transplant\_growth\_lengths\_Sep\_June23

reporting\_period <- params$reporting\_period  
  
library("ggplot2")  
library("nlme")  
library("MuMIn")  
library("dplyr")

Attaching package: 'dplyr'

The following object is masked from 'package:nlme':  
  
 collapse

The following objects are masked from 'package:stats':  
  
 filter, lag

The following objects are masked from 'package:base':  
  
 intersect, setdiff, setequal, union

library("ggpubr")

Registered S3 methods overwritten by 'broom':  
 method from   
 nobs.fitdistr MuMIn  
 nobs.multinom MuMIn

library("gridExtra")

Attaching package: 'gridExtra'

The following object is masked from 'package:dplyr':  
  
 combine

library(lme4)

Loading required package: Matrix

Attaching package: 'lme4'

The following object is masked from 'package:nlme':  
  
 lmList

theme\_set(theme\_bw())  
  
library(kableExtra)

Attaching package: 'kableExtra'

The following object is masked from 'package:dplyr':  
  
 group\_rows

library(jtools)  
library(huxtable)

Attaching package: 'huxtable'

The following object is masked from 'package:kableExtra':  
  
 add\_footnote

The following object is masked from 'package:ggpubr':  
  
 font

The following object is masked from 'package:dplyr':  
  
 add\_rownames

The following object is masked from 'package:ggplot2':  
  
 theme\_grey

library(nlme)  
library(sjPlot) # table functions

Learn more about sjPlot with 'browseVignettes("sjPlot")'.

Attaching package: 'sjPlot'

The following object is masked from 'package:huxtable':  
  
 font\_size

library(sjmisc) # sample data

Attaching package: 'sjmisc'

The following objects are masked from 'package:huxtable':  
  
 add\_columns, add\_rows, print\_html, print\_md

The following objects are masked from 'package:jtools':  
  
 %nin%, center

#source(sjTabLinReg)  
library(lme4)  
library(tidymodels)

── Attaching packages ────────────────────────────────────── tidymodels 1.3.0 ──

✔ broom 1.0.7 ✔ rsample 1.3.0  
✔ dials 1.4.0 ✔ tibble 3.2.1  
✔ infer 1.0.8 ✔ tidyr 1.3.1  
✔ modeldata 1.4.0 ✔ tune 1.3.0  
✔ parsnip 1.3.1 ✔ workflows 1.2.0  
✔ purrr 1.0.4 ✔ workflowsets 1.1.0  
✔ recipes 1.3.0 ✔ yardstick 1.3.2

── Conflicts ───────────────────────────────────────── tidymodels\_conflicts() ──  
✖ tibble::add\_case() masks sjmisc::add\_case()  
✖ huxtable::add\_rownames() masks dplyr::add\_rownames()  
✖ workflows::add\_variables() masks sjmisc::add\_variables()  
✖ dplyr::collapse() masks nlme::collapse()  
✖ gridExtra::combine() masks dplyr::combine()  
✖ purrr::discard() masks scales::discard()  
✖ tidyr::expand() masks Matrix::expand()  
✖ dplyr::filter() masks stats::filter()  
✖ yardstick::get\_weights() masks jtools::get\_weights()  
✖ kableExtra::group\_rows() masks dplyr::group\_rows()  
✖ purrr::is\_empty() masks sjmisc::is\_empty()  
✖ dplyr::lag() masks stats::lag()  
✖ tidyr::pack() masks Matrix::pack()  
✖ tidyr::replace\_na() masks sjmisc::replace\_na()  
✖ recipes::step() masks stats::step()  
✖ huxtable::theme\_grey() masks ggplot2::theme\_grey()  
✖ tidyr::unpack() masks Matrix::unpack()  
✖ recipes::update() masks Matrix::update(), stats::update()

library(kableExtra)  
library(flextable)

Attaching package: 'flextable'

The following object is masked from 'package:purrr':  
  
 compose

The following objects are masked from 'package:huxtable':  
  
 align, as\_flextable, bold, font, height, italic, set\_caption,  
 valign, width

The following object is masked from 'package:jtools':  
  
 theme\_apa

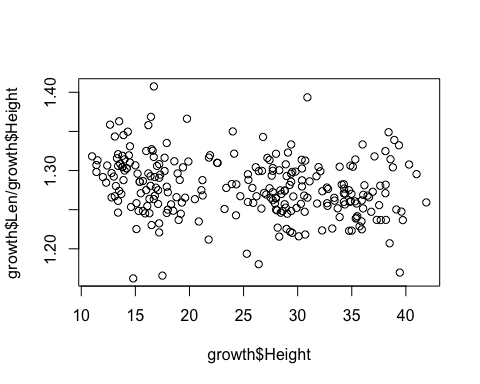
The following objects are masked from 'package:kableExtra':  
  
 as\_image, footnote

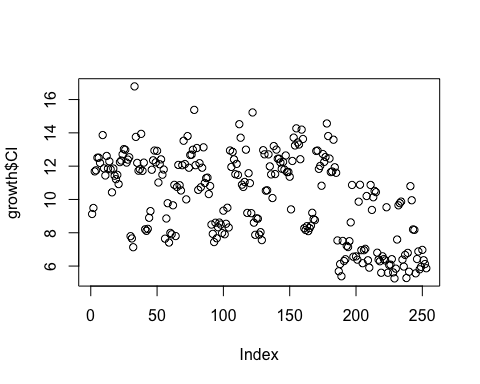
The following objects are masked from 'package:ggpubr':  
  
 border, font, rotate

library(broom)  
library(broom.mixed)

if(reporting\_period == "fall\_spring"){  
  
wd <- "~/Documents/GitHub/EAD-ASEB-Ssolidissima-OA/projects/Transplant\_growth\_survival/data/"  
growth\_fall\_spring <- read.csv(file = paste(wd,"2022\_2023\_surfclam\_transplant - All.csv",sep=""), stringsAsFactors = F)  
  
growth <-growth\_fall\_spring  
  
  
head(growth)  
str(growth)  
#growth[is.na(growth$Collection.month),]  
#growth <- growth[!is.na(growth$Collection.month),]  
growth$Elapsed\_days <- as.numeric(growth$Elapsed\_days)  
growth$Collection1\_date <- as.Date(growth$Collection1\_date, format = "%m/%d/%Y")  
growth$Site <- as.factor(growth$Site)  
growth$Collection.month <- factor(growth$Collection.month, levels = c("December", "April", "June"))  
  
growth$Site <- factor(growth$Site, levels = c("Ptown", "Eel Pond"))  
levels(growth$Site)[levels(growth$Site)=="Ptown"] <- "Provincetown"  
levels(growth$Collection.month) <- c("Dec", "Apr", "Jun")  
levels(growth$Treatment) <- c("Control","Shell addition")  
  
growth\_fall\_spring <- growth  
  
  
# For growth measurements, just use animals that were alive upon collection  
  
  
#growth <- growth[growth$Buried\_Dec=="S"|is.na(growth$Buried\_Dec),] Issue at Eel  
  
  
#Mark as alive or dead  
growth$AliveOrDead <- rep("Missing", nrow(growth))  
growth$AliveOrDead[is.na(growth$Tin.only)] <- "Dead"  
growth$AliveOrDead[!is.na(growth$Tin.only)] <- "Alive"  
growth$AliveOrDead[growth$DW==0] <- "Dead"  
  
growth\_aliveANDdead <- growth  
growth <- growth[growth$AliveOrDead=="Alive",]  
  
plot(growth$Len/growth$Height~growth$Height)  
mean(growth$Len/growth$Height, na.rm = TRUE) #1.285  
  
growth <- growth[!is.na(growth$Len/growth$Height),]  
growth[(growth$Len/growth$Height)<1.1,]  
growth[(growth$Len/growth$Height)>1.5,]  
  
growth <- growth[growth$Treatment!="Outside cage",]  
growth$Treatment <- as.factor(growth$Treatment)  
growth$AFDW <- growth$Corrected.AFDW.using.an.average.of.82...Used.for..20.samples.with...organic...7.which.was.identified.to.caused.by.incomplete..anoxic..muffle.furnace.issues.  
  
# QC  
#growth <- growth[!is.na(growth$L\_mm/growth$H\_mm)&(growth$L\_mm/growth$H\_mm)>1.1,]   
#growth <- growth[!is.na(growth$Height/growth$Len)&((growth$Height/growth$Len)>1|(growth$Height/growth$Len)<.7),]  
#growth <- growth[(growth$Height/growth$Len)<1|(growth$Height/growth$Len)>.7,]  
  
growth$CI <- growth$AFDW/(growth$Len^3)\*1000000  
plot(growth$CI)#All seem in the right range.   
growth <- growth[!is.na(growth$CI),]  
  
}

'data.frame': 555 obs. of 43 variables:  
 $ Start\_date : chr "9/27/2022" "9/27/2022" "9/27/2022" "9/27/2022" ...  
 $ Site : chr "Ptown" "Ptown" "Ptown" "Ptown" ...  
 $ Treatment : chr "N" "N" "N" "N" ...  
 $ Buried\_Dec : chr "N" "N" "N" "N" ...  
 $ Location\_code : chr "A2" "A2" "A2" "A2" ...  
 $ color.1 : chr "R" "Y" "B" "L" ...  
 $ color.2 : chr "" "" "" "" ...  
 $ Start\_len\_mm : num 13.8 12.8 11.8 11.2 10.3 ...  
 $ Start\_height\_mm : num 10.86 9.74 9.45 8.13 8.11 ...  
 $ Start\_thickness\_mm : num 5.92 5.31 5.25 4.55 4.61 4.13 4.46 4.16 3.91 5.68 ...  
 $ Collection.month : chr "December" "December" "December" "December" ...  
 $ Collection1\_date : chr "12/4/2022" "12/4/2022" "12/4/2022" "12/4/2022" ...  
 $ Elapsed\_days : int 68 68 68 68 68 68 68 68 68 202 ...  
 $ depth\_cm : chr "4+" "4+" "" "" ...  
 $ color\_collection : chr "R" "NO LABEL" "" "" ...  
 $ L\_mm\_extra : num 24.1 21.6 NA NA NA NA NA NA NA NA ...  
 $ H\_mm\_extra : num 19.3 17.1 NA NA NA NA NA NA NA NA ...  
 $ T\_mm : num 11.2 10 NA NA NA NA NA NA NA NA ...  
 $ Collection.notes : chr "" "" "" "" ...  
 $ Dissection.ID.label : chr "P125" "P126" "" "" ...  
 $ Label.different.when.collected : chr "" "no label" "" "" ...  
 $ Biodeposition.label : chr "" "" "" "" ...  
 $ Dead\_or\_missing : chr "N" "N" "Y" "Y" ...  
 $ Len : num 23.9 21.5 NA NA NA NA NA NA NA 37.5 ...  
 $ Height : num 19.2 17.1 NA NA NA NA NA NA NA 29.6 ...  
 $ Thickness : num 11.2 10 NA NA NA NA NA NA NA NA ...  
 $ Est..growth.by.height : num 8.44 7.36 NA NA NA NA NA NA NA NA ...  
 $ Est.start.height.from.linear.function : num 10.5 9.6 9.3 8.2 8.2 7.8 8 7.7 7.4 10.3 ...  
 $ Start\_height.from.marking : num 11 9.7 NA NA NA ...  
 $ Growth.increment.from.mark\_height : num 10.9 9.3 NA NA NA NA NA NA NA 23.5 ...  
 $ Tin.only : num 1.09 1.1 NA NA NA ...  
 $ Tin...gonad...somatic.tissue : num 1.25 1.22 NA NA NA ...  
 $ Reweigh..if.necessary. : num NA NA NA NA NA NA NA NA NA NA ...  
 $ Ash.weight..tin...gonad...somatic.tissue. : num 1.18 1.15 NA NA NA ...  
 $ DW : num 0.152 0.115 NA NA NA NA NA NA NA 0.727 ...  
 $ AFDW : num 0.07 0.067 NA NA NA ...  
 $ Ratio.for.samples.with.DW.0.01g : chr "46%" "58%" "" "" ...  
 $ Corrected.AFDW.using.an.average.of.82...Used.for..20.samples.with...organic...7.which.was.identified.to.caused.by.incomplete..anoxic..muffle.furnace.issues.: num 0.1246 0.0943 NA NA NA ...  
 $ Notes : chr "" "Most likely Y (2nd of color series) given start height" "" "" ...  
 $ X..gonad : chr "" "" "" "" ...  
 $ X..digestive : chr "" "" "" "" ...  
 $ Shell.weight : num NA NA NA NA NA NA NA NA NA NA ...  
 $ Start.height.function.params : num 0.839 1.389 NA NA NA ...





if(reporting\_period == "summer"){  
wd <- "~/GitHub/EAD-ASEB-Ssolidissima-OA/projects/Transplant\_growth\_survival/data/"  
growth\_summer <- read.csv(file = paste(wd,"June2022\_Sep2022\_surfclam\_transplant.xlsx - data.csv",sep=""), stringsAsFactors = F)  
  
growth<-growth\_summer  
  
growth <- growth[!is.na(growth$Collection.month),]  
growth$Elapsed\_days <- as.numeric(growth$Elapsed\_days)  
growth$Collection1\_date <- as.Date(growth$Collection\_date, format = "%m/%d/%Y")  
growth$Site <- as.factor(growth$Site)  
growth$Collection.month <- factor(growth$Collection.month)  
levels(growth$Collection.month)[levels(growth$Collection.month)=='August\_transcriptomics'] <- 'August'  
  
growth$Site <- factor(growth$Site, levels = c("Ptown", "Eel\_Pond", "Dennis"))  
levels(growth$Site) <- c("Prov", "Eel Pond", "Dennis")  
growth$Collection.month <- factor(growth$Collection.month, levels = c("July", "August", "September"))  
levels(growth$Collection.month) <- c("Jul", "Aug", "Sep")  
  
growth\_summer <- growth  
  
# For growth measurements, just use animals that were alive upon collection  
  
growth <- growth[growth$AliveOrDead=="L",]  
growth <- growth[!is.na(growth$Collection.month),]  
  
  
plot(growth$Len/growth$Height, xlim = c(340,360))  
mean(growth$Len/growth$Height, na.rm = TRUE) #1.285  
growth[growth$Len/growth$Height>1.2,]  
growth[growth$Len/growth$Height<1.1,]  
plot(growth$Len/growth$Height~growth$Height)  
  
growth$Treatment <- as.factor(growth$Treatment)  
growth$CI <- growth$AFDW/(growth$Len^3)\*1000000  
  
plot(growth$CI)  
growth[growth$CI>10,]  
  
growth <- growth[growth$CI<10,]  
plot(growth$CI)  
  
  
growth$AFDW <- growth$AFDW\_g  
growth$DW <- as.numeric(growth$DW\_g)  
  
  
  
}

##------------------------------------------------------------  
## I still need to fill in any QC'ed data --  
## with the ratio of length to height --  
## But first, I want to check the notebook / frozen clams --  
##------------------------------------------------------------  
  
growth[!is.na(growth$Start\_len\_mm),]

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Start\_date** | **Site** | **Treatment** | **Buried\_Dec** | **Location\_code** | **color.1** | **color.2** | **Start\_len\_mm** | **Start\_height\_mm** | **Start\_thickness\_mm** | **Collection.month** | **Collection1\_date** | **Elapsed\_days** | **depth\_cm** | **color\_collection** | **L\_mm\_extra** | **H\_mm\_extra** | **T\_mm** | **Collection.notes** | **Dissection.ID.label** | **Label.different.when.collected** | **Biodeposition.label** | **Dead\_or\_missing** | **Len** | **Height** | **Thickness** | **Est..growth.by.height** | **Est.start.height.from.linear.function** | **Start\_height.from.marking** | **Growth.increment.from.mark\_height** | **Tin.only** | **Tin...gonad...somatic.tissue** | **Reweigh..if.necessary.** | **Ash.weight..tin...gonad...somatic.tissue.** | **DW** | **AFDW** | **Ratio.for.samples.with.DW.0.01g** | **Corrected.AFDW.using.an.average.of.82...Used.for..20.samples.with...organic...7.which.was.identified.to.caused.by.incomplete..anoxic..muffle.furnace.issues.** | **Notes** | **X..gonad** | **X..digestive** | **Shell.weight** | **Start.height.function.params** | **AliveOrDead** | **CI** |
| 9/27/2022 | Provincetown | N | N | A2 | R |  | 13.8 | 10.9 | 5.92 | Dec | 2022-12-04 | 68 | 4+ | R | 24.1 | 19.3 | 11.2 |  | P125 |  |  | N | 23.9 | 19.2 | 11.2 | 8.44 | 10.5 | 11 | 10.9 | 1.09 | 1.25 |  | 1.18 | 0.152 | 0.125 | 46% | 0.125 |  |  |  |  | 0.839 | Alive | 9.13 |
| 9/27/2022 | Provincetown | N | N | A2 | Y |  | 12.8 | 9.74 | 5.31 | Dec | 2022-12-04 | 68 | 4+ | NO LABEL | 21.6 | 17.1 | 10 |  | P126 | no label |  | N | 21.5 | 17.1 | 10 | 7.36 | 9.6 | 9.7 | 9.3 | 1.1 | 1.22 |  | 1.15 | 0.115 | 0.0943 | 58% | 0.0943 | Most likely Y (2nd of color series) given start height |  |  |  | 1.39 | Alive | 9.49 |
| 9/27/2022 | Provincetown | N |  | A3 | R |  | 13.4 | 10.6 | 5.68 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P51 |  | 3 | N | 37.5 | 29.6 |  |  | 10.3 | 10.8 | 23.5 | 1.08 | 1.81 |  | 1.19 | 0.727 | 0.616 | 85% | 0.616 |  |  |  |  |  | Alive | 11.7 |
| 9/27/2022 | Provincetown | N |  | A3 | Y |  | 12.5 | 9.29 | 5.01 | Apr | 2023-04-17 | 202 | Deep |  |  |  |  |  | P.1 |  |  | N | 41 | 31.7 | 18.5 |  | 9.2 | 9.77 | 27.2 | 0.989 | 1.96 |  | 1.15 | 0.973 | 0.812 | 83% | 0.812 |  |  |  |  |  | Alive | 11.8 |
| 9/27/2022 | Provincetown | N |  | A3 | B |  | 11.8 | 9.32 | 5.02 | Apr | 2023-04-17 | 202 | Deep |  |  |  |  |  | P.2 |  |  | N | 37.8 | 29.4 | 16.2 |  | 9.2 | 9.3 | 24.3 | 1 | 1.78 |  | 1.11 | 0.783 | 0.675 | 86% | 0.675 |  |  |  |  |  | Alive | 12.5 |
| 9/27/2022 | Provincetown | N |  | A3 | L |  | 11.1 | 8.64 | 4.62 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P52 |  | 4 | N | 37 | 28 |  |  | 8.6 | 8.49 | 23.9 | 1.09 | 1.84 |  | 1.2 | 0.749 | 0.634 | 85% | 0.634 |  |  |  |  |  | Alive | 12.5 |
| 9/27/2022 | Provincetown | N |  | A3 | R | Y | 10.5 | 8.12 | 4.44 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.28 | NL |  | N | 34.3 | 26.4 | 15.9 |  | 8.2 | 8.26 | 22.2 | 1.07 | 1.64 |  | 1.15 | 0.574 | 0.492 | 86% | 0.492 |  |  |  |  |  | Alive | 12.2 |
| 9/27/2022 | Provincetown | N |  | A3 | R | L | 9.92 | 7.56 | 4.13 | Apr | 2023-04-17 | 202 | Deep |  |  |  |  |  | P.3 | NL |  | N | 32 | 25.4 | 15 |  | 7.7 | 7.8 | 21.7 | 1.01 | 1.54 |  | 1.08 | 0.526 | 0.454 | 86% | 0.454 |  |  |  |  |  | Alive | 13.9 |
| 9/27/2022 | Provincetown | N |  | A3 | Y | B | 9.81 | 7.56 | 4.33 | Apr | 2023-04-17 | 202 | Deep |  |  |  |  |  | P.4 |  |  | N | 36 | 27.4 | 15.7 |  | 7.7 | 7.51 | 23.6 | 0.991 | 1.63 |  | 1.08 | 0.642 | 0.553 | 86% | 0.553 |  |  |  |  |  | Alive | 11.9 |
| 9/27/2022 | Provincetown | N |  | A4 | R |  | 14.4 | 10.9 | 5.86 | Jun | 2023-06-11 | 257 |  |  | 45.8 | 36.1 | 21.3 |  |  | Y | GTT-5 | N | 45.8 | 36.1 | 21.3 |  | 10.6 | 10.1 | 32.2 | 1.07 | 2.4 |  | 1.31 | 1.33 | 1.1 | 83% | 1.1 |  |  |  | 10.7 |  | Alive | 11.4 |
| 9/27/2022 | Provincetown | N |  | A4 | B |  | 11.4 | 9.17 | 5.2 | Jun | 2023-06-11 | 257 |  |  | 46.5 | 38.5 | 22 |  |  | NL | 2 | N | 46.5 | 38.5 | 22 |  | 9.1 | 9.12 | 34.5 | 1.07 | 2.54 |  | 1.27 | 1.46 | 1.27 | 87% | 1.27 |  |  |  | 11.5 |  | Alive | 12.6 |
| 9/27/2022 | Provincetown | N |  | A4 | L |  | 11.9 | 9.45 | 4.91 | Jun | 2023-06-11 | 257 | Deep? |  | 48.9 | 38.1 | 23 |  | P3 | NL |  | N | 48.9 | 38.1 | 23 |  | 9.3 | 9.59 | 34.4 | 1.07 | 2.72 |  | 1.33 | 1.65 | 1.39 | 84% | 1.39 |  |  |  | 11.7 |  | Alive | 11.9 |
| 9/27/2022 | Provincetown | N |  | A4 | R | Y | 10.6 | 8.3 | 4.65 | Jun | 2023-06-11 | 257 | Shallow? |  | 43.9 | 35.7 | 22.6 |  | P1 | RY |  | N | 43.9 | 35.7 | 22.6 |  | 8.4 | 8.29 | 32.3 | 1.05 | 2.31 |  | 1.27 | 1.25 | 1.04 | 83% | 1.04 |  |  |  | 11 |  | Alive | 12.3 |
| 9/27/2022 | Provincetown | N |  | A4 | R | B | 9.84 | 7.19 | 3.97 | Jun | 2023-06-11 | 257 |  |  | 46.1 | 37.3 | 21 |  |  | BR | GTT-3 | N | 46.1 | 37.3 | 21 |  | 7.4 | 8.46 | 34.6 | 1.07 | 2.46 |  | 1.3 | 1.39 | 1.16 | 84% | 1.16 |  |  |  | 10.9 |  | Alive | 11.8 |
| 9/27/2022 | Provincetown | N |  | A4 | R | L | 10 | 7.45 | 4.12 | Jun | 2023-06-11 | 257 | Deep? |  | 41.9 | 32.8 | 20.1 |  | P2 | NL |  | N | 41.9 | 32.8 | 20.1 |  | 7.6 | 8.07 | 29.8 | 1.08 | 2.03 |  | 1.26 | 0.943 | 0.766 | 81% | 0.766 |  |  |  | 8.48 |  | Alive | 10.4 |
| 9/27/2022 | Provincetown | N |  | A4 | B | L | 8.95 | 6.98 | 3.75 | Jun | 2023-06-11 | 257 | Deep? |  | 47.1 | 37.5 | 21.2 |  | P4 | NL |  | N | 47.1 | 37.5 | 21.2 |  | 7.2 | 6.35 | 35.9 | 1.07 | 2.55 |  | 1.3 | 1.48 | 1.24 | 84% | 1.24 |  |  |  | 11.1 |  | Alive | 11.9 |
| 9/27/2022 | Provincetown | S |  | B1 | R |  | 14.1 | 10.7 | 6.36 | Jun | 2023-06-11 | 257 |  |  | 50.7 | 38.6 | 23.2 |  |  | R | GTT-4 | N | 50.7 | 38.6 | 23.2 |  | 10.4 | 11.1 | 34.5 | 1.07 | 2.8 |  | 1.31 | 1.73 | 1.49 | 86% | 1.49 |  |  |  | 11.7 |  | Alive | 11.4 |
| 9/27/2022 | Provincetown | S |  | B1 | R | B | 10.3 | 7.67 | 4.62 | Jun | 2023-06-11 | 257 | Deep |  | 52.1 | 38.9 | 23.4 |  | P5 | XX |  | N | 52.1 | 38.9 | 23.4 |  | 7.8 | 7.46 | 36.3 | 1.09 | 3 |  | 1.41 | 1.91 | 1.59 | 83% | 1.59 |  |  |  | 12.4 |  | Alive | 11.2 |
| 9/27/2022 | Provincetown | S |  | B1 | R | L | 10.7 | 8.36 | 4.53 | Jun | 2023-06-11 | 257 |  |  | 44 | 34.9 | 21.9 |  |  | RX | 19 | N | 44 | 34.9 | 21.9 |  | 8.4 | 8.58 | 32.5 | 1.09 | 2.3 |  |  | 1.21 | 0.98 | 81% | 0.98 | No Ash weight. Estimated AFDW from average 81% organic |  |  | 10.3 |  | Alive | 11.5 |
| 9/27/2022 | Provincetown | S |  | B1 | Y | B | 9.27 | 6.96 | 3.88 | Jun | 2023-06-11 | 257 |  |  | 43.7 | 34.1 | 19.9 |  |  | BY | GTT-2 | N | 43.7 | 34.1 | 19.9 |  | 7.2 | 7.15 | 32.3 | 1.06 | 2.17 |  | 1.45 | 1.11 | 0.91 | 65% | 0.91 |  |  |  | 8.99 |  | Alive | 10.9 |
| 9/27/2022 | Provincetown | S |  | B2 | R |  | 14.2 | 10.9 | 6.32 | Apr | 2023-04-17 | 202 | Deep |  |  |  |  |  | PBR |  |  | N | 39.9 | 30.4 | 17.2 |  | 10.5 | 11.1 | 24 | 1 | 1.91 |  | 1.13 | 0.907 | 0.778 | 86% | 0.778 |  |  |  |  |  | Alive | 12.2 |
| 9/27/2022 | Provincetown | S |  | B2 | Y |  | 12.8 | 9.87 | 5.58 | Apr | 2023-04-17 | 202 | Deep |  |  |  |  |  | P.B.Y |  | 5 | N | 37.5 | 29.3 | 16.3 |  | 9.7 | 9.89 | 23.6 | 1.01 | 1.78 |  | 1.13 | 0.765 | 0.651 | 85% | 0.651 |  |  |  |  |  | Alive | 12.3 |
| 9/27/2022 | Provincetown | S |  | B2 | B |  | 12.1 | 9.65 | 5.31 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P53 | NL |  | N | 38.1 | 30.3 |  |  | 9.5 | 9.72 | 25.3 | 1.07 | 1.91 |  | 1.21 | 0.838 | 0.703 | 84% | 0.703 |  |  |  |  |  | Alive | 12.7 |
| 9/27/2022 | Provincetown | S |  | B2 | R | Y | 10.1 | 8.16 | 4.19 | Apr | 2023-04-17 | 202 | Deep |  |  |  |  |  | PB.RY |  |  | N | 35.4 | 28.4 | 15.7 |  | 8.2 | 8.37 | 24.4 | 1 | 1.69 |  | 1.11 | 0.69 | 0.58 | 84% | 0.58 |  |  |  |  |  | Alive | 13 |
| 9/27/2022 | Provincetown | S |  | B2 | R | B | 10.1 | 8.3 | 4.63 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P54 | NL | 6 | N | 34.4 | 28.3 |  |  | 8.4 | 8.44 | 23.7 | 1.09 | 1.71 |  | 1.18 | 0.617 | 0.529 | 86% | 0.529 |  |  |  |  |  | Alive | 13 |
| 9/27/2022 | Provincetown | S |  | B2 | R | L | 10.2 | 7.83 | 4.47 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.67 |  |  | N | 36.8 | 28.3 | 16.6 |  | 8 |  | 25.2 | 1.05 | 1.76 |  | 1.15 | 0.712 | 0.609 | 86% | 0.609 |  |  |  |  |  | Alive | 12.2 |
| 9/27/2022 | Provincetown | S |  | B2 | Y | B | 9.69 | 7.44 | 4.03 | Apr | 2023-04-17 | 202 | Deep |  |  |  |  |  | P.B.YB |  |  | N | 39.1 | 30.4 | 17.2 |  | 7.6 | 7.57 | 30.4 | 1.01 | 1.89 |  | 1.14 | 0.879 | 0.743 | 85% | 0.743 |  |  |  |  |  | Alive | 12.4 |
| 9/27/2022 | Provincetown | S |  | B2 | B | L | 9.69 | 7.72 | 4.41 | Apr | 2023-04-17 | 202 | Deep |  |  |  |  |  | P.B.BL |  |  | N | 36.1 | 29 | 17.1 |  | 7.9 | 7.87 | 25.2 | 1 | 1.7 |  | 1.11 | 0.704 | 0.592 | 84% | 0.592 |  |  |  |  |  | Alive | 12.5 |
| 9/27/2022 | Provincetown | S | N | B3 | R |  | 14 | 10.9 | 6.01 | Dec | 2022-12-04 | 68 | 4+ | R | 26.2 | 19.9 | 11.4 |  | P127 |  |  | N | 26.1 | 19.9 | 11.4 | 9.01 | 10.5 | 11 | 10.3 | 1.09 | 1.26 |  | 1.16 | 0.169 | 0.139 | 59% | 0.139 |  |  |  |  |  | Alive | 7.8 |
| 9/27/2022 | Provincetown | S | N | B3 | R | L | 10.2 | 7.85 | 4.36 | Dec | 2022-12-04 | 68 | 0-4 | NO LABEL | 21.4 | 16.7 | 9.5 |  | P130 | No label |  | N | 21.3 | 16.8 | 9.5 | 8.85 | 8 | 7.9 | 11.3 | 1.1 | 1.19 |  | 1.12 | 0.092 | 0.074 | 80% | 0.074 |  |  |  |  |  | Alive | 7.66 |
| 9/27/2022 | Provincetown | S | N | B3 | B | L | 8.76 | 6.98 | 3.67 | Dec | 2022-12-04 | 68 | 0-4 | BL | 20.9 | 16.8 | 8.6 |  | P129 |  |  | N | 21.1 | 16.7 | 8.6 | 9.82 | 7.2 | 6.9 | 11.2 | 1.11 | 1.19 |  | 1.12 | 0.084 | 0.067 | 80% | 0.067 |  |  |  |  |  | Alive | 7.13 |
| 9/27/2022 | Provincetown | N |  | C1 | R |  | 14.8 | 11.4 | 6.51 | Jun | 2023-06-11 | 257 | S | C3 - R | 46.1 | 39.4 | 23.1 | length not measured. It is estimated from sum of measured start height and growth increment; Cage C1 clams not in C1, but in C2-4. It's possible that a beachgoer was interested in them, pulled them out, and then put them back in the same row, but not in the same cage between April and June. Only 1 clam is alive from the C-row. | P32 | C3 - R |  | N | 46.1 | 39.4 | 23.1 |  | 10.9 | 10.5 | 35.6 | 1.07 | 2.9 |  | 1.25 | 1.83 | 1.65 | 90% | 1.65 |  |  |  | 12.7 |  | Alive | 16.8 |
| 9/27/2022 | Provincetown | N |  | C1 | R | B | 11.6 | 9.07 | 5.01 | Jun | 2023-06-11 | 257 |  | C4-NL | 49.4 | 39.6 | 25.2 | Cage C1 clams not in C1, but in C2-4. It's possible that a beachgoer was interested in them, pulled them out, and then put them back in the same row, but not in the same cage between April and June. Most of these clams are dead. |  | C4-NL | 18 | N | 49.4 | 39.6 | 25.2 |  | 9 | 10.6 | 34.5 | 1.06 | 3.11 |  |  | 2.05 | 1.66 | 81% | 1.66 | No Ash weight. Estimated AFDW from average 81% organic |  |  | 13.3 |  | Alive | 13.8 |
| 9/27/2022 | Provincetown | N |  | C2 | Y |  | 12 | 9.4 | 5.28 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P-5 |  |  | N | 38.1 | 29.4 | 17.5 |  | 9.3 | 9.5 | 24.8 | 0.999 | 1.79 |  | 1.12 | 0.791 | 0.674 | 85% | 0.674 |  |  |  |  |  | Alive | 12.2 |
| 9/27/2022 | Provincetown | N |  | C2 | L |  | 11.6 | 9.26 | 4.87 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P56 |  | 8 | N | 36.2 | 28.4 |  |  | 9.2 | 9.31 | 23.5 | 1.06 | 1.72 |  | 1.17 | 0.658 | 0.556 | 84% | 0.556 |  |  |  |  |  | Alive | 11.7 |
| 9/27/2022 | Provincetown | N |  | C2 | R | Y | 10.9 | 8.33 | 4.51 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P6 |  |  | N | 38.9 | 30.4 | 17.7 |  | 8.4 | 8.25 | 26.8 | 1.01 | 1.83 |  | 1.13 | 0.818 | 0.696 | 85% | 0.696 |  |  |  |  |  | Alive | 11.8 |
| 9/27/2022 | Provincetown | N |  | C2 | R | B | 9.94 | 7.84 | 4.35 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.68 |  |  | N | 33 | 25.8 | 15.7 |  | 8 | 7.95 | 21.8 | 1.01 | 1.59 |  | 1.09 | 0.583 | 0.5 | 86% | 0.5 |  |  |  |  |  | Alive | 13.9 |
| 9/27/2022 | Provincetown | N |  | C2 | R | L | 10.3 | 7.87 | 4.55 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | p55 | C3 - R? Must be C2-RX | 7 | N | 33.2 | 26.2 |  |  | 8 | 7.9 | 22.1 | 1.05 | 1.56 |  | 1.13 | 0.511 | 0.429 | 84% | 0.429 |  |  |  |  |  | Alive | 11.7 |
| 9/27/2022 | Provincetown | N |  | C2 | Y | B | 9.54 | 7.16 | 4.12 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.7 |  |  | N | 34.7 | 26.7 | 16 |  | 7.4 | 7.18 | 23.6 | 1.02 | 1.64 |  | 1.13 | 0.611 | 0.51 | 84% | 0.51 |  |  |  |  |  | Alive | 12.2 |
| 9/27/2022 | Provincetown | S | N | D2 | R |  | 13 | 10 | 5.44 | Dec | 2022-12-04 | 68 | 0-4 | R | 22.5 | 17.9 |  | LOOKS LIKE RED AND SOME MISSING NAIL POLISH COLOR BUT POSSIBLE JUST RED, growth marking mismatch | G111 |  |  | N | 22.3 | 17.9 |  | 7.88 | 9.8 | 10 | 9 | 1.12 | 1.23 |  | 1.14 | 0.111 | 0.091 | 82% | 0.091 |  |  |  |  |  | Alive | 8.21 |
| 9/27/2022 | Provincetown | S | N | D2 | Y |  | 12.7 | 9.99 | 5.28 | Dec | 2022-12-04 | 68 | 0-4 | Y | 20.3 | 18.6 | 10.1 |  | G112 |  |  | N | 23.1 | 18.5 | 10.1 | 8.61 | 9.8 | 10 | 10.4 | 1.12 | 1.24 |  | 1.14 | 0.121 | 0.1 | 83% | 0.1 |  |  |  |  |  | Alive | 8.11 |
| 9/27/2022 | Provincetown | S | N | D2 | L |  | 11.5 | 8.68 | 4.49 | Dec | 2022-12-04 | 68 | 0-4 | L | 24.3 | 19 | 9.9 |  | G113 |  |  | N | 23.8 | 18.8 | 9.9 | 10.3 | 8.7 | 8.7 | 12 | 1.1 | 1.24 |  | 1.13 | 0.142 | 0.111 | 78% | 0.111 |  |  |  |  |  | Alive | 8.23 |
| 9/27/2022 | Provincetown | S | N | D2 | Y | B | 9.48 | 7.33 | 3.82 | Dec | 2022-12-04 | 68 | 0-4 | BY | 19.7 | 15.8 | 8.4 | growth marking mismatch | G114 |  |  | N | 19.6 | 15.7 | 8.4 | 8.47 | 7.5 | 7.3 | 12.4 | 1.09 | 1.18 |  | 1.11 | 0.082 | 0.067 | 82% | 0.067 |  |  |  |  |  | Alive | 8.9 |
| 9/27/2022 | Provincetown | S | N | D2 | B | L | 9.47 | 7.31 | 3.96 | Dec | 2022-12-04 | 68 | 0-4 | BL | 18.5 | 14.9 | 8.2 | growth marking mismatch | G115 |  |  | N | 18.3 | 14.6 | 8.2 | 7.59 | 7.5 | 7.3 | 18.9 | 1.1 | 1.17 |  | 1.11 | 0.069 | 0.057 | 83% | 0.057 |  |  |  |  |  | Alive | 9.3 |
| 9/27/2022 | Provincetown | S |  | D3 | R |  | 12.9 | 10.1 | 5.42 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.69 |  |  | N | 41.7 | 32.1 | 18.5 |  | 9.8 | 10 | 26.5 | 0.995 | 2 |  | 1.14 | 1 | 0.854 | 85% | 0.854 |  |  |  |  |  | Alive | 11.8 |
| 9/27/2022 | Provincetown | S |  | D3 | L |  | 10.8 | 8.44 | 4.7 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P.8 |  |  | N | 35.5 | 29 | 16.2 |  | 8.5 | 8.6 | 24.6 | 1.01 | 1.66 |  | 1.1 | 0.649 | 0.553 | 85% | 0.553 |  |  |  |  |  | Alive | 12.4 |
| 9/27/2022 | Provincetown | S |  | D3 | R | B | 10.6 | 8.03 | 4.49 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P9 |  |  | N | 34.8 | 27.5 | 16.1 |  | 8.1 | 8.1 | 23.3 | 0.997 | 1.65 |  | 1.1 | 0.649 | 0.545 | 84% | 0.545 |  |  |  |  |  | Alive | 12.9 |
| 9/27/2022 | Provincetown | S |  | D3 | R | L | 9.92 | 7.66 | 4.35 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.57 | RX | 9 | N | 36 | 27.7 |  |  | 7.8 | 7.96 | 24.5 | 1.08 | 1.75 |  | 1.17 | 0.664 | 0.571 | 86% | 0.571 |  |  |  |  |  | Alive | 12.2 |
| 9/27/2022 | Provincetown | S |  | D3 | Y | B | 10.1 | 7.43 | 3.97 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P.10 |  |  | N | 36.2 | 28.5 | 16.3 |  | 7.6 | 8 | 24.4 | 0.995 | 1.72 |  | 1.11 | 0.73 | 0.613 | 84% | 0.613 |  |  |  |  |  | Alive | 12.9 |
| 9/27/2022 | Provincetown | S |  | D3 | B | L | 9.29 | 6.95 | 3.86 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.58 |  | 10 | N | 35.7 | 27.6 |  |  | 7.2 | 6.79 | 24.2 | 1.06 | 1.65 |  | 1.15 | 0.591 | 0.501 | 85% | 0.501 |  |  |  |  |  | Alive | 11 |
| 9/27/2022 | Provincetown | S |  | D4 | R | Y | 10.2 | 7.71 | 4.39 | Jun | 2023-06-11 | 257 |  | RY | 43.7 | 34.4 | 20.9 |  |  |  |  | N | 43.7 | 34.4 | 20.9 |  | 7.9 | 7.9 | 31.8 | 1.09 | 2.28 |  | 1.27 | 1.18 | 1.01 | 85% | 1.01 | Measured Nov 2023 |  |  |  |  | Alive | 12.1 |
| 9/27/2022 | Provincetown | S |  | D4 | R | B | 11.2 | 9.06 | 5.09 | Jun | 2023-06-11 | 257 |  |  | 46.6 | 37.7 | 22.7 |  |  |  | 15 | N | 46.6 | 37.7 | 22.7 |  | 9 | 9.36 | 34.7 | 1.08 | 2.63 |  |  | 1.55 | 1.26 | 81% | 1.26 | No Ash weight. Estimated AFDW from average 81% organic |  |  | 12.1 |  | Alive | 12.4 |
| 9/27/2022 | Provincetown | S |  | D4 | R | L | 9.8 | 7.95 | 4.6 | Jun | 2023-06-11 | 257 | Deep |  | 52.8 | 41.9 | 25.7 | moved from BL to one with similar start height | P6 | NL |  | N | 52.8 | 41.9 | 25.7 |  | 8.1 | 8.3 | 37.1 | 1.88 | 3.96 |  | 2.28 | 2.08 | 1.69 | 81% | 1.69 |  | 0.5% | 27% | 14.1 |  | Alive | 11.5 |
| 9/27/2022 | Provincetown | S |  | D4 | B | L | 8.3 | 6.21 | 3.44 | Jun | 2023-06-11 | 257 |  |  | 43.5 | 34.3 | 21.7 |  |  | LX | 17 | N | 43.5 | 34.3 | 21.7 |  | 6.6 | 6.43 | 32.8 | 1.07 | 2.28 |  |  | 1.2 | 0.974 | 81% | 0.974 | No Ash weight. Estimated AFDW from average 81% organic |  |  | 9.84 |  | Alive | 11.8 |
| 9/27/2022 | Provincetown | S | N | E2 | R |  | 12.2 | 9.3 | 5.43 | Dec | 2022-12-04 | 68 | 0-4 | R | 23.1 | 17.8 | 10.2 |  | G118 |  |  | N | 23 | 17.7 | 10.2 | 8.5 | 9.2 | 9.3 | 9.8 | 1.09 | 1.21 |  | 1.11 | 0.111 | 0.093 | 84% | 0.093 |  |  |  |  |  | Alive | 7.64 |
| 9/27/2022 | Provincetown | S | N | E2 | Y |  | 10.4 | 8.17 | 4.43 | Dec | 2022-12-04 | 68 | 4+ | Y | 20.4 | 16.4 | 8.9 |  | G119 |  |  | N | 20.2 | 16.1 | 8.9 | 8.23 | 8.2 | 8.2 | 9.9 | 1.09 | 1.18 |  | 1.11 | 0.087 | 0.073 | 84% | 0.073 |  |  |  |  |  | Alive | 8.86 |
| 9/27/2022 | Provincetown | S | N | E2 | B |  | 11.2 | 8.52 | 4.62 | Dec | 2022-12-04 | 68 | 0-4 | B | 20.5 | 17.3 | 9.6 |  | G120 |  |  | N | 20.4 | 17.5 | 9.6 | 8.78 | 8.5 | 8.7 | 10.6 | 1.09 | 1.19 |  | 1.1 | 0.102 | 0.083 | 81% | 0.083 |  |  |  |  |  | Alive | 9.78 |
| 9/27/2022 | Provincetown | S | N | E2 | L |  | 10.9 | 8.81 | 4.79 | Dec | 2022-12-04 | 68 | 0-4 | NO LABEL | 22.5 | 17.4 | 9.6 |  | G121 |  |  | N | 22.4 | 17.3 | 9.6 | 8.59 | 8.8 | 8.8 | 10.6 | 1.09 | 1.19 |  | 1.11 | 0.101 | 0.0833 | 82% | 0.0833 |  |  |  |  |  | Alive | 7.41 |
| 9/27/2022 | Provincetown | S | N | E2 | R | Y | 11 | 8.03 | 4.31 | Dec | 2022-12-04 | 68 | 0-4 | NO LABEL | 19.8 | 15.6 | 8.6 |  | G123 |  |  | N | 19.7 | 15.5 | 8.6 | 8.19 | 8.1 | 7.8 | 10 | 1.09 | 1.16 |  | 1.1 | 0.075 | 0.0611 | 81% | 0.0611 |  |  |  |  |  | Alive | 7.99 |
| 9/27/2022 | Provincetown | S |  | E3 | R |  | 12.3 | 9.63 | 5.22 | Jun | 2023-06-11 | 257 |  |  | 45.3 | 35.9 | 21.3 |  |  | R | 14 | N | 45.3 | 35.9 | 21.3 |  | 9.5 | 9.93 | 31.9 | 1.06 | 2.31 |  |  | 1.25 | 1.01 | 81% | 1.01 | No Ash weight. Estimated AFDW from average 81% organic |  |  | 10.4 |  | Alive | 10.9 |
| 9/27/2022 | Provincetown | S |  | E3 | Y |  | 11.3 | 8.93 | 4.78 | Jun | 2023-06-11 | 257 |  |  | 50.6 | 38.8 | 22.2 |  |  | Y |  | N | 50.6 | 38.8 | 22.2 |  | 8.9 | 7.9 | 31.8 | 1.09 | 2.28 |  | 1.27 | 1.18 | 1.01 | 85% | 1.01 | 0.8535123269 |  |  | 9.44 |  | Alive | 7.8 |
| 9/27/2022 | Provincetown | S |  | E3 | B |  | 10.9 | 8.57 | 4.7 | Jun | 2023-06-11 | 257 |  |  | 42.8 | 35 | 19.8 |  |  | NL | 13 | N | 42.8 | 35 | 19.8 |  | 8.6 | 8.81 | 31.1 | 1.07 | 2.11 |  |  | 1.04 | 0.843 | 81% | 0.843 | No Ash weight. Estimated AFDW from average 81% organic |  |  | 9.44 |  | Alive | 10.8 |
| 9/27/2022 | Provincetown | S |  | E3 | L |  | 10.5 | 8.09 | 4.59 | Jun | 2023-06-11 | 257 | S |  | 43.9 | 34.8 | 21.2 |  | P9 | nl |  | N | 43.9 | 34.8 | 21.2 |  | 8.2 | 8.05 | 32.7 | 1.88 | 3.1 |  | 2.08 | 1.22 | 1.02 | 83% | 1.02 |  | 0.5% | 42% | 10.1 |  | Alive | 12.1 |
| 9/27/2022 | Provincetown | S |  | E3 | R | Y | 9.16 | 6.71 | 3.8 | Jun | 2023-06-11 | 257 | Shallow |  | 46.4 | 35.3 | 21.1 |  | P7 | RY |  | N | 46.4 | 35.3 | 21.1 |  | 7 | 6.98 | 33.4 | 1.85 | 3.2 |  | 2.12 | 1.35 | 1.09 | 80% | 1.09 |  | 0.3% | 40% | 10 |  | Alive | 10.9 |
| 9/27/2022 | Provincetown | S |  | E3 | Y | B | 9.97 | 7.71 | 4.09 | Jun | 2023-06-11 | 257 | S |  | 43.2 | 34.3 | 21.3 |  | P8 | nl |  | N | 43.2 | 34.3 | 21.3 |  | 7.9 | 8.03 | 31.2 | 1.88 | 2.94 |  | 2.1 | 1.06 | 0.849 | 80% | 0.849 |  | 0.5% | 48% | 9.92 |  | Alive | 10.5 |
| 9/27/2022 | Provincetown | S |  | E3 | B | L | 9.3 | 6.89 | 3.79 | Jun | 2023-06-11 | 257 |  |  | 45.8 | 35.1 | 20.3 |  |  | BL |  | N | 45.8 | 35.1 | 20.3 |  | 7.2 | 7.2 | 32.8 | 1.1 | 2.44 |  | 1.28 | 1.34 | 1.16 | 87% | 1.16 |  |  |  |  |  | Alive | 12.1 |
| 9/27/2022 | Provincetown | S |  | E4 | R |  | 12.1 | 9.78 | 5.36 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P59 |  | 11 | N | 35.4 | 28 |  |  | 9.6 | 9.83 | 23 | 1.07 | 1.78 |  | 1.18 | 0.702 | 0.6 | 85% | 0.6 |  |  |  |  |  | Alive | 13.5 |
| 9/27/2022 | Provincetown | S |  | E4 | Y |  | 10.8 | 8.51 | 4.74 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.60 | NL | 12 | N | 35.1 | 27.9 |  |  | 8.5 | 8.14 | 23.7 | 1.06 | 1.67 |  | 1.14 | 0.611 | 0.524 | 86% | 0.524 |  |  |  |  |  | Alive | 12.1 |
| 9/27/2022 | Provincetown | S |  | E4 | B |  | 10.5 | 8.14 | 4.48 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.11 | NL |  | N | 31.3 | 24.7 | 13.9 |  | 8.2 | 8.19 | 20.4 | 1.02 | 1.38 |  | 1.07 | 0.364 | 0.307 | 84% | 0.307 |  |  |  |  |  | Alive | 10 |
| 9/27/2022 | Provincetown | S |  | E4 | L |  | 9.94 | 7.84 | 4.42 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P.13 |  |  | N | 30.2 | 25.3 | 14.4 |  | 8 | 8.04 | 21.2 | 0.989 | 1.43 |  | 1.05 | 0.441 | 0.38 | 86% | 0.38 |  |  |  |  |  | Alive | 13.8 |
| 9/27/2022 | Provincetown | S |  | E4 | R | Y | 10.9 | 8.39 | 4.33 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P.14 |  |  | N | 36.1 | 27.7 |  |  | 8.4 | 8.66 | 23.3 | 1 | 1.66 |  | 1.1 | 0.66 | 0.56 | 85% | 0.56 |  |  |  |  |  | Alive | 11.9 |
| 9/27/2022 | Provincetown | S |  | E4 | R | B | 10 | 8.08 | 4.46 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.12 | RX |  | N | 30.2 | 24.3 | 14.4 |  | 8.2 | 8.02 | 20.2 | 1.01 | 1.42 |  | 1.07 | 0.408 | 0.349 | 85% | 0.349 |  |  |  |  |  | Alive | 12.7 |
| 9/27/2022 | Provincetown | S |  | E4 | Y | B | 9.03 | 7.27 | 3.92 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.70 | NL |  | N | 32.6 | 25.9 | 14.9 |  | 7.5 | 7.34 | 22.5 | 1.03 | 1.54 |  | 1.1 | 0.515 | 0.44 | 85% | 0.44 |  |  |  |  |  | Alive | 12.7 |
| 9/27/2022 | Provincetown | S |  | F1 | R |  | 15.2 | 11.7 | 6.9 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.18 |  |  | N | 39.1 | 30.9 | 18.3 |  | 11.2 | 12 | 24.1 | 1.03 | 1.96 |  | 1.18 | 0.922 | 0.776 | 84% | 0.776 |  |  |  |  |  | Alive | 13 |
| 9/27/2022 | Provincetown | S |  | F1 | Y |  | 16.1 | 13.5 | 8.5 | Apr | 2023-04-17 | 202 | s |  |  |  |  |  | P.17 |  |  | N | 40.7 | 33.2 | 20.6 |  | 12.7 | 13.3 | 25.6 | 1 | 2.23 |  | 1.19 | 1.22 | 1.04 | 85% | 1.04 |  |  |  |  |  | Alive | 15.4 |
| 9/27/2022 | Provincetown | S |  | F1 | B |  | 11.6 | 9.2 | 5.5 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P.21 | NL |  | N | 41.8 | 32.7 | 18.2 |  | 9.1 | 9.2 | 27.5 | 1 | 2.04 |  | 1.16 | 1.04 | 0.881 | 85% | 0.881 |  |  |  |  |  | Alive | 12.1 |
| 9/27/2022 | Provincetown | S |  | F1 | L |  | 9.4 | 7.7 | 4.5 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P.20 | Y? |  | N | 36 | 29.5 | 16.1 |  | 7.9 | 8.53 | 24.8 | 0.993 | 1.74 |  | 1.13 | 0.744 | 0.611 | 82% | 0.611 |  |  |  |  |  | Alive | 13.1 |
| 9/27/2022 | Provincetown | S |  | F1 | R | Y | 10.5 | 8 | 4.7 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.19 |  |  | N | 38.5 | 29.1 | 16.5 |  | 8.1 | 8.34 | 24.8 | 1.03 | 1.76 |  | 1.15 | 0.724 | 0.604 | 83% | 0.604 |  |  |  |  |  | Alive | 10.6 |
| 9/27/2022 | Provincetown | S |  | F1 | R | B | 10.8 | 8.7 | 4.6 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.61 | RB | 13 | N | 36.2 | 28.9 |  |  | 8.7 | 8.5 | 23.9 | 1.03 | 1.68 |  | 1.1 | 0.65 | 0.578 | 89% | 0.578 |  |  |  |  |  | Alive | 12.2 |
| 9/27/2022 | Provincetown | S |  | F1 | R | L | 9.2 | 7.1 | 4 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P.22 | NL |  | N | 35.8 | 27.2 | 15.5 |  | 7.3 | 7.1 | 24.1 | 1.03 | 1.63 |  | 1.14 | 0.597 | 0.492 | 82% | 0.492 |  |  |  |  |  | Alive | 10.7 |
| 9/27/2022 | Provincetown | S |  | F1 | Y | B | 9.7 | 7.5 | 4 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P46 | NL | GTT-1 | N | 36 | 26.8 | 15.8 |  | 7.7 | 8.2 | 22.6 | 1.06 | 1.7 |  | 1.14 | 0.641 | 0.555 | 87% | 0.555 |  |  |  |  |  | Alive | 11.9 |
| 9/27/2022 | Provincetown | S |  | F2 | R |  | 14.3 | 11.4 | 7 | Jun | 2023-06-11 | 257 | D |  | 49.1 | 39.7 | 24.5 |  | P10 | R |  | N | 49.1 | 39.7 | 24.5 |  | 11 | 11.2 | 35.1 | 1.85 | 3.74 |  | 2.18 | 1.88 | 1.56 | 83% | 1.56 |  | 0.5% | 29% | 13.1 |  | Alive | 13.1 |
| 9/27/2022 | Provincetown | S |  | F2 | Y |  | 12.1 | 9.3 | 5.1 | Jun | 2023-06-11 | 257 |  |  | 52.7 | 40.3 | 23.7 |  |  | Y or YX |  | N | 52.7 | 40.3 | 23.7 |  | 9.2 | 9.3 | 37.2 | 1.1 | 2.91 |  | 1.31 | 1.81 | 1.61 | 89% | 1.61 | Measured 11/23 |  |  |  |  | Alive | 11 |
| 9/27/2022 | Provincetown | S |  | F2 | B |  | 11.7 | 9.2 | 5.3 | Jun | 2023-06-11 | 257 | S |  | 43.9 | 35.4 | 21.1 |  | P11 | nl |  | N | 43.9 | 35.4 | 21.1 |  | 9.1 | 9.27 | 30.3 | 1.48 | 2.66 |  | 1.7 | 1.17 | 0.957 | 82% | 0.957 |  |  |  | 10.8 |  | Alive | 11.3 |
| 9/27/2022 | Provincetown | S |  | F2 | R | L | 11.3 | 8.5 | 4.8 | Jun | 2023-06-11 | 257 |  |  | 44.5 | 35.3 | 20 |  |  | SF2-NL2 |  | N | 44.5 | 35.3 | 20 |  | 8.5 | 8.5 | 31.6 | 1.11 | 2.34 |  | 1.28 | 1.23 | 0.997 | 81% | 0.997 |  |  |  |  |  | Alive | 11.3 |
| 9/27/2022 | Provincetown | S |  | F2 | Y | B | 9.8 | 7.6 | 4.2 | Jun | 2023-06-11 | 257 |  |  | 41.2 | 32.7 | 19.3 |  |  | NL | 11 | N | 41.2 | 32.7 | 19.3 |  | 7.8 | 7.6 | 30.1 | 1.08 | 1.97 |  |  | 0.889 | 0.72 | 81% | 0.72 | No Ash weight. Estimated AFDW from average 81% organic |  |  | 8.72 |  | Alive | 10.3 |
| 9/27/2022 | Provincetown | S |  | F2 | B | L | 9.7 | 7.5 | 4.3 | Jun | 2023-06-11 | 257 |  |  | 42.2 | 33.7 | 19.2 |  |  | BL | 12 | N | 42.2 | 33.7 | 19.2 |  | 7.7 | 7.58 | 31.2 | 1.06 | 2.06 |  |  | 1 | 0.811 | 81% | 0.811 | No Ash weight. Estimated AFDW from average 81% organic |  |  | 8.54 |  | Alive | 10.8 |
| 9/27/2022 | Provincetown | S | N | F3 | R |  | 14.3 | 10.8 | 6 | Dec | 2022-12-04 | 68 | 0-4 | R | 24.7 | 19.2 | 11 |  | G125 |  |  | N | 24.6 | 19.1 | 11 | 8.4 | 10.5 | 10.9 | 10.9 | 1.11 | 1.26 |  | 1.13 | 0.154 | 0.126 | 82% | 0.126 |  |  |  |  |  | Alive | 8.49 |
| 9/27/2022 | Provincetown | S | N | F3 | Y |  | 12.1 | 9.5 | 5.1 | Dec | 2022-12-04 | 68 | 0-4 | Y | 22.2 | 17.2 | 9.6 |  | G126 |  |  | N | 22.2 | 17.2 | 9.6 | 7.7 | 9.4 | 9.5 | 9.8 | 1.09 | 1.2 |  | 1.11 | 0.106 | 0.0868 | 82% | 0.0868 |  |  |  |  |  | Alive | 7.93 |
| 9/27/2022 | Provincetown | S | N | F3 | B |  | 12.2 | 9.2 | 5.3 | Dec | 2022-12-04 | 68 | 4+ | NO LABEL | 21.3 | 16.6 | 19.3 | DARKENED YELLOWISH AREA, MAKES ME THINK YELLOW NAILPOLISH | G132 |  |  | N | 21.2 | 16.4 | 19.3 | 7.4 | 9.1 | 9.7 | 9.5 | 1.1 | 1.19 |  | 1.12 | 0.085 | 0.0709 | 83% | 0.0709 |  |  |  |  |  | Alive | 7.44 |
| 9/27/2022 | Provincetown | S | N | F3 | L |  | 11.3 | 8.5 | 4.8 | Dec | 2022-12-04 | 68 | 0-4 | NO LABEL | 20.9 | 16.3 | 9.5 |  | G131 |  |  | N | 20.6 | 16.3 | 9.5 | 7.8 | 8.5 | 8.4 | 9.4 | 1.09 | 1.18 |  | 1.11 | 0.093 | 0.0752 | 81% | 0.0752 |  |  |  |  |  | Alive | 8.6 |
| 9/27/2022 | Provincetown | S | N | F3 | R | B | 11.7 | 8.5 | 4.7 | Dec | 2022-12-04 | 68 | 0-4 | RB | 24 | 18 | 9.6 |  | G127 |  |  | N | 23.9 | 17.9 | 9.6 | 9.5 | 8.5 | 8.7 | 11.5 | 1.1 | 1.23 |  | 1.13 | 0.127 | 0.105 | 82% | 0.105 |  |  |  |  |  | Alive | 7.67 |
| 9/27/2022 | Provincetown | S | N | F3 | R | L | 10.4 | 8.4 | 4.5 | Dec | 2022-12-04 | 68 | 0-4 | RL | 20.5 | 16.4 | 9.1 |  | G128 |  |  | N | 20.3 | 16.3 | 9.1 | 8 | 8.4 | 8.7 | 10.1 | 1.1 | 1.19 |  | 1.12 | 0.085 | 0.0697 | 82% | 0.0697 |  |  |  |  |  | Alive | 8.33 |
| 9/27/2022 | Provincetown | S | N | F3 | Y | B | 10 | 7.8 | 4.2 | Dec | 2022-12-04 | 68 | 0-4 | BY | 22.6 | 17.2 | 9.4 |  | G129 |  |  | N | 22.5 | 17.2 | 9.4 | 9.4 | 7.9 | 7.6 | 11.6 | 1.1 | 1.22 |  | 1.12 | 0.118 | 0.0981 | 83% | 0.0981 |  |  |  |  |  | Alive | 8.61 |
| 9/27/2022 | Provincetown | S | N | F3 | B | L | 8.9 | 7.1 | 4.3 | Dec | 2022-12-04 | 68 | 0-4 | BL | 19.9 | 15.6 | 8.5 |  | G130 |  |  | N | 19.8 | 15.4 | 8.5 | 8.5 | 7.3 | 7.2 | 11.6 | 1.1 | 1.19 |  | 1.12 | 0.08 | 0.0659 | 82% | 0.0659 |  |  |  |  |  | Alive | 8.49 |
| 9/27/2022 | Provincetown | N | N | G2 | Y |  | 13.3 | 10.2 | 5.7 | Dec | 2022-12-04 | 68 | 4+ | Y | 24.5 | 18.9 | 10.8 |  | P101 |  |  | N | 24.4 | 18.6 | 10.8 | 8.7 | 9.9 | 10.3 | 10.6 | 1.1 | 1.25 |  | 1.13 | 0.14 | 0.116 | 83% | 0.116 |  |  |  |  |  | Alive | 7.99 |
| 9/27/2022 | Provincetown | N | N | G2 | B |  | 11.9 | 9.4 | 6.1 | Dec | 2022-12-04 | 68 | 4+ | B | 23.1 | 18.4 | 10.3 |  | P102 |  |  | N | 22.9 | 17.9 | 10.3 | 9 | 9.3 | 9.2 | 11.1 | 1.1 | 1.23 |  | 1.12 | 0.138 | 0.112 | 81% | 0.112 |  |  |  |  |  | Alive | 9.33 |
| 9/27/2022 | Provincetown | N | N | G2 | L |  | 11.4 | 8.9 | 4.8 | Dec | 2022-12-04 | 68 | 0-4 | L | 23.2 | 18.3 | 9.7 |  | P103 |  |  | N | 22.9 | 18 | 9.7 | 9.4 | 8.9 | 8.8 | 11.8 | 1.09 | 1.21 |  | 1.11 | 0.118 | 0.095 | 81% | 0.095 |  |  |  |  |  | Alive | 7.91 |
| 9/27/2022 | Provincetown | N | N | G2 | R | Y | 11.2 | 8.6 | 4.7 | Dec | 2022-12-04 | 68 | 0-4 | RY | 23.5 | 18.2 | 10.2 |  | P104 |  |  | N | 23.3 | 17.7 | 10.2 | 9.6 | 8.6 | 8.6 | 11.6 | 1.1 | 1.23 |  | 1.12 | 0.131 | 0.108 | 82% | 0.108 |  |  |  |  |  | Alive | 8.54 |
| 9/27/2022 | Provincetown | N | N | G2 | R | L | 10.8 | 8.4 | 4.7 | Dec | 2022-12-04 | 68 | 0-4 | LR | 21.3 | 16.8 | 9.2 |  | P105 |  |  | N | 21 | 16.4 | 9.2 | 8.4 | 8.4 | 8.4 | 10.3 | 1.1 | 1.21 |  | 1.12 | 0.107 | 0.088 | 82% | 0.088 |  |  |  |  |  | Alive | 9.5 |
| 9/27/2022 | Provincetown | N | N | G2 | B | L | 9.8 | 7.6 | 4.3 | Dec | 2022-12-04 | 68 | 0-4 | BL | 22.5 | 17.2 | 9.2 |  | P106 |  |  | N | 22.2 | 17 | 9.2 | 9.6 | 7.8 | 7.6 | 11.3 | 1.1 | 1.21 |  | 1.12 | 0.111 | 0.091 | 82% | 0.091 |  |  |  |  |  | Alive | 8.32 |
| 9/27/2022 | Provincetown | N |  | G3 | R |  | 13.9 | 10.6 | 6.1 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P.27 | NL |  | N | 44.3 | 35.9 | 20.8 |  | 10.3 | 10.4 | 31.8 | 0.991 | 2.31 |  | 1.18 | 1.32 | 1.13 | 86% | 1.13 |  |  |  |  |  | Alive | 12.9 |
| 9/27/2022 | Provincetown | N |  | G3 | Y |  | 14 | 10.6 | 6.3 | Apr | 2023-04-17 | 202 | s |  |  |  |  |  | P.16 |  |  | N | 40 | 31.1 | 18.5 |  | 10.3 | 10.8 | 25.4 | 1.01 | 1.91 |  | 1.14 | 0.896 | 0.765 | 85% | 0.765 |  |  |  |  |  | Alive | 12 |
| 9/27/2022 | Provincetown | N |  | G3 | B |  | 11.1 | 8.8 | 5 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P.23 |  |  | N | 35.4 | 28 | 17.5 |  | 8.8 | 8.72 | 23.6 | 0.997 | 1.69 |  | 1.12 | 0.689 | 0.57 | 83% | 0.57 |  |  |  |  |  | Alive | 12.9 |
| 9/27/2022 | Provincetown | N |  | G3 | L |  | 11.5 | 8.8 | 4.7 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.63? | NL | 15 | N | 38.3 | 29.5 |  |  | 8.8 | 8.83 | 25.3 | 1 | 1.81 |  | 1.12 | 0.81 | 0.697 | 86% | 0.697 |  |  |  |  |  | Alive | 12.4 |
| 9/27/2022 | Provincetown | N |  | G3 | R | Y | 10 | 7.9 | 4.5 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.62 |  | 14 | N | 35 | 27.7 |  |  | 8 | 7.78 | 24 | 1.02 | 1.59 |  | 1.1 | 0.572 | 0.492 | 86% | 0.492 |  |  |  |  |  | Alive | 11.5 |
| 9/27/2022 | Provincetown | N |  | G3 | R | B | 11.5 | 9.1 | 4.8 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P.29 (could be p.24, hard to see) |  |  | N | 36.2 | 28.8 | 16.4 |  | 9 | 8.89 | 23.8 | 0.997 | 1.68 |  | 1.11 | 0.688 | 0.576 | 84% | 0.576 |  |  |  |  |  | Alive | 12.1 |
| 9/27/2022 | Provincetown | N |  | G3 | R | L | 10.8 | 8.6 | 4.9 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.47 |  | GTT-2 | N | 40.3 | 30.7 | 17.5 |  | 8.6 | 8.5 | 27.1 | 1.08 | 1.96 |  | 1.2 | 0.874 | 0.751 | 86% | 0.751 |  |  |  |  |  | Alive | 11.5 |
| 9/27/2022 | Provincetown | N |  | G3 | Y | B | 9.9 | 8.1 | 4.3 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P.25 |  |  | N | 37.4 | 30.7 | 17 |  | 8.2 | 8.13 | 27.2 | 1.03 | 1.92 |  | 1.16 | 0.887 | 0.76 | 86% | 0.76 |  |  |  |  |  | Alive | 14.5 |
| 9/27/2022 | Provincetown | N |  | G3 | B | L | 9.8 | 7.3 | 3.9 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P.26 |  |  | N | 35.2 | 27.7 | 16.4 |  | 7.5 | 7.4 | 24.8 | 1.02 | 1.73 |  | 1.13 | 0.709 | 0.6 | 85% | 0.6 | Length of 25.8 is wrong. It looks like we measured the growth increment twice. Use the ratio of height to length to estimate length from height. |  |  |  |  | Alive | 13.7 |
| 9/27/2022 | Provincetown | N |  | G4 | R |  | 13.9 | 10.5 | 6 | Jun | 2023-06-11 | 257 | S |  | 46.3 | 36.6 | 22 |  | P12 | R |  | N | 46.3 | 36.6 | 22 |  | 10.2 | 10.6 | 32 | 1.89 | 3.2 |  | 2.12 | 1.31 | 1.08 | 82% | 1.08 |  | 0.6% | 45% | 11.3 |  | Alive | 10.9 |
| 9/27/2022 | Provincetown | N |  | G4 | Y |  | 14 | 10.7 | 6.1 | Jun | 2023-06-11 | 257 | D |  | 53.1 | 41 | 24.2 |  | P14 | Y |  | N | 53.1 | 41 | 24.2 |  | 10.4 | 10.9 | 37.1 | 1.9 | 3.93 |  | 2.32 | 2.03 | 1.61 | 79% | 1.61 |  | 0.4% | 29% | 13.4 |  | Alive | 10.8 |
| 9/27/2022 | Provincetown | N |  | G4 | B |  | 11.2 | 9.3 | 5 | Jun | 2023-06-11 | 257 |  |  | 51.8 | 38.4 | 22.5 |  |  | nl |  | N | 51.8 | 38.4 | 22.5 |  | 9.2 | 9.2 | 35.5 | 1.1 | 2.88 |  | 1.34 | 1.78 | 1.54 | 87% | 1.54 |  |  |  |  |  | Alive | 11.1 |
| 9/27/2022 | Provincetown | N |  | G4 | R | Y | 11 | 8.3 | 4.9 | Jun | 2023-06-11 | 257 |  |  | 43.2 | 34.4 | 21.2 |  |  | YX | 9 | N | 43.2 | 34.4 | 21.2 |  | 8.4 | 8.88 | 31.5 | 1.08 | 2.37 |  |  | 1.29 | 1.05 | 81% | 1.05 | No Ash weight. Estimated AFDW from average 81% organic |  |  | 9.59 |  | Alive | 13 |
| 9/27/2022 | Provincetown | N |  | G4 | R | B | 10.6 | 8 | 4.5 | Jun | 2023-06-11 | 257 | S |  | 50.5 | 38.1 | 22.4 |  | P15 | R (nl) |  | N | 50.5 | 38.1 | 22.4 |  | 8.1 | 8.19 | 35.4 | 1.93 | 3.55 |  | 2.36 | 1.61 | 1.18 | 73% | 1.18 |  | 0.7% | 37% | 11.9 |  | Alive | 9.19 |
| 9/27/2022 | Provincetown | N |  | G4 | R | L | 10.3 | 8.1 | 4.6 | Jun | 2023-06-11 | 257 | D |  | 45.5 | 34.9 | 21.9 |  | P16 | R (nl) |  | N | 45.5 | 34.9 | 21.9 |  | 8.2 | 8.18 | 32.9 | 1.9 | 3.31 |  | 2.22 | 1.41 | 1.09 | 78% | 1.09 |  | 0.5% | 38% | 10.6 |  | Alive | 11.6 |
| 9/27/2022 | Provincetown | N |  | G4 | Y | B | 9.8 | 7.7 | 4.3 | Jun | 2023-06-11 | 257 |  |  | 48.9 | 39.1 | 21.8 |  |  | BY | 10 | N | 48.9 | 39.1 | 21.8 |  | 7.9 | 7.82 | 36.5 | 1.07 | 2.65 |  |  | 1.59 | 1.28 | 81% | 1.28 | No Ash weight. Estimated AFDW from average 81% organic |  |  | 11.1 |  | Alive | 11 |
| 9/27/2022 | Provincetown | N | N | H2 | R |  | 14.6 | 11.2 | 6.6 | Dec | 2022-12-04 | 68 | 0-4 | R | 25.2 | 19.7 | 11.7 |  | P107 |  |  | N | 24.8 | 19.6 | 11.7 | 8.5 | 10.8 | 11.2 | 10.4 | 1.1 | 1.27 |  | 1.13 | 0.169 | 0.14 | 83% | 0.14 |  |  |  |  |  | Alive | 9.18 |
| 9/27/2022 | Provincetown | N | N | H2 | Y |  | 13.1 | 9.9 | 5.5 | Dec | 2022-12-04 | 68 | 0-4 | Y | 25 | 19.2 | 10.8 |  | P108 |  |  | N | 24.5 | 18.9 | 10.8 | 9.3 | 9.7 | 9.9 | 11.6 | 1.08 | 1.35 |  | 1.23 | 0.273 | 0.224 | 45% | 0.224 |  |  |  |  |  | Alive | 15.2 |
| 9/27/2022 | Provincetown | N | N | H2 | B |  | 11.3 | 9.1 | 5.2 | Dec | 2022-12-04 | 68 | 0-4 | NO LABEL | 20.3 | 16.6 | 10 |  | P114 |  |  | N | 20.3 | 16.5 | 10 | 7.5 | 9 | 9 | 9.4 | 1.11 | 1.21 |  | 1.13 | 0.095 | 0.072 | 76% | 0.072 |  |  |  |  |  | Alive | 8.61 |
| 9/27/2022 | Provincetown | N | N | H2 | L |  | 11.4 | 8.8 | 5.5 | Dec | 2022-12-04 | 68 | 0-4 | L | 24.7 | 19.6 | 10.5 |  | P109 |  |  | N | 24.3 | 19.3 | 10.5 | 10.8 | 8.8 | 8.9 | 12.8 | 1.1 | 1.24 |  | 1.13 | 0.144 | 0.113 | 78% | 0.113 |  |  |  |  |  | Alive | 7.88 |
| 9/27/2022 | Provincetown | N | N | H2 | R | Y | 11.5 | 9.1 | 5.3 | Dec | 2022-12-04 | 68 | 0-4 | R (must be RX) | 22.8 | 18.1 | 10.6 | Repeat R. Process of elimination RY | P115 |  |  | N | 22.5 | 18 | 10.6 | 9 | 9 | 9.1 | 11.8 | 1.12 | 1.24 |  | 1.14 | 0.123 | 0.101 | 82% | 0.101 |  |  |  |  |  | Alive | 8.87 |
| 9/27/2022 | Provincetown | N | N | H2 | R | B | 10 | 8 | 4.5 | Dec | 2022-12-04 | 68 | 0-4 | RB | 20.8 | 15.1 | 8.5 |  | P110 |  |  | N | 18.5 | 15.1 | 8.5 | 7.1 | 8.1 | 8.1 | 9 | 1.1 | 1.18 |  | 1.12 | 0.071 | 0.056 | 79% | 0.056 |  |  |  |  |  | Alive | 8.84 |
| 9/27/2022 | Provincetown | N | N | H2 | R | L | 9.9 | 7.7 | 4.2 | Dec | 2022-12-04 | 68 | 0-4 | RL | 22.2 | 16.9 | 9.1 |  | P111 |  |  | N | 22 | 16.6 | 9.1 | 9.2 | 7.9 | 7.7 | 11.4 | 1.09 | 1.2 |  | 1.11 | 0.105 | 0.084 | 80% | 0.084 |  |  |  |  |  | Alive | 7.89 |
| 9/27/2022 | Provincetown | N | N | H2 | Y | B | 10.2 | 8 | 4.7 | Dec | 2022-12-04 | 68 | 0-4 | BY | 21.8 | 16.9 | 9.1 |  | P112 |  |  | N | 21.6 | 16.9 | 9.1 | 8.9 | 8.1 | 8 | 11.5 | 1.09 | 1.2 |  | 1.12 | 0.104 | 0.081 | 78% | 0.081 |  |  |  |  |  | Alive | 8.04 |
| 9/27/2022 | Provincetown | N | N | H2 | B | L | 8.7 | 6.7 | 3.7 | Dec | 2022-12-04 | 68 | 0-4 | BL | 21.4 | 16.2 | 8.5 |  | P113 |  |  | N | 21 | 16.2 | 8.5 | 9.5 | 7 | 6.7 | 11.2 | 1.09 | 1.18 |  | 1.11 | 0.09 | 0.07 | 78% | 0.07 |  |  |  |  |  | Alive | 7.56 |
| 9/27/2022 | Provincetown | N |  | H3 | R |  | 12.1 | 9.7 | 6 | Jun | 2023-06-11 | 257 |  |  | 44.1 | 35.5 | 22.3 |  |  | R | 8 | N | 44.1 | 35.5 | 22.3 |  | 9.5 | 10.1 | 31.8 | 1.07 | 2.44 |  |  | 1.37 | 1.11 | 81% | 1.11 | No Ash weight. Estimated AFDW from average 81% organic |  |  | 11.2 |  | Alive | 13 |
| 9/27/2022 | Provincetown | N |  | H3 | Y |  | 12 | 9.5 | 5.4 | Jun | 2023-06-11 | 257 | S |  | 46.2 | 36.5 | 21.8 |  | P17 | Y |  | N | 46.2 | 36.5 | 21.8 |  | 9.4 | 9.44 | 32.6 | 1.04 | 2.53 |  | 1.27 | 1.49 | 1.26 | 84% | 1.26 |  |  |  | 10.4 |  | Alive | 12.7 |
| 9/27/2022 | Provincetown | N |  | H3 | L |  | 12 | 9.7 | 5.4 | Jun | 2023-06-11 | 257 | D |  | 52.4 | 39.4 | 22.8 |  | P13 | G4 - R |  | N | 52.4 | 39.4 | 22.8 |  | 9.5 | 10.8 | 34.8 | 1.85 | 3.74 |  | 2.22 | 1.89 | 1.52 | 80% | 1.52 | Unsure where this clam should be included. I wonder if it is from the 1st experiment. | 0.6% | 38% | 11.5 |  | Alive | 10.5 |
| 9/27/2022 | Provincetown | N |  | H3 | R | Y | 10.6 | 8.3 | 4.7 | Jun | 2023-06-11 | 257 |  |  | 48 | 36 | 22.8 |  |  | RY |  | N | 48 | 36 | 22.8 |  | 8.4 | 8.7 | 33 | 1.11 | 2.48 |  | 1.32 | 1.38 | 1.17 | 85% | 1.17 | Measured 11/23 |  |  |  |  | Alive | 10.5 |
| 9/27/2022 | Provincetown | N |  | H3 | R | B | 10.8 | 8.5 | 4.5 | Jun | 2023-06-11 | 257 | S |  | 47 | 36.9 | 22.4 | Moved down from RY to RB 10.23 | P18 | RX |  | N | 47 | 36.9 | 22.4 |  | 8.5 | 8.51 | 33.8 | 1.06 | 2.66 |  | 1.34 | 1.6 | 1.32 | 83% | 1.32 |  |  |  | 10.2 |  | Alive | 12.7 |
| 9/27/2022 | Provincetown | N |  | H3 | R | L | 10.3 | 8.2 | 4.4 | Jun | 2023-06-11 | 257 |  |  | 44 | 35.9 | 21.1 |  |  | RX | 7 | N | 44 | 35.9 | 21.1 |  | 8.3 | 8.46 | 32.8 | 1.08 | 2.34 |  |  | 1.26 | 1.02 | 81% | 1.02 | No Ash weight. Estimated AFDW from average 81% organic |  |  | 9.75 |  | Alive | 12 |
| 9/27/2022 | Provincetown | N |  | H3 | Y | B | 9.1 | 7.2 | 4.2 | Jun | 2023-06-11 | 257 | D |  | 42 | 33.9 | 21 | Moved down from RB - was in the wrong row (ER 10.23) | P19 | BY |  | N | 42 | 33.9 | 21 |  | 7.4 | 7.94 | 31.4 | 1.9 | 2.95 |  | 2.1 | 1.05 | 0.854 | 81% | 0.854 |  | 0.8% | 51% | 9.07 |  | Alive | 11.5 |
| 9/27/2022 | Provincetown | N |  | H3 | B | L | 9.5 | 7.5 | 4.1 | Jun | 2023-06-11 | 257 | D |  | 47.2 | 38.2 | 22.4 |  | P20 | BL |  | N | 47.2 | 38.2 | 22.4 |  | 7.7 | 7.79 | 36 | 1.06 | 2.47 |  | 1.41 | 1.41 | 1.06 | 75% | 1.06 |  |  |  | 11.6 |  | Alive | 10.1 |
| 9/27/2022 | Provincetown | N |  | H4 | R |  | 12.7 | 9.7 | 5.5 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.64 |  | 17 | N | 38.8 | 30.6 |  |  | 9.5 | 10 | 24.8 | 1.01 | 1.91 |  | 1.14 | 0.907 | 0.771 | 85% | 0.771 |  |  |  |  |  | Alive | 13.2 |
| 9/27/2022 | Provincetown | N |  | H4 | Y |  | 12.3 | 9.8 | 5.7 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P29 |  |  | N | 36.7 | 29.4 | 17.1 |  | 9.6 | 9.74 | 24 | 1.07 | 1.73 |  | 1.17 | 0.667 | 0.57 | 85% | 0.57 |  |  |  |  |  | Alive | 11.5 |
| 9/27/2022 | Provincetown | N |  | H4 | L |  | 11.5 | 9.1 | 4.9 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | p48 |  | GTT-3 | N | 35.7 | 28.6 | 16.6 |  | 9 | 9.05 | 23.6 | 1.1 | 1.78 |  | 1.19 | 0.684 | 0.591 | 86% | 0.591 |  |  |  |  |  | Alive | 13 |
| 9/27/2022 | Provincetown | N |  | H4 | R | Y | 10.5 | 8.3 | 4.5 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P30 |  |  | N | 36.7 | 28.8 | 16.7 |  | 8.4 | 8.62 | 24.9 | 1.05 | 1.78 |  | 1.16 | 0.721 | 0.615 | 85% | 0.615 |  |  |  |  |  | Alive | 12.4 |
| 9/27/2022 | Provincetown | N |  | H4 | R | B | 11.1 | 8.5 | 4.6 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P31 |  |  | N | 36.6 | 30.1 | 16.5 |  | 8.5 | 8.45 | 25.2 | 1.06 | 1.79 |  | 1.18 | 0.726 | 0.61 | 84% | 0.61 |  |  |  |  |  | Alive | 12.5 |
| 9/27/2022 | Provincetown | N |  | H4 | R | L | 11.2 | 9 | 4.8 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P32 |  |  | N | 36.7 | 28.8 | 17.2 |  | 8.9 | 8.89 | 23.8 | 1.05 | 1.78 |  | 1.17 | 0.723 | 0.604 | 84% | 0.604 |  |  |  |  |  | Alive | 12.2 |
| 9/27/2022 | Provincetown | S |  | I2 | R |  | 12.5 | 9.6 | 5.6 | Jun | 2023-06-11 | 257 | D |  | 48.4 | 38.1 | 22.5 |  | P21 | RX |  | N | 48.4 | 38.1 | 22.5 |  | 9.4 | 9.63 | 33.8 | 1.88 | 3.57 |  | 2.22 | 1.69 | 1.35 | 80% | 1.35 |  | 0.8% | 37% | 11.3 |  | Alive | 11.8 |
| 9/27/2022 | Provincetown | S |  | I2 | Y |  | 12 | 9.4 | 5.7 | Jun | 2023-06-11 | 257 |  |  | 44.4 | 35 | 22.7 |  |  | Y | 5 | N | 44.4 | 35 | 22.7 |  | 9.3 | 9.4 | 31.4 | 1.05 | 2.31 |  | 1.24 | 1.26 | 1.07 | 86% | 1.07 |  |  |  | 10.3 |  | Alive | 12.3 |
| 9/27/2022 | Provincetown | S |  | I2 | B |  | 11.7 | 9.3 | 4.9 | Jun | 2023-06-11 | 257 | S |  | 44.2 | 33.9 | 21.8 |  | P26 | L |  | N | 44.2 | 33.9 | 21.8 |  | 9.2 | 9.14 | 30.4 | 1.07 | 2.33 |  | 1.31 | 1.26 | 1.02 | 81% | 1.02 |  |  |  | 9.74 |  | Alive | 11.8 |
| 9/27/2022 | Provincetown | S |  | I2 | L |  | 11.4 | 8.9 | 4.8 | Jun | 2023-06-11 | 257 | D |  | 44.6 | 35.5 | 22 |  | P23 | NL |  | N | 44.6 | 35.5 | 22 |  | 8.9 | 9.06 | 31.8 | 1.88 | 3.23 |  | 2.11 | 1.35 | 1.12 | 83% | 1.12 |  | 0.4% | 41% | 10.8 |  | Alive | 12.6 |
| 9/27/2022 | Provincetown | S |  | I2 | R | Y | 11.5 | 9.1 | 5.2 | Jun | 2023-06-11 | 257 | D |  | 39.5 | 32.3 | 19.4 |  | P24 | NL |  | N | 39.5 | 32.3 | 19.4 |  | 9 | 9.07 | 28.6 | 1.07 | 1.99 |  | 1.27 | 0.915 | 0.716 | 78% | 0.716 |  |  |  | 8.15 |  | Alive | 11.6 |
| 9/27/2022 | Provincetown | S |  | I2 | R | B | 10.8 | 8.4 | 4.5 | Jun | 2023-06-11 | 257 |  |  | 45.9 | 36.8 | 21.6 |  |  | nl |  | N | 45.9 | 36.8 | 21.6 |  | 8.4 | 9.3 | 33.5 | 1.1 | 2.4 |  | 1.27 | 1.3 | 1.13 | 87% | 1.13 |  |  |  |  |  | Alive | 11.6 |
| 9/27/2022 | Provincetown | S |  | I2 | R | L | 11 | 8.8 | 4.9 | Jun | 2023-06-11 | 257 |  |  | 41.1 | 32.8 | 20.4 |  |  | RX | 6 | N | 41.1 | 32.8 | 20.4 |  | 8.8 | 8.91 | 29.2 | 1.08 | 2.02 |  | 1.23 | 0.944 | 0.79 | 84% | 0.79 |  |  |  | 8.51 |  | Alive | 11.4 |
| 9/27/2022 | Provincetown | S |  | I2 | Y | B | 11.3 | 8.6 | 4.8 | Jun | 2023-06-11 | 257 | D |  | 45.1 | 36 | 21.4 |  | P22 | YX |  | N | 45.1 | 36 | 21.4 |  | 8.6 | 8.59 | 32.3 | 1.87 | 3.01 |  | 2.15 | 1.14 | 0.864 | 76% | 0.864 |  | 0.9% | 47% | 10.8 |  | Alive | 9.4 |
| 9/27/2022 | Provincetown | S |  | I2 | B | L | 9 | 7.2 | 4.2 | Jun | 2023-06-11 | 257 | S |  | 44.3 | 34.7 | 21.9 |  | P25 | NL |  | N | 44.3 | 34.7 | 21.9 |  | 7.4 | 7.28 | 32.4 | 1.88 | 3.25 |  | 2.18 | 1.37 | 1.07 | 78% | 1.07 |  | 0.7% | 41% | 9.59 |  | Alive | 12.3 |
| 9/27/2022 | Provincetown | S |  | I3 | R |  | 13.3 | 10.4 | 5.7 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P38 | NL | GTT-4 | N | 48.9 | 37.1 | 23.5 |  | 10.1 | 10.1 | 32.8 | 1.09 | 2.98 |  | 1.38 | 1.89 | 1.6 | 85% | 1.6 |  |  |  |  |  | Alive | 13.7 |
| 9/27/2022 | Provincetown | S |  | I3 | Y |  | 11.5 | 8.9 | 4.9 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | p33 |  |  | N | 39.6 | 30.4 | 17.4 |  | 8.9 | 8.92 | 25.4 | 1.07 | 2.02 |  | 1.2 | 0.957 | 0.822 | 86% | 0.822 |  |  |  |  |  | Alive | 13.2 |
| 9/27/2022 | Provincetown | S |  | I3 | B |  | 12.4 | 9.5 | 5.2 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P34 | NL |  | N | 43.8 | 34.3 | 21.4 |  | 9.4 | 8.57 | 30.7 | 1.07 | 2.48 |  | 1.28 | 1.41 | 1.2 | 85% | 1.2 |  |  |  |  |  | Alive | 14.3 |
| 9/27/2022 | Provincetown | S |  | I3 | L |  | 10.3 | 8.1 | 4.2 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P49 |  |  | N | 38.7 | 29.8 | 18 |  | 8.2 | 8.04 | 26.6 | 1.06 | 1.96 |  | 1.18 | 0.902 | 0.778 | 86% | 0.778 |  |  |  |  |  | Alive | 13.4 |
| 9/27/2022 | Provincetown | S |  | I3 | R | Y | 10.2 | 8.1 | 4.5 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P35 | YX? |  | N | 35.1 | 28.1 | 16.4 |  | 8.2 | 7.9 | 24 | 1.07 | 1.75 |  | 1.17 | 0.676 | 0.575 | 85% | 0.575 |  |  |  |  |  | Alive | 13.3 |
| 9/27/2022 | Provincetown | S |  | I3 | R | L | 11.1 | 9.1 | 5.1 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.65 | I3 - RL | 18 | N | 35.8 | 29.3 |  |  | 9 | 9.42 | 24.4 | 1.02 | 1.7 |  | 1.13 | 0.677 | 0.57 | 84% | 0.57 |  |  |  |  |  | Alive | 12.4 |
| 9/27/2022 | Provincetown | S |  | I3 | Y | B | 9.6 | 7.6 | 4.1 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P36 |  |  | N | 34.5 | 28.1 | 16.1 |  | 7.8 | 7.55 | 24.6 | 1.07 | 1.74 |  | 1.16 | 0.675 | 0.585 | 87% | 0.585 |  |  |  |  |  | Alive | 14.2 |
| 9/27/2022 | Provincetown | S |  | I3 | B | L | 9.8 | 7.5 | 4.1 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P37 | BX? |  | N | 37.4 | 29.9 | 17.1 |  | 7.7 | 7.44 | 26.3 | 1.08 | 1.91 |  | 1.19 | 0.834 | 0.715 | 86% | 0.715 |  |  |  |  |  | Alive | 13.6 |
| 9/27/2022 | Provincetown | S | N | I4 | R |  | 14.7 | 11.5 | 6.9 | Dec | 2022-12-04 | 68 | 4+ | R | 25.4 | 19.4 | 11.5 |  | P116 |  |  | N | 25.3 | 19.4 | 11.5 | 7.89 | 11 | 11.3 | 10.5 | 1.09 | 1.26 |  | 1.13 | 0.171 | 0.134 | 78% | 0.134 |  |  |  |  |  | Alive | 8.27 |
| 9/27/2022 | Provincetown | S | N | I4 | Y |  | 11.3 | 8.8 | 5.1 | Dec | 2022-12-04 | 68 | 4+ | Y | 23.7 | 19 | 10.8 |  | P117 |  |  | N | 23.5 | 19 | 10.8 | 10.2 | 8.8 | 8.9 | 12.7 | 1.11 | 1.25 |  | 1.14 | 0.14 | 0.106 | 76% | 0.106 |  |  |  |  |  | Alive | 8.17 |
| 9/27/2022 | Provincetown | S | N | I4 | B |  | 11.2 | 8.8 | 4.8 | Dec | 2022-12-04 | 68 | 4+ | B | 21.6 | 17.3 | 9.34 |  | P118 |  |  | N | 21.2 | 17.2 | 9.34 | 8.49 | 8.8 | 8.8 | 10.5 | 1.1 | 1.21 |  | 1.13 | 0.106 | 0.08 | 75% | 0.08 |  |  |  |  |  | Alive | 8.4 |
| 9/27/2022 | Provincetown | S | N | I4 | L |  | 10.8 | 8.7 | 5.2 | Dec | 2022-12-04 | 68 | 4+ | L | 21.1 | 17.2 | 9.52 |  | P119 |  |  | N | 21 | 17.2 | 9.52 | 8.53 | 8.7 | 8.7 | 10.8 | 1.09 | 1.19 |  | 1.11 | 0.099 | 0.075 | 76% | 0.075 |  |  |  |  |  | Alive | 8.1 |
| 9/27/2022 | Provincetown | S | N | I4 | R | Y | 10.8 | 8.3 | 4.7 | Dec | 2022-12-04 | 68 | 4+ | RY | 21.9 | 16.6 | 9.18 |  | P120 |  |  | N | 21.9 | 16.5 | 9.18 | 8.26 | 8.4 | 8.2 | 10.3 | 1.11 | 1.22 |  | 1.13 | 0.106 | 0.087 | 82% | 0.087 |  |  |  |  |  | Alive | 8.28 |
| 9/27/2022 | Provincetown | S | N | I4 | R | B | 10.6 | 8.7 | 5 | Dec | 2022-12-04 | 68 | 4+ | RB | 23 | 18.3 | 10.2 |  | P121 |  |  | N | 23 | 18.3 | 10.2 | 9.63 | 8.7 | 8.7 | 12.2 | 1.1 | 1.22 |  | 1.15 | 0.125 | 0.102 | 56% | 0.102 |  |  |  |  |  | Alive | 8.42 |
| 9/27/2022 | Provincetown | S | N | I4 | R | L | 10.2 | 8.1 | 4.6 | Dec | 2022-12-04 | 68 | 4+ | RL | 19.1 | 15.1 | 8.97 |  | P122 |  |  | N | 19 | 15.1 | 8.97 | 7.02 | 8.2 | 8.1 | 9.1 | 1.1 | 1.18 |  | 1.13 | 0.077 | 0.0631 | 61% | 0.0631 |  |  |  |  |  | Alive | 9.2 |
| 9/27/2022 | Provincetown | S | N | I4 | Y | B | 10.3 | 7.8 | 4.1 | Dec | 2022-12-04 | 68 | 4+ | YB | 19.3 | 15.3 | 8.33 |  | P123 |  |  | N | 19.1 | 15.3 | 8.33 | 7.51 | 7.9 | 7.7 | 9.3 | 1.1 | 1.17 |  | 1.12 | 0.075 | 0.0615 | 68% | 0.0615 |  |  |  |  |  | Alive | 8.83 |
| 9/27/2022 | Provincetown | S | N | I4 | B | L | 9.4 | 7.3 | 4.1 | Dec | 2022-12-04 | 68 | 4+ | BL | 19.9 | 15.8 | 8.55 |  | P124 |  |  | N | 19.8 | 15.9 | 8.55 | 8.55 | 7.5 | 7.3 | 10.2 | 1.1 | 1.19 |  | 1.12 | 0.087 | 0.068 | 78% | 0.068 |  |  |  |  |  | Alive | 8.76 |
| 9/27/2022 | Provincetown | N |  | J1 | R |  | 13.7 | 10.7 | 6.1 | Jun | 2023-06-11 | 257 | D |  | 44 | 34.3 | 21.5 |  | P27 | R |  | N | 44 | 34.3 | 21.5 |  | 10.4 | 11.1 | 29.7 | 1.87 | 3.19 |  | 2.09 | 1.32 | 1.1 | 83% | 1.1 |  | 0.5% | 41% | 10.2 |  | Alive | 12.9 |
| 9/27/2022 | Provincetown | N |  | J1 | Y |  | 11.9 | 9.2 | 5.3 | Jun | 2023-06-11 | 257 |  |  | 42.2 | 33.4 | 21 |  |  | Y | 3 | N | 42.2 | 33.4 | 21 |  | 9.1 | 9.02 | 29.1 | 1.07 | 2.28 |  | 1.3 | 1.21 | 0.974 | 81% | 0.974 |  |  |  | 9.94 |  | Alive | 12.9 |
| 9/27/2022 | Provincetown | N |  | J1 | B |  | 11.5 | 9.1 | 5.6 | Jun | 2023-06-11 | 257 | D |  | 41.1 | 32.3 | 19.1 |  | P29 | NL |  | N | 41.1 | 32.3 | 19.1 |  | 9 | 7.45 | 30 | 1.87 | 2.91 |  | 2.09 | 1.04 | 0.822 | 79% | 0.822 |  | 0.7% | 49% | 8.19 |  | Alive | 11.8 |
| 9/27/2022 | Provincetown | N |  | J1 | L |  | 11.7 | 9.2 | 5.2 | Jun | 2023-06-11 | 257 | D |  | 46.3 | 36.2 | 21.9 |  | P28 | NL |  | N | 46.3 | 36.2 | 21.9 |  | 9.1 | 9.13 | 33 | 1.88 | 3.31 |  | 2.11 | 1.43 | 1.2 | 83% | 1.2 | moved down from Y to make room for biodeposition clam | 0.5% | 40% | 11.3 |  | Alive | 12 |
| 9/27/2022 | Provincetown | N |  | J1 | R | Y | 11.6 | 8.7 | 4.9 | Jun | 2023-06-11 | 257 |  |  | 48.2 | 37.6 | 21.8 |  |  |  | GTT1 | N | 48.2 | 37.6 | 21.8 |  | 8.7 | 8.74 | 34.3 | 1.08 | 2.62 |  | 1.41 | 1.54 | 1.21 | 79% | 1.21 |  |  |  | 11.3 |  | Alive | 10.8 |
| 9/27/2022 | Provincetown | N |  | J1 | R | B | 10.6 | 8.6 | 5.1 | Jun | 2023-06-11 | 257 | D |  | 43.8 | 35.4 | 22.1 |  | P31 | NL |  | N | 43.8 | 35.4 | 22.1 |  | 8.6 | 8.94 | 32.6 | 1.85 | 3.2 |  | 2.13 | 1.35 | 1.07 | 79% | 1.07 |  | 0.4% | 27% | 10.5 |  | Alive | 12.7 |
| 9/27/2022 | Provincetown | N |  | J1 | R | L | 10.5 | 8.3 | 4.5 | Jun | 2023-06-11 | 257 |  |  | 42.5 | 34.8 | 21.1 |  |  | RL | 4 | N | 42.5 | 34.8 | 21.1 |  | 8.4 | 8.07 | 31.2 | 1.07 | 2.25 |  | 1.31 | 1.18 | 0.941 | 79% | 0.941 |  |  |  | 9.28 |  | Alive | 12.3 |
| 9/27/2022 | Provincetown | N |  | J1 | Y | B | 9.8 | 7.5 | 4.2 | Jun | 2023-06-11 | 257 | S |  | 42.1 | 33.4 | 20.1 |  | P30 | YB |  | N | 42.1 | 33.4 | 20.1 |  | 7.7 | 7.99 | 31.6 | 1.07 | 2.27 |  | 1.33 | 1.19 | 0.94 | 79% | 0.94 |  |  |  | 9.22 |  | Alive | 12.5 |
| 9/27/2022 | Provincetown | N |  | J2 | R |  | 12.9 | 9.9 | 5.6 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P43 |  | GTT-5 | N | 35 | 28 | 16.8 |  | 9.7 | 9.6 | 22.6 | 1.06 | 1.79 |  | 1.16 | 0.723 | 0.624 | 86% | 0.624 |  |  |  |  |  | Alive | 14.6 |
| 9/27/2022 | Provincetown | N |  | J2 | Y |  | 13.1 | 10.1 | 5.5 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P40 |  |  | N | 40 | 31.8 | 18.5 |  | 9.9 | 10.4 | 26.4 | 1.07 | 2.1 |  | 1.22 | 1.04 | 0.884 | 85% | 0.884 |  |  |  |  |  | Alive | 13.8 |
| 9/27/2022 | Provincetown | N |  | J2 | B |  | 12.1 | 9.2 | 4.9 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P41 |  |  | N | 34.4 | 27.1 | 15.5 |  | 9.1 | 8.93 | 21.8 | 1.08 | 1.67 |  | 1.17 | 0.599 | 0.507 | 85% | 0.507 |  |  |  |  |  | Alive | 12.5 |
| 9/27/2022 | Provincetown | N |  | J2 | L |  | 11.9 | 9.6 | 5.5 | Apr | 2023-04-17 | 202 | D |  |  |  |  |  | P42 | NL |  | N | 35 | 27.4 | 16.3 |  | 9.4 | 9.25 | 22.4 | 1.05 | 1.64 |  | 1.14 | 0.588 | 0.499 | 85% | 0.499 |  |  |  |  |  | Alive | 11.6 |
| 9/27/2022 | Provincetown | N |  | J2 | R | Y | 11.4 | 8.5 | 4.5 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P50 | NL |  | N | 39.2 | 29.4 | 17.4 |  | 8.5 | 8.59 | 25.6 | 1.08 | 1.91 |  | 1.21 | 0.828 | 0.704 | 85% | 0.704 |  |  |  |  |  | Alive | 11.7 |
| 9/27/2022 | Provincetown | N |  | J2 | R | B | 10.3 | 8.2 | 4.5 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P44 |  |  | N | 31.2 | 26.4 | 14.8 |  | 8.3 | 8.73 | 21.7 | 1.06 | 1.54 |  | 1.13 | 0.481 | 0.411 | 86% | 0.411 |  |  |  |  |  | Alive | 13.6 |
| 9/27/2022 | Provincetown | N |  | J2 | R | L | 9.9 | 8 | 4.4 | Apr | 2023-04-17 | 202 | s |  |  |  |  |  | P45 |  |  | N | 32.9 | 25.4 | 15.1 |  | 8.1 | 8.09 | 21.4 | 1.07 | 1.58 |  | 1.16 | 0.508 | 0.425 | 84% | 0.425 |  |  |  |  |  | Alive | 11.9 |
| 9/27/2022 | Provincetown | N |  | J2 | Y | B | 11.2 | 8.5 | 4.5 | Apr | 2023-04-17 | 202 | S |  |  |  |  |  | P.66 |  | 19 | N | 37.8 | 28.9 |  |  | 8.5 | 8.46 | 24.7 | 1.01 | 1.75 |  | 1.12 | 0.735 | 0.626 | 85% | 0.626 |  |  |  |  |  | Alive | 11.6 |
| 9/26/2022 | Eel Pond | N | Y | A2 | L |  | 13.1 | 9.83 | 5.68 | Dec | 2022-12-05 | 70 | 0-4 | L | 20.4 | 16 | 9.01 |  | L |  |  | N | 20.4 | 16 | 9.01 | 8 | 9.6 | 4.22 | 6.16 | 1.1 | 1.18 |  | 1.13 | 0.078 | 0.064 | 0.615 | 0.064 |  |  |  |  |  | Alive | 7.54 |
| 9/26/2022 | Eel Pond | N | Y | A2 | R | Y | 10.9 | 7.93 | 4.57 | Dec | 2022-12-05 | 70 | 0-4 | RY | 18.7 | 13.9 | 7.9 |  | RY |  |  | N | 18.7 | 13.9 | 7.9 | 7.3 | 8 | 8.07 | 6.02 | 1.1 | 1.15 |  | 1.11 | 0.048 | 0.0372 | 0.775 | 0.0372 |  |  |  |  |  | Alive | 5.69 |
| 9/26/2022 | Eel Pond | N | Y | A2 | B | L | 10.1 | 7.51 | 4.09 | Dec | 2022-12-05 | 70 | 0-4 | LB | 18.1 | 13.8 | 7.3 |  | LB |  |  | N | 18 | 13.8 | 7.3 | 7.6 | 7.7 | 7.5 | 6.3 | 1.1 | 1.15 |  | 1.11 | 0.046 | 0.0357 | 0.776 | 0.0357 |  |  |  |  |  | Alive | 6.12 |
| 9/26/2022 | Eel Pond | N |  | A4 | R |  | 17.5 | 13 | 6.96 | Jun | 2023-06-09 | 256 |  |  | 43.1 | 30.9 | 17.4 |  |  | R | 4 | N | 43.1 | 30.9 | 17.4 |  | 12.3 | 12.7 | 22.4 | 0.401 | 0.944 | 0.933 | 0.514 | 0.543 | 0.43 | 0.79 | 0.43 |  |  |  | 6.6 |  | Alive | 5.39 |
| 9/26/2022 | Eel Pond | N |  | A4 | B |  | 12.4 | 8.96 | 5.17 | Jun | 2023-06-09 | 256 |  |  | 37.5 | 29 | 17.2 |  |  | B | 3 | N | 37.5 | 29 | 17.2 |  | 8.9 | 9.19 | 24.6 | 0.401 | 0.903 | 0.893 | 0.508 | 0.502 | 0.395 | 0.79 | 0.395 |  |  |  | 6.07 |  | Alive | 7.51 |
| 9/26/2022 | Eel Pond | S | N | B1 | No label |  | 10.5 | 8.07 | 4.45 | Dec | 2022-12-05 | 70 | 4+ | NO LABEL | 17.4 | 13.7 | 7.93 |  |  |  |  | N | 17.4 | 13.7 | 7.93 |  | 8.2 | 8.89 | 6.4 | 1.09 | 1.14 |  | 1.11 | 0.044 | 0.0332 | 0.755 | 0.0332 |  |  |  |  |  | Alive | 6.3 |
| 9/26/2022 | Eel Pond | S | N | B1 | No label |  | 10.5 | 8.07 | 4.45 | Dec | 2022-12-05 | 70 | 4+ | NO LABEL | 16.8 | 12.9 | 7.49 |  |  |  |  | N | 16.8 | 13 | 7.49 |  | 8.2 | 8.88 | 6.2 | 1.12 | 1.16 |  | 1.13 | 0.04 | 0.0304 | 0.760 | 0.0304 |  |  |  |  |  | Alive | 6.41 |
| 9/26/2022 | Eel Pond | S | N | B1 | No label |  | 10.5 | 8.07 | 4.45 | Dec | 2022-12-05 | 70 | 4+ | NO LABEL | 16.7 | 13.2 | 7.87 |  |  |  |  | N | 16.7 | 13.4 | 7.87 |  | 8.2 | 9.7 | 5.2 | 1.1 | 1.14 |  | 1.11 | 0.043 | 0.0336 | 0.781 | 0.0336 |  |  |  |  |  | Alive | 7.21 |
| 9/26/2022 | Eel Pond | S |  | B3 | L |  | 11.2 | 8.93 | 4.9 | Jun | 2023-06-09 | 256 |  |  | 31.9 | 24.1 | 15.1 |  |  | NL1 | 7 | N | 31.9 | 24.1 | 15.1 |  | 8.9 | 9.01 | 19.6 | 0.402 | 0.702 | 0.696 | 0.47 | 0.3 | 0.232 | 0.77 | 0.232 |  |  |  | 4.16 |  | Alive | 7.14 |
| 9/26/2022 | Eel Pond | N |  | C1 | B |  | 12 | 8.84 | 4.78 | Jun | 2023-06-09 | 256 |  |  | 41.6 | 31.9 | 18.3 |  |  | B | 6 | N | 41.6 | 31.9 | 18.3 |  | 8.8 | 9.39 | 28.3 | 0.402 | 1.09 | 1.07 | 0.544 | 0.684 | 0.541 | 0.79 | 0.541 |  |  |  | 7.28 |  | Alive | 7.49 |
| 9/26/2022 | Eel Pond | N |  | C1 | L |  | 11.4 | 8.88 | 5.12 | Jun | 2023-06-09 | 256 |  |  | 38.2 | 30.6 | 18.7 |  |  | L | 5 | N | 38.2 | 30.6 | 18.7 |  | 8.8 | 9.67 | 26.6 | 0.395 | 1 | 0.991 | 0.523 | 0.609 | 0.482 | 0.79 | 0.482 |  |  |  | 6.72 |  | Alive | 8.62 |
| 9/26/2022 | Eel Pond | N |  | C1 | R | Y | 11 | 8.32 | 4.76 | Apr | 2023-04-19 | 205 |  |  |  |  |  |  |  | E2-RY | 2 | N | 33.4 | 26.6 | 16.4 |  | 8.4 | 8.65 | 21.4 | 1.02 | 1.51 |  | 1.11 | 0.486 | 0.403 | 0.829 | 0.403 | Collected in April |  |  |  |  | Alive | 10.9 |
| 9/26/2022 | Eel Pond | N | P | C2 | R |  | 15.6 | 11.6 | 6.8 | Dec | 2022-12-05 | 70 | 0-4 | R | 19 | 14.5 | 8.45 |  |  |  |  | N | 19 | 14.5 | 8.45 |  | 11.1 | 11.9 | 4.6 | 1.1 | 1.16 |  | 1.12 | 0.058 | 0.045 | 0.776 | 0.045 | High CI. AFDW is high. |  |  |  |  | Alive | 6.56 |
| 9/26/2022 | Eel Pond | S | Y | D2 | B |  | 13.4 | 9.42 | 5.3 | Dec | 2022-12-05 | 70 | 0-4 | B | 18.4 | 13.9 | 7.97 |  | E139 |  |  | N | 18.4 | 14 | 7.97 |  | 9.3 | 9.9 | 5.6 | 1.09 | 1.14 |  | 1.11 | 0.05 | 0.041 | 0.582 | 0.041 | This seemed to be labelled G139 not E139, but maybe I misread it. |  |  |  |  | Alive | 6.58 |
| 9/26/2022 | Eel Pond | S | Y | D2 | R | Y | 10.9 | 8.51 | 4.92 | Dec | 2022-12-05 | 70 |  | NO LABEL | 14.8 | 11.3 | 6.23 | Originally wrote: the growth marking is too big leading me to think that this clam must have been too small to be part of the initial experiment | E140 |  |  | N | 14.8 | 11.4 | 6.23 |  | 8.5 | 8.6 | 3.7 | 1.09 | 1.12 |  | 1.1 | 0.025 | 0.0207 | 0.828 | 0.0207 | Moved up because of updated start height estimate. |  |  |  |  | Alive | 6.39 |
| 9/26/2022 | Eel Pond | S |  | D4 | R | B | 11.7 | 8.82 | 4.68 | Apr | 2023-04-19 | 205 |  | NL |  |  |  |  | E3 |  | 3 | N | 29.5 | 22.6 | 11.7 |  | 8.8 | 8.96 | 12.7 | 1.01 | 1.32 |  | 1.07 | 0.312 | 0.254 | 0.816 | 0.254 |  |  |  |  |  | Alive | 9.87 |
| 9/26/2022 | Eel Pond | S |  | D4 | Y | B | 10.9 | 8.32 | 4.49 | Apr | 2023-04-19 | 205 |  |  |  |  |  |  | E4 |  | 4 | N | 29.1 | 23.2 | 11.1 |  | 8.4 | 8.38 | 17.7 | 1.03 | 1.35 |  | 1.08 | 0.322 | 0.267 | 0.831 | 0.267 |  |  |  |  |  | Alive | 10.9 |
| 9/26/2022 | Eel Pond | S | N | E2 | B |  | 13.5 | 9.92 | 5.51 | Dec | 2022-12-05 | 70 | 0-4 | B | 19.3 | 14.5 | 8.19 |  | E141 |  |  | N | 19.3 | 14.5 | 8.19 |  | 9.7 | 10.2 | 5.9 | 1.09 | 1.16 |  | 1.13 | 0.061 | 0.05 | 0.475 | 0.05 |  |  |  |  |  | Alive | 6.96 |
| 9/26/2022 | Eel Pond | S | N | E2 | L |  | 12.8 | 9.35 | 5.42 | Dec | 2022-12-05 | 70 | 0-4 | L | 17.9 | 13.4 | 8.13 |  | E142 |  |  | N | 17.9 | 13.9 | 8.13 |  | 9.2 | 9.5 | 5.6 | 1.09 | 1.14 |  | 1.1 | 0.046 | 0.0354 | 0.770 | 0.0354 |  |  |  |  |  | Alive | 6.17 |
| 9/26/2022 | Eel Pond | S | N | E2 | R | B | 11 | 8.31 | 4.76 | Dec | 2022-12-05 | 70 | 0-4 | BR | 14.8 | 11.4 | 6.61 |  | E143 |  |  | N | 14.9 | 11.4 | 6.61 |  | 8.4 | 8.4 | 4.3 | 1.12 | 1.15 |  | 1.13 | 0.028 | 0.023 | 0.536 | 0.023 |  |  |  |  |  | Alive | 6.95 |
| 9/26/2022 | Eel Pond | S | N | E2 | B | L | 9.88 | 7.3 | 4.28 | Dec | 2022-12-05 | 70 | 0-4 | BL | 15.4 | 11.9 | 6.88 |  | E144 |  |  | N | 15.5 | 12 | 6.88 |  | 7.5 | 7.5 | 6 | 1.1 | 1.14 |  | 1.11 | 0.032 | 0.0262 | 0.656 | 0.0262 |  |  |  |  |  | Alive | 7.04 |
| 9/26/2022 | Eel Pond | S |  | E3 | B | L | 8.86 | 6.82 | 3.61 | Apr | 2023-04-19 | 205 |  |  |  |  |  |  |  | E5-BL | 5 | N | 26.9 | 21.2 | 11.4 |  | 7.1 | 6.48 | 17.6 | 1 | 1.24 |  | 1.04 | 0.242 | 0.199 | 0.821 | 0.199 |  |  |  | 2.44 |  | Alive | 10.2 |
| 9/26/2022 | Eel Pond | N | N | F1 | R |  | 15.1 | 11.4 | 6.3 | Dec | 2022-12-05 | 70 |  | RX | 18.4 | 14.2 | 7.98 |  | E145 |  |  | N | 18.5 | 14.2 | 7.98 |  | 11 | 11.3 | 4 | 1.09 | 1.14 |  | 1.11 | 0.049 | 0.0402 | 0.653 | 0.0402 | Originally included as RL but start height and final height do not match prior information about this clam. Matches R. |  |  |  |  | Alive | 6.35 |
| 9/26/2022 | Eel Pond | N | N | F1 | B | L | 11.4 | 7.8 | 4.4 | Dec | 2022-12-05 | 70 | 0-4 | LB | 14.5 | 11 | 6.24 |  | E146 |  |  | N | 14.5 | 11 | 6.24 |  | 7.9 | 7.8 | 4.4 | 1.12 | 1.14 |  | 1.12 | 0.024 | 0.018 | 0.750 | 0.018 |  |  |  |  |  | Alive | 5.9 |
| 9/26/2022 | Eel Pond | N |  | F2 | R |  | 15.7 | 11.8 | 7 | Apr | 2023-04-19 | 205 |  |  |  |  |  |  |  | E8 | 8 | N | 32.8 | 25.4 | 15.2 |  | 11.3 | 11.6 | 17.7 | 1.02 | 1.47 |  | 1.09 | 0.459 | 0.383 | 0.835 | 0.383 |  |  |  |  |  | Alive | 10.9 |
| 9/26/2022 | Eel Pond | N |  | F2 | Y |  | 12.7 | 9.9 | 5.9 | Apr | 2023-04-19 | 205 |  |  |  |  |  |  |  | E21 | GTT-1 | N | 31.2 | 24.3 | 14 |  | 9.7 | 10.4 | 17.5 | 1.01 | 1.35 |  | 1.07 | 0.341 | 0.285 | 0.835 | 0.285 |  |  |  |  |  | Alive | 9.37 |
| 9/26/2022 | Eel Pond | N |  | F2 | R | Y | 11.5 | 8.8 | 4.7 | Apr | 2023-04-19 | 205 |  |  |  |  |  |  |  | E11 | 11 | N | 26.4 | 21.8 | 12 |  | 8.8 | 8.89 | 15.9 | 1.01 | 1.24 |  |  | 0.227 | 0.186 | 0.000 | 0.186 | Ash weight number is wrong - missing 1.X -(554). Find in datasheet. Until then, estimating AFDW using DW and average AFDW/DW conversion ratio. |  |  |  |  | Alive | 10.1 |
| 9/26/2022 | Eel Pond | N |  | F2 | R | B | 9.4 | 7.3 | 4.3 | Apr | 2023-04-19 | 205 |  |  |  |  |  |  |  | E7 | 7 | N | 25.8 | 20.9 |  |  | 7.5 | 7.32 | 16.8 | 1.01 | 1.23 |  | 1.05 | 0.212 | 0.18 | 0.846 | 0.18 |  |  |  |  |  | Alive | 10.5 |
| 9/26/2022 | Eel Pond | N |  | F2 | B | L | 10.6 | 7.9 | 4.4 | Apr | 2023-04-19 | 205 |  |  |  |  |  |  |  | E9 | 9 | N | 30.7 | 23.9 | 13.1 |  | 8 | 8.11 | 19.3 | 1.03 | 1.38 |  | 1.08 | 0.345 | 0.301 | 0.872 | 0.301 | Tin only weight was bad. Using average. |  |  |  |  | Alive | 10.4 |
| 9/26/2022 | Eel Pond | S | N | G2 | R |  | 14.2 | 10.4 | 5.9 | Dec | 2022-12-05 | 70 | 0-4 | R | 19.7 | 15.1 | 8.32 | G2? | E101 |  |  | N | 19.7 | 15.2 | 8.32 |  | 10.1 | 11 | 5.3 | 1.09 | 1.16 |  | 1.11 | 0.067 | 0.052 | 0.776 | 0.052 |  |  |  |  |  | Alive | 6.8 |
| 9/26/2022 | Eel Pond | S | N | G2 | Y |  | 13.3 | 9.8 | 5.9 | Dec | 2022-12-05 | 70 | 0-4 | Y | 17.8 | 13.5 | 7.62 | G2 - had to sample from 2 cages from row G, and so I assume G2 is the cage sampled from and the original G that was sampled from is not G2 (unknown which) | E102 |  |  | N | 17.8 | 13.6 | 7.62 |  | 9.6 | 10.2 | 5.3 | 1.1 | 1.15 |  | 1.11 | 0.043 | 0.036 | 0.837 | 0.036 |  |  |  |  |  | Alive | 6.38 |
| 9/26/2022 | Eel Pond | S | N | G2 | B |  | 11.7 | 9.1 | 5 | Dec | 2022-12-05 | 70 | 4+ | B | 17.1 | 12.7 | 7.04 | G2? | E103 |  |  | N | 17.2 | 12.7 | 7.04 |  | 9 | 8.8 | 4.5 | 1.09 | 1.14 |  | 1.1 | 0.041 | 0.032 | 0.780 | 0.032 | Corrected height for dissections based off of previous measurement. Was 10.6, now is 12.6. |  |  |  |  | Alive | 6.29 |
| 9/26/2022 | Eel Pond | S | N | G2 | L |  | 12.3 | 9 | 5.1 | Dec | 2022-12-05 | 70 | 4+ | L | 17.4 | 13.1 | 7.28 | G2? | E104 |  |  | N | 17.5 | 13.3 | 7.28 |  | 8.9 | 8.6 | 6 | 1.1 | 1.14 |  | 1.11 | 0.039 | 0.03 | 0.769 | 0.03 |  |  |  |  |  | Alive | 5.6 |
| 9/26/2022 | Eel Pond | S | N | G2 | R | L | 9.7 | 7.5 | 4.4 | Dec | 2022-12-05 | 70 | 0-4 | RL | 16.1 | 12.7 | 6.94 | G2? | E105 |  |  | N | 16.2 | 12.8 | 6.94 |  | 7.7 | 7.5 | 6.7 | 1.11 | 1.14 |  | 1.11 | 0.036 | 0.028 | 0.778 | 0.028 |  |  |  |  |  | Alive | 6.59 |
| 9/26/2022 | Eel Pond | S | N | G2 | Y | B | 11.1 | 8.1 | 5.2 | Dec | 2022-12-05 | 70 | 0-4 | BY | 16.9 | 13.3 | 8.22 | G2? | E106 |  |  | N | 16.9 | 13.4 | 8.22 |  | 8.2 | 8.7 | 6.5 | 1.09 | 1.12 |  | 1.09 | 0.039 | 0.031 | 0.795 | 0.031 |  |  |  |  |  | Alive | 6.42 |
| 9/26/2022 | Eel Pond | S | N | G2 | B | L | 10 | 7.7 | 4.4 | Dec | 2022-12-05 | 70 | 0-4 | BL | 16.5 | 12.8 | 7.43 | G2? | E107 |  |  | N | 16.6 | 12.8 | 7.43 |  | 7.9 | 8.3 | 5.8 | 1.11 | 1.14 |  | 1.11 | 0.037 | 0.029 | 0.784 | 0.029 |  |  |  |  |  | Alive | 6.34 |
| 9/26/2022 | Eel Pond | S |  | G4 | R |  | 13.9 | 10 | 6 | Apr | 2023-04-19 | 205 |  |  |  |  |  | Collected from G1. Likely moved from G4 to G1 due to problems with cage being dug up. | E19 |  | E19 | N | 29.6 | 22.6 | 13.1 |  | 9.8 | 10.5 | 15.4 | 1.01 | 1.3 |  | 1.05 | 0.292 | 0.247 | 0.847 | 0.247 |  |  |  |  |  | Alive | 9.53 |
| 9/26/2022 | Eel Pond | N | N | H2 | R |  | 12.6 | 10 | 5.6 | Dec | 2022-12-05 | 70 | 0-4 | R | 21.8 | 17 | 9.79 |  | E108 |  |  | N | 21.8 | 17.1 | 9.79 |  | 9.8 | 10.3 | 9 | 1.09 | 1.17 |  | 1.11 | 0.074 | 0.058 | 0.784 | 0.058 | Original tin only dry weight marked as 1.193. Fixed typo, and corrected to 1.093. |  |  |  |  | Alive | 5.6 |
| 9/26/2022 | Eel Pond | N | N | H2 | Y |  | 13.2 | 10 | 6.1 | Dec | 2022-12-05 | 70 | 0-4 | Y | 20.2 | 15.7 | 9.39 |  | E109 |  |  | N | 20.2 | 15.7 | 9.39 |  | 9.8 | 10 | 7.8 | 1.1 | 1.17 |  | 1.12 | 0.063 | 0.05 | 0.794 | 0.05 |  |  |  |  |  | Alive | 6.07 |
| 9/26/2022 | Eel Pond | N | N | H2 | B |  | 10.9 | 8 | 4.5 | Dec | 2022-12-05 | 70 |  | NO LABEL | 15.8 | 12.2 | 6.65 |  | E113 |  |  | N | 15.8 | 12.3 | 6.65 |  | 8.1 | 8.2 | 5.5 | 1.11 | 1.14 |  | 1.12 | 0.03 | 0.024 | 0.800 | 0.024 |  |  |  |  |  | Alive | 6.08 |
| 9/26/2022 | Eel Pond | N | N | H2 | L |  | 11.6 | 9 | 5.1 | Dec | 2022-12-05 | 70 |  | NO LABEL | 19 | 14.3 | 8.04 |  | E114 |  |  | N | 19 | 14.4 | 8.04 |  | 8.9 | 9.1 | 7.1 | 1.1 | 1.16 |  | 1.11 | 0.058 | 0.044 | 0.759 | 0.044 |  |  |  |  |  | Alive | 6.41 |
| 9/26/2022 | Eel Pond | N | N | H2 | R | B | 10.2 | 7.5 | 4.2 | Dec | 2022-12-05 | 70 |  | RX | 18.4 | 13.4 | 7.58 |  | E112 |  |  | N | 18.4 | 13.5 | 7.58 |  | 7.7 | 7.6 | 7.9 | 1.1 | 1.14 |  | 1.11 | 0.046 | 0.035 | 0.761 | 0.035 |  |  |  |  |  | Alive | 5.62 |
| 9/26/2022 | Eel Pond | N | N | H2 | R | L | 11.8 | 9.2 | 5.5 | Dec | 2022-12-05 | 70 | 0-4 | RL | 22 | 16.6 | 9.5 |  | E110 |  |  | N | 22 | 16.7 | 9.5 |  | 9.1 | 9.1 | 9.5 | 1.1 | 1.17 |  | 1.11 | 0.073 | 0.056 | 0.767 | 0.056 |  |  |  |  |  | Alive | 5.26 |
| 9/26/2022 | Eel Pond | N | N | H2 | B | L | 11.1 | 8.3 | 4.8 | Dec | 2022-12-05 | 70 | 0-4 | BL | 19.5 | 15 | 8.07 |  | E111 |  |  | N | 19.6 | 15 | 8.07 |  | 8.4 | 8.2 | 8.5 | 1.09 | 1.15 |  | 1.1 | 0.057 | 0.044 | 0.772 | 0.044 |  |  |  |  |  | Alive | 5.84 |
| 9/26/2022 | Eel Pond | N |  | H4 | R | Y | 11.9 | 8.8 | 5.3 | Apr | 2023-04-19 | 205 |  | NL |  |  |  |  | E20 |  |  | N | 22.5 | 16.4 | 10 |  | 8.8 | 8.8 | 10.1 | 1.01 | 1.11 |  | 1.02 | 0.102 | 0.0865 | 0.846 | 0.0865 |  |  |  |  |  | Alive | 7.59 |
| 9/26/2022 | Eel Pond | N |  | H4 | R | L | 9.8 | 7.7 | 4.2 | Apr | 2023-04-19 | 205 |  |  |  |  |  |  | E13 |  | 13 | N | 26.9 | 21.1 | 12.2 |  | 7.9 | 7.6 | 16.3 | 1.01 | 1.24 |  | 1.05 | 0.224 | 0.188 | 0.840 | 0.188 |  |  |  |  |  | Alive | 9.65 |
| 9/26/2022 | Eel Pond | N |  | H4 | Y | B | 10.9 | 8.4 | 4.5 | Apr | 2023-04-19 | 205 |  |  |  |  |  |  | E14 |  | 14 | N | 29.9 | 23.4 | 13 |  | 8.4 | 8.4 | 18.5 | 1.01 | 1.32 |  | 1.06 | 0.31 | 0.261 | 0.844 | 0.261 |  |  |  |  |  | Alive | 9.78 |
| 9/26/2022 | Eel Pond | N |  | H4 | B | L | 11 | 8.4 | 4.5 | Apr | 2023-04-19 | 205 |  |  |  |  |  |  | E12 |  | 12 | N | 25.9 | 20.5 | 12.1 |  | 8.4 | 8.7 | 15.8 | 1.03 | 1.24 |  | 1.07 | 0.211 | 0.172 | 0.814 | 0.172 |  |  |  |  |  | Alive | 9.87 |
| 9/26/2022 | Eel Pond | N | N | I3 | R |  | 14.5 | 10.2 | 6 | Dec | 2022-12-05 | 70 | 4+ | R | 22 | 16.2 | 9.65 |  | E115 |  |  | N | 22 | 16.2 | 9.65 |  | 9.9 | 10.1 | 8.1 | 1.11 | 1.19 |  | 1.13 | 0.088 | 0.068 | 0.773 | 0.068 |  |  |  |  |  | Alive | 6.39 |
| 9/26/2022 | Eel Pond | N | N | I3 | Y |  | 11.4 | 8.6 | 4.4 | Dec | 2022-12-05 | 70 | 4+ | Y | 17.5 | 13.3 | 7.67 |  | E116 |  |  | N | 17.5 | 13.4 | 7.67 |  | 8.6 | 8.7 | 6.3 | 1.1 | 1.13 |  | 1.1 | 0.034 | 0.032 | 0.941 | 0.032 |  |  |  |  |  | Alive | 5.97 |
| 9/26/2022 | Eel Pond | N | N | I3 | R | L | 9.6 | 7.3 | 4.3 | Dec | 2022-12-05 | 70 | 0-4 | RL | 18 | 13.8 | 7.94 |  | E117 |  |  | N | 18.2 | 13.8 | 7.94 |  | 7.5 | 7.4 | 8.3 | 1.11 | 1.16 |  | 1.13 | 0.049 | 0.0402 | 0.571 | 0.0402 | black not grey after muffling, AFDW is likely too high. |  |  |  |  | Alive | 6.67 |
| 9/26/2022 | Eel Pond | N | N | I3 | Y | B | 11.4 | 8.5 | 4.9 | Dec | 2022-12-05 | 70 | 0-4 | BY | 19.9 | 15.5 | 8.14 |  | E118 |  |  | N | 19.8 | 15.4 | 8.14 |  | 8.5 | 8.8 | 8.1 | 1.1 | 1.15 |  | 1.11 | 0.051 | 0.041 | 0.804 | 0.041 |  |  |  |  |  | Alive | 5.28 |
| 9/26/2022 | Eel Pond | N | N | I3 |  |  | 11.4 | 8.51 | 4.91 | Dec | 2022-12-05 | 70 | 0-4 | B | 18.5 | 14.2 | 8.17 | duplicate B label | E119 |  |  | N | 18.5 | 14.2 | 8.17 |  | 8.5 | 8.3 | 7.9 | 1.11 | 1.17 |  | 1.13 | 0.055 | 0.043 | 0.782 | 0.043 | duplicate B label |  |  |  |  | Alive | 6.79 |
| 9/26/2022 | Eel Pond | N | N | I3 |  |  | 11.4 | 8.51 | 4.91 | Dec | 2022-12-05 | 70 | 0-4 | RL | 18.2 | 13.8 | 7.62 | duplicate RL label | E120 |  |  | N | 18 | 13.8 | 7.62 |  | 8.5 | 8.4 | 7.3 | 1.11 | 1.15 |  | 1.11 | 0.041 | 0.033 | 0.805 | 0.033 | duplicate RL label |  |  |  |  | Alive | 5.66 |
| 9/26/2022 | Eel Pond | S |  | J1 | Y |  | 13 | 9 | 5.7 | Apr | 2023-04-19 | 205 |  |  |  |  |  |  | E6 |  | 6 | N | 28.7 | 21.8 | 13 |  | 8.9 | 10 | 15.7 | 0.986 | 1.29 |  | 1.04 | 0.305 | 0.255 | 0.836 | 0.255 |  |  |  |  |  | Alive | 10.8 |
| 9/26/2022 | Eel Pond | S |  | J2 | R |  | 13.7 | 10.2 | 6.1 | Apr | 2023-04-19 | 205 |  |  |  |  |  |  | E15 |  | 15 | N | 32.4 | 24 | 13.8 |  | 9.9 | 10 | 17.1 | 1.02 | 1.42 |  | 1.09 | 0.404 | 0.339 | 0.838 | 0.339 |  |  |  |  |  | Alive | 9.95 |
| 9/26/2022 | Eel Pond | S |  | J2 | B |  | 12 | 9 | 5.6 | Apr | 2023-04-19 | 205 |  |  |  |  |  |  | E18 |  | 18 | N | 28.9 | 21.9 | 12.7 |  | 8.9 | 9.2 | 16.2 | 1.02 | 1.27 |  | 1.07 | 0.249 | 0.198 | 0.794 | 0.198 |  |  |  |  |  | Alive | 8.2 |
| 9/26/2022 | Eel Pond | S |  | J2 | R | Y | 10.7 | 8.3 | 4.1 | Apr | 2023-04-19 | 205 |  |  |  |  |  |  | E17 |  | 17 | N | 27.3 | 21.2 | 11 |  | 8.4 | 8.4 | 15.9 | 1.01 | 1.21 |  | 1.04 | 0.2 | 0.166 | 0.831 | 0.166 |  |  |  |  |  | Alive | 8.17 |
| 9/26/2022 | Eel Pond | S | N | J3 | R |  | 13.5 | 10 | 5.4 | Dec | 2022-12-05 | 70 | 0-4 | R | 19.3 | 14.3 | 7.86 |  | E121 |  |  | N | 19.3 | 14.3 | 7.86 |  | 9.8 | 9.8 | 5.9 | 1.09 | 1.14 |  | 1.1 | 0.049 | 0.04 | 0.816 | 0.04 |  |  |  |  |  | Alive | 5.56 |
| 9/26/2022 | Eel Pond | S | N | J3 | Y |  | 12.1 | 9.4 | 5.4 | Dec | 2022-12-05 | 70 | 0-4 | Y | 16.9 | 13.1 | 7.54 |  | E122 |  |  | N | 16.9 | 13.2 | 7.54 |  | 9.3 | 9.5 | 5.2 | 1.12 | 1.16 |  | 1.13 | 0.039 | 0.031 | 0.795 | 0.031 |  |  |  |  |  | Alive | 6.42 |
| 9/26/2022 | Eel Pond | S | N | J3 | B |  | 11.5 | 9 | 5 | Dec | 2022-12-05 | 70 | 0-4 | B | 17.1 | 13.4 | 7.71 |  | E123 |  |  | N | 17.2 | 13.5 | 7.71 |  | 8.9 | 8.6 | 6.5 | 1.09 | 1.14 |  | 1.1 | 0.044 | 0.035 | 0.795 | 0.035 |  |  |  |  |  | Alive | 6.88 |
| 9/26/2022 | Eel Pond | S | N | J3 | L |  | 11.3 | 8.6 | 4.5 | Dec | 2022-12-05 | 70 | 0-4 | L | 18.2 | 14 | 7.45 |  | E124 |  |  | N | 18.2 | 14 | 7.45 |  | 8.6 | 8.6 | 7 | 1.11 | 1.15 |  | 1.12 | 0.044 | 0.035 | 0.795 | 0.035 |  |  |  |  |  | Alive | 5.81 |
| 9/26/2022 | Eel Pond | S | N | J3 | R | Y | 10.2 | 7.7 | 4.5 | Dec | 2022-12-05 | 70 | 4+ | RY | 17.7 | 13.3 | 7.38 |  | E125 |  |  | N | 17.7 | 13.4 | 7.38 |  | 7.9 | 7.8 | 7.1 | 1.11 | 1.15 |  | 1.12 | 0.043 | 0.033 | 0.767 | 0.033 |  |  |  |  |  | Alive | 5.95 |
| 9/26/2022 | Eel Pond | S | N | J3 | R | B | 9.4 | 7.1 | 4.2 | Dec | 2022-12-05 | 70 | 0-4 | BR | 15.1 | 11.4 | 6.64 |  | E126 |  |  | N | 15.1 | 11.5 | 6.64 |  | 7.3 | 7.4 | 5.9 | 1.09 | 1.12 |  | 1.1 | 0.03 | 0.024 | 0.800 | 0.024 |  |  |  |  |  | Alive | 6.97 |
| 9/26/2022 | Eel Pond | S | N | J3 | R | L | 10.1 | 8.1 | 4.3 | Dec | 2022-12-05 | 70 | 0-4 | RL | 16.1 | 12.4 | 6.86 |  | E127 |  |  | N | 16.2 | 12.4 | 6.86 |  | 8.2 | 8.1 | 5.8 | 1.09 | 1.13 |  | 1.1 | 0.036 | 0.027 | 0.750 | 0.027 |  |  |  |  |  | Alive | 6.35 |
| 9/26/2022 | Eel Pond | S | N | J3 | Y | B | 11 | 8.5 | 5 | Dec | 2022-12-05 | 70 | 4+ | YB | 16.6 | 13.1 | 7.54 |  | E128 |  |  | N | 16.6 | 13.1 | 7.54 |  | 8.5 | 8.3 | 6.3 | 1.11 | 1.15 |  | 1.12 | 0.037 | 0.028 | 0.757 | 0.028 |  |  |  |  |  | Alive | 6.12 |
| 9/26/2022 | Eel Pond | S | N | J3 | B | L | 11.5 | 8.5 | 4.6 | Dec | 2022-12-05 | 70 | 4+ | BL | 17.5 | 13.1 | 7 |  | E129 |  |  | N | 17.6 | 13.1 | 7 |  | 8.5 | 8.4 | 6 | 1.1 | 1.14 |  | 1.11 | 0.043 | 0.032 | 0.744 | 0.032 |  |  |  |  |  | Alive | 5.87 |

#growth <- growth[!is.na(growth$L\_mm),]  
#growth <- growth[growth$AliveOrDead=="L",]  
  
growth$len\_tot <- growth$Len-growth$Start\_len\_mm #len\_tot is growth not final length  
growth$len\_per\_day <- growth$len\_tot/growth$Elapsed\_days  
  
growth$height\_tot <- growth$Height-growth$Start\_height\_mm  
growth$height\_per\_day <- growth$height\_tot/growth$Elapsed\_days  
growth$ratio.LH <- growth$height\_tot/growth$len\_tot  
  
growth <- growth[growth$ratio.LH < 1 & growth$ratio.LH > 0,]  
  
mean(growth$len\_tot, na.rm = TRUE)

[1] 21.09983

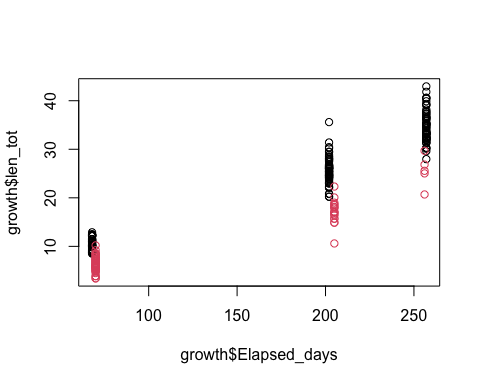
mean(growth$len\_per\_day, na.rm = TRUE)

[1] 0.1245683

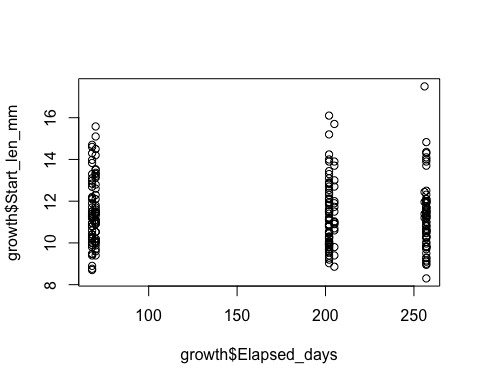
#growth[growth$len\_tot<=0,"Len"]<- NA

Plot total change in length as a function of starting length

par(mfrow = c(1,1))  
plot(growth$Elapsed\_days, growth$len\_tot, col = growth$Site)



plot(growth$Elapsed\_days, growth$Start\_len\_mm)



## Ptown treatment comparison

growth <- growth[!is.na(growth$len\_tot),]  
 mod\_growth\_full <- lme(len\_tot/Elapsed\_days\*30~Treatment+Collection.month+Site,  
 #\*Collection.month,  
 #+Start\_len\_mm+Start\_len\_mm:Site,   
 random = ~1|Location\_code,   
 data = growth)

library(svglite)  
library(ftExtra)

Registered S3 method overwritten by 'ftExtra':  
 method from   
 as\_flextable.data.frame flextable

Attaching package: 'ftExtra'

The following object is masked from 'package:flextable':  
  
 separate\_header

The following object is masked from 'package:huxtable':  
  
 as\_flextable

#Commenting out b/c seems to be causing memory usage issues  
  
# #https://ardata-fr.github.io/flextable-book/plotting-flextable.html  
# ft <- as\_flextable(mod\_growth\_full, fit = "fixed", just = "center")%>%  
# add\_header\_lines("Growth (mm/day)")  
# ft  
#   
# gr <- gen\_grob(ft)  
# plot(gr)  
#   
# library(patchwork)  
#   
# ggarrange(gr,gr)  
#   
#   
#   
# library(tables)  
# tab <- tabular(  
# (Species + 1) ~ (n = 1) + Format(digits = 2) \*  
# (Sepal.Length + Sepal.Width) \* (mean + sd),  
# data = iris  
# )  
# as\_flextable(tab)

#Length change   
#https://stackoverflow.com/questions/77037940/how-to-convert-nlme-summary-object-into-table  
  
   
  
 summary(mod\_growth\_full)

Linear mixed-effects model fit by REML  
 Data: growth   
 AIC BIC logLik  
 368.4321 392.8835 -177.216  
  
Random effects:  
 Formula: ~1 | Location\_code  
 (Intercept) Residual  
StdDev: 0.2161049 0.454428  
  
Fixed effects: len\_tot/Elapsed\_days \* 30 ~ Treatment + Collection.month + Site   
 Value Std.Error DF t-value p-value  
(Intercept) 4.549824 0.10115823 215 44.97730 0.0000  
TreatmentS -0.110329 0.08197825 215 -1.34583 0.1798  
Collection.monthApr -0.539846 0.10510634 215 -5.13619 0.0000  
Collection.monthJun -0.428697 0.12119840 215 -3.53715 0.0005  
SiteEel Pond -1.672723 0.07924195 215 -21.10906 0.0000  
 Correlation:   
 (Intr) TrtmnS Cllc.A Cllc.J  
TreatmentS -0.458   
Collection.monthApr -0.627 -0.007   
Collection.monthJun -0.658 0.039 0.573   
SiteEel Pond -0.435 0.021 0.244 0.386  
  
Standardized Within-Group Residuals:  
 Min Q1 Med Q3 Max   
-2.92913521 -0.60445434 -0.04832064 0.62530974 2.61565396   
  
Number of Observations: 248  
Number of Groups: 29

anova(mod\_growth\_full)

|  |  |  |  |
| --- | --- | --- | --- |
| **numDF** | **denDF** | **F-value** | **p-value** |
| 1 | 215 | 5.62e+03 | 0 |
| 1 | 215 | 1.39 | 0.24 |
| 2 | 215 | 17.5 | 9.32e-08 |
| 1 | 215 | 446 | 0 |

# summary(mod\_growth\_ful)$tTable %>%  
 # as\_tibble(rownames="variable") %>%  
 # knitr::kable(digits=3)  
   
  
fit <- linear\_reg() %>%   
 set\_engine("lm") %>%   
 fit(formula = mpg ~ cyl, data = mtcars)  
fit %>% tidy()

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **term** | **estimate** | **std.error** | **statistic** | **p.value** |
| (Intercept) | 37.9 | 2.07 | 18.3 | 8.37e-18 |
| cyl | -2.88 | 0.322 | -8.92 | 6.11e-10 |

fit %>% glance()

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **r.squared** | **adj.r.squared** | **sigma** | **statistic** | **p.value** | **df** | **logLik** | **AIC** | **BIC** | **deviance** | **df.residual** | **nobs** |
| 0.726 | 0.717 | 3.21 | 79.6 | 6.11e-10 | 1 | -81.7 | 169 | 174 | 308 | 30 | 32 |

mod\_growth\_full <- lmer(len\_tot/Elapsed\_days\*30~Treatment+Collection.month+Site+(1|Location\_code), data = growth)  
  
  
   
#as\_flextable(mod\_growth\_full, options(show.signif.stars = FALSE))  
   
mod.out <- anova(mod\_growth\_full)   
mod.out%>%  
 kbl(caption = "Mixed model output")%>%  
 kable\_classic(full\_width=F, html\_font = "Cambria")%>%  
 kable\_styling(bootstrap\_options = c("striped","hover","condensed"))

Mixed model output

|  | npar | Sum Sq | Mean Sq | F value |
| --- | --- | --- | --- | --- |
| Treatment | 1 | 0.2861897 | 0.2861897 | 1.385874 |
| Collection.month | 2 | 7.2154542 | 3.6077271 | 17.470425 |
| Site | 1 | 92.0169408 | 92.0169408 | 445.592208 |

# mod.out <- coeff(mod\_growth\_full)   
mod.out%>%  
 kbl(caption = "Mixed model output")%>%  
 kable\_classic(full\_width=F, html\_font = "Cambria")%>%  
 kable\_styling(bootstrap\_options = c("striped","hover","condensed"))

Mixed model output

|  | npar | Sum Sq | Mean Sq | F value |
| --- | --- | --- | --- | --- |
| Treatment | 1 | 0.2861897 | 0.2861897 | 1.385874 |
| Collection.month | 2 | 7.2154542 | 3.6077271 | 17.470425 |
| Site | 1 | 92.0169408 | 92.0169408 | 445.592208 |

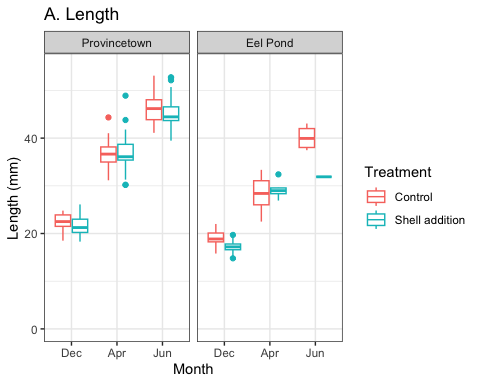
#write.csv(summary(mod\_growth\_full), "LMER output\_growth.csv")

mod\_growth\_full.CI <- lme(CI~Treatment+Collection.month+Site,  
 #+Start\_len\_mm+Start\_len\_mm:Site,   
 random = ~1|Location\_code,   
 data = growth)  
 summary(mod\_growth\_full.CI)

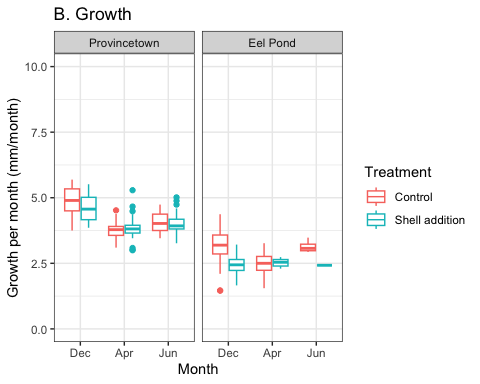
Linear mixed-effects model fit by REML  
 Data: growth   
 AIC BIC logLik  
 750.6729 775.1244 -368.3365  
  
Random effects:  
 Formula: ~1 | Location\_code  
 (Intercept) Residual  
StdDev: 0.2262083 1.036618  
  
Fixed effects: CI ~ Treatment + Collection.month + Site   
 Value Std.Error DF t-value p-value  
(Intercept) 8.845526 0.1821654 215 48.55766 0.0000  
TreatmentS -0.154781 0.1506118 215 -1.02768 0.3053  
Collection.monthApr 3.808401 0.1859536 215 20.48038 0.0000  
Collection.monthJun 2.726700 0.2098696 215 12.99235 0.0000  
SiteEel Pond -2.735380 0.1685048 215 -16.23325 0.0000  
 Correlation:   
 (Intr) TrtmnS Cllc.A Cllc.J  
TreatmentS -0.530   
Collection.monthApr -0.655 0.090   
Collection.monthJun -0.666 0.118 0.541   
SiteEel Pond -0.484 0.057 0.268 0.366  
  
Standardized Within-Group Residuals:  
 Min Q1 Med Q3 Max   
-3.33642362 -0.52816591 -0.04810808 0.49213942 6.13877998   
  
Number of Observations: 248  
Number of Groups: 29

# M\_int<-update(mod\_growth\_full, .~. - Start\_len\_mm:Site)  
# M <- update(M\_int, ~. - Treatment:Site)  
# M2 <- update(M\_int, ~. - Start\_len\_mm)  
#   
# summary(M\_int)  
# summary(M)  
# summary(M2)  
# AIC(mod\_growth\_full,M\_int,M,M2)  
#banner(snug = TRUE, bandChar = "-") # <--- create a small banner  
  
  
# Remove growth measurements that are <(-2)... There are none.   
#growth\_dec[growth\_dec$growth\_height<0,]  
#growth\_dec <- growth\_dec[growth\_dec$growth\_height>(-2),]

growth$Site <- factor(growth$Site)  
  
levels(growth$Treatment) <- c("Control","Shell addition")  
  
gg0 <- ggplot(data = growth, aes(x=as.factor(Collection.month), y=Len, color = Treatment))+  
 geom\_boxplot()+  
 xlab("Month") +   
 ylab("Length (mm)")+  
 ylim(0,55)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('A. Length')+  
 facet\_wrap(facets = "Site")  
gg0

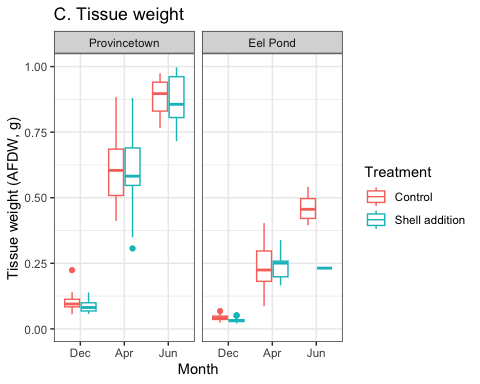


gg1 <- ggplot(data = growth, aes(x=as.factor(Collection.month), y=len\_tot/(Elapsed\_days/30), color = Treatment))+  
 geom\_boxplot()+  
 xlab("Month") +   
 ylab("Growth per month (mm/month)")+  
 ylim(0,10)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('B. Growth')+  
 facet\_wrap(facets = "Site")  
gg1

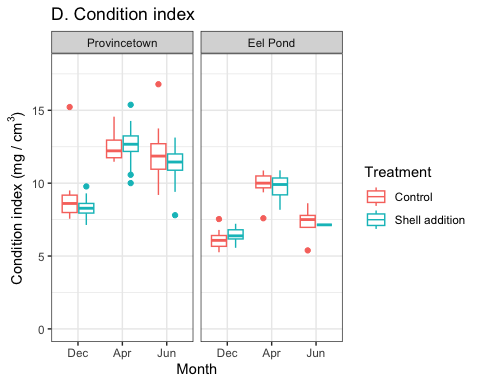


gg2 <- ggplot(data = growth, aes(x=as.factor(Collection.month), y=AFDW, color = Treatment))+  
 geom\_boxplot()+  
 xlab("Month") +   
 ylab("Tissue weight (AFDW, g)")+  
 ylim(0,1)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('C. Tissue weight')+  
 facet\_wrap(facets = "Site")  
  
gg2

Warning: Removed 48 rows containing non-finite outside the scale range  
(`stat\_boxplot()`).



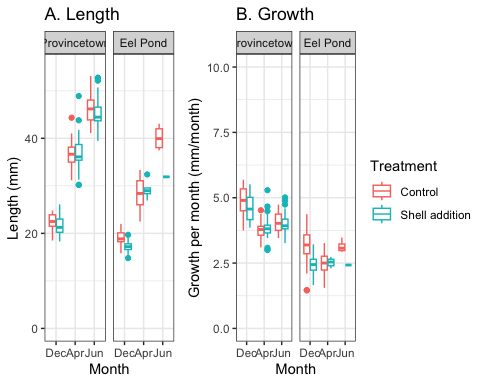
CI\_label <- expression(paste("Condition index (mg / ","cm"^3,")", sep = ""))  
gg3 <- ggplot(data = growth, aes(x=as.factor(Collection.month), y=CI, color = Treatment))+  
 geom\_boxplot()+  
 xlab("Month") +   
 ylab(CI\_label)+  
 ylim(0,18)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('D. Condition index')+  
 facet\_wrap(facets = "Site")  
  
gg3



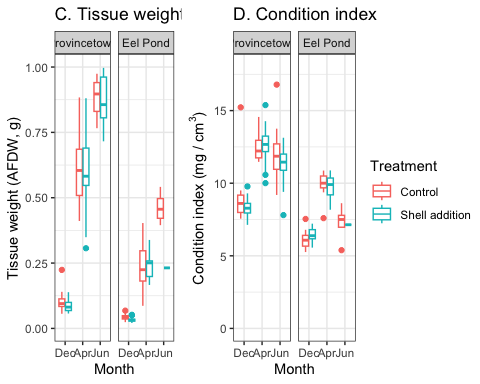
ggarrange(gg0,gg1,gg2,gg3, ncol=2, common.legend = TRUE, legend = "right")

Warning: Removed 48 rows containing non-finite outside the scale range  
(`stat\_boxplot()`).

$`1`

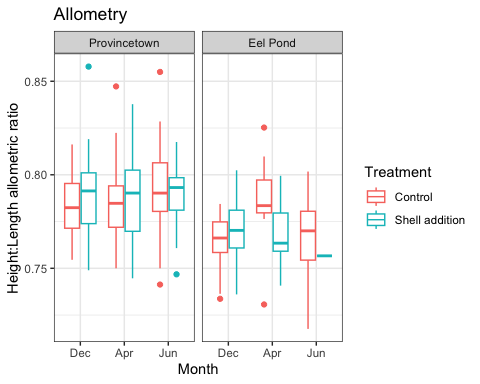


$`2`

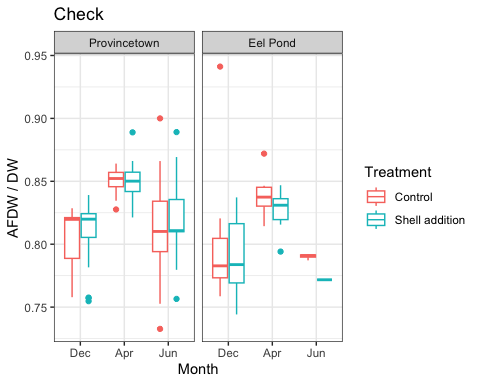


attr(,"class")  
[1] "list" "ggarrange"

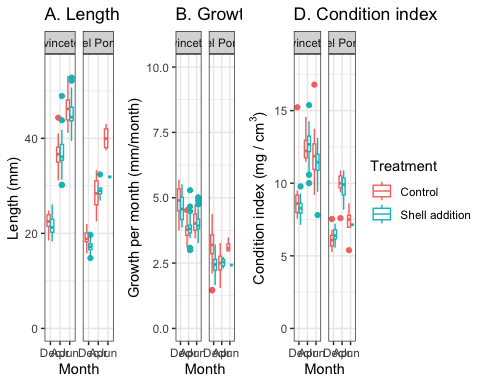
gg4 <- ggplot(data = growth, aes(x=as.factor(Collection.month), y=Height/Len, color = Treatment))+  
 geom\_boxplot()+  
 xlab("Month") +   
 ylab("Height:Length allometric ratio")+  
 #ylim(0,9)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('Allometry')+  
 facet\_wrap(facets = "Site")  
  
gg4



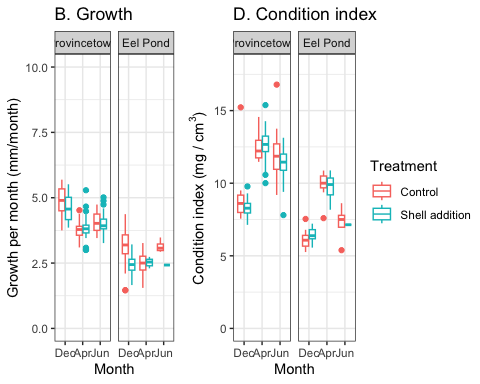
gg5 <- ggplot(data = growth, aes(x=as.factor(Collection.month), y=AFDW/DW, color = Treatment))+  
 geom\_boxplot()+  
 xlab("Month") +   
 ylab("AFDW / DW")+  
 #ylim(0,9)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('Check')+  
 facet\_wrap(facets = "Site")  
  
gg5



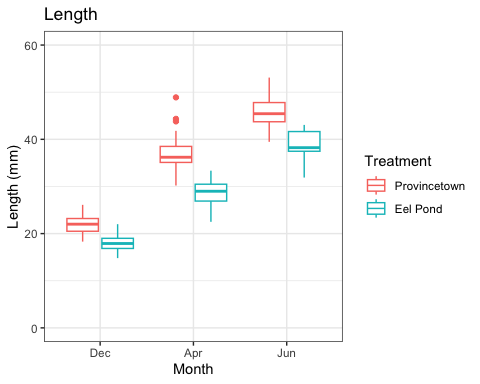
ggarrange(gg0,gg1,gg3, ncol=3, common.legend = TRUE, legend = "right")



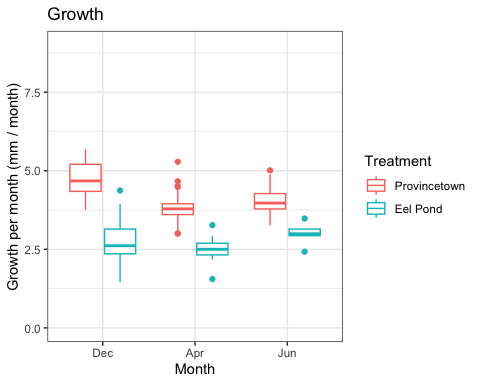
ggarrange(gg1,gg3, ncol=2, common.legend = TRUE, legend = "right")



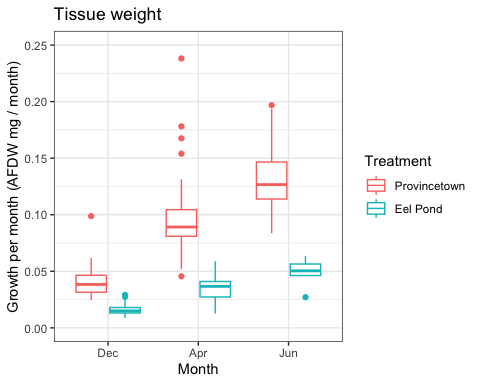
gg0 <- ggplot(data = growth, aes(x=as.factor(Collection.month), y=Len, color = Site))+  
 geom\_boxplot()+  
 xlab("Month") +   
 ylab("Length (mm)")+  
 ylim(0,60)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('Length')#+  
 #facet\_wrap(facets = "Site")  
gg0



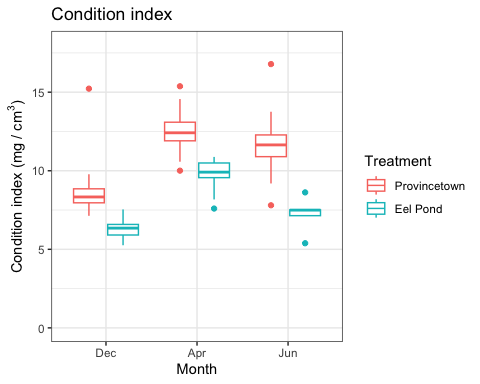
gg1 <- ggplot(data = growth, aes(x=as.factor(Collection.month), y=len\_tot/(Elapsed\_days/30), color = Site))+  
 geom\_boxplot()+  
 xlab("Month") +   
 ylab("Growth per month (mm / month)")+  
 ylim(0,9)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('Growth')#+  
 #facet\_wrap(facets = "Site")  
gg1



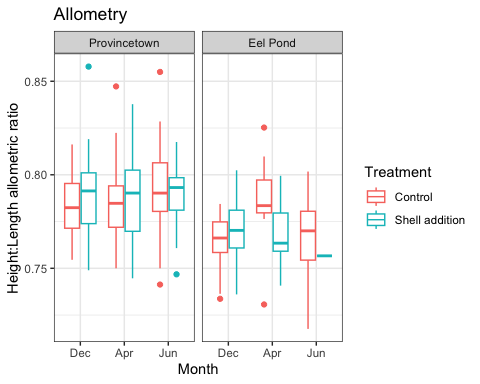
gg2 <- ggplot(data = growth, aes(x=as.factor(Collection.month), y=(AFDW)/(Elapsed\_days/30), color = Site))+  
 geom\_boxplot()+  
 xlab("Month") +   
 ylab("Growth per month (AFDW mg / month)")+  
 ylim(0,.25)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('Tissue weight')#+  
 #facet\_wrap(facets = "Site")  
  
gg2



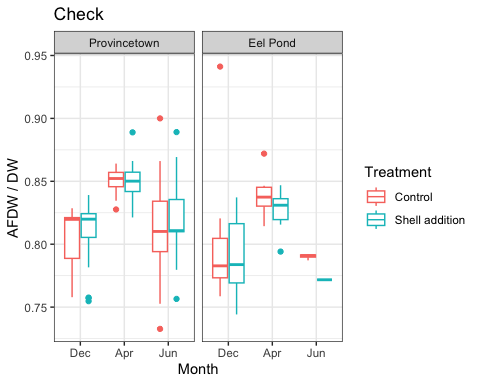
CI\_label <- expression(paste("Condition index( g ","mm"^-3,10^-6,")", sep = ""))  
CI\_label <- expression(paste("Condition index (mg / ","cm"^3,")", sep = ""))  
  
gg3 <- ggplot(data = growth, aes(x=as.factor(Collection.month), y=CI, color = Site))+  
 geom\_boxplot()+  
 xlab("Month") +   
 #ylab("Condition index (mg / cm^3)")+  
 ylab(CI\_label)+  
 ylim(0,18)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('Condition index')#+  
 #facet\_wrap(facets = "Site")  
  
gg3



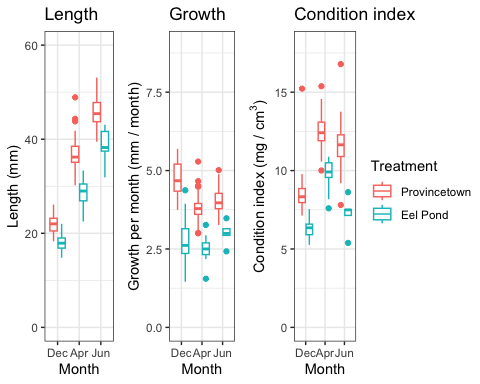
gg4 <- ggplot(data = growth, aes(x=as.factor(Collection.month), y=Height/Len, color = Treatment))+  
 geom\_boxplot()+  
 xlab("Month") +   
 ylab("Height:Length allometric ratio")+  
 #ylim(0,9)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('Allometry')+  
 facet\_wrap(facets = "Site")  
  
gg4



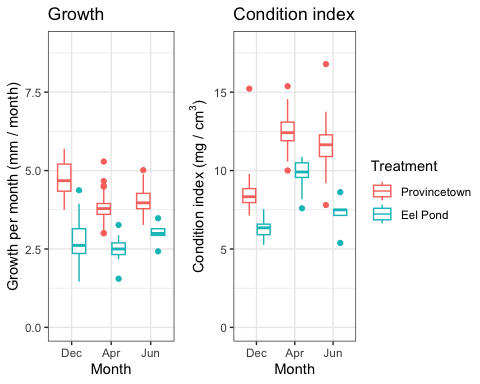
gg5 <- ggplot(data = growth, aes(x=as.factor(Collection.month), y=AFDW/DW, color = Treatment))+  
 geom\_boxplot()+  
 xlab("Month") +   
 ylab("AFDW / DW")+  
 #ylim(0,9)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('Check')+  
 facet\_wrap(facets = "Site")  
  
gg5



ggarrange(gg0,gg1,gg3, ncol=3, common.legend = TRUE, legend = "right")

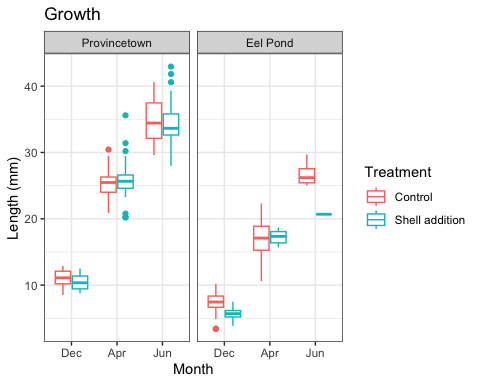


ggarrange(gg1,gg3, ncol=2, common.legend = TRUE, legend = "right")

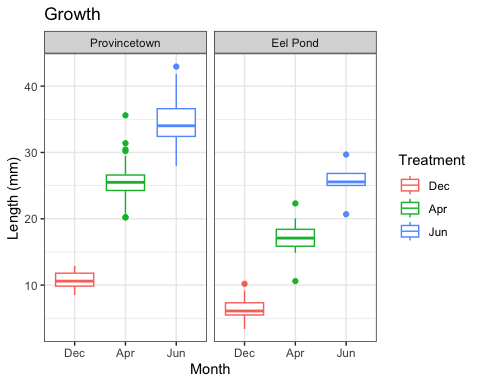


## Initial and final lengths and weights for DEB model

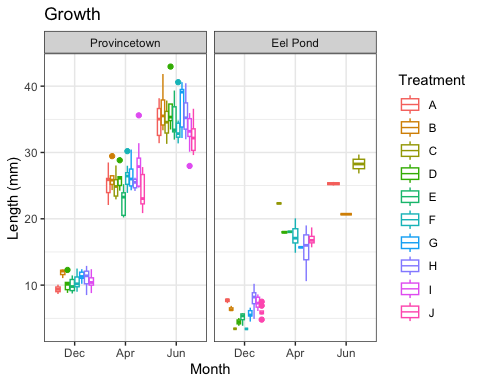
gg1 <- ggplot(data = growth, aes(x=as.factor(Collection.month), y=len\_tot, color = Treatment))+  
 geom\_boxplot()+  
 xlab("Month") +   
 ylab("Length (mm)")+  
 #ylim(0,9)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('Growth')+  
 facet\_wrap(facets = "Site")  
gg1



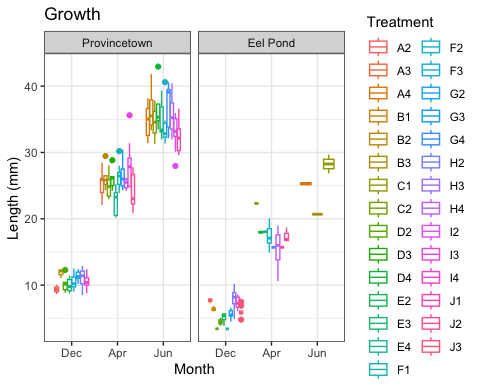
gg2 <- ggplot(data = growth, aes(x=as.factor(Collection.month), y=len\_tot, color = as.factor(Collection.month)))+  
 geom\_boxplot()+  
 xlab("Month") +   
 ylab("Length (mm)")+  
 #ylim(0,9)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('Growth')+  
 facet\_wrap(facets = "Site")  
gg2



growth$row <- as.factor(substr(growth$Location\_code,1,1))  
gg3 <- ggplot(data = growth, aes(x=as.factor(Collection.month), y=len\_tot, color = as.factor(row)))+  
 geom\_boxplot()+  
 xlab("Month") +   
 ylab("Length (mm)")+  
 #ylim(0,9)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('Growth')+  
 facet\_wrap(facets = "Site")  
gg3



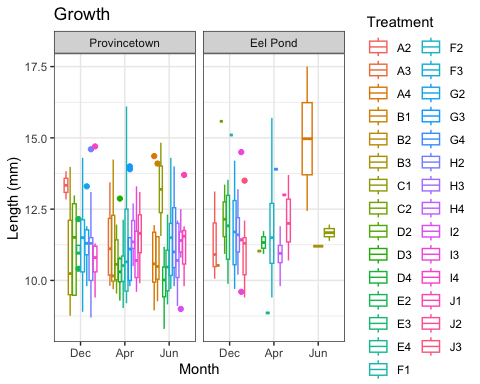
gg4 <- ggplot(data = growth, aes(x=as.factor(Collection.month), y=len\_tot, color = as.factor(Location\_code)))+  
 geom\_boxplot()+  
 xlab("Month") +   
 ylab("Length (mm)")+  
 #ylim(0,9)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('Growth')+  
 facet\_wrap(facets = "Site")  
gg4



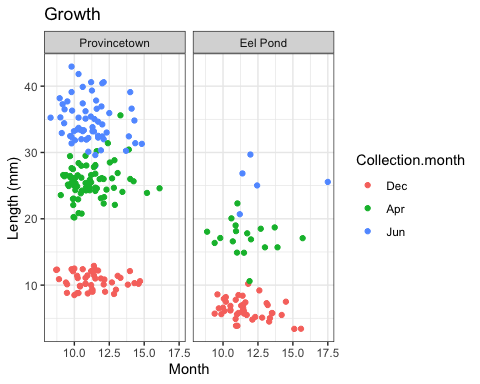
growth$Start\_len\_mm

[1] 13.83000 12.84000 13.44000 12.54000 11.81000 11.11000 10.46000 9.92000  
 [9] 9.81000 14.36000 11.44000 11.94000 10.58000 9.84000 10.04000 8.95000  
 [17] 14.10000 10.30000 10.68000 9.27000 14.24000 12.83000 12.10000 10.08000  
 [25] 10.07000 10.24000 9.69000 9.69000 13.98000 10.24000 8.76000 14.83000  
 [33] 11.56000 11.96000 11.61000 10.86000 9.94000 10.27000 9.54000 12.98000  
 [41] 12.69000 11.51000 9.48000 9.47000 12.87000 10.83000 10.55000 9.92000  
 [49] 10.05000 9.29000 10.23000 11.18000 9.80000 8.30000 12.15000 10.41000  
 [57] 11.23000 10.94000 10.96000 12.31000 11.26000 10.86000 10.47000 9.16000  
 [65] 9.97000 9.30000 12.13000 10.83000 10.52000 9.94000 10.88000 10.00000  
 [73] 9.03000 15.20000 16.10000 11.60000 9.40000 10.50000 10.80000 9.20000  
 [81] 9.70000 14.30000 12.10000 11.70000 11.30000 9.80000 9.70000 14.30000  
 [89] 12.10000 12.20000 11.30000 11.70000 10.40000 10.00000 8.90000 13.30000  
 [97] 11.90000 11.40000 11.20000 10.80000 9.80000 13.90000 14.00000 11.10000  
[105] 11.50000 10.00000 11.50000 10.80000 9.90000 9.80000 13.90000 14.00000  
[113] 11.20000 11.00000 10.60000 10.30000 9.80000 14.60000 13.10000 11.30000  
[121] 11.40000 11.50000 10.00000 9.90000 10.20000 8.70000 12.10000 12.00000  
[129] 12.00000 10.60000 10.80000 10.30000 9.10000 9.50000 12.70000 12.30000  
[137] 11.50000 10.50000 11.10000 11.20000 12.50000 12.00000 11.70000 11.40000  
[145] 11.50000 10.80000 11.00000 11.30000 9.00000 13.30000 11.50000 12.40000  
[153] 10.30000 10.20000 11.10000 9.60000 9.80000 14.70000 11.30000 11.20000  
[161] 10.80000 10.80000 10.60000 10.20000 10.30000 9.40000 13.70000 11.90000  
[169] 11.50000 11.70000 11.60000 10.60000 10.50000 9.80000 12.90000 13.10000  
[177] 12.10000 11.90000 11.40000 10.30000 9.90000 11.20000 13.12000 10.91000  
[185] 10.06000 17.50000 12.44000 10.52714 10.52714 10.52714 11.20000 11.96000  
[193] 11.39000 11.03000 15.58000 13.36000 10.93000 11.73000 10.93000 13.53000  
[201] 12.80000 11.03000 9.88000 8.86000 15.10000 15.70000 12.70000 11.50000  
[209] 9.40000 10.60000 14.20000 13.30000 11.70000 12.30000 9.70000 11.10000  
[217] 10.00000 13.90000 12.60000 13.20000 10.90000 11.60000 10.20000 11.80000  
[225] 11.10000 11.90000 9.80000 10.90000 11.00000 14.50000 11.40000 9.60000  
[233] 11.40000 11.44444 11.44444 13.00000 13.70000 12.00000 10.70000 13.50000  
[241] 12.10000 11.50000 11.30000 10.20000 9.40000 10.10000 11.00000 11.50000

gg5 <- ggplot(data = growth, aes(x=as.factor(Collection.month), y=Start\_len\_mm, color = as.factor(Location\_code)))+  
 geom\_boxplot()+  
 xlab("Month") +   
 ylab("Length (mm)")+  
 #ylim(0,9)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('Growth')+  
 facet\_wrap(facets = "Site")  
gg5



gg5 <- ggplot(data = growth, aes(x=Start\_len\_mm, y=len\_tot, color = as.factor(Collection.month)))+  
 geom\_point()+  
 xlab("Month") +   
 ylab("Length (mm)")+  
 #ylim(0,9)+  
 scale\_color\_discrete(name="Collection.month")+  
 ggtitle ('Growth')+  
 facet\_wrap(facets = "Site")  
gg5



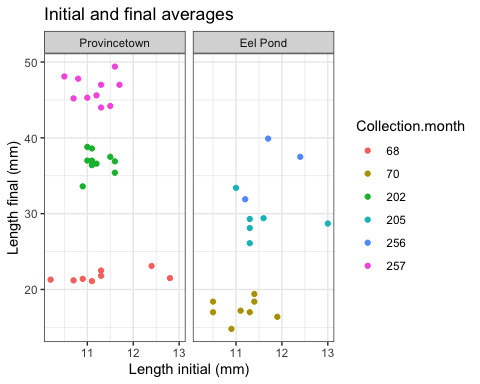
#So for each cage we want Site, month collected, start date, end date, mean start length, final length  
  
str(growth)

'data.frame': 248 obs. of 51 variables:  
 $ Start\_date : chr "9/27/2022" "9/27/2022" "9/27/2022" "9/27/2022" ...  
 $ Site : Factor w/ 2 levels "Provincetown",..: 1 1 1 1 1 1 1 1 1 1 ...  
 $ Treatment : Factor w/ 2 levels "Control","Shell addition": 1 1 1 1 1 1 1 1 1 1 ...  
 $ Buried\_Dec : chr "N" "N" "" "" ...  
 $ Location\_code : chr "A2" "A2" "A3" "A3" ...  
 $ color.1 : chr "R" "Y" "R" "Y" ...  
 $ color.2 : chr "" "" "" "" ...  
 $ Start\_len\_mm : num 13.8 12.8 13.4 12.5 11.8 ...  
 $ Start\_height\_mm : num 10.86 9.74 10.63 9.29 9.32 ...  
 $ Start\_thickness\_mm : num 5.92 5.31 5.68 5.01 5.02 4.62 4.44 4.13 4.33 5.86 ...  
 $ Collection.month : Factor w/ 3 levels "Dec","Apr","Jun": 1 1 2 2 2 2 2 2 2 3 ...  
 $ Collection1\_date : Date, format: "2022-12-04" "2022-12-04" ...  
 $ Elapsed\_days : num 68 68 202 202 202 202 202 202 202 257 ...  
 $ depth\_cm : chr "4+" "4+" "S" "Deep" ...  
 $ color\_collection : chr "R" "NO LABEL" "" "" ...  
 $ L\_mm\_extra : num 24.1 21.6 NA NA NA ...  
 $ H\_mm\_extra : num 19.3 17.1 NA NA NA ...  
 $ T\_mm : num 11.2 10 NA NA NA ...  
 $ Collection.notes : chr "" "" "" "" ...  
 $ Dissection.ID.label : chr "P125" "P126" "P51" "P.1" ...  
 $ Label.different.when.collected : chr "" "no label" "" "" ...  
 $ Biodeposition.label : chr "" "" "3" "" ...  
 $ Dead\_or\_missing : chr "N" "N" "N" "N" ...  
 $ Len : num 23.9 21.5 37.5 41 37.8 ...  
 $ Height : num 19.2 17.1 29.6 31.7 29.4 ...  
 $ Thickness : num 11.2 10 NA 18.5 16.2 ...  
 $ Est..growth.by.height : num 8.44 7.36 NA NA NA NA NA NA NA NA ...  
 $ Est.start.height.from.linear.function : num 10.5 9.6 10.3 9.2 9.2 8.6 8.2 7.7 7.7 10.6 ...  
 $ Start\_height.from.marking : num 11 9.7 10.85 9.77 9.3 ...  
 $ Growth.increment.from.mark\_height : num 10.9 9.3 23.5 27.2 24.3 ...  
 $ Tin.only : num 1.095 1.104 1.083 0.989 1.001 ...  
 $ Tin...gonad...somatic.tissue : num 1.25 1.22 1.81 1.96 1.78 ...  
 $ Reweigh..if.necessary. : num NA NA NA NA NA NA NA NA NA NA ...  
 $ Ash.weight..tin...gonad...somatic.tissue. : num 1.18 1.15 1.19 1.15 1.11 ...  
 $ DW : num 0.152 0.115 0.727 0.973 0.783 ...  
 $ AFDW : num 0.1246 0.0943 0.6162 0.8117 0.6755 ...  
 $ Ratio.for.samples.with.DW.0.01g : chr "46%" "58%" "85%" "83%" ...  
 $ Corrected.AFDW.using.an.average.of.82...Used.for..20.samples.with...organic...7.which.was.identified.to.caused.by.incomplete..anoxic..muffle.furnace.issues.: num 0.1246 0.0943 0.6162 0.8117 0.6755 ...  
 $ Notes : chr "" "Most likely Y (2nd of color series) given start height" "" "" ...  
 $ X..gonad : chr "" "" "" "" ...  
 $ X..digestive : chr "" "" "" "" ...  
 $ Shell.weight : num NA NA NA NA NA ...  
 $ Start.height.function.params : num 0.839 1.389 NA NA NA ...  
 $ AliveOrDead : chr "Alive" "Alive" "Alive" "Alive" ...  
 $ CI : num 9.13 9.49 11.68 11.75 12.51 ...  
 $ len\_tot : num 10.07 8.66 24.06 28.49 25.99 ...  
 $ len\_per\_day : num 0.148 0.127 0.119 0.141 0.129 ...  
 $ height\_tot : num 8.34 7.36 18.97 22.45 20.08 ...  
 $ height\_per\_day : num 0.1226 0.1082 0.0939 0.1111 0.0994 ...  
 $ ratio.LH : num 0.828 0.85 0.788 0.788 0.773 ...  
 $ row : Factor w/ 10 levels "A","B","C","D",..: 1 1 1 1 1 1 1 1 1 1 ...

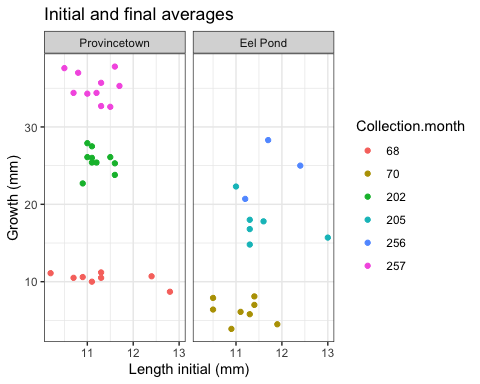
growth$Start\_date <- as.Date(strptime(growth$Start\_date, format = "%m/%d/%Y"))  
  
df\_summary <- growth %>%   
 group\_by(Collection.month,as.factor(Location\_code),Site) %>%   
 filter(AliveOrDead=="Alive") %>%   
 filter(Start\_len\_mm<=13&Start\_len\_mm>=10) %>%   
 summarise(  
 Li = round(mean(Start\_len\_mm, na.rm = TRUE),1),  
   
   
 Lf = round(mean(Len, na.rm = TRUE),1),  
   
   
 Elapsed\_days = round(mean(Elapsed\_days, na.rm = TRUE),0),  
   
 Start\_date = unique(Start\_date, na.rm = TRUE),  
  
 End\_date = unique(Collection1\_date, na.rm = TRUE),  
   
 Ave\_growth = round(mean(Len-Start\_len\_mm, na.rm = TRUE),1)  
   
   
 )

`summarise()` has grouped output by 'Collection.month',  
'as.factor(Location\_code)'. You can override using the `.groups` argument.

# Perc\_SE = round(sd(X..organic\*100, na.rm = TRUE) /   
 # sqrt(sum(!is.na(X..organic))),0),  
  
  
# Remove negative growths by adjusting initial lengths to match final lengths. This is weird, but the alternative is setting final lengths to be the same as initial lengths   
# df\_summary$Li[(df\_summary$Lf-df\_summary$Li)<0]<- df\_summary$Lf[(df\_summary$Lf-df\_summary$Li)<0]  
  
#OK a little less weird... final lengths are just set to the same as initial lengths if there was no positive growth.   
df\_summary$Lf[(df\_summary$Lf-df\_summary$Li)<0]<- df\_summary$Li[(df\_summary$Lf-df\_summary$Li)<0]  
  
gg5 <- ggplot(data = df\_summary, aes(x=Li, y=Lf, color = as.factor(Elapsed\_days)))+  
 geom\_point()+  
 xlab("Length initial (mm)") +   
 ylab("Length final (mm)")+  
 #ylim(0,9)+  
 scale\_color\_discrete(name="Collection.month")+  
 ggtitle ('Initial and final averages')+  
 facet\_wrap(facets = "Site")  
gg5

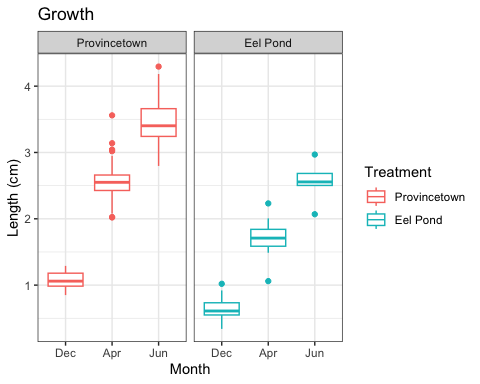


gg5 <- ggplot(data = df\_summary, aes(x=Li, y=Ave\_growth, color = as.factor(Elapsed\_days)))+  
 geom\_point()+  
 xlab("Length initial (mm)") +   
 ylab("Growth (mm)")+  
 #ylim(0,9)+  
 scale\_color\_discrete(name="Collection.month")+  
 ggtitle ('Initial and final averages')+  
 facet\_wrap(facets = "Site")  
gg5



# write.csv(df\_summary,file="~/GitHub/EAD-ASEB-Ssolidissima-OA/projects/Transplant\_growth\_survival/data/Growth.est.len.csv")

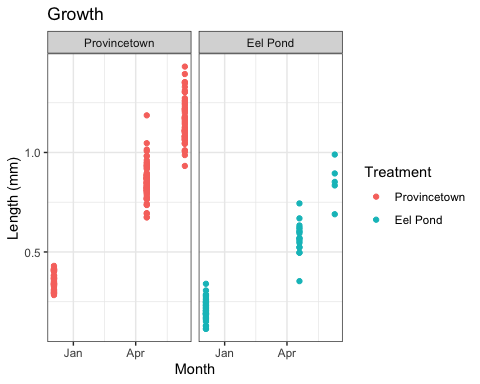
gg2 <- ggplot(data = growth, aes(x=as.factor(Collection.month), y=len\_tot/10, color =as.factor(Site)))+  
 geom\_boxplot()+  
 xlab("Month") +   
 ylab("Length (cm)")+  
 #ylim(0,9)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('Growth')+  
 facet\_wrap(~Site)  
gg2



growth$Collection1\_date

[1] "2022-12-04" "2022-12-04" "2023-04-17" "2023-04-17" "2023-04-17"  
 [6] "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17" "2023-06-11"  
 [11] "2023-06-11" "2023-06-11" "2023-06-11" "2023-06-11" "2023-06-11"  
 [16] "2023-06-11" "2023-06-11" "2023-06-11" "2023-06-11" "2023-06-11"  
 [21] "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17"  
 [26] "2023-04-17" "2023-04-17" "2023-04-17" "2022-12-04" "2022-12-04"  
 [31] "2022-12-04" "2023-06-11" "2023-06-11" "2023-04-17" "2023-04-17"  
 [36] "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17" "2022-12-04"  
 [41] "2022-12-04" "2022-12-04" "2022-12-04" "2022-12-04" "2023-04-17"  
 [46] "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17"  
 [51] "2023-06-11" "2023-06-11" "2023-06-11" "2023-06-11" "2022-12-04"  
 [56] "2022-12-04" "2022-12-04" "2022-12-04" "2022-12-04" "2023-06-11"  
 [61] "2023-06-11" "2023-06-11" "2023-06-11" "2023-06-11" "2023-06-11"  
 [66] "2023-06-11" "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17"  
 [71] "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17"  
 [76] "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17"  
 [81] "2023-04-17" "2023-06-11" "2023-06-11" "2023-06-11" "2023-06-11"  
 [86] "2023-06-11" "2023-06-11" "2022-12-04" "2022-12-04" "2022-12-04"  
 [91] "2022-12-04" "2022-12-04" "2022-12-04" "2022-12-04" "2022-12-04"  
 [96] "2022-12-04" "2022-12-04" "2022-12-04" "2022-12-04" "2022-12-04"  
[101] "2022-12-04" "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17"  
[106] "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17"  
[111] "2023-06-11" "2023-06-11" "2023-06-11" "2023-06-11" "2023-06-11"  
[116] "2023-06-11" "2023-06-11" "2022-12-04" "2022-12-04" "2022-12-04"  
[121] "2022-12-04" "2022-12-04" "2022-12-04" "2022-12-04" "2022-12-04"  
[126] "2022-12-04" "2023-06-11" "2023-06-11" "2023-06-11" "2023-06-11"  
[131] "2023-06-11" "2023-06-11" "2023-06-11" "2023-06-11" "2023-04-17"  
[136] "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17"  
[141] "2023-06-11" "2023-06-11" "2023-06-11" "2023-06-11" "2023-06-11"  
[146] "2023-06-11" "2023-06-11" "2023-06-11" "2023-06-11" "2023-04-17"  
[151] "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17"  
[156] "2023-04-17" "2023-04-17" "2022-12-04" "2022-12-04" "2022-12-04"  
[161] "2022-12-04" "2022-12-04" "2022-12-04" "2022-12-04" "2022-12-04"  
[166] "2022-12-04" "2023-06-11" "2023-06-11" "2023-06-11" "2023-06-11"  
[171] "2023-06-11" "2023-06-11" "2023-06-11" "2023-06-11" "2023-04-17"  
[176] "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17" "2023-04-17"  
[181] "2023-04-17" "2023-04-17" "2022-12-05" "2022-12-05" "2022-12-05"  
[186] "2023-06-09" "2023-06-09" "2022-12-05" "2022-12-05" "2022-12-05"  
[191] "2023-06-09" "2023-06-09" "2023-06-09" "2023-04-19" "2022-12-05"  
[196] "2022-12-05" "2022-12-05" "2023-04-19" "2023-04-19" "2022-12-05"  
[201] "2022-12-05" "2022-12-05" "2022-12-05" "2023-04-19" "2022-12-05"  
[206] "2023-04-19" "2023-04-19" "2023-04-19" "2023-04-19" "2023-04-19"  
[211] "2022-12-05" "2022-12-05" "2022-12-05" "2022-12-05" "2022-12-05"  
[216] "2022-12-05" "2022-12-05" "2023-04-19" "2022-12-05" "2022-12-05"  
[221] "2022-12-05" "2022-12-05" "2022-12-05" "2022-12-05" "2022-12-05"  
[226] "2023-04-19" "2023-04-19" "2023-04-19" "2023-04-19" "2022-12-05"  
[231] "2022-12-05" "2022-12-05" "2022-12-05" "2022-12-05" "2022-12-05"  
[236] "2023-04-19" "2023-04-19" "2023-04-19" "2023-04-19" "2022-12-05"  
[241] "2022-12-05" "2022-12-05" "2022-12-05" "2022-12-05" "2022-12-05"  
[246] "2022-12-05" "2022-12-05" "2022-12-05"

gg2 <- ggplot(data = growth, aes(x=Collection1\_date, y=len\_tot/30, color =as.factor(Site)))+  
 geom\_point()+  
 xlab("Month") +   
 ylab("Length (mm)")+  
 #ylim(0,9)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('Growth')+  
 facet\_wrap(~Site)  
gg2

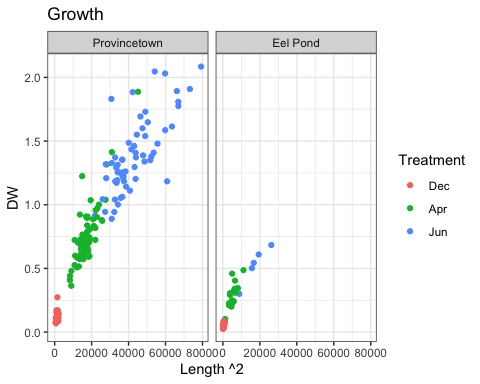


## Shape coefficient parameter

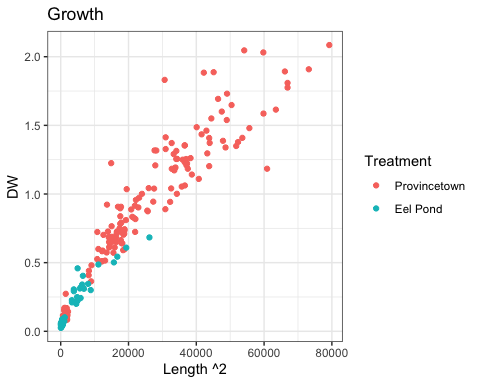
str(growth)

'data.frame': 248 obs. of 51 variables:  
 $ Start\_date : Date, format: "2022-09-27" "2022-09-27" ...  
 $ Site : Factor w/ 2 levels "Provincetown",..: 1 1 1 1 1 1 1 1 1 1 ...  
 $ Treatment : Factor w/ 2 levels "Control","Shell addition": 1 1 1 1 1 1 1 1 1 1 ...  
 $ Buried\_Dec : chr "N" "N" "" "" ...  
 $ Location\_code : chr "A2" "A2" "A3" "A3" ...  
 $ color.1 : chr "R" "Y" "R" "Y" ...  
 $ color.2 : chr "" "" "" "" ...  
 $ Start\_len\_mm : num 13.8 12.8 13.4 12.5 11.8 ...  
 $ Start\_height\_mm : num 10.86 9.74 10.63 9.29 9.32 ...  
 $ Start\_thickness\_mm : num 5.92 5.31 5.68 5.01 5.02 4.62 4.44 4.13 4.33 5.86 ...  
 $ Collection.month : Factor w/ 3 levels "Dec","Apr","Jun": 1 1 2 2 2 2 2 2 2 3 ...  
 $ Collection1\_date : Date, format: "2022-12-04" "2022-12-04" ...  
 $ Elapsed\_days : num 68 68 202 202 202 202 202 202 202 257 ...  
 $ depth\_cm : chr "4+" "4+" "S" "Deep" ...  
 $ color\_collection : chr "R" "NO LABEL" "" "" ...  
 $ L\_mm\_extra : num 24.1 21.6 NA NA NA ...  
 $ H\_mm\_extra : num 19.3 17.1 NA NA NA ...  
 $ T\_mm : num 11.2 10 NA NA NA ...  
 $ Collection.notes : chr "" "" "" "" ...  
 $ Dissection.ID.label : chr "P125" "P126" "P51" "P.1" ...  
 $ Label.different.when.collected : chr "" "no label" "" "" ...  
 $ Biodeposition.label : chr "" "" "3" "" ...  
 $ Dead\_or\_missing : chr "N" "N" "N" "N" ...  
 $ Len : num 23.9 21.5 37.5 41 37.8 ...  
 $ Height : num 19.2 17.1 29.6 31.7 29.4 ...  
 $ Thickness : num 11.2 10 NA 18.5 16.2 ...  
 $ Est..growth.by.height : num 8.44 7.36 NA NA NA NA NA NA NA NA ...  
 $ Est.start.height.from.linear.function : num 10.5 9.6 10.3 9.2 9.2 8.6 8.2 7.7 7.7 10.6 ...  
 $ Start\_height.from.marking : num 11 9.7 10.85 9.77 9.3 ...  
 $ Growth.increment.from.mark\_height : num 10.9 9.3 23.5 27.2 24.3 ...  
 $ Tin.only : num 1.095 1.104 1.083 0.989 1.001 ...  
 $ Tin...gonad...somatic.tissue : num 1.25 1.22 1.81 1.96 1.78 ...  
 $ Reweigh..if.necessary. : num NA NA NA NA NA NA NA NA NA NA ...  
 $ Ash.weight..tin...gonad...somatic.tissue. : num 1.18 1.15 1.19 1.15 1.11 ...  
 $ DW : num 0.152 0.115 0.727 0.973 0.783 ...  
 $ AFDW : num 0.1246 0.0943 0.6162 0.8117 0.6755 ...  
 $ Ratio.for.samples.with.DW.0.01g : chr "46%" "58%" "85%" "83%" ...  
 $ Corrected.AFDW.using.an.average.of.82...Used.for..20.samples.with...organic...7.which.was.identified.to.caused.by.incomplete..anoxic..muffle.furnace.issues.: num 0.1246 0.0943 0.6162 0.8117 0.6755 ...  
 $ Notes : chr "" "Most likely Y (2nd of color series) given start height" "" "" ...  
 $ X..gonad : chr "" "" "" "" ...  
 $ X..digestive : chr "" "" "" "" ...  
 $ Shell.weight : num NA NA NA NA NA ...  
 $ Start.height.function.params : num 0.839 1.389 NA NA NA ...  
 $ AliveOrDead : chr "Alive" "Alive" "Alive" "Alive" ...  
 $ CI : num 9.13 9.49 11.68 11.75 12.51 ...  
 $ len\_tot : num 10.07 8.66 24.06 28.49 25.99 ...  
 $ len\_per\_day : num 0.148 0.127 0.119 0.141 0.129 ...  
 $ height\_tot : num 8.34 7.36 18.97 22.45 20.08 ...  
 $ height\_per\_day : num 0.1226 0.1082 0.0939 0.1111 0.0994 ...  
 $ ratio.LH : num 0.828 0.85 0.788 0.788 0.773 ...  
 $ row : Factor w/ 10 levels "A","B","C","D",..: 1 1 1 1 1 1 1 1 1 1 ...

gg5 <- ggplot(data = growth, aes(x=len\_tot^3, y=DW, color = Collection.month))+  
 geom\_point()+  
 xlab("Length ^2") +   
 ylab("DW")+  
 #ylim(0,9)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('Growth')+  
 facet\_wrap(facets = "Site")  
gg5



gg5 <- ggplot(data = growth, aes(x=len\_tot^3, y=DW, color = Site))+  
 geom\_point()+  
 xlab("Length ^2") +   
 ylab("DW")+  
 #ylim(0,9)+  
 scale\_color\_discrete(name="Treatment")+  
 ggtitle ('Growth')#+  
 #facet\_wrap(facets = "Site")  
gg5



nls(data = growth, DW~(shape\*len\_tot/10)^3,  
 start = list(shape = .5))

Nonlinear regression model  
 model: DW ~ (shape \* len\_tot/10)^3  
 data: growth  
 shape   
0.3209   
 residual sum-of-squares: 8.765  
  
Number of iterations to convergence: 4   
Achieved convergence tolerance: 4.771e-06

# param <- NA  
# param$shape <- 0.3209

## Survival

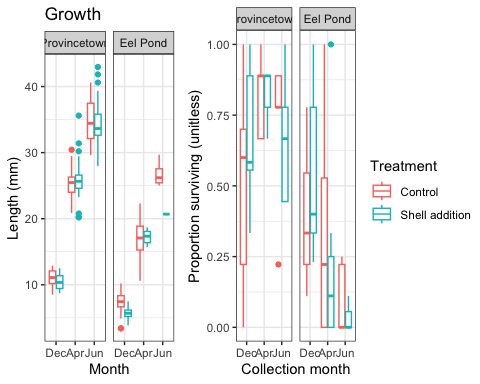
#Summer  
if(reporting\_period == "summer"){  
growth\_summer$Collection.month[growth\_summer$Collection.month=="August\_transcriptomics"] <- "August"  
  
growth <- growth\_summer  
  
growth$Site <- factor(growth$Site, levels = c("Ptown", "Eel\_Pond", "Dennis"))  
levels(growth$Site) <- c("Prov", "Eel Pond", "Dennis")  
growth$Collection.month <- factor(growth$Collection.month, levels = c("July", "August", "September"))  
levels(growth$Collection.month) <- c("Jul", "Aug", "Sep")  
  
  
library(dplyr)  
  
live\_count <- growth %>%  
 group\_by(Site, Collection.month, Treatment) %>%  
 summarise(live = sum(AliveOrDead == 'L', na.rm = TRUE),  
 dead = sum(AliveOrDead == 'D', na.rm = TRUE))  
  
gg1 <- ggplot(data = live\_count, aes(x = Collection.month, y = live/36, colour = Site, group= interaction(Treatment, Site)))+  
 geom\_line(aes(linetype = Treatment))+  
 geom\_point(aes(shape=Treatment))+  
 ylim(0,1)+  
 ylab("Proportion surviving (unitless)")+  
 xlab("Collection month")+  
 scale\_color\_brewer(palette="Set1")  
gg1  
  
str(growth)  
  
df\_summary <- growth %>%   
 group\_by(Collection.month,Location\_code,Site, Treatment) %>%   
 #filter(AliveOrDead=="Alive") %>%   
 #filter(Start\_len\_mm<=13&Start\_len\_mm>=10) %>%   
 summarise(live = sum(AliveOrDead == 'L', na.rm = TRUE), n = n())  
  
df\_summary$prop <- df\_summary$live / df\_summary$n  
  
#Nope this is how I analyze growth  
# m1 <- lme(data = df\_summary, prop ~ Site + Treatment \* Collection.month, random = (~1|Location\_code))  
# summary(m1)  
#   
# m1 <- lmer(data = df\_summary, prop ~ Site \* Treatment \* Collection.month + (1|Location\_code), REML = FALSE)  
# m2 <- lmer(data = df\_summary, prop ~ Site + Treatment + Collection.month + (1|Location\_code), REML = FALSE)  
# AICc(m1, m2)  
  
m1 <- lm(data = df\_summary, prop ~ Site + Treatment \* Collection.month)  
summary(m1)  
  
gg1 <- ggplot(data = df\_summary, aes(x = Collection.month, y = prop, colour = Treatment))+  
 #geom\_line(aes(linetype = Treatment))+  
 #geom\_point(aes(shape=Treatment))+  
 geom\_boxplot()+  
 ylim(0,1)+  
 ylab("Proportion surviving (unitless)")+  
 xlab("Collection month")+  
 scale\_color\_brewer(palette="Set1")+  
 scale\_color\_discrete(name="Treatment")+  
 facet\_wrap(~Site)  
gg1  
}

#Fall through spring  
if(reporting\_period == "fall\_spring"){  
growth <- growth\_fall\_spring  
  
#growth$Site <- factor(growth$Site, levels = c("Ptown", "Eel Pond"))  
#levels(growth$Site) <- c("Prov", "Eel Pond")  
levels(growth$Collection.month) <- c("Dec", "Apr", "Jun")  
  
growth$AliveOrDead[growth$Dead\_or\_missing=="N"]<-"L"  
growth$AliveOrDead[growth$Dead\_or\_missing=="Y"]<-"D"  
  
  
live\_count <- growth %>%  
 group\_by(Site, Collection.month, Treatment) %>%  
 summarise(live = sum(AliveOrDead == 'L', na.rm = TRUE),  
 dead = sum(AliveOrDead == 'D', na.rm = TRUE))  
live\_count <- live\_count[live\_count$Treatment!="Outside cage",]  
  
gg2 <- ggplot(data = live\_count, aes(x = Collection.month, y = live/(live + dead), colour = Site, group= interaction(Treatment, Site)))+  
 geom\_line(aes(linetype = Treatment))+  
 geom\_point(aes(shape=Treatment))+  
 ylim(0,1)+  
 ylab("Proportion surviving (unitless)")+  
 xlab("Collection month")+  
 scale\_color\_brewer(palette="Set1")  
gg2  
  
ggarrange(gg1,gg2,ncol=2, common.legend = TRUE, legend = "right")  
  
  
df\_summary <- growth %>%   
 group\_by(Collection.month,Location\_code,Site, Treatment) %>%   
 #filter(AliveOrDead=="Alive") %>%   
 #filter(Start\_len\_mm<=13&Start\_len\_mm>=10) %>%   
 summarise(live = sum(AliveOrDead == 'L', na.rm = TRUE), n = n(), .groups = "keep")  
  
df\_summary$prop <- df\_summary$live / df\_summary$n  
df\_summary <- df\_summary[df\_summary$Treatment!="Outside cage",]  
  
#Nope this is how I analyze growth  
# m1 <- lme(data = df\_summary, prop ~ Site + Treatment \* Collection.month, random = (~1|Location\_code))  
# summary(m1)  
#   
# m1 <- lmer(data = df\_summary, prop ~ Site \* Treatment \* Collection.month + (1|Location\_code), REML = FALSE)  
# m2 <- lmer(data = df\_summary, prop ~ Site + Treatment + Collection.month + (1|Location\_code), REML = FALSE)  
# AICc(m1, m2)  
  
m1 <- lm(data = df\_summary, prop ~ Site + Treatment \* Collection.month)  
summary(m1)  
  
gg2 <- ggplot(data = df\_summary, aes(x = Collection.month, y = prop, colour = Treatment))+  
 #geom\_line(aes(linetype = Treatment))+  
 #geom\_point(aes(shape=Treatment))+  
 geom\_boxplot()+  
 ylim(0,1)+  
 ylab("Proportion surviving (unitless)")+  
 xlab("Collection month")+  
 scale\_color\_brewer(palette="Set1")+  
 scale\_color\_discrete(name="Treatment")+  
 facet\_wrap(~Site)  
gg2  
  
# I need to include missing clams as dead clams or else if we didn't pull up clam shells this would bias the numbers.   
}

`summarise()` has grouped output by 'Site', 'Collection.month'. You can  
override using the `.groups` argument.  
Scale for colour is already present. Adding another scale for colour, which  
will replace the existing scale.



ggarrange(gg1,gg2, ncol=2, common.legend = TRUE, legend = "right")



# #---------- Plot for proposal  
# # # Pool treatments  
# # gg1 <- ggplot(data = growth\_dec, aes(x=Site, y=len\_tot/Elapsed\_days))+  
# # geom\_boxplot()+  
# # xlab("Site") +  
# # ylab("Growth (mm/day)")+  
# # ylim(0,9/30)+  
# # #scale\_color\_discrete(name="Shell hash addition")+  
# # ggtitle ('Change in length Sep - Dec')  
# # gg1  
# # str(growth\_dec)  
# mod\_growth\_full <- lme(height\_tot~Site+Start\_len\_mm+Start\_len\_mm:Site,  
# random = ~1|Location\_code, data = growth)  
# summary(mod\_growth\_full)  
# M\_int<-update(mod\_growth\_full, .~. - Start\_len\_mm:Site)  
# M2 <- update(M\_int, ~. - Start\_len\_mm)  
# summary(M2)  
#   
# (P <- mean(growth$len\_per\_day[growth$Site=="Ptown"]))  
# (E <- mean(growth$len\_per\_day[growth$Site=="Eel Pond"]))  
# E/P  
# (P-E)/E #Overall Provincetown clam growth rate was 50% higher than Eel Pond growth rate  
# P/E  
#   
# (P <- mean(growth$CI[growth$Site=="Ptown"]))  
# (E <- mean(growth$CI[growth$Site=="Eel Pond"]))  
# E/P  
# (P-E)/E #Overall Provincetown clam growth rate was 50% higher than Eel Pond growth rate  
# P/E  
#   
# (P.dec <- mean(growth$CI[growth$Site=="Ptown"&growth$Collection.month=="Dec"], na.rm = TRUE))  
# (P.apr <- mean(growth$CI[growth$Site=="Ptown"&growth$Collection.month=="Apr"], na.rm = TRUE))  
# (P.jun <- mean(growth$CI[growth$Site=="Ptown"&growth$Collection.month=="Jun"], na.rm = TRUE))  
#   
# P.apr / P.dec  
#   
# (E.dec <- mean(growth$CI[growth$Site=="Eel Pond"&growth$Collection.month=="Dec"], na.rm = TRUE))  
# (E.apr <- mean(growth$CI[growth$Site=="Eel Pond"&growth$Collection.month=="Apr"], na.rm = TRUE))  
# E.apr /E.dec  
#   
#   
# summary <- growth\_dec %>%  
# group\_by(Site) %>%  
# summarize(mean\_len = mean(len\_tot, na.rm = TRUE),  
# sd\_len = sd(len\_tot, na.rm = TRUE))  
#   
#   
#   
# gg2 <- ggplot(data = summary, aes(x=Site, y=mean\_len))+  
# geom\_bar()  
#   
#   
# barplot(growth\_dec$len\_per\_day~site)  
#   
# +  
# xlab("Site") +  
# #scale\_color\_discrete(name="Shell hash addition")+  
# gg2

head(growth)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Start\_date** | **Site** | **Treatment** | **Buried\_Dec** | **Location\_code** | **color.1** | **color.2** | **Start\_len\_mm** | **Start\_height\_mm** | **Start\_thickness\_mm** | **Collection.month** | **Collection1\_date** | **Elapsed\_days** | **depth\_cm** | **color\_collection** | **L\_mm\_extra** | **H\_mm\_extra** | **T\_mm** | **Collection.notes** | **Dissection.ID.label** | **Label.different.when.collected** | **Biodeposition.label** | **Dead\_or\_missing** | **Len** | **Height** | **Thickness** | **Est..growth.by.height** | **Est.start.height.from.linear.function** | **Start\_height.from.marking** | **Growth.increment.from.mark\_height** | **Tin.only** | **Tin...gonad...somatic.tissue** | **Reweigh..if.necessary.** | **Ash.weight..tin...gonad...somatic.tissue.** | **DW** | **AFDW** | **Ratio.for.samples.with.DW.0.01g** | **Corrected.AFDW.using.an.average.of.82...Used.for..20.samples.with...organic...7.which.was.identified.to.caused.by.incomplete..anoxic..muffle.furnace.issues.** | **Notes** | **X..gonad** | **X..digestive** | **Shell.weight** | **Start.height.function.params** | **AliveOrDead** |
| 9/27/2022 | Provincetown | N | N | A2 | R |  | 13.8 | 10.9 | 5.92 | Dec | 2022-12-04 | 68 | 4+ | R | 24.1 | 19.3 | 11.2 |  | P125 |  |  | N | 23.9 | 19.2 | 11.2 | 8.44 | 10.5 | 11 | 10.9 | 1.09 | 1.25 |  | 1.18 | 0.152 | 0.07 | 46% | 0.125 |  |  |  |  | 0.839 | L |
| 9/27/2022 | Provincetown | N | N | A2 | Y |  | 12.8 | 9.74 | 5.31 | Dec | 2022-12-04 | 68 | 4+ | NO LABEL | 21.6 | 17.1 | 10 |  | P126 | no label |  | N | 21.5 | 17.1 | 10 | 7.36 | 9.6 | 9.7 | 9.3 | 1.1 | 1.22 |  | 1.15 | 0.115 | 0.067 | 58% | 0.0943 | Most likely Y (2nd of color series) given start height |  |  |  | 1.39 | L |
| 9/27/2022 | Provincetown | N | N | A2 | B |  | 11.8 | 9.45 | 5.25 | Dec | 2022-12-04 | 68 |  |  |  |  |  |  |  |  |  | Y |  |  |  |  | 9.3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | D |
| 9/27/2022 | Provincetown | N | N | A2 | L |  | 11.2 | 8.13 | 4.55 | Dec | 2022-12-04 | 68 |  |  |  |  |  |  |  |  |  | Y |  |  |  |  | 8.2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | D |
| 9/27/2022 | Provincetown | N | N | A2 | R | Y | 10.3 | 8.11 | 4.61 | Dec | 2022-12-04 | 68 |  |  |  |  |  |  |  |  |  | Y |  |  |  |  | 8.2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | D |
| 9/27/2022 | Provincetown | N | N | A2 | R | B | 9.95 | 7.61 | 4.13 | Dec | 2022-12-04 | 68 |  |  |  |  |  |  |  |  |  | Y |  |  |  |  | 7.8 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | D |

growth <- growth\_aliveANDdead   
Alive\_count <- growth %>% count(Treatment, Collection.month, Location\_code, Site, AliveOrDead)  
head(Alive\_count)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Treatment** | **Collection.month** | **Location\_code** | **Site** | **AliveOrDead** | **n** |
| N | Dec | A2 | Provincetown | Alive | 2 |
| N | Dec | A2 | Provincetown | Dead | 7 |
| N | Dec | A2 | Eel Pond | Alive | 3 |
| N | Dec | A2 | Eel Pond | Dead | 6 |
| N | Dec | C2 | Eel Pond | Alive | 1 |
| N | Dec | C2 | Eel Pond | Dead | 8 |

Alive\_count\_inside\_cage <- Alive\_count[Alive\_count$Treatment== "N"|Alive\_count$Treatment== "S",]  
mod\_growth\_full <- lme(n~Treatment\*Collection.month,   
 random = ~1|Location\_code, data = Alive\_count\_inside\_cage)  
summary(mod\_growth\_full) # Not really answering my question but not differences in survival between treatments

Linear mixed-effects model fit by REML  
 Data: Alive\_count\_inside\_cage   
 AIC BIC logLik  
 524.0307 544.7105 -254.0154  
  
Random effects:  
 Formula: ~1 | Location\_code  
 (Intercept) Residual  
StdDev: 0.0001693316 2.962654  
  
Fixed effects: n ~ Treatment \* Collection.month   
 Value Std.Error DF t-value p-value  
(Intercept) 5.705882 0.7185492 69 7.940838 0.0000  
TreatmentS -0.261438 1.0019689 69 -0.260924 0.7949  
Collection.monthApr -0.352941 1.0161820 69 -0.347321 0.7294  
Collection.monthJun -0.470588 1.0161820 69 -0.463094 0.6448  
TreatmentS:Collection.monthApr -0.136958 1.3853605 69 -0.098861 0.9215  
TreatmentS:Collection.monthJun 0.256913 1.4816994 69 0.173391 0.8629  
 Correlation:   
 (Intr) TrtmnS Cllc.A Cllc.J TS:C.A  
TreatmentS -0.717   
Collection.monthApr -0.707 0.507   
Collection.monthJun -0.707 0.507 0.500   
TreatmentS:Collection.monthApr 0.519 -0.723 -0.734 -0.367   
TreatmentS:Collection.monthJun 0.485 -0.676 -0.343 -0.686 0.489  
  
Standardized Within-Group Residuals:  
 Min Q1 Med Q3 Max   
-1.5884009 -0.9343136 0.1433973 0.9034030 2.1244862   
  
Number of Observations: 104  
Number of Groups: 30

(gm1 <- glmer(as.factor(AliveOrDead) ~ Treatment \* Collection.month + Site + (1 | Location\_code),  
 data = growth, family = binomial))

fixed-effect model matrix is rank deficient so dropping 2 columns / coefficients

Warning in checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, : Model is nearly unidentifiable: large eigenvalue ratio  
 - Rescale variables?

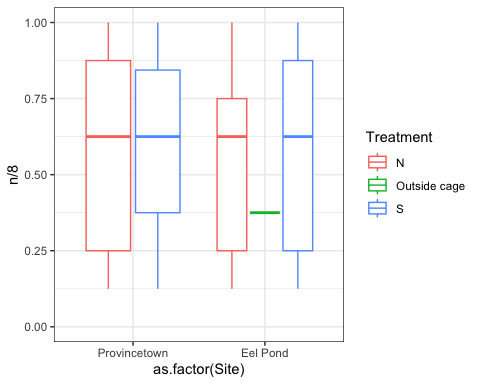
Generalized linear mixed model fit by maximum likelihood (Laplace  
 Approximation) [glmerMod]  
 Family: binomial ( logit )  
Formula: as.factor(AliveOrDead) ~ Treatment \* Collection.month + Site +   
 (1 | Location\_code)  
 Data: growth  
 AIC BIC logLik deviance df.resid   
 624.5863 663.4571 -303.2932 606.5863 546   
Random effects:  
 Groups Name Std.Dev.  
 Location\_code (Intercept) 1.173   
Number of obs: 555, groups: Location\_code, 30  
Fixed Effects:  
 (Intercept) TreatmentOutside cage   
 0.4275 -19.8327   
 TreatmentS Collection.monthApr   
 -3.0316 -1.6992   
 Collection.monthJun SiteEel Pond   
 -0.9085 2.2312   
TreatmentS:Collection.monthApr TreatmentS:Collection.monthJun   
 3.7885 2.8526   
fit warnings:  
fixed-effect model matrix is rank deficient so dropping 2 columns / coefficients  
optimizer (Nelder\_Mead) convergence code: 0 (OK) ; 0 optimizer warnings; 1 lme4 warnings

summary(gm1) #Here there is an effect of treatment but it's still not answering my question about initial lengths

Generalized linear mixed model fit by maximum likelihood (Laplace  
 Approximation) [glmerMod]  
 Family: binomial ( logit )  
Formula: as.factor(AliveOrDead) ~ Treatment \* Collection.month + Site +   
 (1 | Location\_code)  
 Data: growth  
  
 AIC BIC logLik deviance df.resid   
 624.6 663.5 -303.3 606.6 546   
  
Scaled residuals:   
 Min 1Q Median 3Q Max   
-6.5914 -0.6383 0.2396 0.5466 3.7377   
  
Random effects:  
 Groups Name Variance Std.Dev.  
 Location\_code (Intercept) 1.376 1.173   
Number of obs: 555, groups: Location\_code, 30  
  
Fixed effects:  
 Estimate Std. Error z value Pr(>|z|)   
(Intercept) 0.4275 0.4555 0.938 0.347999   
TreatmentOutside cage -19.8327 512.0014 -0.039 0.969101   
TreatmentS -3.0316 0.6078 -4.988 6.11e-07 \*\*\*  
Collection.monthApr -1.6992 0.5842 -2.909 0.003629 \*\*   
Collection.monthJun -0.9085 0.6253 -1.453 0.146276   
SiteEel Pond 2.2312 0.2368 9.422 < 2e-16 \*\*\*  
TreatmentS:Collection.monthApr 3.7885 0.8241 4.597 4.29e-06 \*\*\*  
TreatmentS:Collection.monthJun 2.8526 0.8224 3.469 0.000523 \*\*\*  
---  
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
  
Correlation of Fixed Effects:  
 (Intr) TrtmOc TrtmnS Cllc.A Cllc.J StElPn TS:C.A  
TrtmntOtsdc 0.001   
TreatmentS -0.595 -0.002   
Cllctn.mntA -0.653 -0.001 0.488   
Cllctn.mntJ -0.663 -0.002 0.489 0.496   
SiteEelPond -0.129 0.000 -0.252 -0.098 -0.001   
TrtmntS:C.A 0.477 0.002 -0.782 -0.692 -0.361 0.178   
TrtmntS:C.J 0.447 0.002 -0.720 -0.299 -0.724 0.218 0.537  
fit warnings:  
fixed-effect model matrix is rank deficient so dropping 2 columns / coefficients  
optimizer (Nelder\_Mead) convergence code: 0 (OK)  
Model is nearly unidentifiable: large eigenvalue ratio  
 - Rescale variables?

p <- ggplot(Alive\_count, aes(x = as.factor(Site), y = n/8,   
 color = Treatment))+  
 ylim(0,1)+  
 geom\_boxplot()  
   
 p

Warning: Removed 17 rows containing non-finite outside the scale range  
(`stat\_boxplot()`).



# Generally high survival  
# p + geom\_boxplot() + facet\_grid(Site ~ .)  
#   
# p <- ggplot(growth\_dec, aes(x = Start\_len\_mm, y = AliveOrDead,   
# color = Treatment))  
# p + geom\_boxplot() + facet\_grid(Site ~ .)

Alive <- as.data.frame(Alive\_count[Alive\_count$AliveOrDead=="Alive",])  
Alive$perc\_alive <- Alive$n/9\*100  
#Alive