

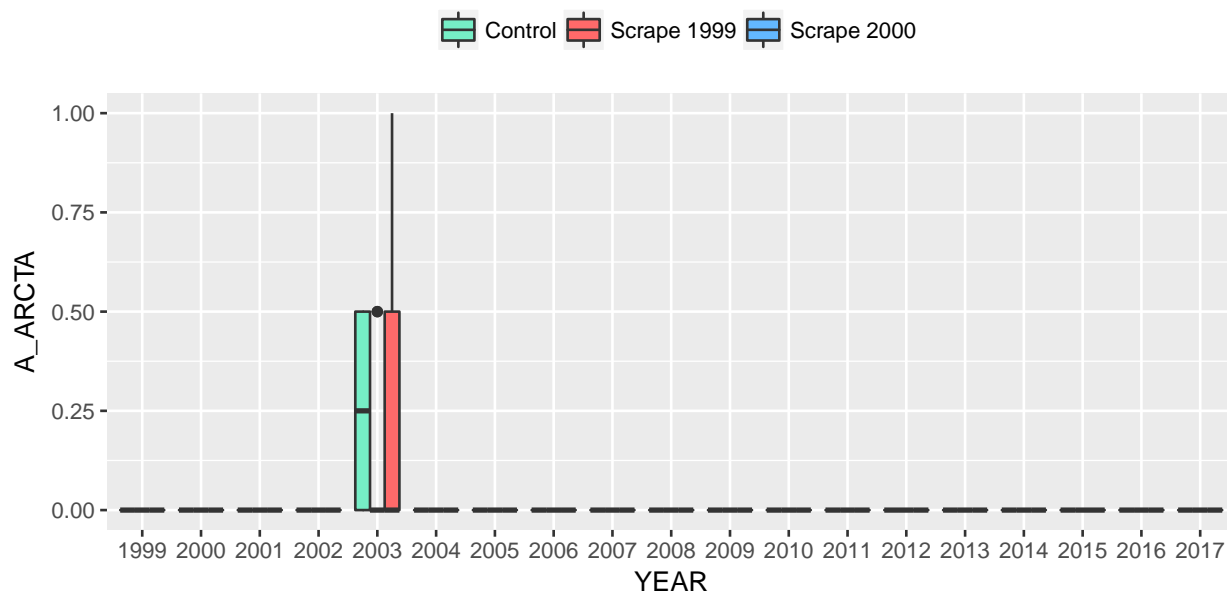
# Data Visualization

*Rachael E. Blake*

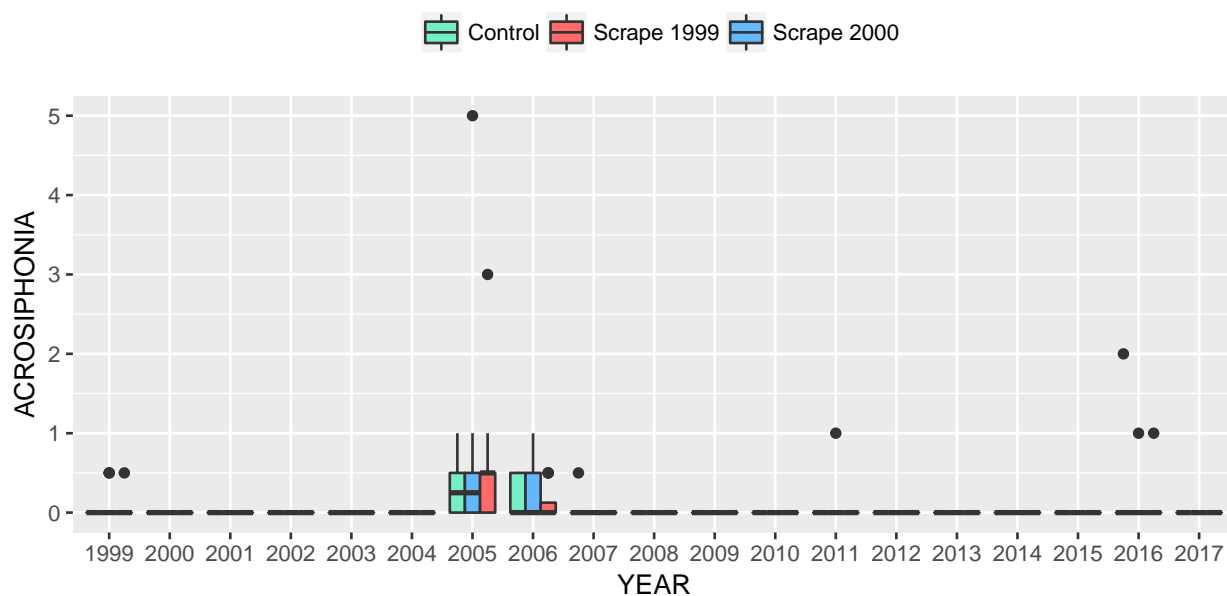
*May 1, 2017*

## Invertebrates: Percent Cover Data

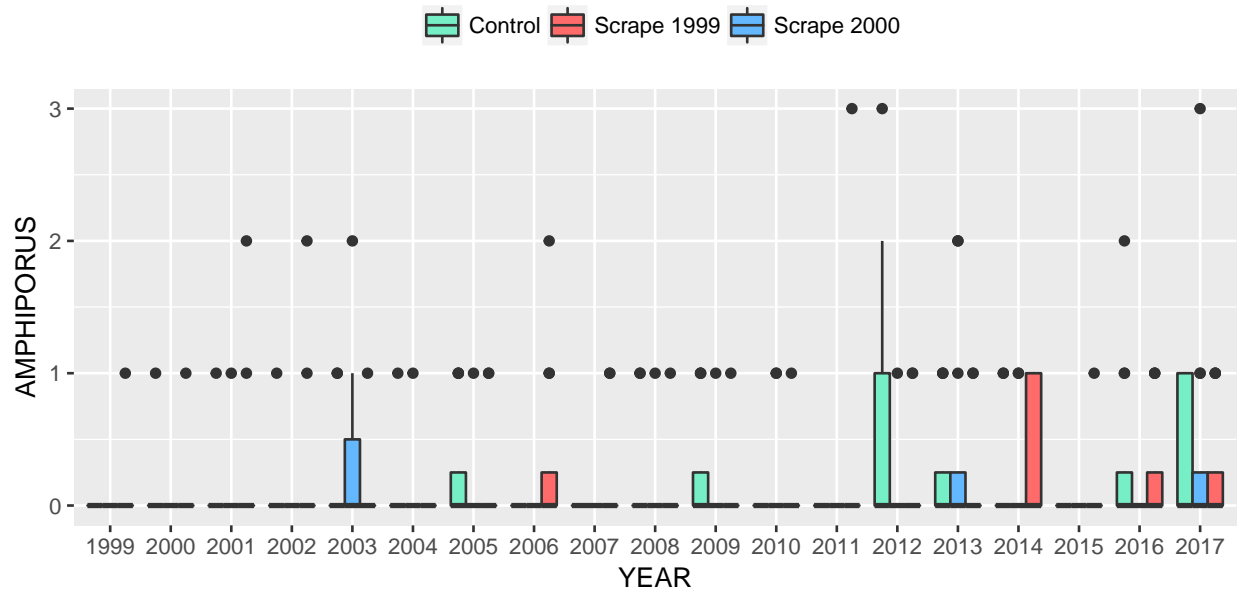
```
## [[1]]
```



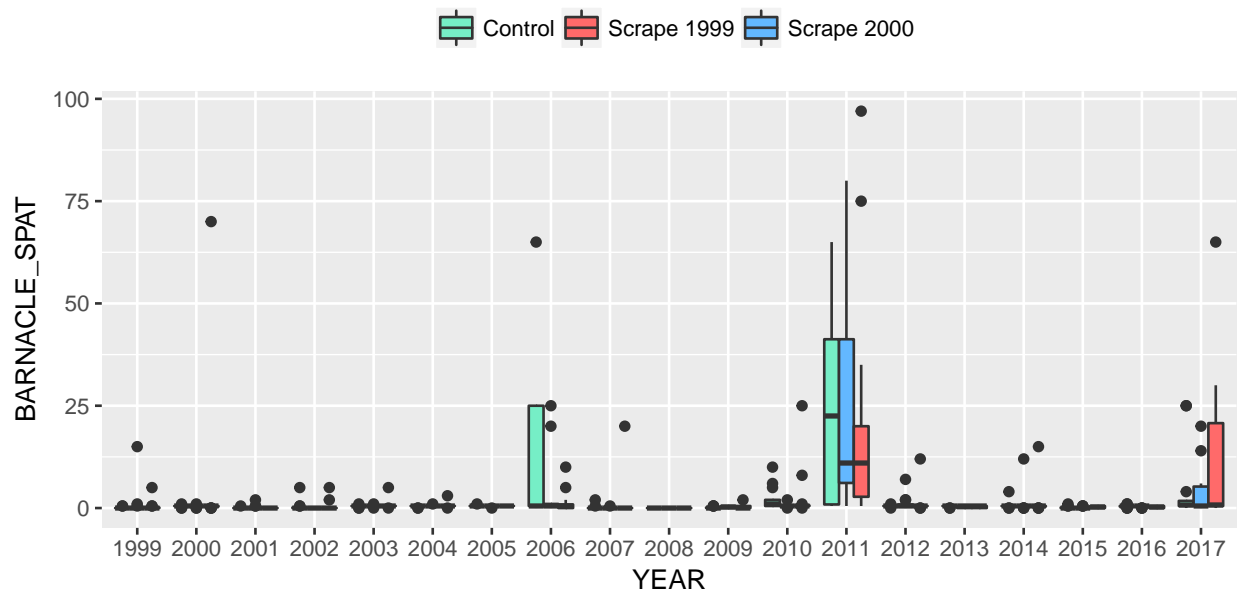
```
##  
## [[2]]
```



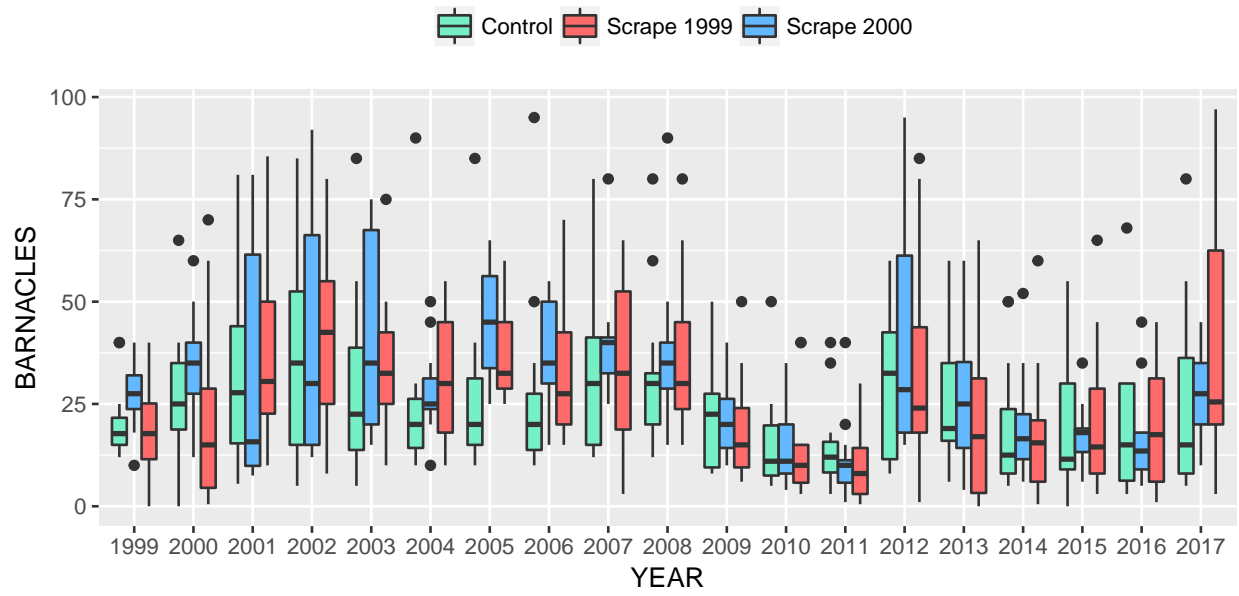
```
##  
## [[3]]
```



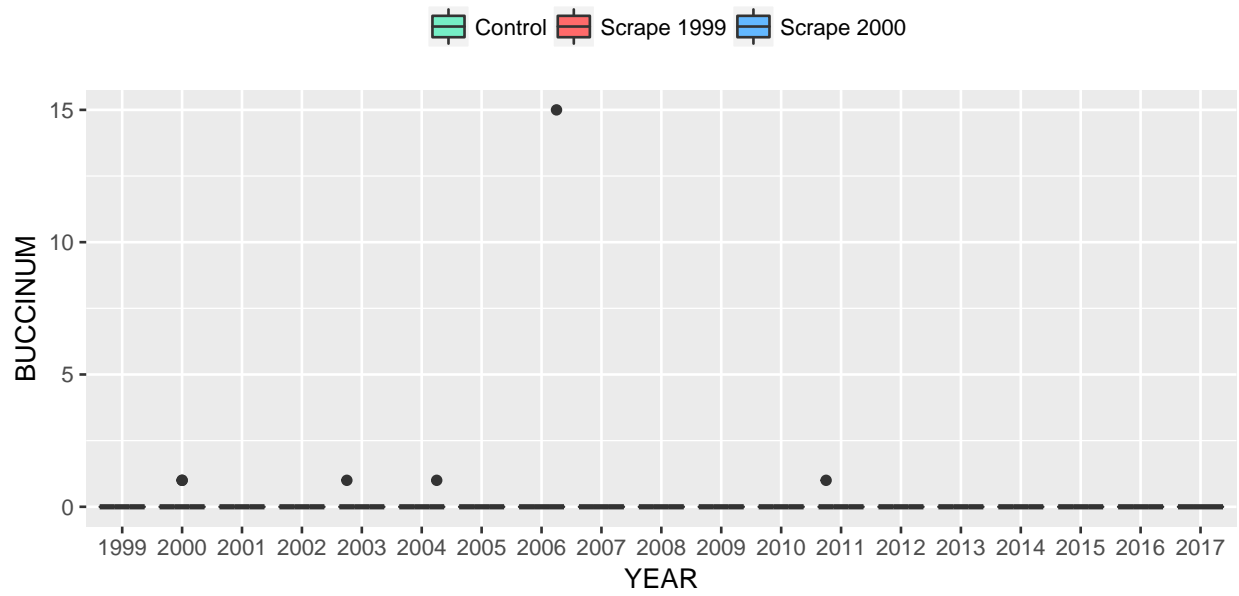
```
##  
## [[4]]
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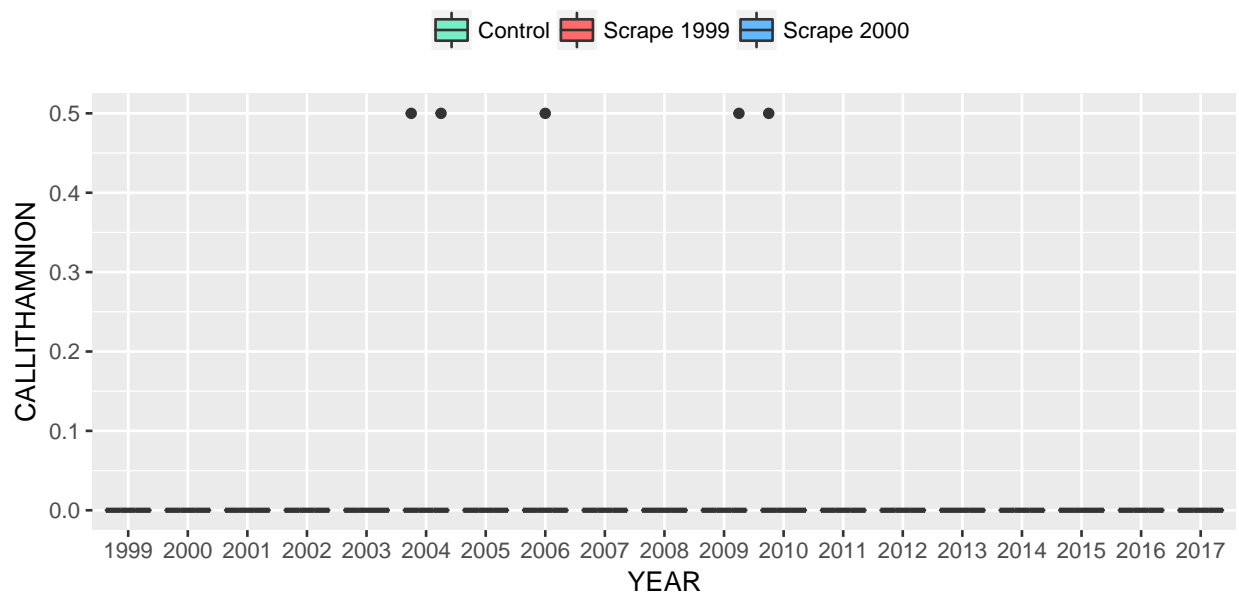
```
##  
## [[5]]
```



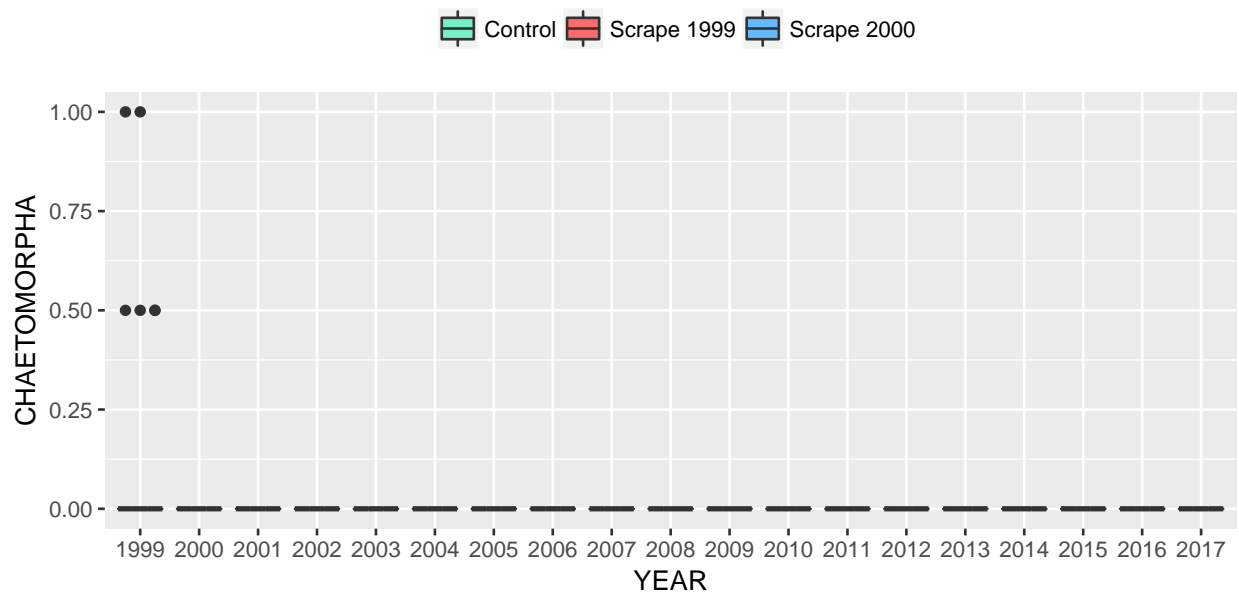
```
##
## [[6]]
```



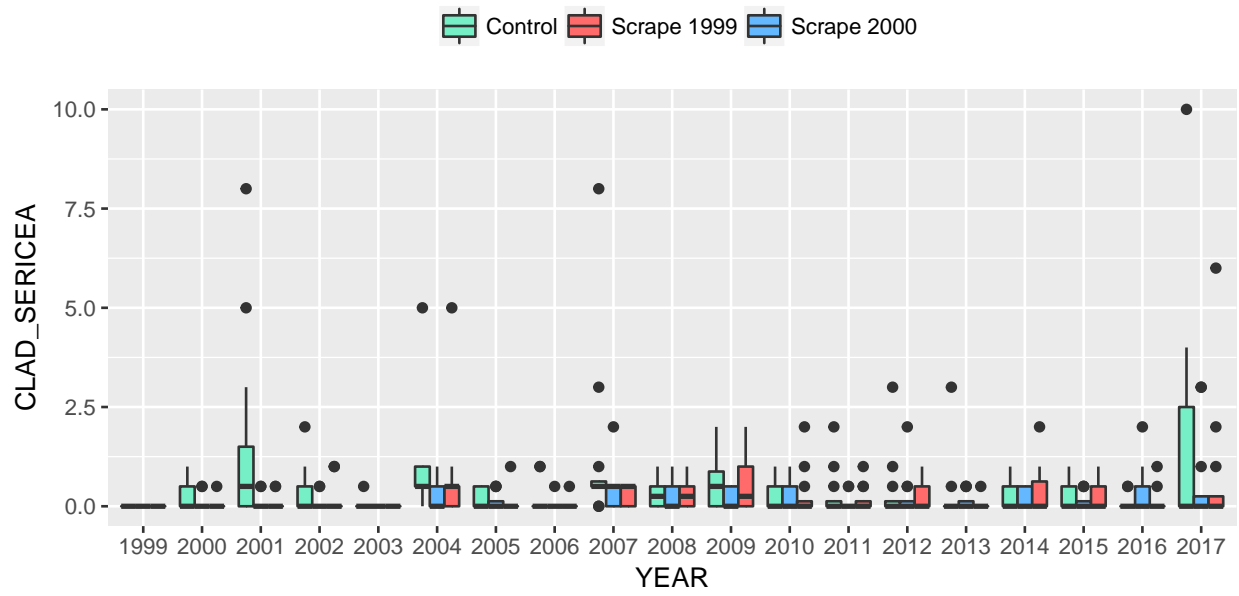
```
##
## [[7]]
```



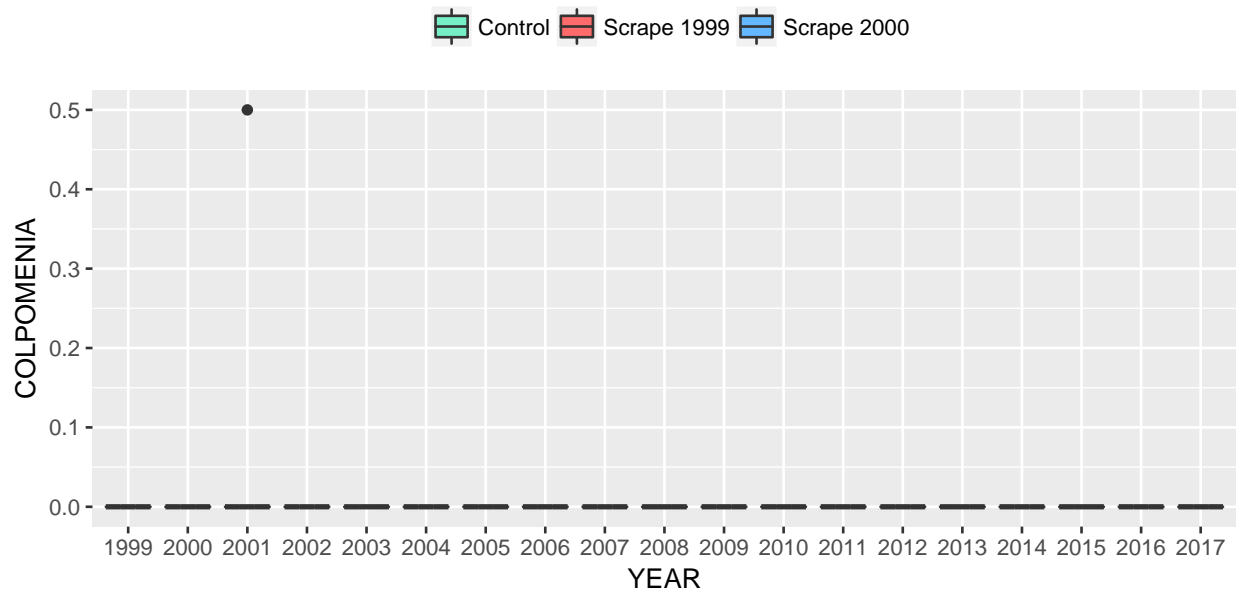
```
##
## [[8]]
```



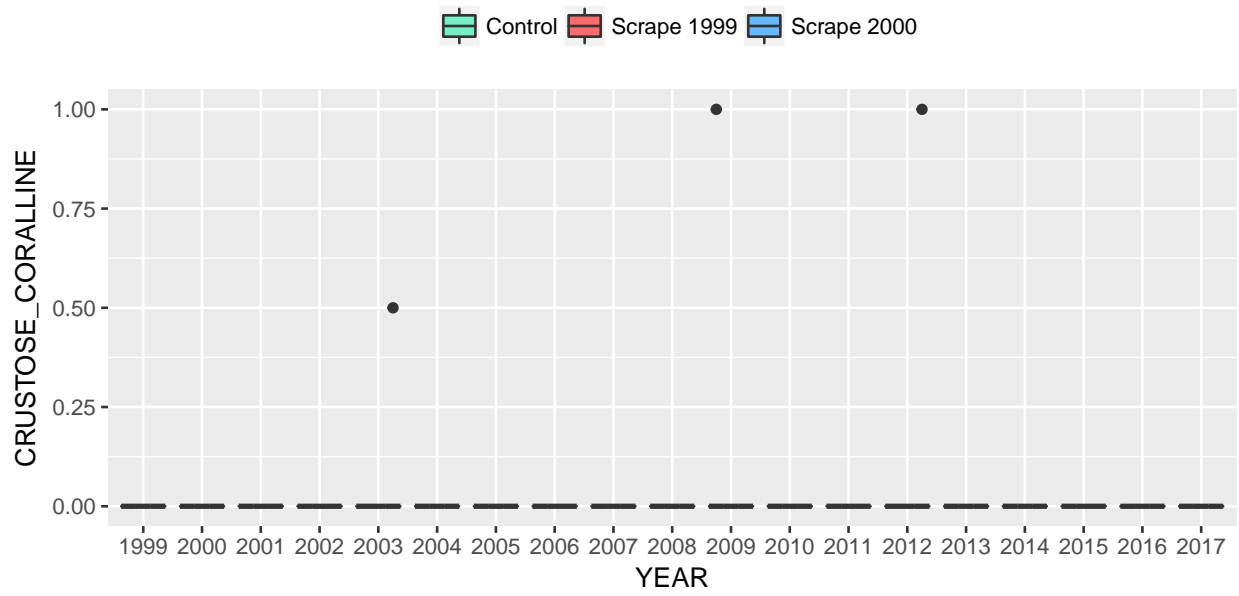
```
##
## [[9]]
```



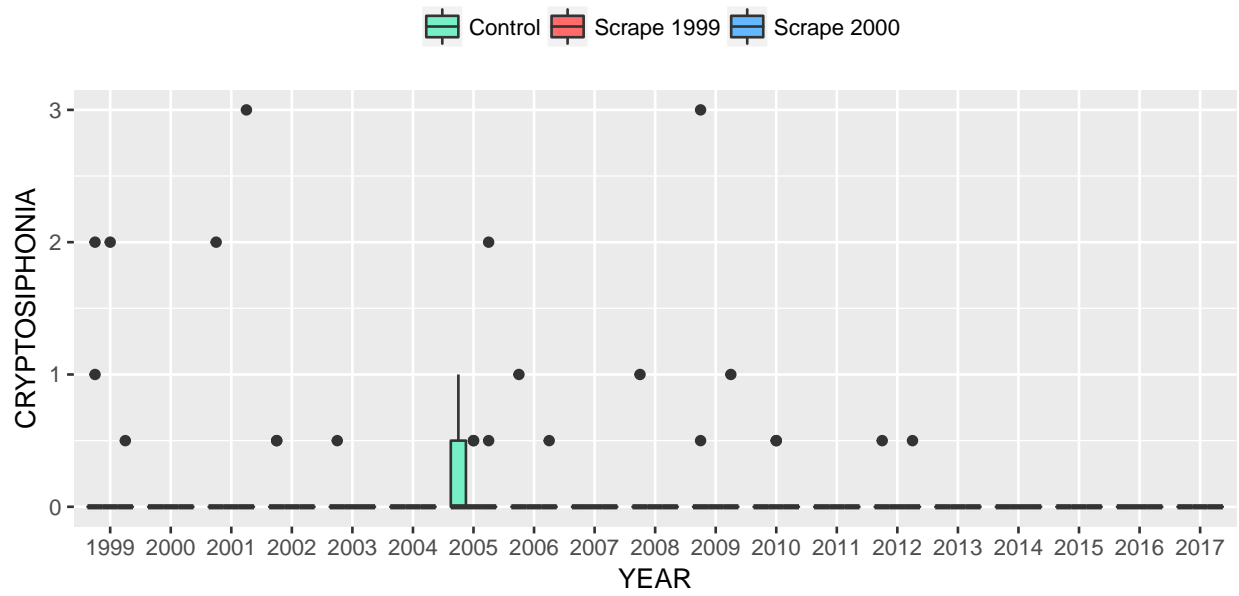
```
##
## [[10]]
```



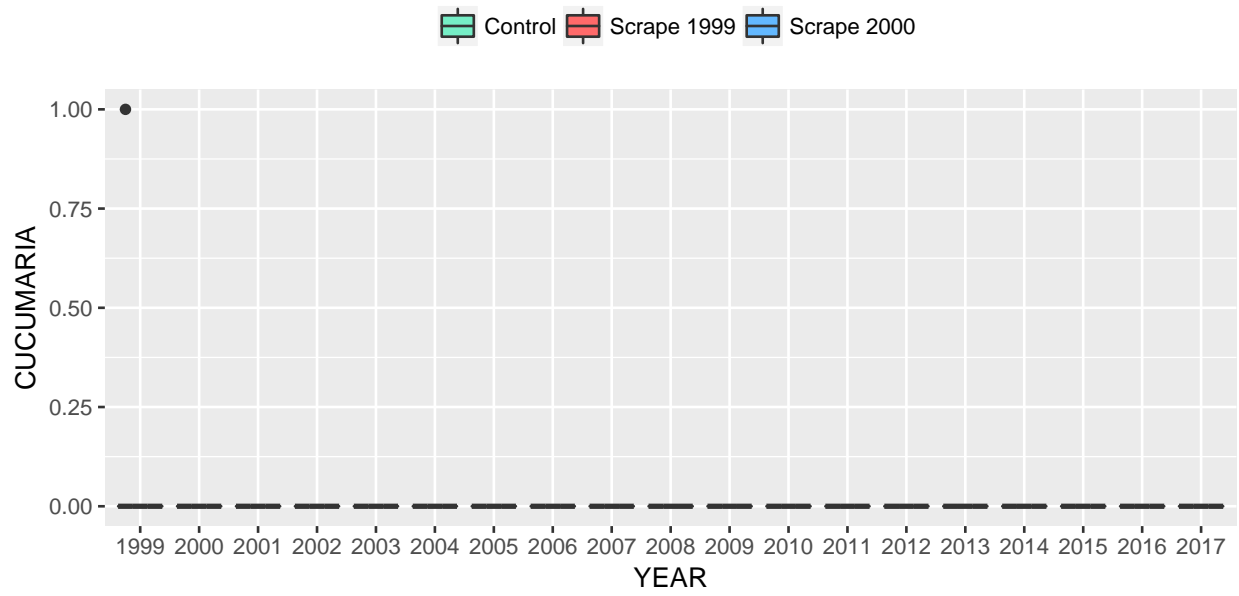
```
##
## [[11]]
```



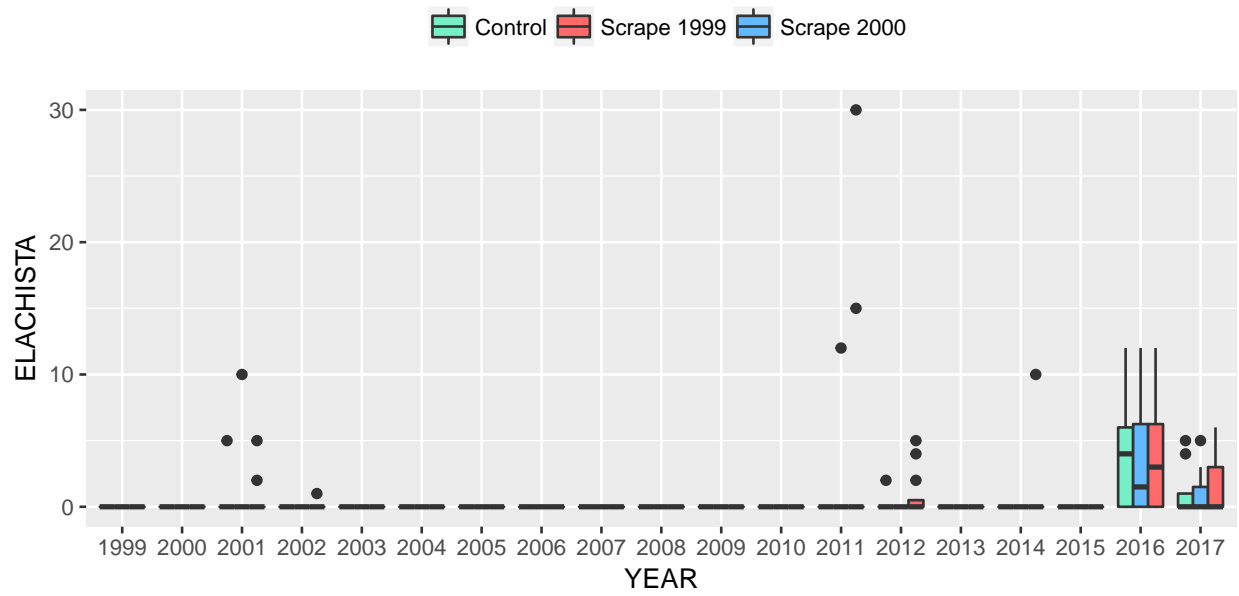
```
##
## [[12]]
```



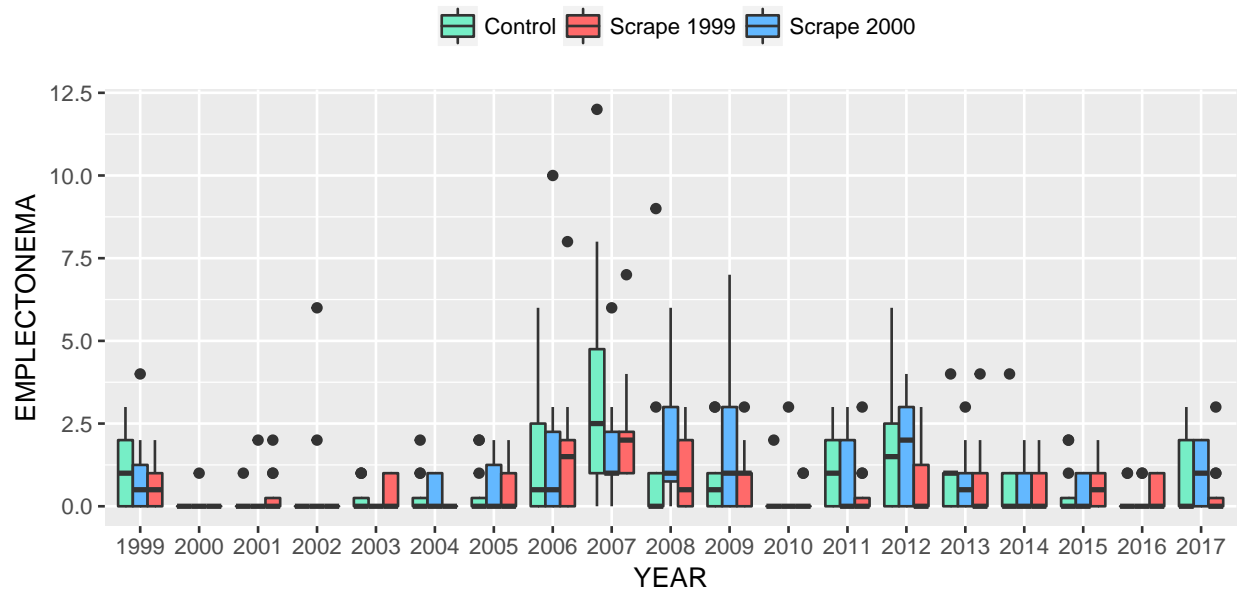
```
##
## [[13]]
```



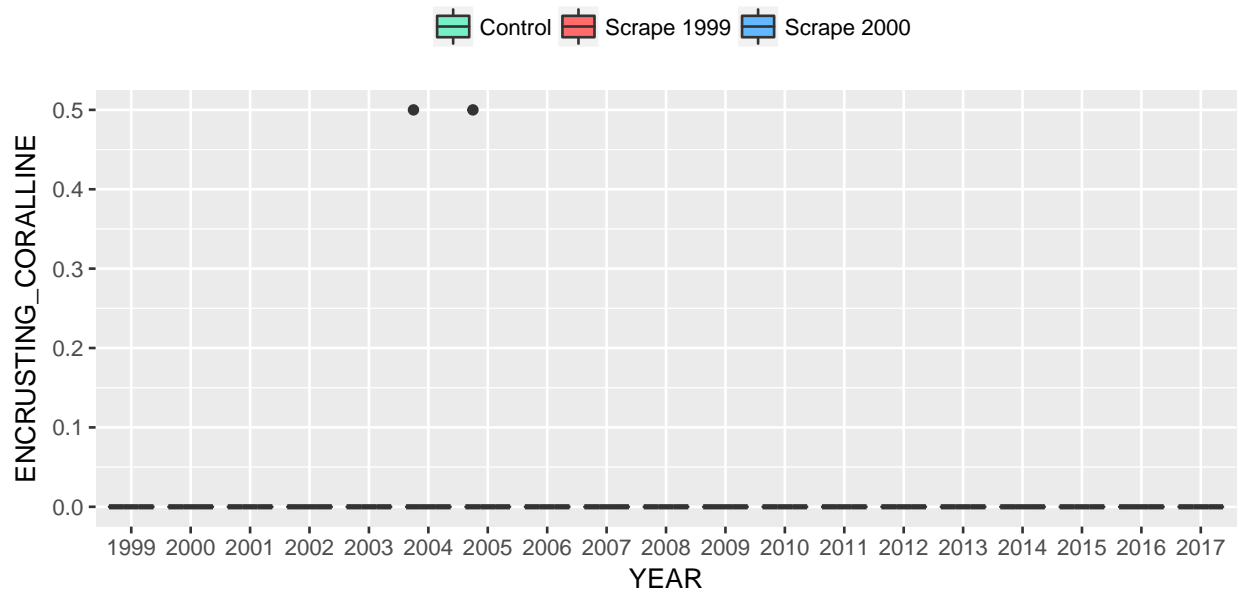
##  
## [[14]]



##  
## [[15]]

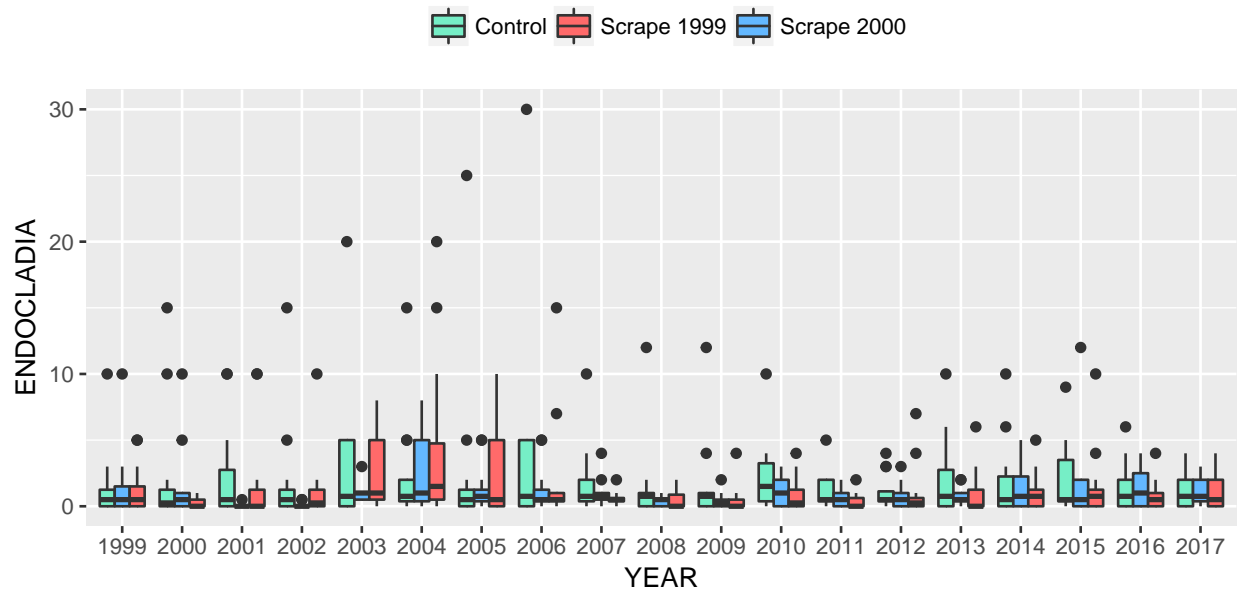


```
##
## [[16]]
```

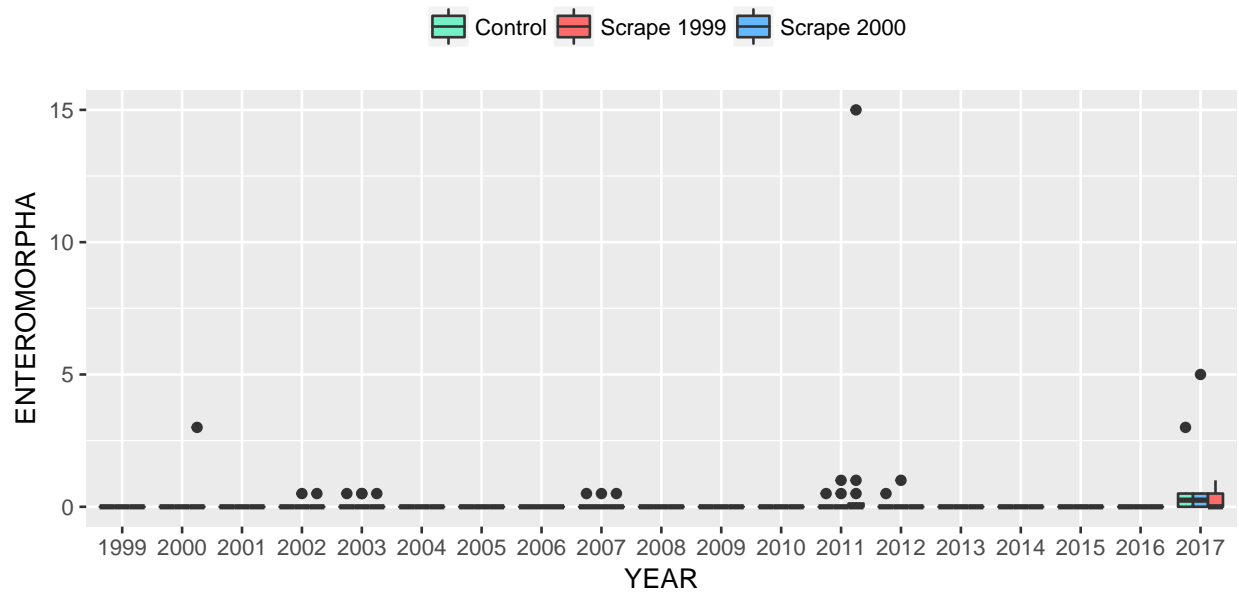


```
##
## [[17]]
```

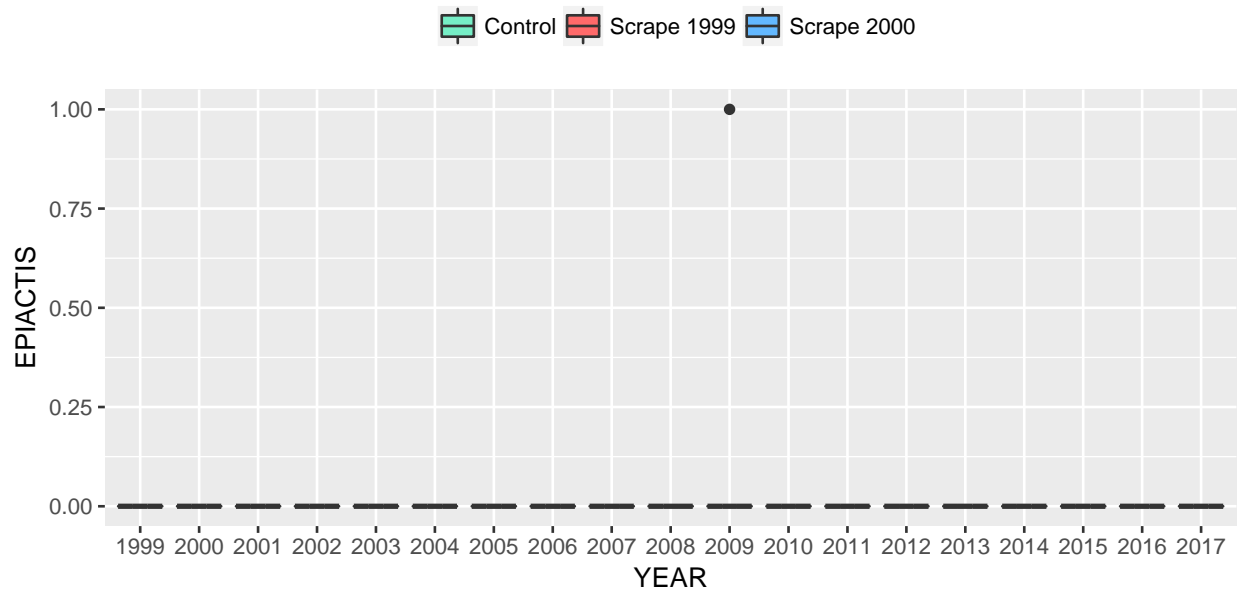




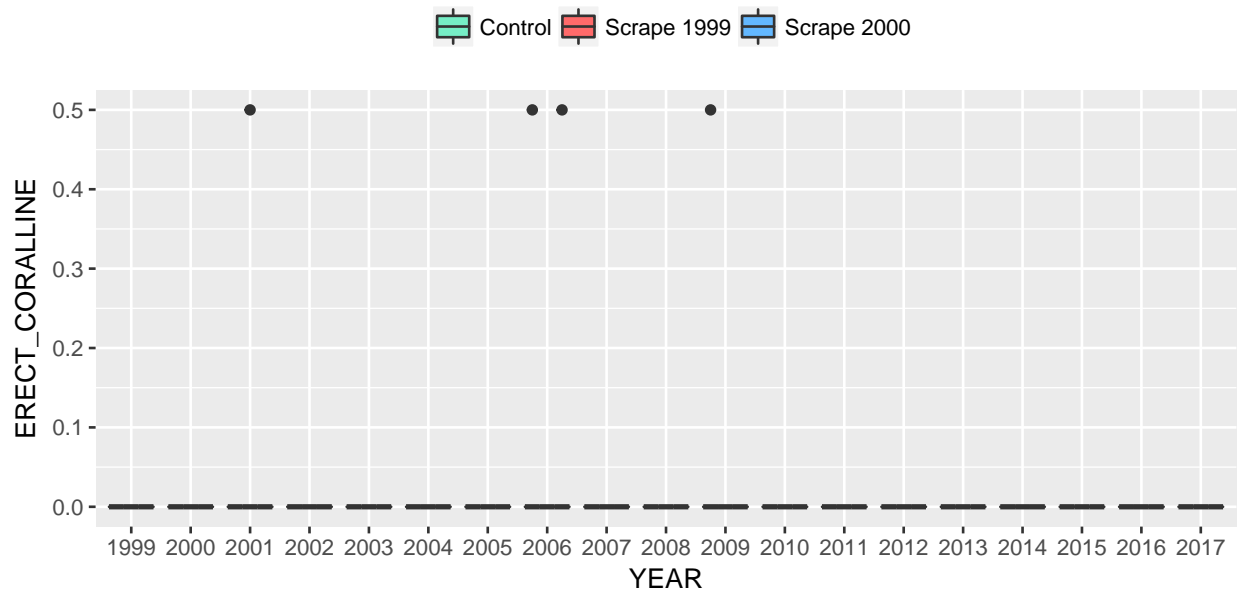
```
##
## [[18]]
```



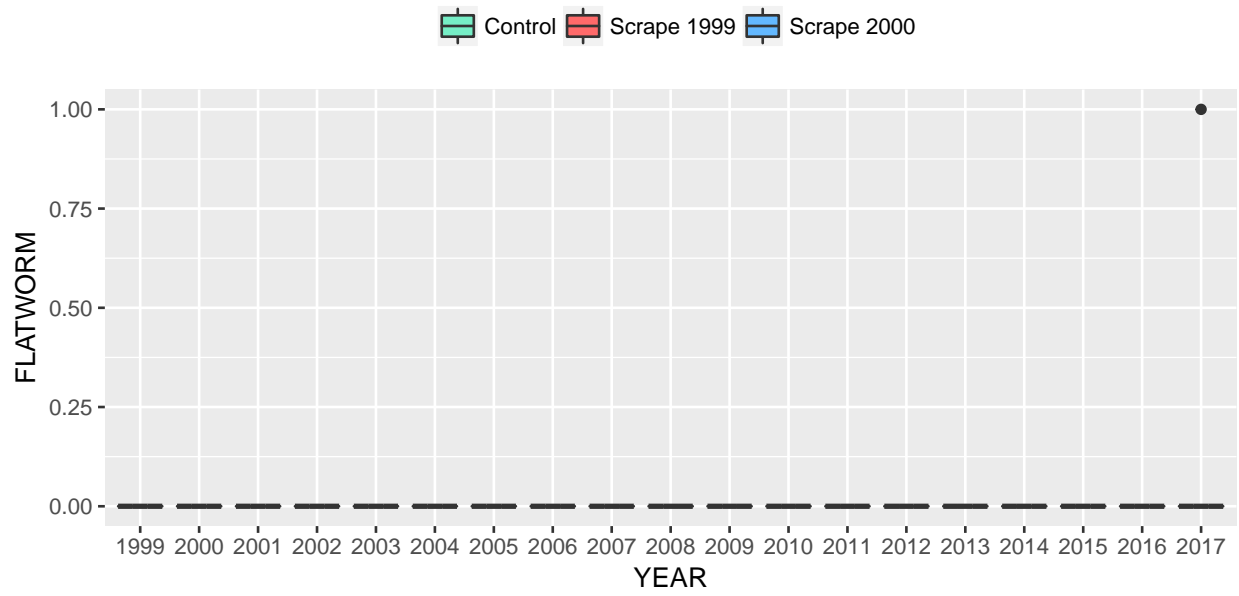
```
##
## [[19]]
```



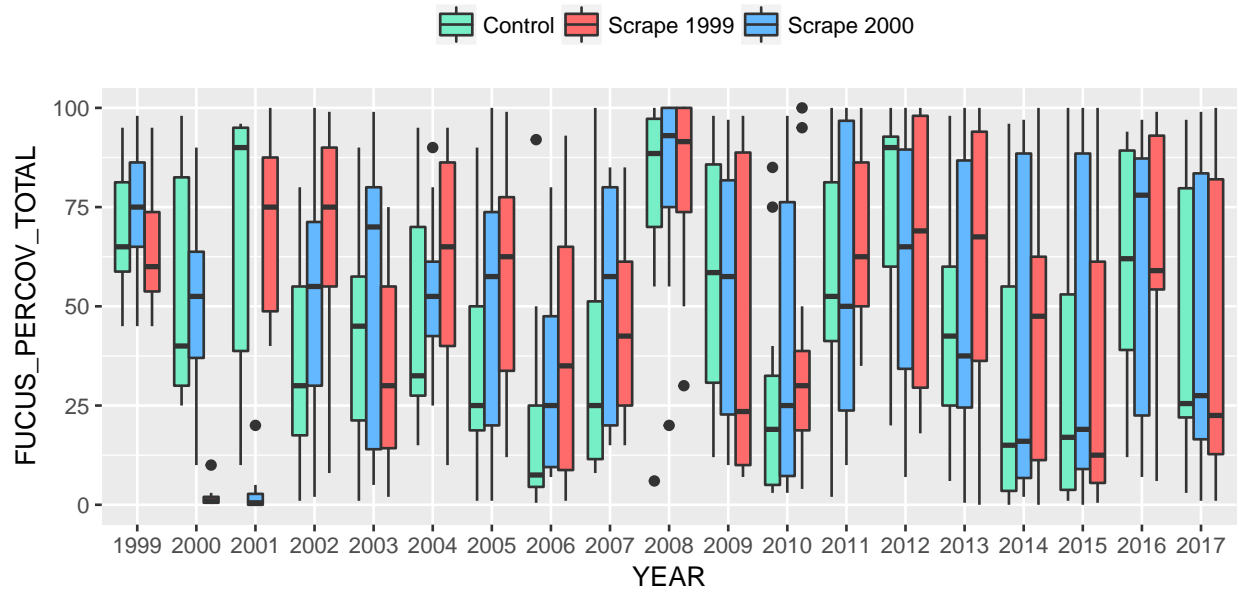
##  
## [[20]]



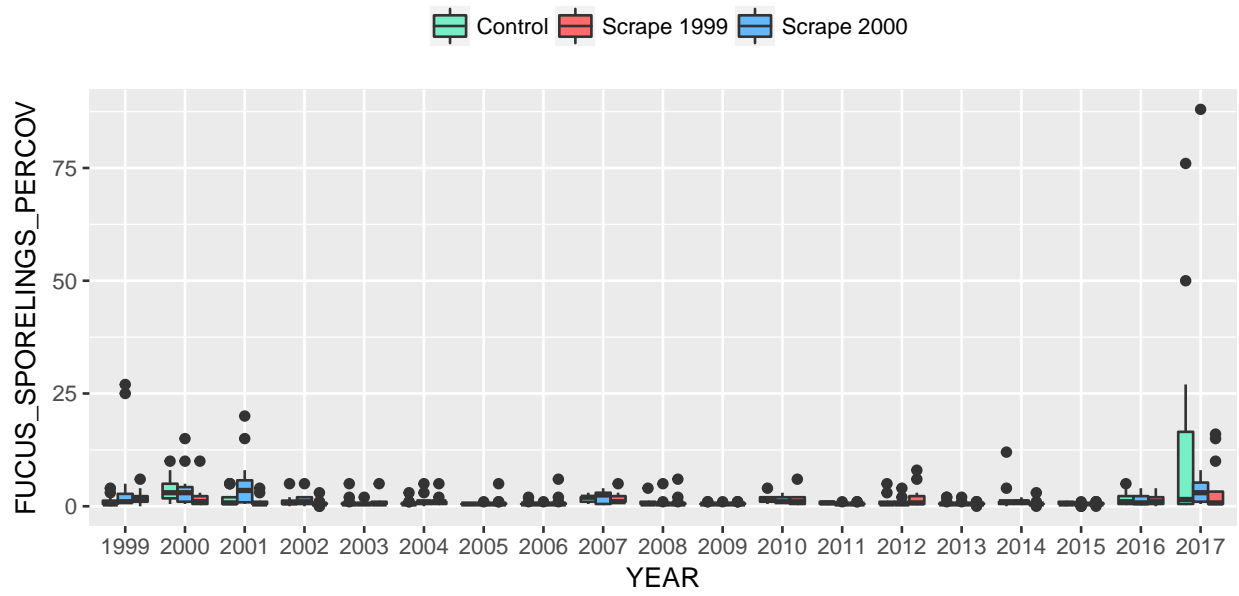
##  
## [[21]]



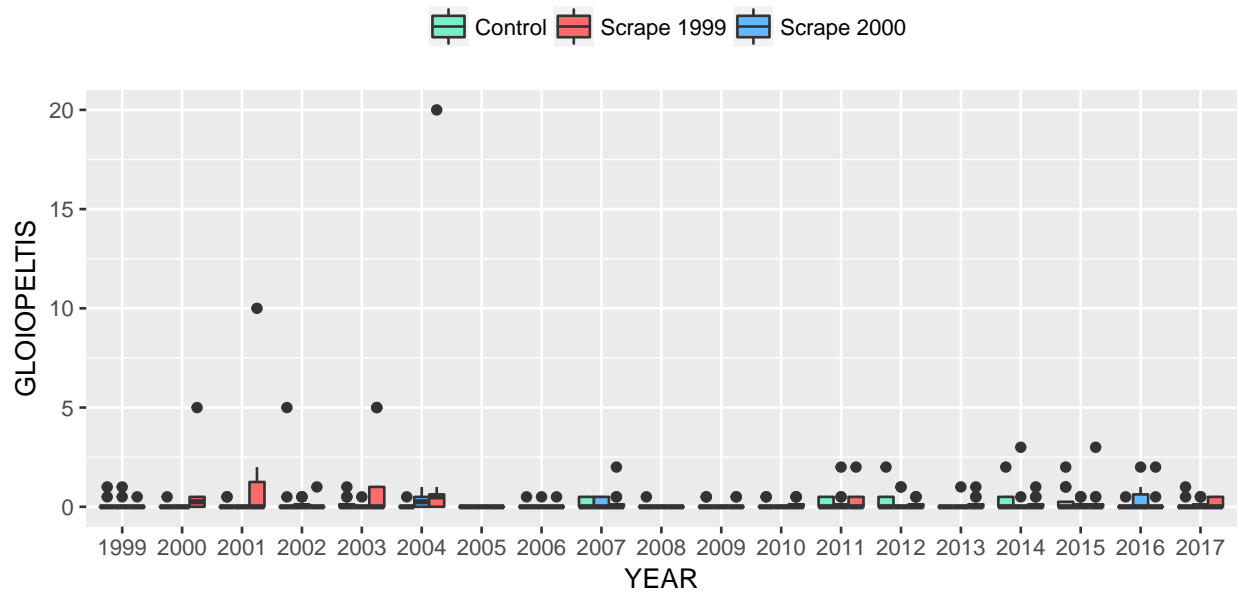
```
##
## [[22]]
```



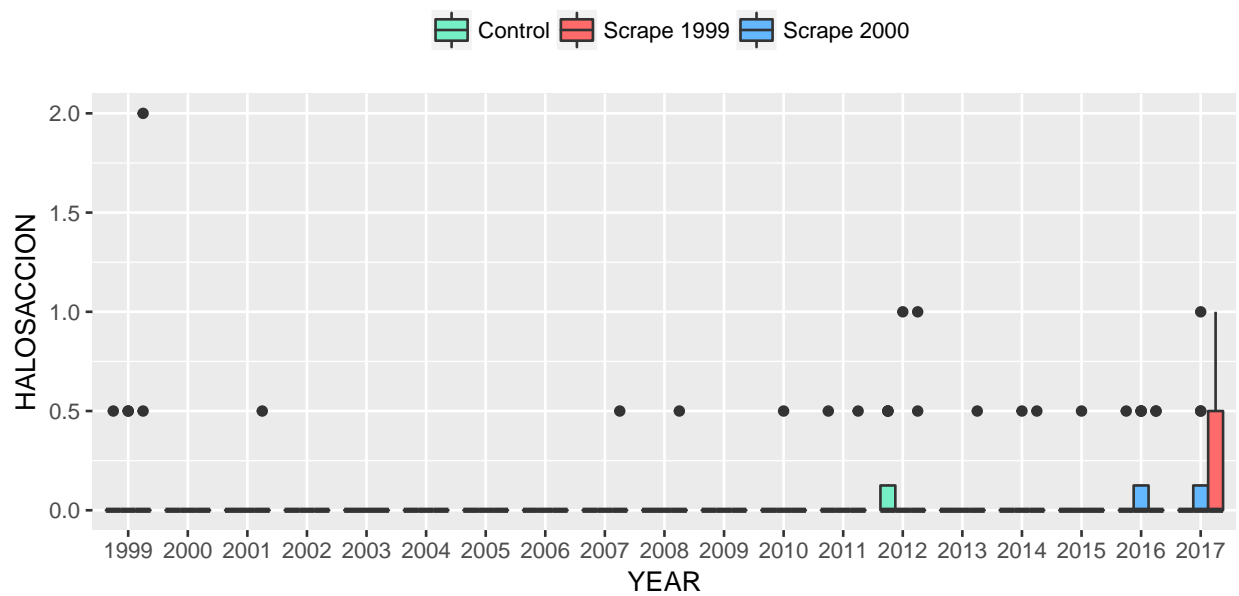
```
##
## [[23]]
```



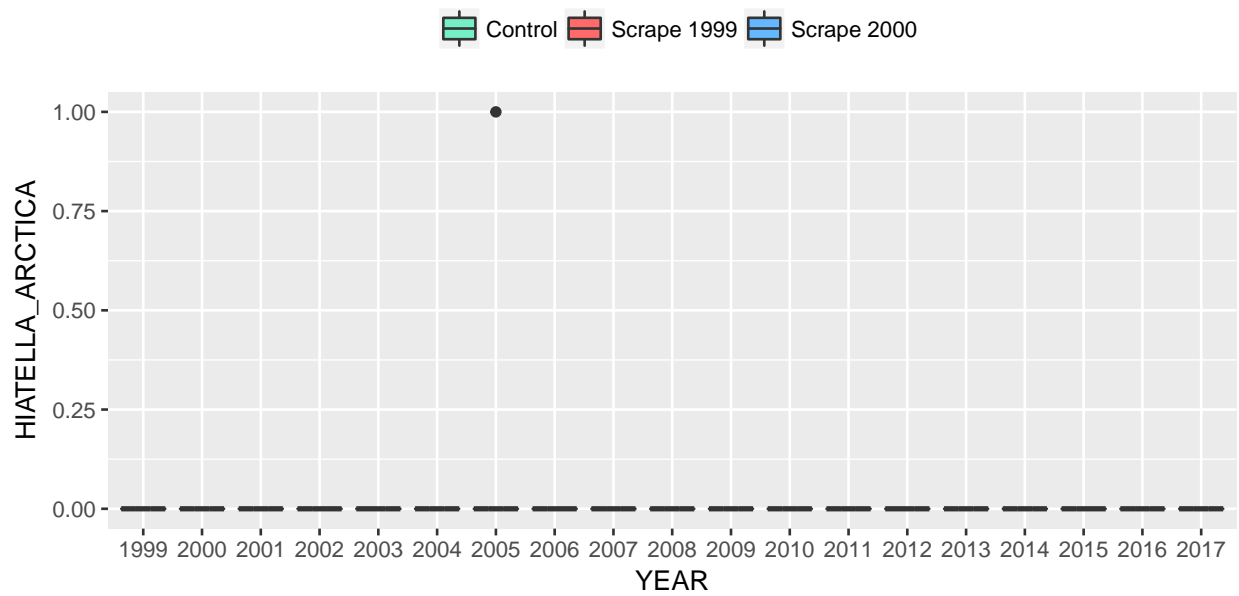
```
##
## [[24]]
```



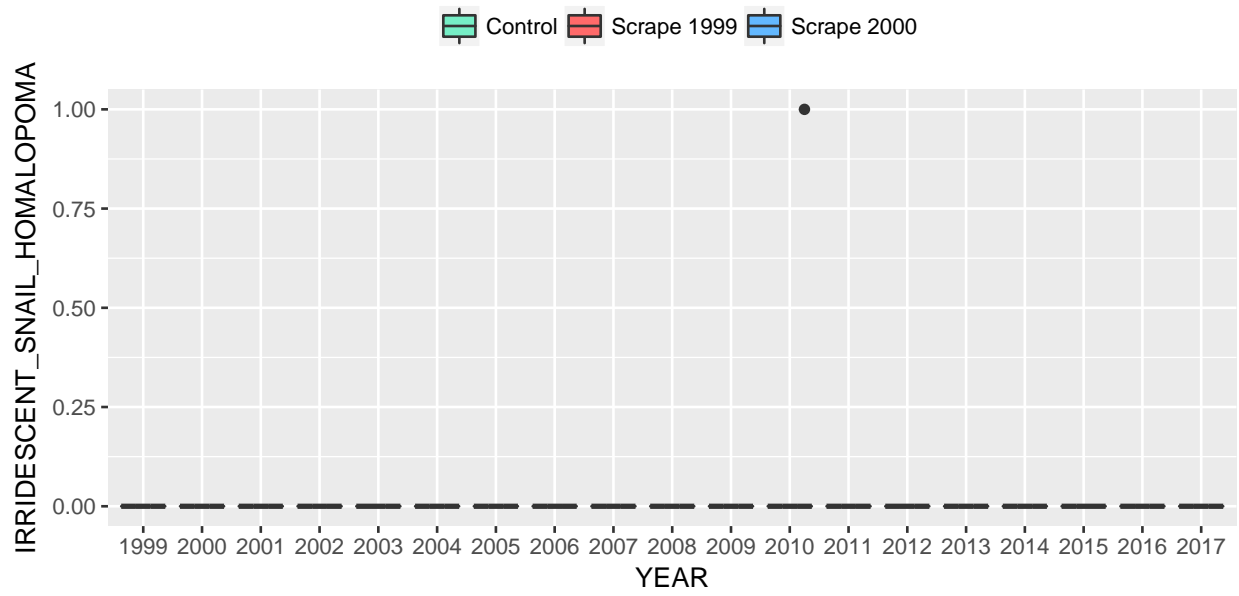
```
##
## [[25]]
```



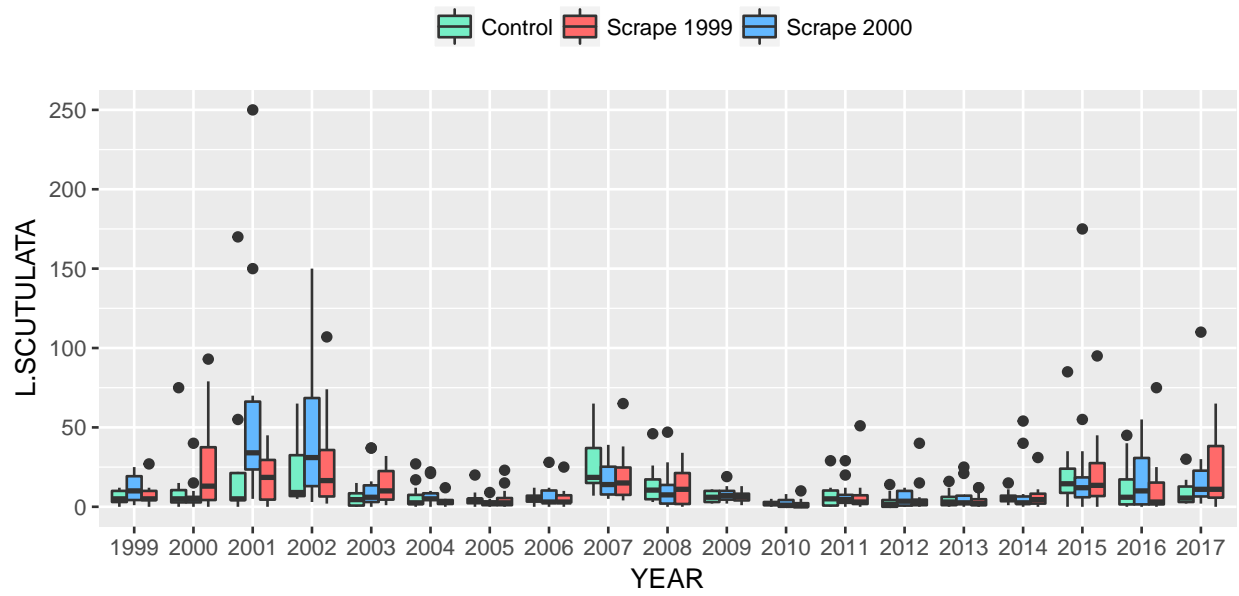
##  
## [[26]]



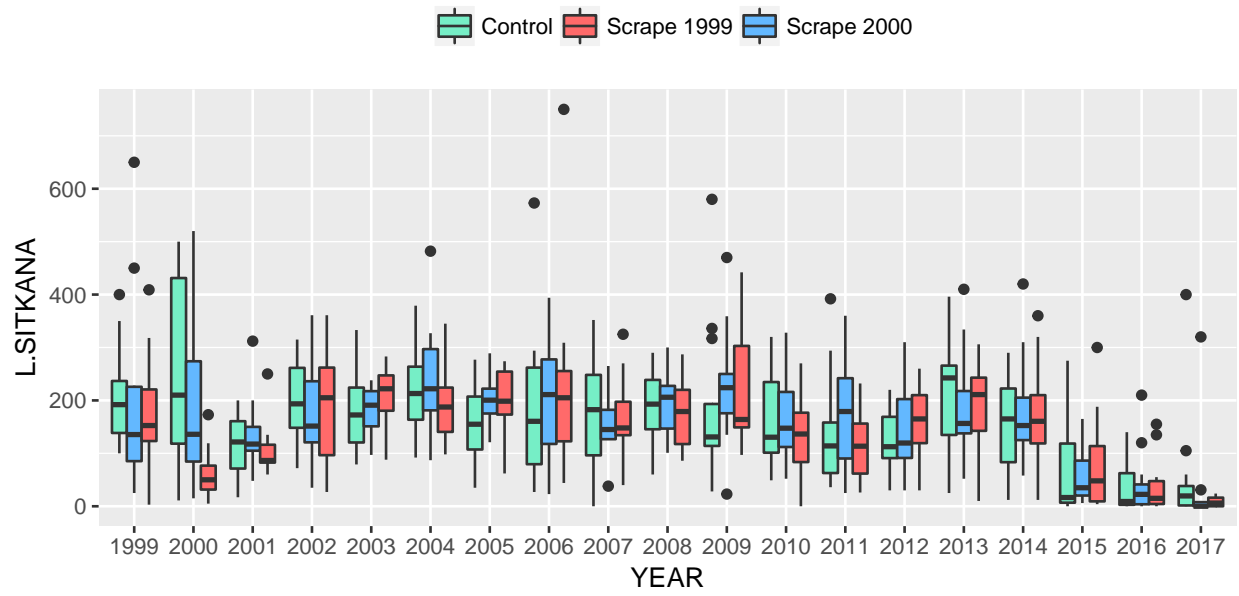
##  
## [[27]]



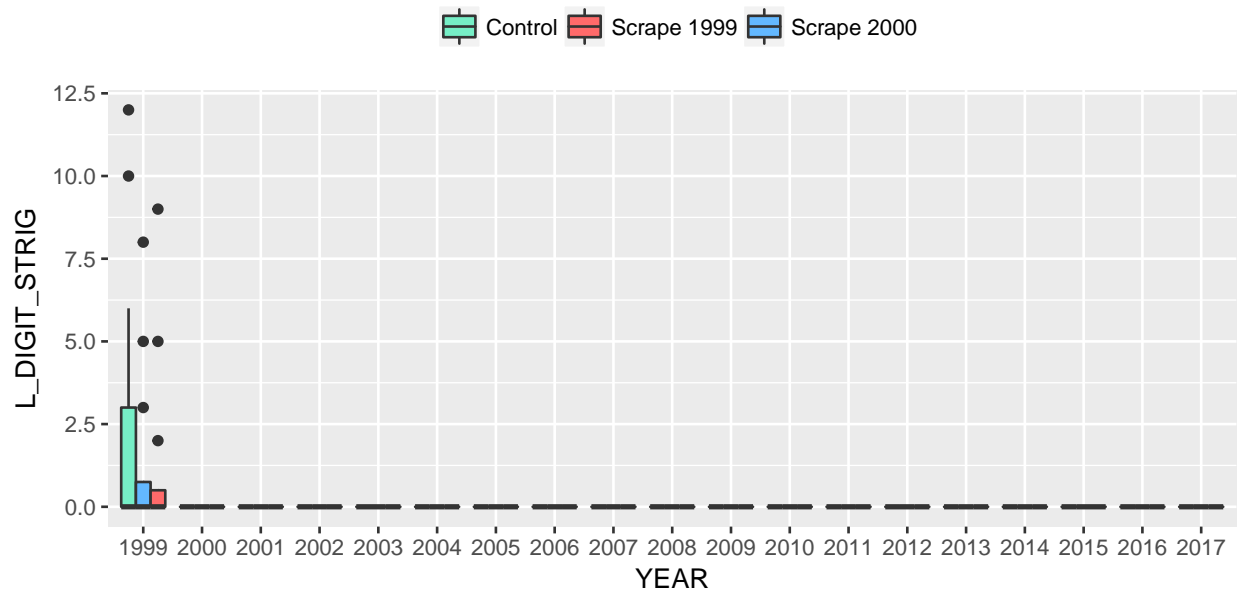
##  
## [[28]]



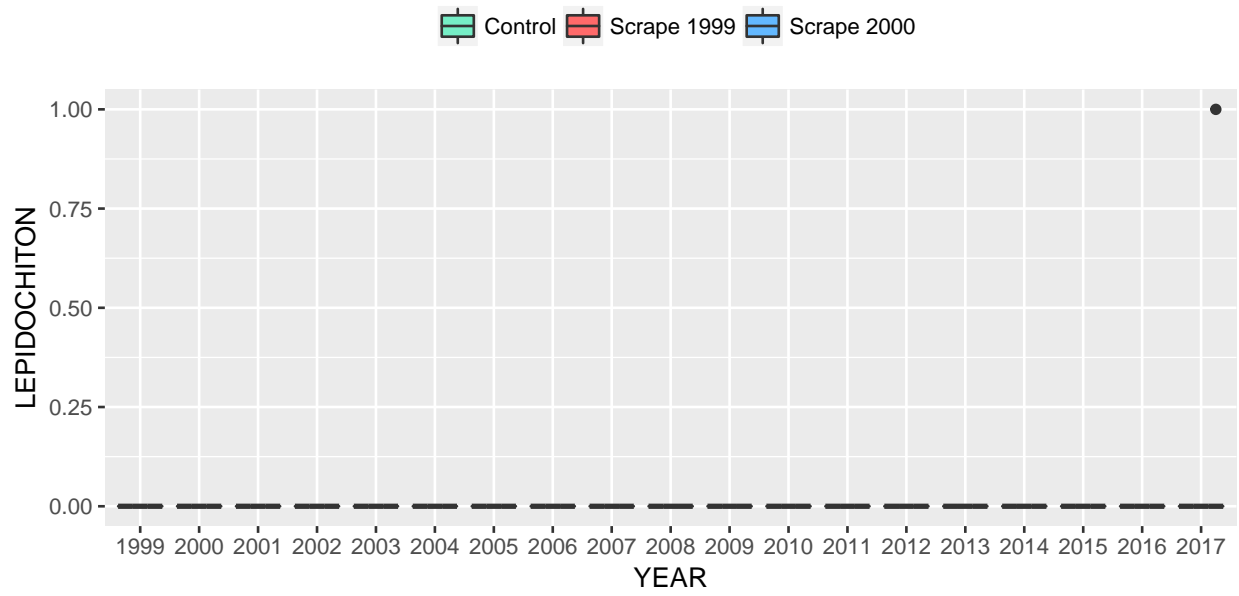
##  
## [[29]]



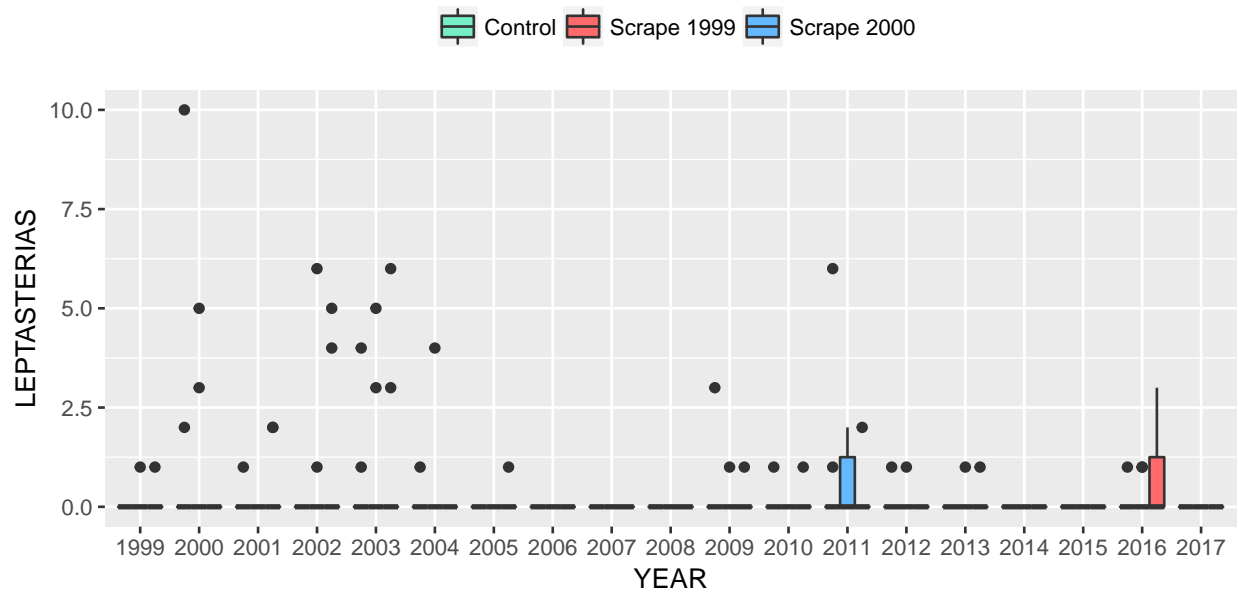
```
##
## [[30]]
```



```
##
## [[31]]
```

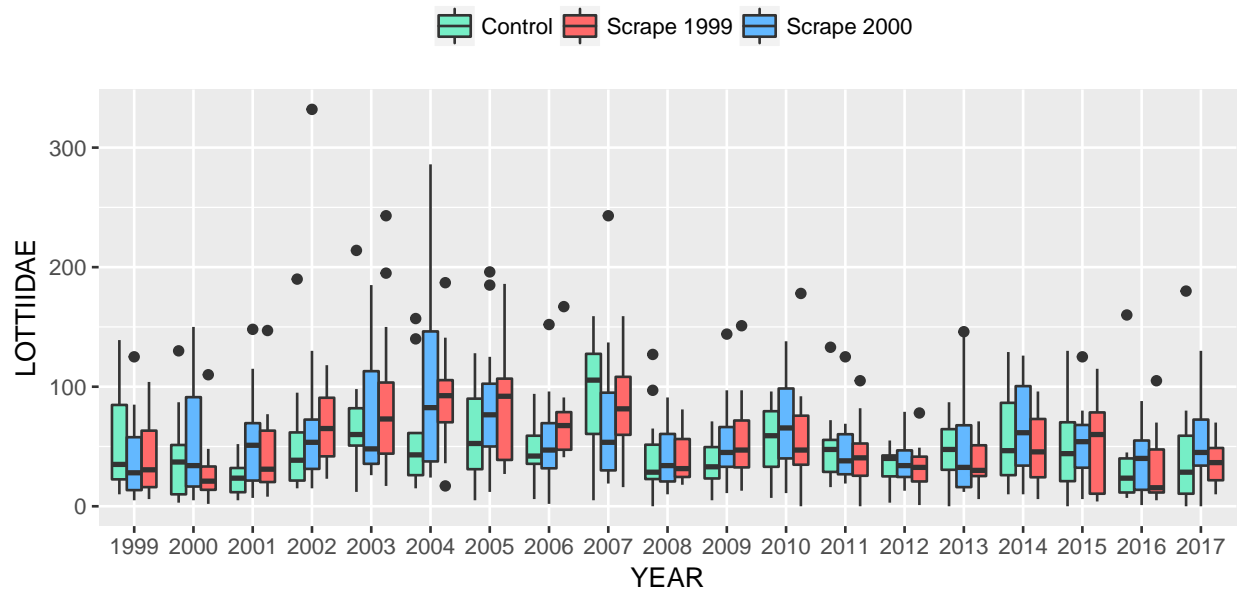


```
##
## [[32]]
```

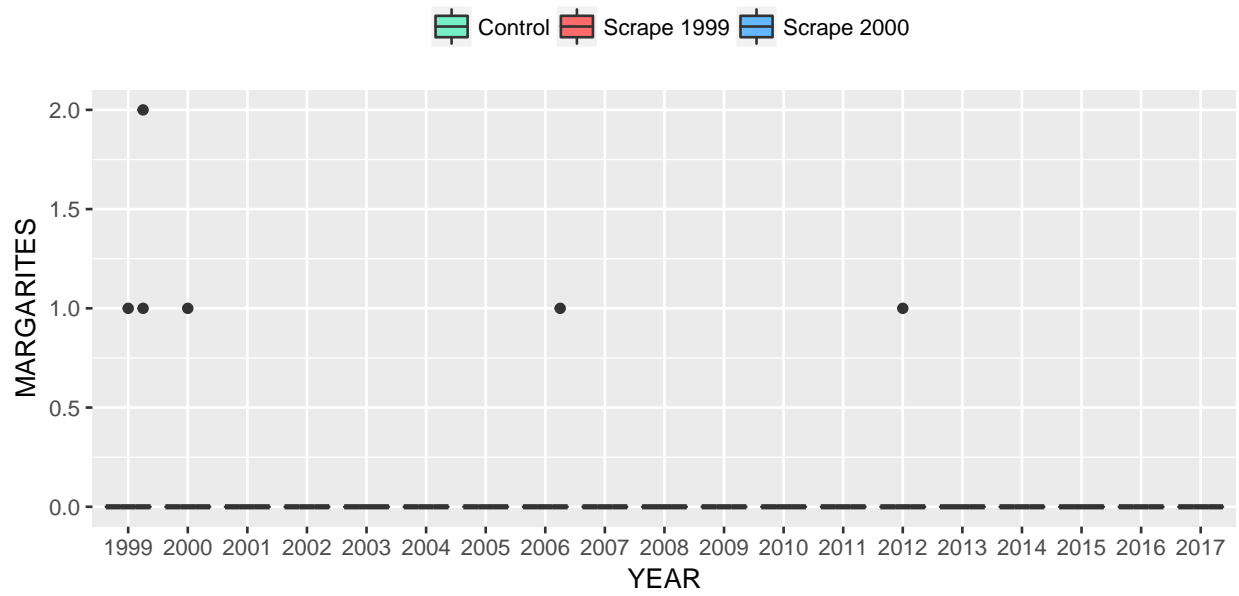


```
##
## [[33]]
```

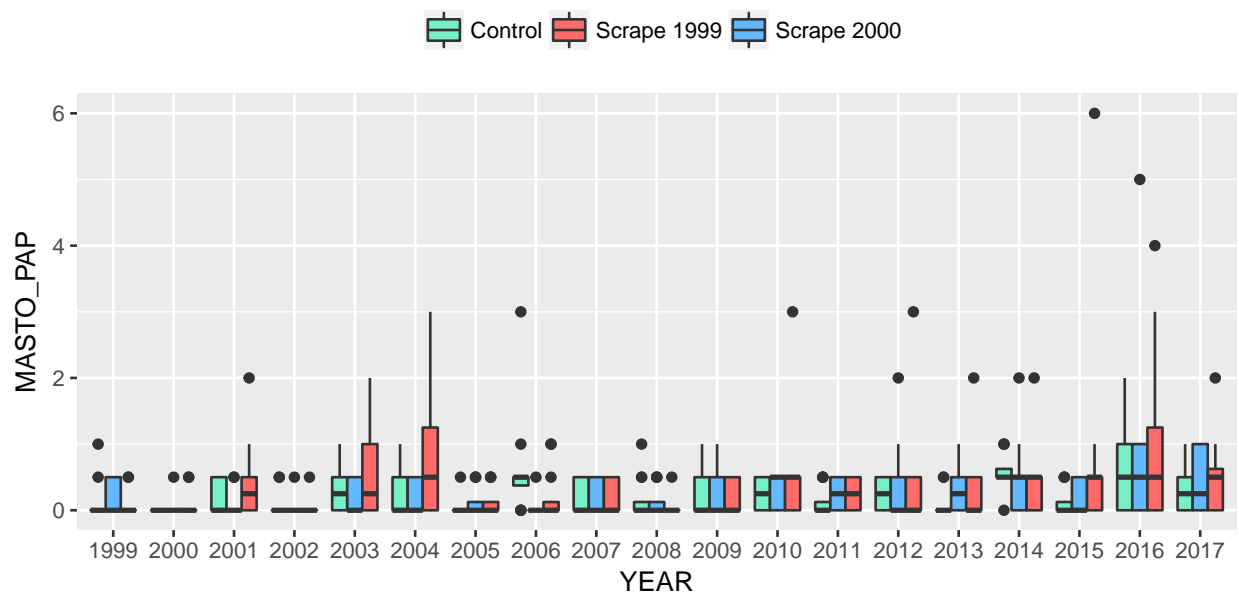




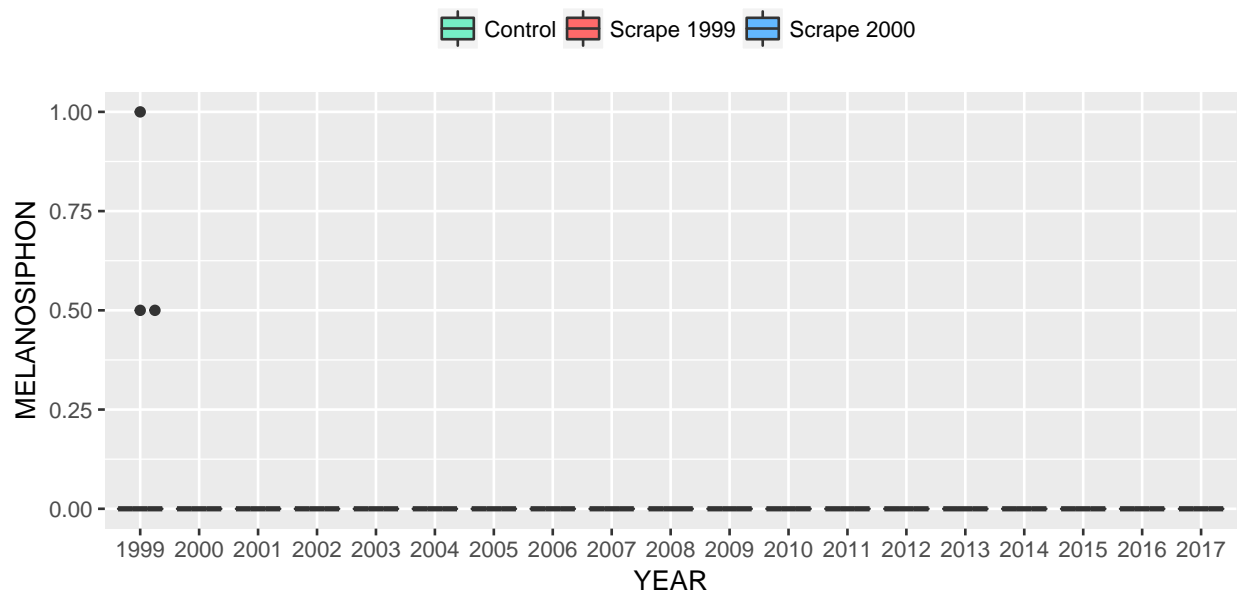
```
##
## [[34]]
```



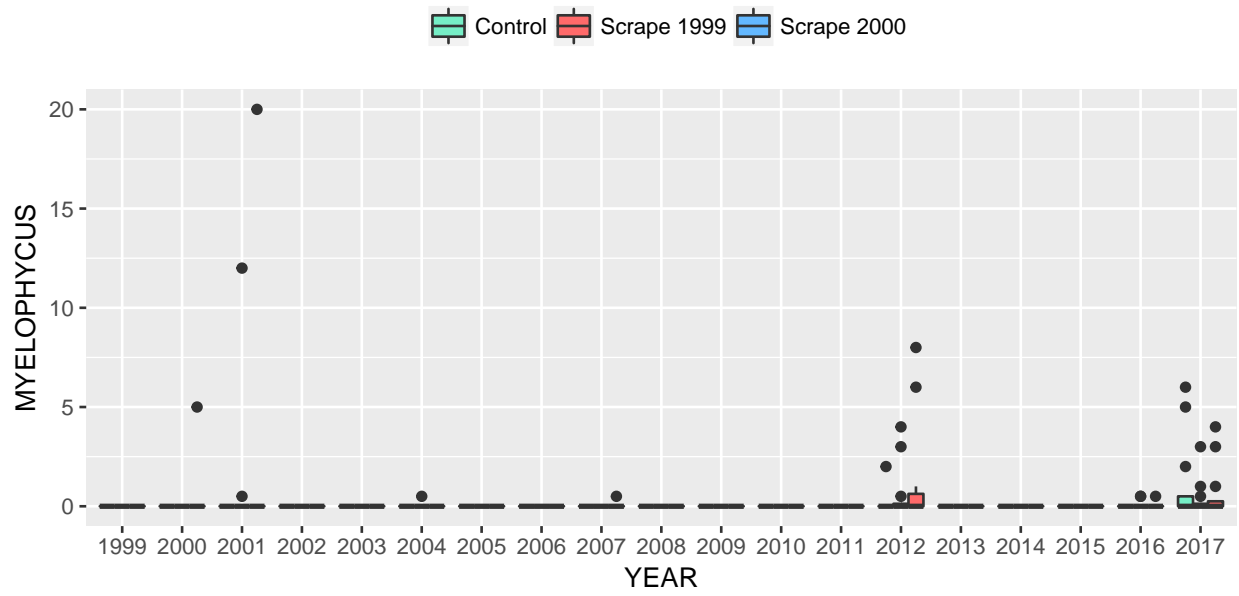
```
##
## [[35]]
```



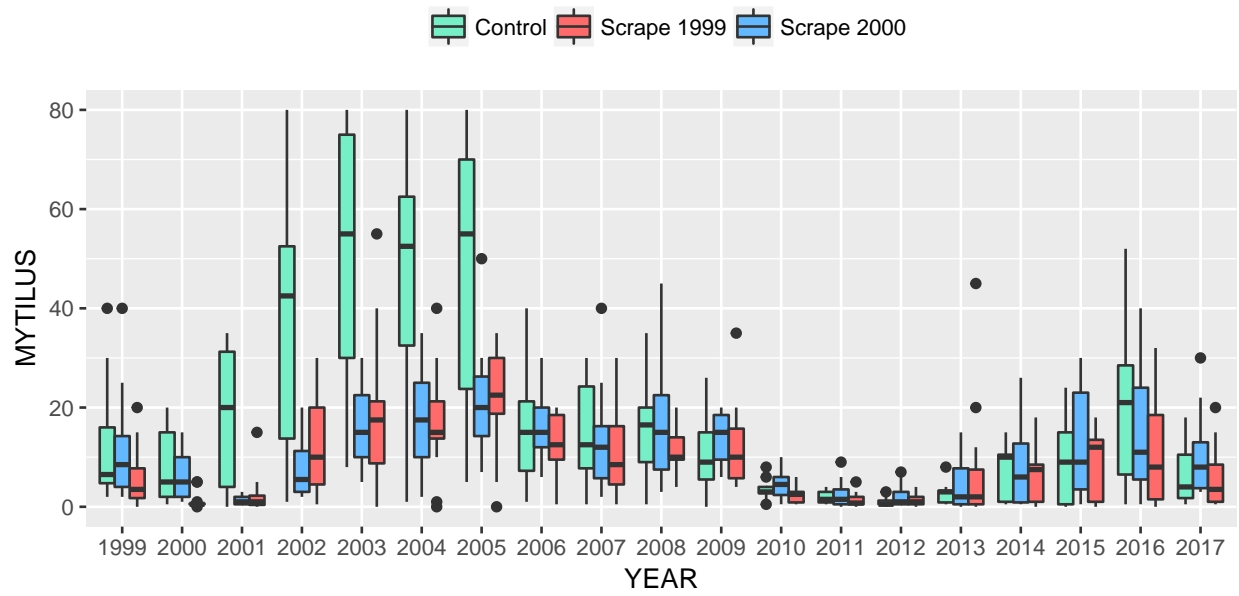
```
##
## [[36]]
```



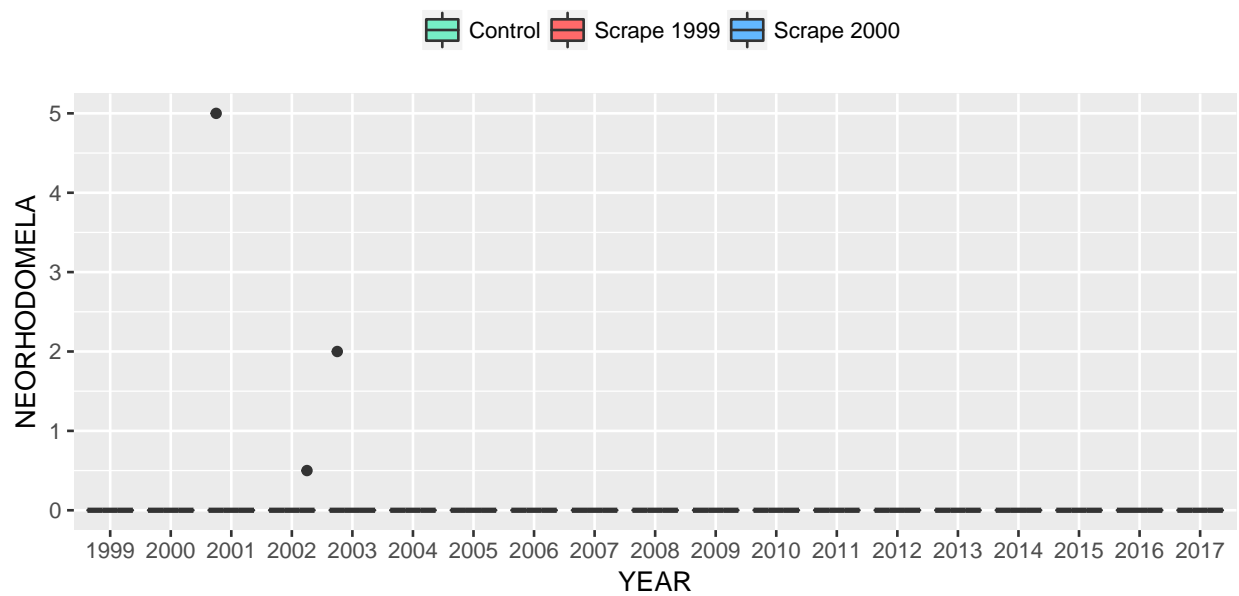
```
##
## [[37]]
```



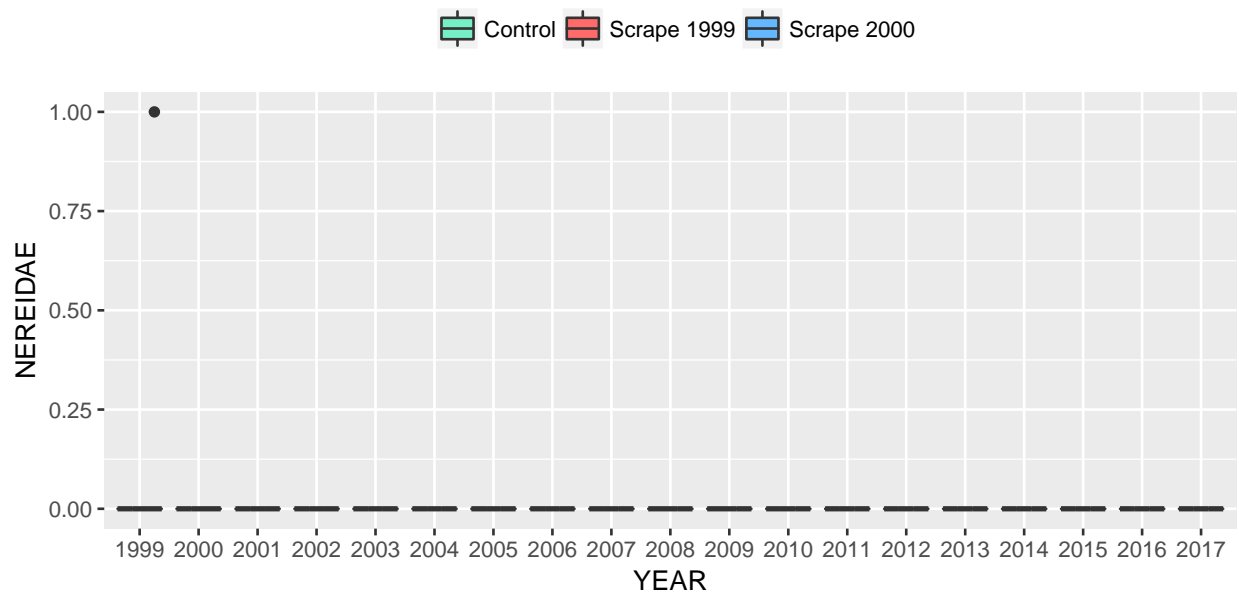
##  
## [[38]]



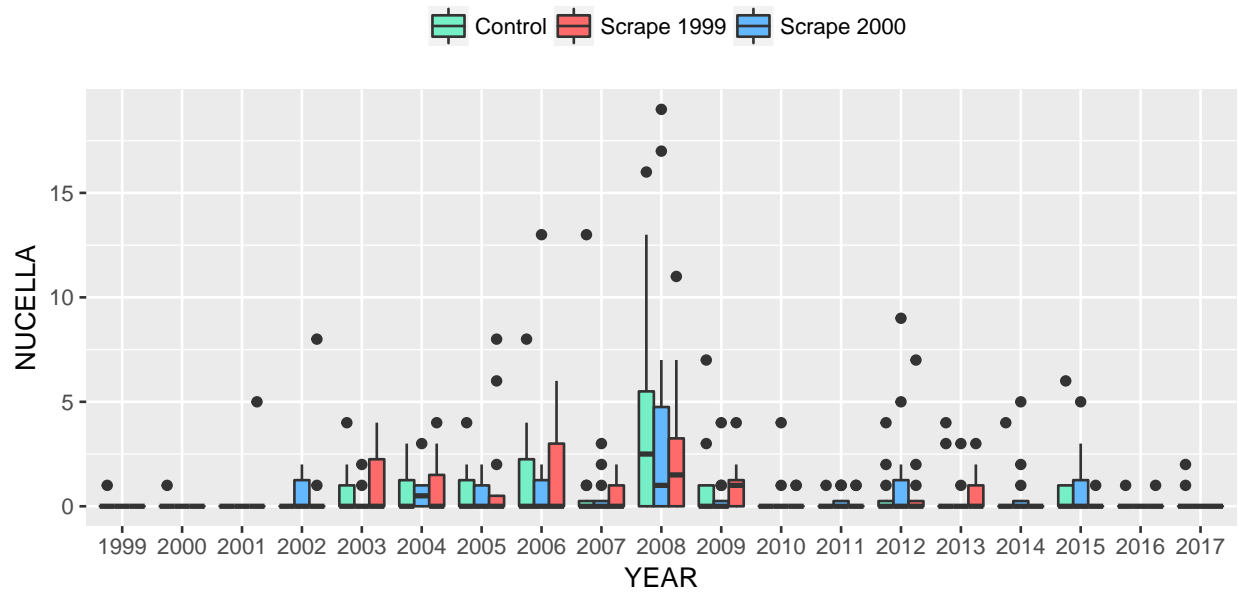
##  
## [[39]]



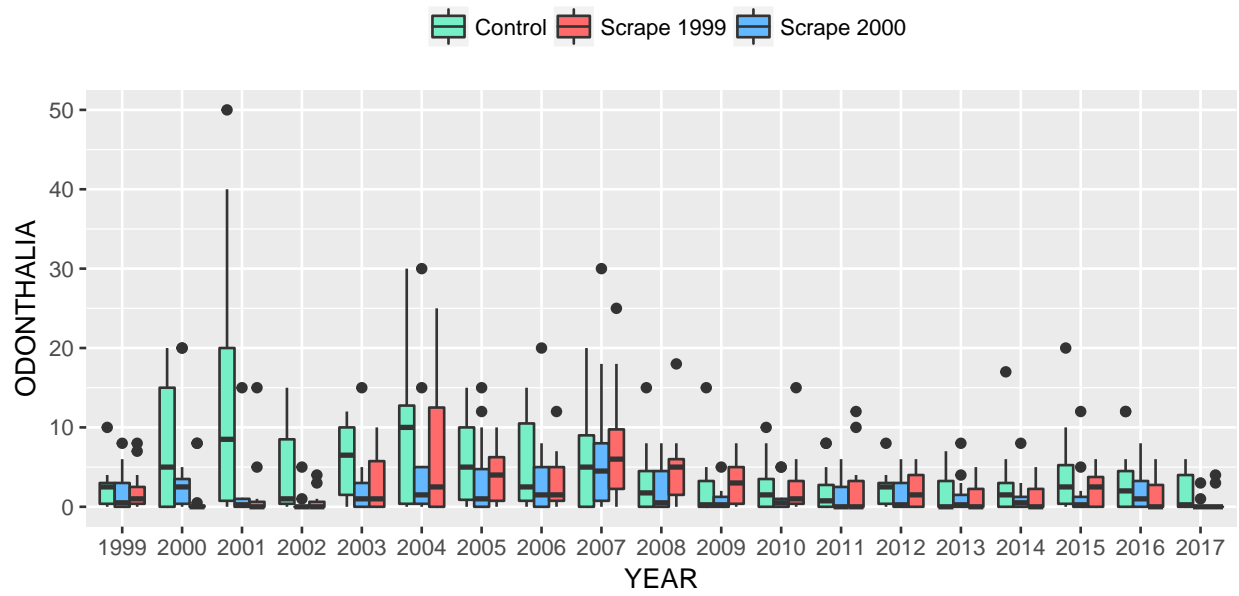
```
##
## [[40]]
```



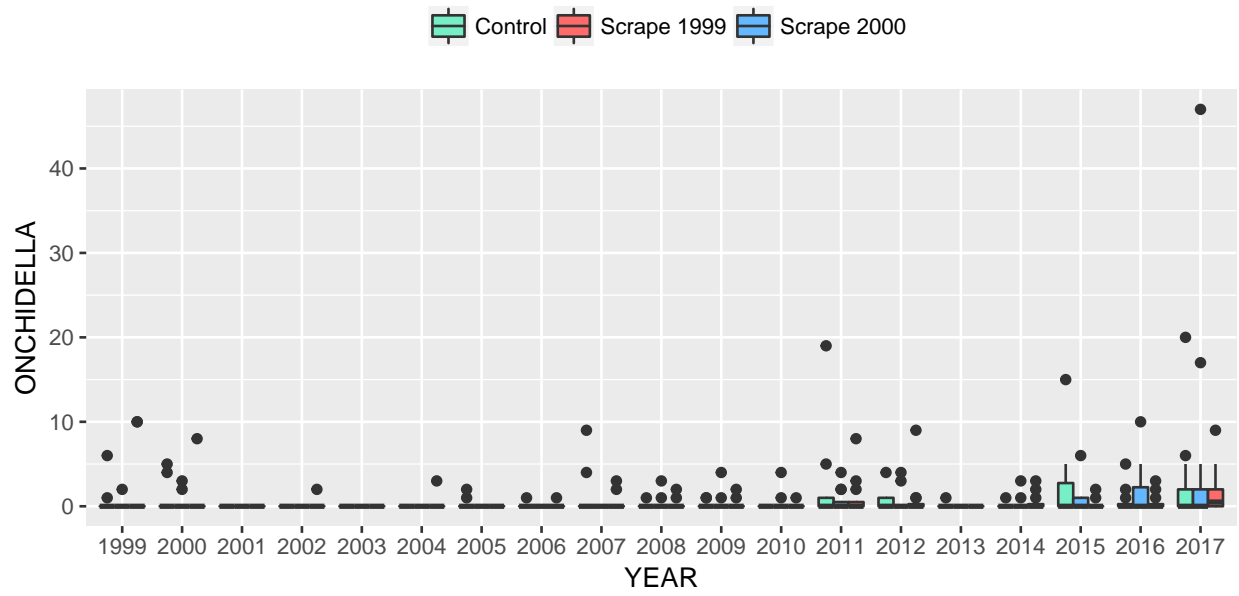
```
##
## [[41]]
```



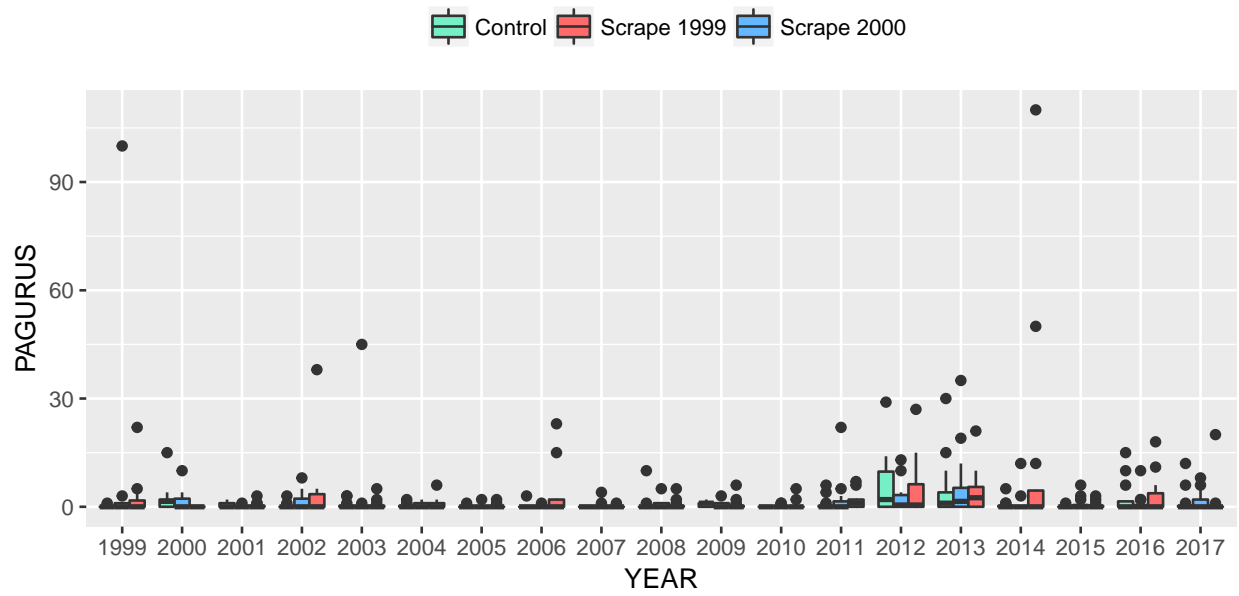
##  
## [[42]]



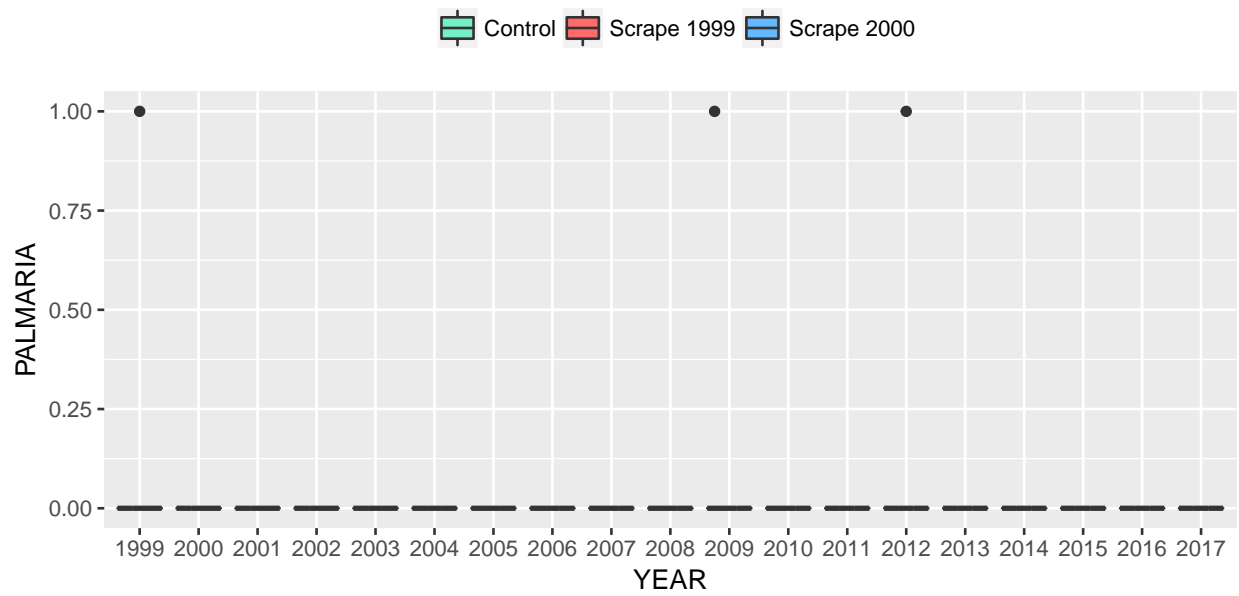
##  
## [[43]]



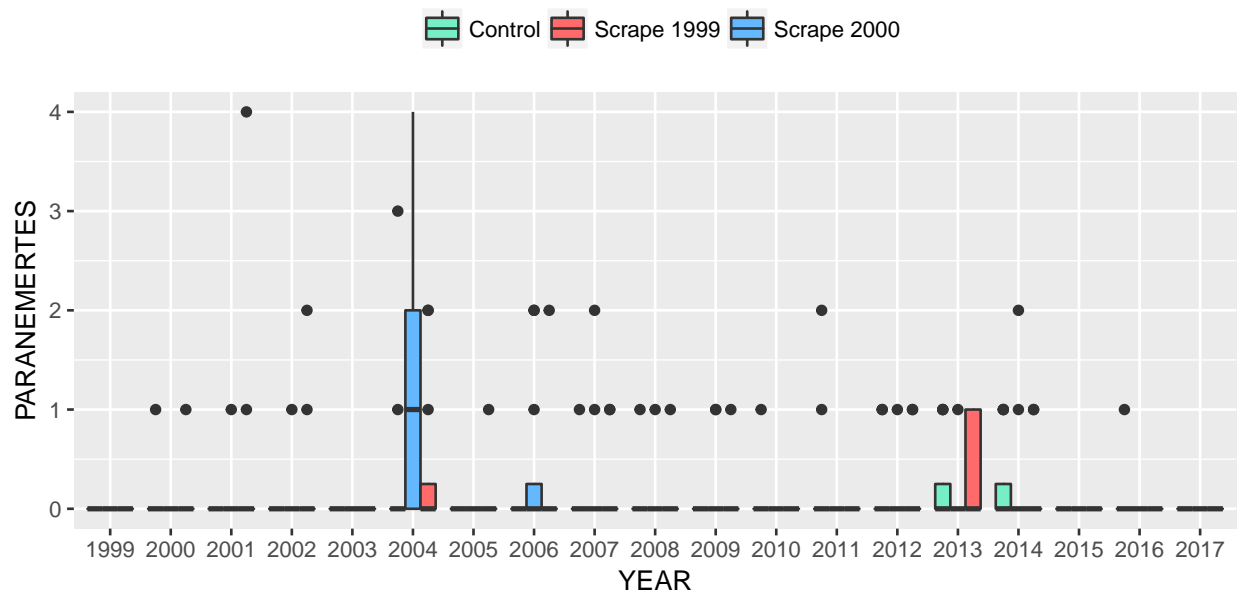
##  
## [[44]]



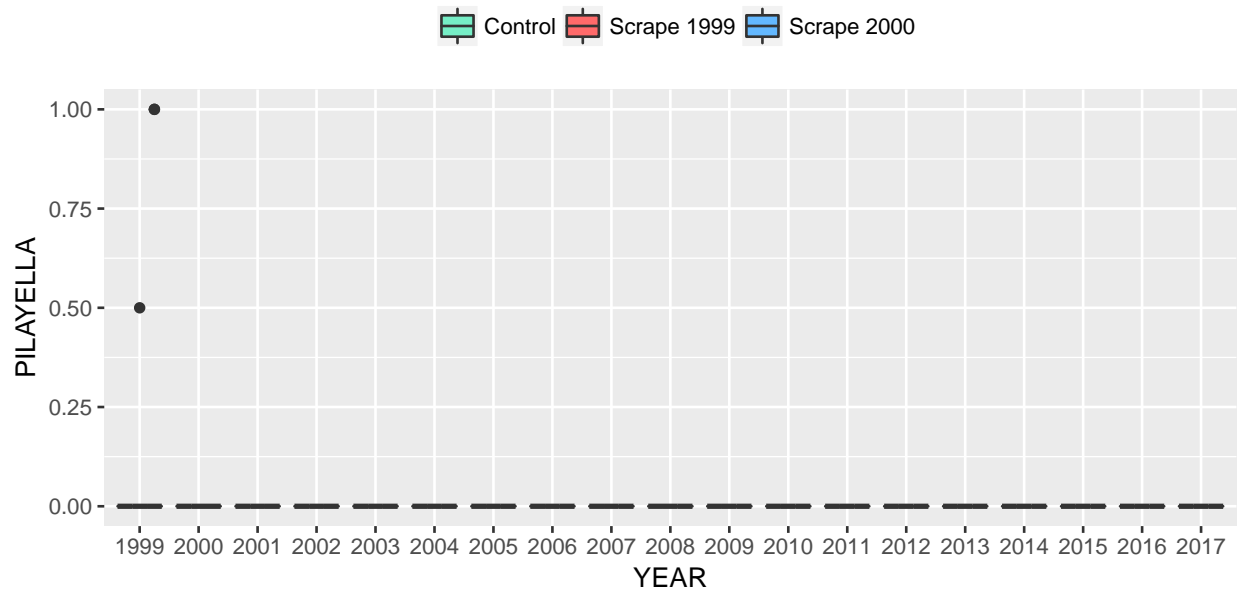
##  
## [[45]]



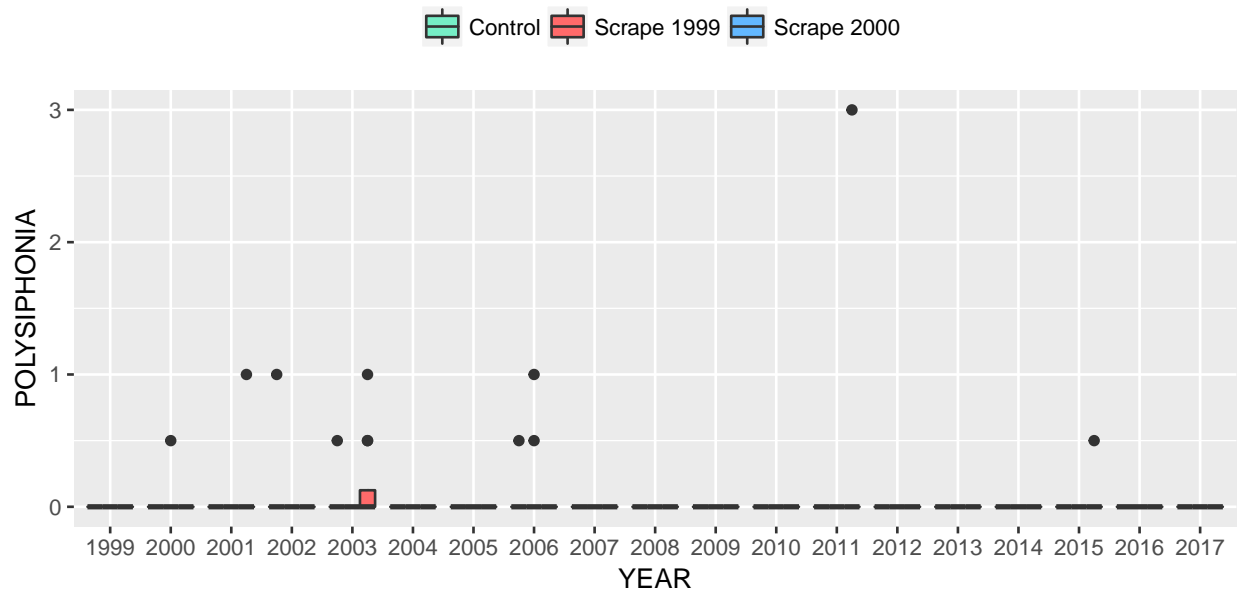
```
##
## [[46]]
```



```
##
## [[47]]
```

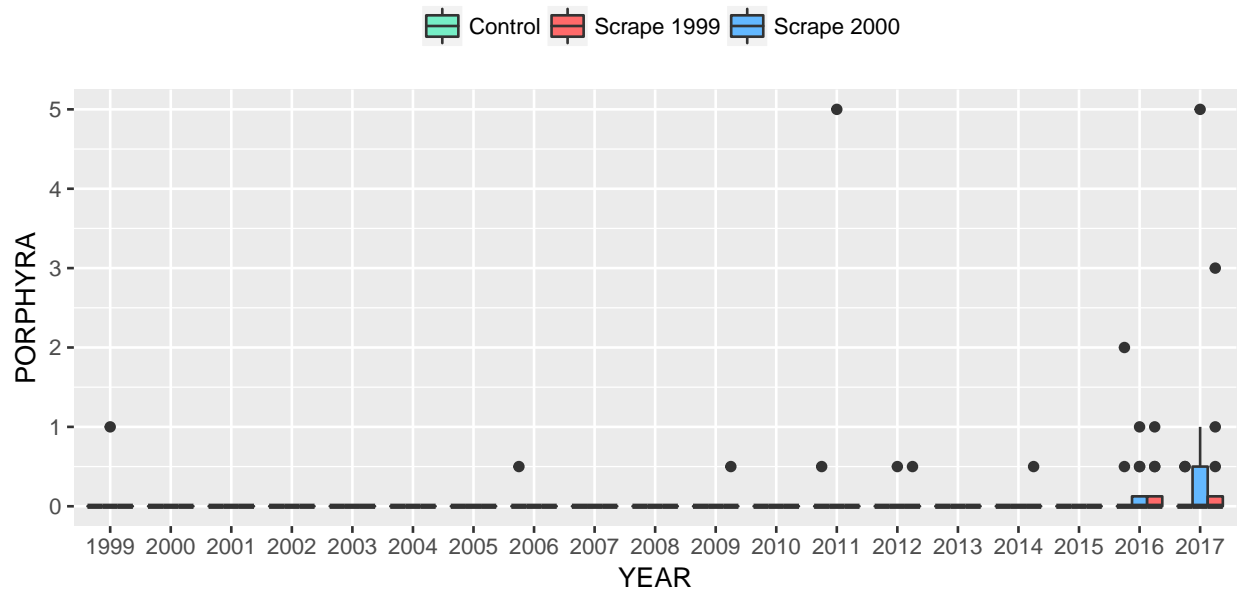


##  
## [[48]]

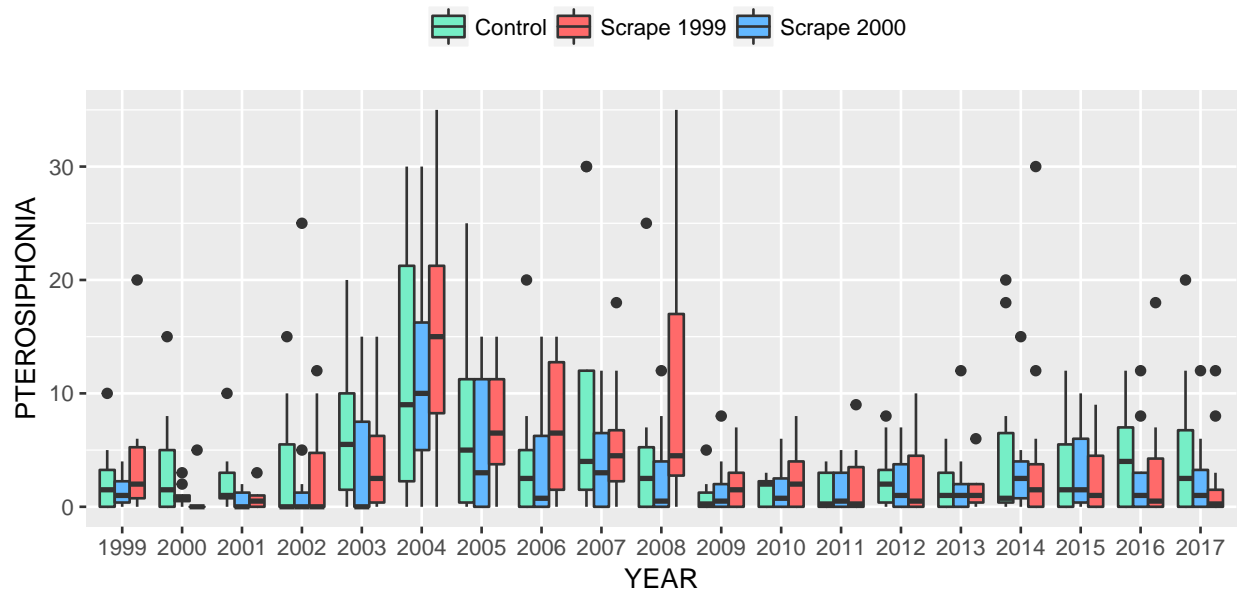


##  
## [[49]]

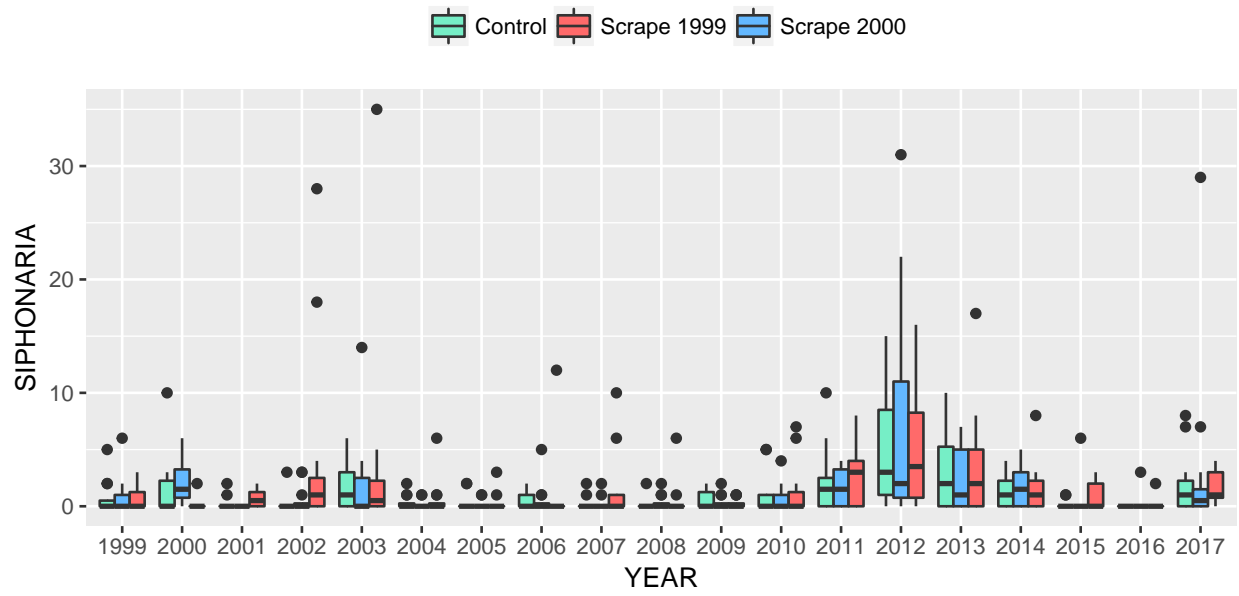




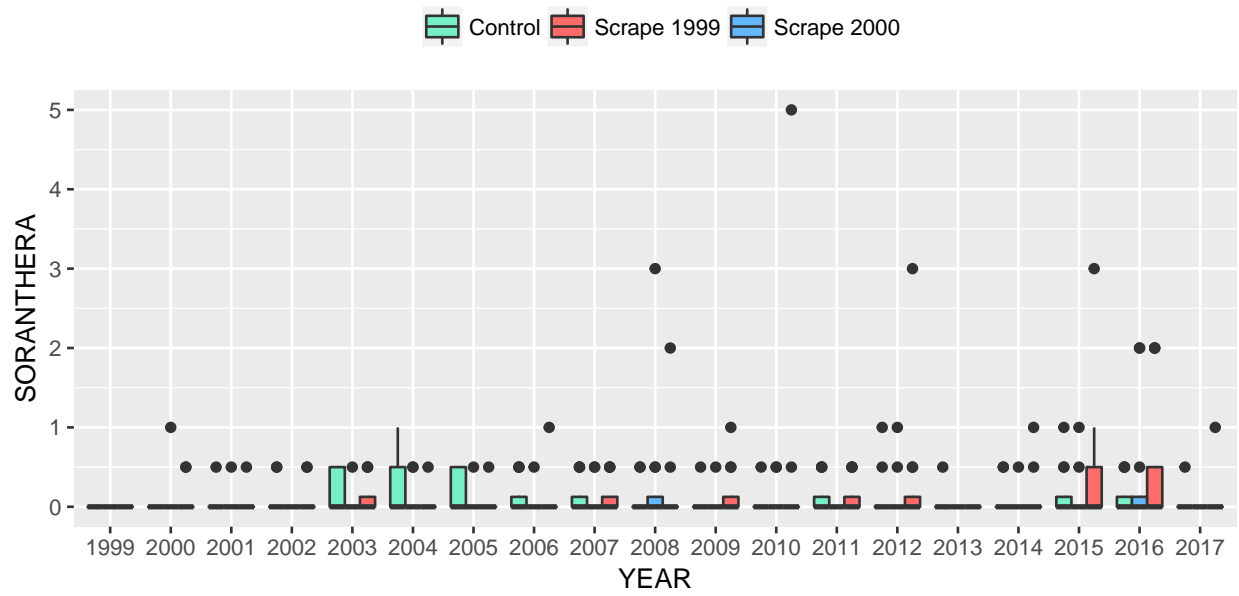
```
##
## [[50]]
```



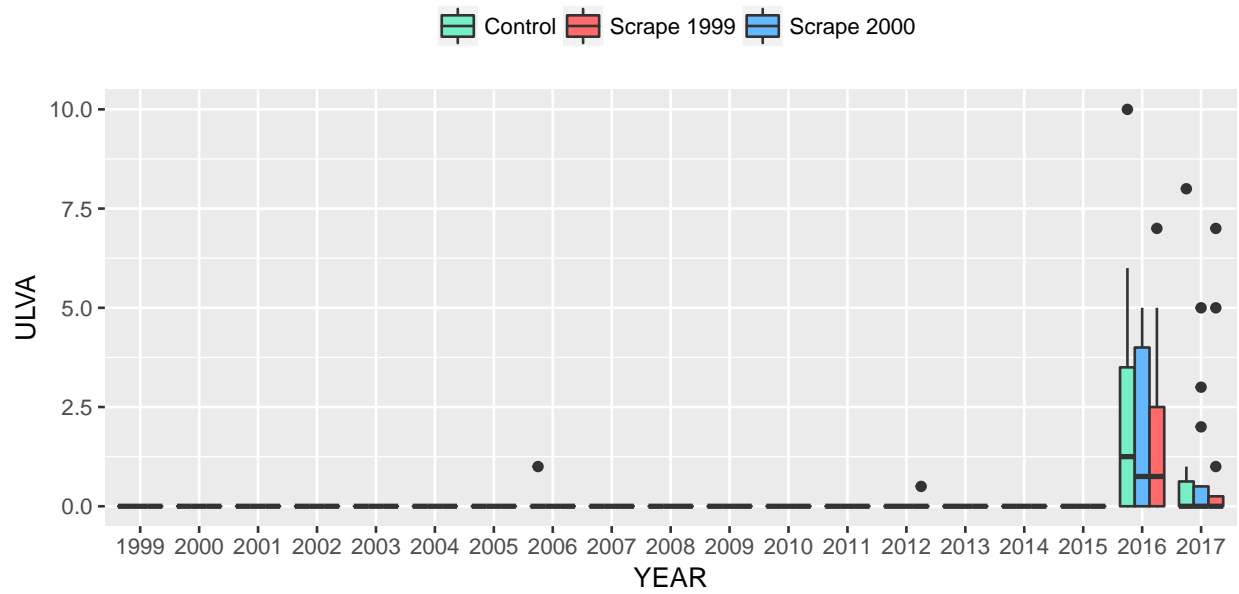
```
##
## [[51]]
```



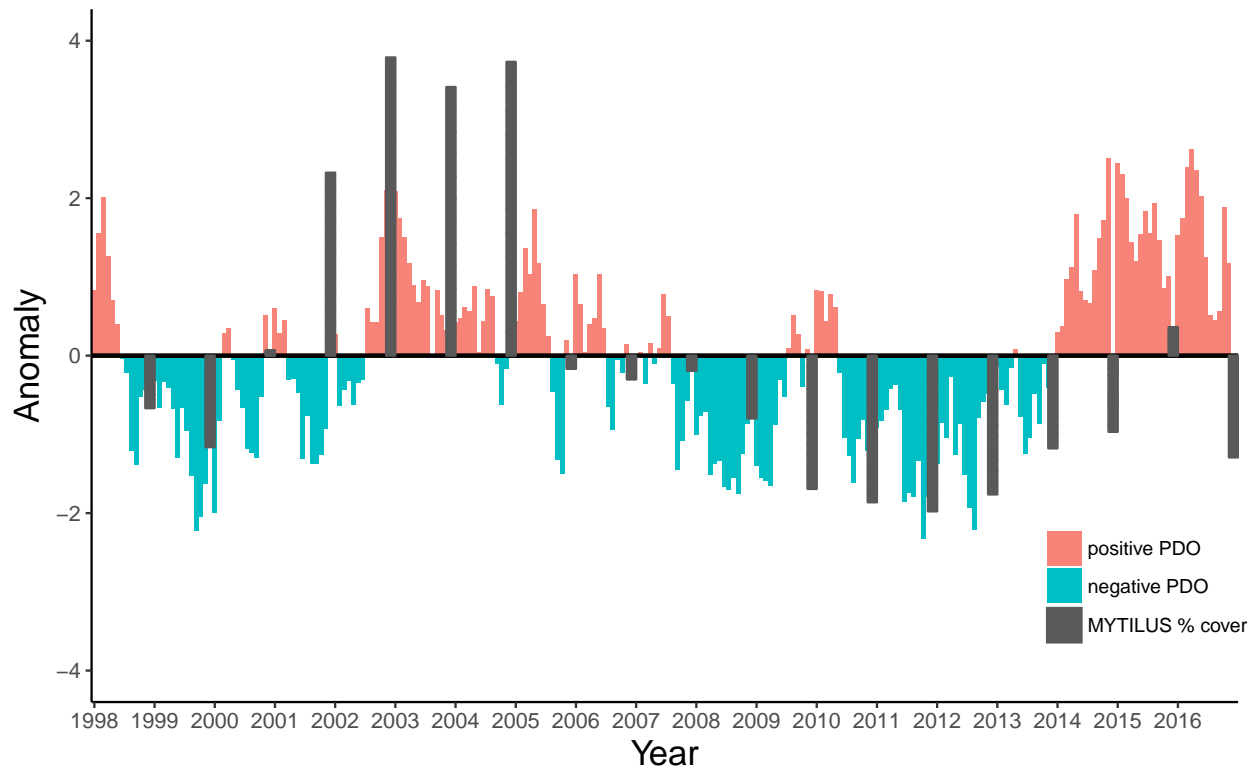
##  
## [[52]]

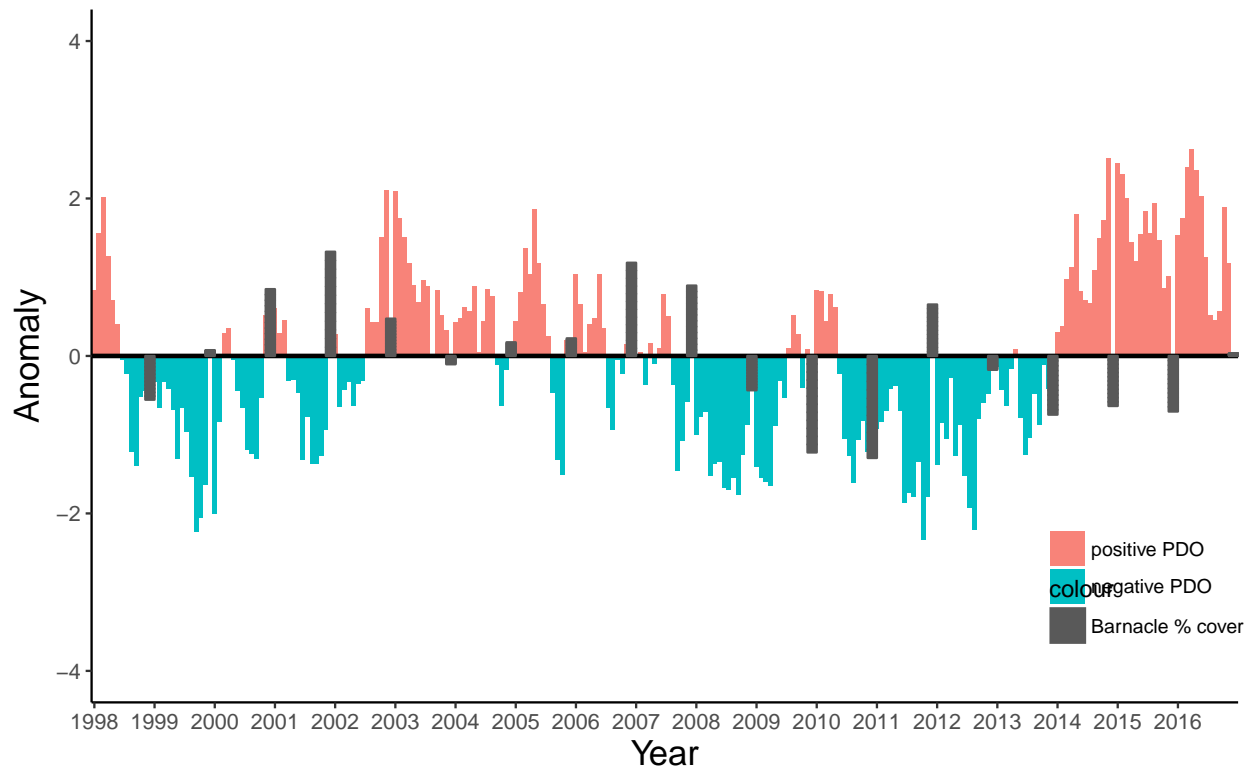
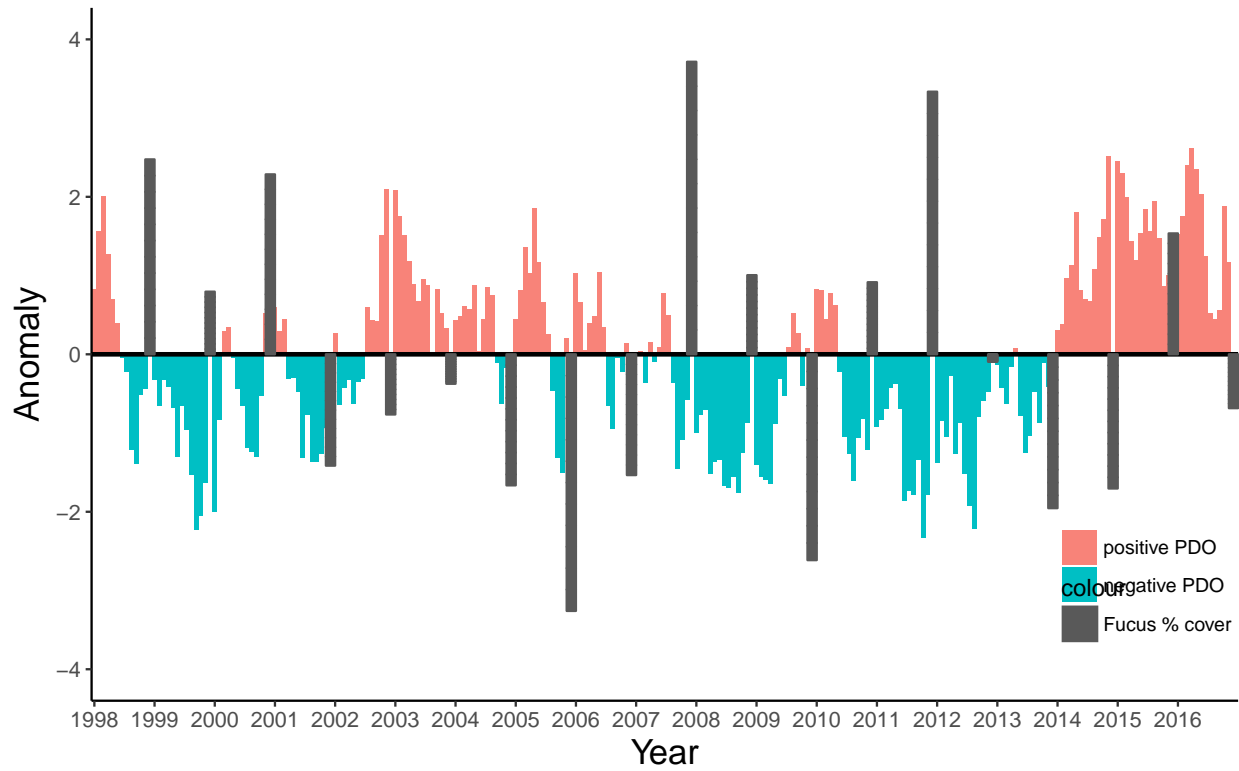


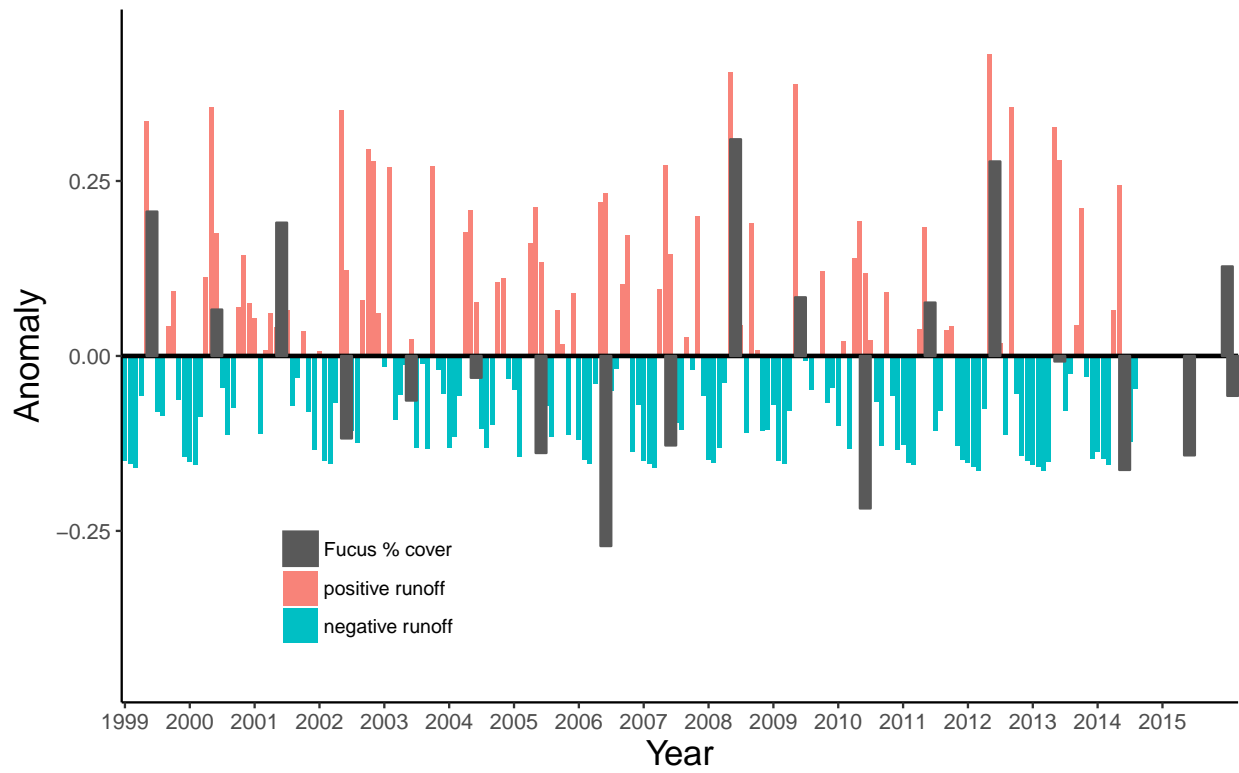
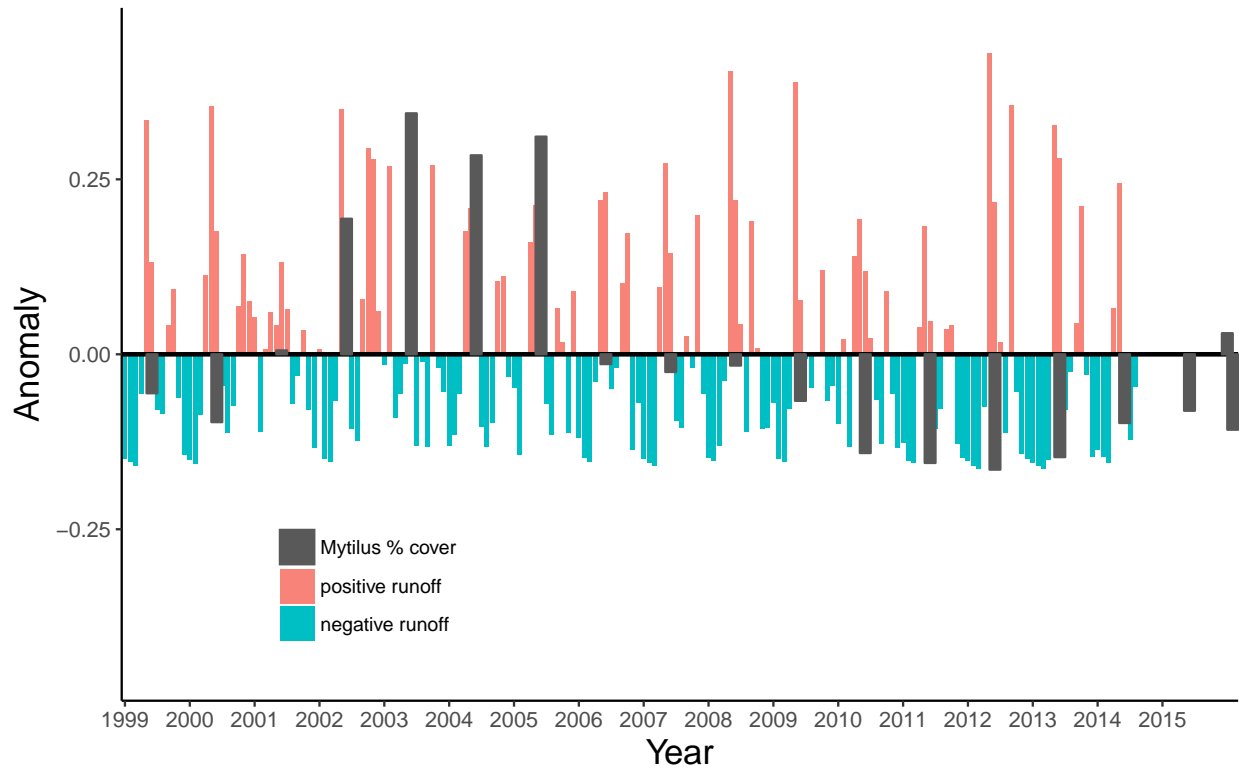
##  
## [[53]]

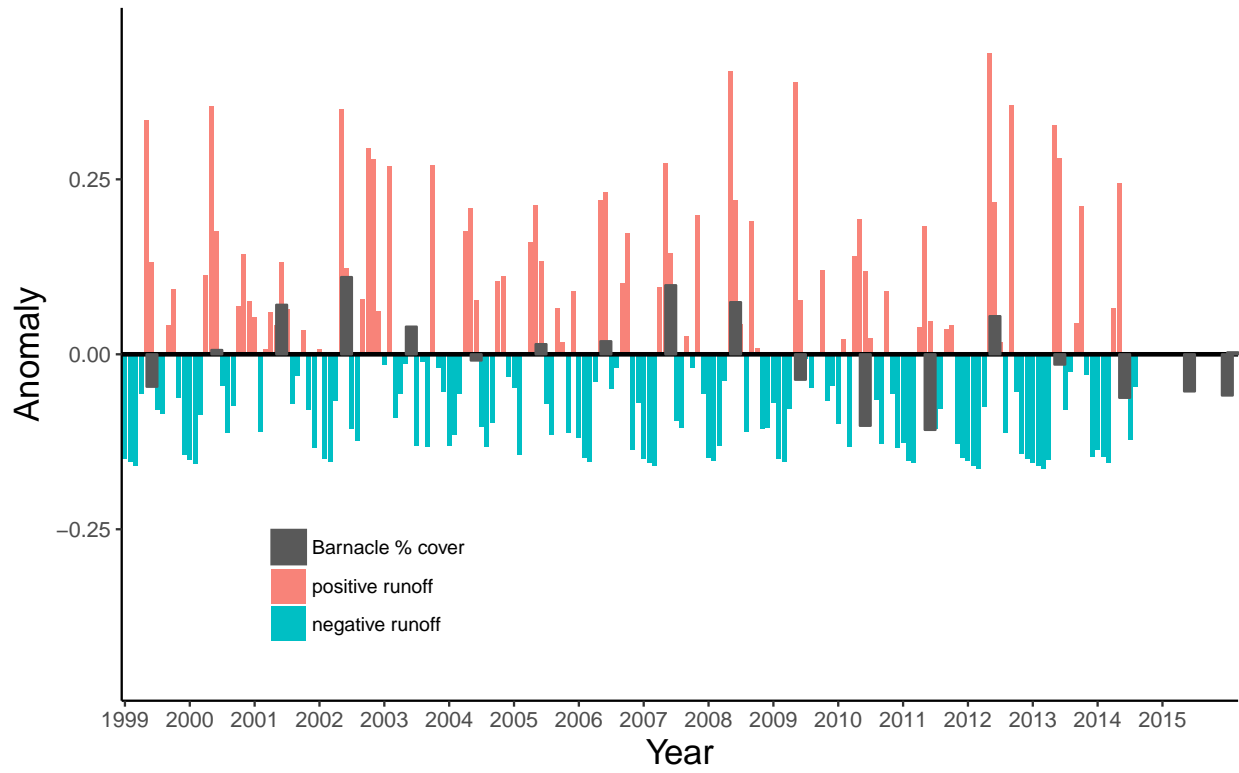


## Warning: Removed 1 rows containing missing values (geom\_col).

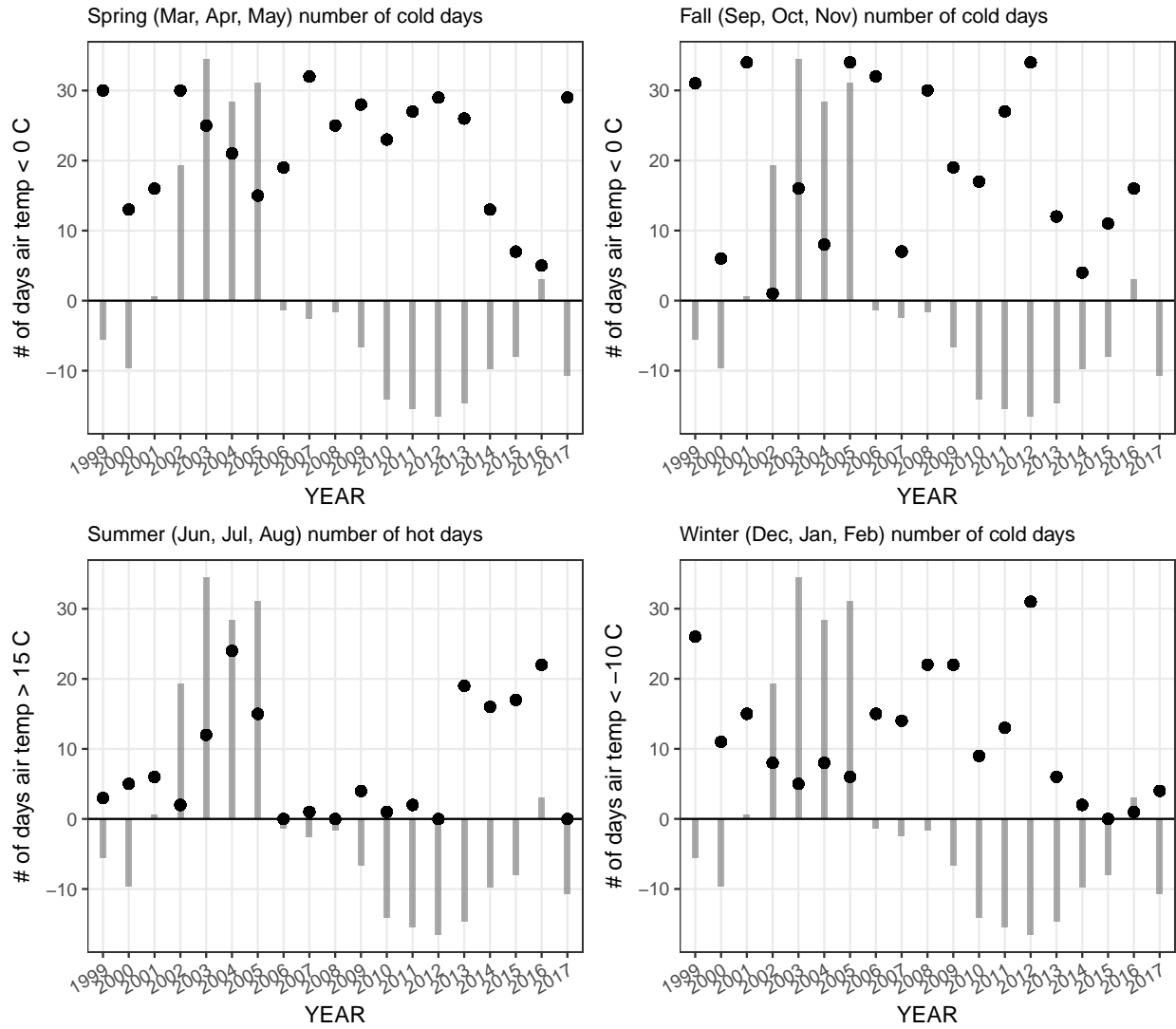




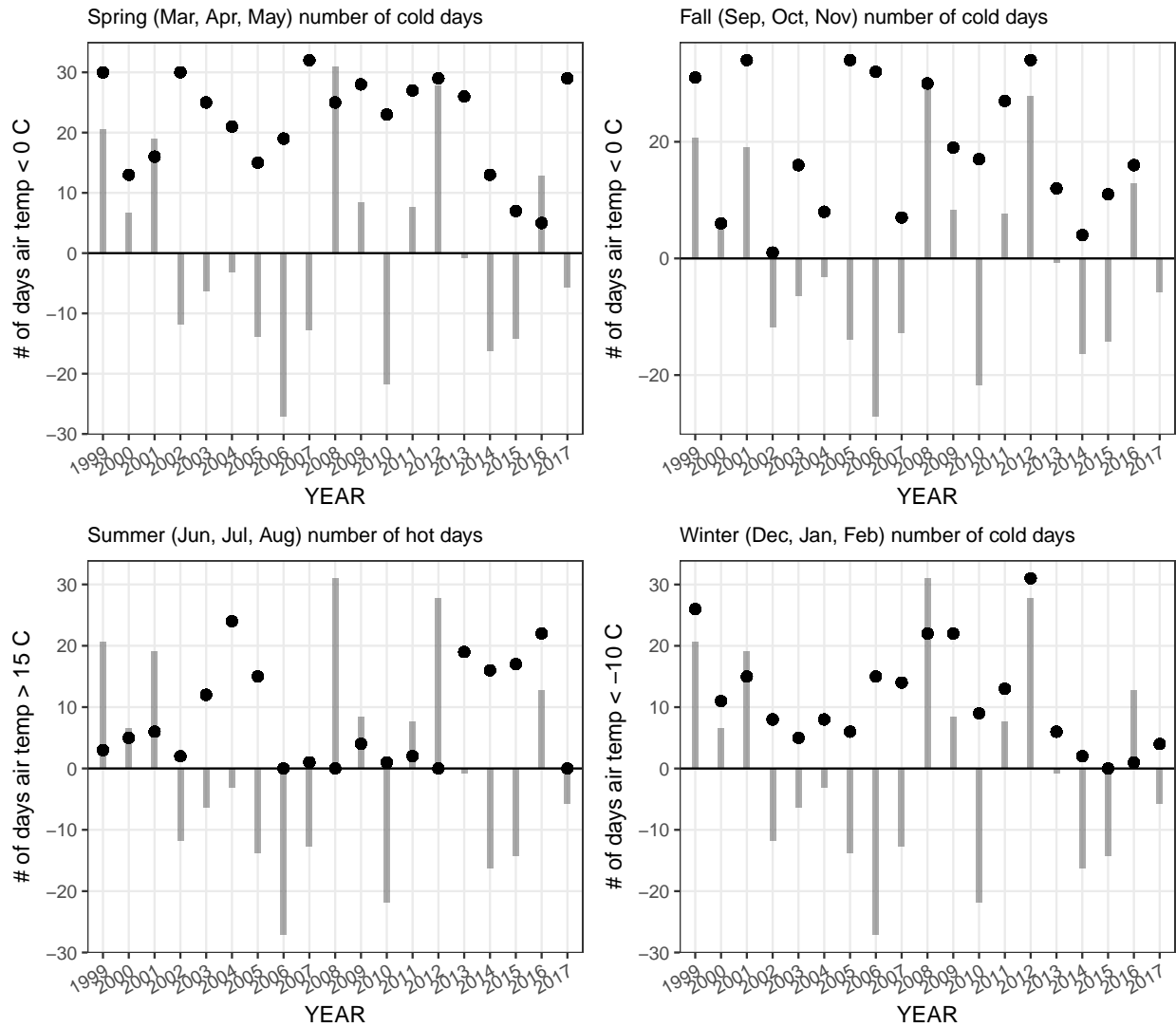




## Mytilus

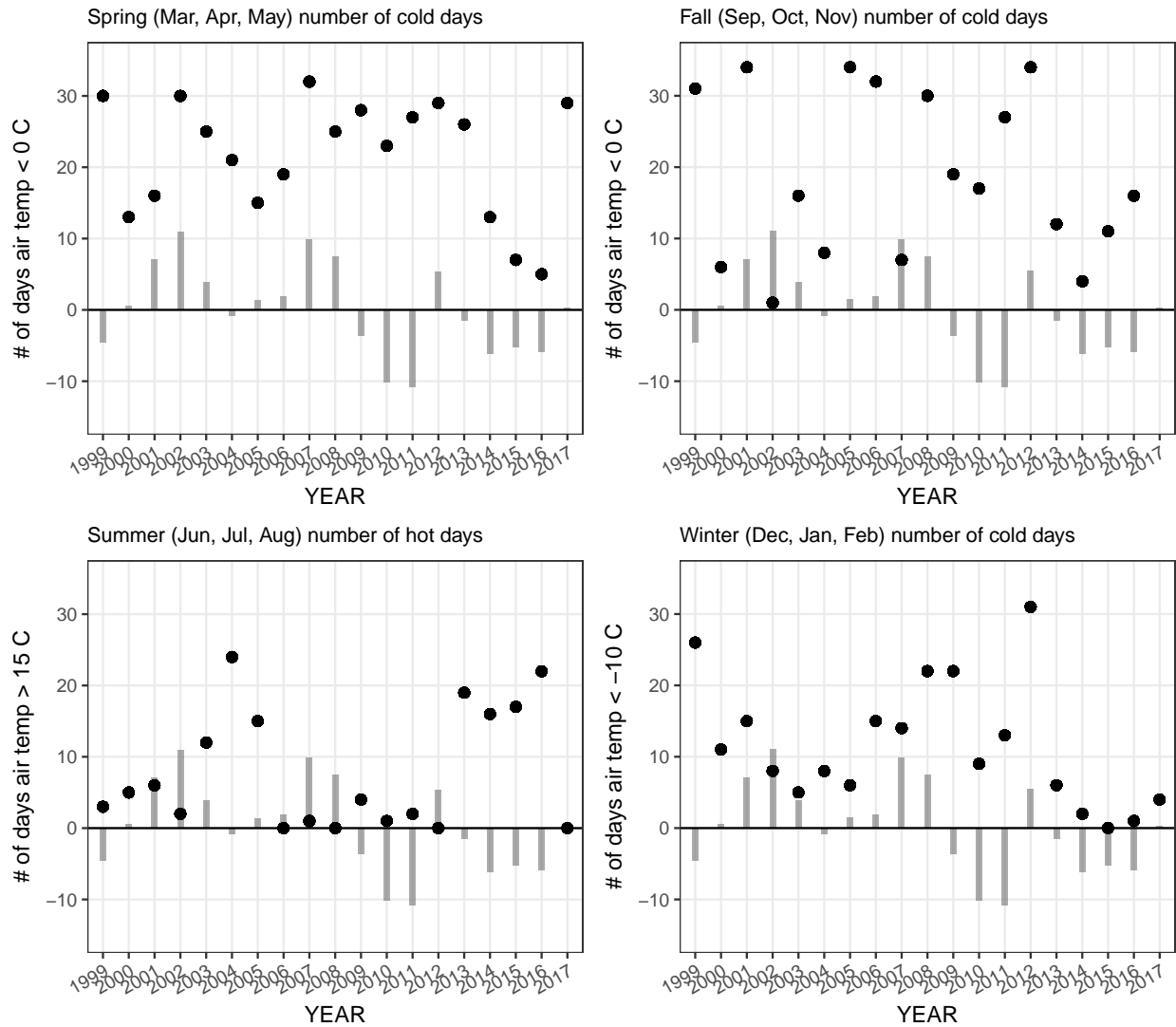


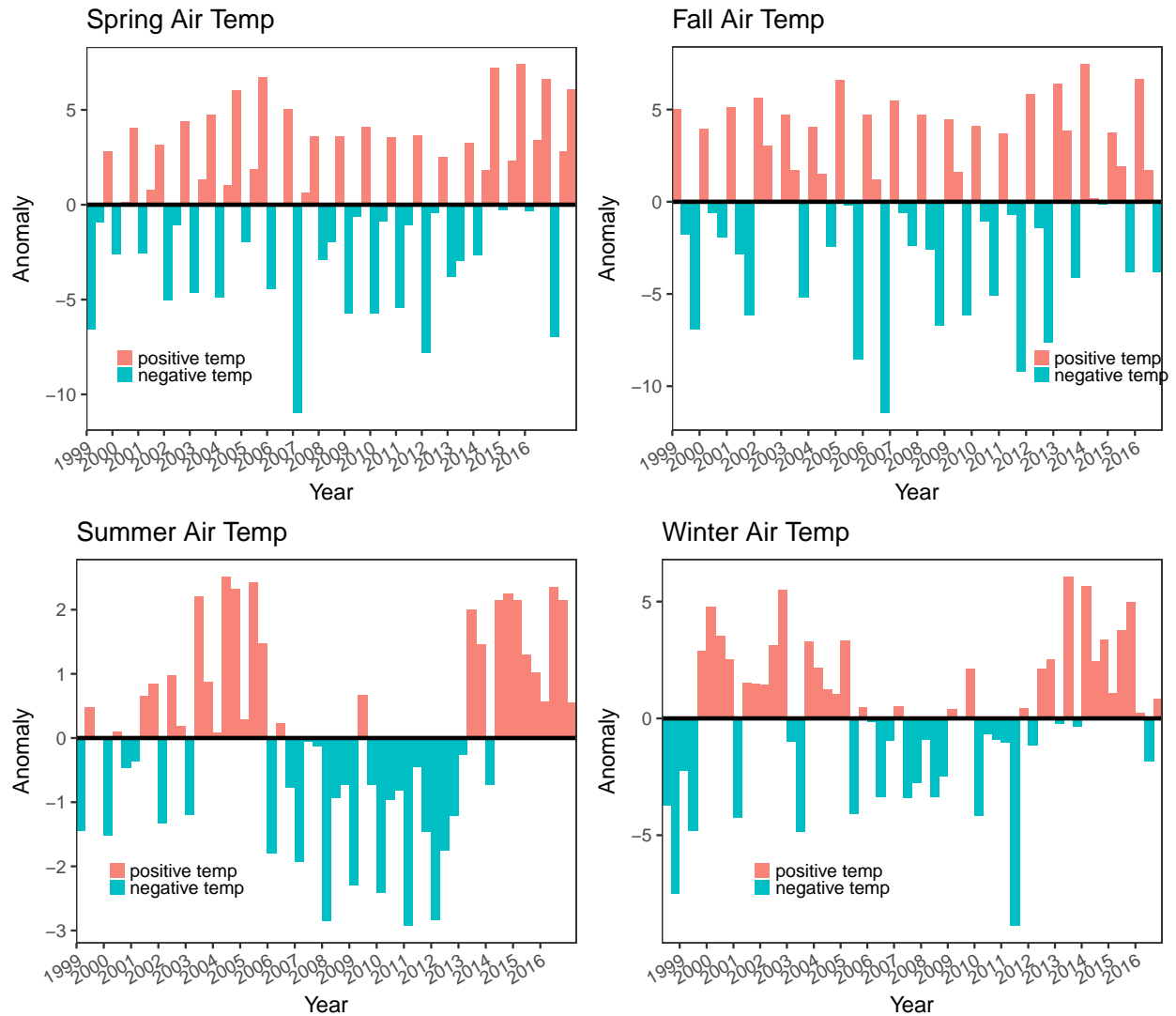
## Fucus



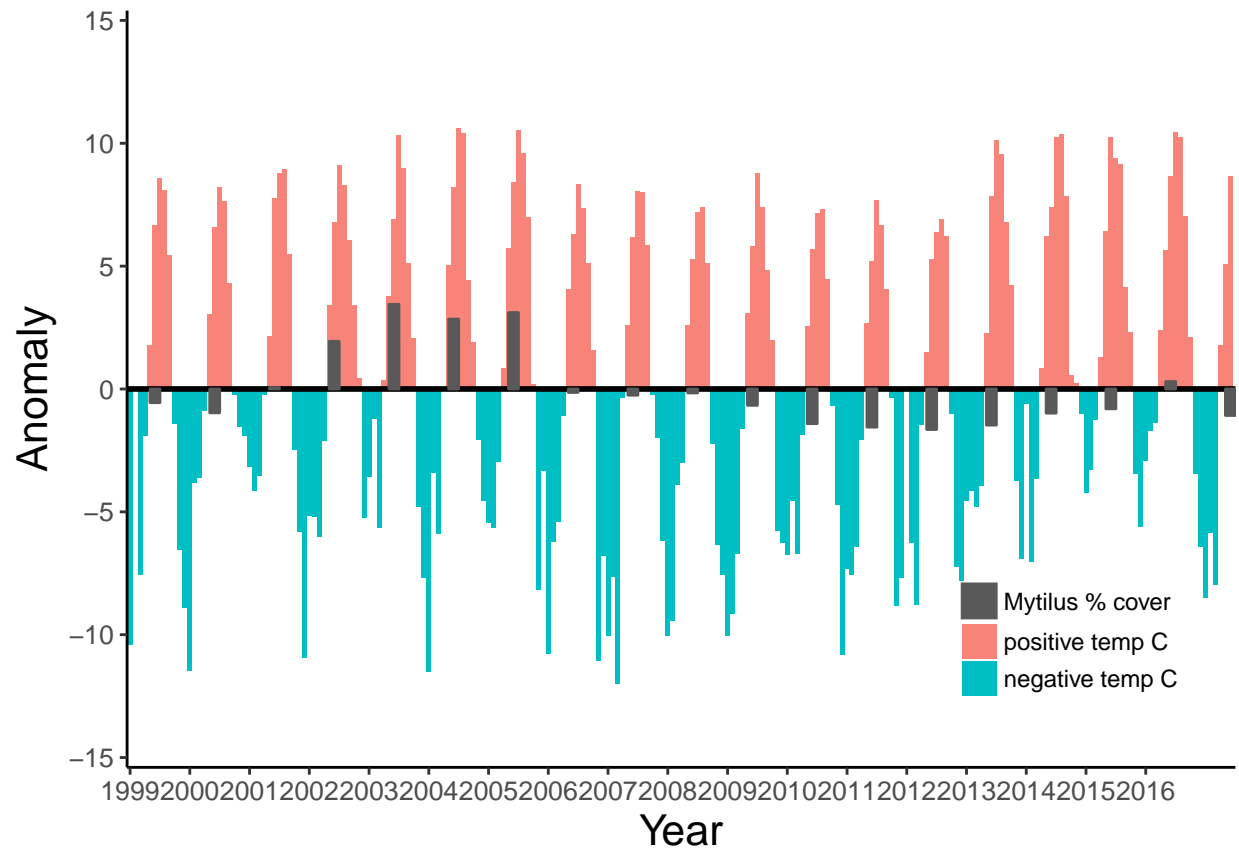


## Barnacles

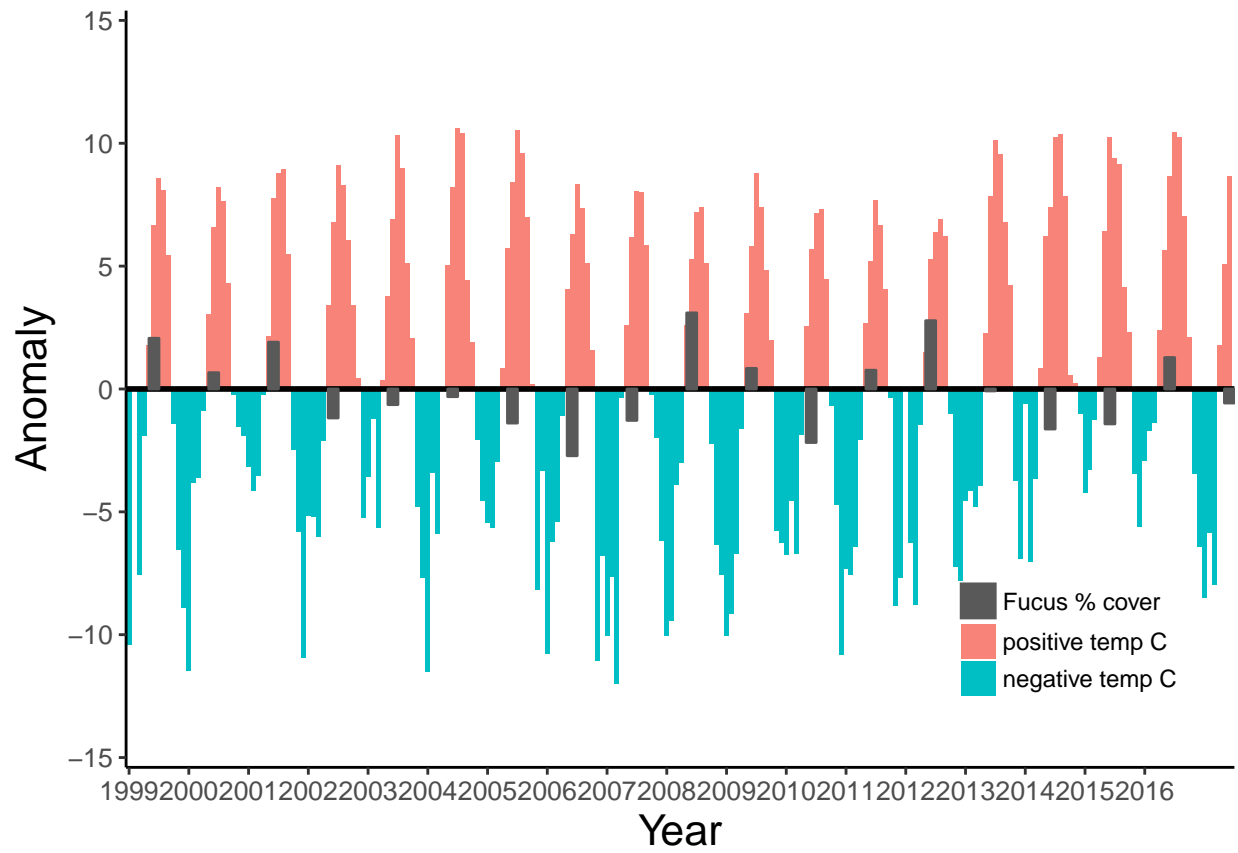




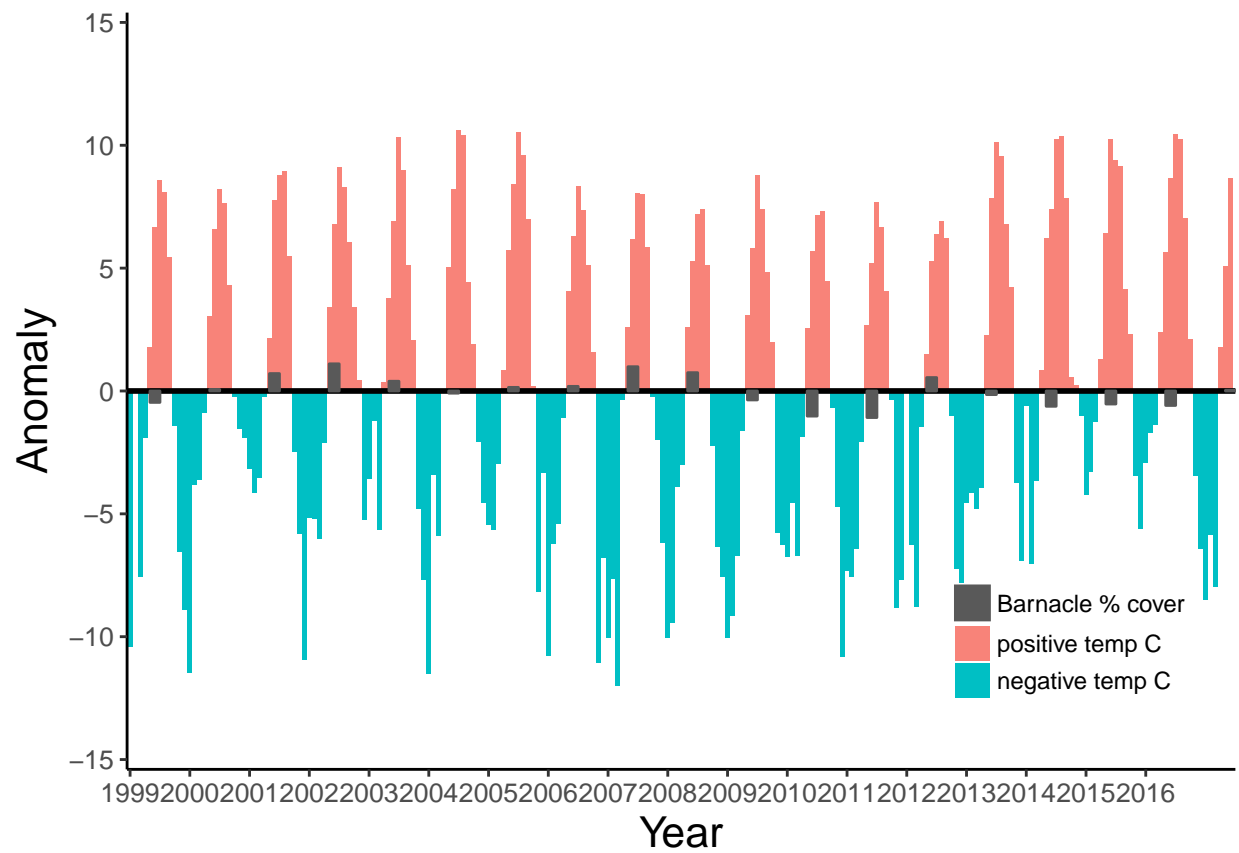
## Warning: Removed 2 rows containing missing values (position\_stack).



## Warning: Removed 2 rows containing missing values (position\_stack).

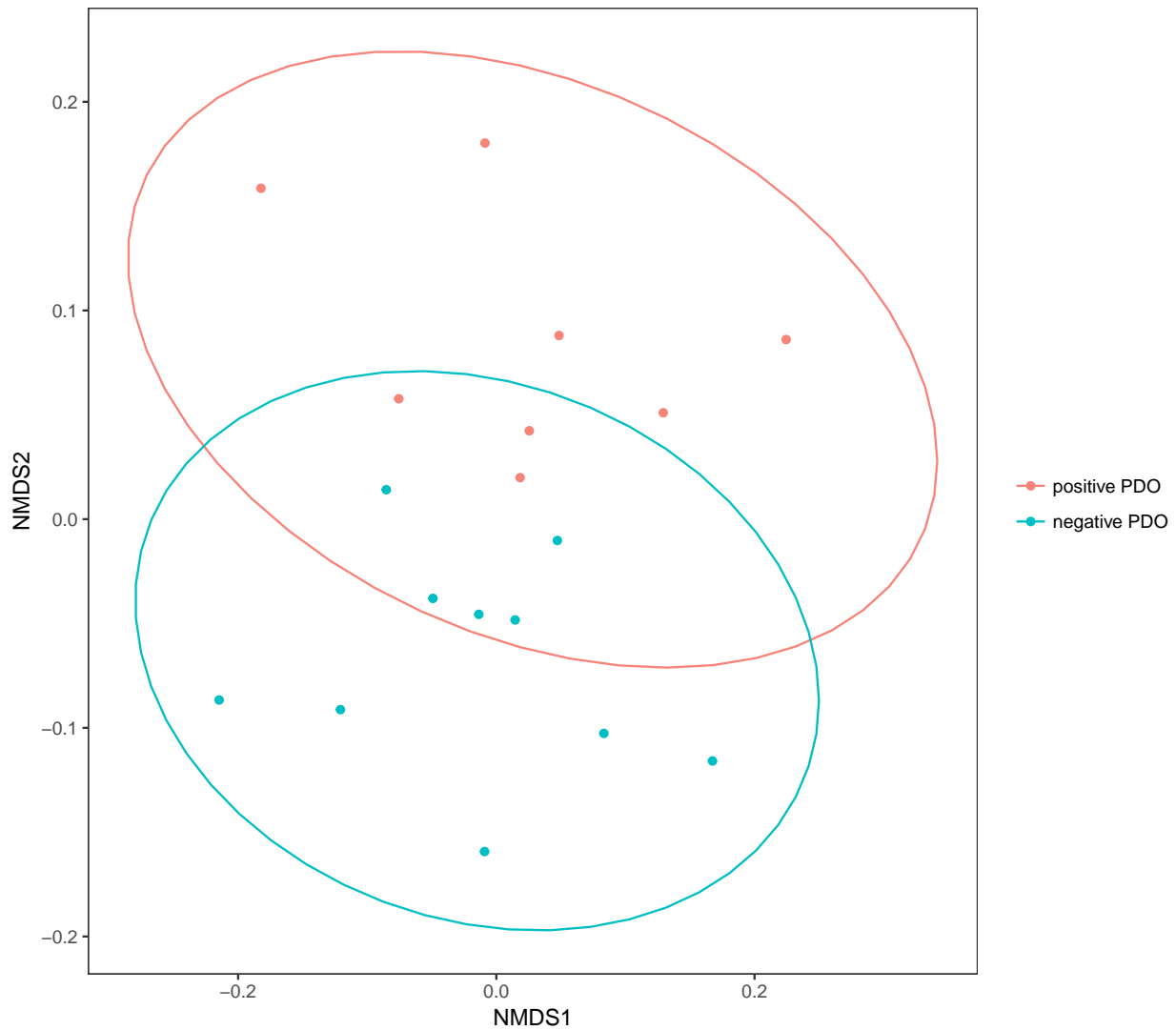


## Warning: Removed 2 rows containing missing values (position\_stack).



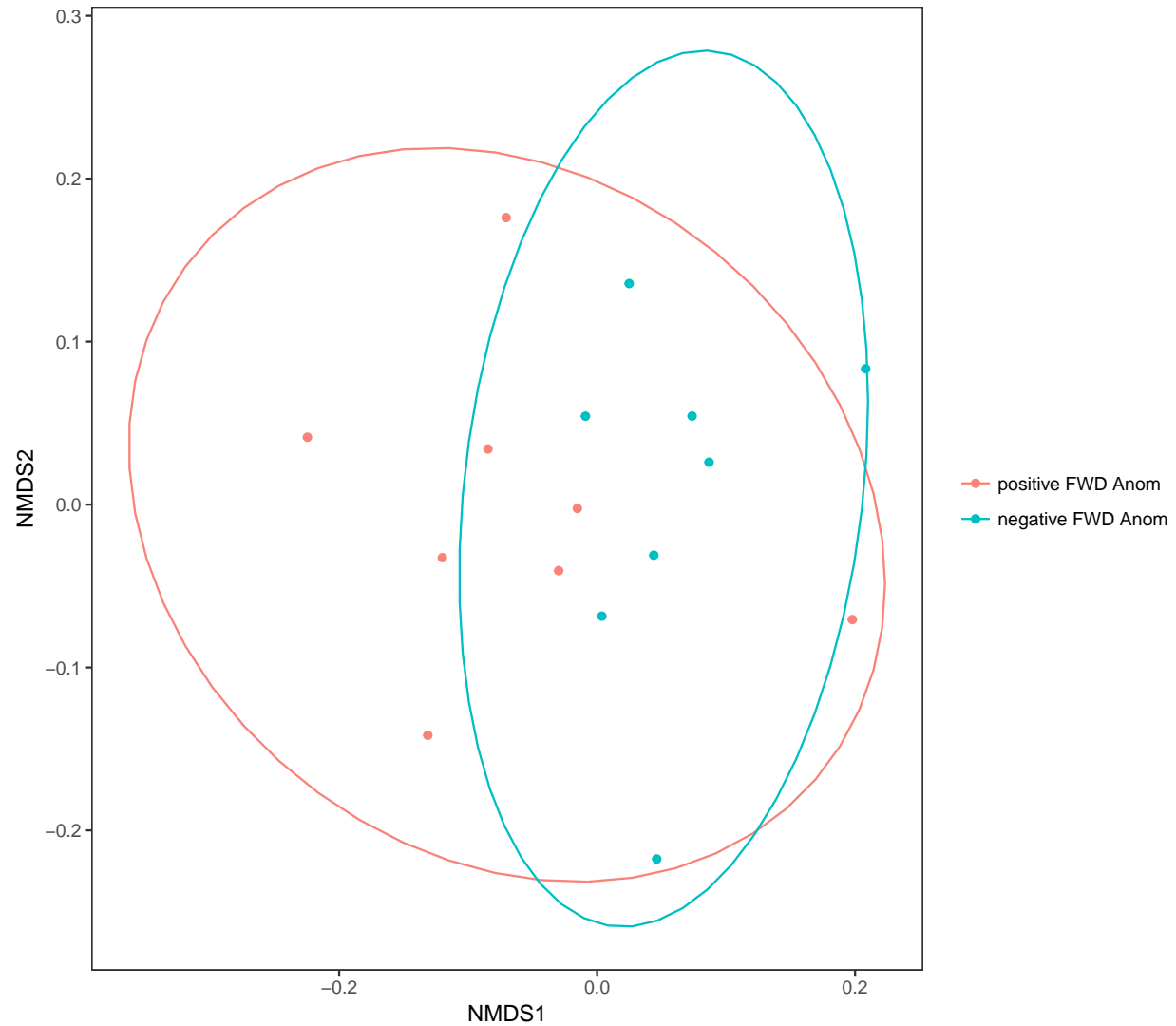
# NMDS Plots

## PDO



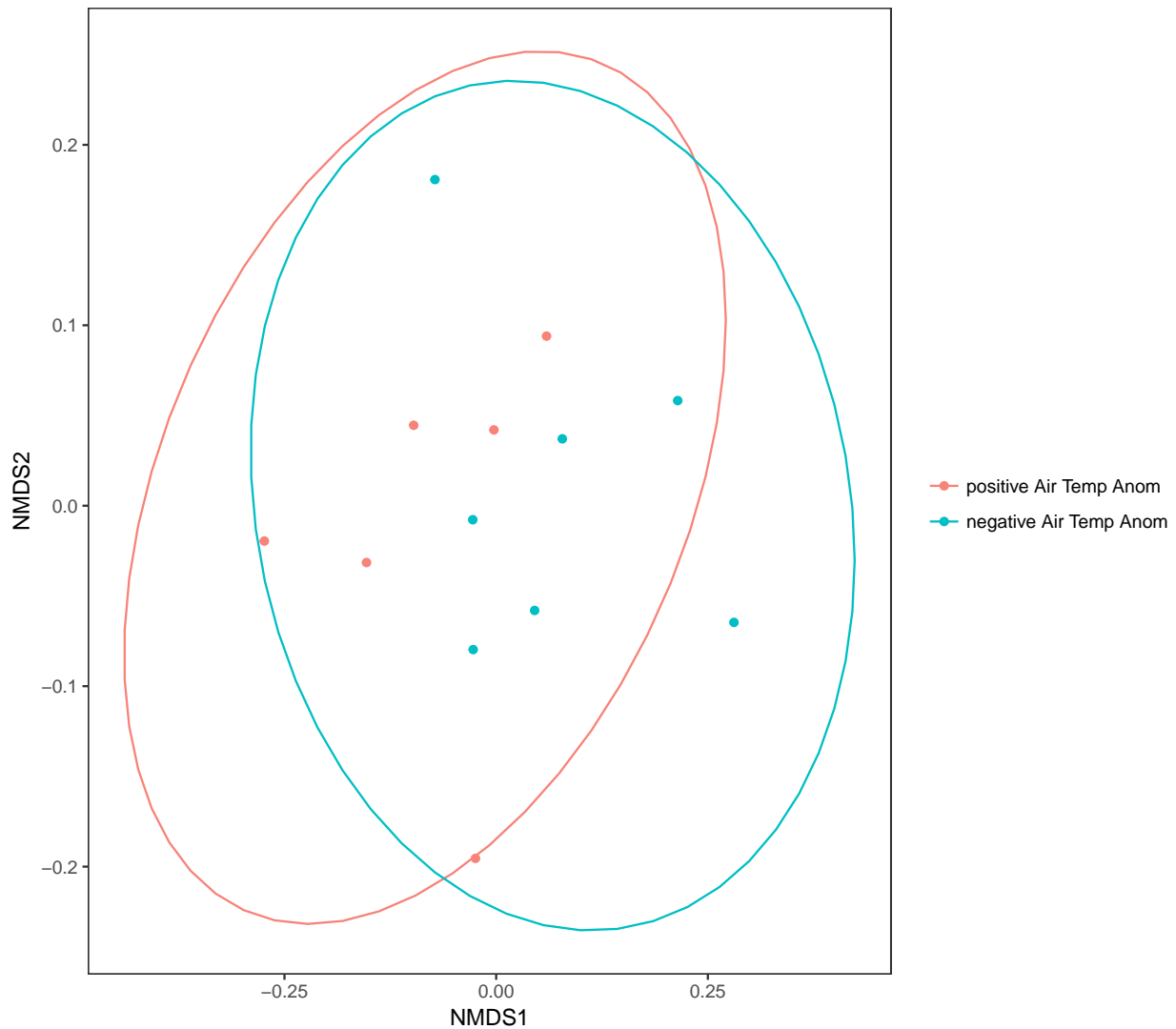
```
##
## Call:
## vegan::adonis(formula = sp_percov ~ PDO_anul_mn, data = pdo_treats,      permutations = 1000, method
##
## Permutation: free
## Number of permutations: 1000
##
## Terms added sequentially (first to last)
##
##           Df SumsOfSqs  MeanSqs F.Model    R2  Pr(>F)
## PDO_anul_mn  1   0.13244 0.132442  3.5615 0.18207 0.01299 *
## Residuals   16   0.59500 0.037187         0.81793
## Total       17   0.72744          1.00000
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

## Freshwater



```
##
## Call:
## vegan::adonis(formula = sp_percov2 ~ mean_yearly_discharge_m3s1,      data = fresh_treats, permutati
##
## Permutation: free
## Number of permutations: 1000
##
## Terms added sequentially (first to last)
##
##              Df SumsOfSqs  MeanSqs F.Model    R2  Pr(>F)
## mean_yearly_discharge_m3s1  1   0.10861 0.108610    2.645 0.1589 0.04995 *
## Residuals                14   0.57488 0.041063      0.8411
## Total                    15   0.68349      1.0000
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

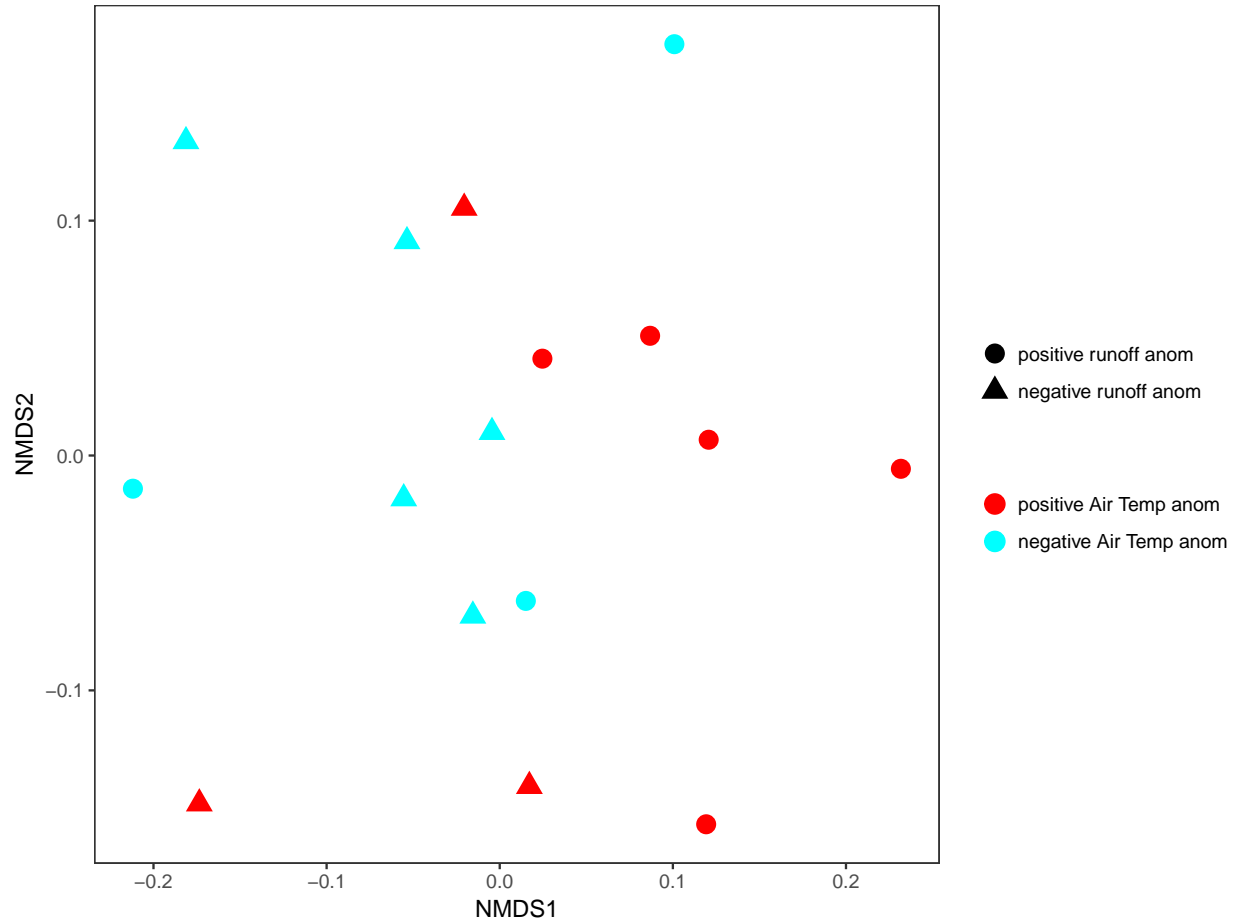
## Air Temp



```
##
## Call:
## vegan::adonis(formula = sp_percov3 ~ ATemp_YearMn, data = atemp_treats,      permutations = 1000, me
##
## Permutation: free
## Number of permutations: 1000
##
## Terms added sequentially (first to last)
##
##              Df SumsOfSqs  MeanSqs F.Model    R2  Pr(>F)
## ATemp_YearMn  1   0.11104 0.111036  2.5455 0.18792 0.04895 *
## Residuals    11   0.47983 0.043621          0.81208
## Total        12   0.59087          1.00000
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

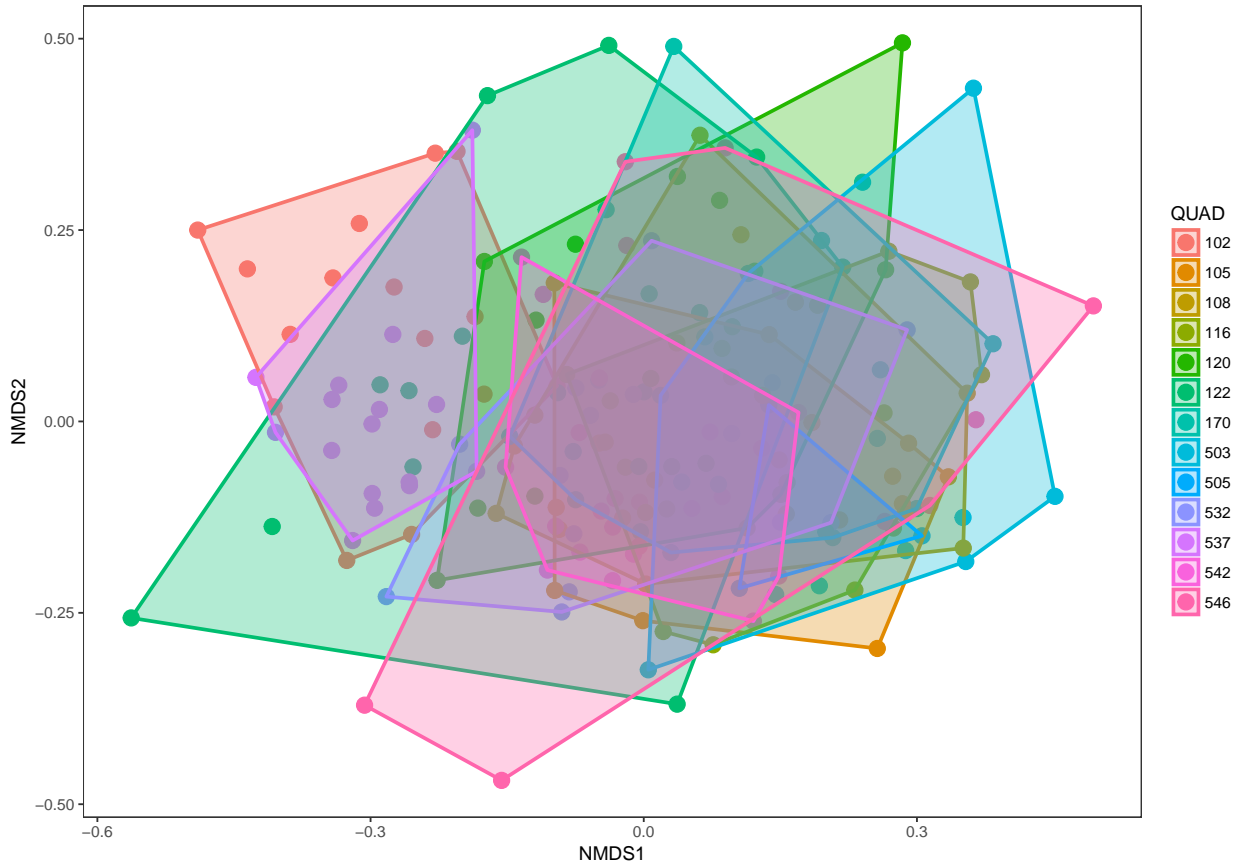


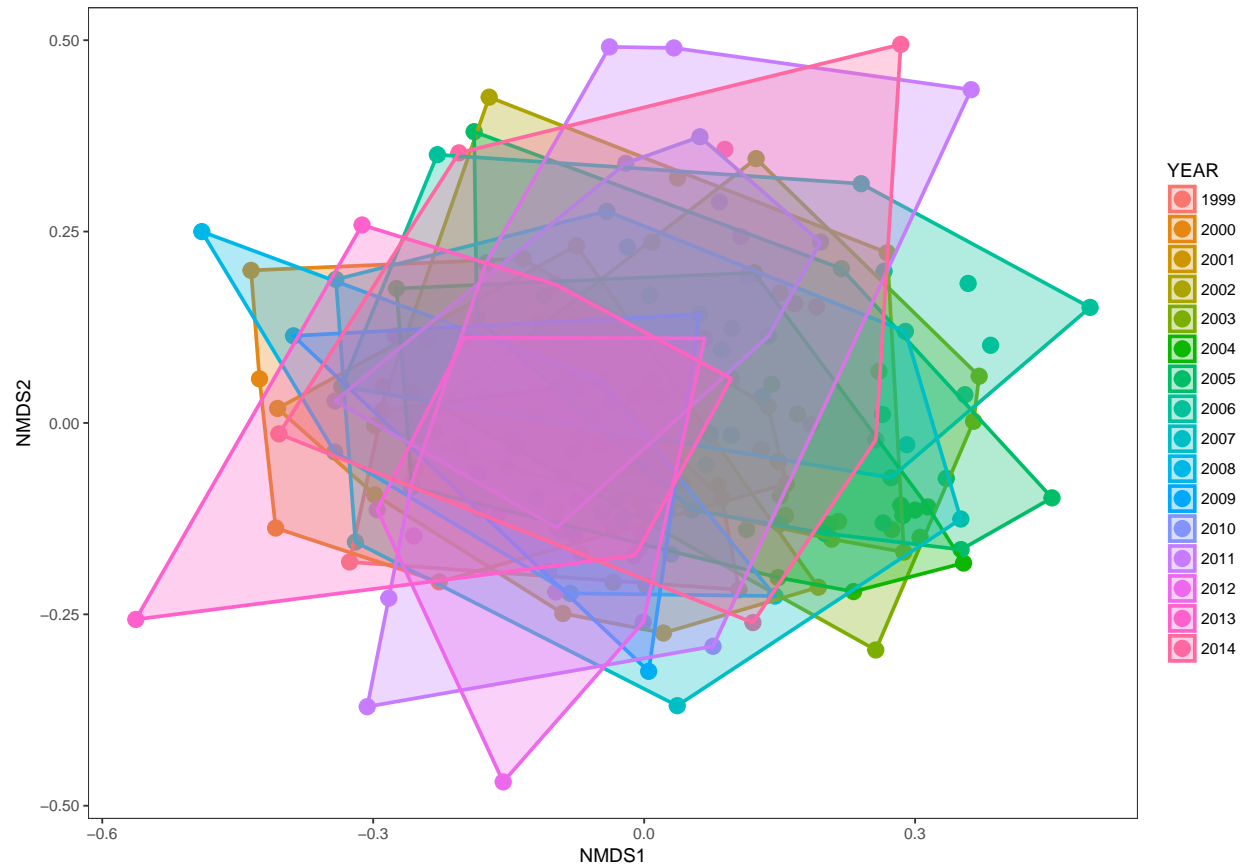
# All env. variables



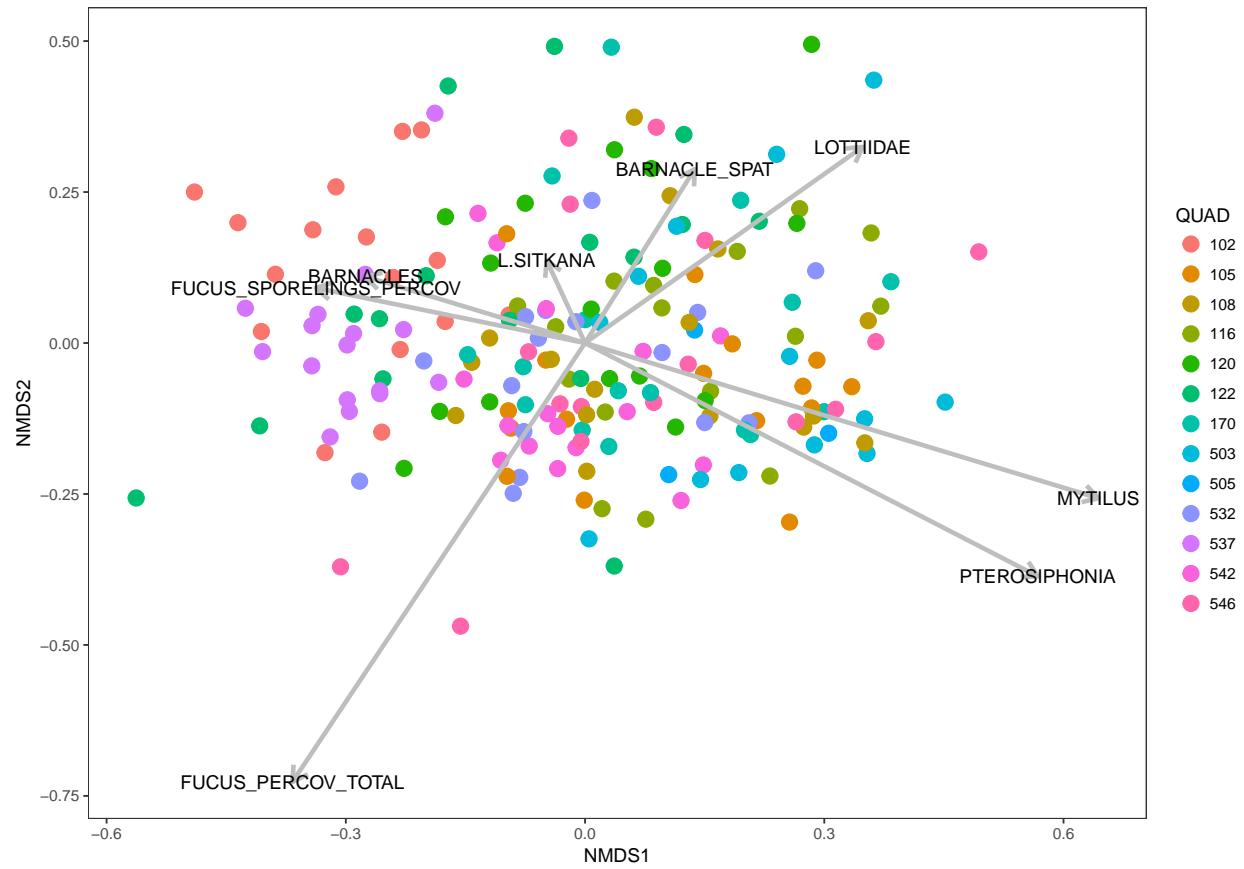
```
##
## Call:
## vegan::adonis(formula = sp_percov4 ~ ATemp_YearMn + mn_yr_discharge,      data = all_treats, permuta
##
## Permutation: free
## Number of permutations: 1000
##
## Terms added sequentially (first to last)
##
##              Df SumsOfSqs  MeanSqs F.Model    R2  Pr(>F)
## ATemp_YearMn   1  0.13125 0.131246  3.6168 0.19202 0.008991 **
## mn_yr_discharge 1  0.08050 0.080499  2.2183 0.11778 0.078921 .
## Residuals     13  0.47175 0.036288          0.69020
## Total         15  0.68349          1.00000
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

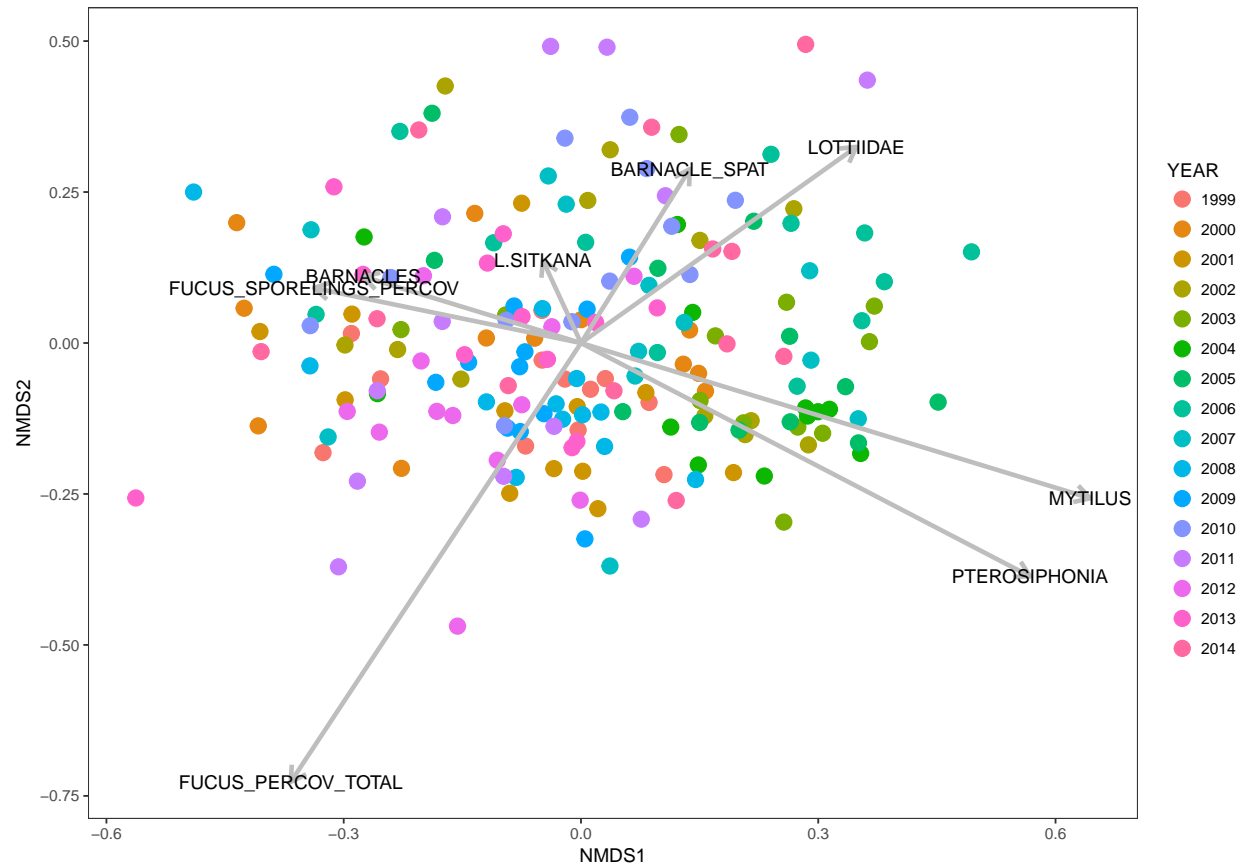
Biological NMDS



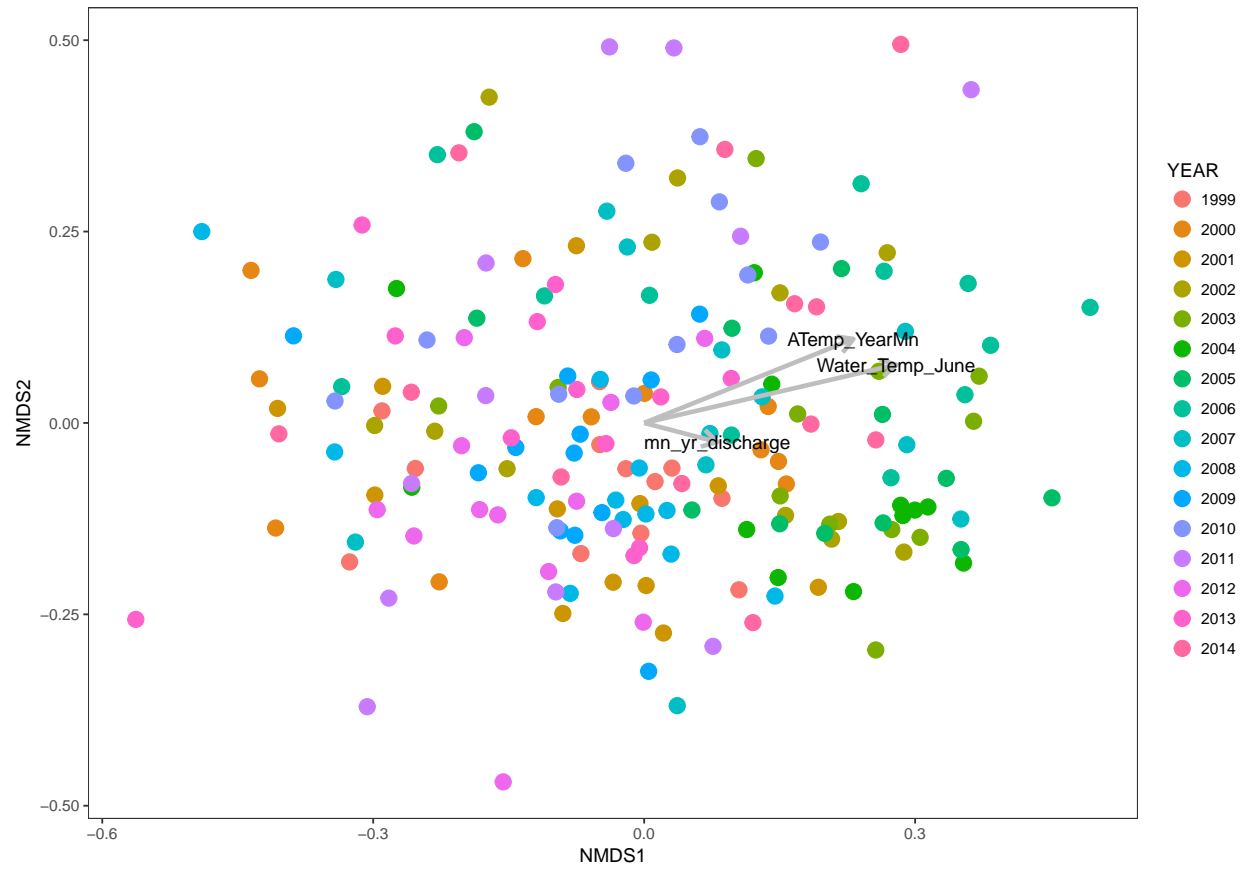


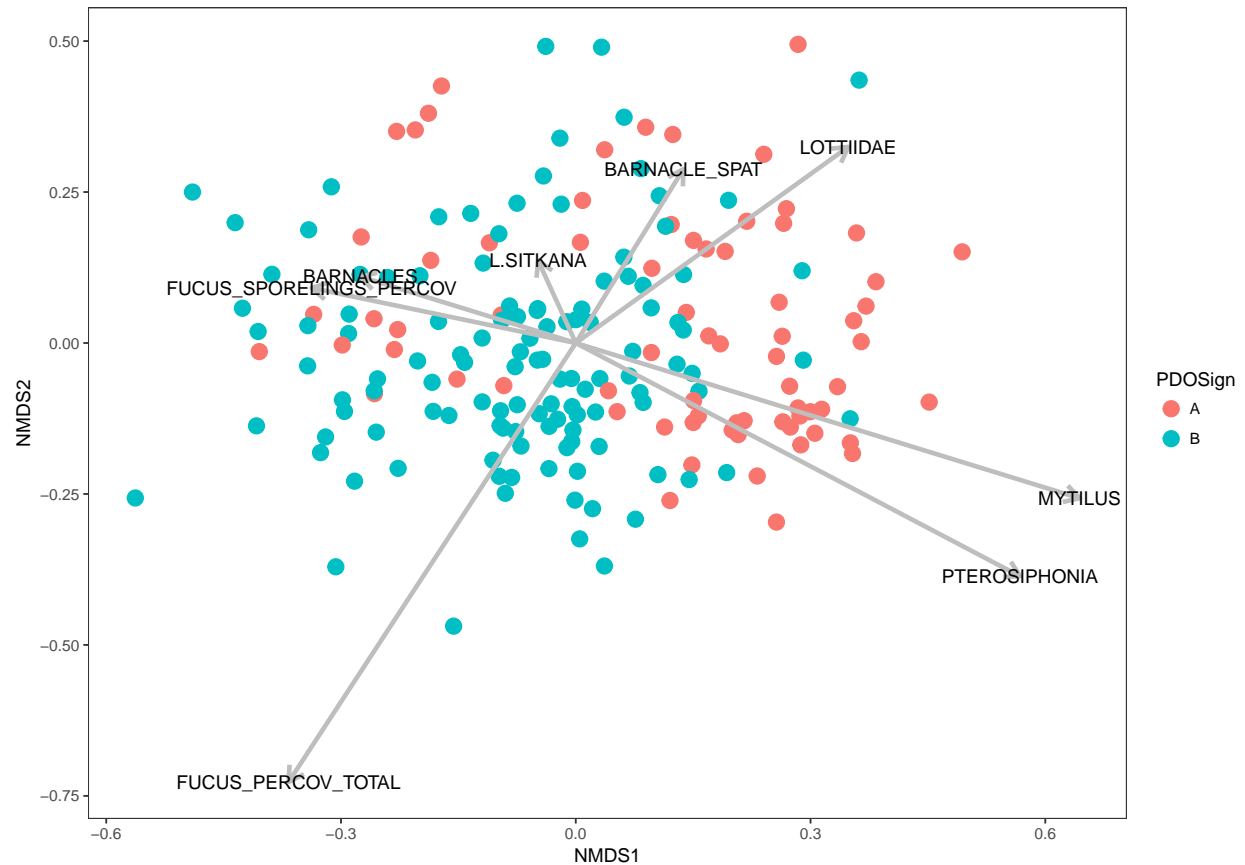
```
##
## ***VECTORS
##
##          MDS1      MDS2      r2    Pr(>r)
## FUCUS_PERCOV_TOTAL    -0.45069 -0.89268 0.6629 0.000999 ***
## BARNACLES             -0.92864  0.37098 0.0877 0.000999 ***
## MYTILUS                0.92871 -0.37081 0.4805 0.000999 ***
## PTEROSIPHONIA          0.82674 -0.56259 0.4717 0.000999 ***
## BARNACLE_SPAT          0.43105  0.90233 0.1018 0.000999 ***
## FUCUS_SPORELINGS_PERCOV -0.96541  0.26072 0.1222 0.000999 ***
## LOTTIIDAE              0.73134  0.68201 0.2266 0.000999 ***
## L.SITKANA              -0.33243  0.94313 0.0209 0.123876
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## Permutation: free
## Number of permutations: 1000
```





```
##
## ***VECTORS
##
##          MDS1      MDS2      r2    Pr(>r)
## mn_yr_discharge  0.95569 -0.29437 0.0072 0.493506
## ATemp_YearMn     0.90376  0.42804 0.0657 0.001998 **
## Water_Temp_June  0.96471  0.26333 0.0837 0.000999 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## Permutation: free
## Number of permutations: 1000
```





```
##
## Call:
## vegan::adonis(formula = sp_percov5 ~ ATemp_YearMn * mn_yr_discharge *      Water_Temp_June, data = a
##
## Permutation: free
## Number of permutations: 1000
##
## Terms added sequentially (first to last)
##
##
```

	Df	SumsOfSqs	MeanSqs	F.Model
ATemp_YearMn	1	0.4967	0.49673	6.4060
mn_yr_discharge	1	0.3659	0.36587	4.7184
Water_Temp_June	1	0.2328	0.23276	3.0018
ATemp_YearMn:mn_yr_discharge	1	0.1418	0.14179	1.8286
ATemp_YearMn:Water_Temp_June	1	0.3122	0.31220	4.0263
mn_yr_discharge:Water_Temp_June	1	0.1262	0.12619	1.6274
ATemp_YearMn:mn_yr_discharge:Water_Temp_June	1	0.0207	0.02067	0.2666
Residuals	184	14.2676	0.07754	
Total	191	15.9638		

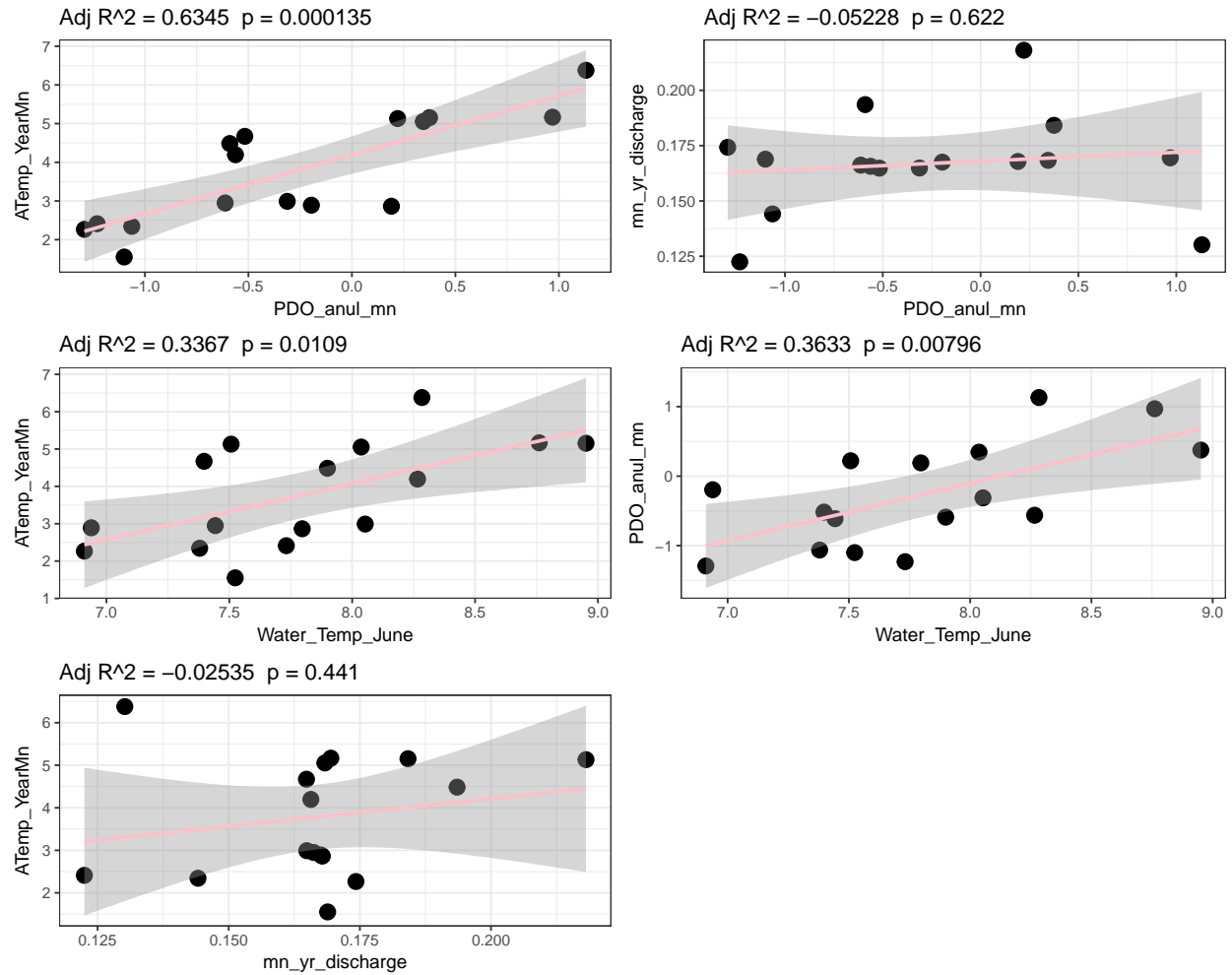
```
##
##
```

	R2	Pr(>F)
ATemp_YearMn	0.03112	0.000999 ***
mn_yr_discharge	0.02292	0.001998 **
Water_Temp_June	0.01458	0.020979 *
ATemp_YearMn:mn_yr_discharge	0.00888	0.138861
ATemp_YearMn:Water_Temp_June	0.01956	0.005994 **
mn_yr_discharge:Water_Temp_June	0.00790	0.181818

```
##
```

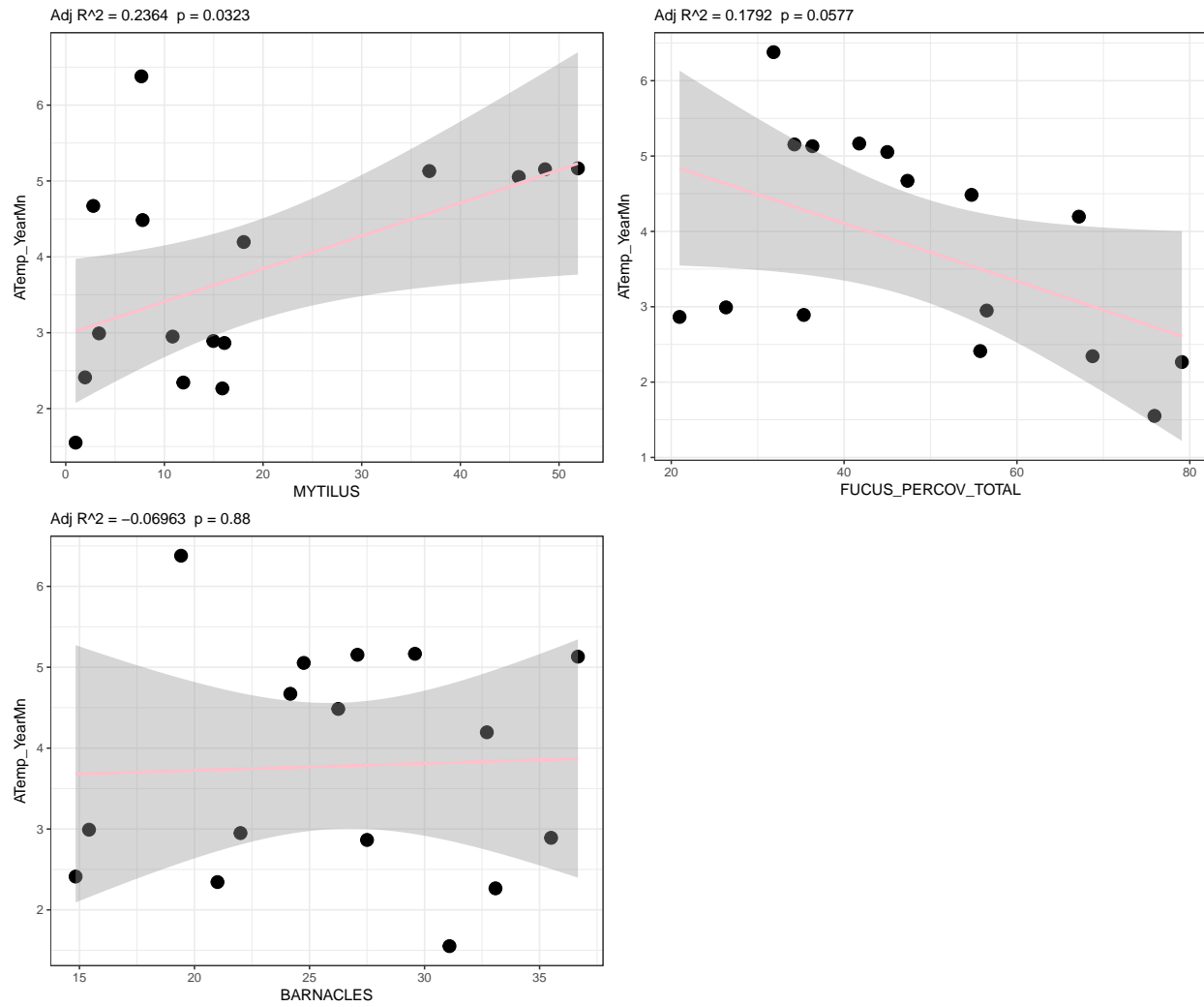
```
## ATemp_YearMn:mn_yr_discharge:Water_Temp_June 0.00129 0.894106
## Residuals                                0.89375
## Total                                    1.00000
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

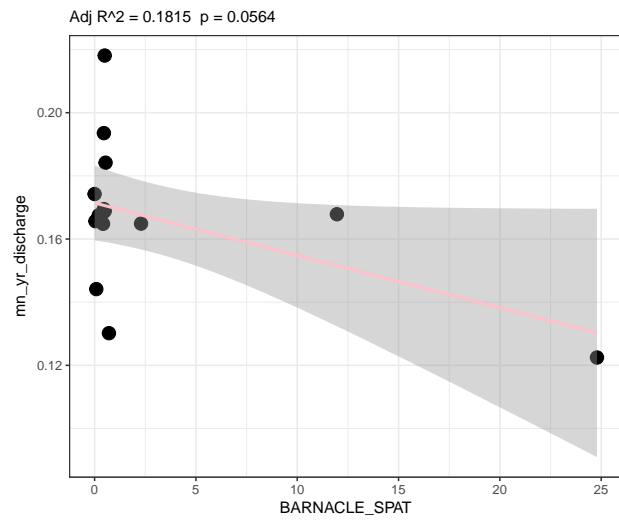
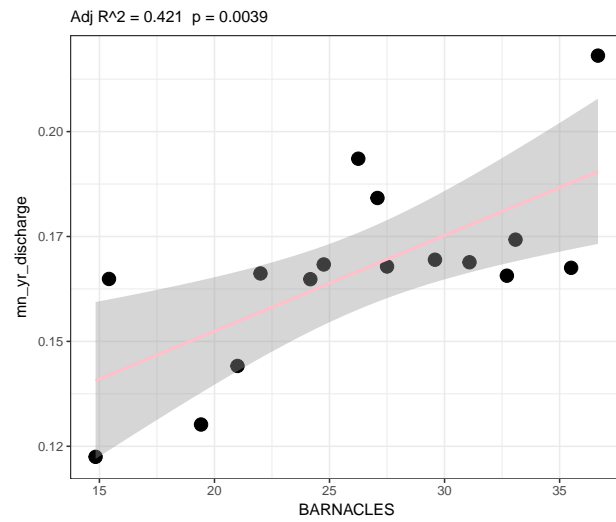
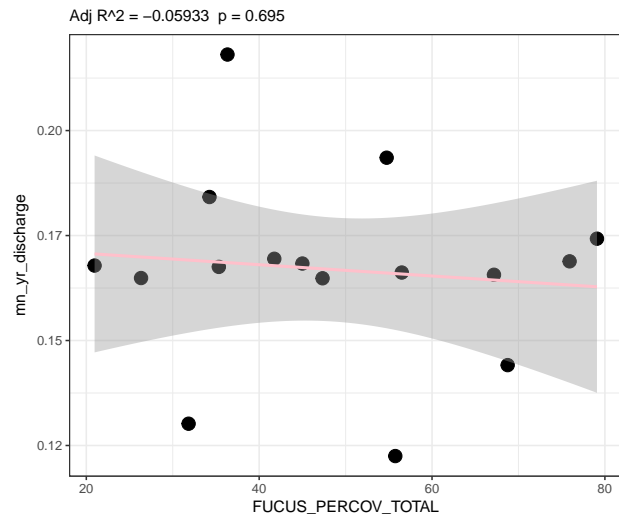
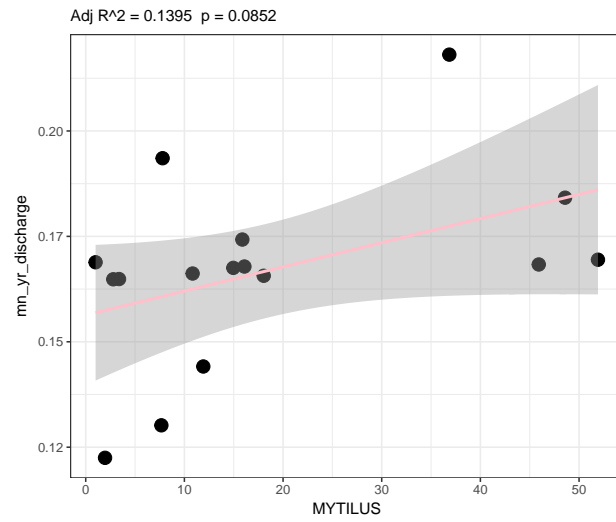
### Correlations between env. variables

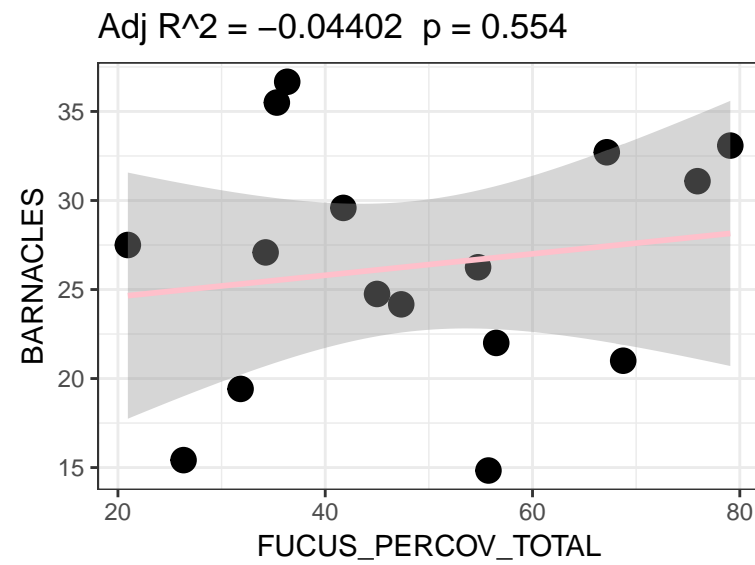
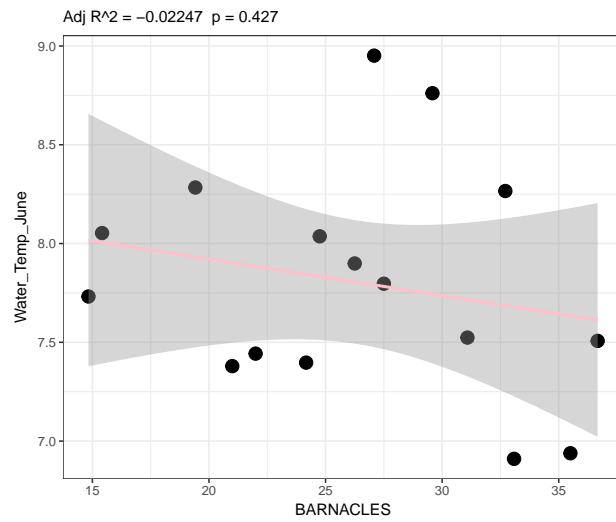
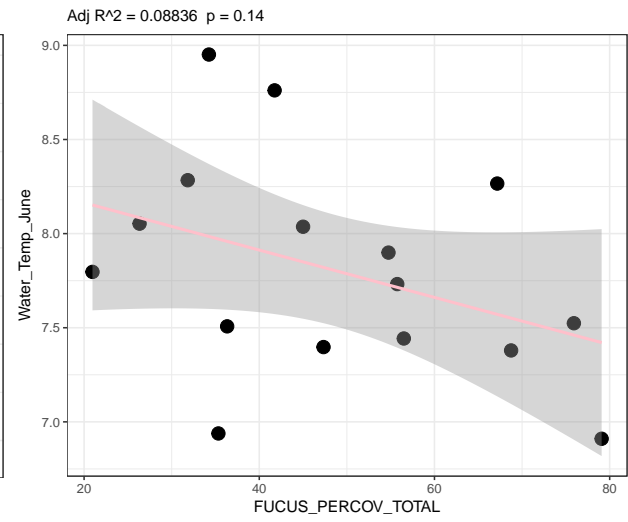
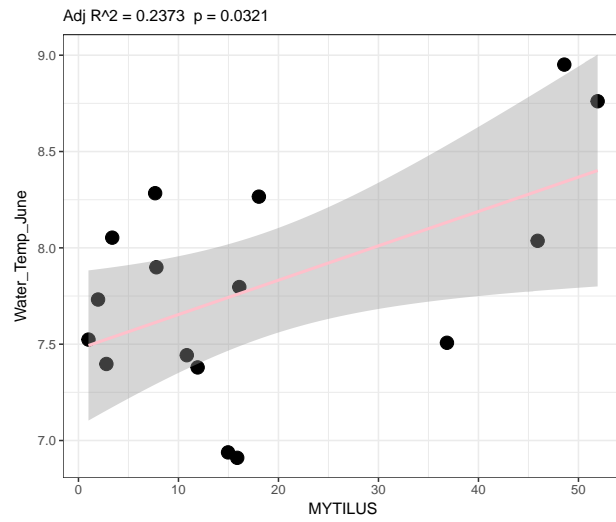




## Correlations between other variables







## Looking at lagged June water temp

