SignificantDifferencesComparingSixMeters

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# Initial stuff, including loading packages and importing data

##loading packages

library(here)  
library(tidyverse)  
library(dplyr)  
library(lubridate)  
library(scales)  
library(ggpubr)  
library(reshape2)  
library(rstatix)

## loading files

# Tell R where files are stored  
here::i\_am("scripts/SignificantDifferencesComparingSixMeters.Rmd")  
  
# Load Files  
a <- readr::read\_csv(here("data/SporeConcentrationsByDepthAll.csv"))

##Walsh Ordospora

wo = a %>%  
 filter(Parasite== "Ordospora",  
 Lake=="Walsh",  
 Depth =="0" | Depth == "1" | Depth =="2"| Depth == "3"|Depth == "4"|Depth == "5")  
  
wo.mean <- mean(wo$Concentration)  
  
wo6 = a %>%  
 filter(Parasite== "Ordospora",  
 Lake=="Walsh",  
 Depth =="6")  
  
wo6.mean <- mean(wo6$Concentration)  
  
###percent increase  
wo.diff <- (((wo6.mean-wo.mean)/wo.mean)\*100)  
wo.diff

## [1] 41871.73

##Walsh Metschnikowia

wm = a %>%  
 filter(Parasite== "Metschnikowia",  
 Lake=="Walsh",  
 Depth =="0" | Depth == "1" | Depth =="2"| Depth == "3"|Depth == "4"|Depth == "5")  
  
wm.mean <- mean(wm$Concentration)  
  
wm6 = a %>%  
 filter(Parasite== "Metschnikowia",  
 Lake=="Walsh",  
 Depth =="6")  
  
wm6.mean <- mean(wm6$Concentration)  
  
###percent increase  
wm.diff <- (((wm6.mean-wm.mean)/wm.mean)\*100)  
wm.diff

## [1] 231.4155

##Walsh Pasteuria

wp = a %>%  
 filter(Parasite== "Pasteuria",  
 Lake=="Walsh",  
 Depth =="0" | Depth == "1" | Depth =="2"| Depth == "3"|Depth == "4"|Depth == "5")  
  
wp.mean <- mean(wp$Concentration)  
  
wp6 = a %>%  
 filter(Parasite== "Pasteuria",  
 Lake=="Walsh",  
 Depth =="6")  
  
wp6.mean <- mean(wp6$Concentration)  
  
###percent increase  
wp.diff <- (((wp6.mean-wp.mean)/wp.mean)\*100)  
wp.diff

## [1] 3274.69

##Cedar Pasteuria

cp = a %>%  
 filter(Parasite== "Pasteuria",  
 Lake=="Cedar",  
 Depth =="0" | Depth == "1" | Depth =="2"| Depth == "3"|Depth == "4"|Depth == "5"|Depth == "6")  
  
cp.mean <- mean(cp$Concentration)  
  
cp7 = a %>%  
 filter(Parasite== "Pasteuria",  
 Lake=="Cedar",  
 Depth =="7")  
  
cp7.mean <- mean(cp7$Concentration)  
  
###percent increase  
cp.diff <- (((cp7.mean-cp.mean)/cp.mean)\*100)  
cp.diff

## [1] 2823.74

##Mill Pasteuria

mp = a %>%  
 filter(Parasite== "Pasteuria",  
 Lake=="Mill",  
 Depth =="0" | Depth == "1" | Depth =="2"| Depth == "3"|Depth == "4"|Depth == "5")  
  
mp.mean <- mean(mp$Concentration)  
  
mp6 = a %>%  
 filter(Parasite== "Pasteuria",  
 Lake=="Mill",  
 Depth =="6")  
  
mp6.mean <- mean(mp6$Concentration)  
  
###percent increase  
mp.diff <- (((mp6.mean-mp.mean)/mp.mean)\*100)  
mp.diff

## [1] 31887.54

##Mill Blastulidium

mb = a %>%  
 filter(Parasite== "Blastulidium",  
 Lake=="Mill",  
 Depth =="0" | Depth == "1" | Depth =="2"| Depth == "3"|Depth == "4"|Depth == "5")  
  
mb.mean <- mean(mb$Concentration)  
  
mb6 = a %>%  
 filter(Parasite== "Blastulidium",  
 Lake=="Mill",  
 Depth =="6")  
  
mb6.mean <- mean(mb6$Concentration)  
  
###percent increase  
mb.diff <- (((mb6.mean-mb.mean)/mb.mean)\*100)  
mb.diff

## [1] 1307.577

##LilAp Spirobacillus

ls = a %>%  
 filter(Parasite== "Spirobacillus",  
 Lake=="LilAp",  
 Depth =="0" | Depth == "1" | Depth =="2"| Depth == "3"|Depth == "4"|Depth == "5")  
  
ls.mean <- mean(ls$Concentration)  
  
ls6 = a %>%  
 filter(Parasite== "Spirobacillus",  
 Lake=="LilAp",  
 Depth =="6")  
  
ls6.mean <- mean(ls6$Concentration)  
  
###percent increase  
ls.diff <- (((ls6.mean-ls.mean)/ls.mean)\*100)  
ls.diff

## [1] 97.69213

##Crooked W Blastulidium

cwb = a %>%  
 filter(Parasite== "Blastulidium",  
 Lake=="CrookedW",  
 Depth =="0" | Depth == "1" | Depth =="2"| Depth == "3"|Depth == "4"|Depth == "5")  
  
cwb.mean <- mean(cwb$Concentration)  
  
cwb6 = a %>%  
 filter(Parasite== "Blastulidium",  
 Lake=="CrookedW",  
 Depth =="6")  
  
cwb6.mean <- mean(cwb6$Concentration)  
  
###percent increase  
cwb.diff <- (((cwb6.mean-cwb.mean)/cwb.mean)\*100)  
cwb.diff

## [1] 1299.315

##Crooked W Ordospora

cwo = a %>%  
 filter(Parasite== "Ordospora",  
 Lake=="CrookedW",  
 Depth =="0" | Depth == "1" | Depth =="2"| Depth == "3"|Depth == "4"|Depth == "5")  
  
cwo.mean <- mean(cwo$Concentration)  
  
cwo6 = a %>%  
 filter(Parasite== "Ordospora",  
 Lake=="CrookedW",  
 Depth =="6")  
  
cwo6.mean <- mean(cwo6$Concentration)  
  
###percent increase  
cwo.diff <- (((cwo6.mean-cwo.mean)/cwo.mean)\*100)  
cwo.diff

## [1] 1564.118

##Crooked W Pasteuria

cwp = a %>%  
 filter(Parasite== "Pasteuria",  
 Lake=="CrookedW",  
 Depth =="0" | Depth == "1" | Depth =="2"| Depth == "3"|Depth == "4"|Depth == "5")  
  
cwp.mean <- mean(cwp$Concentration)  
  
cwp6 = a %>%  
 filter(Parasite== "Pasteuria",  
 Lake=="CrookedW",  
 Depth =="6")  
  
cwp6.mean <- mean(cwp6$Concentration)  
  
###percent increase  
cwp.diff <- (((cwp6.mean-cwp.mean)/cwp.mean)\*100)  
cwp.diff

## [1] 1018.093

##Bishop Blastulidium

bb = a %>%  
 filter(Parasite== "Blastulidium",  
 Lake=="Bishop",  
 Depth =="0" | Depth == "1" | Depth =="2"| Depth == "3"|Depth == "4"|Depth == "5")  
  
bb.mean <- mean(bb$Concentration)  
  
bb6 = a %>%  
 filter(Parasite== "Blastulidium",  
 Lake=="Bishop",  
 Depth == "11" | Depth =="12"| Depth == "13"|Depth == "14"|Depth == "15"|Depth =="16")  
  
bb6.mean <- mean(bb6$Concentration)  
  
###percent increase  
bb.diff <- (((bb6.mean-bb.mean)/bb.mean)\*100)  
bb.diff

## [1] -96.41378

##Bishop Ordospora

bo = a %>%  
 filter(Parasite== "Ordospora",  
 Lake=="Bishop",  
 Depth =="0" | Depth == "1" | Depth =="2"| Depth == "3"|Depth == "4"|Depth == "5")  
  
bo.mean <- mean(bo$Concentration)  
  
bo6 = a %>%  
 filter(Parasite== "Ordospora",  
 Lake=="Bishop",  
 Depth == "11" | Depth =="12"| Depth == "13"|Depth == "14"|Depth == "15"|Depth =="16")  
  
bo6.mean <- mean(bo6$Concentration)  
  
###percent increase  
bo.diff <- (((bo6.mean-bo.mean)/bo.mean)\*100)  
bo.diff

## [1] -78.45835

##Bishop Spirobacillus

bs = a %>%  
 filter(Parasite== "Spirobacillus",  
 Lake=="Bishop",  
 Depth =="0" | Depth == "1" | Depth =="2"| Depth == "3"|Depth == "4"|Depth == "5")  
  
bs.mean <- mean(bs$Concentration)  
  
bs6 = a %>%  
 filter(Parasite== "Spirobacillus",  
 Lake=="Bishop",  
 Depth == "11" | Depth =="12"| Depth == "13"|Depth == "14"|Depth == "15"|Depth =="16")  
  
bs6.mean <- mean(bs6$Concentration)  
  
###percent increase  
bs.diff <- (((bs6.mean-bs.mean)/bs.mean)\*100)  
bs.diff

## [1] 90.19032