04 OW albopictus Generate Summary Data

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# set wd  
setwd("~/Documents/CBS PhD/albopictus OW/")  
  
# libaries  
shhh <- suppressPackageStartupMessages # It's a library, so shhh!  
shhh(library(lubridate))  
shhh(library(dplyr))  
  
# import temperature data frame- WIDE  
OWw <- read.csv("Data/OWALL.wide\_KMS\_092220.csv")  
#format corrections  
OWw$DateTime <- ymd\_hms(OWw$DateTime)  
  
# import temperature data frame - TIDY  
OW <- read.csv("Data/OWALL.f\_KMS\_092220.csv")  
#format corrections  
OW$DateTime <- ymd\_hms(OW$DateTime)  
  
# import survival data frame  
hatch <- read.csv("Data/OWhatchALL.csv")

### Process survival data

# add survival percent  
hatch$perc.s <- hatch$Total.Larvae / hatch$Egg.Count  
# reanme the location variable   
names(hatch)[names(hatch)=="Location.Tire"] <- "Number"

### Process temperature data

There are extream temperature values that are because of the ibuttons reading temperatures before being set in place this ewill be remove by removing all dates before 11-Nov\_2020

OW <- filter(OW, DateTime > "2018-11-13 21:00:00")  
OWw <- filter(OWw, DateTime > "2018-11-13 21:00:00")

### Build Summary dataframe

Fliter by: species and dipuase  
Extract: Strip number, percent survival

# filter to create new albopictus dipause only list  
AA.hatch <- hatch %>%  
 filter(Diapause =="Y", Species == "AA")  
AA.summary <- subset(AA.hatch, select = -c(H1,H2,H3))

The dataframe now includes the strip number, diapause, species, tire.location, egg count, total larve chatched, percent hatched

I will begin adding the summary values to the summary table now

#### January Mean In tire

#Tt is a temperary DF that will be re-written for each summary  
Tt<-OWw %>%   
 filter(DateTime > "2018-12-31 21:00:00", DateTime < "2019-02-01 00:00:00") %>% # filter to JAN  
 group\_by(Number) %>%  
 dplyr::summarise(JANmeanT = mean(Tire)) # calcualte mean   
# add the control temperatures   
Tt<- rbind(Tt,c("Control 4", 4))   
Tt<- rbind(Tt,c("Control 27", 27))  
#merge with summary DF  
AA.summary <- merge(AA.summary, Tt,"Number",   
 incomparables = c("Test Hatch"))  
# correct format  
AA.summary$JANmeanT <- as.numeric(AA.summary$JANmeanT)

#### January Mean- Ambient

Tt<-OWw %>%   
 filter(DateTime > "2018-12-31 21:00:00", DateTime < "2019-02-01 00:00:00") %>% # filter to JAN  
 group\_by(Number) %>%  
 dplyr::summarise(JANmeanA = mean(Ambient)) # calcualte mean   
# add the control temperatures   
Tt<- rbind(Tt,c("Control 4", 4))   
Tt<- rbind(Tt,c("Control 27", 27))  
#merge with summary DF  
AA.summary <- merge(AA.summary, Tt,"Number",   
 incomparables = c("Test Hatch"))  
# correct format  
AA.summary$JANmeanA <- as.numeric(AA.summary$JANmeanA)

#### January Mean - Difference

JANmeanTire - JANmeanAmbient

Positive number = the the Tire is warmer than ambient temperature

AA.summary$JANmeanD <- AA.summary$JANmeanT - AA.summary$JANmeanA

#### Winter Mean Temperature - Tire

Winter is defined as December, January and Febuary.

Tt<-OWw %>%   
 filter(DateTime > "2018-11-30 21:00:00", DateTime < "2019-03-01 00:00:00") %>% # filter to DJF  
 group\_by(Number) %>%  
 dplyr::summarise(DJFmeanT = mean(Tire)) # calcualte mean   
# add the control temperatures   
Tt<- rbind(Tt,c("Control 4", 4))   
Tt<- rbind(Tt,c("Control 27", 27))  
#merge with summary DF  
AA.summary <- merge(AA.summary, Tt,"Number",   
 incomparables = c("Test Hatch"))  
# correct format  
AA.summary$DJFmeanT <- as.numeric(AA.summary$DJFmeanT)

#### Winter Mean Temperature - Ambient

Winter is defined as December, January and Febuary.

Tt<-OWw %>%   
 filter(DateTime > "2018-11-30 21:00:00", DateTime < "2019-03-01 00:00:00") %>% # filter to DJF  
 group\_by(Number) %>%  
 dplyr::summarise(DJFmeanA = mean(Ambient)) # calcualte mean   
# add the control temperatures   
Tt<- rbind(Tt,c("Control 4", 4))   
Tt<- rbind(Tt,c("Control 27", 27))  
#merge with summary DF  
AA.summary <- merge(AA.summary, Tt,"Number",   
 incomparables = c("Test Hatch"))  
# correct format  
AA.summary$DJFmeanA <- as.numeric(AA.summary$DJFmeanA)

#### Winter Mean - Difference

DJFmeanTire - DJFmeanAmbient

Positive number = the the Tire is warmer than ambient temperature

AA.summary$DJFmeanD <- AA.summary$DJFmeanT - AA.summary$DJFmeanA

#### Date of First Frost - Tire

Tt <- OWw %>%  
 group\_by(Number) %>% # group by location  
 filter(Tire < 0) %>% # filter to temperatures below frost temperature  
 summarise(FFrostT = min(DateTime)) # Find the earliest date   
  
# add the control temperatures   
Tt<- rbind(Tt,c("Control 4", NA))   
Tt<- rbind(Tt,c("Control 27", NA))  
#merge with summary DF  
AA.summary <- merge(AA.summary, Tt,"Number")

#### Date of First Frost - Ambient

Tt <- OWw %>%  
 group\_by(Number) %>% # group by location  
 filter(Ambient < 0) %>% # filter to temperatures below frost temperature  
 summarise(FFrostA = min(DateTime)) # Find the earliest date   
  
# add the control temperatures   
Tt<- rbind(Tt,c("Control 4", NA))   
Tt<- rbind(Tt,c("Control 27", NA))  
#merge with summary DF  
AA.summary <- merge(AA.summary, Tt,"Number")