

# Figures\_to\_Journal\_Specifications

You've made a great graph, or you have some exciting data, and you want to create a clear, informative graph, that is accessible to everyone and is up to the specifications of the journal you are submitting to.

Porzana Solutions can help.

I can ensure that your figure is accessible to those with colorblindness, or the legally blind.

I can write screen reader captions for your figures so that those who use screen readers can still use and understand your figures.

I do most of my graphing in ggplot2, and with this R package can make a figure to your exact specifications.

```
library(ggplot2)
library(gridExtra)
library(auriel)
library(raildata)
library(chron)
library(cowplot)
library(ResourceSelection)
library(tidyverse)
library(raildata)
library(RColorBrewer)

states <- c("missouri","illinois","ohio","indiana","kentucky")

####
# Missouri Surveys
####

data(allbirds)

allbirds <- allbirds %>%
  mutate(species=ifelse(species=="y"|species=="yera",
                        "Yellow Rail",species),
         species=ifelse(species=="v"|species=="vira",
                        "Virginia Rail",species)) %>%
  filter(species=="Yellow Rail"|species=="Virginia Rail") %>%
  mutate(state="missouri",
         source="This Study") %>%
  select(species, state, month, day, year, source, odate)

#####
## Building Strikes
####

nonebird <- read.csv("./data/no_ebird.csv",
                    stringsAsFactors = FALSE) %>%
  mutate(spp=ifelse(spp=="yera","Yellow Rail",spp),
         spp=ifelse(spp=="vira","Virginia Rail",spp),
         source=ifelse(source=="birdstrikes",
                        "Building Strikes",source)) %>%
  filter(spp!="sora",
         !is.na(spp),
```

```

state %in% states,
state != "illinois",
year >= 1960,
month >= 8 & month <= 11)

####
## Bluebird
####

bluebird <- read.csv("../data/the_bluebird.csv",
  stringsAsFactors = FALSE) %>%
  mutate(state = "missouri",
    source = "The Bluebird") %>%
  filter(!is.na(day))

bluebird[bluebird$month == "august",]$month <- 8
bluebird[bluebird$month == "june",]$month <- 6
bluebird[bluebird$month == "december",]$month <- 12
bluebird[bluebird$month == "August",]$month <- 8
bluebird[bluebird$month == "May",]$month <- 5
bluebird[bluebird$month == "september",]$month <- 9
bluebird[bluebird$month == "october",]$month <- 10
bluebird[bluebird$month == "april",]$month <- 4
bluebird[bluebird$month == "march",]$month <- 3
bluebird[bluebird$month == "july",]$month <- 7
bluebird[bluebird$month == "november",]$month <- 11
bluebird[bluebird$month == "may",]$month <- 5

bluebird$odate <- ordinal_date_con(bluebird[,c("month", "day", "year")])

bbird <- bluebird %>%
  mutate(species = ifelse(species == "year" | species == "yera",
    "Yellow Rail", species),
    species = ifelse(species == "vira", "Virginia Rail", species),
    month = as.numeric(month)) %>%
  filter(species == "Virginia Rail" | species == "Yellow Rail",
    month >= 8 & month <= 11) %>%
  select(species, state, month, day, year, source, odate)

####
# eBird
####

vira <- c("Virginia Rail", "vira")
yera <- c("Yellow Rail", "yera", "year")
sora <- c("Sora", "sora")

dat <- read.csv("../data/ebird.csv", stringsAsFactors = FALSE) %>%
  mutate(source = "eBird",
    species = ifelse(species %in% vira,
      "Virginia Rail", species),
    species = ifelse(species %in% yera,

```

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        "Yellow Rail", species)) %>%
filter(species=="Virginia Rail"|species=="Yellow Rail",
       year>=2000,
       latitude<=40.5&latitude>36.5&state %in% states,
       month>=8&month<=11) %>%
select(species, state, month, day, year, source, odate)

###
# bring everything together
###

colnames(allbirds) <- colnames(nonebird)
colnames(bbird) <- colnames(nonebird)
colnames(dat) <- colnames(nonebird)

alldat <- bind_rows(dat, nonebird, allbirds, bbird) %>%
  filter(source!="vertnet",
         odate>=213) %>%
  mutate(date=paste0(month, "/", day, "/", year),
         date=as.Date(date, format="%m/%d/%y")) %>%
  filter(day>=1) %>%
  select(spp, source, odate)

all_together_now <- alldat %>%
  filter(source!="This Study") %>%
  mutate(source="Opportunistic") %>%
  bind_rows(alldat)

summary_for_graph <- all_together_now %>%
  group_by(source, spp) %>%
  summarize_each(funs(min=min(odate),
                        q1=quantile(odate, probs=0.25),
                        median=median(odate),
                        q3=quantile(odate, probs=0.75),
                        max=max(odate)))

## `summarise_each()` is deprecated.
## Use `summarise_all()`, `summarise_at()` or `summarise_if()` instead.
## To map `funs` over all variables, use `summarise_all()`

#####
# BNA
#####

BNA <- data.frame(source="Birds Of \nNorth America",
                  spp=c("Virginia Rail", "Yellow Rail"),
                  min=c(227, 232),
                  q1=c(258, 244),
                  median=c(258, 244),
                  q3=c(283, 293),
                  max=c(293, 314))

```

```

dt <- bind_rows(summary_for_graph, BNA)

## Warning in bind_rows(x, .id): binding character and factor vector,
## coercing into character vector

## Warning in bind_rows(x, .id): binding character and factor vector,
## coercing into character vector

fin_dat <- dt %>%
  mutate(col=NA,
         col = ifelse(spp=="Virginia Rail","V","Y")) %>%
  mutate(col = ifelse(source=="Birds Of North America","BNA",col)) %>%
  filter(source!="eBird"&source!="The Bluebird"&source!="Building Strikes")

vira <- all_together_now %>%
  filter(source=="This Study"|source=="Opportunistic",
         spp=="Virginia Rail") %>%
  mutate(source=factor(source,
                       levels=c("This Study","Opportunistic"))) %>%
  ggplot(aes(x=odate, fill=source))+
  geom_density(alpha=0.5)+
  theme_kremetz()+
  theme(legend.position="none",
        legend.direction="vertical",
        legend.title=element_blank(),
        axis.text.x=element_blank(),
        axis.title.x=element_blank(),
        axis.ticks = element_blank(),
        axis.title.y=element_blank())+
  ylab("Relative Density")+
  scale_fill_manual(values=c("grey",NA))+
  ggtitle("Virginia Rail")+
  xlim(214, 335)

vira_bna <- fin_dat %>%
  filter(spp=="Virginia Rail",
         source=="Birds Of \nNorth America") %>%
  ggplot()+
  geom_boxplot(
    aes(ymax=max, lower=q1, middle=median, upper=q3,
        ymin=min, x=source, fill=spp),
    color='black', stat="identity", fill="black")+
  coord_flip()+
  theme_kremetz()+
  scale_y_continuous(label = function(y)
    strftime(chron(y, origin = c(month = 1, day = 1, year = 2016)),
              "%b %d"),
    breaks=c(214, 228,245,259,275,289,306,320,335,350,365),
    limits=c(214, 335))+
  theme(axis.title.y=element_blank(),
        legend.position="none",
        axis.text.x=element_text(ang=90),

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```

axis.text.y=element_blank(),
axis.ticks = element_blank())

#####

yera <- all_together_now %>%
  filter(source=="This Study"|source=="Opportunistic",
         spp=="Yellow Rail") %>%
  mutate(source=factor(source, levels=c("This Study","Opportunistic"))) %>%
  ggplot(aes(x=odate, fill=source))+
  geom_density(alpha=0.5)+theme_kremetz()+
  theme(axis.text.x=element_blank(),
        axis.title.x=element_blank(),
        legend.position=c(0.75,0.85),
        legend.title=element_blank(),
        legend.direction="vertical",
        axis.ticks = element_blank(),
        axis.title.y=element_text(size=15))+
  scale_fill_manual(values=c("grey",NA))+
  ylab("Proportion of Total Individuals Counted")+
  ggtitle("Yellow Rail")+
  xlim(214, 335)

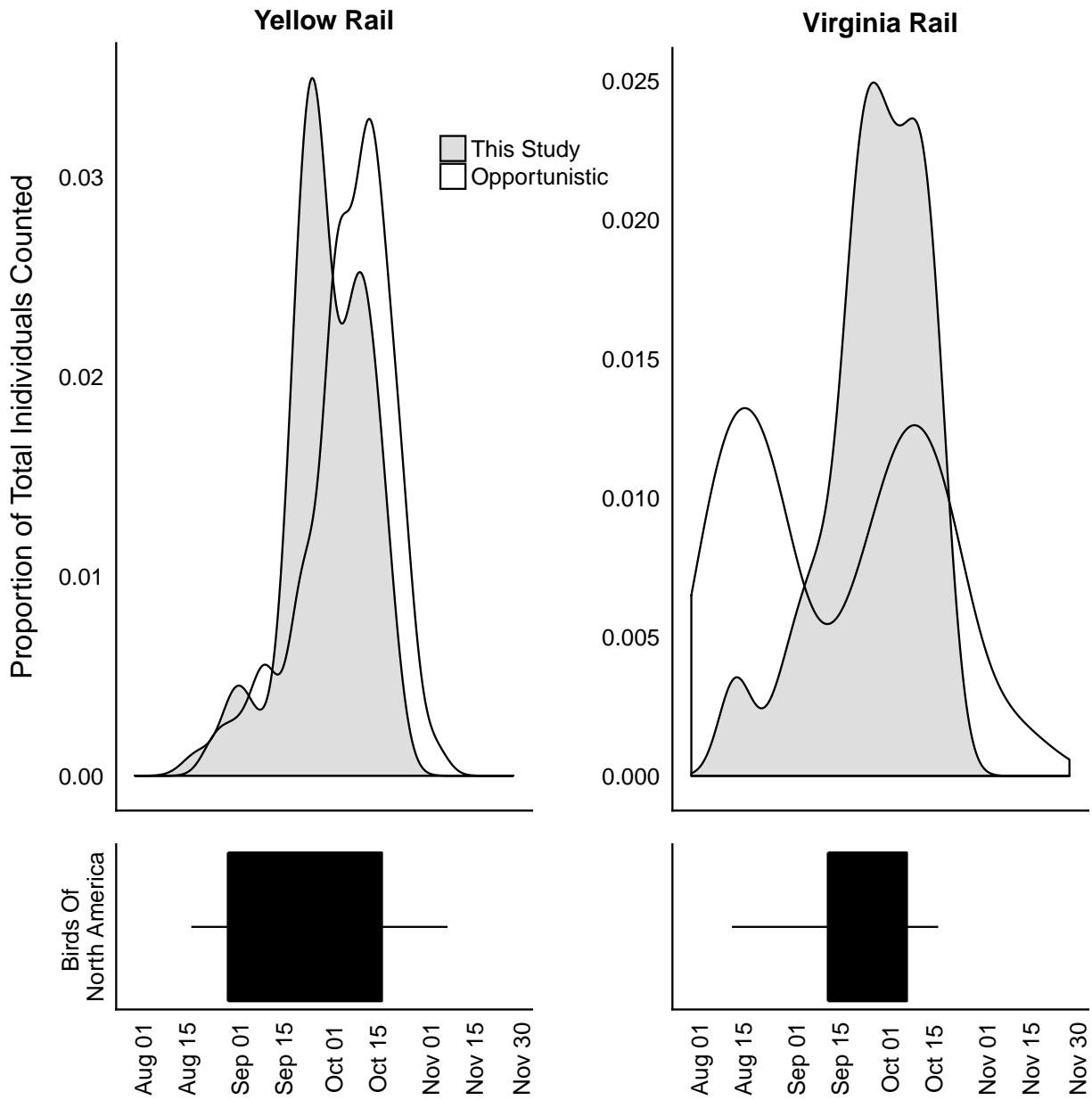
yera_bna <-fin_dat %>%
  filter(spp=="Yellow Rail",
         source=="Birds Of \nNorth America") %>%

  ggplot()+
  geom_boxplot(
    aes(ymax=max, lower=q1, middle=median, upper=q3,
        ymin=min, x=source, fill=spp),
    color='black', stat="identity", fill="black")+
  coord_flip()+
  theme_kremetz()+
  theme(axis.title.y=element_blank(),
        legend.position="none",
        axis.text.x=element_text(ang=90),
        axis.text.y=element_text(ang=90, hjust=0.5, size=12),
        axis.ticks = element_blank())+
  scale_y_continuous(label = function(y)
    strftime(chron(y, origin = c(month = 1, day = 1, year = 2016)),
              "%b %d"),
                    breaks=c(214, 228,245,259,275,289,306,320,335),
                    limits=c(214, 335))

# jpeg(file=paste0(Sys.Date(),"figure_III.jpeg"), height=15, width=15, units="cm", res=600)
plot_grid(yera, vira, yera_bna, vira_bna, ncol=2, align="v", rel_heights = c(3,1), rel_widths = c(1,1))

## Warning: Removed 4 rows containing non-finite values (stat_density).

```



```
# dev.off()
```

```
write.csv(all_together_now, file="./master_figure_III.csv", row.names = FALSE)
```