Lab 3 Analysis

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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
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## sample estimates:
## mean of x mean of y
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```