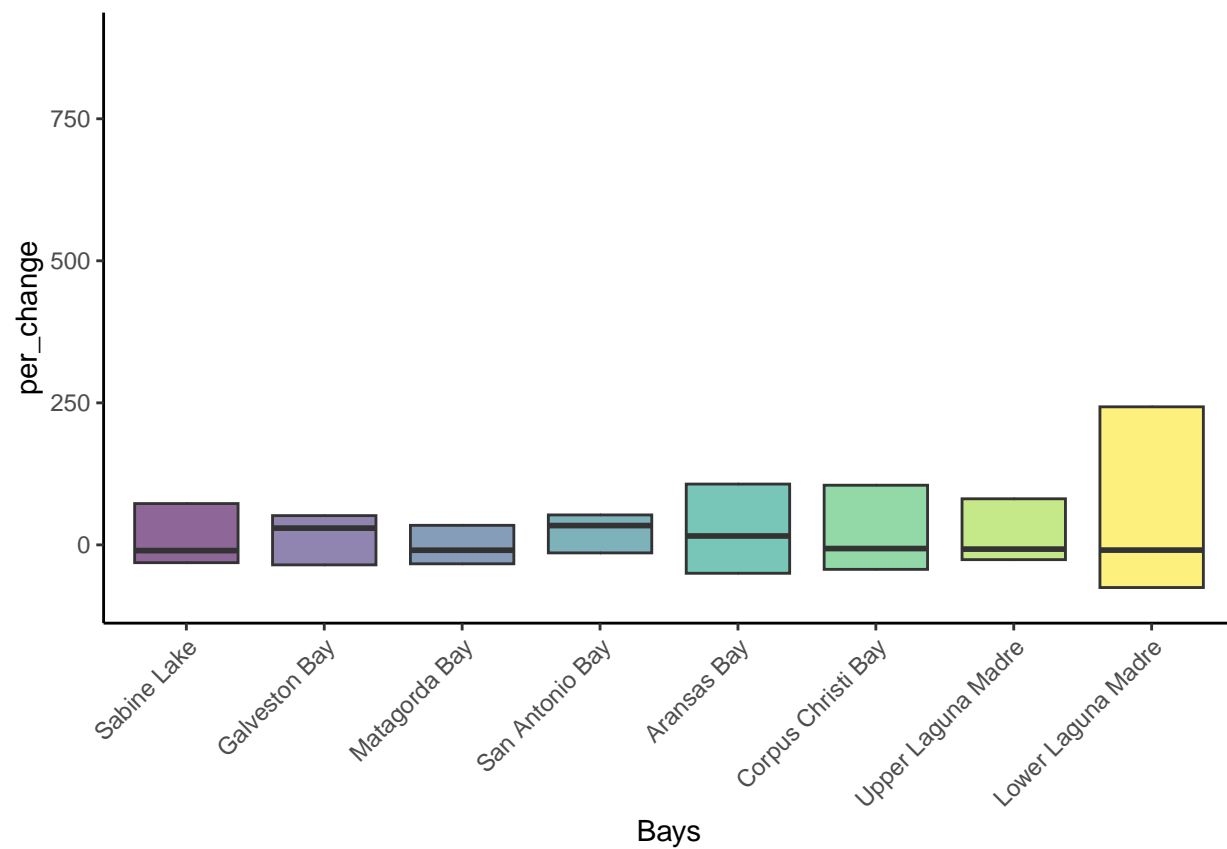
```
## [1] "AransasBay" "CorpusChristiBay" "GalvestonBay" "LowerLagunaMadre"
## [5] "MatagordaBay" "SabineLake" "SanAntonioBay" "UpperLagunaMadre"
```

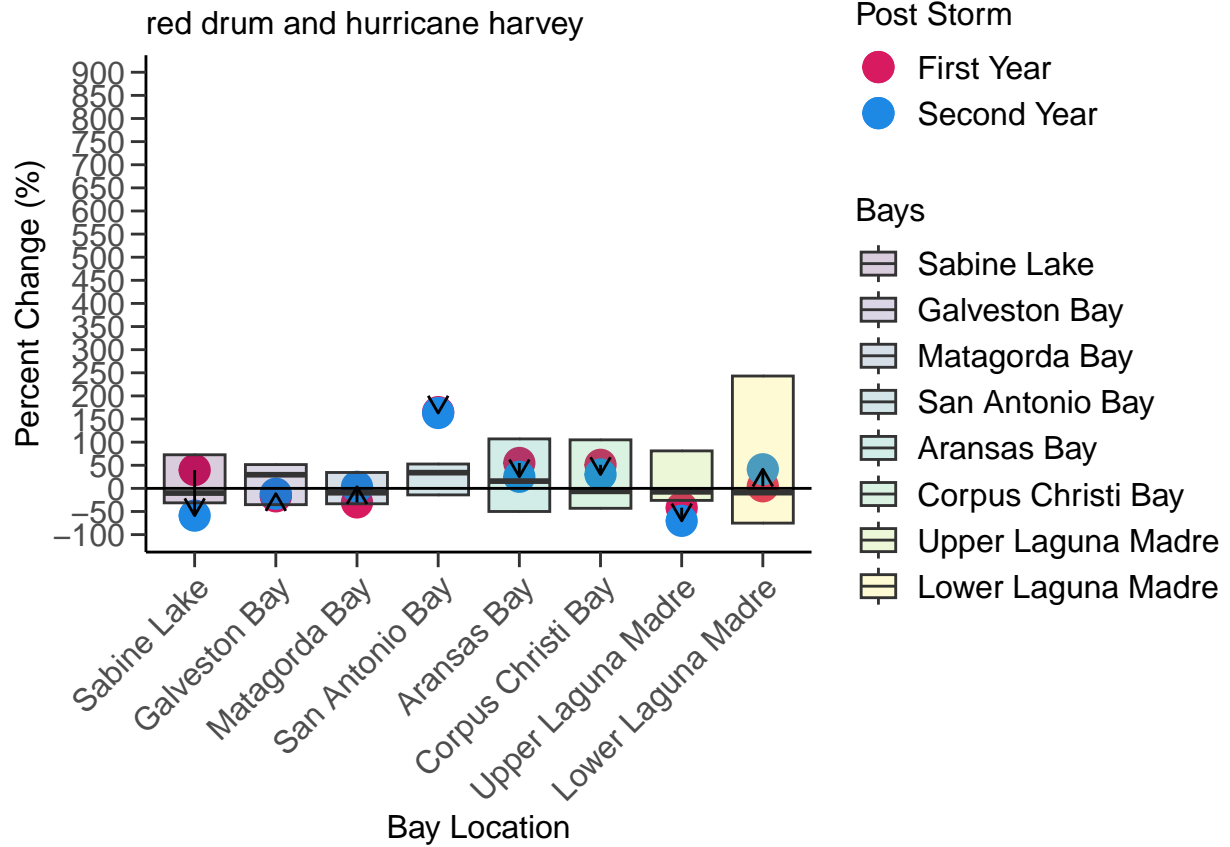




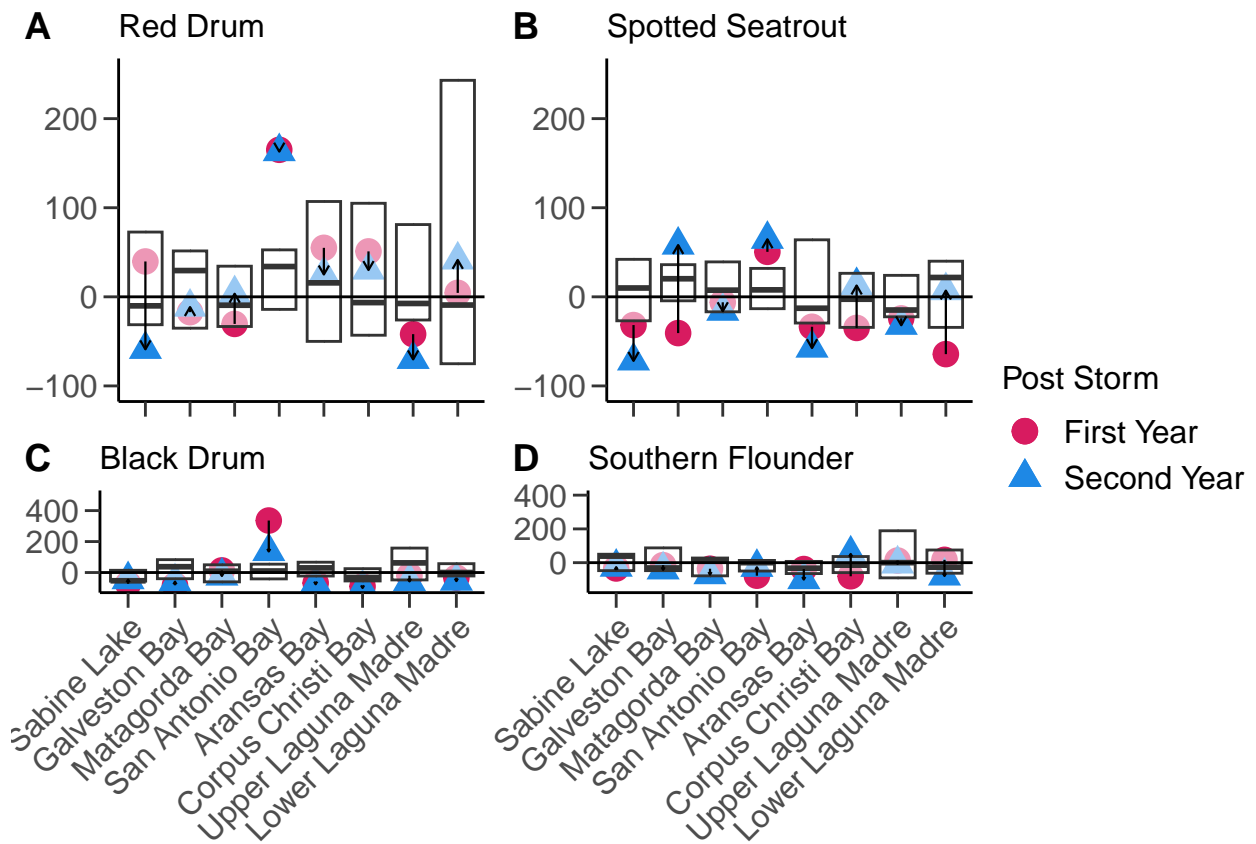
```
## [1] "Year 1" "Year 2" "Year 3" "Year 4" "Year 5" "Year 6" "Year 7"
## [8] "Year 8" "Year 9" "Year 10"
```

```
## [1] "AransasBay" "CorpusChristiBay" "GalvestonBay" "LowerLagunaMadre"
## [5] "MatagordaBay" "SabineLake" "SanAntonioBay" "UpperLagunaMadre"
```

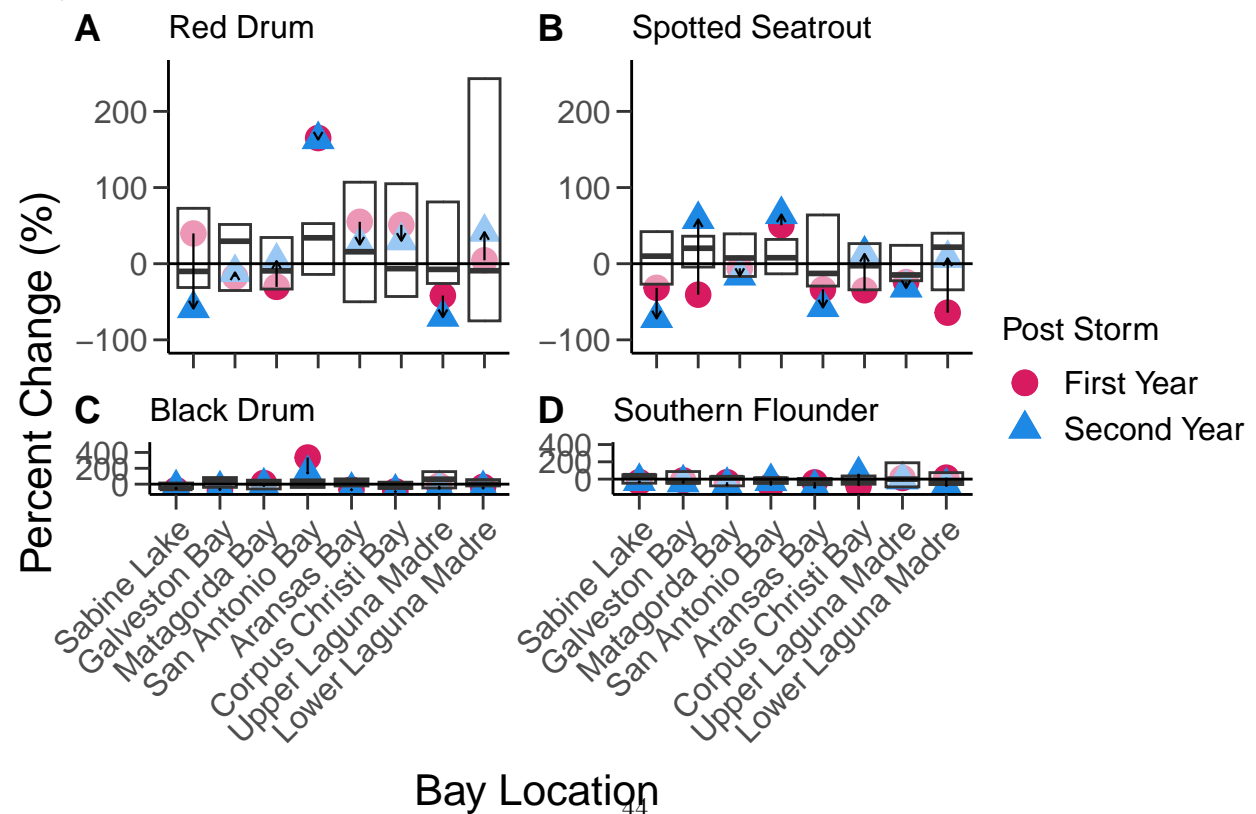




Hurricane Figure - FIGURE 3



vey



#Freeze figure - FIGURE 4

