BIOL 432 Assignment 1 R Markdown

Laavanya Joshi

Monday, January 6, 2024

Assignment1Github (https://github.com/LaavanyaJoshi/BIOL432-Assignment-1)

Executes RScripts 1 and 2, respectively, which opens the original and updated datasets of Butterfly species

```
source("C:/Users/laava/OneDrive/Documents/Queen's University/Fourth Year/BIOL 432/BIOL432-Assignment-1/dataGenerato.R")
source("C:/Users/laava/OneDrive/Documents/Queen's University/Fourth Year/BIOL 432/BIOL432-Assignment-1/volumeEstimato.R")
```

```
##
## Attaching package: 'dplyr'
```

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

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

Installs the required packages and uploads the csv datafile this analysis will use

```
library(dplyr)
library(ggplot2)

measurements <- read.csv("C:/Users/laava/OneDrive/Documents/Queen's University/Fourth Year/BIOL 432/BIOL432-Assignment-1/measurements.csv")
```

Sorts the data by Species, then Observer, then Limb Volume

```
sorted_data <- measurements %>%
  arrange(Species, Observer, Limb_volume)
```

View a table of Average Limb Volume for each Species

```
measurements %>%
  count(Species, mean(Limb_volume)) %>%
  setNames(c("Species", "Average Limb Volume (mm^3)", "Count"))
```

Species <chr>	Average Limb Volume (mm^3) <dbl>	Count <int>
Candalides erinus	0.1271001	11
Elodina queenslandica	0.1271001	18
Junonia hedonia	0.1271001	24
Ogyris zosine	0.1271001	19
Zizula hylux	0.1271001	28

5 rows

View a table of number of Species observed by each person

```
measurements %>%
  count(Species, Observer) %>%
  setNames(c("Species", "Observer", "Count"))
```

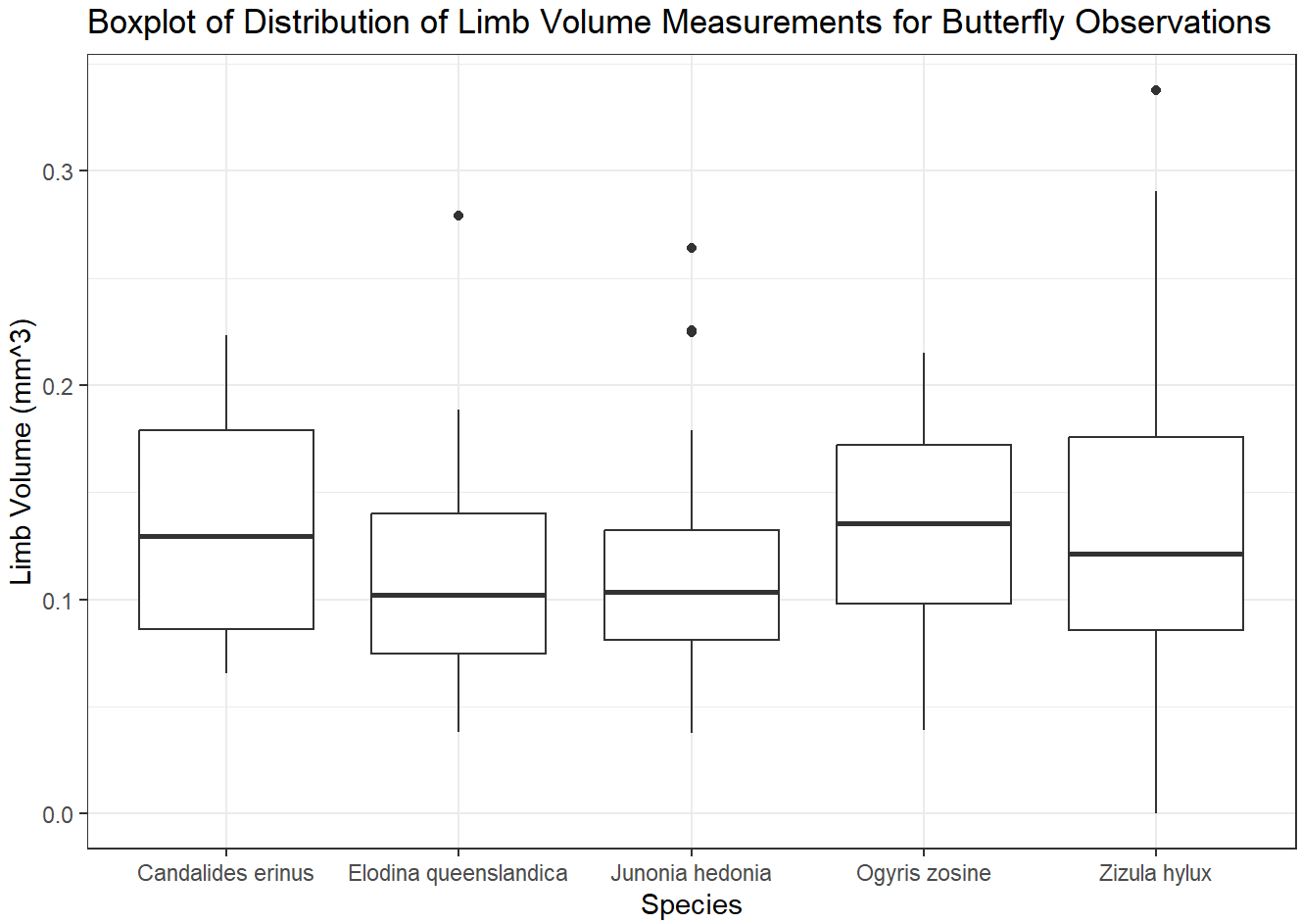
Species <chr>	Observer <chr>	Count <int>
Candalides erinus	London	1
Candalides erinus	Paris	3
Candalides erinus	Sydney	7
Elodina queenslandica	London	6
Elodina queenslandica	Paris	4
Elodina queenslandica	Sydney	8
Junonia hedonia	London	6
Junonia hedonia	Paris	11
Junonia hedonia	Sydney	7
Ogyris zosine	London	6

1-10 of 15 rows Previous **1** 2 Next

Creates a boxplot showing the distribution of limb volume for each

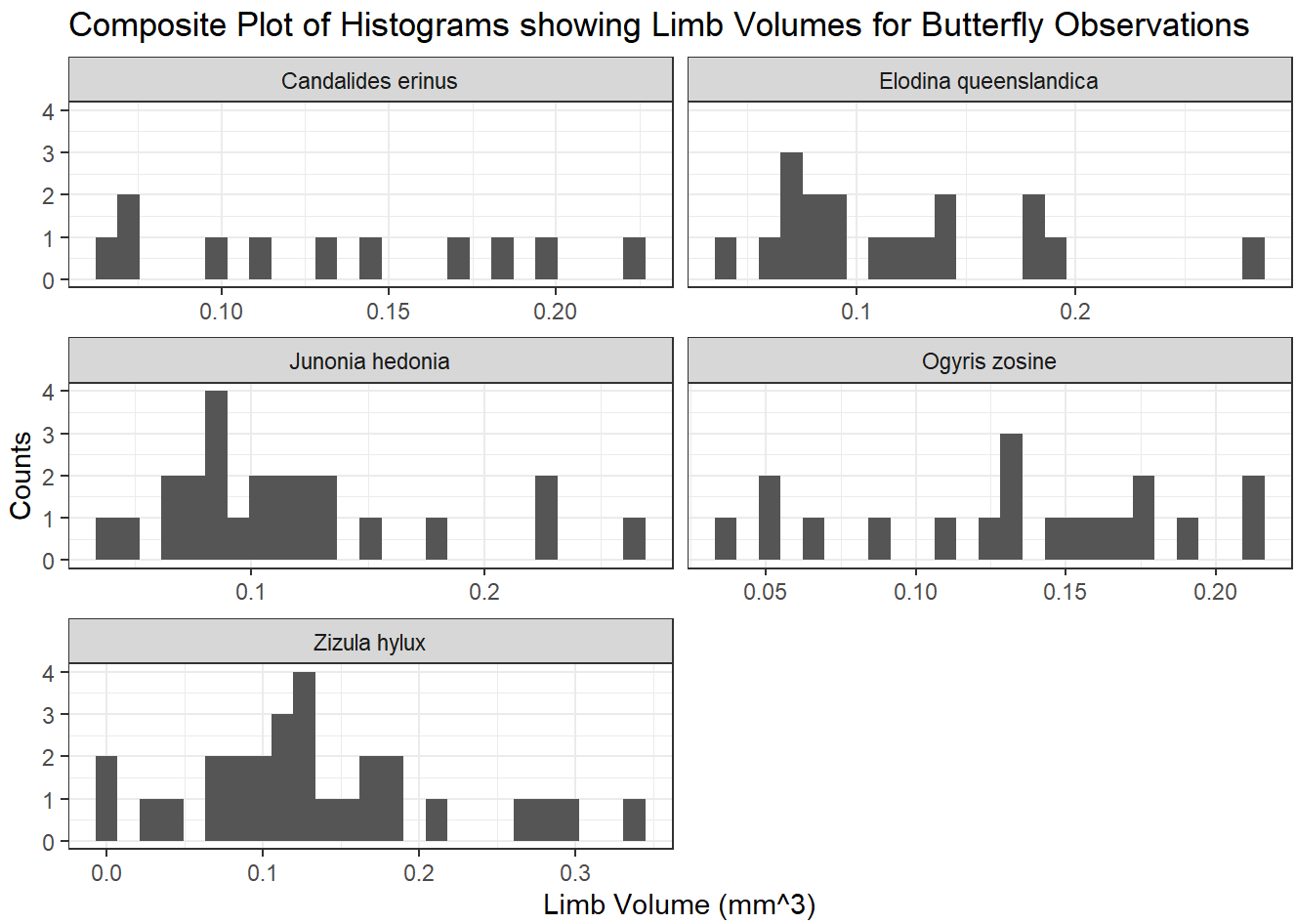
species

```
ggplot(data = measurements) +
  geom_boxplot(aes(x = Species, y = Limb_volume)) +
  theme_bw() +
  labs(x = "Species", y = "Limb Volume (mm^3)", title = "Boxplot of Distribution of Limb Volume Measurements for Butterfly Observations")
```



Creates a faceted histogram to compare limb volumes for each species

```
ggplot(data = measurements) +
  geom_histogram(aes(x = Limb_volume), bins = 25) +
  facet_wrap(~Species, nrow = 3, ncol = 2, scales = "free_x") +
  theme_bw() +
  labs(x = "Limb Volume (mm^3)", y = "Counts", title = "Composite Plot of Histograms showing Limb Volumes for Butterfly Observations")
```


Composite Plot of Histograms showing Limb Volumes for Butterfly Observations
Candalides erinus
Elodina queenslandica
Junonia hedonia
Ogyris zosine
Zizula hylux
Counts
Limb Volume (mm^3)