warmXtrophic Project: CN Plots

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Load in data

```
# Clear all existing data
rm(list=ls())

#Load packages
library(tidyverse)
library(plotrix)

# Set working directory to Google Drive
setwd("/Volumes/GoogleDrive/Shared drives/SpaCE_Lab_warmXtrophic/data/")

# Read in data
cn <- read.csv("L1/CN/CN_L1.csv")

# Summary of data
with(cn,table(cn$site,cn$species))
```

```
##
##        Acmi Cest Popr Soca
##   kbs   139    0    0  424
##   umbs    0  275  183    0
```

```
with(cn,table(cn$year,cn$species))
```

```
##
##        Acmi Cest Popr Soca
##   2017   99   69    0  161
##   2018   40   67   61   60
##   2019    0   69   58   71
##   2020    0   70   64   63
##   2021    0    0    0   69
```

```
with(cn,table(cn$year,cn$site))
```

```
##
##        kbs umbs
##   2017 260   69
##   2018 100  128
##   2019  71  127
##   2020  63  134
##   2021  69    0
```

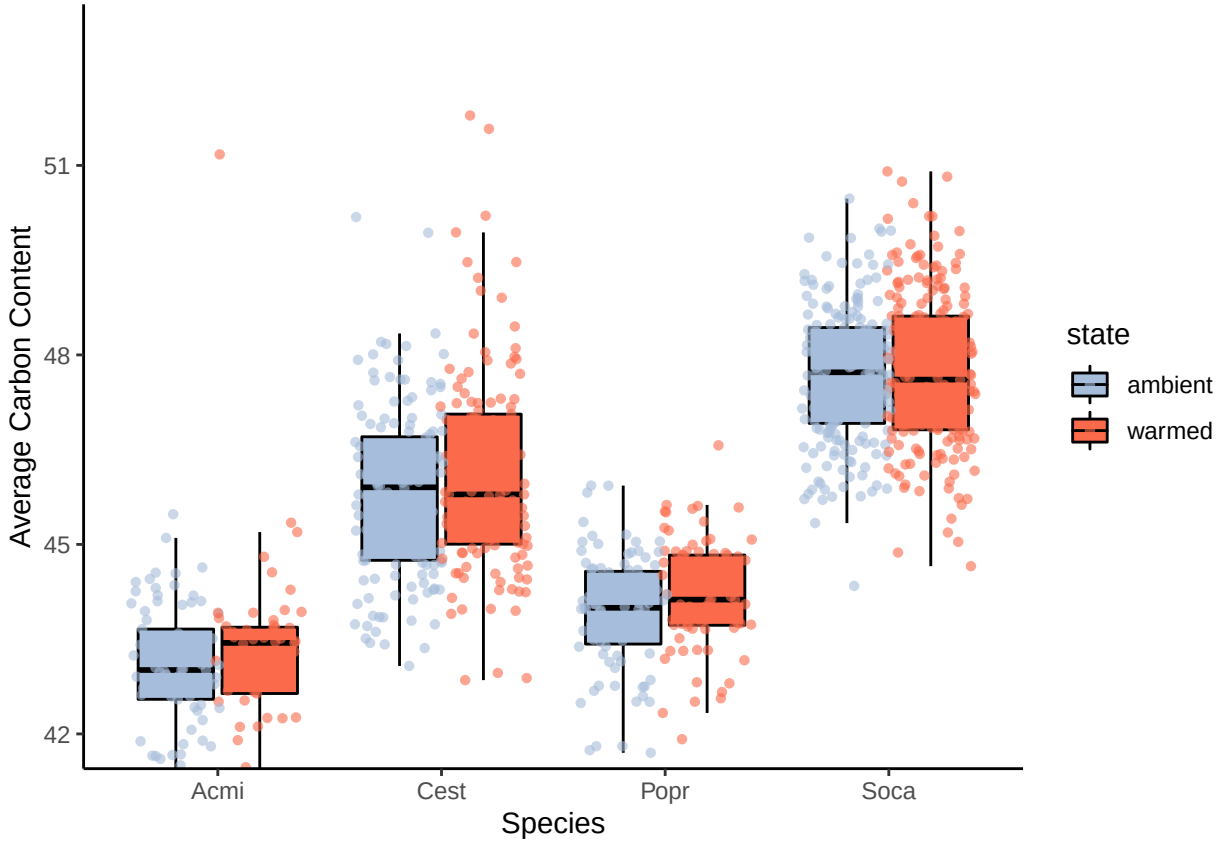
Carbon data: all yrs, sites

Cest and Popr = UMBS, Soca = KBS (working on faceting this)

```
ggplot(cn, aes(x = species, y = carbon, fill = state)) +
        #facet_grid(.~site) +
        geom_boxplot(color = "black", outlier.shape = NA) +
        labs(x = "Species", y = "Average Carbon Content") +
        scale_fill_manual(values = c("#a6bddb", "#fb6a4a")) +
        scale_x_discrete(labels=c("ambient" = "A", "warmed" = "W")) +
        geom_jitter(shape=16, position=position_jitterdodge(), alpha = 0.6, aes(colour = state)) +
        scale_color_manual(values = c("ambient" = "#a6bddb", "warmed" = "#fb6a4a")) +
        coord_cartesian(ylim = c(42, 53)) +
        theme_classic()
```

```
## Warning: Removed 3 rows containing non-finite values (stat_boxplot).
```

```
## Warning: Removed 3 rows containing missing values (geom_point).
```



Nitrogen data: all yrs, sites

```
ggplot(cn, aes(x = species, y = nitrogen, fill = state)) +
        #facet_grid(.~site) +
        geom_boxplot(color = "black", outlier.shape = NA) +
        labs(x = "Species", y = "Average Nitrogen Content") +
        scale_fill_manual(values = c("#a6bddb", "#fb6a4a")) +
```

```
        scale_x_discrete(labels=c("ambient" = "A", "warmed" = "W")) +
        geom_jitter(shape=16, position=position_jitterdodge(), alpha = 0.6, aes(colour = state)) +
        scale_color_manual(values = c("ambient" = "#a6bddb", "warmed" = "#fb6a4a")) +
        theme_classic()
```

```
## Warning: Removed 3 rows containing non-finite values (stat_boxplot).
```

```
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```
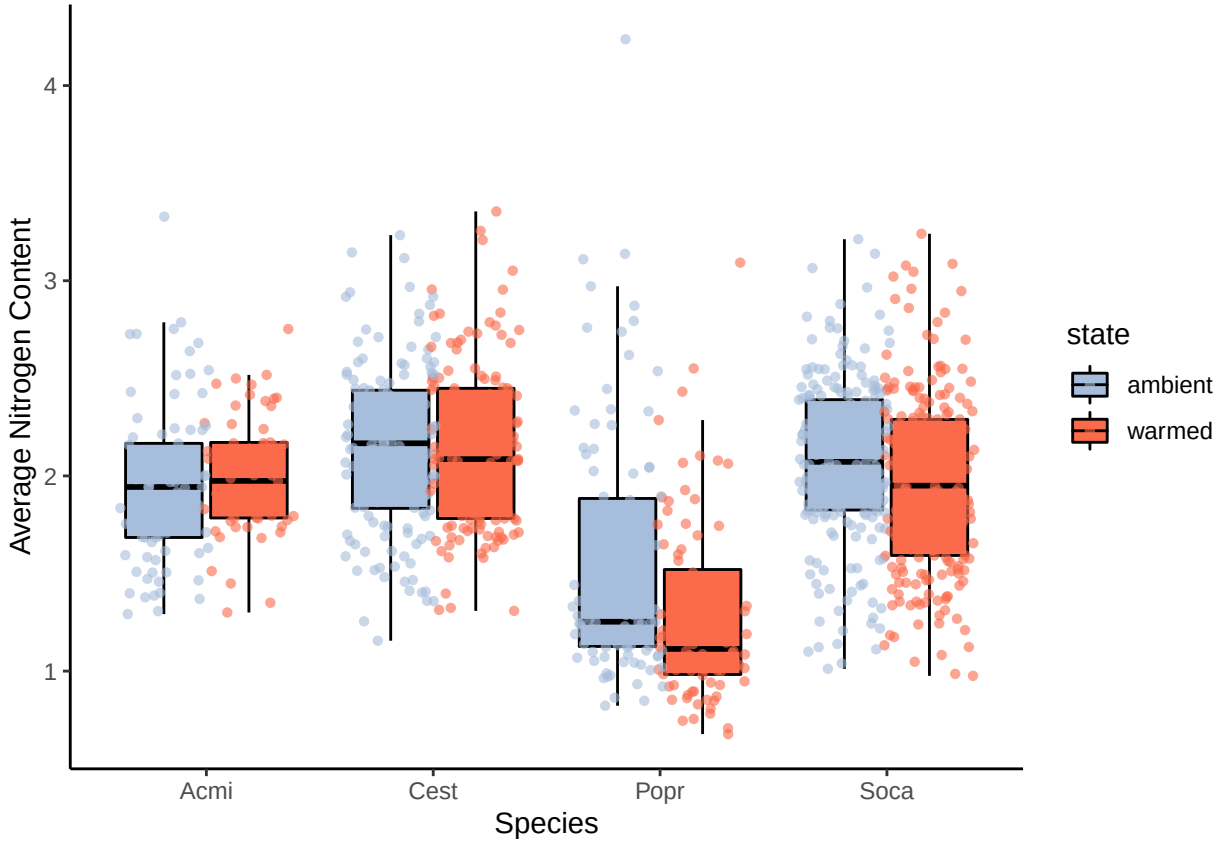
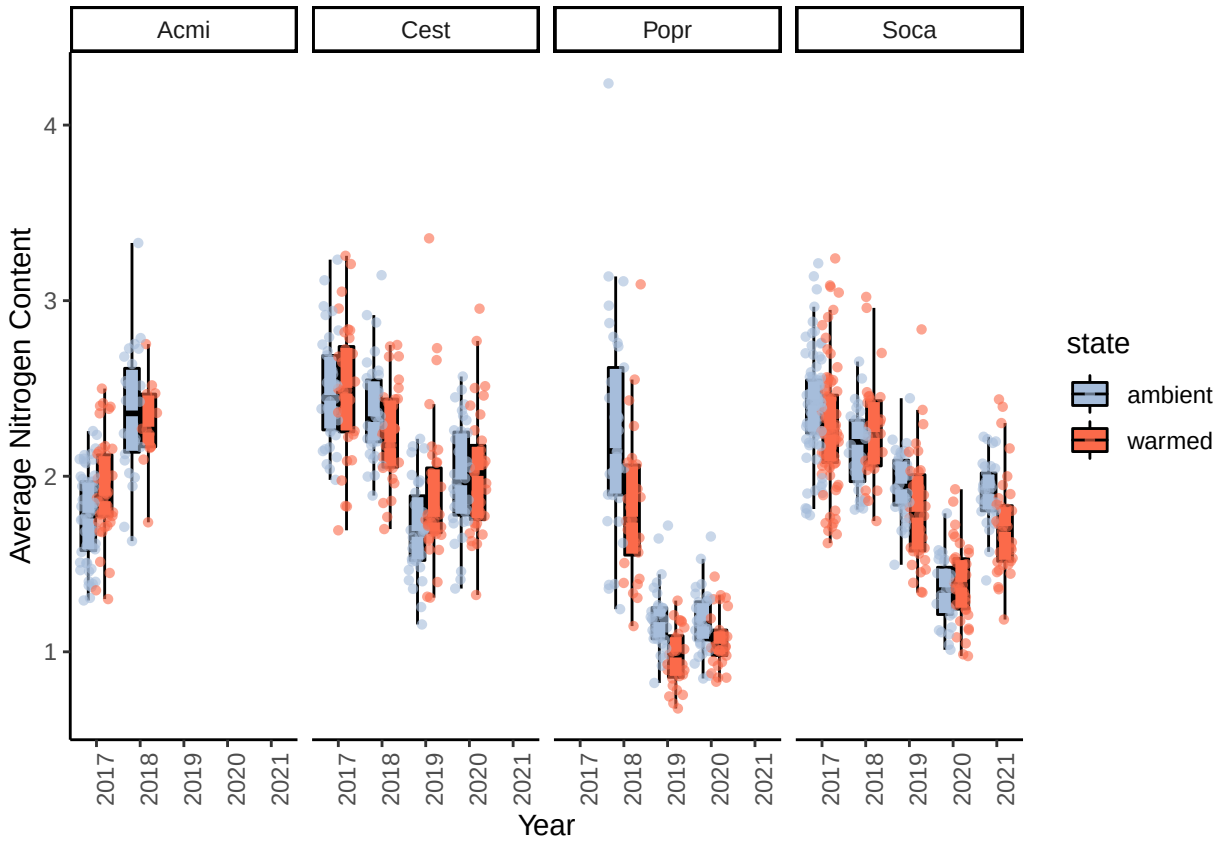



Nitrogen data: all yrs, by species

```
ggplot(cn, aes(x = factor(year), y = nitrogen, fill = state)) +
        geom_boxplot(color = "black", outlier.shape = NA) +
        geom_jitter(shape=16, position=position_jitterdodge(), alpha = 0.6, aes(colour = state)) +
        facet_grid(.~species) +
        labs(x = "Year", y = "Average Nitrogen Content") +
        scale_fill_manual(values = c("#a6bddb", "#fb6a4a")) +
        #scale_x_discrete(labels=c("ambient" = "A", "warmed" = "W")) +
        scale_color_manual(values = c("ambient" = "#a6bddb", "warmed" = "#fb6a4a")) +
        facet_grid(.~species) +
        theme_classic() +
        theme(axis.text.x = element_text(angle = 90))
```

```
## Warning: Removed 3 rows containing non-finite values (stat_boxplot).
```

```
## Warning: Removed 3 rows containing missing values (geom_point).
```



Carbon data: all yrs, by species

```
ggplot(cn, aes(x = factor(year), y = carbon, fill = state)) +
        geom_boxplot(color = "black", outlier.shape = NA) +
        geom_jitter(shape=16, position=position_jitterdodge(), alpha = 0.6, aes(colour = state)) +
        facet_grid(.~species) +
        labs(x = "Year", y = "Average Carbon Content") +
        scale_fill_manual(values = c("#a6bddb", "#fb6a4a")) +
        #scale_x_discrete(labels=c("ambient" = "A", "warmed" = "W")) +
        scale_color_manual(values = c("ambient" = "#a6bddb", "warmed" = "#fb6a4a")) +
        facet_grid(.~species) +
        theme_classic() +
        theme(axis.text.x = element_text(angle = 90))
```

```
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```
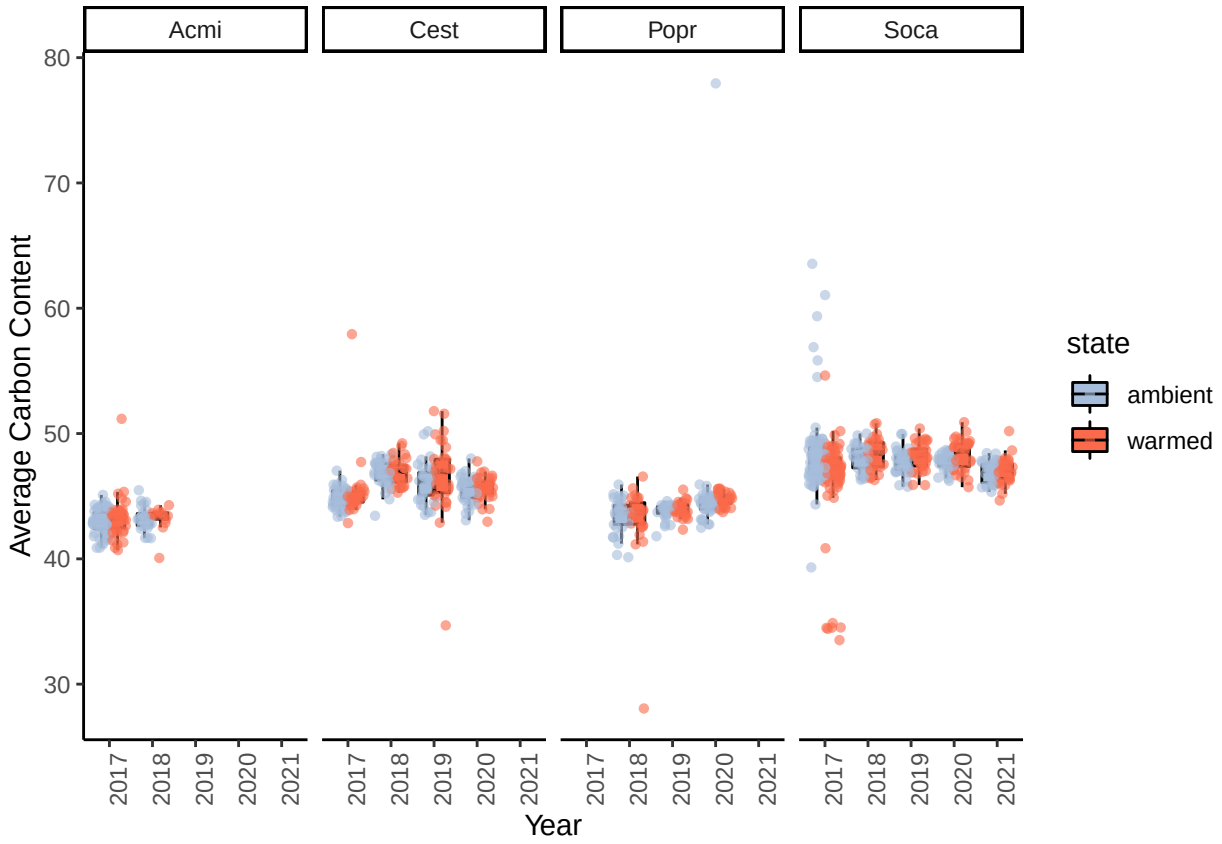
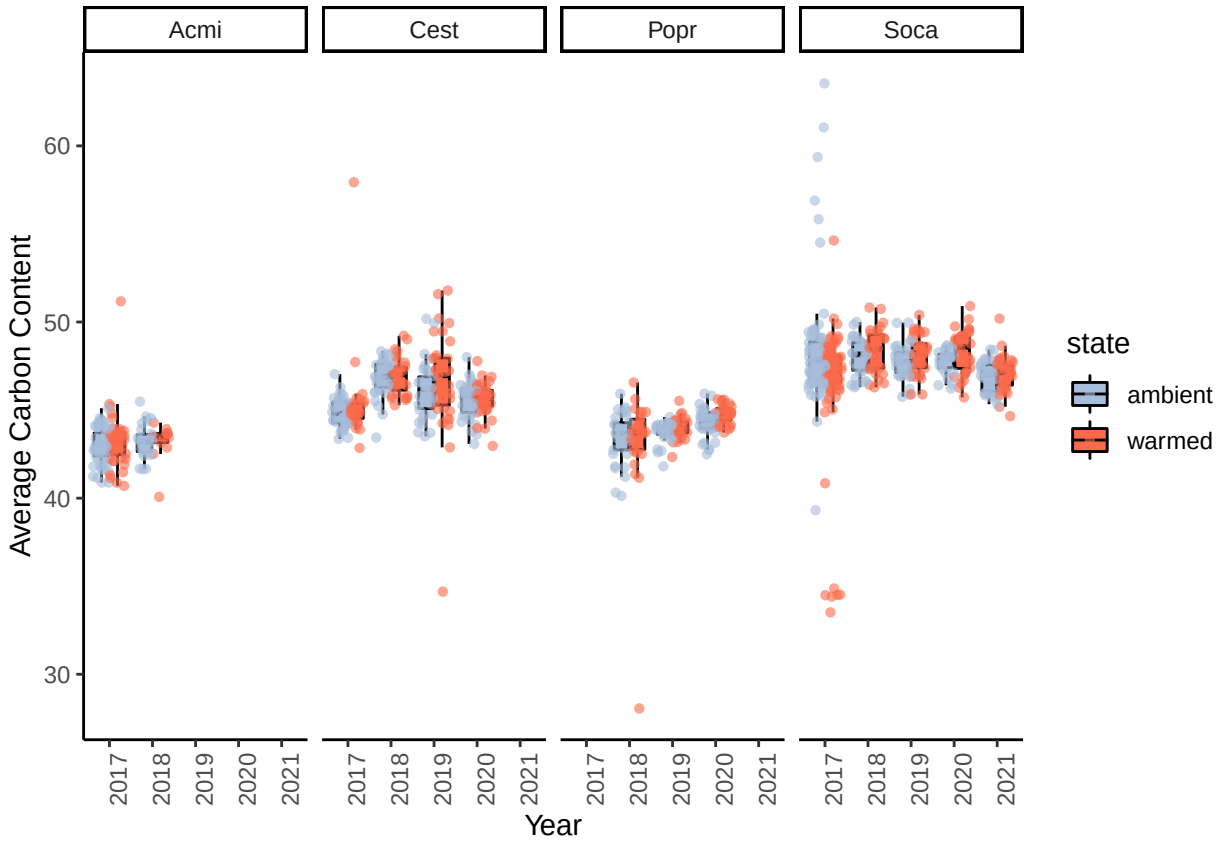



Some major outlier for Popr carbon; omit and re-plot

```
cn1<-cn[(cn$carbon < 70),]
cn1 <- cn1[!is.na(cn1$carbon), ]
ggplot(cn1, aes(x = factor(year), y = carbon, fill = state)) +
        geom_boxplot(color = "black", outlier.shape = NA) +
        geom_jitter(shape=16, position=position_jitterdodge(), alpha = 0.6, aes(colour = state)) +
        facet_grid(.~species) +
        labs(x = "Year", y = "Average Carbon Content") +
        scale_fill_manual(values = c("#a6bddb", "#fb6a4a")) +
        #scale_x_discrete(labels=c("ambient" = "A", "warmed" = "W")) +
        scale_color_manual(values = c("ambient" = "#a6bddb", "warmed" = "#fb6a4a")) +
        facet_grid(.~species) +
        theme_classic() +
        theme(axis.text.x = element_text(angle = 90))
```


Acmi
Cest
Popr
Soca
Average Carbon Content
60
50
40
30
2017
2018
2019
2020
2021
Year
state
ambient
warmed