Lab 3 Analysis

Stephen Cook

Oct 6 2018

## Import packages

require(tidyverse)  
require(lubridate)

## Import data

lww <- read.csv(file = "lww\_fall\_18.csv", header = T, sep = ",")

## Calculations

Is management activity influencing the *abundance* of cattail?

management\_abundance <- lww %>%  
 select(CELL, CAT\_PRESENT) %>%  
 group\_by(CELL) %>%  
 summarise(CAT\_PRESENT = sum(CAT\_PRESENT)) %>%  
 mutate(CAT\_ABSENT = 50 - CAT\_PRESENT)  
  
  
managment.abund <- chisq.test(management\_abundance, simulate.p.value = TRUE)  
managment.abund

##   
## Pearson's Chi-squared test with simulated p-value (based on 2000  
## replicates)  
##   
## data: management\_abundance  
## X-squared = 6.7072, df = NA, p-value = 0.02049

Is management activity influencing the *dominance* of cattail?

management\_dominance <- lww %>%  
 select(CELL, CAT\_DOMINANT) %>%  
 group\_by(CELL) %>%  
 summarise(CAT\_DOMINANT = sum(CAT\_DOMINANT)) %>%  
 mutate(CAT\_NOT\_DOM = 50 - CAT\_DOMINANT)  
  
managment.dom <- chisq.test(management\_dominance, simulate.p.value = TRUE)  
managment.dom

##   
## Pearson's Chi-squared test with simulated p-value (based on 2000  
## replicates)  
##   
## data: management\_dominance  
## X-squared = 1.2009, df = NA, p-value = 0.5537

Is management activity influencing species richness?

cell1\_richness <- lww %>%  
 select(CELL, RICHNESS) %>%  
 filter(CELL == 1)  
  
cell2\_richness <- lww %>%  
 select(CELL, RICHNESS) %>%  
 filter(CELL == 2)  
  
richness.test <- t.test(cell1\_richness$RICHNESS, cell2\_richness$RICHNESS)  
  
richness.test

##   
## Welch Two Sample t-test  
##   
## data: cell1\_richness$RICHNESS and cell2\_richness$RICHNESS  
## t = -2.2762, df = 97.44, p-value = 0.02503  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -1.16058648 -0.07941352  
## sample estimates:  
## mean of x mean of y   
## 2.38 3.00

manag.rich <- lww %>%  
 select(CELL, RICHNESS) %>%  
 mutate(RICH\_CATEGORY = ifelse(RICHNESS > 4, 1, 0)) %>%  
 select(-RICHNESS)

Does typha dominance influence species richness?

typha\_dom\_richness <- lww %>%  
 select(CAT\_DOMINANT, RICHNESS) %>%  
 filter(CAT\_DOMINANT == 1)  
  
other\_dom\_richness <- lww %>%  
 select(CAT\_DOMINANT, RICHNESS) %>%  
 filter(CAT\_DOMINANT == 0)  
  
typha.test <- t.test(typha\_dom\_richness$RICHNESS, other\_dom\_richness$RICHNESS)  
  
typha.test

##   
## Welch Two Sample t-test  
##   
## data: typha\_dom\_richness$RICHNESS and other\_dom\_richness$RICHNESS  
## t = -2.4307, df = 29.033, p-value = 0.02148  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -1.7605981 -0.1516826  
## sample estimates:  
## mean of x mean of y   
## 2.460526 3.416667

manag.dom <- lww %>%  
 select(CAT\_DOMINANT, RICHNESS) %>%  
 mutate(RICH\_CATEGORY = ifelse(RICHNESS > 4, 1, 0)) %>%  
 select(-RICHNESS) %>%  
 group\_by(CAT\_DOMINANT) %>%  
 summarise(RICH\_HIGH = sum(RICH\_CATEGORY)) %>%  
 mutate(RICH\_LOW = ifelse(CAT\_DOMINANT == 1, 76-RICH\_HIGH, 24-RICH\_HIGH))  
  
  
new.test <- chisq.test(manag.dom, simulate.p.value = TRUE)  
new.test

##   
## Pearson's Chi-squared test with simulated p-value (based on 2000  
## replicates)  
##   
## data: manag.dom  
## X-squared = 19.549, df = NA, p-value = 0.0004998

test <- lww %>%  
 select(CAT\_DOMINANT, RICHNESS)  
  
  
  
sum(test$CAT\_DOMINANT)

## [1] 76

typha\_richness <- lww %>%  
 select(CAT\_DOMINANT, RICHNESS) %>%  
 filter(CAT\_DOMINANT == 1)  
  
other\_richness <- lww %>%  
 select(CAT\_DOMINANT, RICHNESS) %>%  
 filter(CAT\_DOMINANT == 0)  
  
  
richness.test <- t.test(typha\_richness$RICHNESS, other\_richness$RICHNESS)  
  
richness.test

##   
## Welch Two Sample t-test  
##   
## data: typha\_richness$RICHNESS and other\_richness$RICHNESS  
## t = -2.4307, df = 29.033, p-value = 0.02148  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -1.7605981 -0.1516826  
## sample estimates:  
## mean of x mean of y   
## 2.460526 3.416667