BIOST 79 Figures

Gabby Lopez

2024-05-19

hcbc <- read\_csv('HCBC\_2015\_ClusterData\_Observations.csv')

## Rows: 208 Columns: 37  
## ── Column specification ────────────────────────────────────────────────────────  
## Delimiter: ","  
## chr (2): Island\_Name, DepthBin\_5m  
## dbl (35): RasterAddress\_1km, Depth\_m\_mn, Longitude\_mn, Latitude\_mn, Longitud...  
##   
## ℹ Use `spec()` to retrieve the full column specification for this data.  
## ℹ Specify the column types or set `show\_col\_types = FALSE` to quiet this message.

hcbc <- hcbc %>%  
 mutate(PropAffected\_mean = PctAffected\_mean / 100)  
  
hcbc <- hcbc %>% mutate(Prop\_LiveCoral = PercentLiveCoralCover\_mean / 100) %>%  
 mutate(LiveCoral = Prop\_LiveCoral \* AreaSurveyed\_m2\_sum) %>%  
 mutate(Affected = PropAffected\_mean \* LiveCoral) %>%   
 mutate(LiveCoral = round(LiveCoral)) %>%   
 filter(LiveCoral > 0) %>%   
 mutate(Affected = round(Affected))  
  
summary(hcbc)

## Island\_Name RasterAddress\_1km DepthBin\_5m Depth\_m\_mn   
## Length:151 Min. : 13 Length:151 Min. : 0.6096   
## Class :character 1st Qu.:13652 Class :character 1st Qu.: 5.0456   
## Mode :character Median :18924 Mode :character Median : 8.4570   
## Mean :21844 Mean : 7.2093   
## 3rd Qu.:36892 3rd Qu.: 9.5511   
## Max. :45331 Max. :13.7647   
##   
## Longitude\_mn Latitude\_mn Longitude\_ras Latitude\_ras   
## Min. :-157.9 Min. :19.75 Min. :-157.9 Min. :19.75   
## 1st Qu.:-157.0 1st Qu.:20.07 1st Qu.:-157.0 1st Qu.:20.08   
## Median :-156.7 Median :20.76 Median :-156.7 Median :20.76   
## Mean :-156.7 Mean :20.65 Mean :-156.7 Mean :20.65   
## 3rd Qu.:-156.0 3rd Qu.:20.96 3rd Qu.:-156.0 3rd Qu.:20.96   
## Max. :-155.8 Max. :21.48 Max. :-155.8 Max. :21.48   
##   
## AreaSurveyed\_m2\_sum PercentLiveCoralCover\_mean PercentLiveCoralCover\_sd  
## Min. : 27.6 Min. : 0.05 Min. : 0.000   
## 1st Qu.: 2226.4 1st Qu.:15.00 1st Qu.: 3.536   
## Median : 4618.5 Median :26.67 Median : 6.590   
## Mean : 6222.0 Mean :32.55 Mean : 8.328   
## 3rd Qu.: 8275.4 3rd Qu.:43.54 3rd Qu.:11.446   
## Max. :32269.8 Max. :92.50 Max. :37.052   
## NA's :46   
## PercentLiveCoralCover\_N PctCoralUnbleached\_mean PctCoralUnbleached\_sd  
## Min. : 1.000 Min. : 5.00 Min. : 0.000   
## 1st Qu.: 1.000 1st Qu.:47.70 1st Qu.: 2.887   
## Median : 2.000 Median :57.62 Median : 6.379   
## Mean : 3.053 Mean :59.75 Mean : 8.254   
## 3rd Qu.: 4.000 3rd Qu.:73.88 3rd Qu.:11.198   
## Max. :13.000 Max. :98.00 Max. :42.426   
## NA's :12 NA's :47   
## PctCoralUnbleached\_N PctCoralPartialBleached\_mean PctCoralPartialBleached\_sd  
## Min. : 1.000 Min. : 0.00 Min. : 0.000   
## 1st Qu.: 1.000 1st Qu.:15.00 1st Qu.: 2.411   
## Median : 2.000 Median :20.00 Median : 4.257   
## Mean : 3.053 Mean :21.46 Mean : 5.909   
## 3rd Qu.: 4.000 3rd Qu.:30.00 3rd Qu.: 7.192   
## Max. :13.000 Max. :50.00 Max. :35.355   
## NA's :41   
## PctCoralPartialBleached\_N PctCoralFullyBleached\_mean PctCoralFullyBleached\_sd  
## Min. : 1.000 Min. : 0.000 Min. : 0.000   
## 1st Qu.: 1.000 1st Qu.: 7.066 1st Qu.: 1.771   
## Median : 2.000 Median :17.482 Median : 4.225   
## Mean : 3.053 Mean :18.935 Mean : 6.216   
## 3rd Qu.: 4.000 3rd Qu.:26.042 3rd Qu.: 7.612   
## Max. :13.000 Max. :95.000 Max. :42.426   
## NA's :41   
## PctCoralFullyBleached\_N PctAffected\_mean PctAffected\_sd PctAffected\_N   
## Min. : 1.000 Min. : 2.00 Min. : 0.000 Min. : 1.000   
## 1st Qu.: 1.000 1st Qu.:25.00 1st Qu.: 2.912 1st Qu.: 1.000   
## Median : 2.000 Median :42.50 Median : 6.604 Median : 2.000   
## Mean : 3.053 Mean :40.37 Mean : 8.533 Mean : 3.053   
## 3rd Qu.: 4.000 3rd Qu.:53.54 3rd Qu.:11.538 3rd Qu.: 4.000   
## Max. :13.000 Max. :95.00 Max. :42.426 Max. :13.000   
## NA's :41   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03  
## Min. : 4.110   
## 1st Qu.: 6.655   
## Median : 8.300   
## Mean : 8.199   
## 3rd Qu.:10.670   
## Max. :11.640   
##   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 mean\_PAR\_MODIS\_Daily\_MO03  
## Min. :0.0000 Min. :39.65   
## 1st Qu.:0.0000 1st Qu.:45.12   
## Median :0.0000 Median :47.08   
## Mean :0.3335 Mean :46.55   
## 3rd Qu.:0.6000 3rd Qu.:48.05   
## Max. :1.9100 Max. :50.56   
##   
## mean\_kdPAR\_VIIRS\_Weekly\_MO03 mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4  
## Min. :0.05099 Min. :2.400   
## 1st Qu.:0.05529 1st Qu.:2.481   
## Median :0.05872 Median :2.503   
## Mean :0.06166 Mean :2.493   
## 3rd Qu.:0.06730 3rd Qu.:2.512   
## Max. :0.08588 Max. :2.568   
##   
## Prop\_BleachResTaxa OTP\_MHI\_OSDS\_TotalEffluent LBSP\_AgGolf\_runoff\_01\_sc  
## Min. : 0.002909 Min. : 0.0 Min. :-1.0075   
## 1st Qu.: 0.783282 1st Qu.: 0.0 1st Qu.:-0.9283   
## Median : 2.611480 Median : 381.2 Median :-0.3937   
## Mean : 4.012675 Mean : 2968.4 Mean :-0.1256   
## 3rd Qu.: 6.309030 3rd Qu.: 2970.2 3rd Qu.: 0.3296   
## Max. :14.233244 Max. :28424.9 Max. : 2.7575   
##   
## LBSP\_Urban\_runoff\_01\_sc WaveEnergy\_MN1979.2012 TourRec\_DirectHuman\_10yrAvgPUD  
## Min. :-0.76706 Min. : 12.33 Min. : 0.50   
## 1st Qu.:-0.61497 1st Qu.: 171.27 1st Qu.: 2.90   
## Median :-0.42604 Median : 6199.26 Median : 12.70   
## Mean : 0.07637 Mean : 39004.37 Mean : 60.16   
## 3rd Qu.: 0.17182 3rd Qu.: 27044.38 3rd Qu.: 83.60   
## Max. : 4.41028 Max. :245548.09 Max. :947.40   
##   
## Depth\_m\_mn\_sc Correlation\_Weight PropAffected\_mean Prop\_LiveCoral   
## Min. :-2.1557 Min. :0.02166 Min. :0.0200 Min. :0.0005   
## 1st Qu.:-0.8696 1st Qu.:0.05597 1st Qu.:0.2500 1st Qu.:0.1500   
## Median : 0.1194 Median :0.12994 Median :0.4250 Median :0.2667   
## Mean :-0.2423 Mean :0.23296 Mean :0.4037 Mean :0.3255   
## 3rd Qu.: 0.4366 3rd Qu.:0.29170 3rd Qu.:0.5354 3rd Qu.:0.4354   
## Max. : 1.6583 Max. :1.00000 Max. :0.9500 Max. :0.9250   
##   
## LiveCoral Affected   
## Min. : 2 Min. : 1.0   
## 1st Qu.: 362 1st Qu.: 104.0   
## Median : 1017 Median : 337.0   
## Mean : 1841 Mean : 740.5   
## 3rd Qu.: 2528 3rd Qu.: 960.0   
## Max. :13602 Max. :6758.0   
##

my\_theme <-  
 list(  
 "tbl\_summary-str:default\_con\_type" = "continuous2",  
 "tbl\_summary-str:continuous\_stat" = c(  
 "{median} ({p25} - {p75})",  
 "{mean} ({sd})",  
 "{min} - {max}"  
 ),  
 "style\_number-arg:big.mark" = "",  
 "tbl\_summary-fn:percent\_fun" = function(x) style\_percent(x, digits = 3)  
 )  
gtsummary::set\_gtsummary\_theme(my\_theme)  
  
hcbc %>% select(c('Island\_Name','Depth\_m\_mn','AreaSurveyed\_m2\_sum','LiveCoral','PctAffected\_mean','PctCoralPartialBleached\_mean','PctCoralFullyBleached\_mean','Prop\_BleachResTaxa')) %>%  
 gtsummary::tbl\_summary(  
 by = Island\_Name,   
 include=c(Depth\_m\_mn, AreaSurveyed\_m2\_sum, LiveCoral, PctAffected\_mean, PctCoralPartialBleached\_mean, PctCoralFullyBleached\_mean, Prop\_BleachResTaxa),  
 list(  
 Depth\_m\_mn ~ 'Bathymetric Depth (m)',  
 AreaSurveyed\_m2\_sum ~ 'Area Surveyed (m2)',  
 LiveCoral ~ 'Live Coral Cover (m)',  
 PctAffected\_mean ~ 'Percent Bleached',  
 PctCoralPartialBleached\_mean ~ 'Percent Partially Bleached',  
 PctCoralFullyBleached\_mean ~ 'Percent Fully Bleached',  
 Prop\_BleachResTaxa ~ 'Proportion of Bleach Resistant Taxa'  
 ),  
 type = all\_continuous() ~ "continuous2",  
 statistic = all\_continuous() ~ c(  
 "{median} ({min}, {max})"  
 )  
 ) %>%  
 add\_n() %>%  
 bold\_labels() %>%  
 modify\_header(label ~ "\*\*Island\*\*")

## Table printed with `knitr::kable()`, not {gt}. Learn why at  
## https://www.danieldsjoberg.com/gtsummary/articles/rmarkdown.html  
## To suppress this message, include `message = FALSE` in the code chunk header.

| **Island** | **N** | **Hawaii**, N = 51 | **Lanai**, N = 29 | **Maui**, N = 34 | **Oahu**, N = 37 |
| --- | --- | --- | --- | --- | --- |
| **Bathymetric Depth (m)** | 151 |  |  |  |  |
| Median (Range) |  | 9.3 (5.9, 13.8) | 9.3 (4.6, 11.3) | 6.7 (3.4, 11.1) | 1.2 (0.6, 6.7) |
| **Area Surveyed (m2)** | 151 |  |  |  |  |
| Median (Range) |  | 4346 (1878, 13317) | 5341 (1756, 14351) | 7070 (1293, 32270) | 1855 (28, 19015) |
| **Live Coral Cover (m)** | 151 |  |  |  |  |
| Median (Range) |  | 1109 (3, 4832) | 1869 (22, 9879) | 1843 (2, 10623) | 152 (14, 13602) |
| **Percent Bleached** | 151 |  |  |  |  |
| Median (Range) |  | 49 (28, 95) | 33 (13, 65) | 41 (2, 71) | 22 (2, 79) |
| **Percent Partially Bleached** | 151 |  |  |  |  |
| Median (Range) |  | 23 (0, 45) | 18 (3, 41) | 25 (0, 50) | 18 (2, 41) |
| **Percent Fully Bleached** | 151 |  |  |  |  |
| Median (Range) |  | 24 (6, 95) | 13 (4, 36) | 17 (0, 36) | 5 (0, 60) |
| **Proportion of Bleach Resistant Taxa** | 151 |  |  |  |  |
| Median (Range) |  | 0.9 (0.0, 10.4) | 4.2 (0.5, 13.8) | 6.5 (0.8, 14.2) | 1.3 (0.0, 7.5) |

hcbc %>% select(c('Depth\_m\_mn','AreaSurveyed\_m2\_sum','LiveCoral','PctAffected\_mean','PctCoralPartialBleached\_mean','PctCoralFullyBleached\_mean','Prop\_BleachResTaxa')) %>%  
 gtsummary::tbl\_summary(  
 include=everything(),  
 label=list(  
 Depth\_m\_mn ~ 'Bathymetric Depth (m)',  
 AreaSurveyed\_m2\_sum ~ 'Area Surveyed (m2)',  
 LiveCoral ~ 'Live Coral Cover (m)',  
 PctAffected\_mean ~ 'Percent Bleached',  
 PctCoralPartialBleached\_mean ~ 'Percent Partially Bleached',  
 PctCoralFullyBleached\_mean ~ 'Percent Fully Bleached',  
 Prop\_BleachResTaxa ~ 'Proportion of Bleach Resistant Taxa'  
 ),  
 type = all\_continuous() ~ "continuous2",  
 statistic = all\_continuous() ~ c(  
 "{median} ({min}, {max})"  
 )  
 ) %>%  
 add\_n() %>%  
 bold\_labels()

## Table printed with `knitr::kable()`, not {gt}. Learn why at  
## https://www.danieldsjoberg.com/gtsummary/articles/rmarkdown.html  
## To suppress this message, include `message = FALSE` in the code chunk header.

| **Characteristic** | **N** | **N = 151** |
| --- | --- | --- |
| **Bathymetric Depth (m)** | 151 |  |
| Median (Range) |  | 8.5 (0.6, 13.8) |
| **Area Surveyed (m2)** | 151 |  |
| Median (Range) |  | 4619 (28, 32270) |
| **Live Coral Cover (m)** | 151 |  |
| Median (Range) |  | 1017 (2, 13602) |
| **Percent Bleached** | 151 |  |
| Median (Range) |  | 43 (2, 95) |
| **Percent Partially Bleached** | 151 |  |
| Median (Range) |  | 20 (0, 50) |
| **Percent Fully Bleached** | 151 |  |
| Median (Range) |  | 17 (0, 95) |
| **Proportion of Bleach Resistant Taxa** | 151 |  |
| Median (Range) |  | 2.6 (0.0, 14.2) |

hcbc %>% select(c('Island\_Name','Depth\_m\_mn','AreaSurveyed\_m2\_sum','LiveCoral','PctAffected\_mean','PctCoralPartialBleached\_mean','PctCoralFullyBleached\_mean','Prop\_BleachResTaxa','DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03','DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01','mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4','LBSP\_AgGolf\_runoff\_01\_sc','LBSP\_Urban\_runoff\_01\_sc','TourRec\_DirectHuman\_10yrAvgPUD','mean\_PAR\_MODIS\_Daily\_MO03')) %>%  
 gtsummary::tbl\_summary(  
 by = Island\_Name,   
 include=c(Depth\_m\_mn, AreaSurveyed\_m2\_sum, LiveCoral, PctAffected\_mean, PctCoralPartialBleached\_mean, PctCoralFullyBleached\_mean, Prop\_BleachResTaxa,DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03,DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01,mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4,LBSP\_AgGolf\_runoff\_01\_sc,LBSP\_Urban\_runoff\_01\_sc,TourRec\_DirectHuman\_10yrAvgPUD,mean\_PAR\_MODIS\_Daily\_MO03),  
 list(  
 Depth\_m\_mn ~ 'Bathymetric Depth (m)',  
 AreaSurveyed\_m2\_sum ~ 'Area Surveyed (m2)',  
 LiveCoral ~ 'Live Coral Cover (m)',  
 PctAffected\_mean ~ 'Percent Bleached',  
 PctCoralPartialBleached\_mean ~ 'Percent Partially Bleached',  
 PctCoralFullyBleached\_mean ~ 'Percent Fully Bleached',  
 Prop\_BleachResTaxa ~ 'Proportion of Bleach Resistant Taxa',  
 DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 ~ 'DHW (3 months)',  
 DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 ~ 'DHW (10 years)',  
 mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 ~ 'Mean Weekly SST Range (C)',  
 LBSP\_AgGolf\_runoff\_01\_sc ~ 'Agricultural Runoff',  
 LBSP\_Urban\_runoff\_01\_sc ~ 'Urban Runoff',  
 TourRec\_DirectHuman\_10yrAvgPUD ~ 'Tourism (10 years)',  
 mean\_PAR\_MODIS\_Daily\_MO03 ~ 'PAR level'  
 ),  
 type = all\_continuous() ~ "continuous2",  
 statistic = all\_continuous() ~ c(  
 "{median} ({min}, {max})"  
 )  
 ) %>%  
 add\_n() %>%  
 bold\_labels() %>%  
 modify\_header(label ~ "\*\*Island\*\*")

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## https://www.danieldsjoberg.com/gtsummary/articles/rmarkdown.html  
## To suppress this message, include `message = FALSE` in the code chunk header.

| **Island** | **N** | **Hawaii**, N = 51 | **Lanai**, N = 29 | **Maui**, N = 34 | **Oahu**, N = 37 |
| --- | --- | --- | --- | --- | --- |
| **Bathymetric Depth (m)** | 151 |  |  |  |  |
| Median (Range) |  | 9.3 (5.9, 13.8) | 9.3 (4.6, 11.3) | 6.7 (3.4, 11.1) | 1.2 (0.6, 6.7) |
| **Area Surveyed (m2)** | 151 |  |  |  |  |
| Median (Range) |  | 4346 (1878, 13317) | 5341 (1756, 14351) | 7070 (1293, 32270) | 1855 (28, 19015) |
| **Live Coral Cover (m)** | 151 |  |  |  |  |
| Median (Range) |  | 1109 (3, 4832) | 1869 (22, 9879) | 1843 (2, 10623) | 152 (14, 13602) |
| **Percent Bleached** | 151 |  |  |  |  |
| Median (Range) |  | 49 (28, 95) | 33 (13, 65) | 41 (2, 71) | 22 (2, 79) |
| **Percent Partially Bleached** | 151 |  |  |  |  |
| Median (Range) |  | 23 (0, 45) | 18 (3, 41) | 25 (0, 50) | 18 (2, 41) |
| **Percent Fully Bleached** | 151 |  |  |  |  |
| Median (Range) |  | 24 (6, 95) | 13 (4, 36) | 17 (0, 36) | 5 (0, 60) |
| **Proportion of Bleach Resistant Taxa** | 151 |  |  |  |  |
| Median (Range) |  | 0.9 (0.0, 10.4) | 4.2 (0.5, 13.8) | 6.5 (0.8, 14.2) | 1.3 (0.0, 7.5) |
| **DHW (3 months)** | 151 |  |  |  |  |
| Median (Range) |  | 11.32 (8.50, 11.64) | 8.30 (7.82, 9.92) | 7.57 (5.48, 9.25) | 5.07 (4.11, 6.59) |
| **DHW (10 years)** | 151 |  |  |  |  |
| Median (Range) |  | 0.00 (0.00, 0.00) | 0.60 (0.00, 1.91) | 0.38 (0.00, 0.79) | 0.60 (0.00, 1.26) |
| **Mean Weekly SST Range (C)** | 151 |  |  |  |  |
| Median (Range) |  | 2.50 (2.48, 2.52) | 2.51 (2.51, 2.57) | 2.50 (2.48, 2.53) | 2.47 (2.40, 2.51) |
| **Agricultural Runoff** | 151 |  |  |  |  |
| Median (Range) |  | -0.25 (-1.01, 1.17) | -0.88 (-1.01, -0.38) | 0.13 (-1.00, 2.76) | -0.36 (-1.00, 1.80) |
| **Urban Runoff** | 151 |  |  |  |  |
| Median (Range) |  | -0.48 (-0.64, 0.88) | -0.72 (-0.76, -0.56) | -0.05 (-0.73, 0.43) | 1.48 (-0.77, 4.41) |
| **Tourism (10 years)** | 151 |  |  |  |  |
| Median (Range) |  | 5 (1, 138) | 1 (1, 13) | 61 (11, 413) | 28 (1, 947) |
| **PAR level** | 151 |  |  |  |  |
| Median (Range) |  | 48.45 (47.24, 50.56) | 47.37 (45.30, 48.05) | 46.17 (39.65, 47.08) | 44.74 (41.54, 49.34) |

Thermal Stress

##   
## Call: glm(formula = Affected ~ DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 +   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 + mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 +   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa +   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa +   
## mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa,   
## family = poisson, data = hcbc, offset = log(LiveCoral))  
##   
## Coefficients:  
## (Intercept)   
## 9.48554   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03   
## 0.02749   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01   
## -0.42446   
## mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4   
## -4.23439   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa   
## 0.01435   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa   
## 0.11651   
## mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa   
## -0.05076   
##   
## Degrees of Freedom: 150 Total (i.e. Null); 144 Residual  
## Null Deviance: 21110   
## Residual Deviance: 16090 AIC: 17230

##   
## Call:  
## regress(fnctl = "rate", formula = Affected ~ DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 +   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 + mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 +   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa +   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa +   
## mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa +   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Depth\_m\_mn + DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Depth\_m\_mn +   
## mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Depth\_m\_mn, data = hcbc,   
## offset = log(LiveCoral))  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -33.646 -5.278 -0.450 3.700 23.699   
##   
## Coefficients:  
##   
## Raw Model:  
## Estimate   
## [1] Intercept -4.972   
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 -0.1901   
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 -1.658   
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 2.605   
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 0.01491   
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 0.1355   
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa -0.05386   
## [8] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Depth\_m\_mn 0.03075   
## [9] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Depth\_m\_mn 0.1197   
## [10] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Depth\_m\_mn -0.1451   
## Naive SE   
## [1] Intercept 0.6116   
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 8.659e-03  
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.03729   
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 0.2665   
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 6.504e-04  
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 2.528e-03  
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 2.162e-03  
## [8] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Depth\_m\_mn 9.915e-04  
## [9] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Depth\_m\_mn 3.848e-03  
## [10] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Depth\_m\_mn 3.433e-03  
## Robust SE   
## [1] Intercept 5.261   
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.07085   
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.3809   
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 2.276   
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 5.131e-03   
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 0.03169   
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 0.01943   
## [8] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Depth\_m\_mn 8.581e-03   
## [9] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Depth\_m\_mn 0.03969   
## [10] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Depth\_m\_mn 0.03144   
## F stat   
## [1] Intercept 0.89  
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 7.20  
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 18.95  
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 1.31  
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 8.44  
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 18.29  
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 7.68  
## [8] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Depth\_m\_mn 12.84  
## [9] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Depth\_m\_mn 9.09  
## [10] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Depth\_m\_mn 21.30  
## df  
## [1] Intercept 1   
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 1   
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 1   
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 1   
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 1   
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 1   
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 1   
## [8] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Depth\_m\_mn 1   
## [9] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Depth\_m\_mn 1   
## [10] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Depth\_m\_mn 1   
## Pr(>F)   
## [1] Intercept 0.3462   
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.0082   
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 < 0.00005  
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 0.2544   
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 0.0043   
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa < 0.00005  
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 0.0063   
## [8] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Depth\_m\_mn 0.0005   
## [9] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Depth\_m\_mn 0.0031   
## [10] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Depth\_m\_mn < 0.00005  
##   
## Transformed Model:  
## e(Est)   
## [1] Intercept 6.929e-03  
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.8269   
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.1905   
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 13.53   
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 1.015   
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 1.145   
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 0.9476   
## [8] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Depth\_m\_mn 1.031   
## [9] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Depth\_m\_mn 1.127   
## [10] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Depth\_m\_mn 0.8649   
## e(95%L)   
## [1] Intercept 2.108e-07  
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.7188   
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.08970   
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 0.1504   
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 1.005   
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 1.076   
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 0.9119   
## [8] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Depth\_m\_mn 1.014   
## [9] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Depth\_m\_mn 1.042   
## [10] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Depth\_m\_mn 0.8128   
## e(95%H)   
## [1] Intercept 227.8   
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.9512   
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.4045   
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 1217   
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 1.025   
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 1.219   
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 0.9847   
## [8] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Depth\_m\_mn 1.049   
## [9] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Depth\_m\_mn 1.219   
## [10] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Depth\_m\_mn 0.9204   
## F stat   
## [1] Intercept 0.89  
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 7.20  
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 18.95  
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 1.31  
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 8.44  
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 18.29  
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 7.68  
## [8] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Depth\_m\_mn 12.84  
## [9] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Depth\_m\_mn 9.09  
## [10] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Depth\_m\_mn 21.30  
## df  
## [1] Intercept 1   
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 1   
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 1   
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 1   
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 1   
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 1   
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 1   
## [8] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Depth\_m\_mn 1   
## [9] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Depth\_m\_mn 1   
## [10] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Depth\_m\_mn 1   
## Pr(>F)   
## [1] Intercept 0.3462   
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.0082   
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 < 0.00005  
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 0.2544   
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 0.0043   
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa < 0.00005  
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 0.0063   
## [8] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Depth\_m\_mn 0.0005   
## [9] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Depth\_m\_mn 0.0031   
## [10] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Depth\_m\_mn < 0.00005  
##   
## (Dispersion parameter for poisson family taken to be 1)  
##   
## Null deviance: 21112 on 150 degrees of freedom  
## Residual deviance: 13075 on 141 degrees of freedom  
## AIC: 14217  
##   
## Number of Fisher Scoring iterations: 4

##   
## Call:  
## regress(fnctl = "rate", formula = Affected ~ DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 +   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 + mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 +   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa +   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa +   
## mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa +   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:DepthBin\_5m + DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:DepthBin\_5m +   
## mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:DepthBin\_5m, data = hcbc,   
## offset = log(LiveCoral))  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -34.253 -4.992 -0.248 3.578 27.089   
##   
## Coefficients:  
##   
## Raw Model:  
## Estimate   
## [1] Intercept 0.3671   
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.1600   
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 -0.5100   
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 -1.158   
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 0.01528   
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 0.1385   
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa -0.05368   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:DepthBin\_5m   
## [8] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 -0.09698   
## [9] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 -0.3019   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:DepthBin\_5m   
## [10] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.05368   
## [11] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 -0.7738   
## mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:DepthBin\_5m   
## [12] (5,10]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 0.4119   
## [13] [0,5]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 1.277   
## Naive SE   
## [1] Intercept 0.6888   
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 6.52e-03   
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.02578   
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 0.2777   
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 6.526e-04  
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 2.658e-03  
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 2.159e-03  
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:DepthBin\_5m   
## [8] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 6.481e-03  
## [9] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.01258   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:DepthBin\_5m   
## [10] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.02246   
## [11] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.03018   
## mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:DepthBin\_5m   
## [12] (5,10]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 0.02589   
## [13] [0,5]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 0.04046   
## Robust SE   
## [1] Intercept 6.613   
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.04262   
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.1954   
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 2.638   
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 5.353e-03   
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 0.02953   
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 0.01992   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:DepthBin\_5m   
## [8] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.04368   
## [9] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.1212   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:DepthBin\_5m   
## [10] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.1432   
## [11] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.2134   
## mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:DepthBin\_5m   
## [12] (5,10]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 0.1828   
## [13] [0,5]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 0.3614   
## F stat   
## [1] Intercept 0.00  
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 14.09  
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 6.81  
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 0.19  
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 8.15  
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 21.98  
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 7.26  
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:DepthBin\_5m 4.18  
## [8] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 4.93  
## [9] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 6.20  
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:DepthBin\_5m 7.34  
## [10] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.14  
## [11] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 13.16  
## mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:DepthBin\_5m 6.63  
## [12] (5,10]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 5.08  
## [13] [0,5]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 12.47  
## df  
## [1] Intercept 1   
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 1   
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 1   
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 1   
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 1   
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 1   
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 1   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:DepthBin\_5m 2   
## [8] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 1   
## [9] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 1   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:DepthBin\_5m 2   
## [10] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 1   
## [11] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 1   
## mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:DepthBin\_5m 2   
## [12] (5,10]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 1   
## [13] [0,5]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 1   
## Pr(>F)   
## [1] Intercept 0.9558   
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.0003   
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.0101   
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 0.6615   
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 0.0050   
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa < 0.00005  
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 0.0079   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:DepthBin\_5m 0.0173   
## [8] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.0280   
## [9] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.0140   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:DepthBin\_5m 0.0009   
## [10] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.7083   
## [11] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.0004   
## mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:DepthBin\_5m 0.0018   
## [12] (5,10]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 0.0258   
## [13] [0,5]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 0.0006   
##   
## Transformed Model:  
## e(Est)   
## [1] Intercept 1.444   
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 1.173   
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.6005   
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 0.3143   
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 1.015   
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 1.149   
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 0.9477   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:DepthBin\_5m   
## [8] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.9076   
## [9] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.7394   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:DepthBin\_5m   
## [10] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 1.055   
## [11] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.4612   
## mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:DepthBin\_5m   
## [12] (5,10]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 1.510   
## [13] [0,5]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 3.584   
## e(95%L)   
## [1] Intercept 3.023e-06  
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 1.079   
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.4080   
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 1.705e-03  
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 1.005   
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 1.083   
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 0.9111   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:DepthBin\_5m   
## [8] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.8325   
## [9] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.5818   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:DepthBin\_5m   
## [10] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.7950   
## [11] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.3025   
## mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:DepthBin\_5m   
## [12] (5,10]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 1.052   
## [13] [0,5]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 1.754   
## e(95%H)   
## [1] Intercept 6.893e+05   
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 1.277   
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.8838   
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 57.93   
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 1.026   
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 1.218   
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 0.9858   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:DepthBin\_5m   
## [8] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.9894   
## [9] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.9397   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:DepthBin\_5m   
## [10] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 1.400   
## [11] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.7033   
## mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:DepthBin\_5m   
## [12] (5,10]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 2.167   
## [13] [0,5]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 7.324   
## F stat   
## [1] Intercept 0.00  
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 14.09  
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 6.81  
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 0.19  
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 8.15  
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 21.98  
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 7.26  
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:DepthBin\_5m 4.18  
## [8] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 4.93  
## [9] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 6.20  
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:DepthBin\_5m 7.34  
## [10] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.14  
## [11] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 13.16  
## mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:DepthBin\_5m 6.63  
## [12] (5,10]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 5.08  
## [13] [0,5]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 12.47  
## df  
## [1] Intercept 1   
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 1   
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 1   
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 1   
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 1   
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa 1   
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 1   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:DepthBin\_5m 2   
## [8] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 1   
## [9] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 1   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:DepthBin\_5m 2   
## [10] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 1   
## [11] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 1   
## mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:DepthBin\_5m 2   
## [12] (5,10]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 1   
## [13] [0,5]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 1   
## Pr(>F)   
## [1] Intercept 0.9558   
## [2] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.0003   
## [3] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.0101   
## [4] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 0.6615   
## [5] DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:Prop\_BleachResTaxa 0.0050   
## [6] DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:Prop\_BleachResTaxa < 0.00005  
## [7] mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:Prop\_BleachResTaxa 0.0079   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03:DepthBin\_5m 0.0173   
## [8] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.0280   
## [9] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_MO03 0.0140   
## DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01:DepthBin\_5m 0.0009   
## [10] (5,10]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.7083   
## [11] [0,5]:DHW.MeanMax\_Degree\_Heating\_Weeks\_YR10YR01 0.0004   
## mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4:DepthBin\_5m 0.0018   
## [12] (5,10]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 0.0258   
## [13] [0,5]:mean\_weekly\_range\_SST\_CRW\_Daily\_ALLB4 0.0006   
##   
## (Dispersion parameter for poisson family taken to be 1)  
##   
## Null deviance: 21112 on 150 degrees of freedom  
## Residual deviance: 11868 on 138 degrees of freedom  
## AIC: 13017  
##   
## Number of Fisher Scoring iterations: 4

Human Activity

reg3 <- regress("rate", Affected ~ LBSP\_AgGolf\_runoff\_01\_sc + LBSP\_Urban\_runoff\_01\_sc + TourRec\_DirectHuman\_10yrAvgPUD + LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa + LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa + TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa +  
LBSP\_AgGolf\_runoff\_01\_sc:Depth\_m\_mn + LBSP\_Urban\_runoff\_01\_sc:Depth\_m\_mn + TourRec\_DirectHuman\_10yrAvgPUD:Depth\_m\_mn,  
 data = hcbc,  
 offset = log(LiveCoral))  
reg3

##   
## Call:  
## regress(fnctl = "rate", formula = Affected ~ LBSP\_AgGolf\_runoff\_01\_sc +   
## LBSP\_Urban\_runoff\_01\_sc + TourRec\_DirectHuman\_10yrAvgPUD +   
## LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa + LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa +   
## TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa + LBSP\_AgGolf\_runoff\_01\_sc:Depth\_m\_mn +   
## LBSP\_Urban\_runoff\_01\_sc:Depth\_m\_mn + TourRec\_DirectHuman\_10yrAvgPUD:Depth\_m\_mn,   
## data = hcbc, offset = log(LiveCoral))  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -37.973 -3.378 1.166 5.377 24.606   
##   
## Coefficients:  
##   
## Raw Model:  
## Estimate Naive SE   
## [1] Intercept -0.9380 5.425e-03  
## [2] LBSP\_AgGolf\_runoff\_01\_sc 0.6243 0.01670   
## [3] LBSP\_Urban\_runoff\_01\_sc -1.144 0.02309   
## [4] TourRec\_DirectHuman\_10yrAvgPUD 5.975e-03 1.473e-04  
## [5] LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa -0.1238 2.145e-03  
## [6] LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa 0.1687 2.901e-03  
## [7] TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa 1.875e-04 8.969e-06  
## [8] LBSP\_AgGolf\_runoff\_01\_sc:Depth\_m\_mn -0.05928 2.298e-03  
## [9] LBSP\_Urban\_runoff\_01\_sc:Depth\_m\_mn 0.1196 3.34e-03   
## [10] TourRec\_DirectHuman\_10yrAvgPUD:Depth\_m\_mn -7.679e-04 2.08e-05   
## Robust SE   
## [1] Intercept 0.06554   
## [2] LBSP\_AgGolf\_runoff\_01\_sc 0.1946   
## [3] LBSP\_Urban\_runoff\_01\_sc 0.2501   
## [4] TourRec\_DirectHuman\_10yrAvgPUD 1.829e-03   
## [5] LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa 0.02385   
## [6] LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa 0.04264   
## [7] TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa 8.587e-05   
## [8] LBSP\_AgGolf\_runoff\_01\_sc:Depth\_m\_mn 0.02447   
## [9] LBSP\_Urban\_runoff\_01\_sc:Depth\_m\_mn 0.03324   
## [10] TourRec\_DirectHuman\_10yrAvgPUD:Depth\_m\_mn 2.825e-04   
## F stat df  
## [1] Intercept 204.80 1   
## [2] LBSP\_AgGolf\_runoff\_01\_sc 10.30 1   
## [3] LBSP\_Urban\_runoff\_01\_sc 20.94 1   
## [4] TourRec\_DirectHuman\_10yrAvgPUD 10.67 1   
## [5] LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa 26.92 1   
## [6] LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa 15.65 1   
## [7] TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa 4.77 1   
## [8] LBSP\_AgGolf\_runoff\_01\_sc:Depth\_m\_mn 5.87 1   
## [9] LBSP\_Urban\_runoff\_01\_sc:Depth\_m\_mn 12.95 1   
## [10] TourRec\_DirectHuman\_10yrAvgPUD:Depth\_m\_mn 7.39 1   
## Pr(>F)   
## [1] Intercept < 0.00005  
## [2] LBSP\_AgGolf\_runoff\_01\_sc 0.0017   
## [3] LBSP\_Urban\_runoff\_01\_sc < 0.00005  
## [4] TourRec\_DirectHuman\_10yrAvgPUD 0.0014   
## [5] LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa < 0.00005  
## [6] LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa 0.0001   
## [7] TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa 0.0306   
## [8] LBSP\_AgGolf\_runoff\_01\_sc:Depth\_m\_mn 0.0167   
## [9] LBSP\_Urban\_runoff\_01\_sc:Depth\_m\_mn 0.0004   
## [10] TourRec\_DirectHuman\_10yrAvgPUD:Depth\_m\_mn 0.0074   
##   
## Transformed Model:  
## e(Est) e(95%L)   
## [1] Intercept 0.3914 0.3439   
## [2] LBSP\_AgGolf\_runoff\_01\_sc 1.867 1.271   
## [3] LBSP\_Urban\_runoff\_01\_sc 0.3185 0.1943   
## [4] TourRec\_DirectHuman\_10yrAvgPUD 1.006 1.002   
## [5] LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa 0.8836 0.8429   
## [6] LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa 1.184 1.088   
## [7] TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa 1.000 1.000   
## [8] LBSP\_AgGolf\_runoff\_01\_sc:Depth\_m\_mn 0.9424 0.8979   
## [9] LBSP\_Urban\_runoff\_01\_sc:Depth\_m\_mn 1.127 1.055   
## [10] TourRec\_DirectHuman\_10yrAvgPUD:Depth\_m\_mn 0.9992 0.9987   
## e(95%H)   
## [1] Intercept 0.4456   
## [2] LBSP\_AgGolf\_runoff\_01\_sc 2.743   
## [3] LBSP\_Urban\_runoff\_01\_sc 0.5221   
## [4] TourRec\_DirectHuman\_10yrAvgPUD 1.010   
## [5] LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa 0.9263   
## [6] LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa 1.288   
## [7] TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa 1.000   
## [8] LBSP\_AgGolf\_runoff\_01\_sc:Depth\_m\_mn 0.9891   
## [9] LBSP\_Urban\_runoff\_01\_sc:Depth\_m\_mn 1.204   
## [10] TourRec\_DirectHuman\_10yrAvgPUD:Depth\_m\_mn 0.9998   
## F stat df  
## [1] Intercept 204.80 1   
## [2] LBSP\_AgGolf\_runoff\_01\_sc 10.30 1   
## [3] LBSP\_Urban\_runoff\_01\_sc 20.94 1   
## [4] TourRec\_DirectHuman\_10yrAvgPUD 10.67 1   
## [5] LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa 26.92 1   
## [6] LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa 15.65 1   
## [7] TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa 4.77 1   
## [8] LBSP\_AgGolf\_runoff\_01\_sc:Depth\_m\_mn 5.87 1   
## [9] LBSP\_Urban\_runoff\_01\_sc:Depth\_m\_mn 12.95 1   
## [10] TourRec\_DirectHuman\_10yrAvgPUD:Depth\_m\_mn 7.39 1   
## Pr(>F)   
## [1] Intercept < 0.00005  
## [2] LBSP\_AgGolf\_runoff\_01\_sc 0.0017   
## [3] LBSP\_Urban\_runoff\_01\_sc < 0.00005  
## [4] TourRec\_DirectHuman\_10yrAvgPUD 0.0014   
## [5] LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa < 0.00005  
## [6] LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa 0.0001   
## [7] TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa 0.0306   
## [8] LBSP\_AgGolf\_runoff\_01\_sc:Depth\_m\_mn 0.0167   
## [9] LBSP\_Urban\_runoff\_01\_sc:Depth\_m\_mn 0.0004   
## [10] TourRec\_DirectHuman\_10yrAvgPUD:Depth\_m\_mn 0.0074   
##   
## (Dispersion parameter for poisson family taken to be 1)  
##   
## Null deviance: 21112 on 150 degrees of freedom  
## Residual deviance: 14947 on 141 degrees of freedom  
## AIC: 16090  
##   
## Number of Fisher Scoring iterations: 4

reg03 <- regress("rate", Affected ~ LBSP\_AgGolf\_runoff\_01\_sc + LBSP\_Urban\_runoff\_01\_sc + TourRec\_DirectHuman\_10yrAvgPUD + LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa + LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa + TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa +  
LBSP\_AgGolf\_runoff\_01\_sc:DepthBin\_5m + LBSP\_Urban\_runoff\_01\_sc:DepthBin\_5m + TourRec\_DirectHuman\_10yrAvgPUD:DepthBin\_5m,  
 data = hcbc,  
 offset = log(LiveCoral))  
reg03

##   
## Call:  
## regress(fnctl = "rate", formula = Affected ~ LBSP\_AgGolf\_runoff\_01\_sc +   
## LBSP\_Urban\_runoff\_01\_sc + TourRec\_DirectHuman\_10yrAvgPUD +   
## LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa + LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa +   
## TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa + LBSP\_AgGolf\_runoff\_01\_sc:DepthBin\_5m +   
## LBSP\_Urban\_runoff\_01\_sc:DepthBin\_5m + TourRec\_DirectHuman\_10yrAvgPUD:DepthBin\_5m,   
## data = hcbc, offset = log(LiveCoral))  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -39.518 -4.092 0.514 4.718 26.089   
##   
## Coefficients:  
##   
## Raw Model:  
## Estimate Naive SE   
## [1] Intercept -0.9677 5.229e-03  
## [2] LBSP\_AgGolf\_runoff\_01\_sc 0.2700 0.02459   
## [3] LBSP\_Urban\_runoff\_01\_sc -0.09579 0.03486   
## [4] TourRec\_DirectHuman\_10yrAvgPUD 1.017e-04 2.739e-04  
## [5] LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa -0.1207 2.283e-03  
## [6] LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa 0.1698 3.081e-03  
## [7] TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa 2.257e-04 9.552e-06  
## LBSP\_AgGolf\_runoff\_01\_sc:DepthBin\_5m   
## [8] (5,10]:LBSP\_AgGolf\_runoff\_01\_sc -0.1779 0.02403   
## [9] [0,5]:LBSP\_AgGolf\_runoff\_01\_sc 0.06324 0.02498   
## LBSP\_Urban\_runoff\_01\_sc:DepthBin\_5m   
## [10] (5,10]:LBSP\_Urban\_runoff\_01\_sc -0.1360 0.03447   
## [11] [0,5]:LBSP\_Urban\_runoff\_01\_sc -0.5760 0.03599   
## TourRec\_DirectHuman\_10yrAvgPUD:DepthBin\_5m   
## [12] (5,10]:TourRec\_DirectHuman\_10yrAvgPUD -1.311e-04 2.761e-04  
## [13] [0,5]:TourRec\_DirectHuman\_10yrAvgPUD 2.906e-03 2.79e-04   
## Robust SE   
## [1] Intercept 0.06402   
## [2] LBSP\_AgGolf\_runoff\_01\_sc 0.2228   
## [3] LBSP\_Urban\_runoff\_01\_sc 0.2737   
## [4] TourRec\_DirectHuman\_10yrAvgPUD 1.627e-03   
## [5] LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa 0.02895   
## [6] LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa 0.04855   
## [7] TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa 8.656e-05   
## LBSP\_AgGolf\_runoff\_01\_sc:DepthBin\_5m   
## [8] (5,10]:LBSP\_AgGolf\_runoff\_01\_sc 0.2046   
## [9] [0,5]:LBSP\_AgGolf\_runoff\_01\_sc 0.2100   
## LBSP\_Urban\_runoff\_01\_sc:DepthBin\_5m   
## [10] (5,10]:LBSP\_Urban\_runoff\_01\_sc 0.2575   
## [11] [0,5]:LBSP\_Urban\_runoff\_01\_sc 0.2573   
## TourRec\_DirectHuman\_10yrAvgPUD:DepthBin\_5m   
## [12] (5,10]:TourRec\_DirectHuman\_10yrAvgPUD 1.758e-03   
## [13] [0,5]:TourRec\_DirectHuman\_10yrAvgPUD 1.884e-03   
## F stat df  
## [1] Intercept 228.48 1   
## [2] LBSP\_AgGolf\_runoff\_01\_sc 1.47 1   
## [3] LBSP\_Urban\_runoff\_01\_sc 0.12 1   
## [4] TourRec\_DirectHuman\_10yrAvgPUD 0.00 1   
## [5] LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa 17.39 1   
## [6] LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa 12.24 1   
## [7] TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa 6.80 1   
## LBSP\_AgGolf\_runoff\_01\_sc:DepthBin\_5m 2.08 2   
## [8] (5,10]:LBSP\_AgGolf\_runoff\_01\_sc 0.76 1   
## [9] [0,5]:LBSP\_AgGolf\_runoff\_01\_sc 0.09 1   
## LBSP\_Urban\_runoff\_01\_sc:DepthBin\_5m 4.08 2   
## [10] (5,10]:LBSP\_Urban\_runoff\_01\_sc 0.28 1   
## [11] [0,5]:LBSP\_Urban\_runoff\_01\_sc 5.01 1   
## TourRec\_DirectHuman\_10yrAvgPUD:DepthBin\_5m 2.78 2   
## [12] (5,10]:TourRec\_DirectHuman\_10yrAvgPUD 0.01 1   
## [13] [0,5]:TourRec\_DirectHuman\_10yrAvgPUD 2.38 1   
## Pr(>F)   
## [1] Intercept < 0.00005  
## [2] LBSP\_AgGolf\_runoff\_01\_sc 0.2276   
## [3] LBSP\_Urban\_runoff\_01\_sc 0.7269   
## [4] TourRec\_DirectHuman\_10yrAvgPUD 0.9502   
## [5] LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa 0.0001   
## [6] LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa 0.0006   
## [7] TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa 0.0101   
## LBSP\_AgGolf\_runoff\_01\_sc:DepthBin\_5m 0.1291   
## [8] (5,10]:LBSP\_AgGolf\_runoff\_01\_sc 0.3861   
## [9] [0,5]:LBSP\_AgGolf\_runoff\_01\_sc 0.7638   
## LBSP\_Urban\_runoff\_01\_sc:DepthBin\_5m 0.0189   
## [10] (5,10]:LBSP\_Urban\_runoff\_01\_sc 0.5984   
## [11] [0,5]:LBSP\_Urban\_runoff\_01\_sc 0.0268   
## TourRec\_DirectHuman\_10yrAvgPUD:DepthBin\_5m 0.0653   
## [12] (5,10]:TourRec\_DirectHuman\_10yrAvgPUD 0.9406   
## [13] [0,5]:TourRec\_DirectHuman\_10yrAvgPUD 0.1254   
##   
## Transformed Model:  
## e(Est) e(95%L)   
## [1] Intercept 0.3800 0.3348   
## [2] LBSP\_AgGolf\_runoff\_01\_sc 1.310 0.8432   
## [3] LBSP\_Urban\_runoff\_01\_sc 0.9087 0.5289   
## [4] TourRec\_DirectHuman\_10yrAvgPUD 1.000 0.9969   
## [5] LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa 0.8863 0.8370   
## [6] LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa 1.185 1.077   
## [7] TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa 1.000 1.000   
## LBSP\_AgGolf\_runoff\_01\_sc:DepthBin\_5m   
## [8] (5,10]:LBSP\_AgGolf\_runoff\_01\_sc 0.8371 0.5586   
## [9] [0,5]:LBSP\_AgGolf\_runoff\_01\_sc 1.065 0.7032   
## LBSP\_Urban\_runoff\_01\_sc:DepthBin\_5m   
## [10] (5,10]:LBSP\_Urban\_runoff\_01\_sc 0.8729 0.5246   
## [11] [0,5]:LBSP\_Urban\_runoff\_01\_sc 0.5621 0.3380   
## TourRec\_DirectHuman\_10yrAvgPUD:DepthBin\_5m   
## [12] (5,10]:TourRec\_DirectHuman\_10yrAvgPUD 0.9999 0.9964   
## [13] [0,5]:TourRec\_DirectHuman\_10yrAvgPUD 1.003 0.9992   
## e(95%H)   
## [1] Intercept 0.4312   
## [2] LBSP\_AgGolf\_runoff\_01\_sc 2.035   
## [3] LBSP\_Urban\_runoff\_01\_sc 1.561   
## [4] TourRec\_DirectHuman\_10yrAvgPUD 1.003   
## [5] LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa 0.9385   
## [6] LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa 1.305   
## [7] TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa 1.000   
## LBSP\_AgGolf\_runoff\_01\_sc:DepthBin\_5m   
## [8] (5,10]:LBSP\_AgGolf\_runoff\_01\_sc 1.254   
## [9] [0,5]:LBSP\_AgGolf\_runoff\_01\_sc 1.614   
## LBSP\_Urban\_runoff\_01\_sc:DepthBin\_5m   
## [10] (5,10]:LBSP\_Urban\_runoff\_01\_sc 1.452   
## [11] [0,5]:LBSP\_Urban\_runoff\_01\_sc 0.9350   
## TourRec\_DirectHuman\_10yrAvgPUD:DepthBin\_5m   
## [12] (5,10]:TourRec\_DirectHuman\_10yrAvgPUD 1.003   
## [13] [0,5]:TourRec\_DirectHuman\_10yrAvgPUD 1.007   
## F stat df  
## [1] Intercept 228.48 1   
## [2] LBSP\_AgGolf\_runoff\_01\_sc 1.47 1   
## [3] LBSP\_Urban\_runoff\_01\_sc 0.12 1   
## [4] TourRec\_DirectHuman\_10yrAvgPUD 0.00 1   
## [5] LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa 17.39 1   
## [6] LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa 12.24 1   
## [7] TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa 6.80 1   
## LBSP\_AgGolf\_runoff\_01\_sc:DepthBin\_5m 2.08 2   
## [8] (5,10]:LBSP\_AgGolf\_runoff\_01\_sc 0.76 1   
## [9] [0,5]:LBSP\_AgGolf\_runoff\_01\_sc 0.09 1   
## LBSP\_Urban\_runoff\_01\_sc:DepthBin\_5m 4.08 2   
## [10] (5,10]:LBSP\_Urban\_runoff\_01\_sc 0.28 1   
## [11] [0,5]:LBSP\_Urban\_runoff\_01\_sc 5.01 1   
## TourRec\_DirectHuman\_10yrAvgPUD:DepthBin\_5m 2.78 2   
## [12] (5,10]:TourRec\_DirectHuman\_10yrAvgPUD 0.01 1   
## [13] [0,5]:TourRec\_DirectHuman\_10yrAvgPUD 2.38 1   
## Pr(>F)   
## [1] Intercept < 0.00005  
## [2] LBSP\_AgGolf\_runoff\_01\_sc 0.2276   
## [3] LBSP\_Urban\_runoff\_01\_sc 0.7269   
## [4] TourRec\_DirectHuman\_10yrAvgPUD 0.9502   
## [5] LBSP\_AgGolf\_runoff\_01\_sc:Prop\_BleachResTaxa 0.0001   
## [6] LBSP\_Urban\_runoff\_01\_sc:Prop\_BleachResTaxa 0.0006   
## [7] TourRec\_DirectHuman\_10yrAvgPUD:Prop\_BleachResTaxa 0.0101   
## LBSP\_AgGolf\_runoff\_01\_sc:DepthBin\_5m 0.1291   
## [8] (5,10]:LBSP\_AgGolf\_runoff\_01\_sc 0.3861   
## [9] [0,5]:LBSP\_AgGolf\_runoff\_01\_sc 0.7638   
## LBSP\_Urban\_runoff\_01\_sc:DepthBin\_5m 0.0189   
## [10] (5,10]:LBSP\_Urban\_runoff\_01\_sc 0.5984   
## [11] [0,5]:LBSP\_Urban\_runoff\_01\_sc 0.0268   
## TourRec\_DirectHuman\_10yrAvgPUD:DepthBin\_5m 0.0653   
## [12] (5,10]:TourRec\_DirectHuman\_10yrAvgPUD 0.9406   
## [13] [0,5]:TourRec\_DirectHuman\_10yrAvgPUD 0.1254   
##   
## (Dispersion parameter for poisson family taken to be 1)  
##   
## Null deviance: 21112 on 150 degrees of freedom  
## Residual deviance: 14288 on 138 degrees of freedom  
## AIC: 15436  
##   
## Number of Fisher Scoring iterations: 5

PAR

reg4 <- regress("rate", Affected ~ mean\_PAR\_MODIS\_Daily\_MO03 + mean\_PAR\_MODIS\_Daily\_MO03:Prop\_BleachResTaxa + mean\_PAR\_MODIS\_Daily\_MO03:Depth\_m\_mn,  
 data = hcbc,  
 offset = log(LiveCoral))  
reg4

##   
## Call:  
## regress(fnctl = "rate", formula = Affected ~ mean\_PAR\_MODIS\_Daily\_MO03 +   
## mean\_PAR\_MODIS\_Daily\_MO03:Prop\_BleachResTaxa + mean\_PAR\_MODIS\_Daily\_MO03:Depth\_m\_mn,   
## data = hcbc, offset = log(LiveCoral))  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -42.468 -5.761 0.088 5.267 26.841   
##   
## Coefficients:  
##   
## Raw Model:  
## Estimate Naive SE   
## [1] Intercept -8.967 0.1147   
## [2] mean\_PAR\_MODIS\_Daily\_MO03 0.1904 2.647e-03  
## [3] mean\_PAR\_MODIS\_Daily\_MO03:Prop\_BleachResTaxa -2.465e-04 1.424e-05  
## [4] mean\_PAR\_MODIS\_Daily\_MO03:Depth\_m\_mn -2.282e-03 3.414e-05  
## Robust SE F stat   
## [1] Intercept 1.267 50.12  
## [2] mean\_PAR\_MODIS\_Daily\_MO03 0.02896 43.25  
## [3] mean\_PAR\_MODIS\_Daily\_MO03:Prop\_BleachResTaxa 2.42e-04 1.04  
## [4] mean\_PAR\_MODIS\_Daily\_MO03:Depth\_m\_mn 3.941e-04 33.53  
## df Pr(>F)   
## [1] Intercept 1 < 0.00005  
## [2] mean\_PAR\_MODIS\_Daily\_MO03 1 < 0.00005  
## [3] mean\_PAR\_MODIS\_Daily\_MO03:Prop\_BleachResTaxa 1 0.3101   
## [4] mean\_PAR\_MODIS\_Daily\_MO03:Depth\_m\_mn 1 < 0.00005  
##   
## Transformed Model:  
## e(Est) e(95%L)   
## [1] Intercept 1.275e-04 1.043e-05  
## [2] mean\_PAR\_MODIS\_Daily\_MO03 1.210 1.142   
## [3] mean\_PAR\_MODIS\_Daily\_MO03:Prop\_BleachResTaxa 0.9998 0.9993   
## [4] mean\_PAR\_MODIS\_Daily\_MO03:Depth\_m\_mn 0.9977 0.9969   
## e(95%H) F stat   
## [1] Intercept 1.558e-03 50.12  
## [2] mean\_PAR\_MODIS\_Daily\_MO03 1.281 43.25  
## [3] mean\_PAR\_MODIS\_Daily\_MO03:Prop\_BleachResTaxa 1.000 1.04  
## [4] mean\_PAR\_MODIS\_Daily\_MO03:Depth\_m\_mn 0.9985 33.53  
## df Pr(>F)   
## [1] Intercept 1 < 0.00005  
## [2] mean\_PAR\_MODIS\_Daily\_MO03 1 < 0.00005  
## [3] mean\_PAR\_MODIS\_Daily\_MO03:Prop\_BleachResTaxa 1 0.3101   
## [4] mean\_PAR\_MODIS\_Daily\_MO03:Depth\_m\_mn 1 < 0.00005  
##   
## (Dispersion parameter for poisson family taken to be 1)  
##   
## Null deviance: 21112 on 150 degrees of freedom  
## Residual deviance: 15187 on 147 degrees of freedom  
## AIC: 16317  
##   
## Number of Fisher Scoring iterations: 4

reg04 <- regress("rate", Affected ~ mean\_PAR\_MODIS\_Daily\_MO03 + mean\_PAR\_MODIS\_Daily\_MO03:Prop\_BleachResTaxa + mean\_PAR\_MODIS\_Daily\_MO03:DepthBin\_5m,  
 data = hcbc,  
 offset = log(LiveCoral))  
reg04

##   
## Call:  
## regress(fnctl = "rate", formula = Affected ~ mean\_PAR\_MODIS\_Daily\_MO03 +   
## mean\_PAR\_MODIS\_Daily\_MO03:Prop\_BleachResTaxa + mean\_PAR\_MODIS\_Daily\_MO03:DepthBin\_5m,   
## data = hcbc, offset = log(LiveCoral))  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -41.736 -5.470 -0.449 3.887 28.585   
##   
## Coefficients:  
##   
## Raw Model:  
## Estimate Naive SE   
## [1] Intercept -7.220 0.09536   
## [2] mean\_PAR\_MODIS\_Daily\_MO03 0.1327 2.021e-03  
## [3] mean\_PAR\_MODIS\_Daily\_MO03:Prop\_BleachResTaxa -2.769e-04 1.44e-05   
## mean\_PAR\_MODIS\_Daily\_MO03:DepthBin\_5m   
## [4] (5,10]:mean\_PAR\_MODIS\_Daily\_MO03 1.049e-03 1.966e-04  
## [5] [0,5]:mean\_PAR\_MODIS\_Daily\_MO03 0.01409 2.483e-04  
## Robust SE F stat   
## [1] Intercept 1.277 31.95  
## [2] mean\_PAR\_MODIS\_Daily\_MO03 0.02717 23.85  
## [3] mean\_PAR\_MODIS\_Daily\_MO03:Prop\_BleachResTaxa 2.486e-04 1.24  
## mean\_PAR\_MODIS\_Daily\_MO03:DepthBin\_5m 20.97  
## [4] (5,10]:mean\_PAR\_MODIS\_Daily\_MO03 2.255e-03 0.22  
## [5] [0,5]:mean\_PAR\_MODIS\_Daily\_MO03 2.491e-03 31.99  
## df Pr(>F)   
## [1] Intercept 1 < 0.00005  
## [2] mean\_PAR\_MODIS\_Daily\_MO03 1 < 0.00005  
## [3] mean\_PAR\_MODIS\_Daily\_MO03:Prop\_BleachResTaxa 1 0.2672   
## mean\_PAR\_MODIS\_Daily\_MO03:DepthBin\_5m 2 < 0.00005  
## [4] (5,10]:mean\_PAR\_MODIS\_Daily\_MO03 1 0.6425   
## [5] [0,5]:mean\_PAR\_MODIS\_Daily\_MO03 1 < 0.00005  
##   
## Transformed Model:  
## e(Est) e(95%L)   
## [1] Intercept 7.318e-04 5.862e-05  
## [2] mean\_PAR\_MODIS\_Daily\_MO03 1.142 1.082   
## [3] mean\_PAR\_MODIS\_Daily\_MO03:Prop\_BleachResTaxa 0.9997 0.9992   
## mean\_PAR\_MODIS\_Daily\_MO03:DepthBin\_5m   
## [4] (5,10]:mean\_PAR\_MODIS\_Daily\_MO03 1.001 0.9966   
## [5] [0,5]:mean\_PAR\_MODIS\_Daily\_MO03 1.014 1.009   
## e(95%H) F stat   
## [1] Intercept 9.135e-03 31.95  
## [2] mean\_PAR\_MODIS\_Daily\_MO03 1.205 23.85  
## [3] mean\_PAR\_MODIS\_Daily\_MO03:Prop\_BleachResTaxa 1.000 1.24  
## mean\_PAR\_MODIS\_Daily\_MO03:DepthBin\_5m 20.97  
## [4] (5,10]:mean\_PAR\_MODIS\_Daily\_MO03 1.006 0.22  
## [5] [0,5]:mean\_PAR\_MODIS\_Daily\_MO03 1.019 31.99  
## df Pr(>F)   
## [1] Intercept 1 < 0.00005  
## [2] mean\_PAR\_MODIS\_Daily\_MO03 1 < 0.00005  
## [3] mean\_PAR\_MODIS\_Daily\_MO03:Prop\_BleachResTaxa 1 0.2672   
## mean\_PAR\_MODIS\_Daily\_MO03:DepthBin\_5m 2 < 0.00005  
## [4] (5,10]:mean\_PAR\_MODIS\_Daily\_MO03 1 0.6425   
## [5] [0,5]:mean\_PAR\_MODIS\_Daily\_MO03 1 < 0.00005  
##   
## (Dispersion parameter for poisson family taken to be 1)  
##   
## Null deviance: 21112 on 150 degrees of freedom  
## Residual deviance: 14703 on 146 degrees of freedom  
## AIC: 15835  
##   
## Number of Fisher Scoring iterations: 4

Location

reg5 <- regress("rate", Affected ~ Island\_Name + Island\_Name:Prop\_BleachResTaxa + Island\_Name:Depth\_m\_mn,  
 data = hcbc,  
 offset = log(LiveCoral))  
reg5

##   
## Call:  
## regress(fnctl = "rate", formula = Affected ~ Island\_Name + Island\_Name:Prop\_BleachResTaxa +   
## Island\_Name:Depth\_m\_mn, data = hcbc, offset = log(LiveCoral))  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -49.761 -3.274 0.007 3.922 23.823   
##   
## Coefficients:  
##   
## Raw Model:  
## Estimate Naive SE Robust SE   
## [1] Intercept -0.6161 0.04231 0.2071   
## Island\_Name   
## [2] Lanai 1.076 0.06408 0.7021   
## [3] Maui 0.05389 0.04757 0.3871   
## [4] Oahu 0.03523 0.06362 0.3036   
## Island\_Name:Prop\_BleachResTaxa   
## [5] Hawaii:Prop\_BleachResTaxa 0.01054 1.385e-03 7.327e-03   
## [6] Lanai:Prop\_BleachResTaxa -0.03025 1.427e-03 0.02405   
## [7] Maui:Prop\_BleachResTaxa 5.62e-03 1.525e-03 0.02155   
## [8] Oahu:Prop\_BleachResTaxa -4.352e-03 0.01520 0.06468   
## Island\_Name:Depth\_m\_mn   
## [9] Hawaii:Depth\_m\_mn -0.01387 4.569e-03 0.02169   
## [10] Lanai:Depth\_m\_mn -0.1636 4.879e-03 0.06595   
## [11] Maui:Depth\_m\_mn -0.05193 2.642e-03 0.03643   
## [12] Oahu:Depth\_m\_mn -0.2157 8.424e-03 0.03863   
## F stat df Pr(>F)   
## [1] Intercept 8.85 1 0.0035   
## Island\_Name 0.80 3 0.4976   
## [2] Lanai 2.35 1 0.1275   
## [3] Maui 0.02 1 0.8895   
## [4] Oahu 0.01 1 0.9078   
## Island\_Name:Prop\_BleachResTaxa 0.93 4 0.4481   
## [5] Hawaii:Prop\_BleachResTaxa 2.07 1 0.1527   
## [6] Lanai:Prop\_BleachResTaxa 1.58 1 0.2106   
## [7] Maui:Prop\_BleachResTaxa 0.07 1 0.7947   
## [8] Oahu:Prop\_BleachResTaxa 0.00 1 0.9465   
## Island\_Name:Depth\_m\_mn 9.94 4 < 0.00005  
## [9] Hawaii:Depth\_m\_mn 0.41 1 0.5235   
## [10] Lanai:Depth\_m\_mn 6.16 1 0.0143   
## [11] Maui:Depth\_m\_mn 2.03 1 0.1563   
## [12] Oahu:Depth\_m\_mn 31.16 1 < 0.00005  
##   
## Transformed Model:  
## e(Est) e(95%L) e(95%H)   
## [1] Intercept 0.5400 0.3586 0.8134   
## Island\_Name   
## [2] Lanai 2.934 0.7321 11.76   
## [3] Maui 1.055 0.4910 2.269   
## [4] Oahu 1.036 0.5683 1.888   
## Island\_Name:Prop\_BleachResTaxa   
## [5] Hawaii:Prop\_BleachResTaxa 1.011 0.9961 1.025   
## [6] Lanai:Prop\_BleachResTaxa 0.9702 0.9252 1.017   
## [7] Maui:Prop\_BleachResTaxa 1.006 0.9637 1.049   
## [8] Oahu:Prop\_BleachResTaxa 0.9957 0.8761 1.131   
## Island\_Name:Depth\_m\_mn   
## [9] Hawaii:Depth\_m\_mn 0.9862 0.9448 1.029   
## [10] Lanai:Depth\_m\_mn 0.8490 0.7453 0.9673   
## [11] Maui:Depth\_m\_mn 0.9494 0.8834 1.020   
## [12] Oahu:Depth\_m\_mn 0.8060 0.7467 0.8700   
## F stat df Pr(>F)   
## [1] Intercept 8.85 1 0.0035   
## Island\_Name 0.80 3 0.4976   
## [2] Lanai 2.35 1 0.1275   
## [3] Maui 0.02 1 0.8895   
## [4] Oahu 0.01 1 0.9078   
## Island\_Name:Prop\_BleachResTaxa 0.93 4 0.4481   
## [5] Hawaii:Prop\_BleachResTaxa 2.07 1 0.1527   
## [6] Lanai:Prop\_BleachResTaxa 1.58 1 0.2106   
## [7] Maui:Prop\_BleachResTaxa 0.07 1 0.7947   
## [8] Oahu:Prop\_BleachResTaxa 0.00 1 0.9465   
## Island\_Name:Depth\_m\_mn 9.94 4 < 0.00005  
## [9] Hawaii:Depth\_m\_mn 0.41 1 0.5235   
## [10] Lanai:Depth\_m\_mn 6.16 1 0.0143   
## [11] Maui:Depth\_m\_mn 2.03 1 0.1563   
## [12] Oahu:Depth\_m\_mn 31.16 1 < 0.00005  
##   
## (Dispersion parameter for poisson family taken to be 1)  
##   
## Null deviance: 21112 on 150 degrees of freedom  
## Residual deviance: 13642 on 139 degrees of freedom  
## AIC: 14788  
##   
## Number of Fisher Scoring iterations: 4