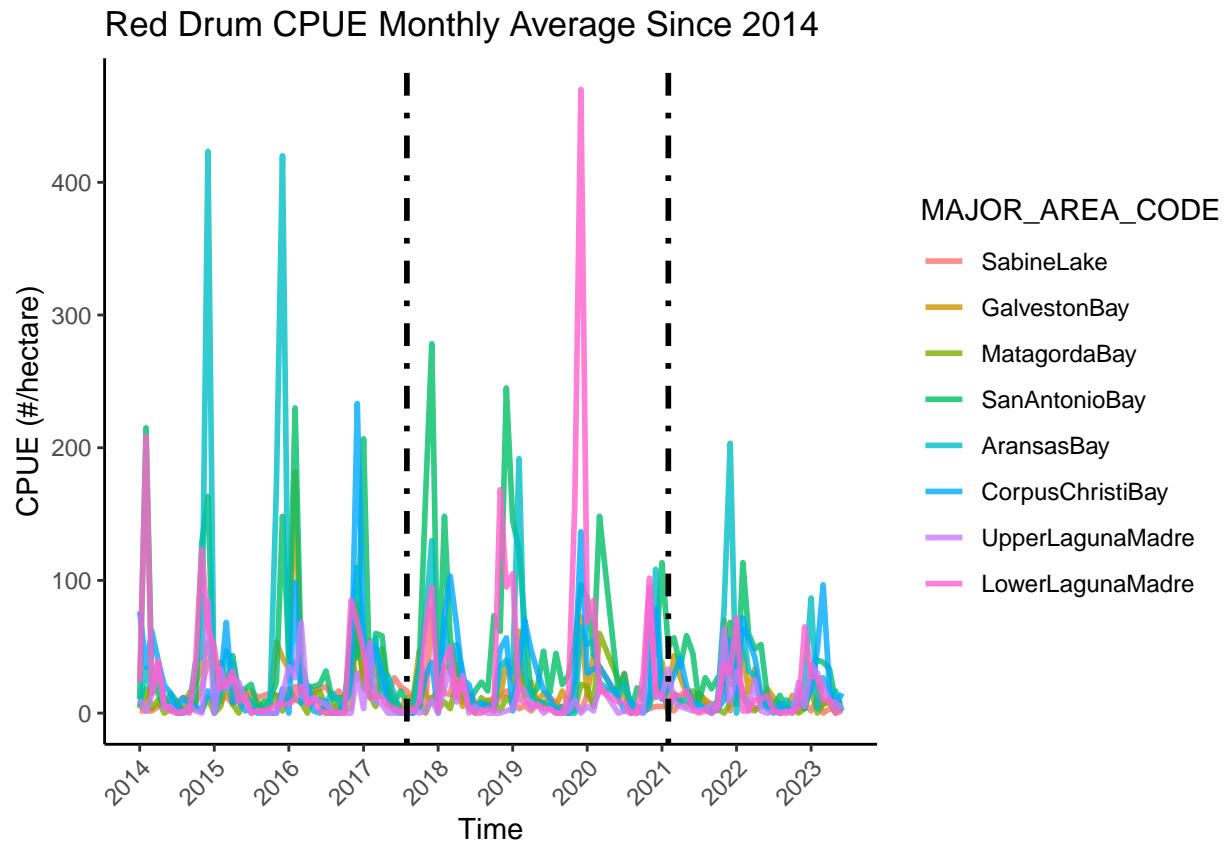


CH1Results

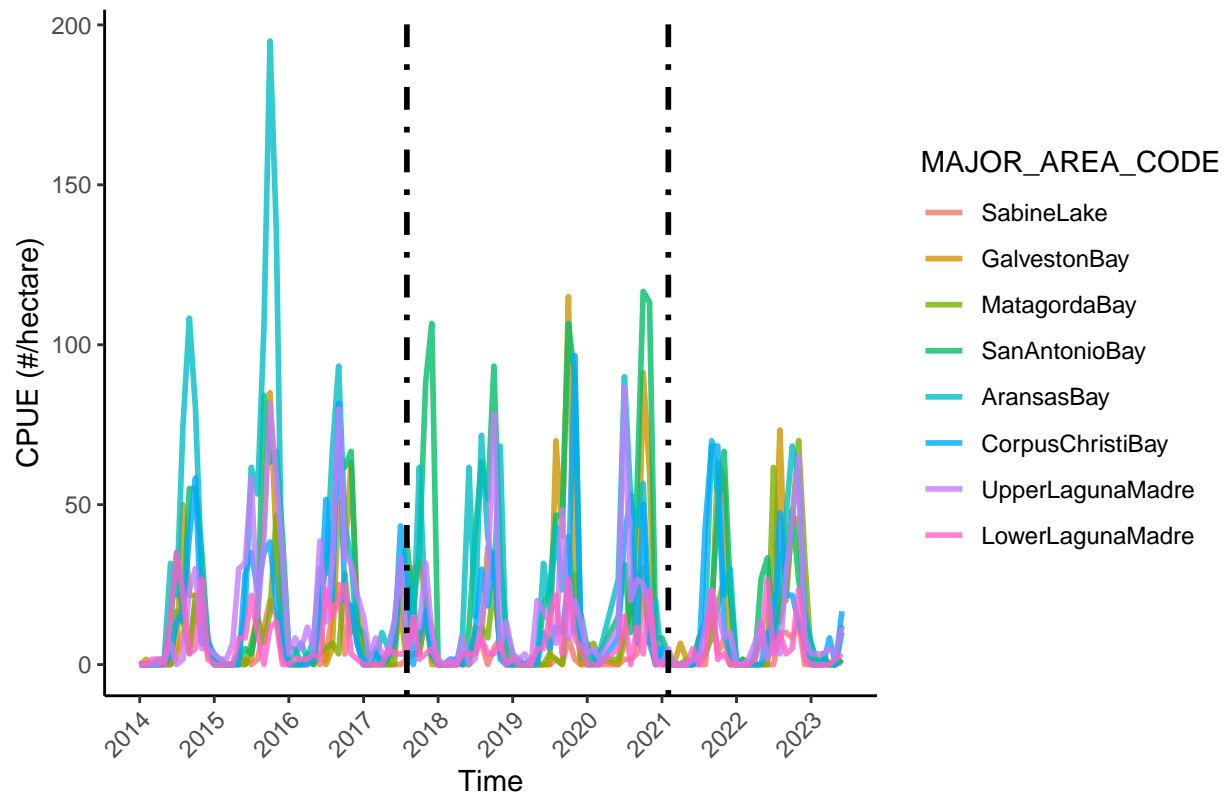
Ana Silverio

2023-10-20

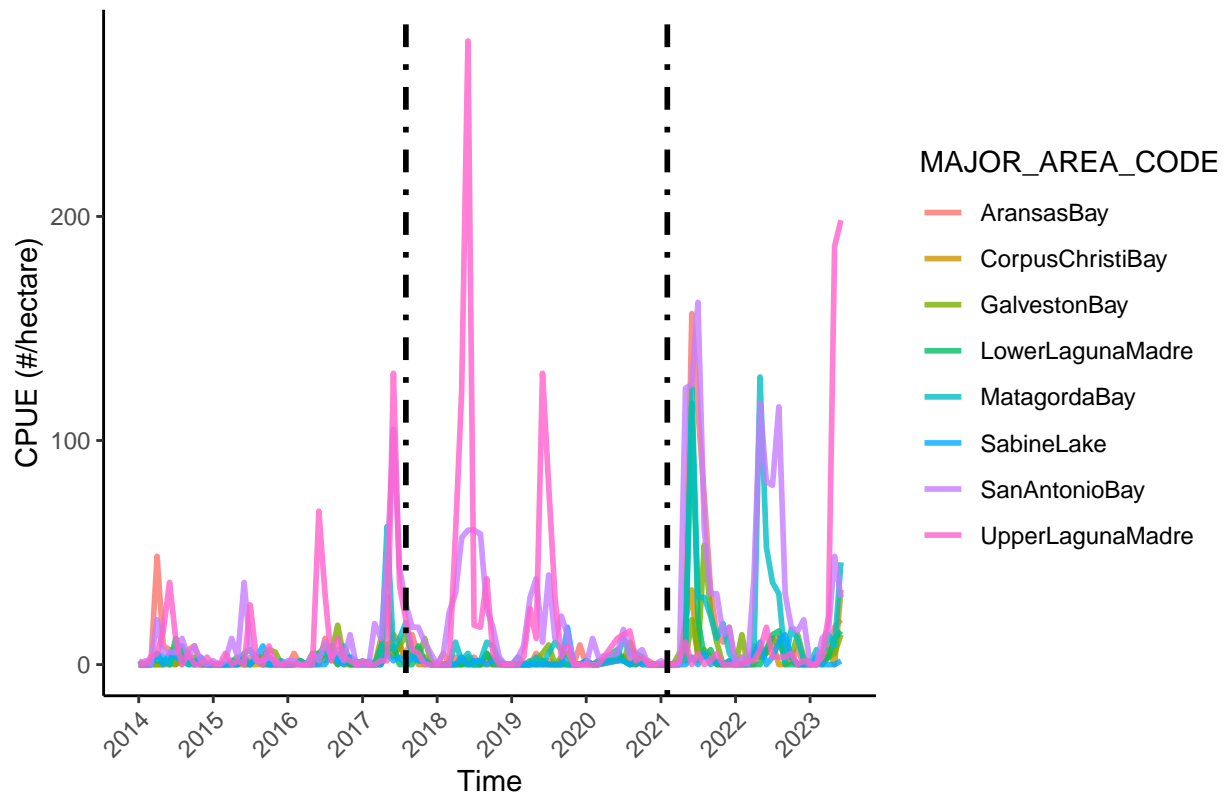
#Time series Figures 2-5



Spotted Seatrout CPUE Monthly Average since 2014



Black Drum CPUE Monthly Average since 2014



Southern Flounder CPUE Monthly Average since 2014

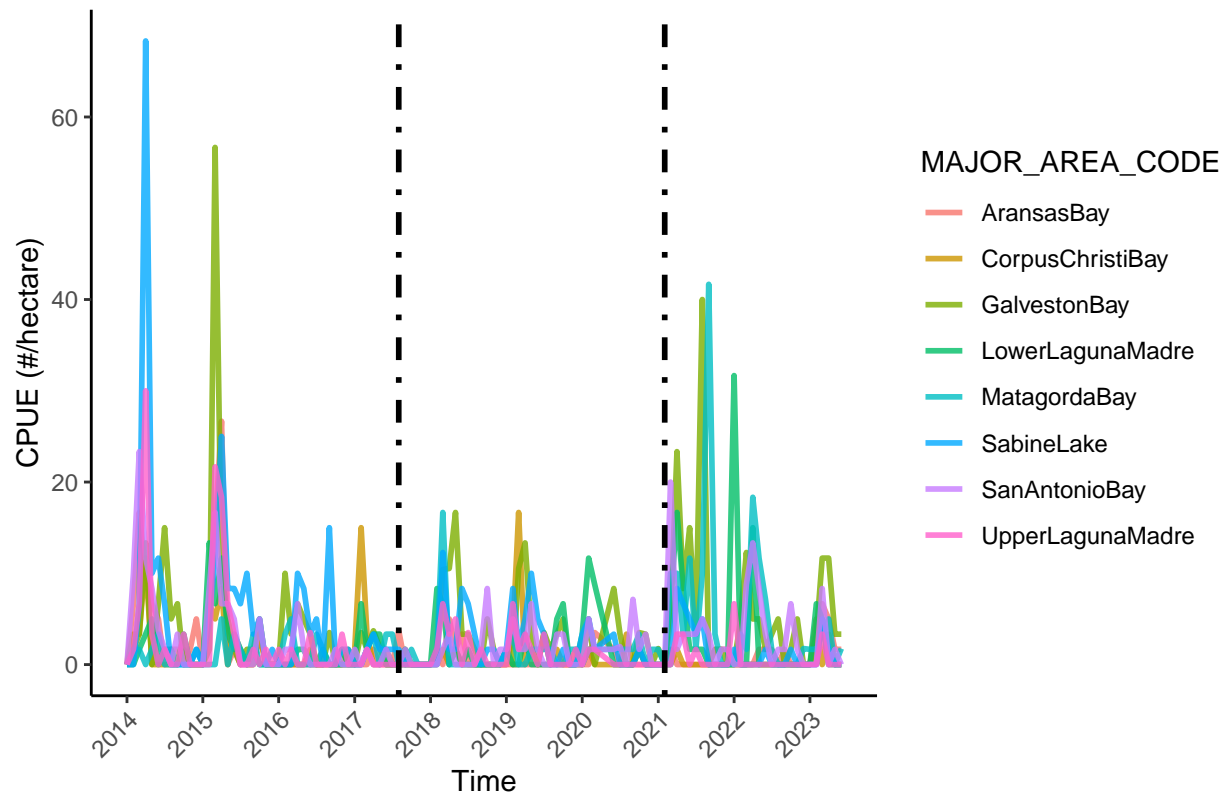
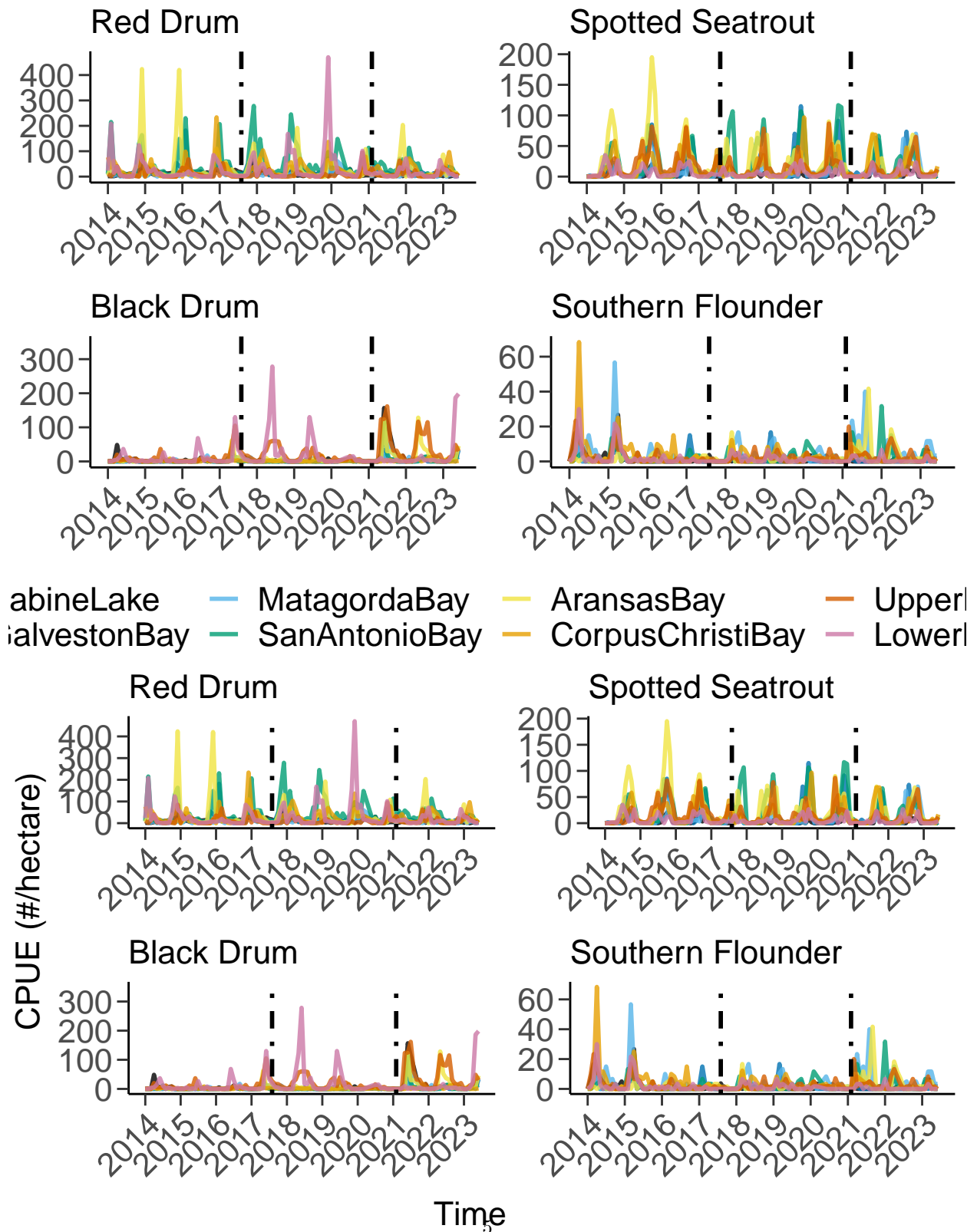


Figure 2

abineLake — MatagordaBay — AransasBay — UpperL
 ialvestonBay — SanAntonioBay — CorpusChristiBay — LowerL



Major Bay	Average Temp (Celsius)	Standard Deviation Temp	Average Salinity (ppt)	Standard Deviation Salinity
Aransas Bay	24.0	6.62	20.26	8.41
Corpus Christi Bay	24.1	6.07	29.46	5.77
Galveston Bay	23.7	6.74	16.85	8.97
Lower Laguna Madre	25.5	5.83	30.43	7.67
Matagorda Bay	24.0	6.59	19.05	8.55
Sabine Lake	22.8	6.87	7.04	6.04
San Antonio Bay	24.3	6.49	21.59	9.53
Upper Laguna Madre	25.4	6.50	37.44	9.25

```
## [1] "Sabine Lake"      "Galveston Bay"    "Matagorda Bay"
## [4] "San Antonio Bay"  "Aransas Bay"      "Corpus Christi Bay"
## [7] "Upper Laguna Madre" "Lower Laguna Madre"
```

Major Bay	Average Depth (m)	Max Depth (Dredged (m))	Max Dpeth (Non Dredged (m))	Surface Area (ha)	Volume (km3)
Sabine Lake	1.8	12.0	3.0	17,798	0.326
Galveston Bay	2.1	9.1	3.0	143,153	2.911
Matagorda Bay	2.3	13.7	3.9	101,368	2.134
San Antonio Bay	1.4	9.4	2.1	56,162	0.754
Aransas Bay	2.0	6.1	3.0	46,279	0.925
Corpus Christi Bay	2.4	13.7	4.8	44,451	1.147
Laguna Madre	1.1	3.7	3.0	214,545	2.574

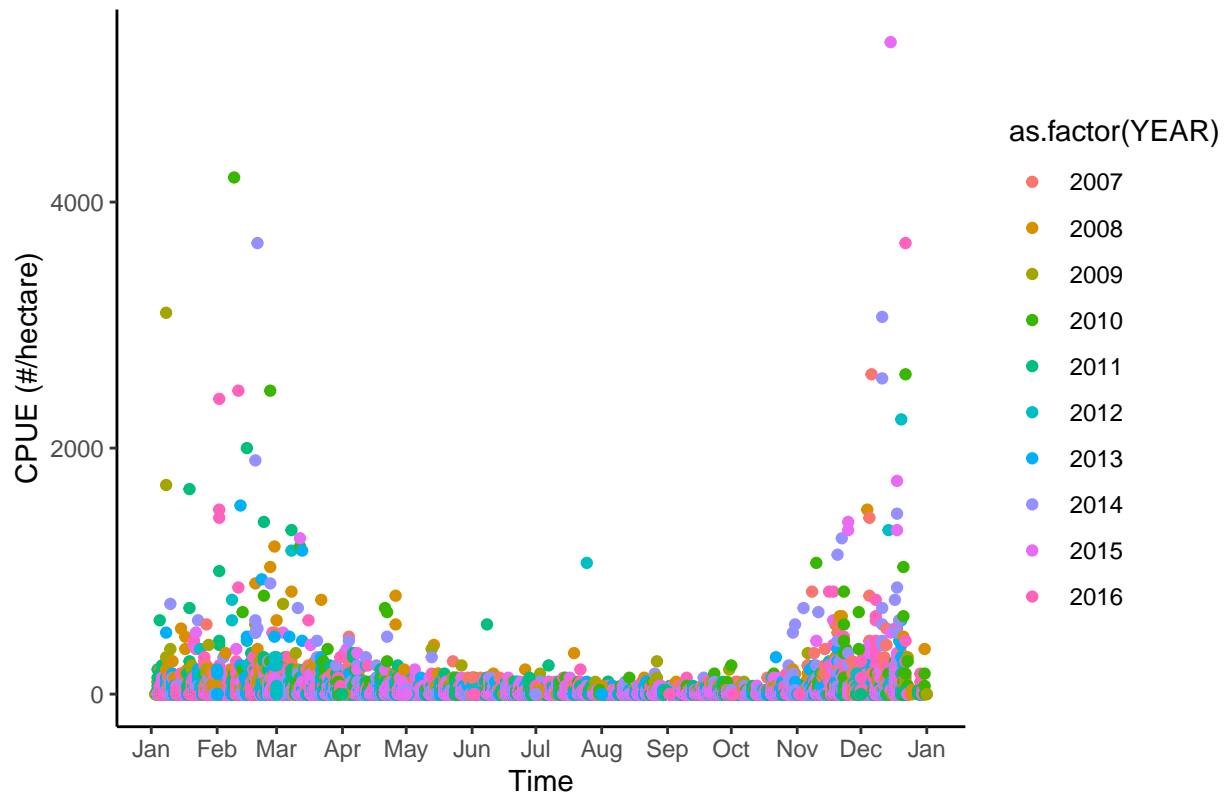
Table 2

Table 3

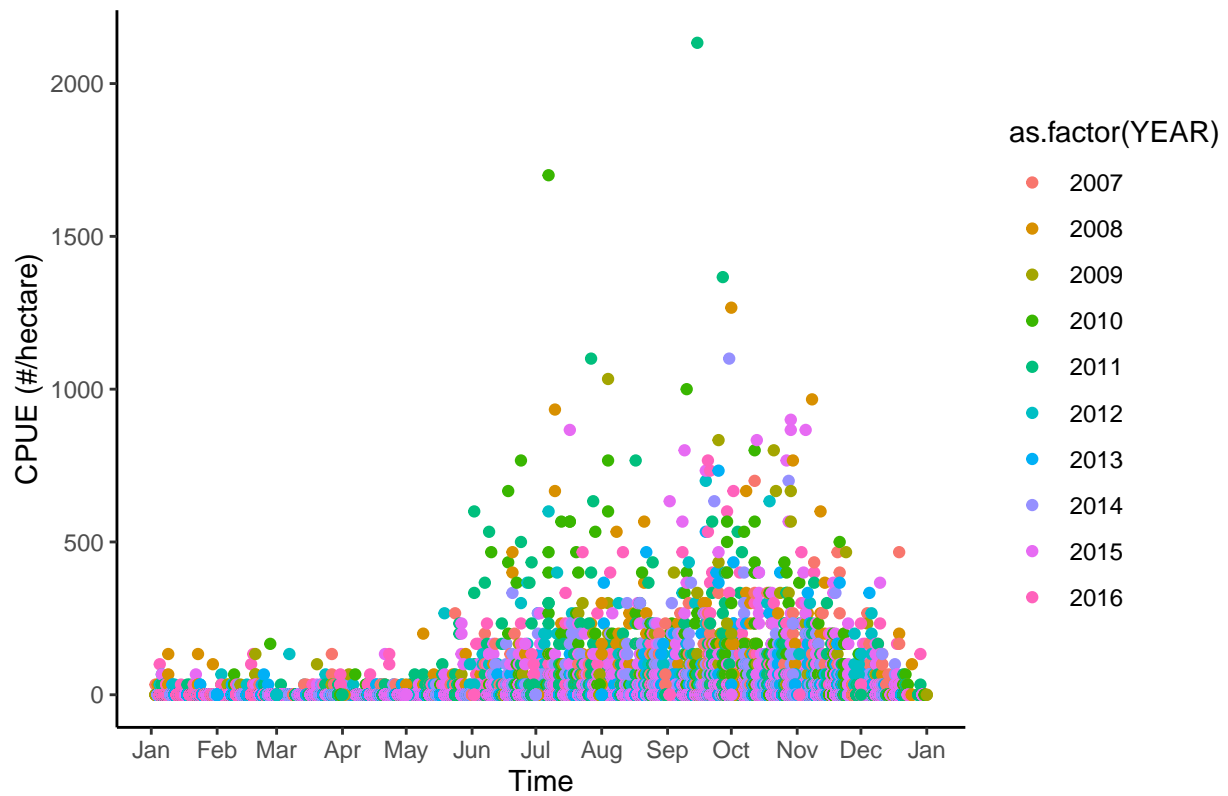
Species	Recruitment Window	Spawning Season	Citation
Red Drum	October - May of the followinig year	mid August - mid October	Neiland and Wilson 1994 & Rooker 1998
Spotted Seatrout	June - December	April - October	Rooker 1998 & Murphy and McMichael Jr 2002
Black Drum	April - October	Febuary - April	Neiland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

Pulse Recruitment

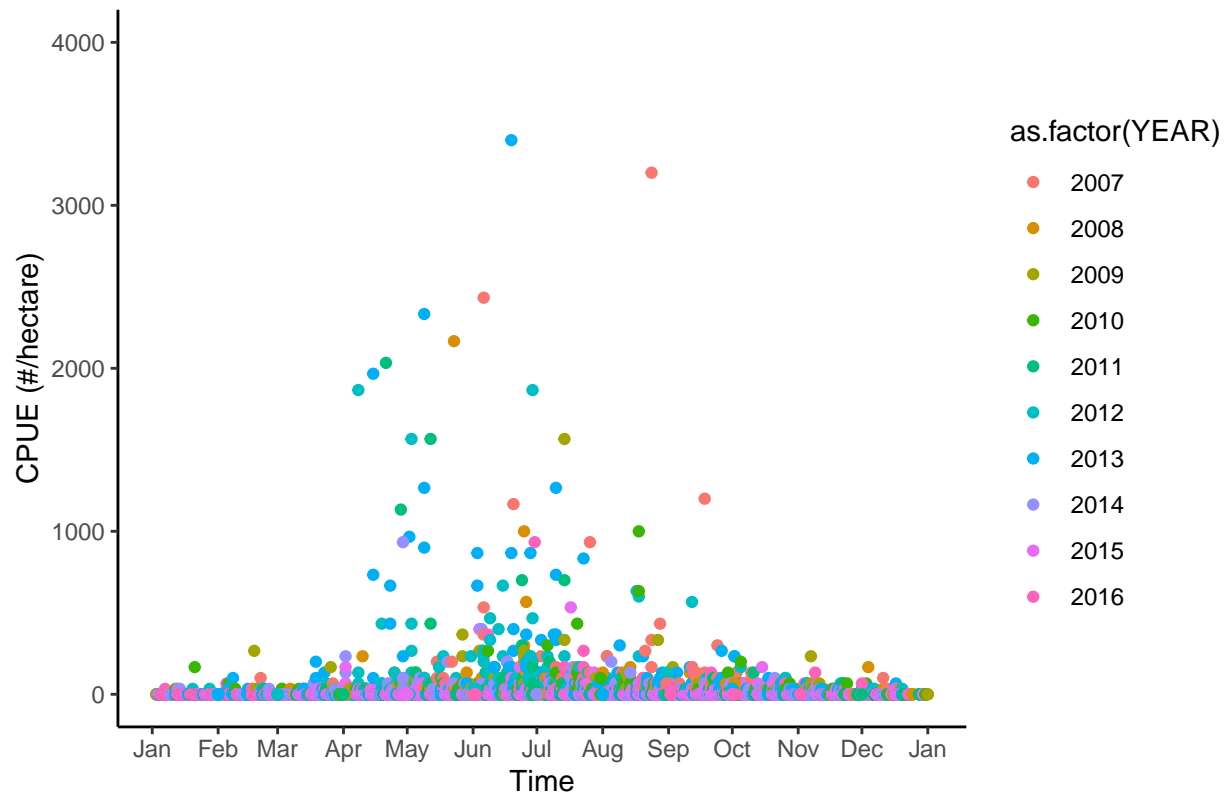
Red Drum CPUE Monthly Average Since 2007

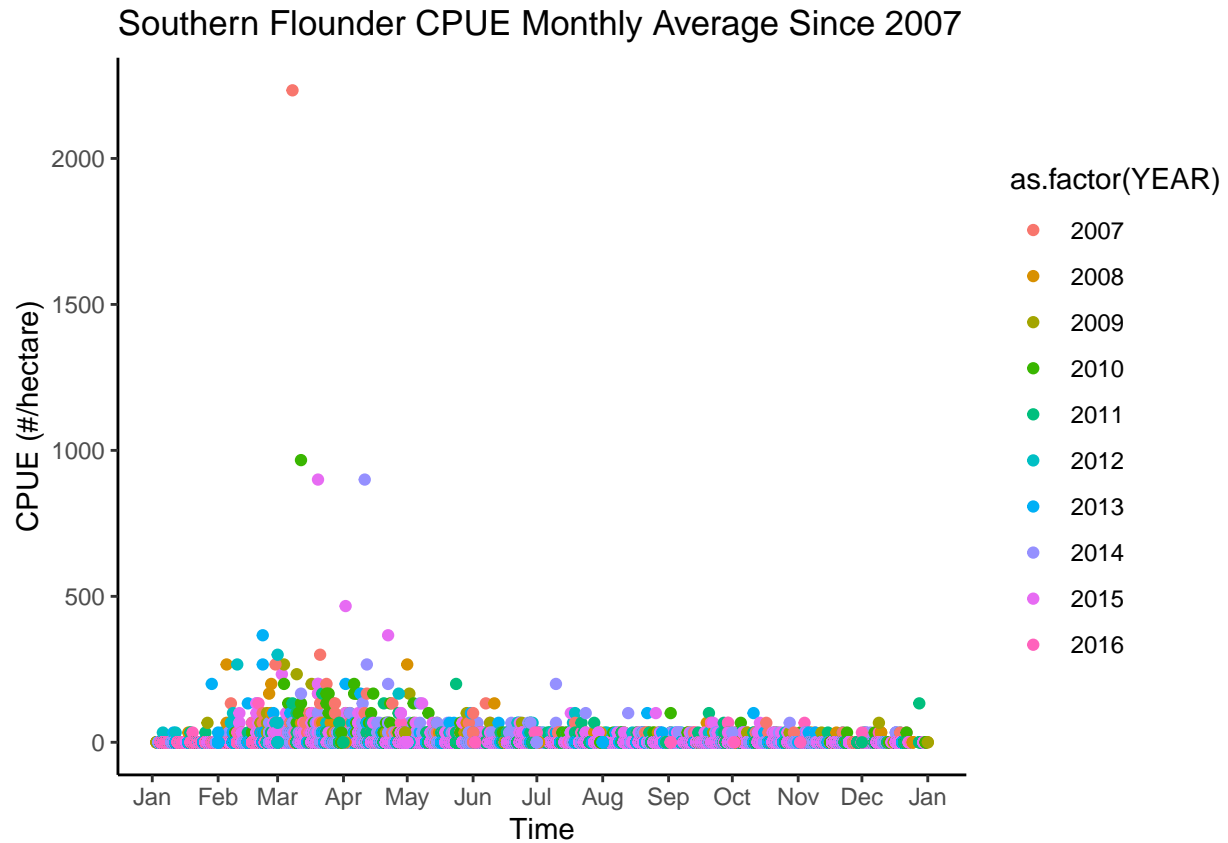


SST CPUE Monthly Average Since 2007



black drum CPUE Monthly Average Since 2007





Notes

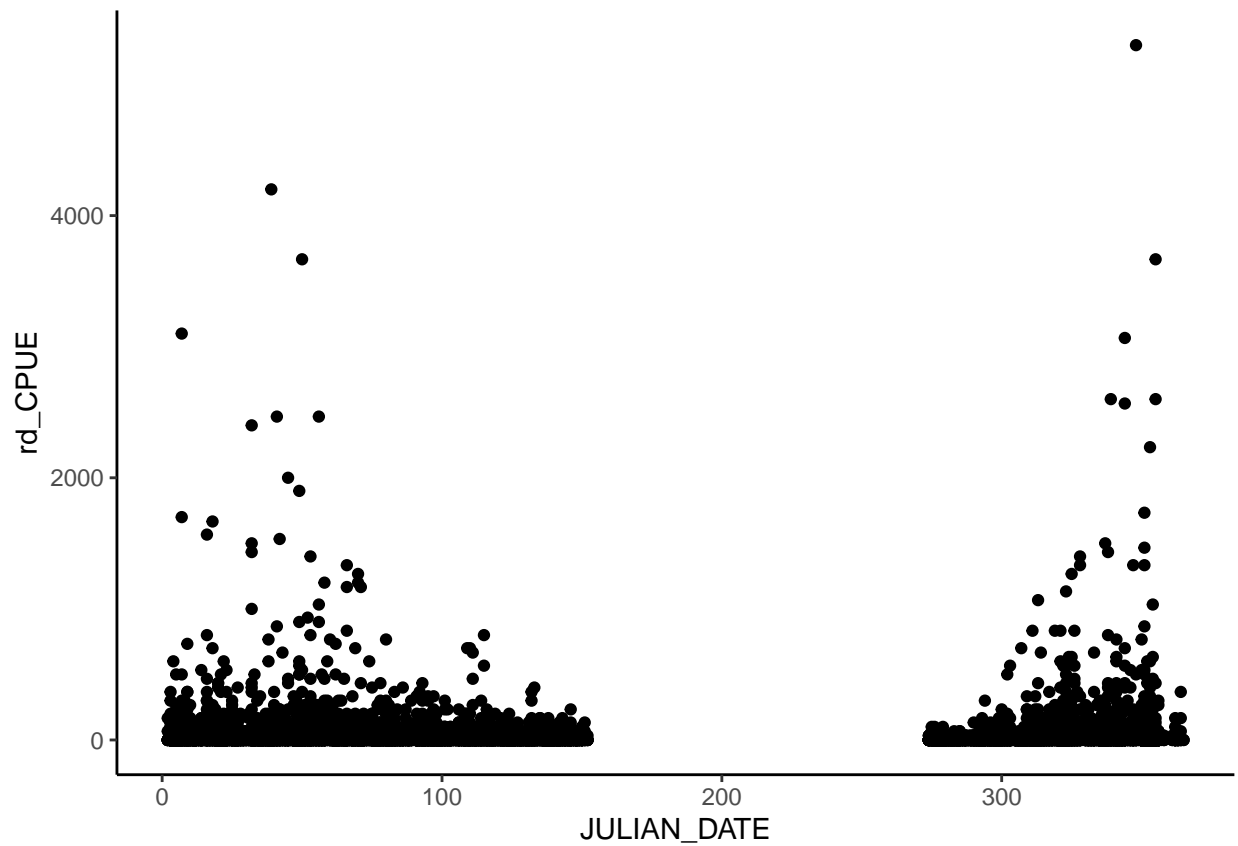
From here I am able to look at the recruitment windows for each species to better align my averages for each species moving forward

New Baseline Calculations

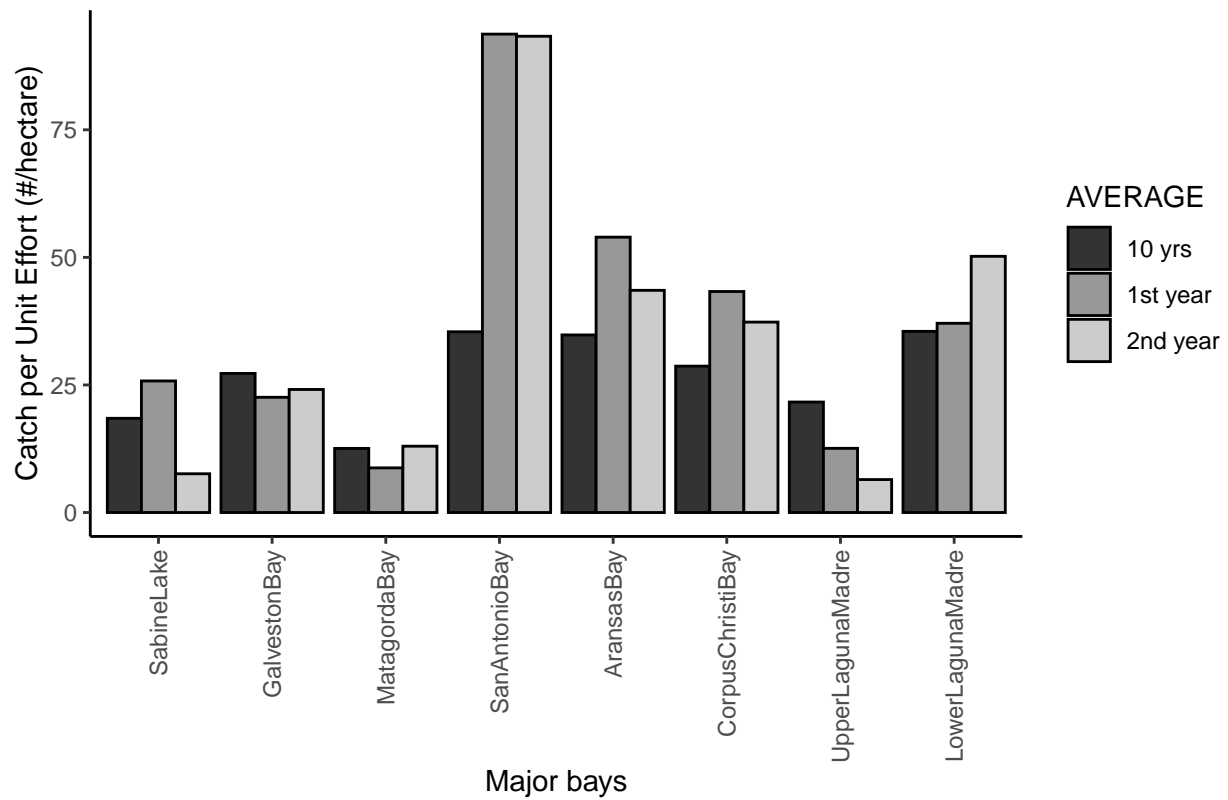
In the order of Hurricane, Freeze for each

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

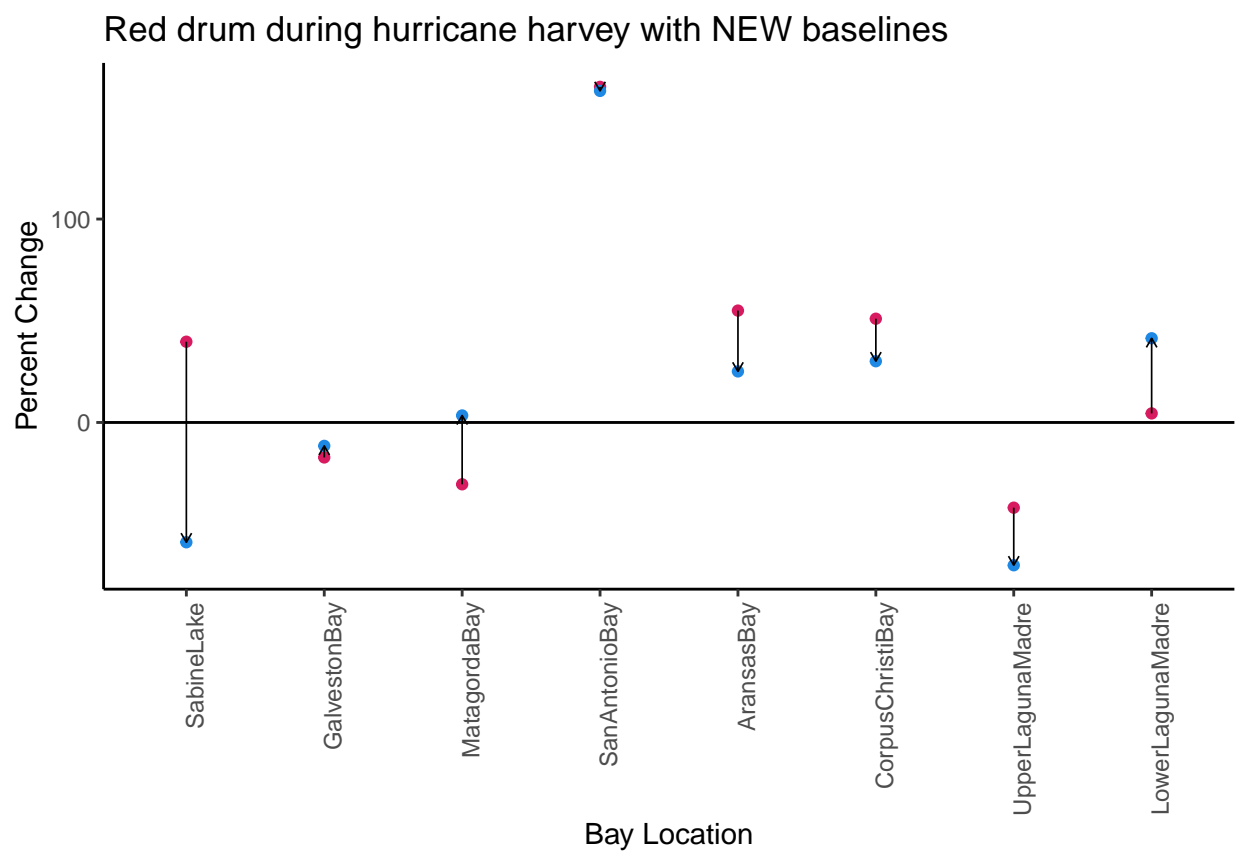
Red Drum

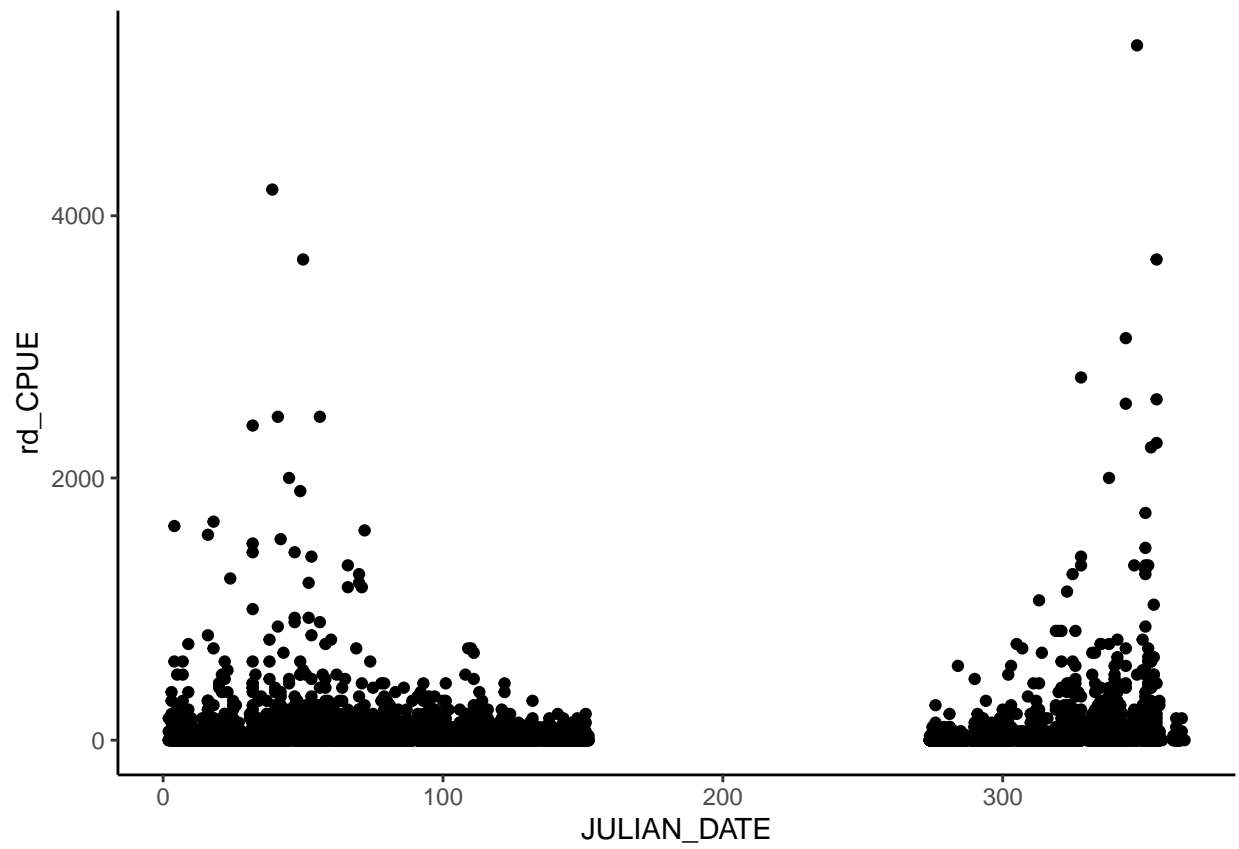


10 yr avg vs post storm avg for RD across bays using NEW baselines

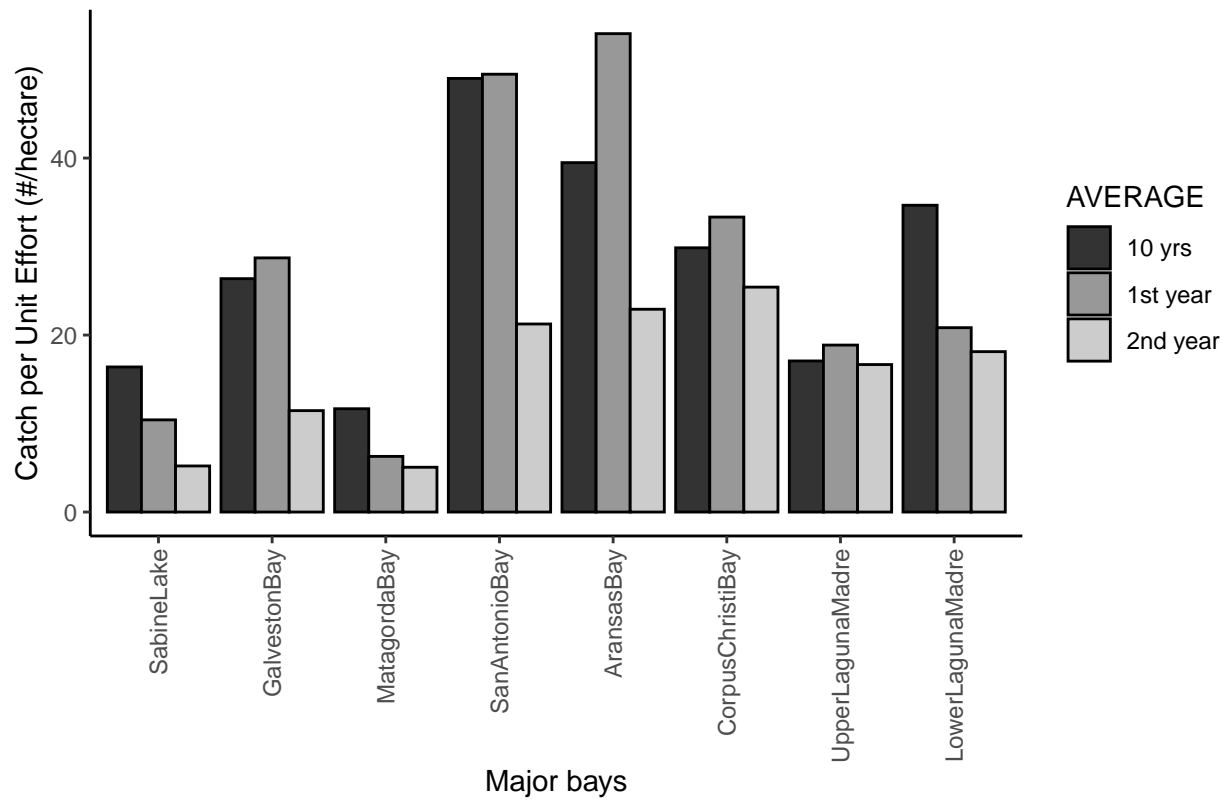


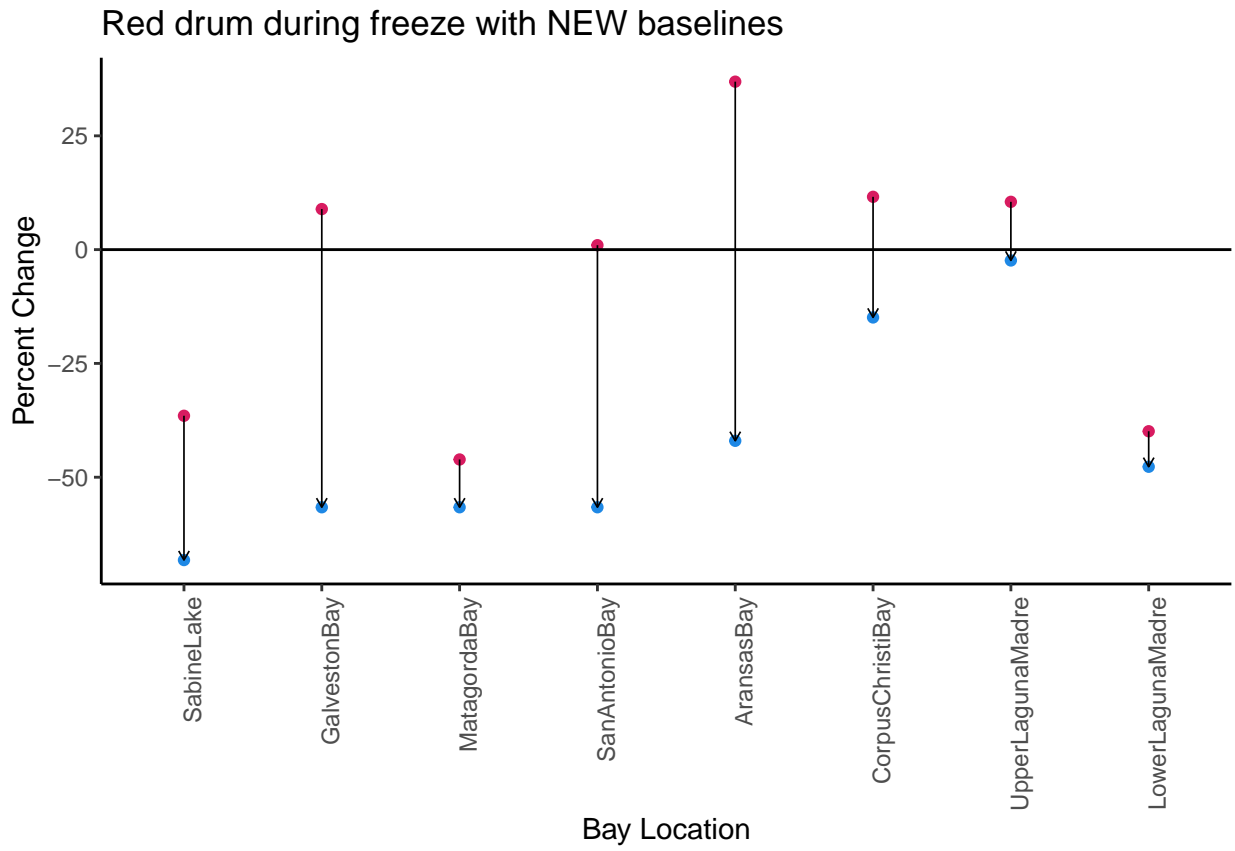
Bays	SPECIES	10 yrs	1st year	2nd year	first_perChange	second_perChange
SabineLake	Red Drum	18.46	25.79	7.595	39.680	-58.860
GalvestonBay	Red Drum	27.26	22.58	24.109	-17.150	-11.540
MatagordaBay	Red Drum	12.57	8.75	12.998	-30.360	3.443
SanAntonioBay	Red Drum	35.42	93.75	93.333	164.700	163.500
AransasBay	Red Drum	34.80	53.96	43.542	55.040	25.110
CorpusCristiBay	Red Drum	28.69	43.31	37.317	50.990	30.090
UpperLagunaMadre	Red Drum	21.65	12.58	6.458	-41.900	-70.170
LowerLagunaMadre	Red Drum	35.50	37.08	50.208	4.448	41.420



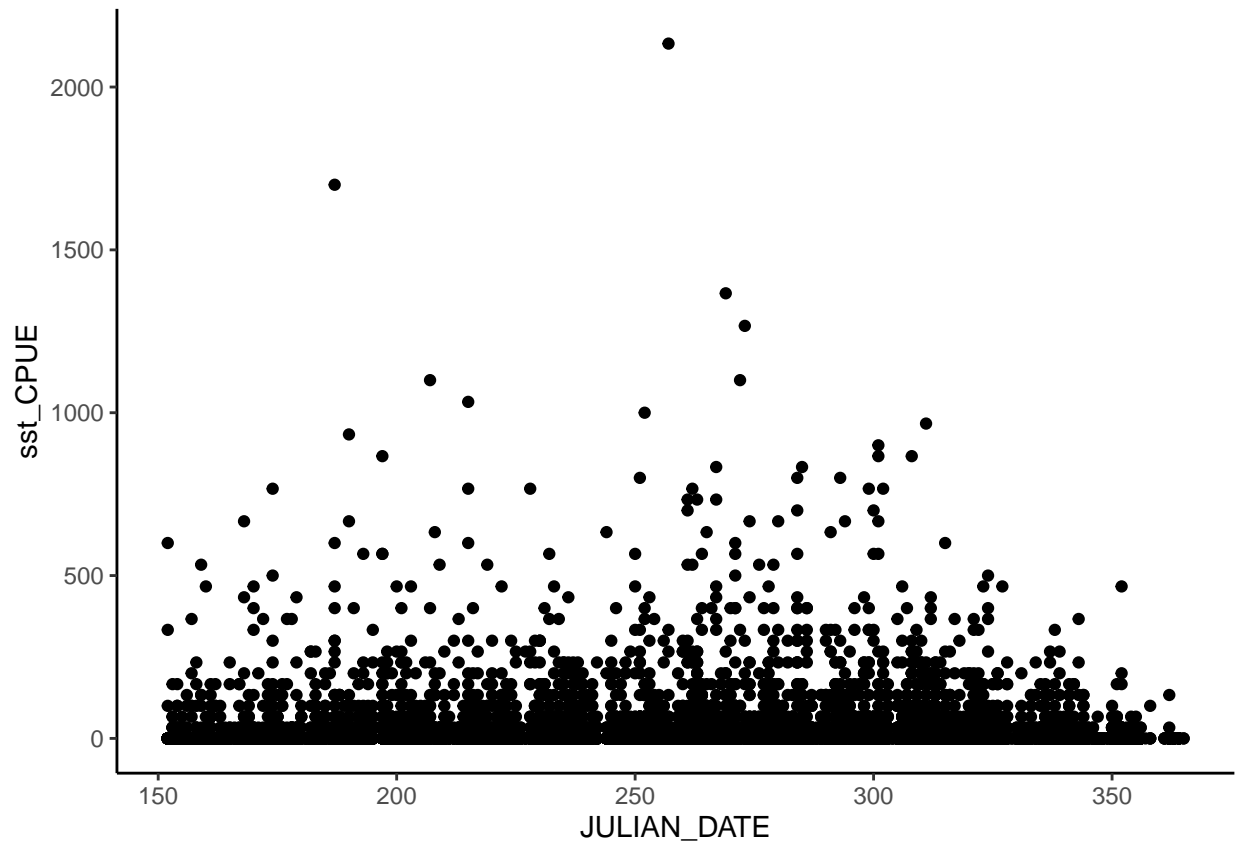


10 yr avg vs post freeze avg for RD across bays using NEW baselines

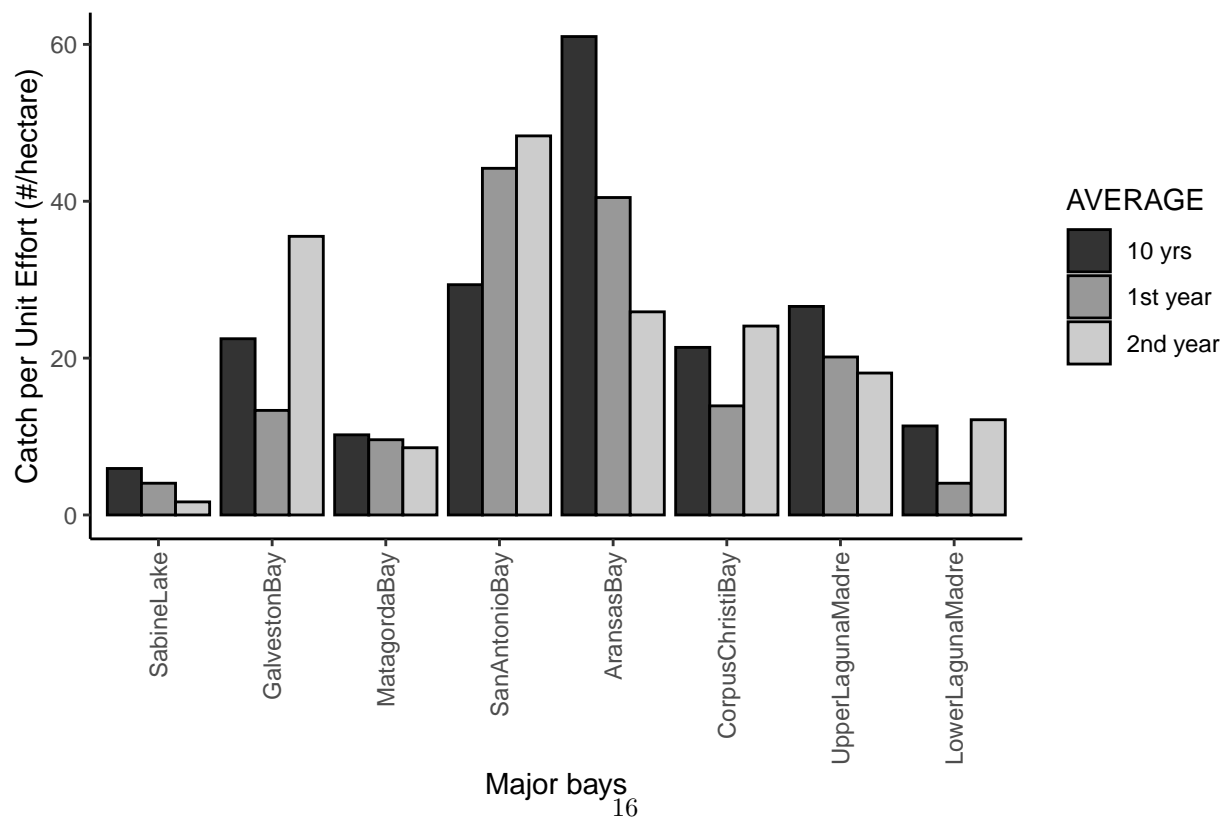




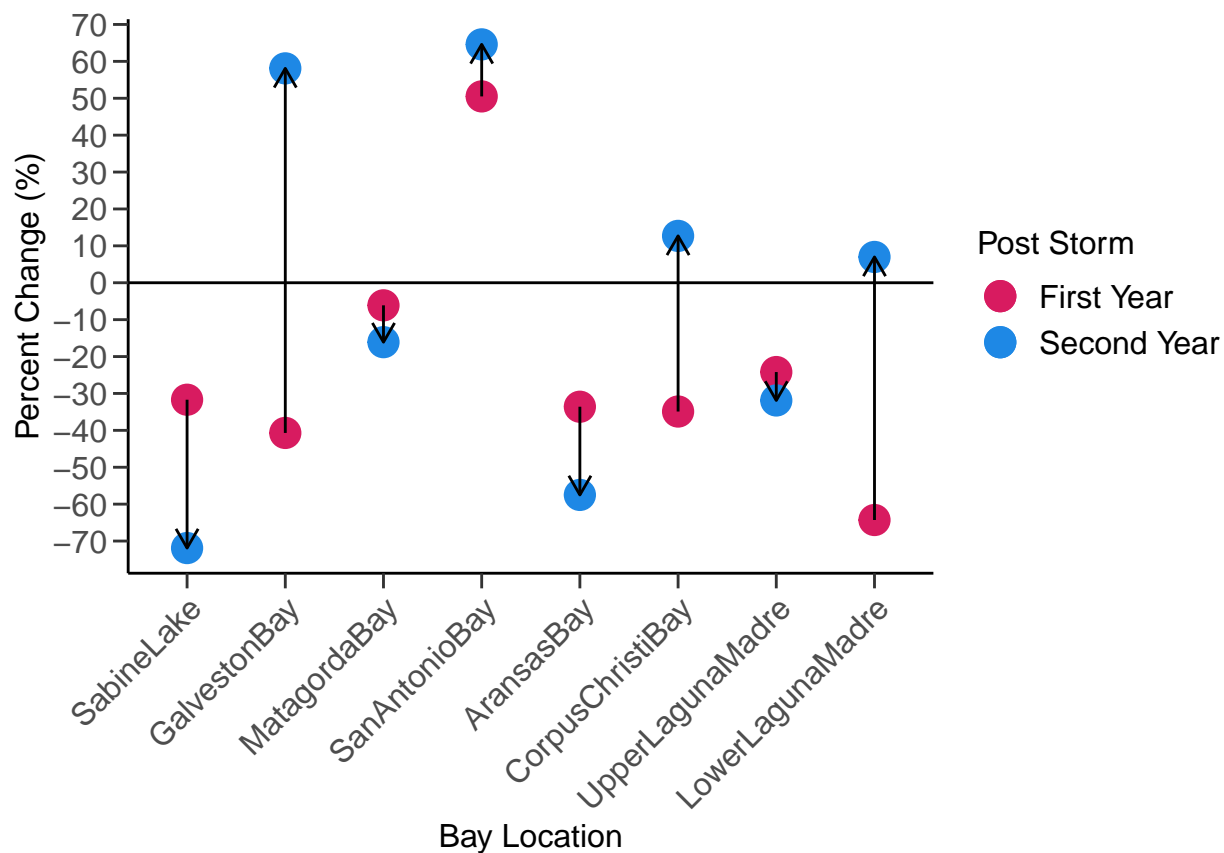
Spotted Seatrout

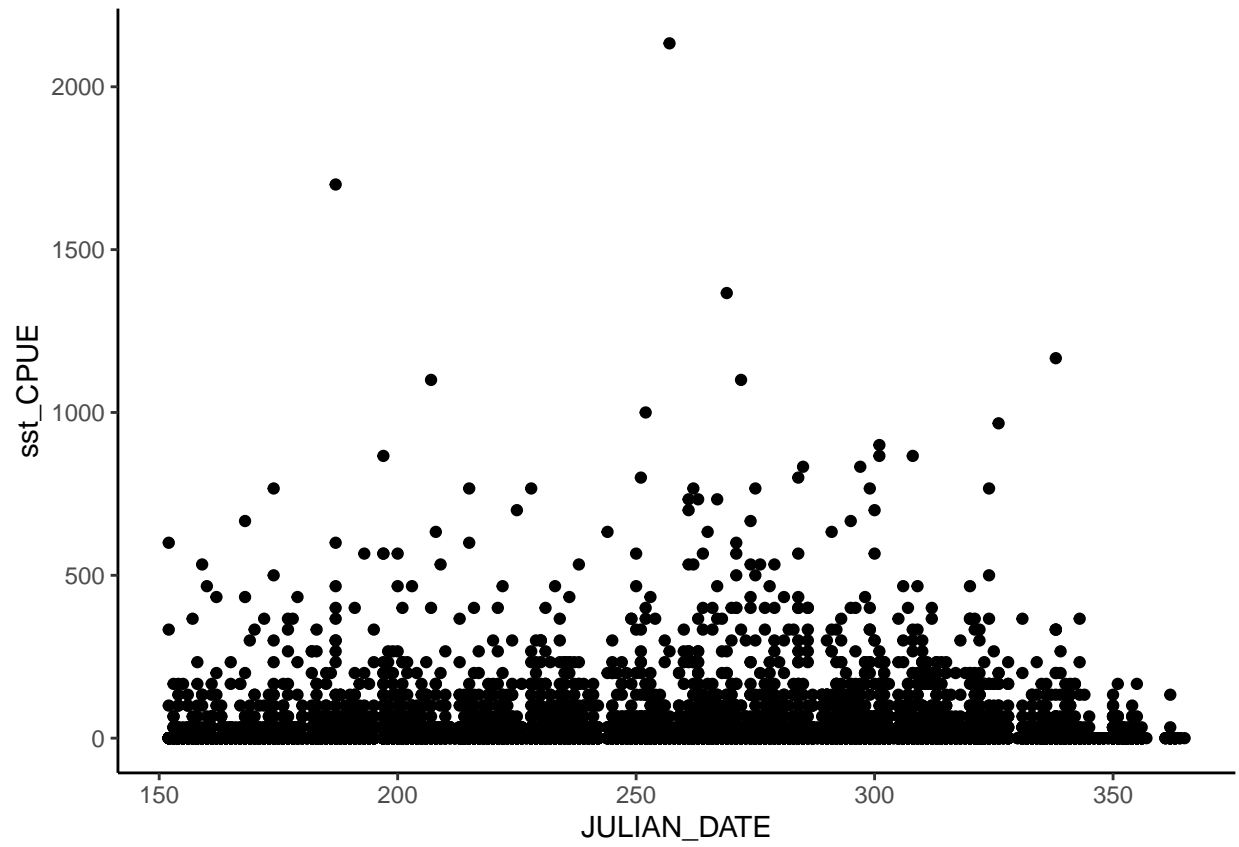


10 yr avg vs post storm avg for SST across bays using NEW baselines

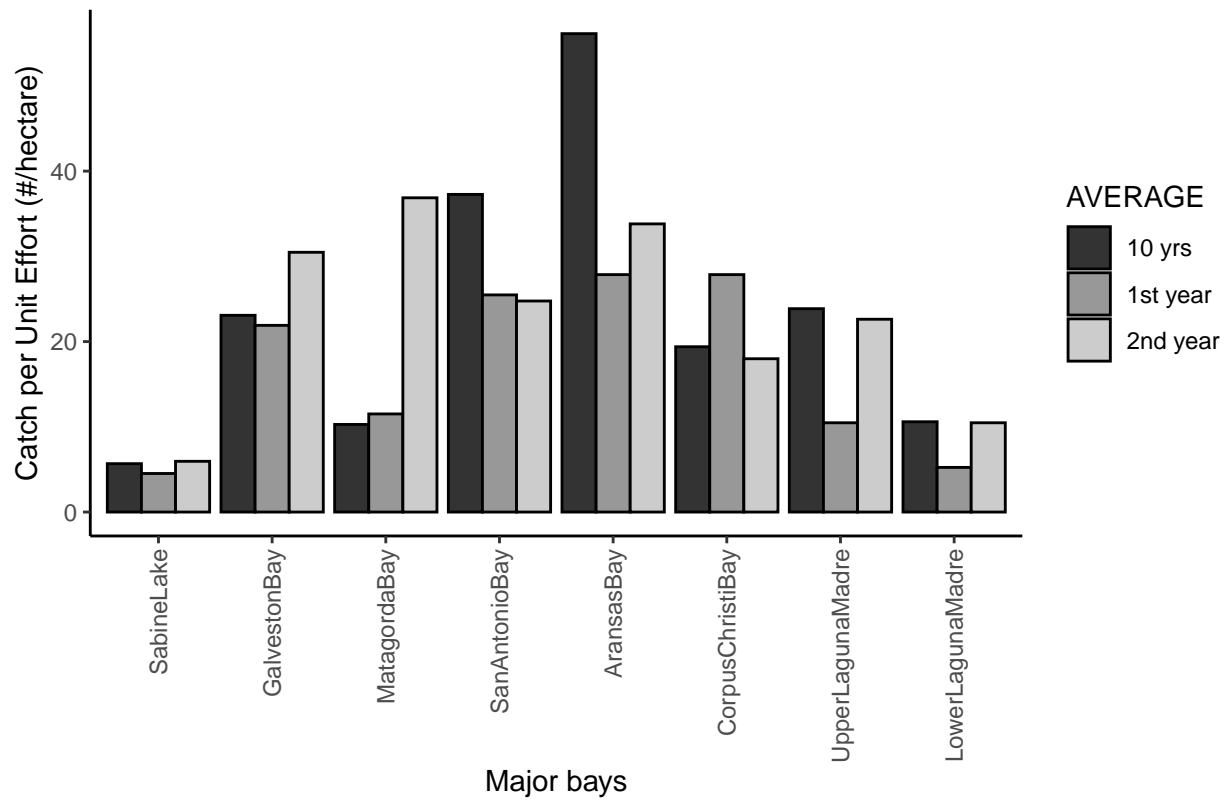


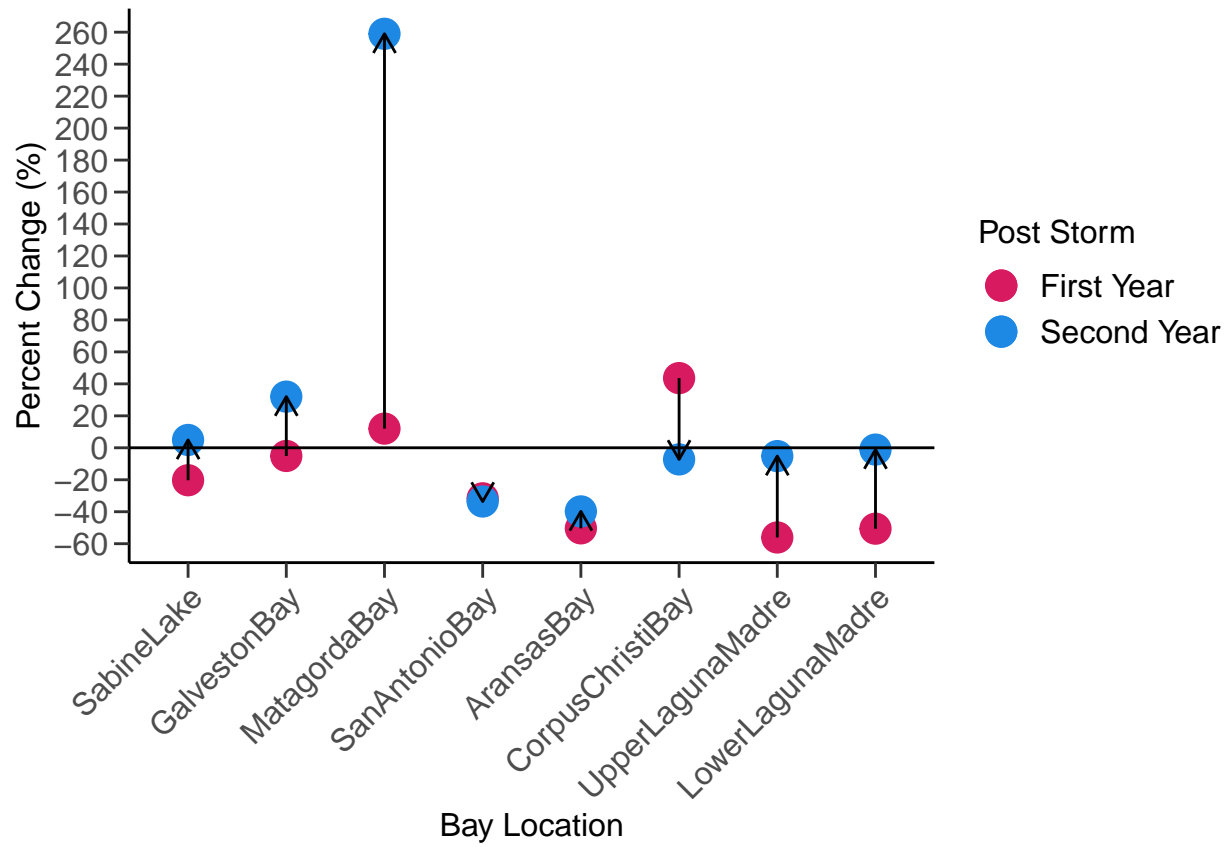
MAJOR_AREA_CODE	SPECIES	10 yrs	1st year	2nd year	first_perChange	second_perChange
SabineLake	Spotted Seatrout	5.926	4.048	1.667	-31.700	-71.88
GalvestonBay	Spotted Seatrout	22.470	13.333	35.523	-40.660	58.09
MatagordaBay	Spotted Seatrout	10.218	9.592	8.571	-6.121	-16.11
SanAntonioBay	Spotted Seatrout	29.361	44.197	48.333	50.530	64.62
AransasBay	Spotted Seatrout	60.999	40.476	25.899	-33.640	-57.54
CorpusCristiBay	Spotted Seatrout	21.365	13.909	24.088	-34.900	12.74
UpperLagunaMadre	Spotted Seatrout	26.590	20.144	18.095	-24.240	-31.95
LowerLagunaMadre	Spotted Seatrout	11.350	4.048	12.143	-64.340	6.99



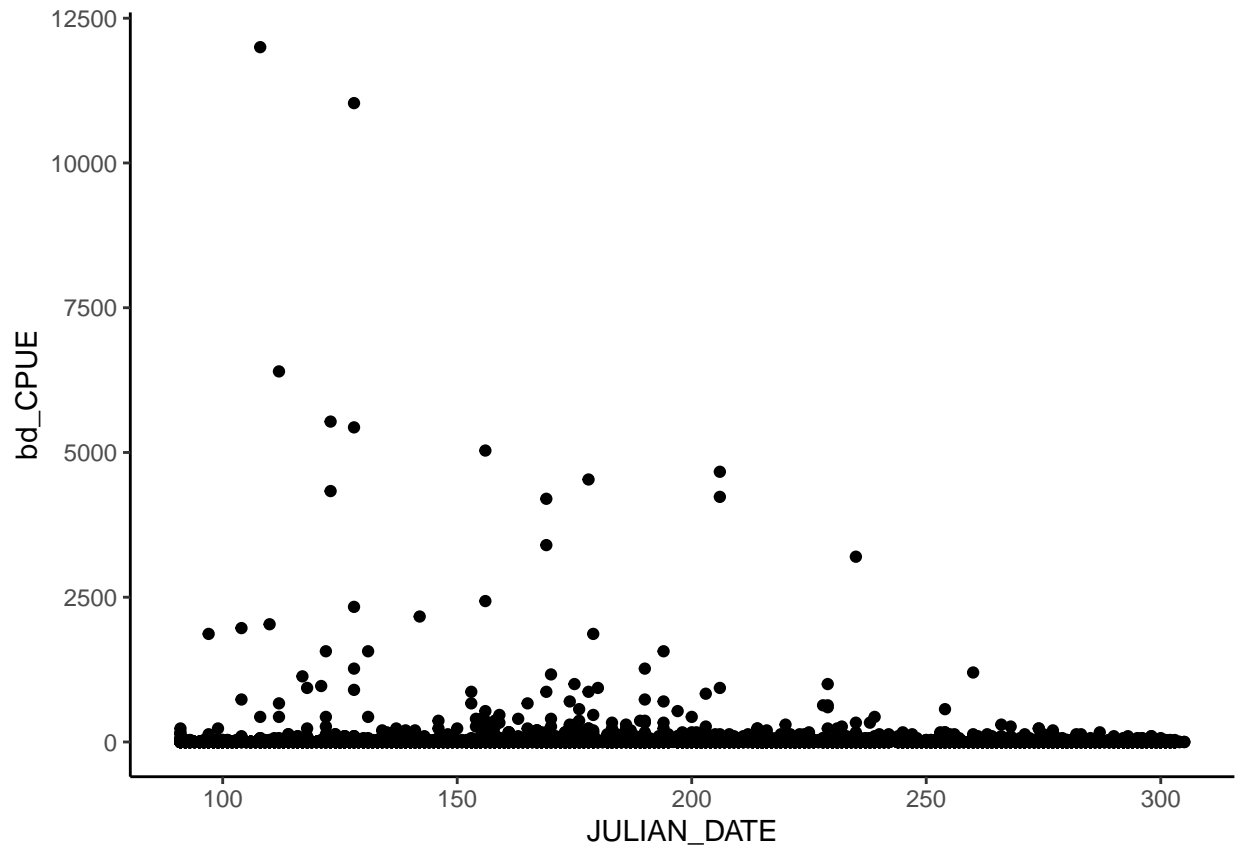


10 yr avg vs post storm avg for SST across bays using NEW baselines

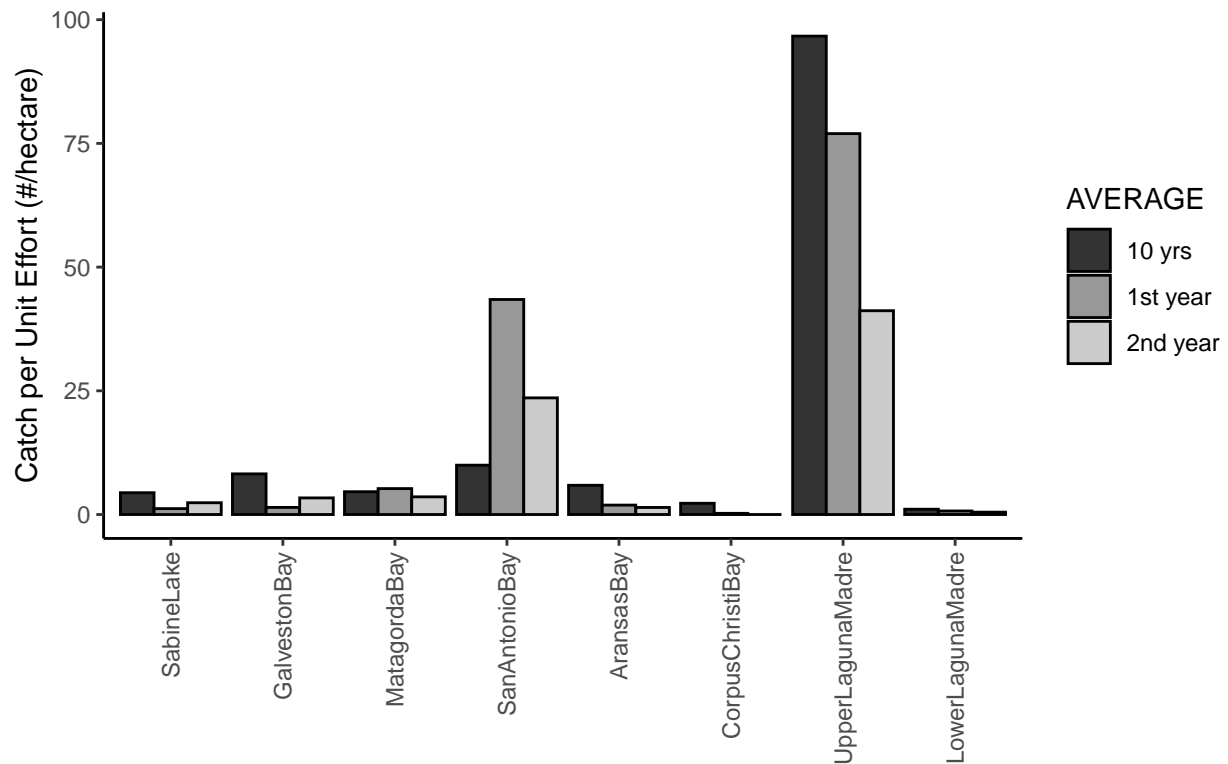


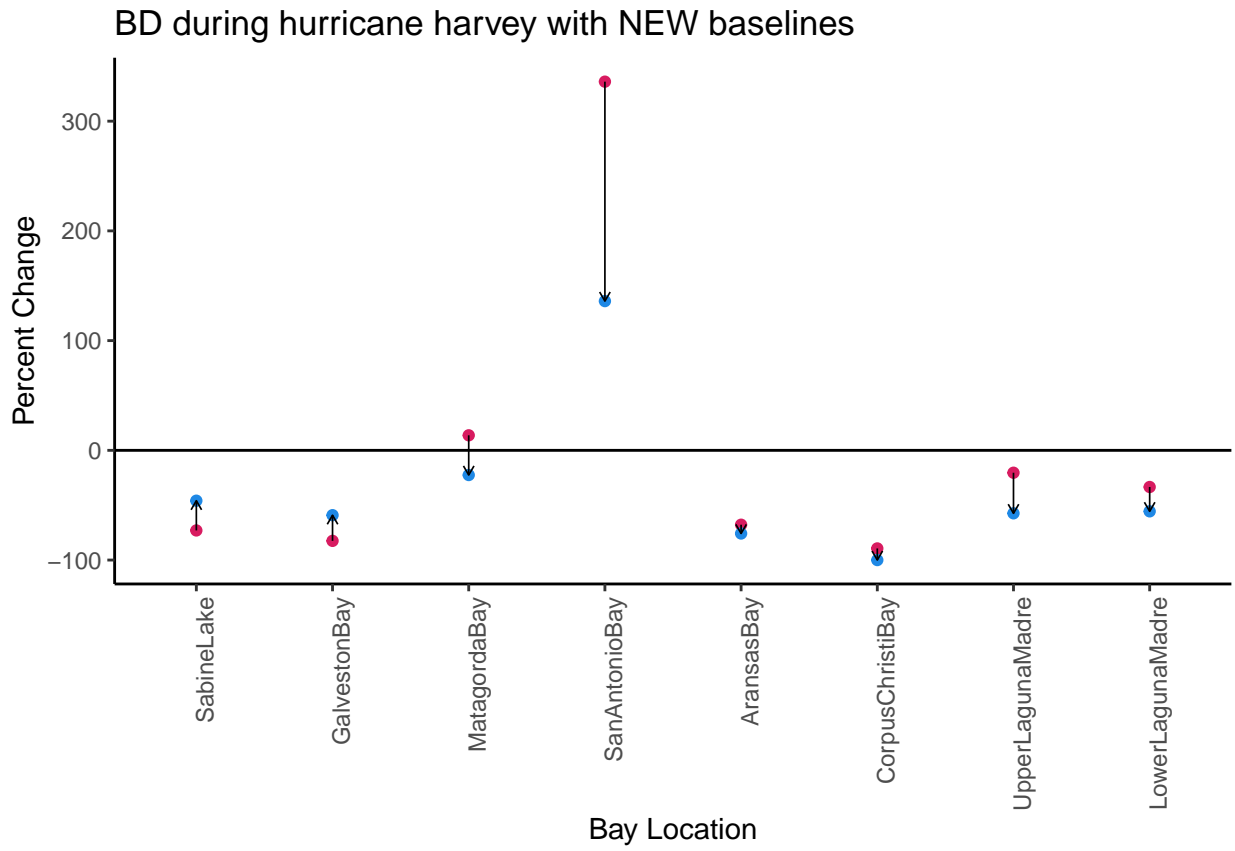


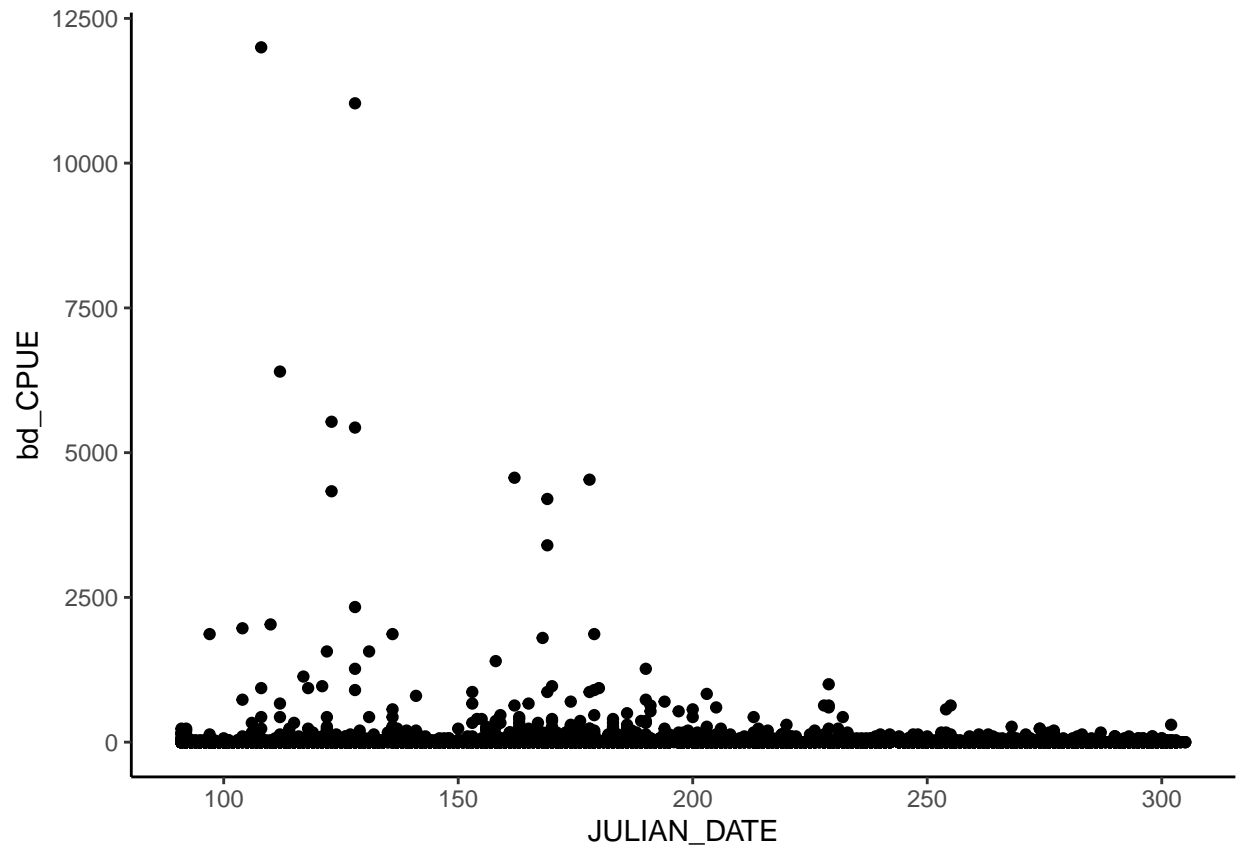
Black Drum



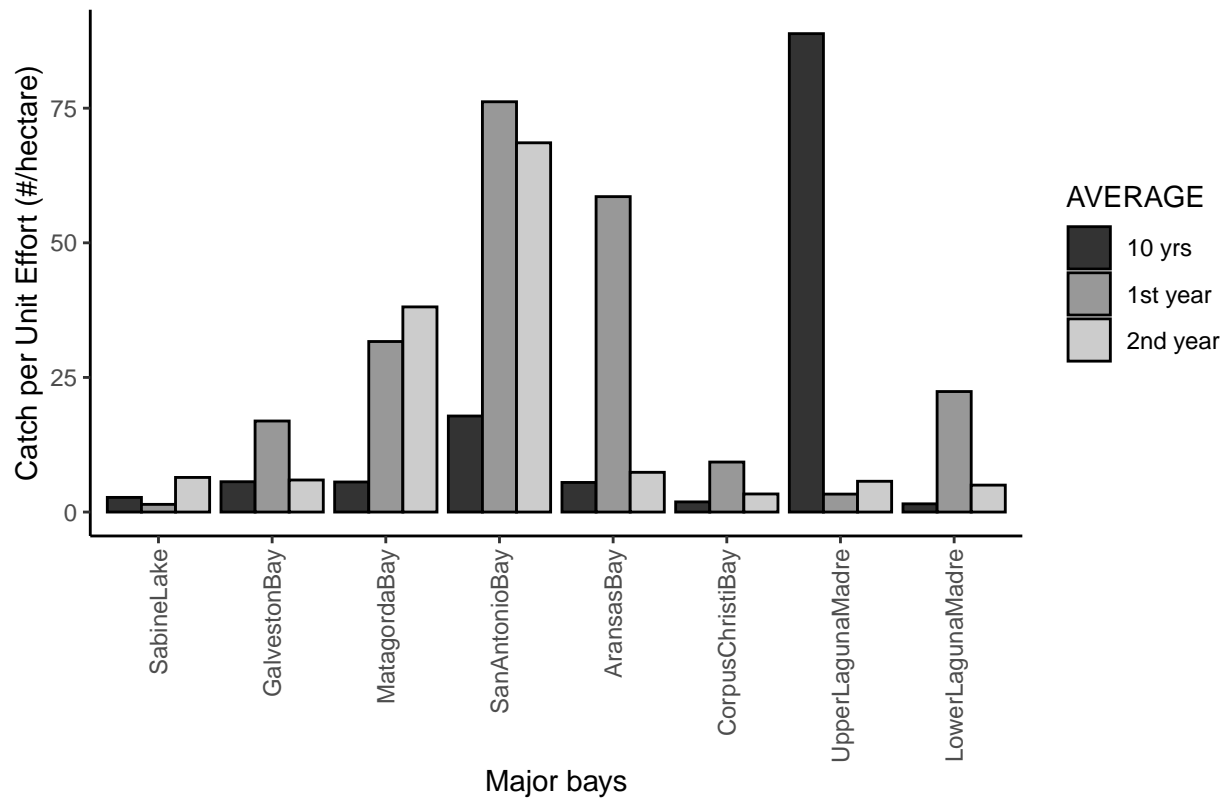
10 yr avg vs post storm avg for BD across bays using NEW baselines

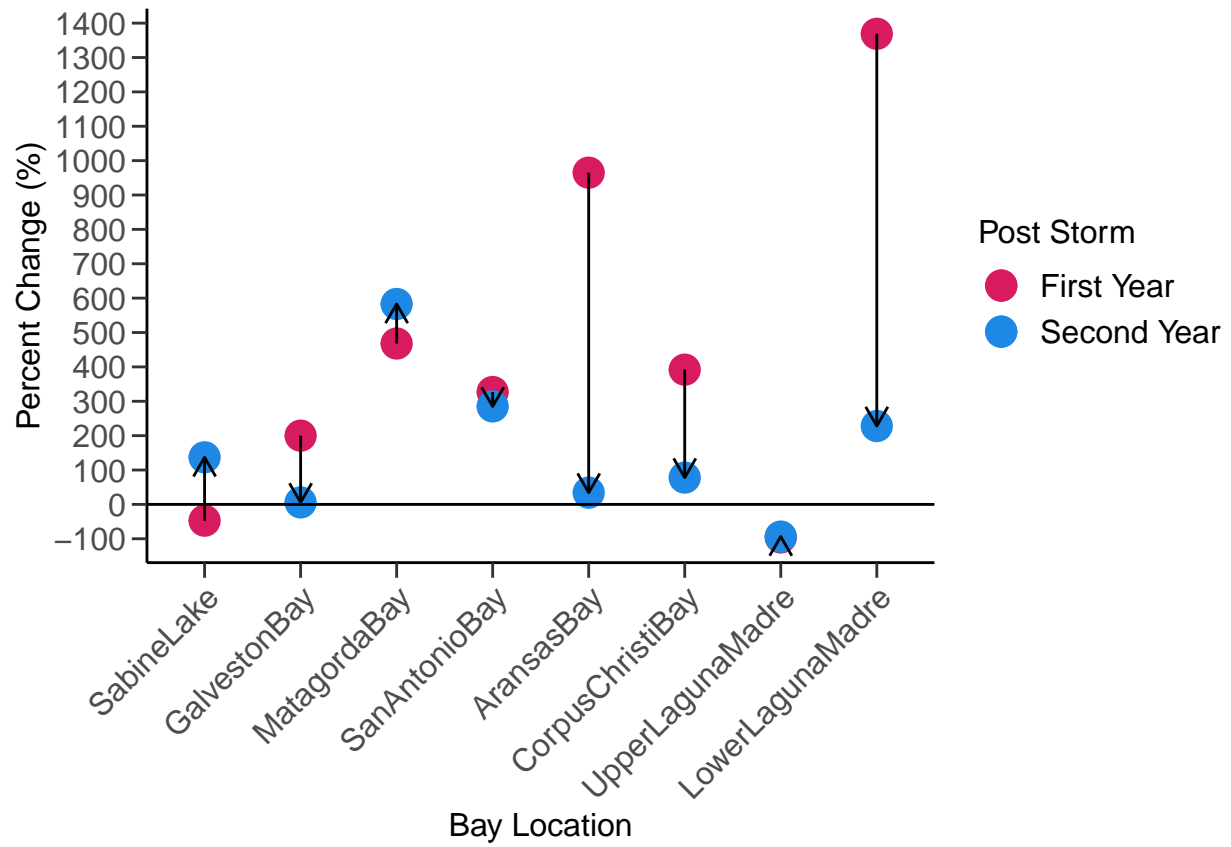




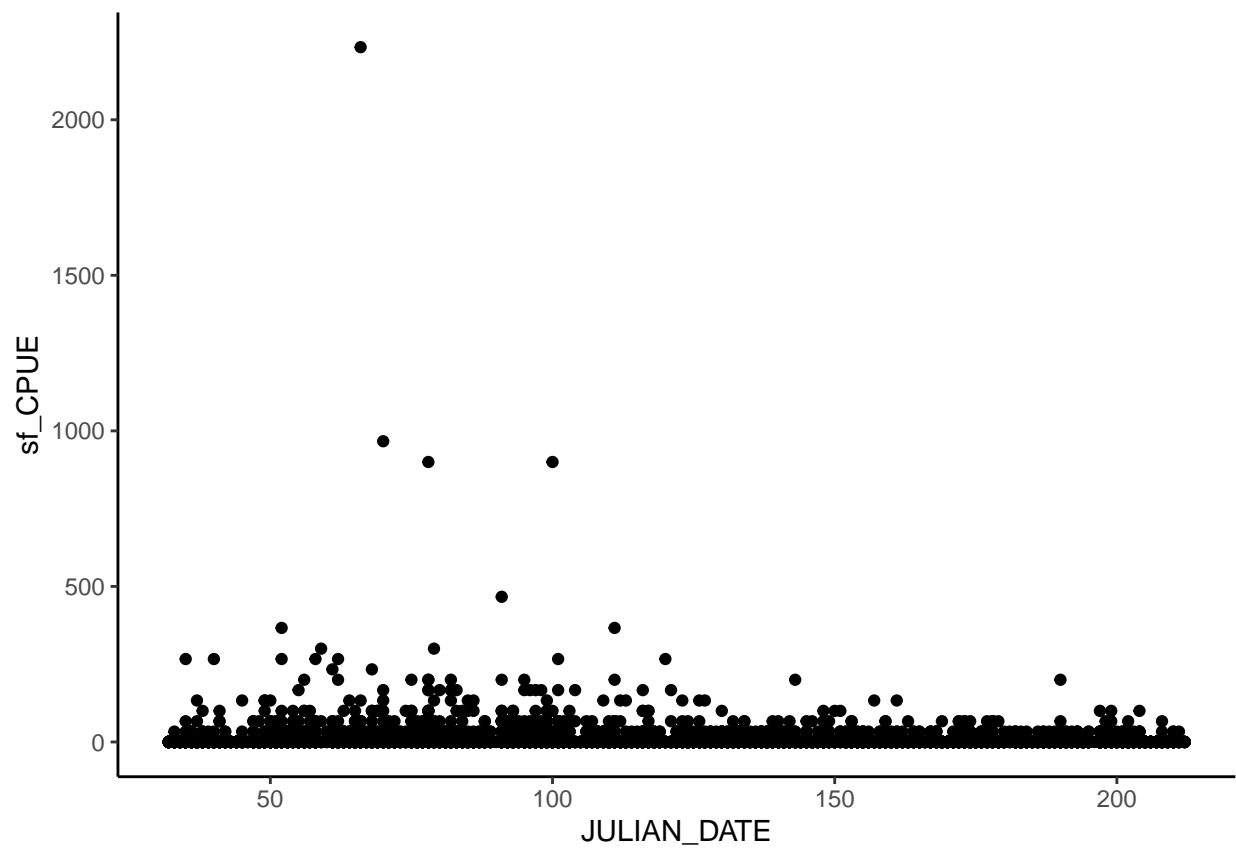


10 yr avg vs post storm avg for BD across bays using NEW baselines

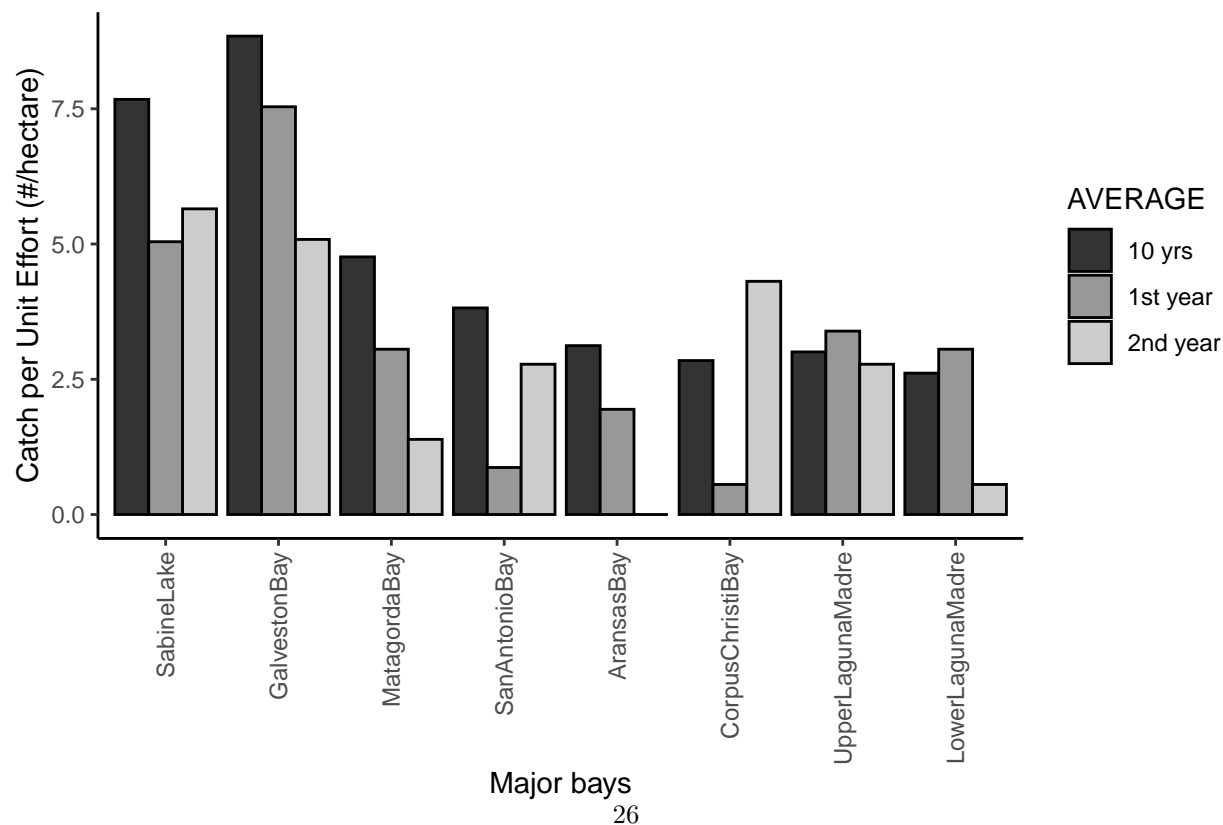


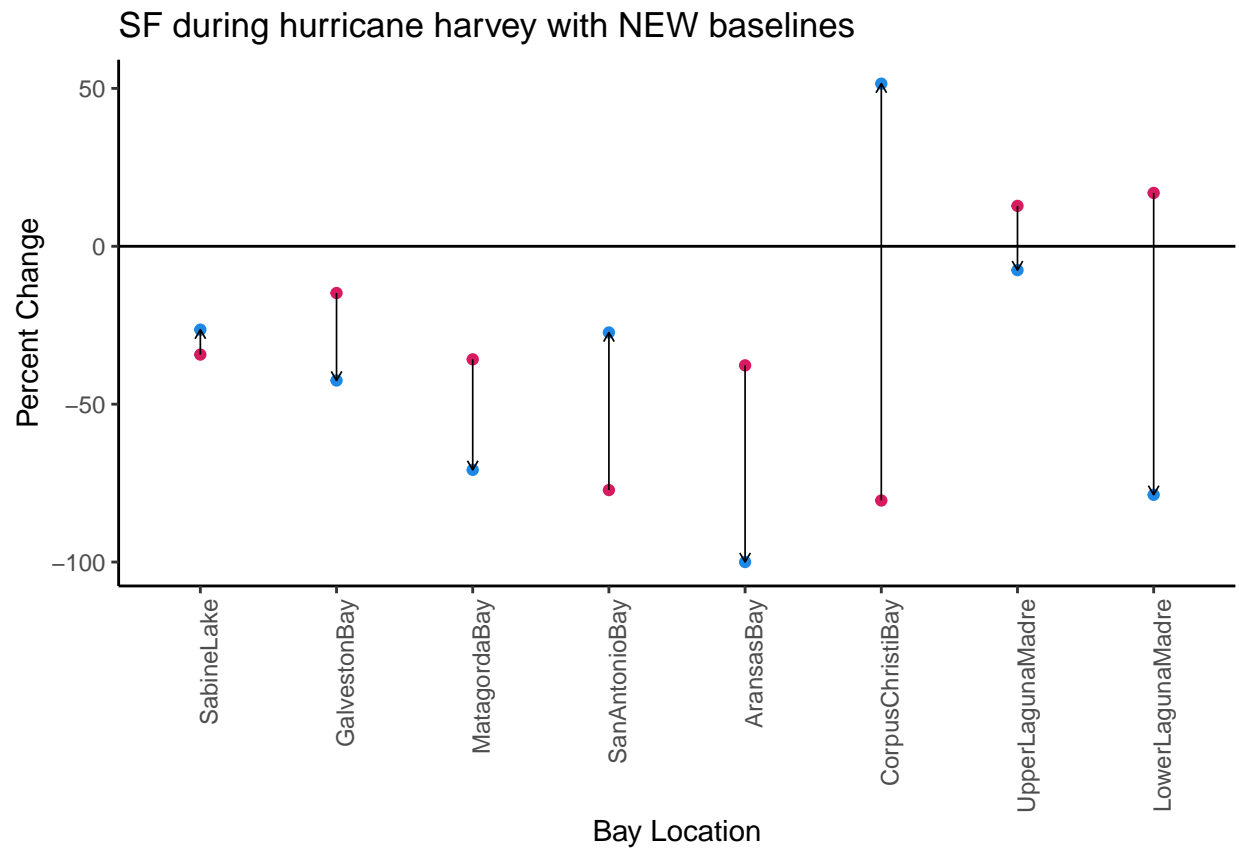


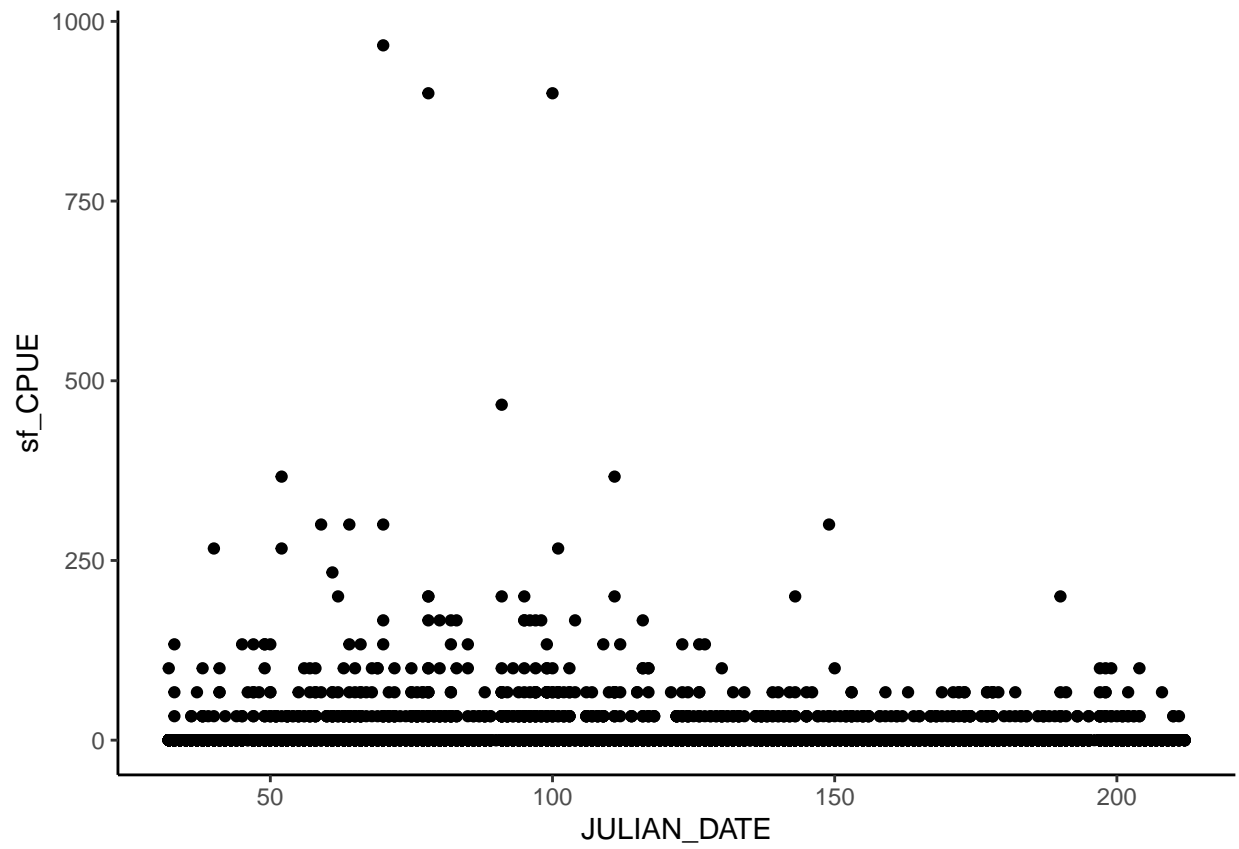
Southern Flounder



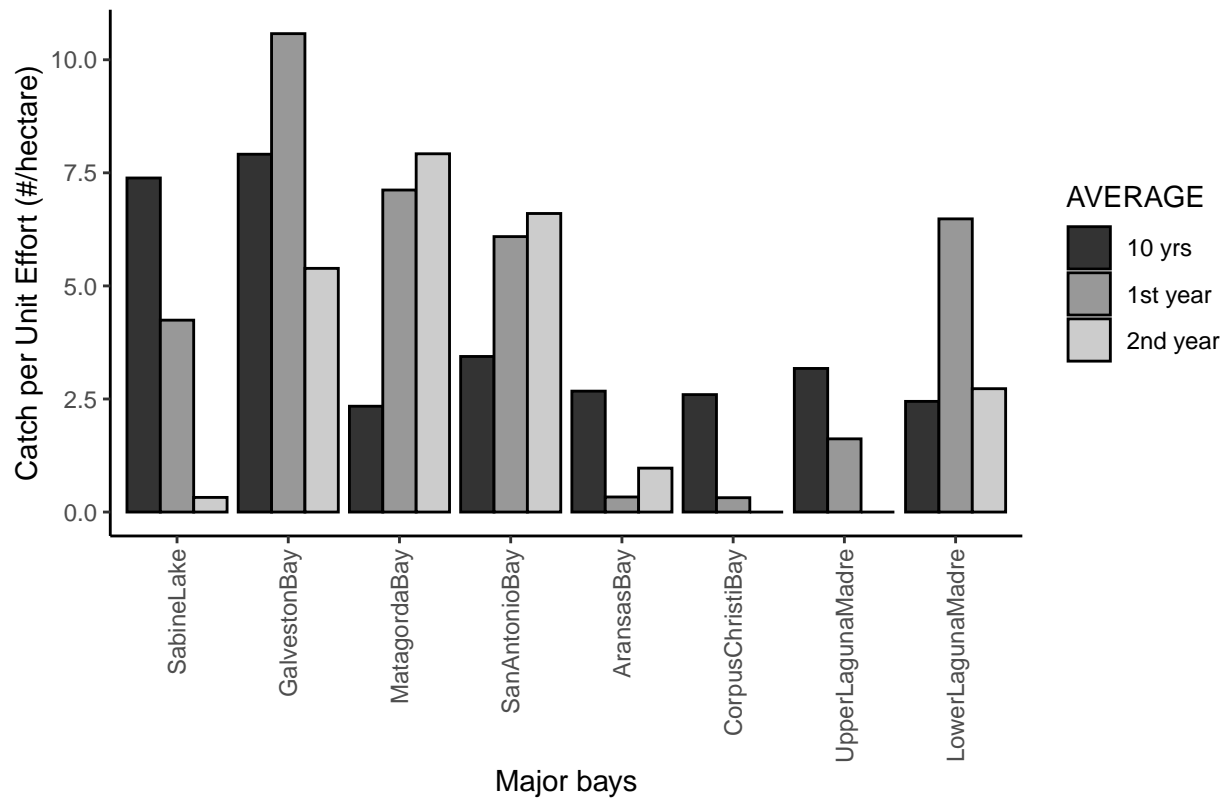
10 yr avg vs post storm avg for SF across bays using NEW baselines

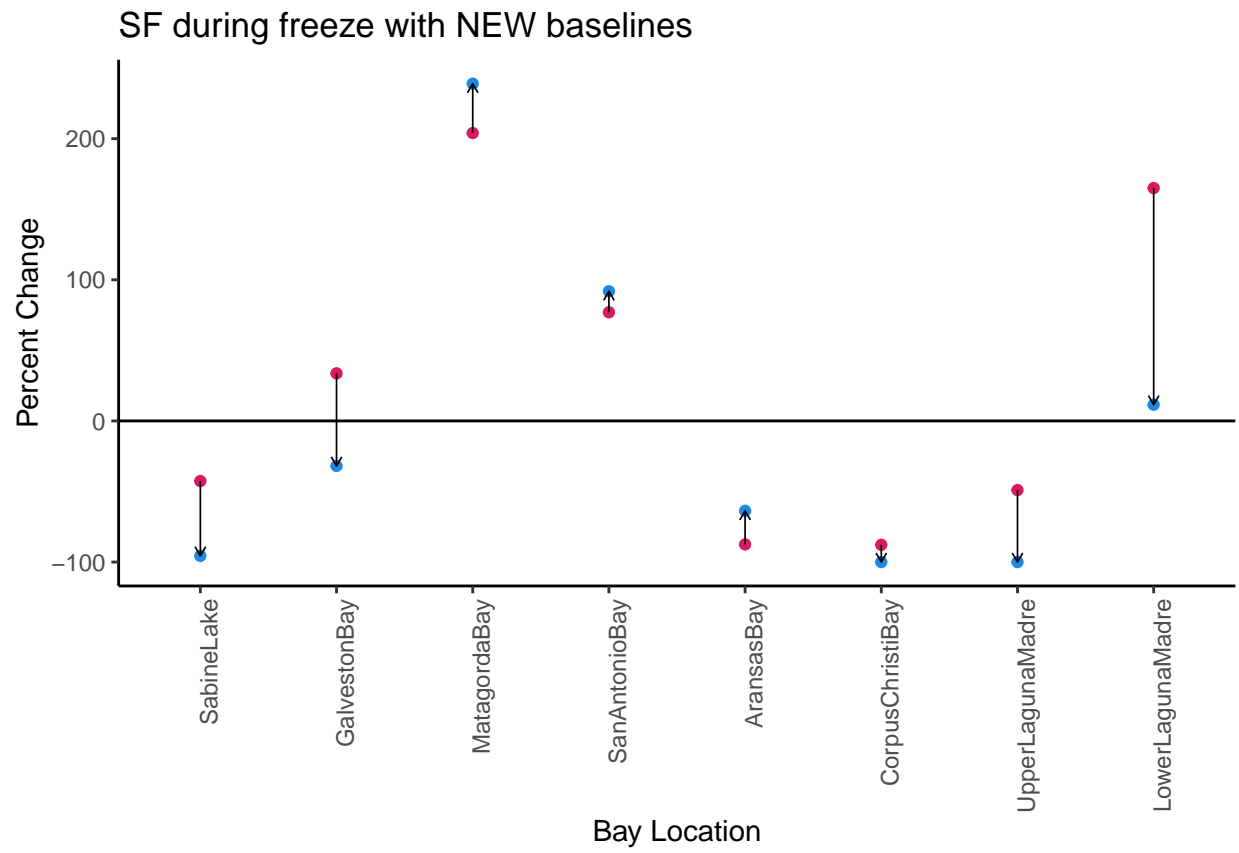


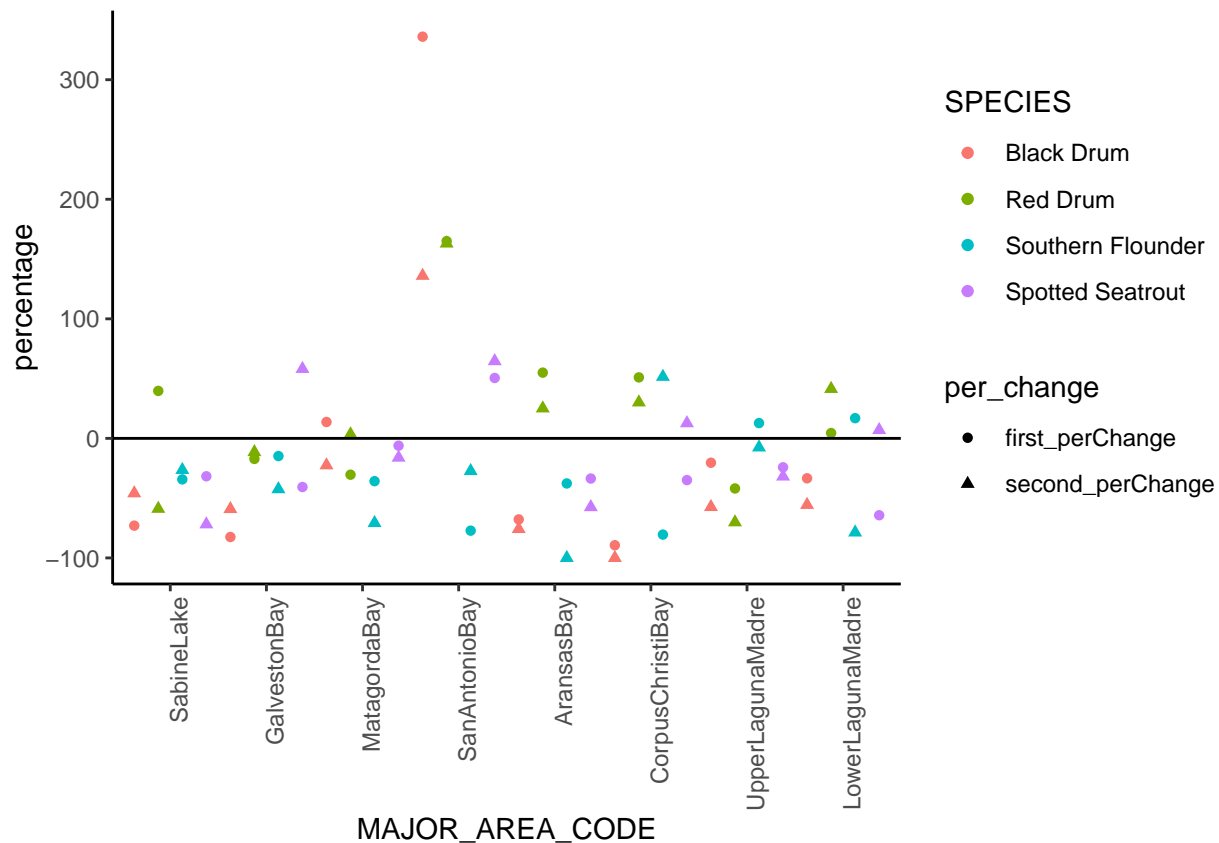




10 yr avg vs post storm avg for SF across bays using NEW baselines







Added Analysis

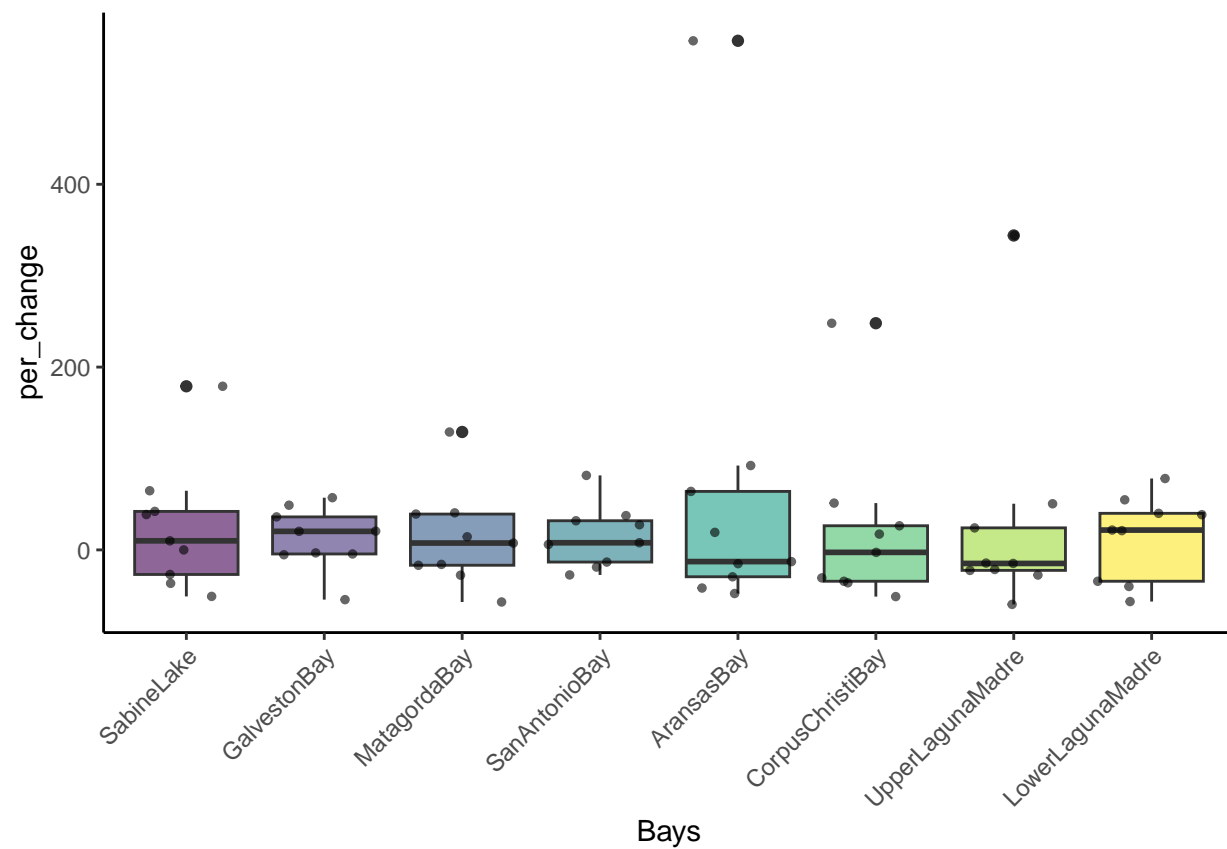
Here we calculate the year to year percent change in the 10 year baseline period. From these numbers we created boxplots and then put thme on top of the percent change figures to give a range of expected interannual variability.

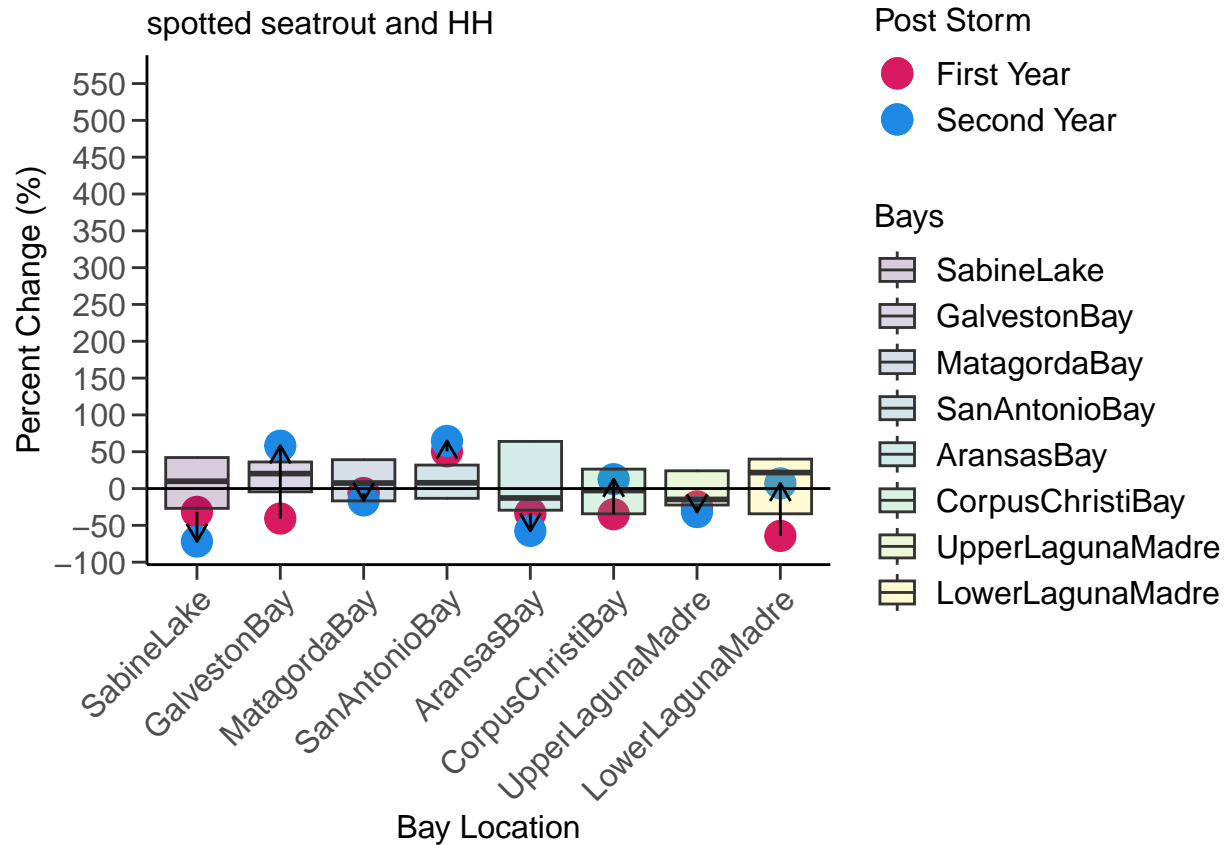
This is organized by species: - Spotted seatrout and Hurricane - Spotted seatrout and Freeze - Black Drum and Hurricane - Black Drum and Freeze - SF and Hurricane - SF and Freeze

I am putting a pin on the red drum for now given their unique recruitment window

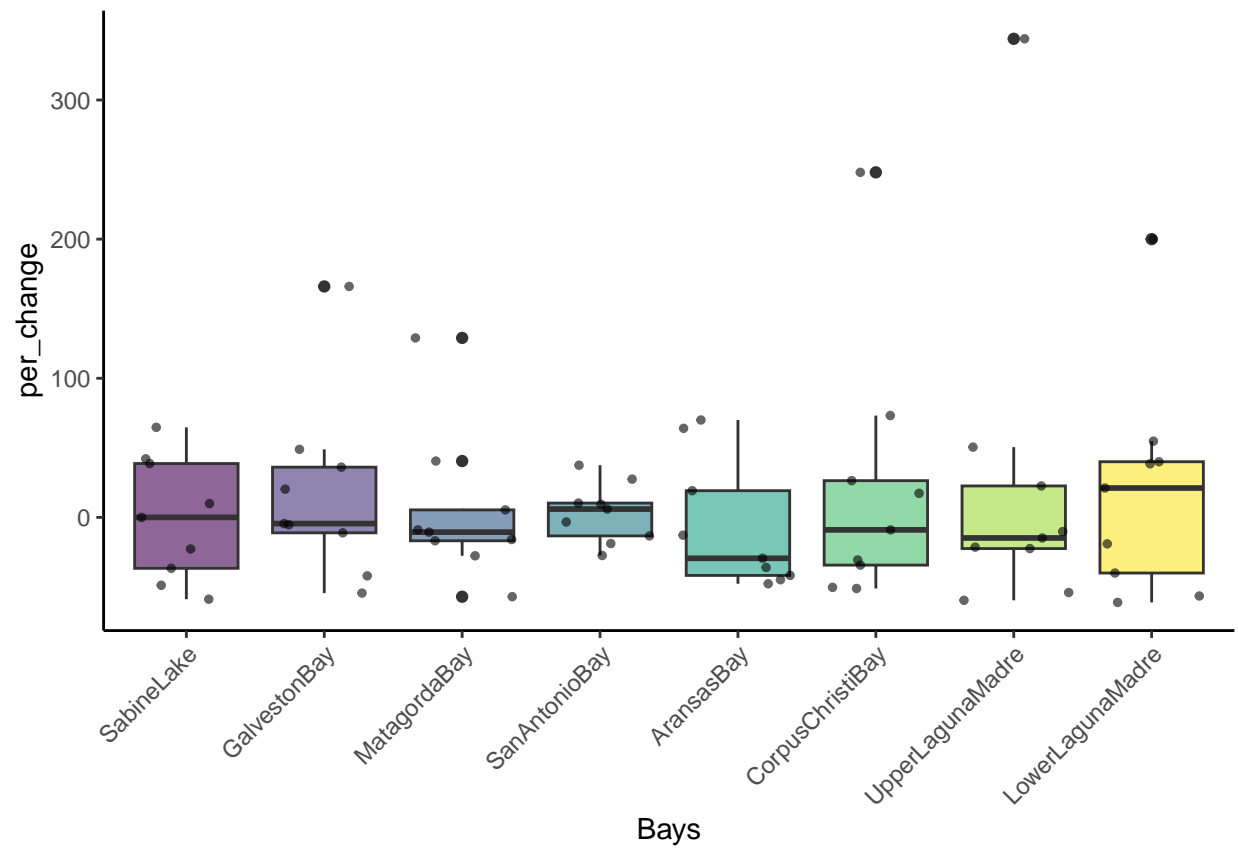
Spotted seatrout Added Boxplot

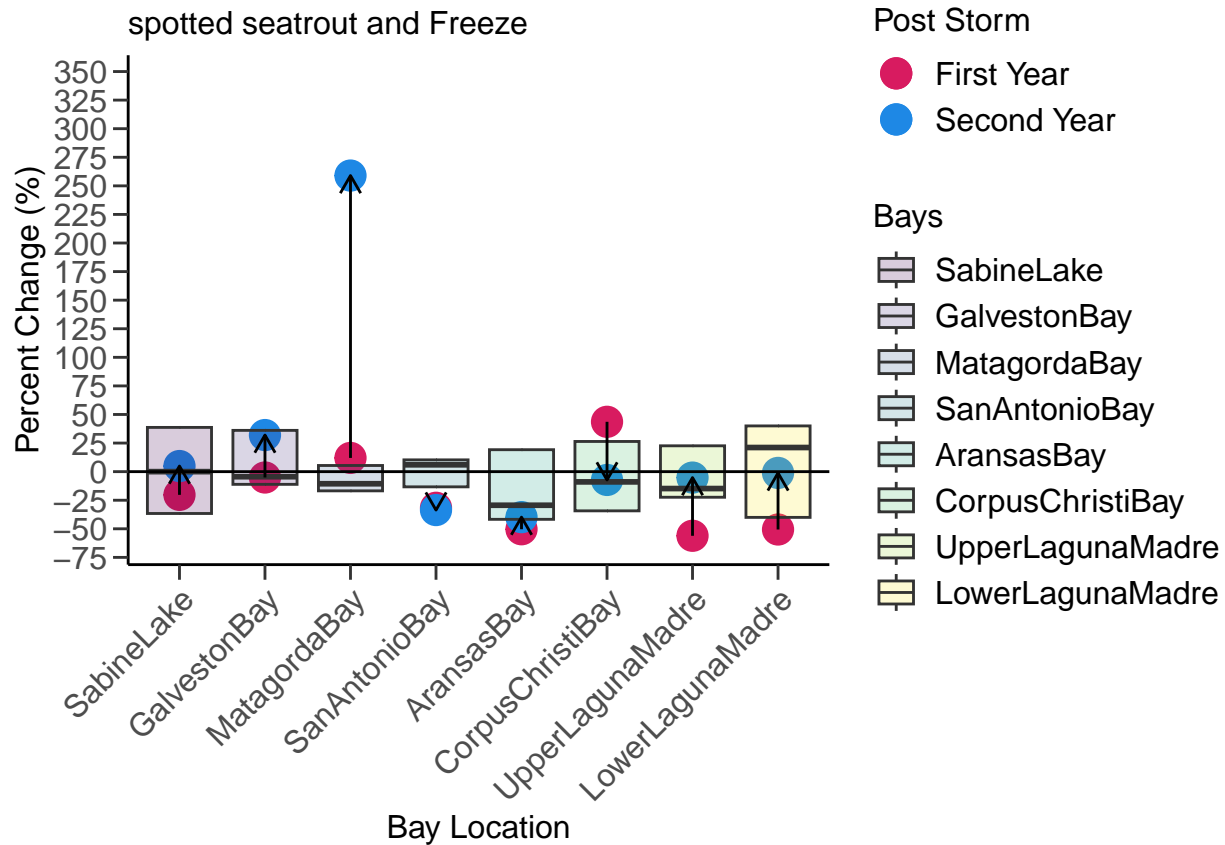
```
## [1] "AransasBay"      "CorpusCristiBay" "GalvestonBay"    "LowerLagunaMadre"
## [5] "MatagordaBay"    "SabineLake"      "SanAntonioBay"   "UpperLagunaMadre"
```





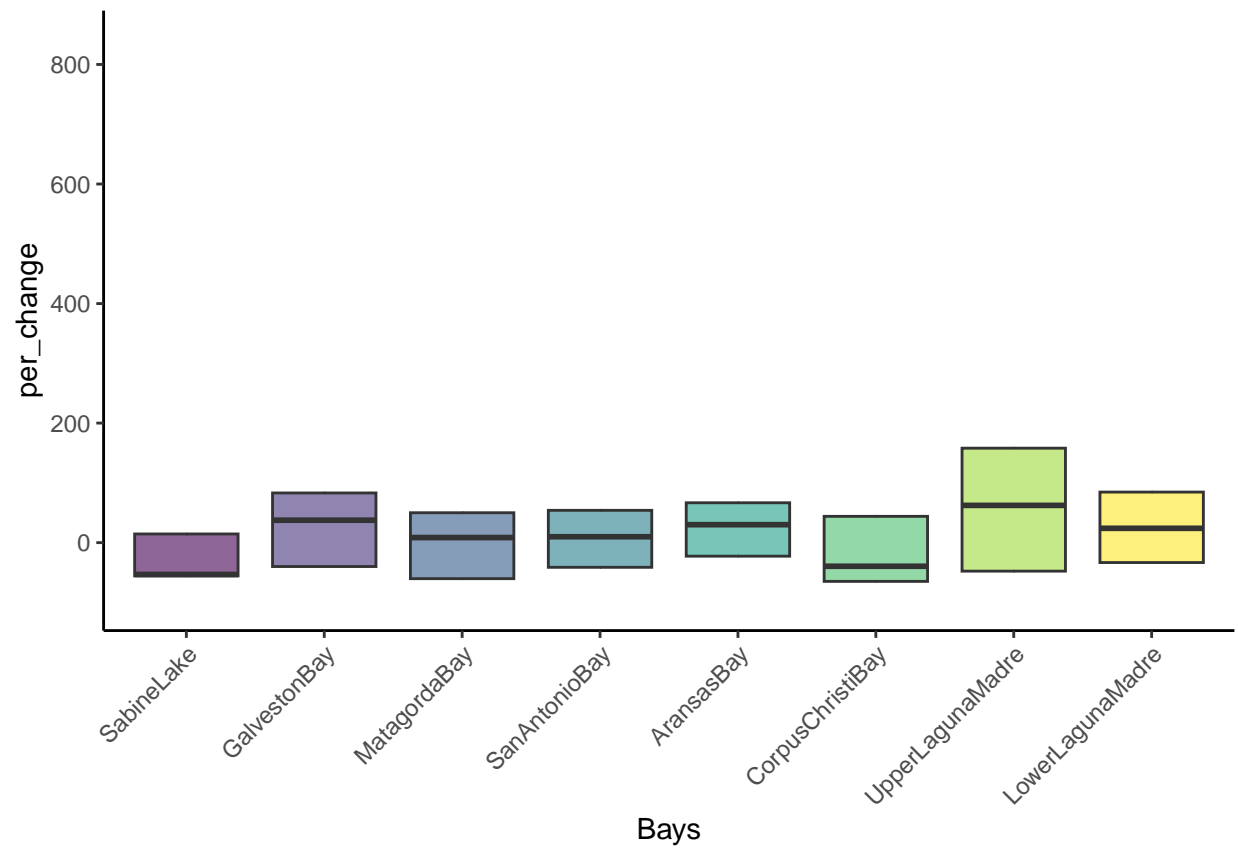
```
## [1] "AransasBay"      "CorpusCristiBay" "GalvestonBay"    "LowerLagunaMadre"
## [5] "MatagordaBay"    "SabineLake"      "SanAntonioBay"   "UpperLagunaMadre"
```

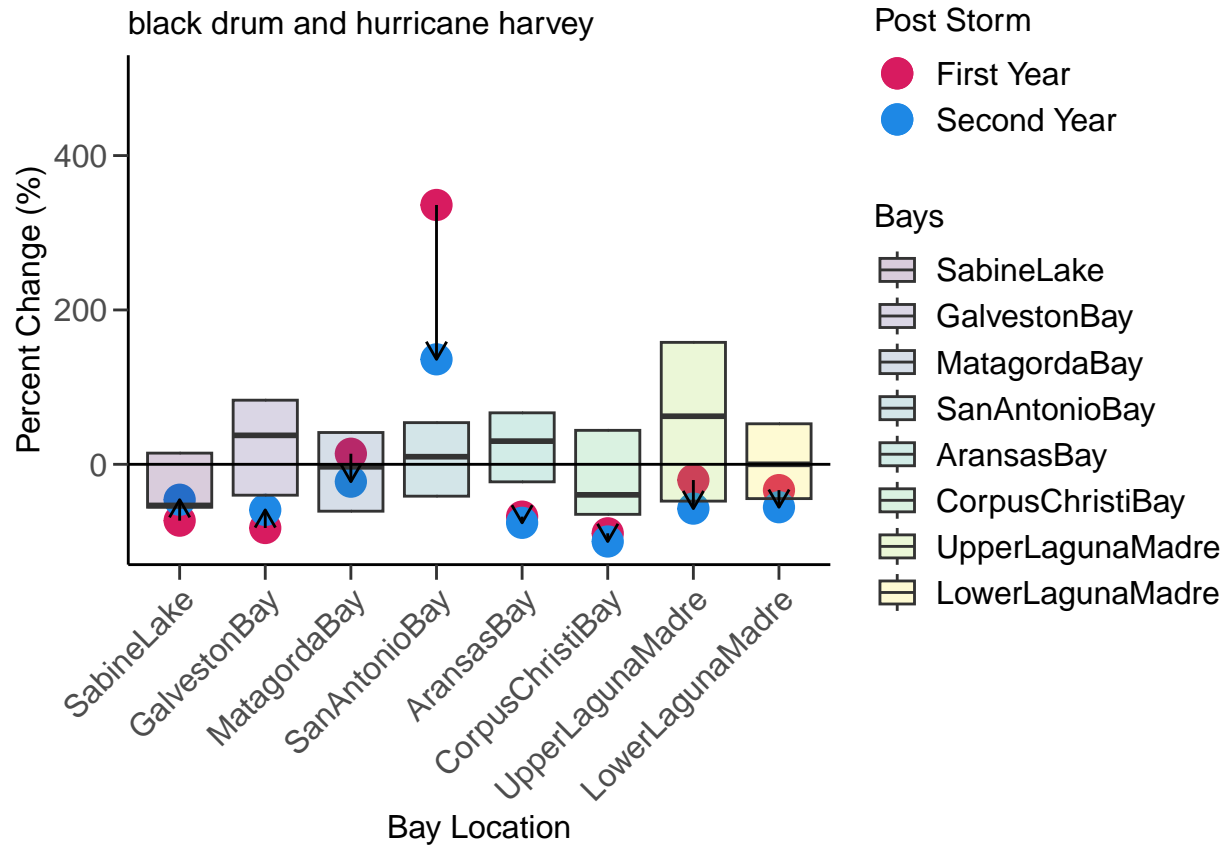




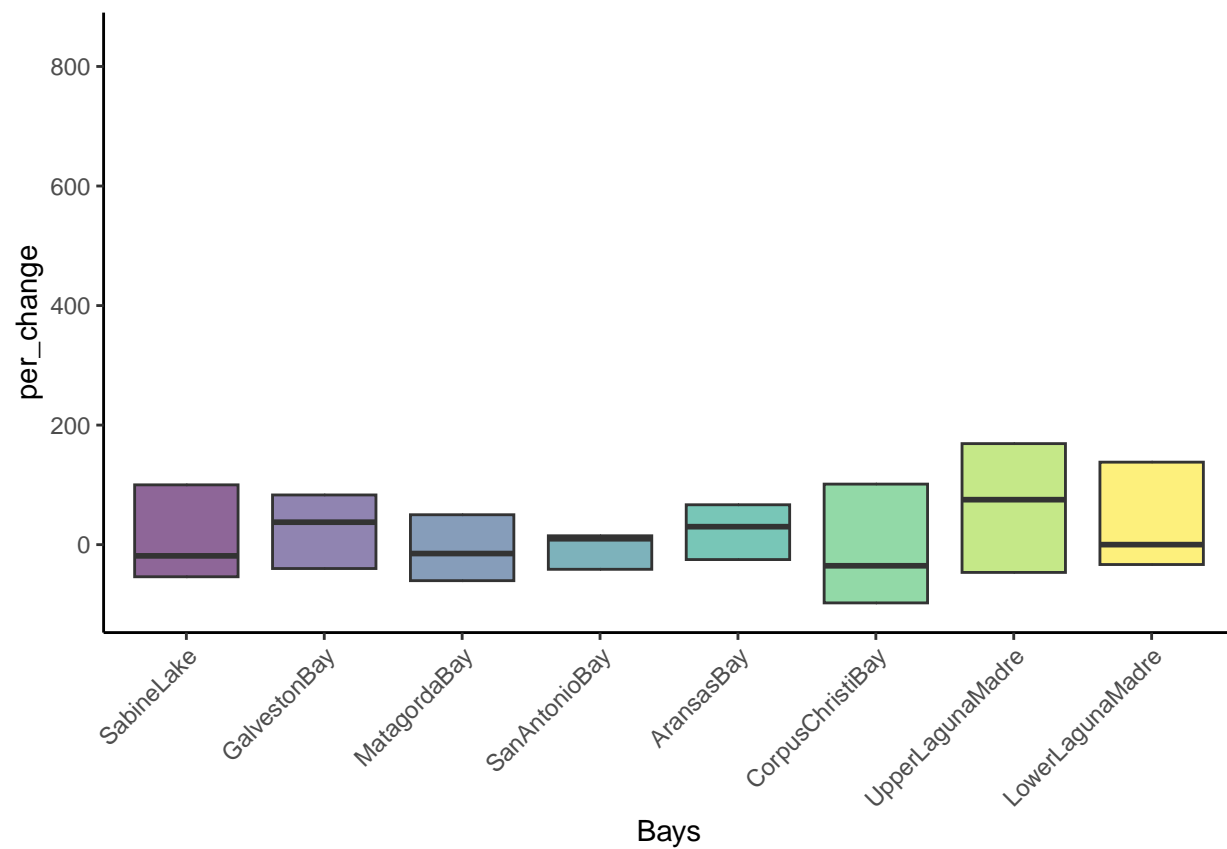
#Black drum added boxplot

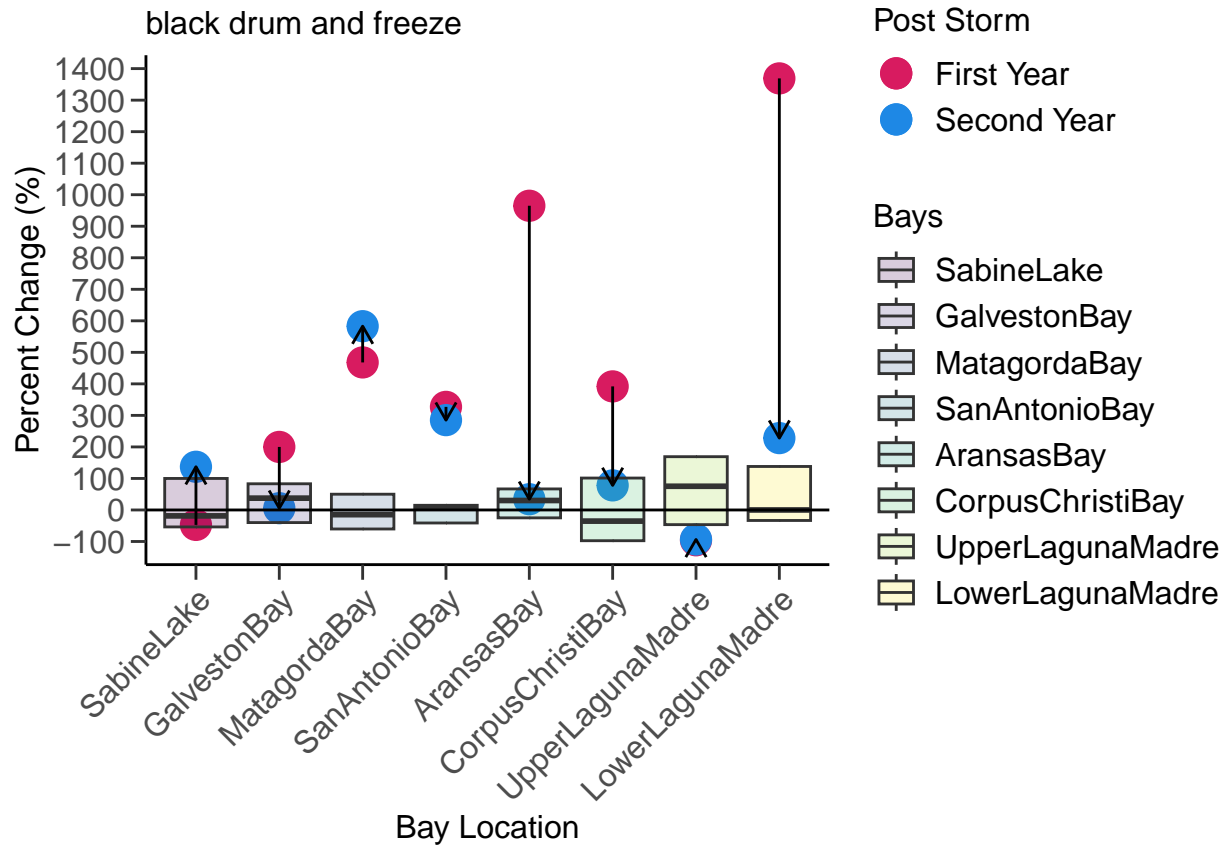
```
## [1] "AransasBay"      "CorpusCristiBay" "GalvestonBay"    "LowerLagunaMadre"
## [5] "MatagordaBay"    "SabineLake"      "SanAntonioBay"   "UpperLagunaMadre"
```





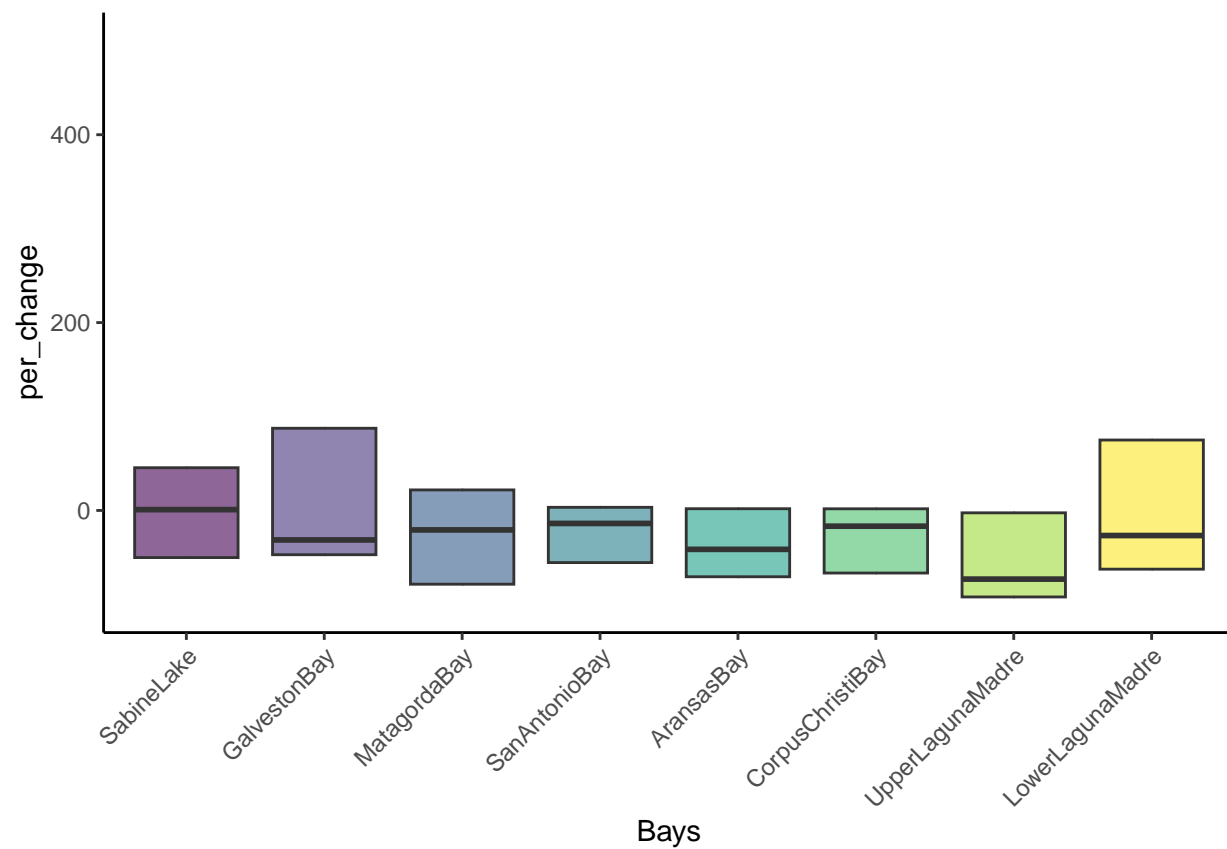
```
## [1] "AransasBay"      "CorpusCristiBay" "GalvestonBay"    "LowerLagunaMadre"
## [5] "MatagordaBay"    "SabineLake"      "SanAntonioBay"   "UpperLagunaMadre"
```

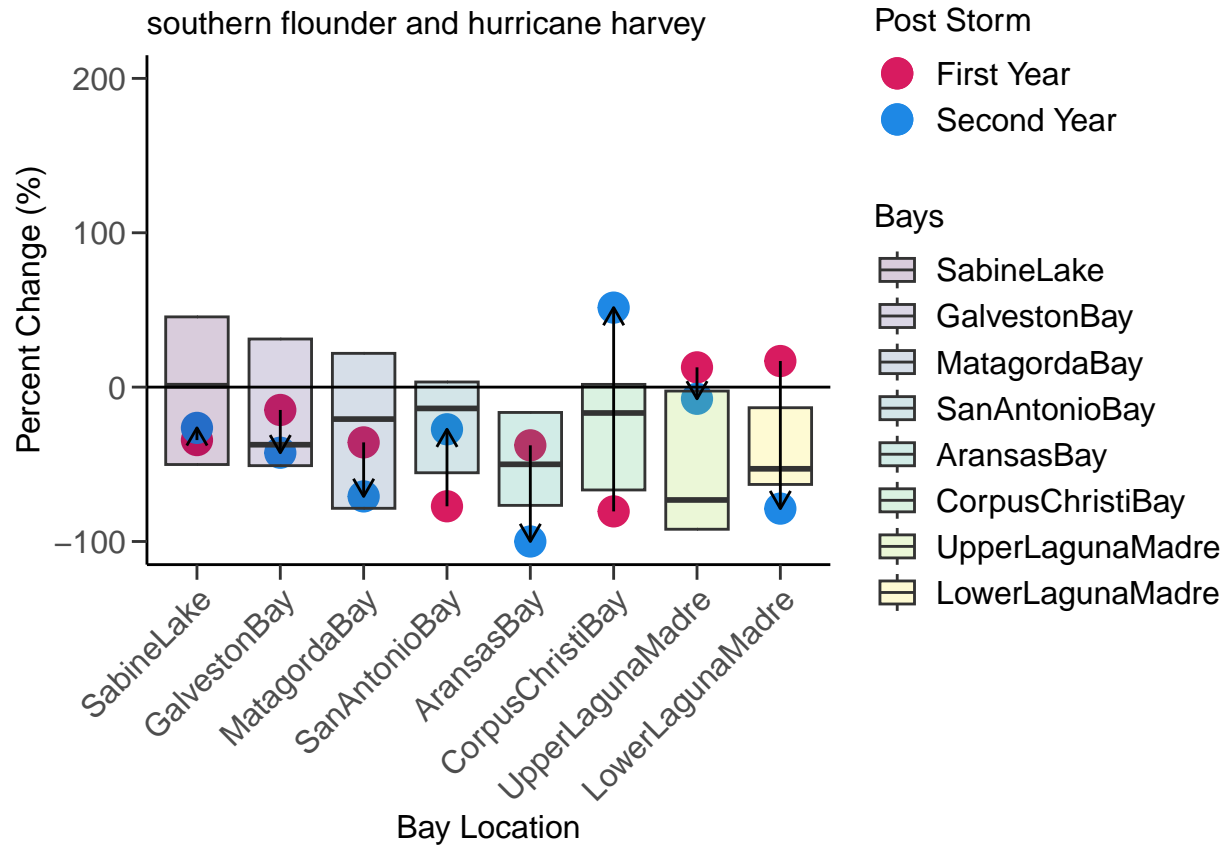




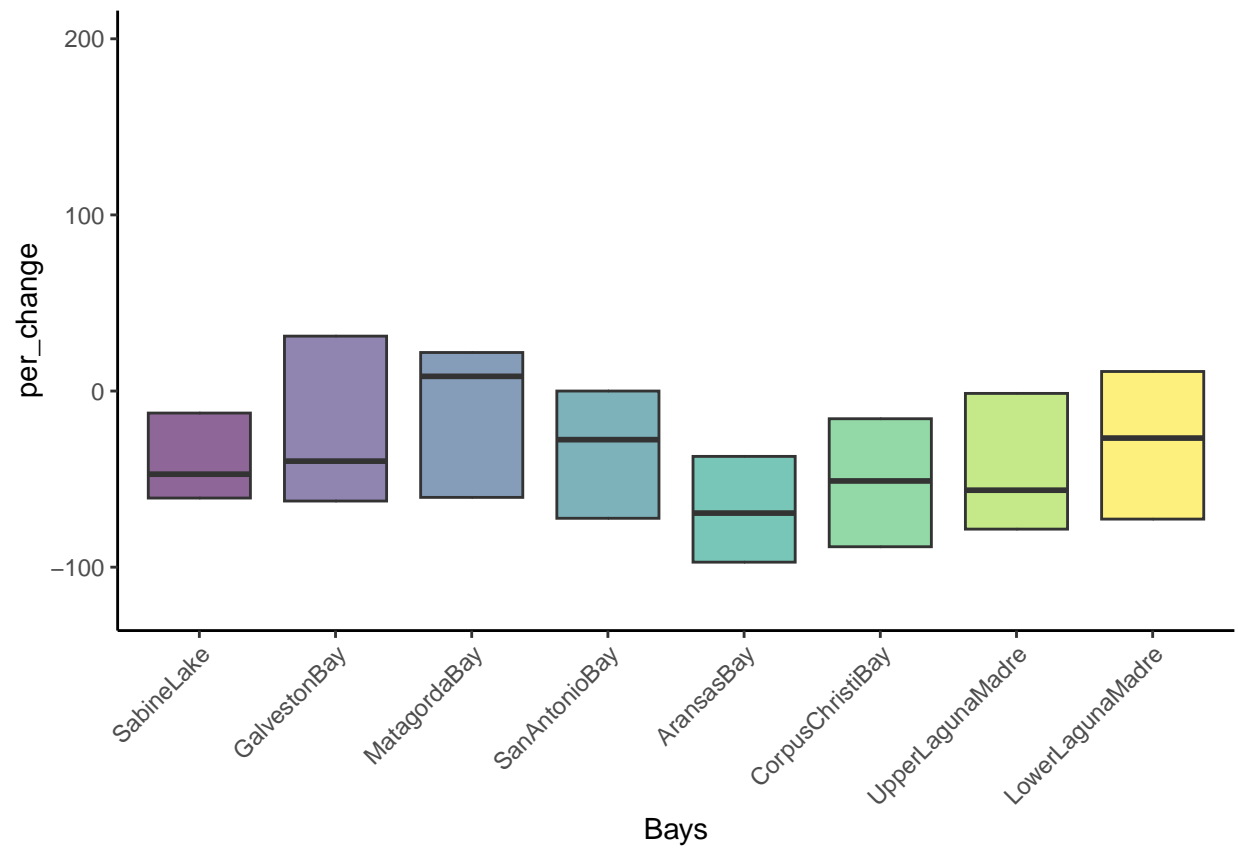
Southern Flounder added box plots

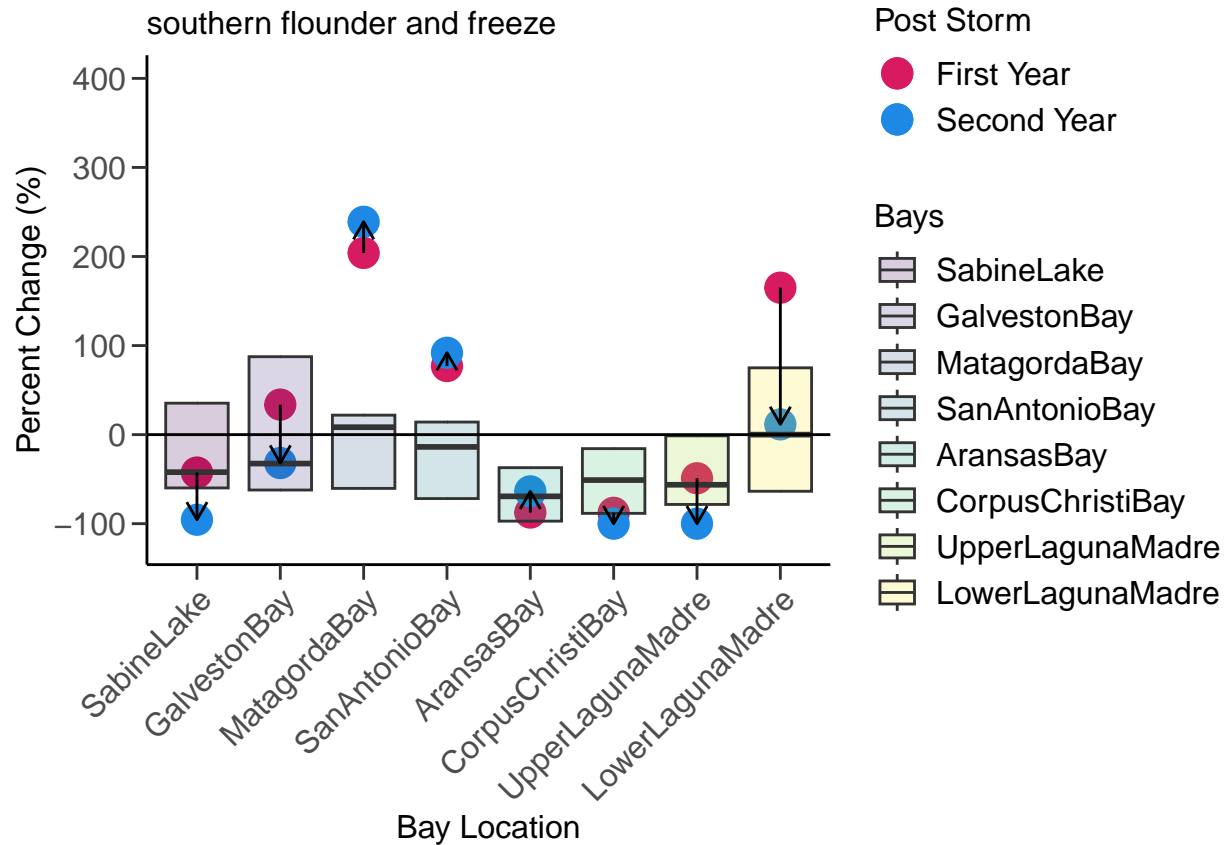
```
## [1] "AransasBay"      "CorpusCristiBay" "GalvestonBay"    "LowerLagunaMadre"
## [5] "MatagordaBay"    "SabineLake"      "SanAntonioBay"   "UpperLagunaMadre"
```





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

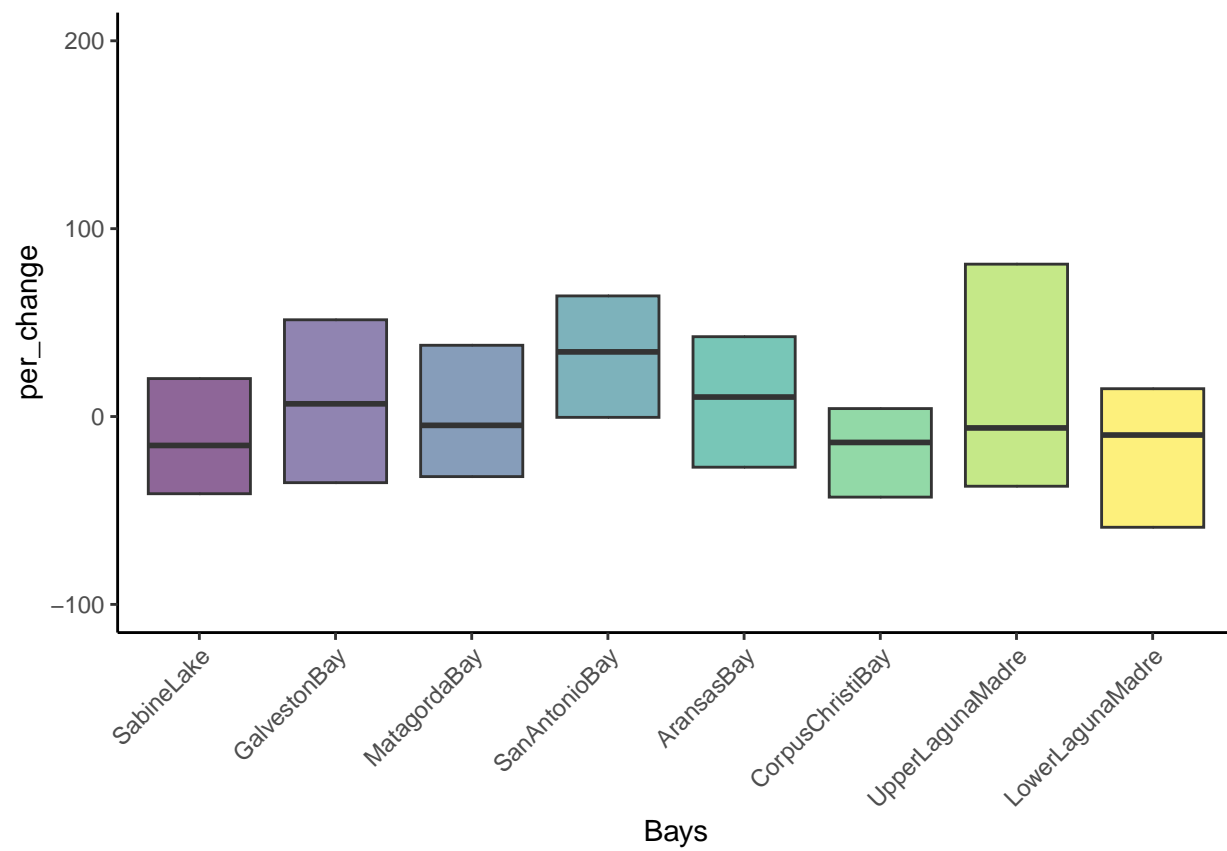


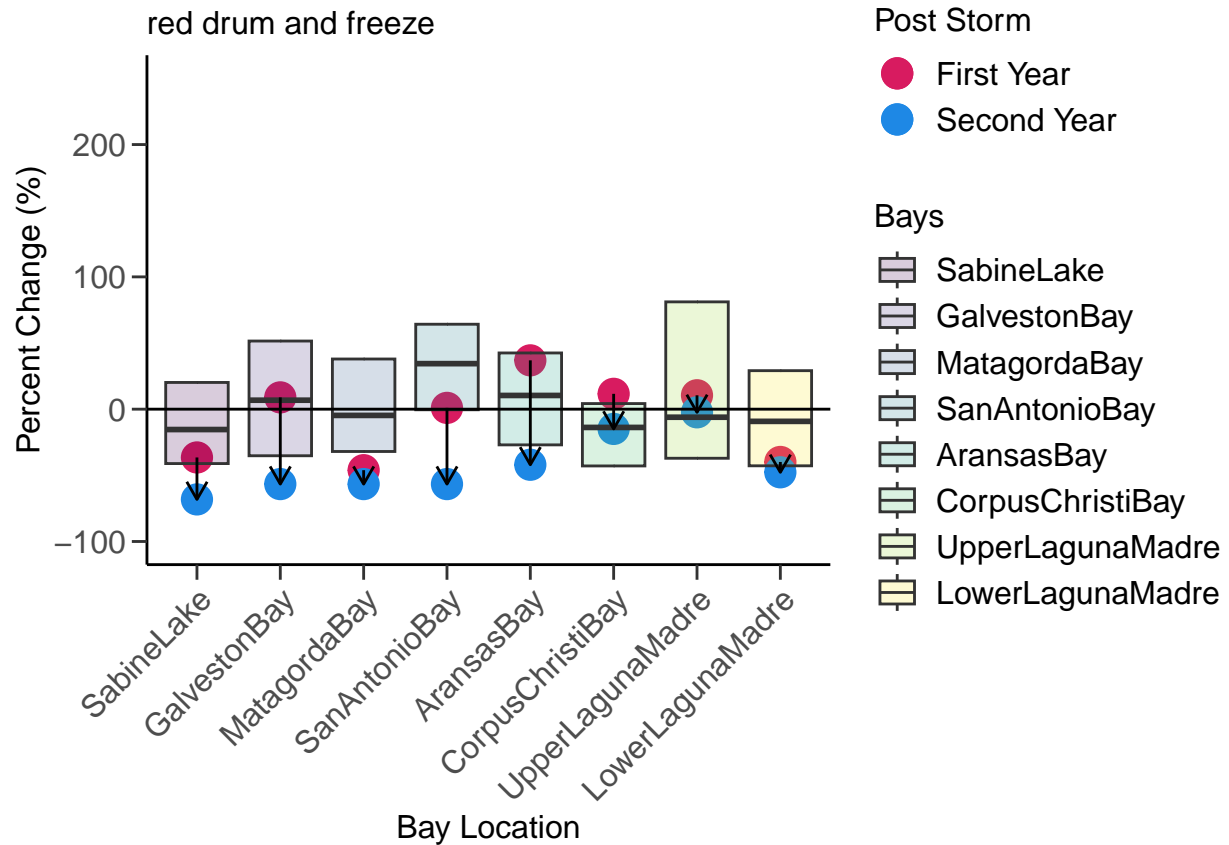


Red Drum added boxplots

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

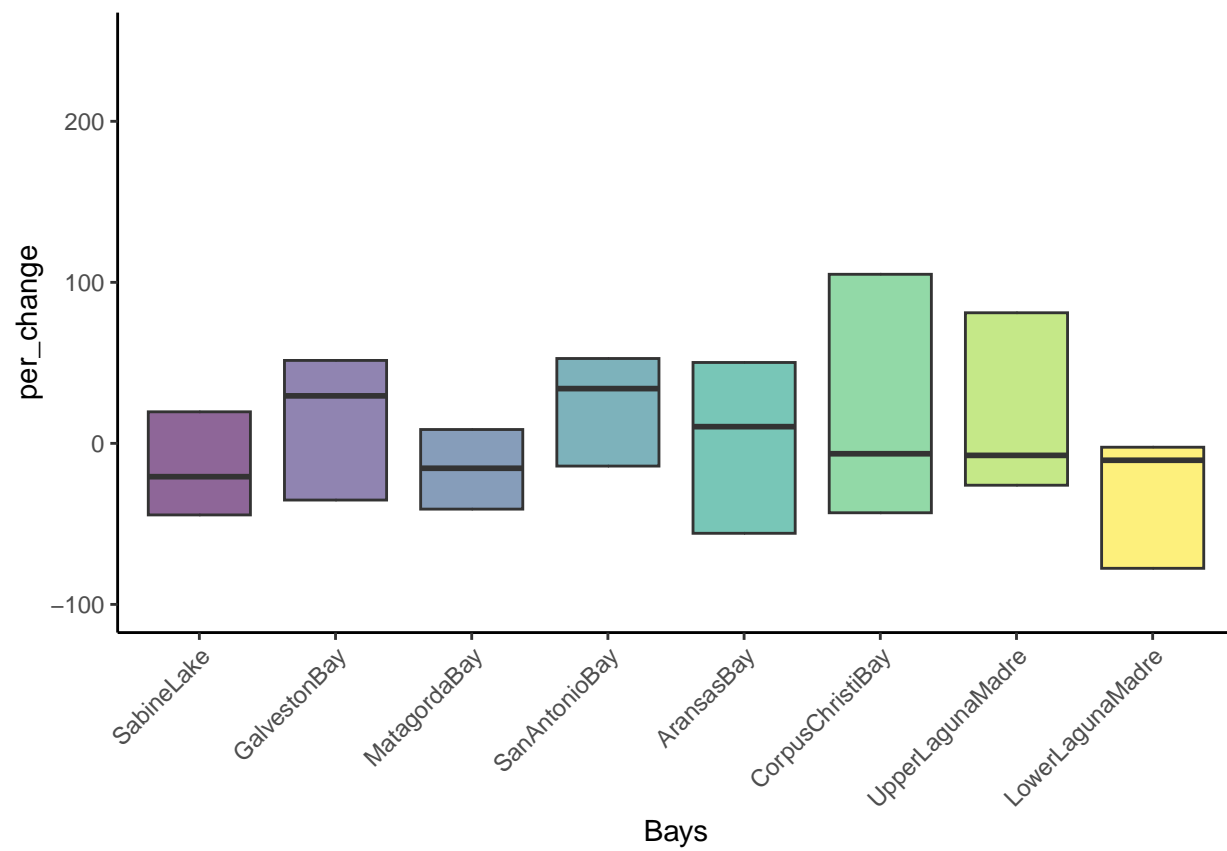
```
## [1] "AransasBay" "CorpusCristiBay" "GalvestonBay" "LowerLagunaMadre"
## [5] "MatagordaBay" "SabineLake" "SanAntonioBay" "UpperLagunaMadre"
```

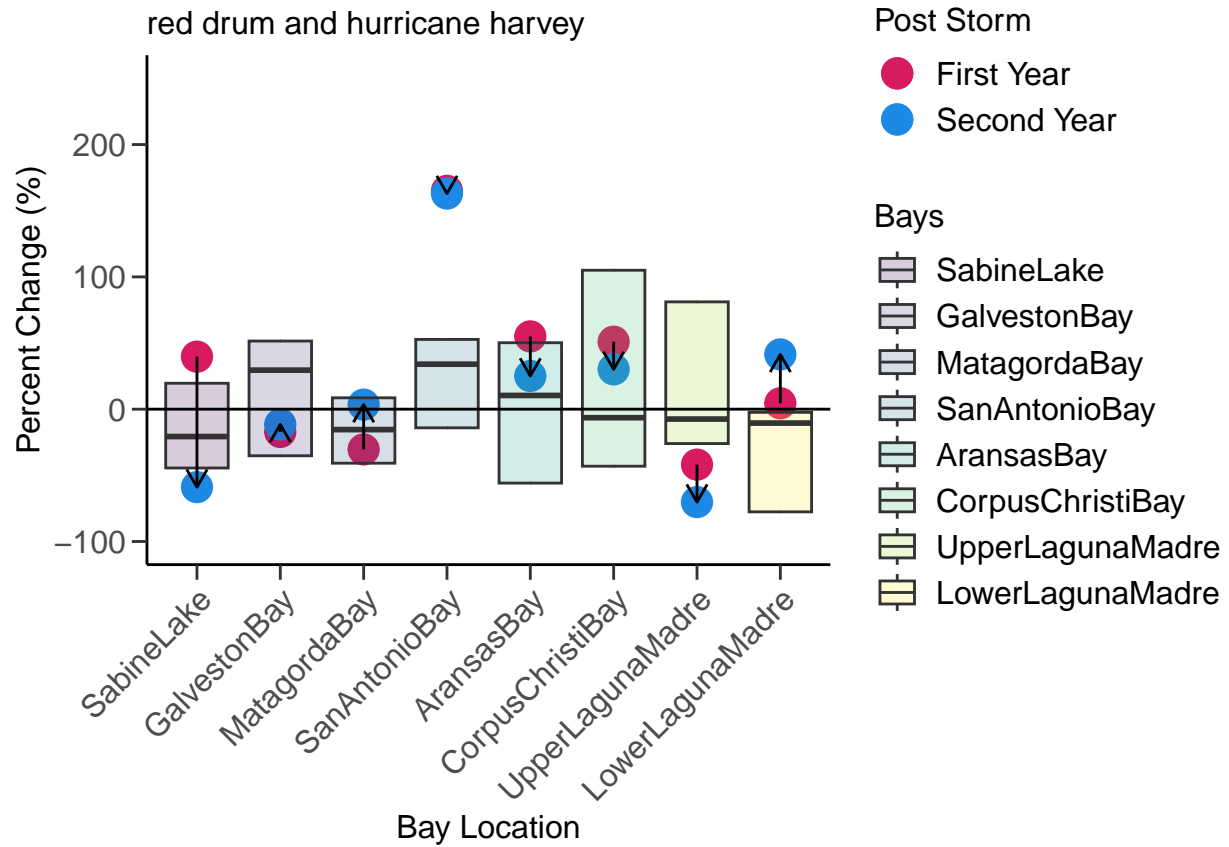




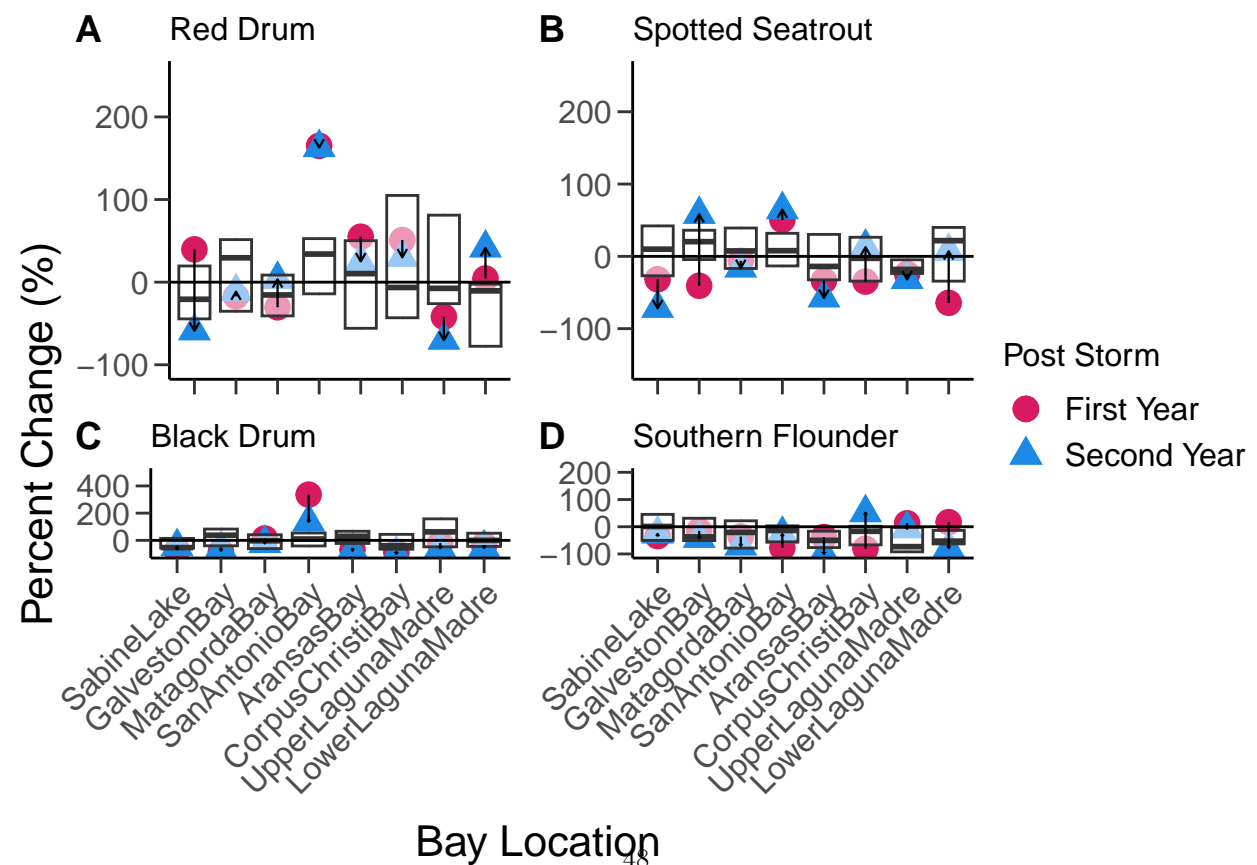
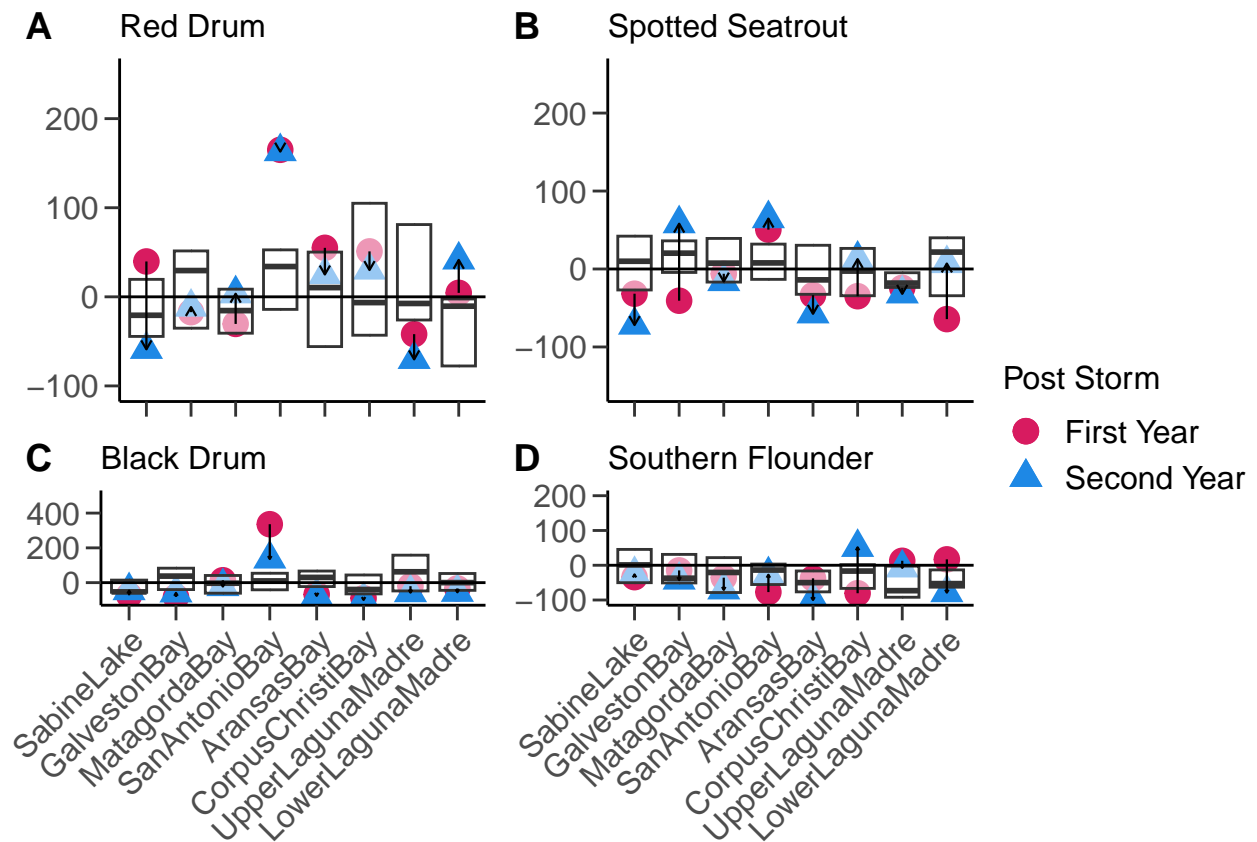
```
## [1] "Year 1" "Year 2" "Year 3" "Year 4" "Year 5" "Year 6" "Year 7"
## [8] "Year 8" "Year 9" "Year 10"
```

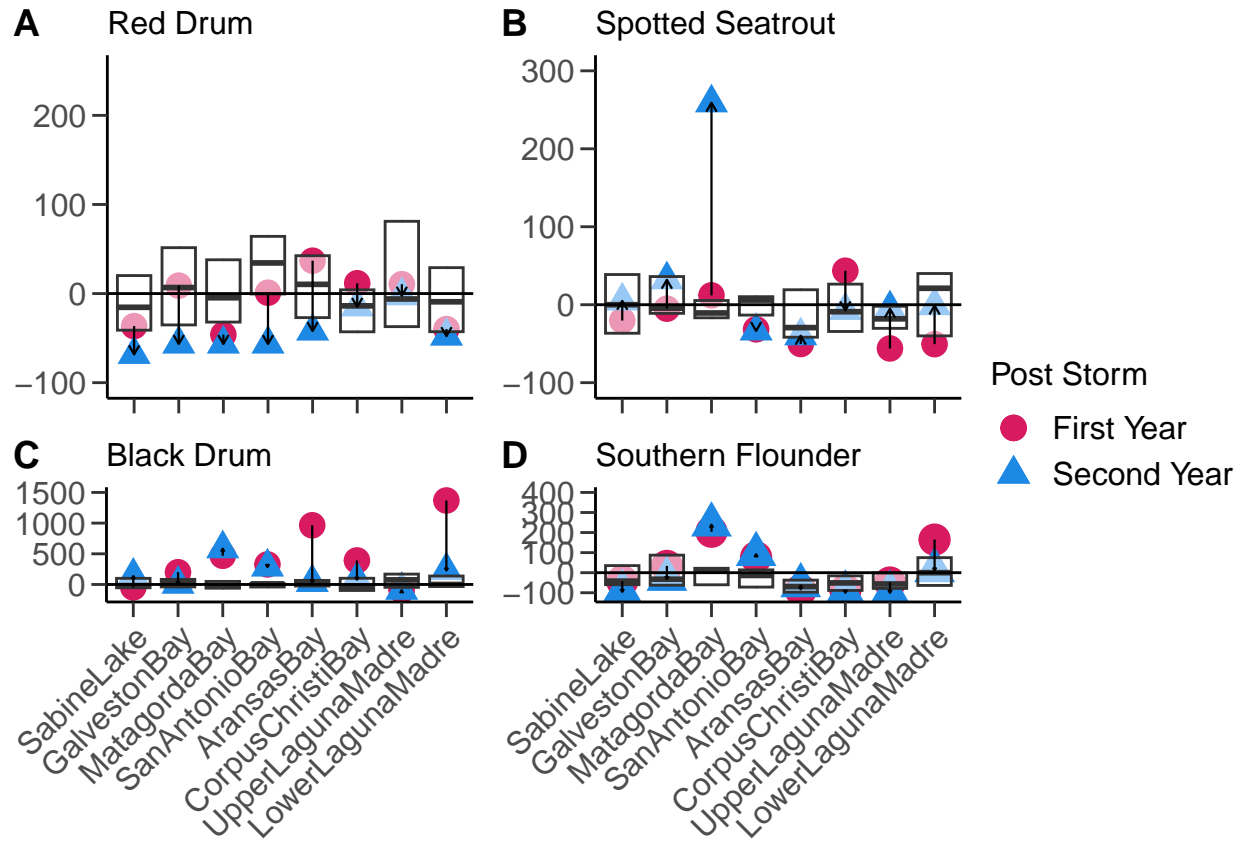
```
## [1] "AransasBay" "CorpusCristiBay" "GalvestonBay" "LowerLagunaMadre"
## [5] "MatagordaBay" "SabineLake" "SanAntonioBay" "UpperLagunaMadre"
```





Hurricane Figure





#Freeze figure

