Phenology Visualization

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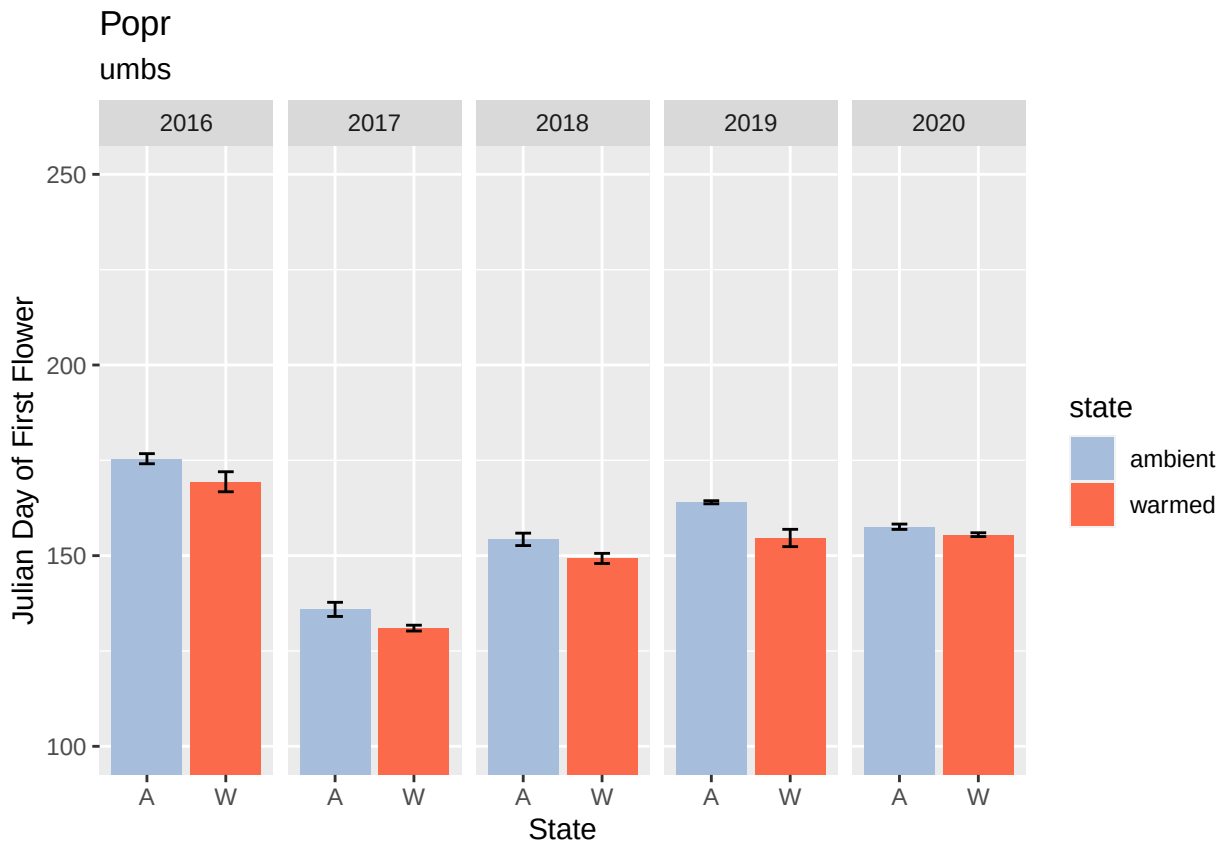
DATA INPUT: Cleaned phenology data csv from the shared Google drive
DATA OUTPUT: Code and Rmd are in the scripts folder in Github
PROJECT: warmXtrophic

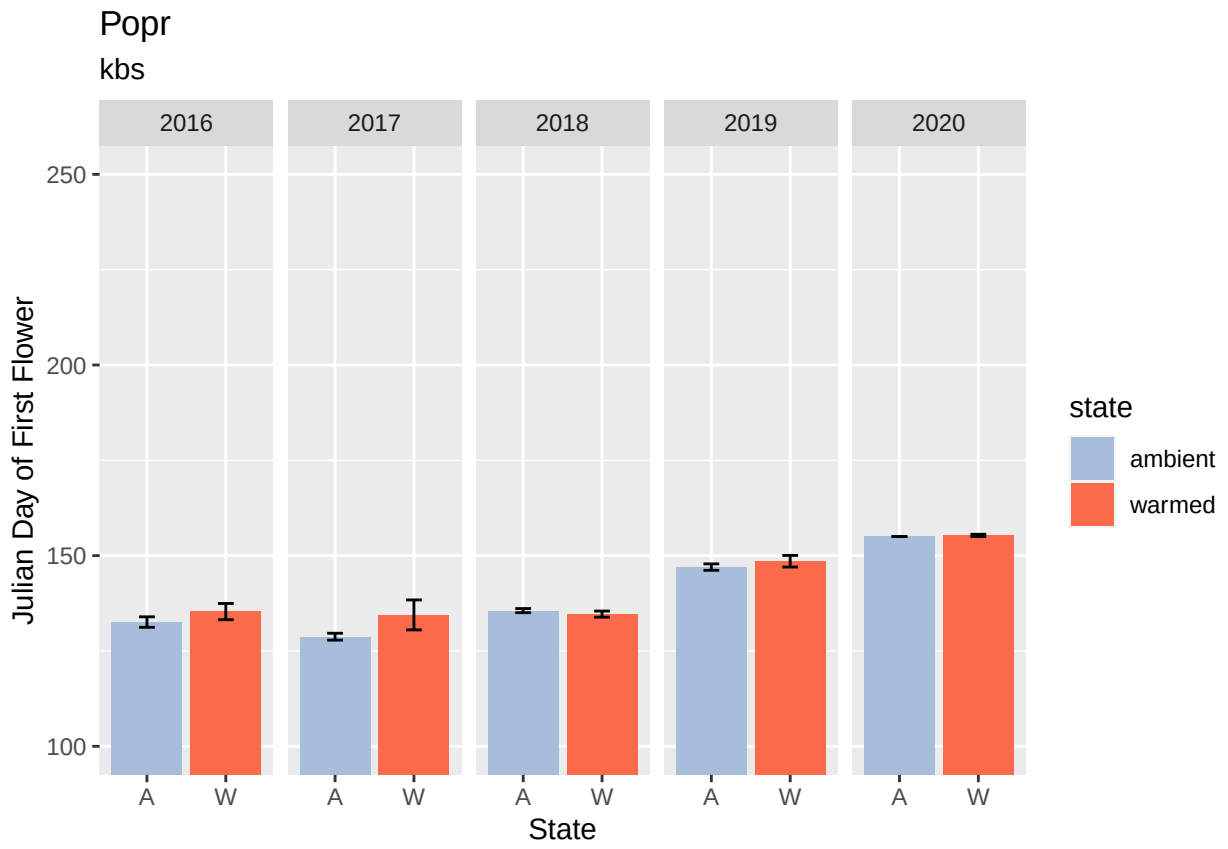
Flowering

This creates a plot for a given species and site and for every year

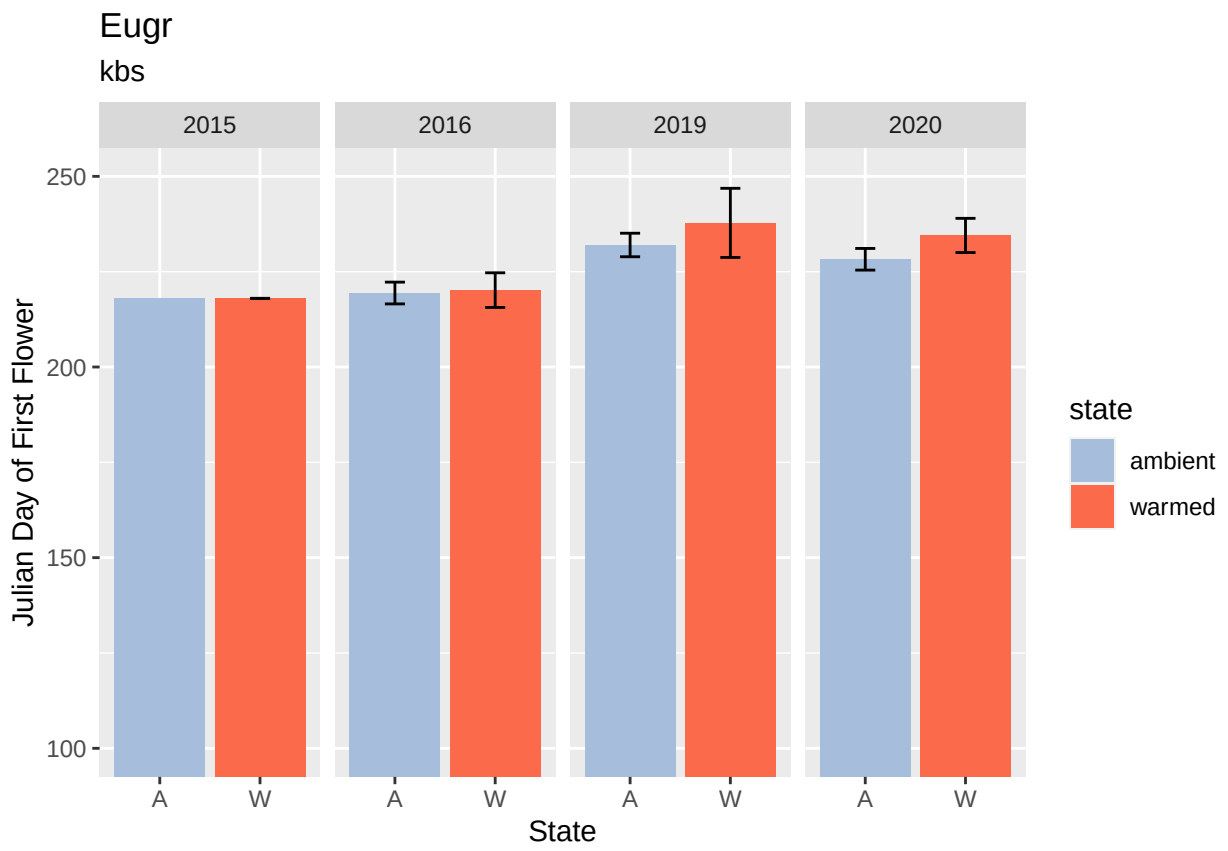
```
FirstFlower_plot <- function(spp, loc) {
        FirstFlower_spp <- subset(sum_FirstFlower, species == spp & site == loc)
        return(ggplot(FirstFlower_spp, aes(x = state, y = avg_julian, fill = state)) +
                        facet_grid(.~year) +
                        geom_bar(position = "identity", stat = "identity") +
                        geom_errorbar(aes(ymin = avg_julian - se, ymax = avg_julian + se), width = 0.2,
                                      position = "identity") +
                        labs(x = "State", y = "Julian Day of First Flower", title = spp, subtitle = loc)
                        coord_cartesian(ylim = c(100, 250)) +
                        scale_fill_manual(values = c("#a6bddb", "#fb6a4a")) +
                        scale_x_discrete(labels=c("ambient" = "A", "warmed" = "W")) +
                        theme_grey())
}
FirstFlower_plot("Popr", "umbs")
```



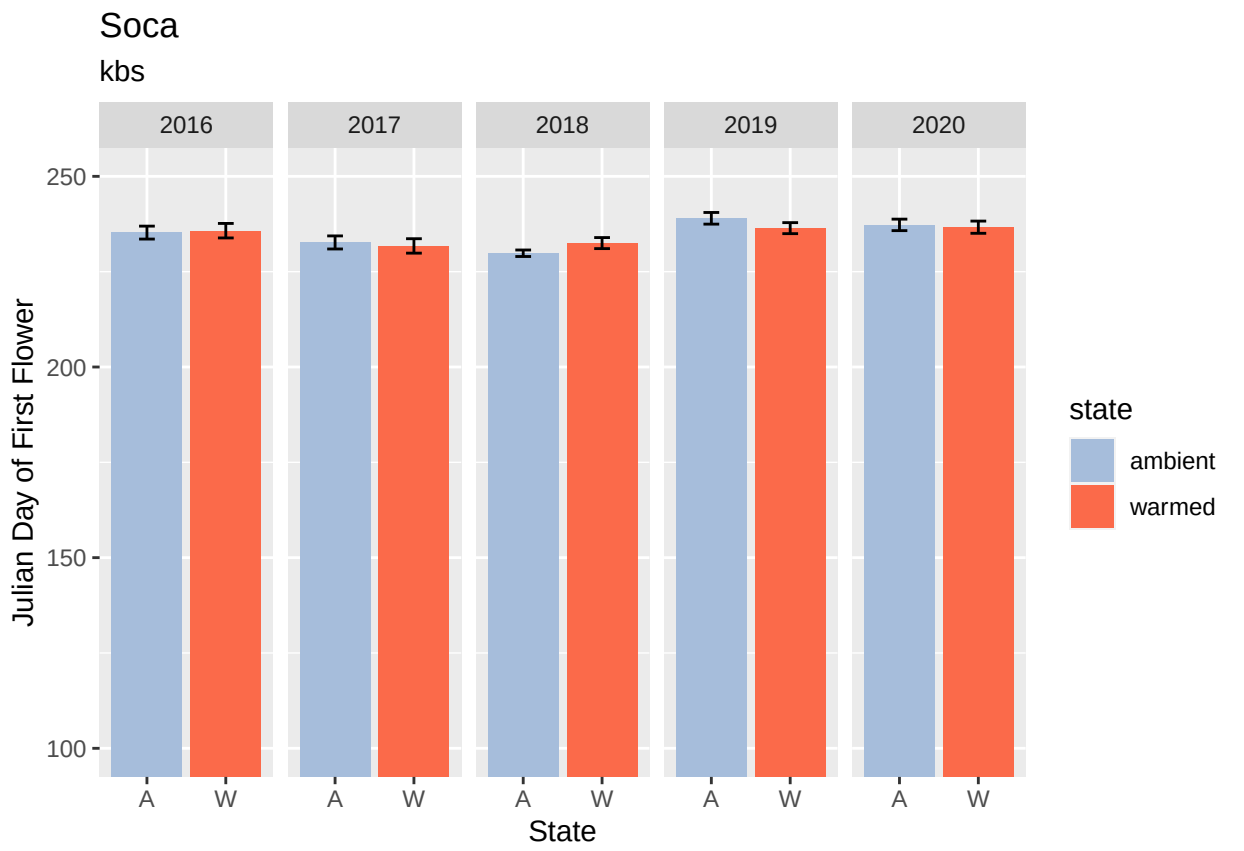

```
FirstFlower_plot("Popr", "kbs")
```




```
FirstFlower_plot("Eugr", "kbs")
```



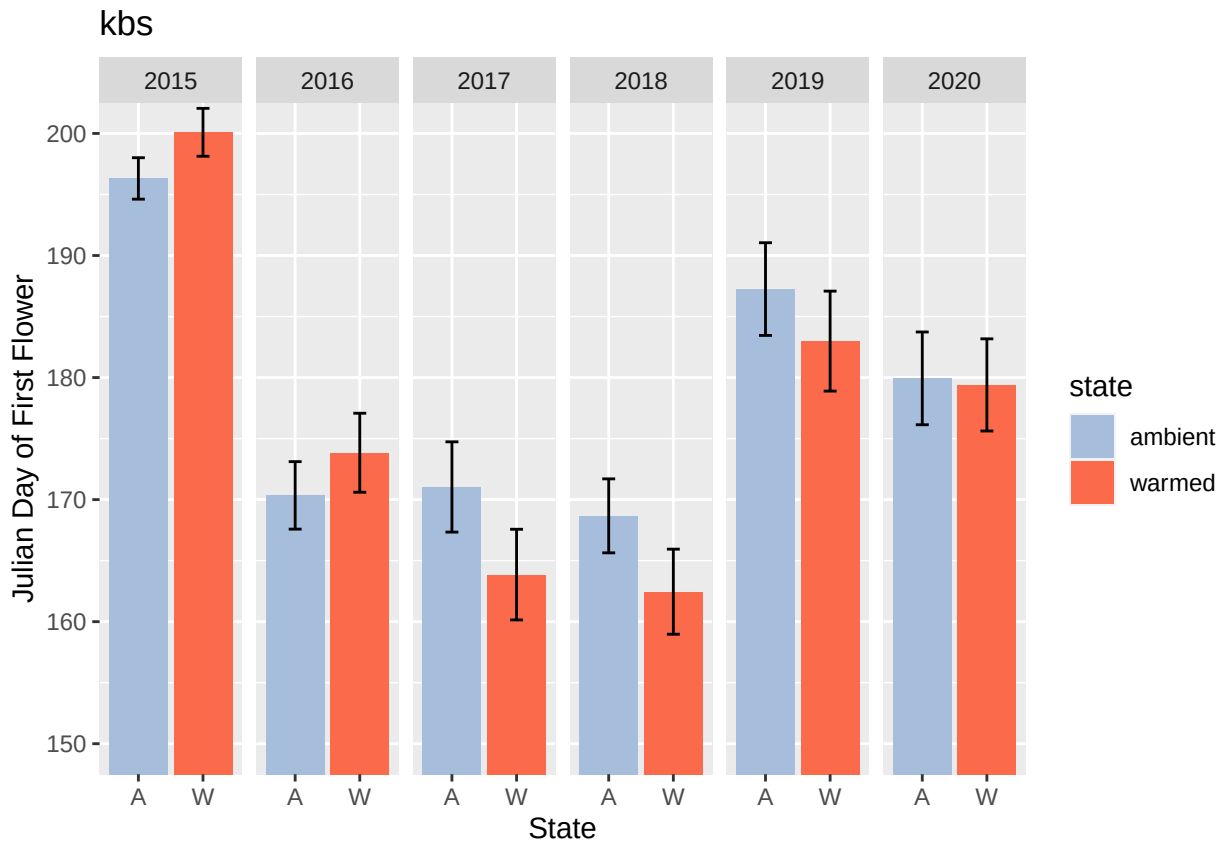

```
FirstFlower_plot("Soca", "kbs")
```



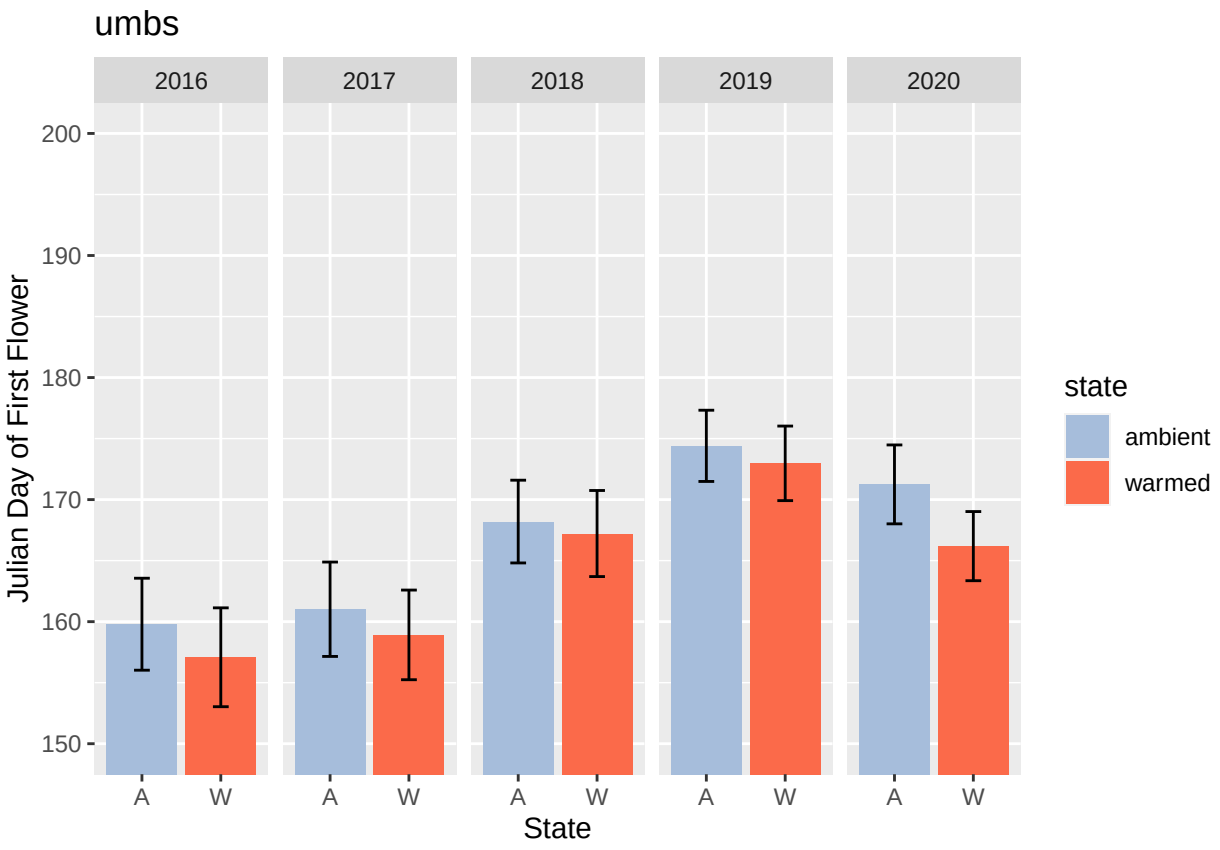
This creates a function that returns plots for a given site and year for average first date of flower comparing ambient vs warmed plots

```
sum_FirstFlwr_plot <- function(loc) {
        FirstFlwr_sub <- subset(sum_FirstFlwr_state, site == loc)
        return(ggplot(FirstFlwr_sub, aes(x = state, y = avg_julian, fill = state)) +
                        facet_grid(.~year) +
                        geom_bar(position = "identity", stat = "identity") +
                        geom_errorbar(aes(ymin = avg_julian - se, ymax = avg_julian + se), width = 0.2,
                                      position = "identity") +
                        labs(x = "State", y = "Julian Day of First Flower", title = loc) +
                        coord_cartesian(ylim = c(150, 200)) +
                        scale_fill_manual(values = c("#a6bddb", "#fb6a4a")) +
                        scale_x_discrete(labels=c("ambient" = "A", "warmed" = "W")) +
                        theme_grey())
}
```

KBS


kbs
2015
2016
2017
2018
2019
2020
200
190
180
170
160
150
Julian Day of First Flower
A
W
State
state
ambient
warmed

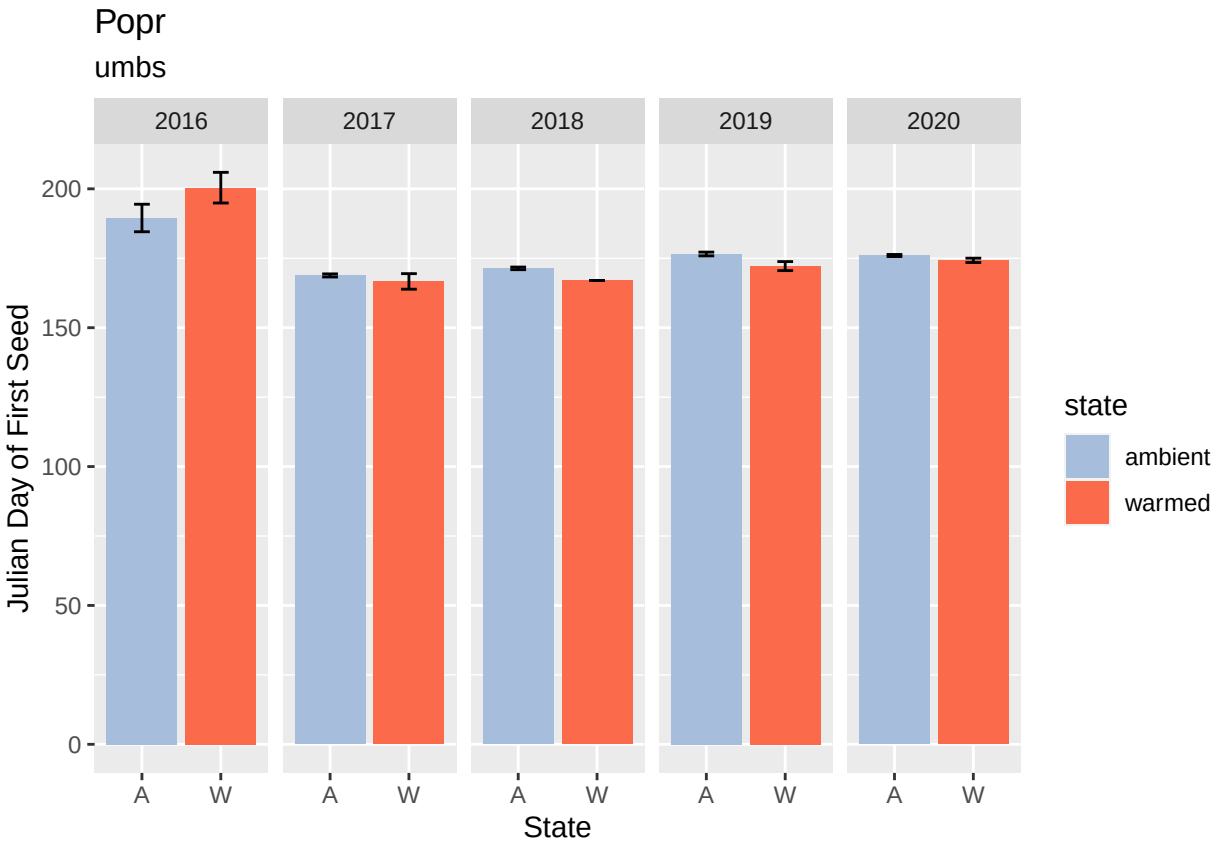
UMBS



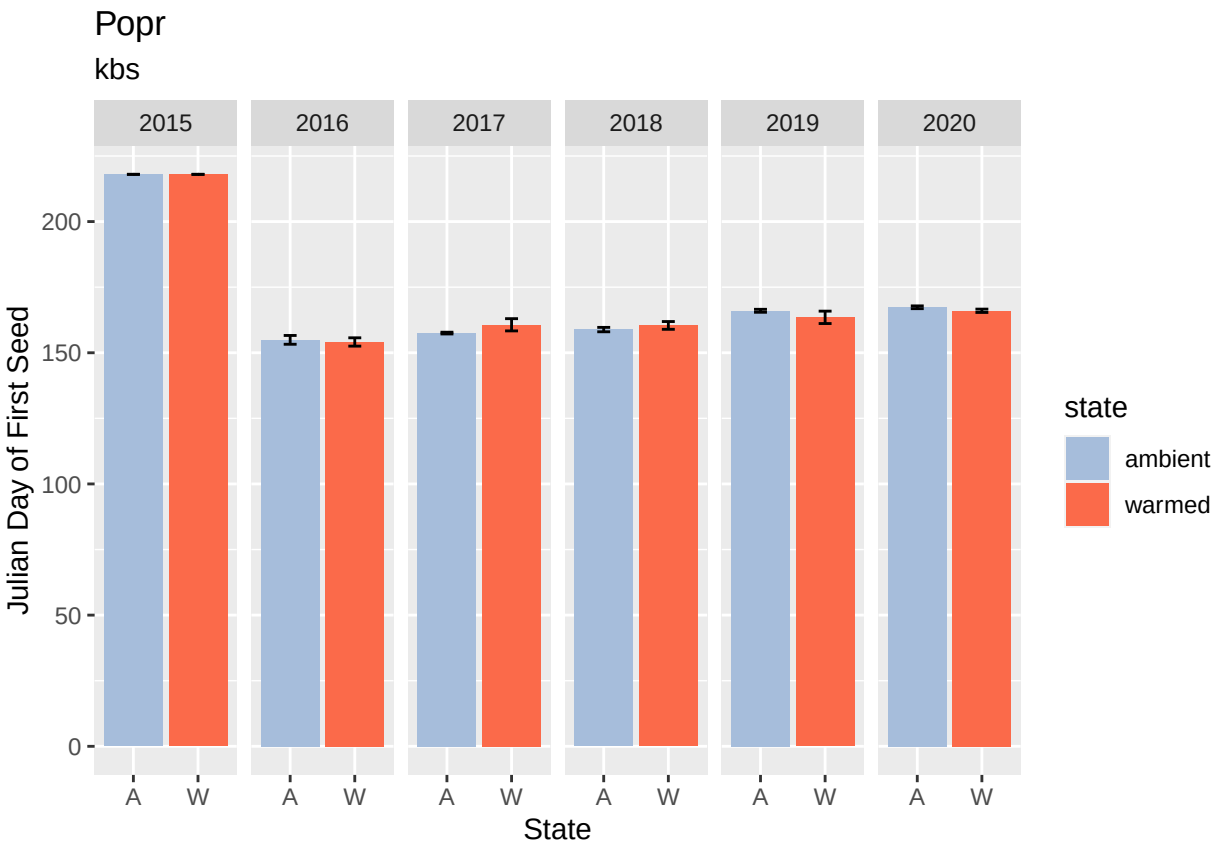
Seeding

This creates function so that you can look at a specific species at either kbs or umbs and it's mean julian day of first seed for every year of data collection

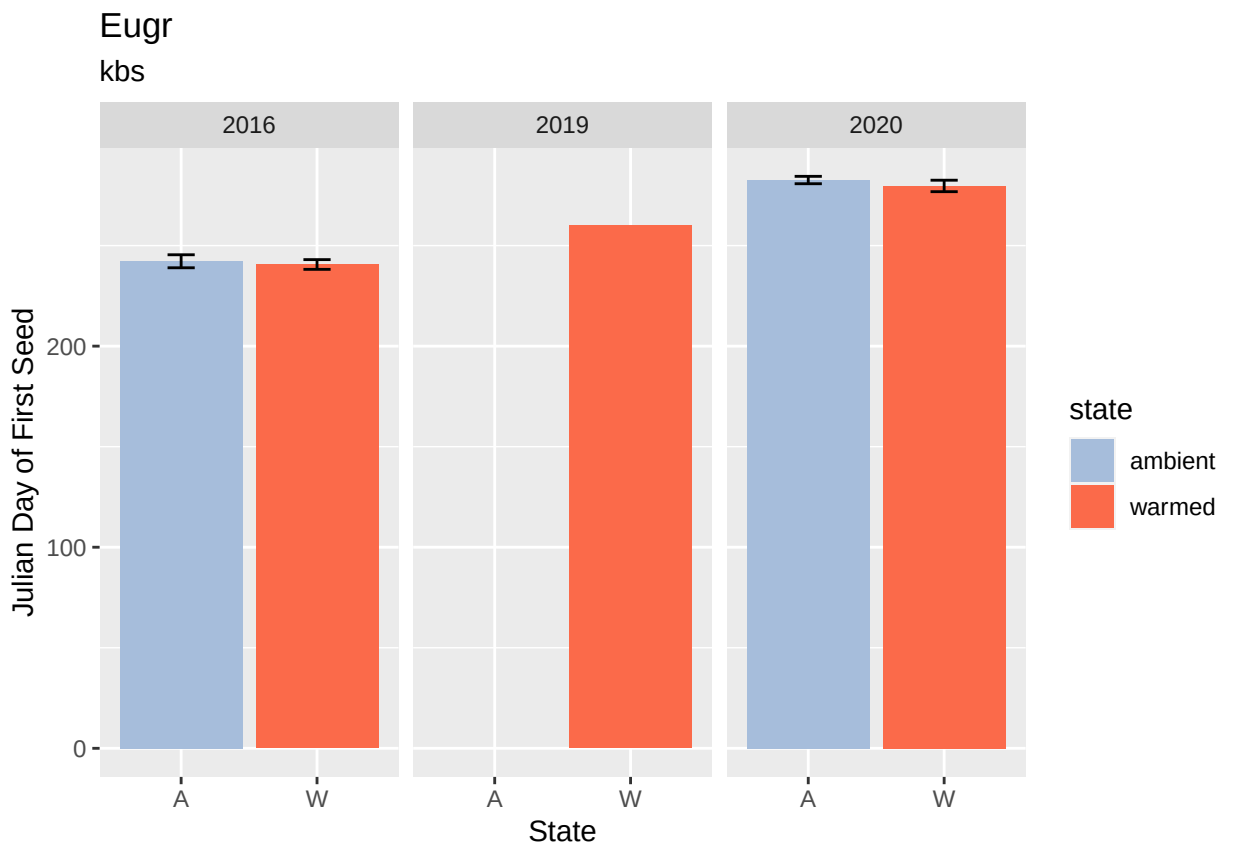
```
FirstSeed_plot <- function(spp, loc) {
        FirstSeed_spp <- subset(sum_FirstSeed, species == spp & site == loc)
        return(ggplot(FirstSeed_spp, aes(x = state, y = avg_julian, fill = state)) +
                        facet_grid(.~year) +
                        geom_bar(position = "identity", stat = "identity") +
                        geom_errorbar(aes(ymin = avg_julian - se, ymax = avg_julian + se), width = 0.2,
                                      position = "identity") +
                        labs(x = "State", y = "Julian Day of First Seed", title = spp, subtitle = loc) +
                        #coord_cartesian(ylim = c(150, 300)) +
                        scale_fill_manual(values = c("#a6bddb", "#fb6a4a")) +
                        scale_x_discrete(labels=c("ambient" = "A", "warmed" = "W")) +
                        theme_grey())
}
FirstSeed_plot("Popr", "umbs")
```



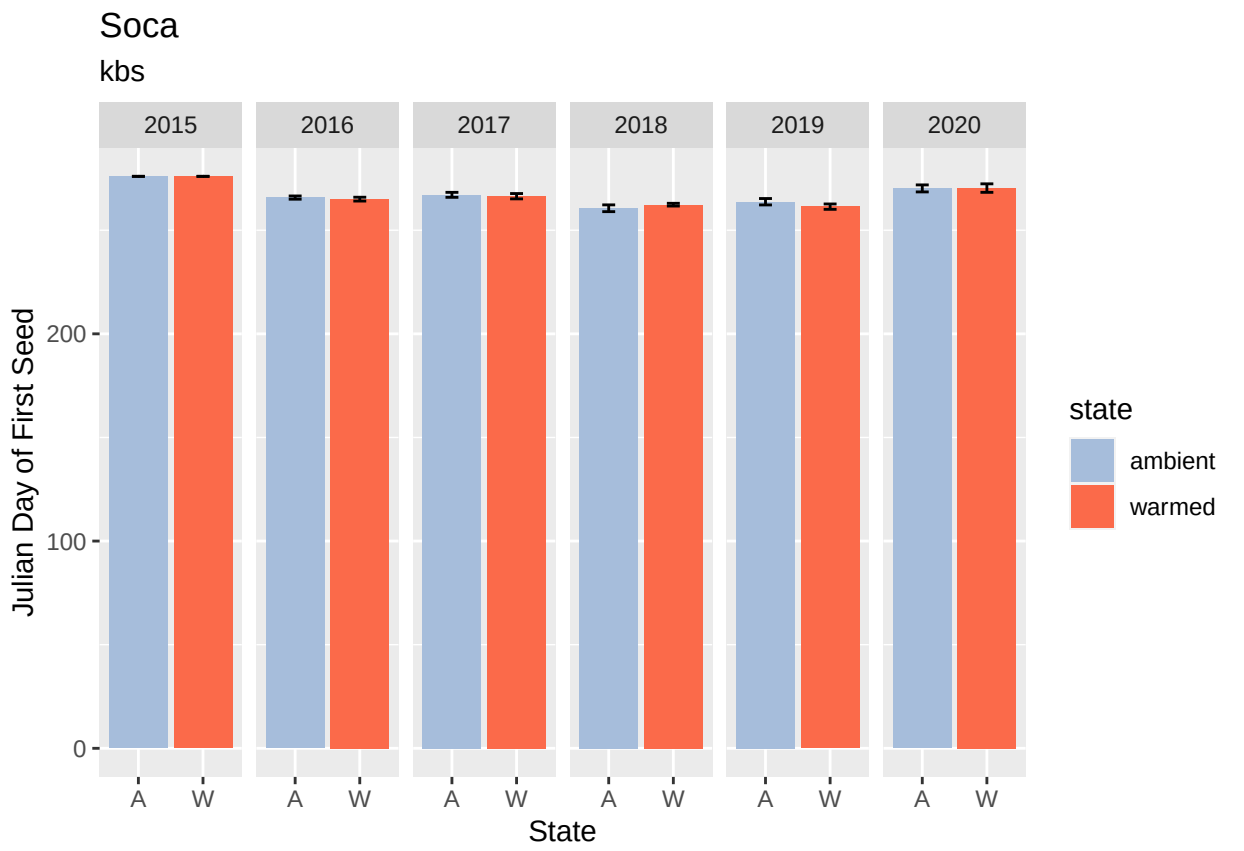

```
FirstSeed_plot("Popr", "kbs")
```




```
FirstSeed_plot("Eugr", "kbs")
```



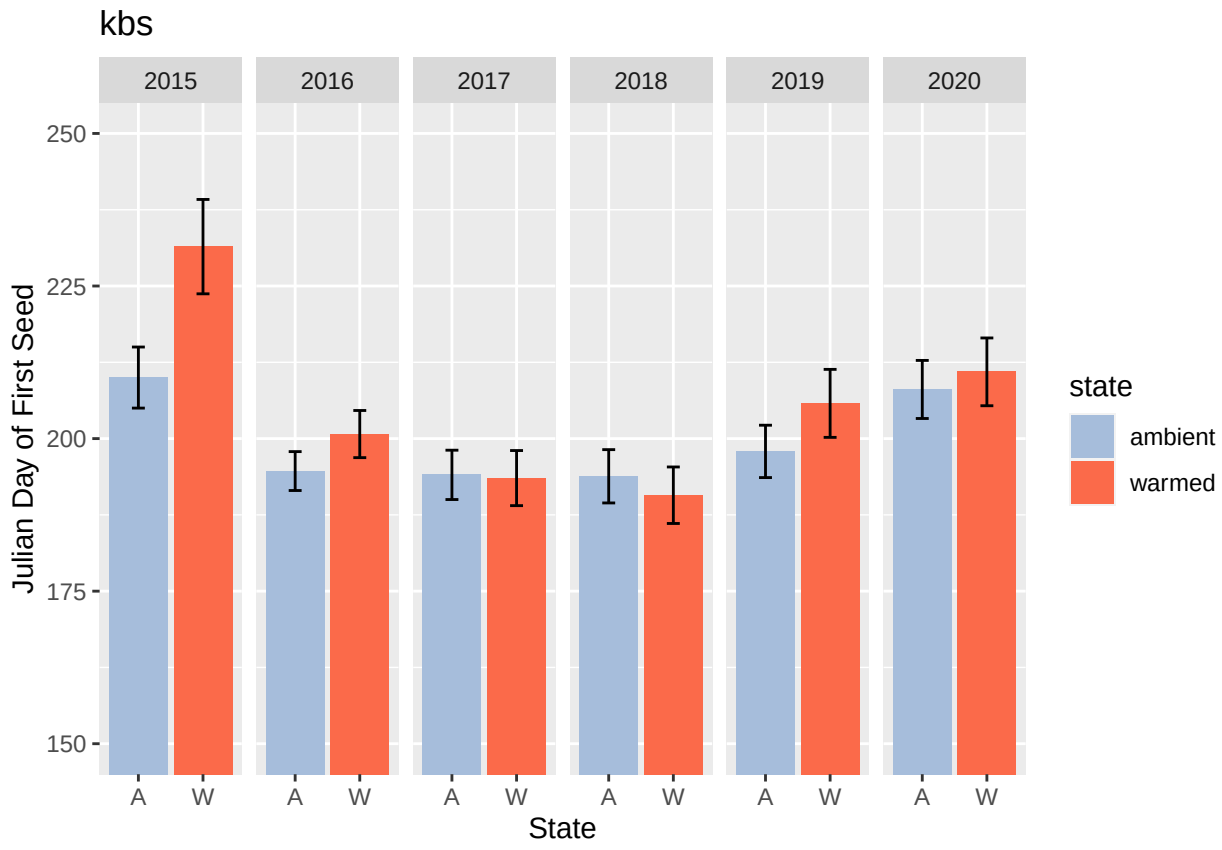

```
FirstSeed_plot("Soca", "kbs")
```



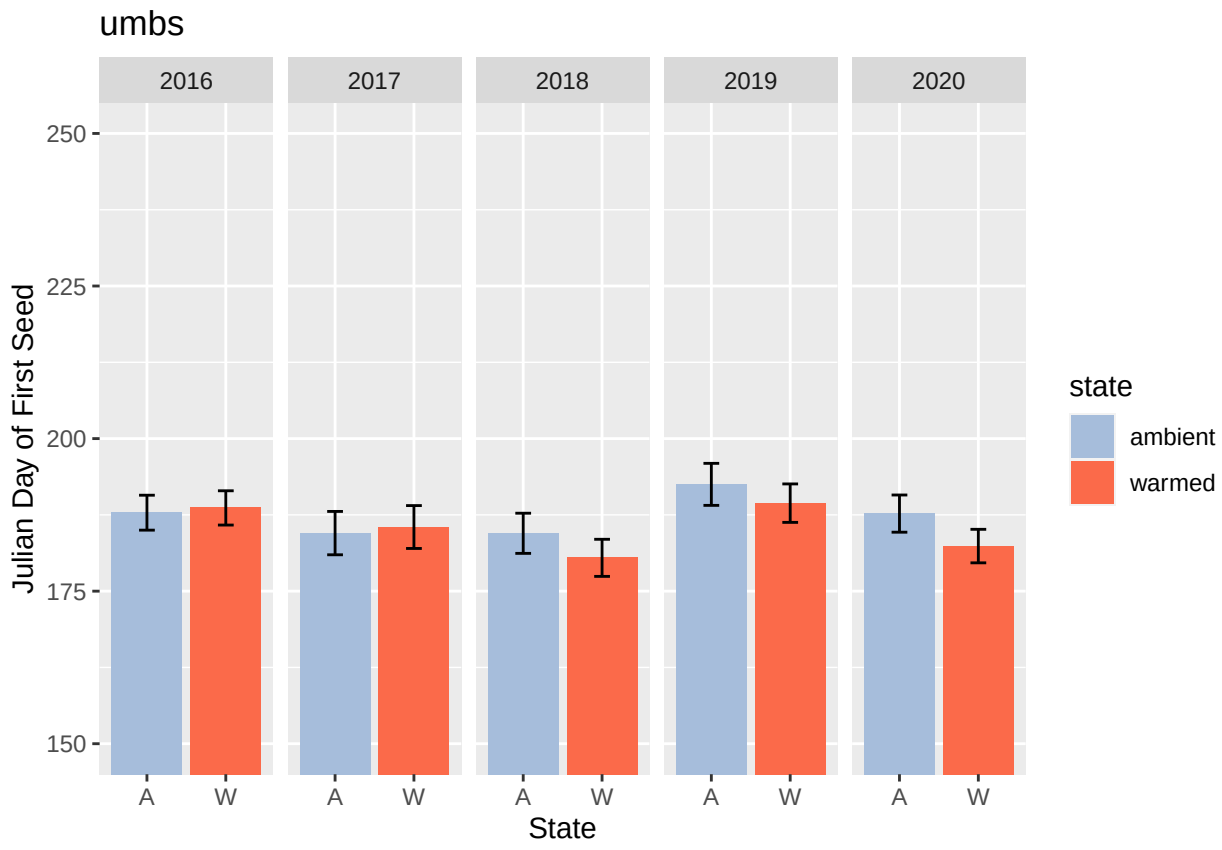
This creates a function that returns plots for a given site and year for average first date of seed comparing ambient vs warmed plots

```
sum_FirstSeed_plot <- function(loc) {
        FirstSeed_sub <- subset(sum_FirstSeed_state, site == loc)
        return(ggplot(FirstSeed_sub, aes(x = state, y = avg_julian, fill = state)) +
                       facet_grid(.~year) +
                       geom_bar(position = "identity", stat = "identity") +
                       geom_errorbar(aes(ymin = avg_julian - se, ymax = avg_julian + se), width = 0.2,
                                     position = "identity") +
                       labs(x = "State", y = "Julian Day of First Seed", title = loc) +
                       coord_cartesian(ylim = c(150, 250)) +
                       scale_fill_manual(values = c("#a6bddb", "#fb6a4a")) +
                       scale_x_discrete(labels=c("ambient" = "A", "warmed" = "W")) +
                       theme_grey())
}
```

KBS


kbs
2015
2016
2017
2018
2019
2020
250
225
200
175
150
Julian Day of First Seed
A
W
State
state
ambient
warmed

UMBS


umbs
2016
2017
2018
2019
2020
250
225
200
175
150
Julian Day of First Seed
A
W
State
state
ambient
warmed