

Leptograpsus crab morphology manuscript

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##Introduction

Leptograpsus variegatus is a species of small shore crab found throughout the Southern Pacific, including on the shores of western Australia where the crabs dataset was collected (Campbell and Mahon 1974). These crabs play an important role in the flow of nutrients through mangrove ecosystems, where they break down mangrove leaves and provide particulate organic matter to many species of detritivores (Camilleri 1992).

##Data and analysis

Data for this project was originally collected and published in Campbell and Mahon (1974).

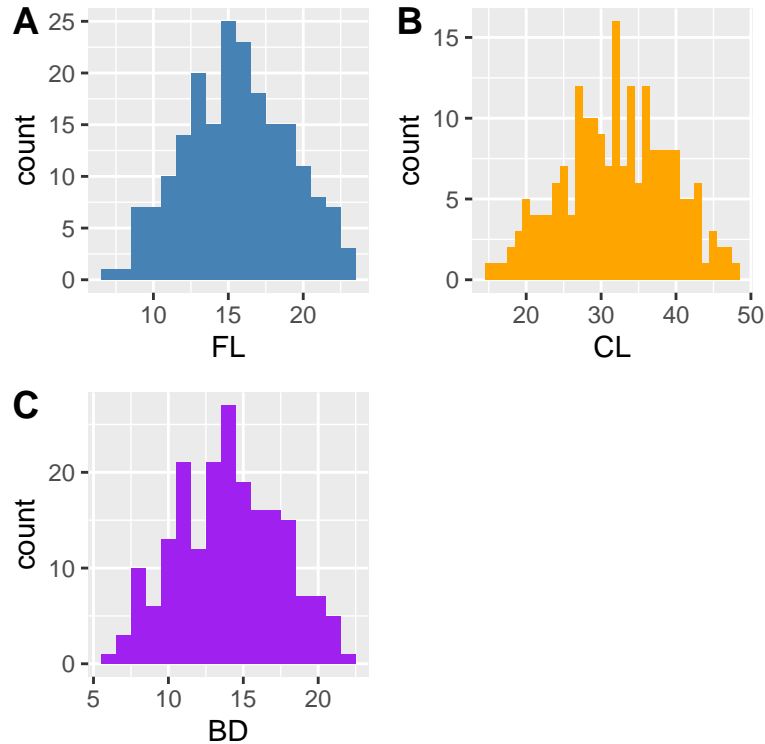


Figure 1: Histograms showing distributions of frontal lobe (FL), carapace length (CL), and body depth (BD).

We used R version 4.4.0 (R Core Team 2024) and the following R packages: ggordiplots v. 0.4.3 (Quensen et al. 2024), prereg v. 0.6.0 (Aust and Spitzer 2022), rmarkdown v. 2.28 (Xie et al. 2018, 2020; Allaire et al. 2024), tidyverse v. 2.0.0 (Wickham et al. 2019), vegan v. 2.6.8 (Oksanen et al. 2024).

##Results

Results of the PCA demonstrated some distinction between blue and orange morphs along the first principal component, and a larger distinction between males and females along the second axis of variation as seen in

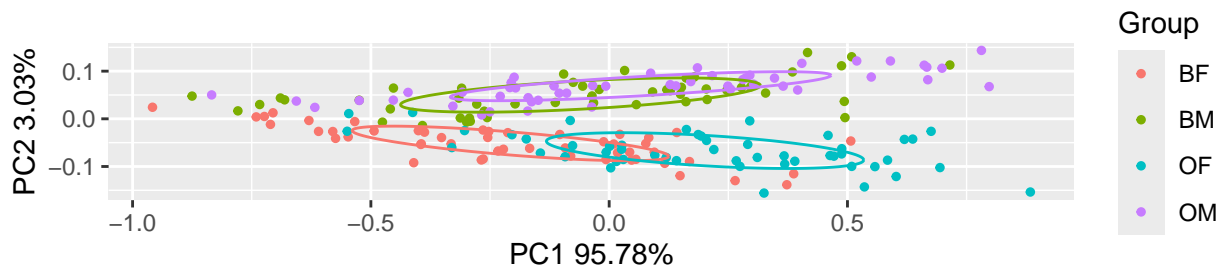
the following code chunk.

```
library(vegan)

## Loading required package: permute
## Loading required package: lattice
## This is vegan 2.6-8

library(ggplot2)
library(ggordiplots)

## Loading required package: glue
crabs <- read.csv('../00_rawdata/crabs_measurements.csv')
#pca using vegan's rda function
pca_crabs <- rda(crabs[5:9], scale = TRUE)
#creating a species+sex column for visualization in the plot
crabs$spsex <- paste0(crabs$sp, crabs$sex)
#using ggordiplot. Ellipses are 1 standard deviation about the centroid.
gg_ordiplot(pca_crabs, groups = crabs$spsex, pt.size = 1, kind = 'sd')
```



##References

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