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ECO-634 Environmental Data Analysis – Lab
10/27/2021 – LATE
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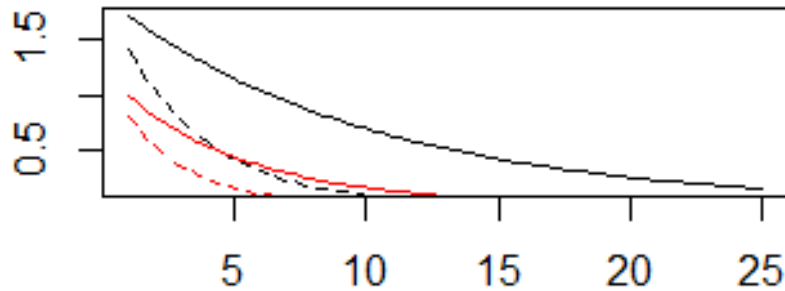
Lab 5: Uncertainty, Samples, and Populations

Q1:

Exp_fun = function (x, a, b)
{
return(a * exp (-b * x))
}

curve(
exp_fun(x, 0.3, (1.15)), add = FALSE, from = 0, to = 50,
ann = FALSE, axes = TRUE, ylab = "f(x)"); box()

Q2:

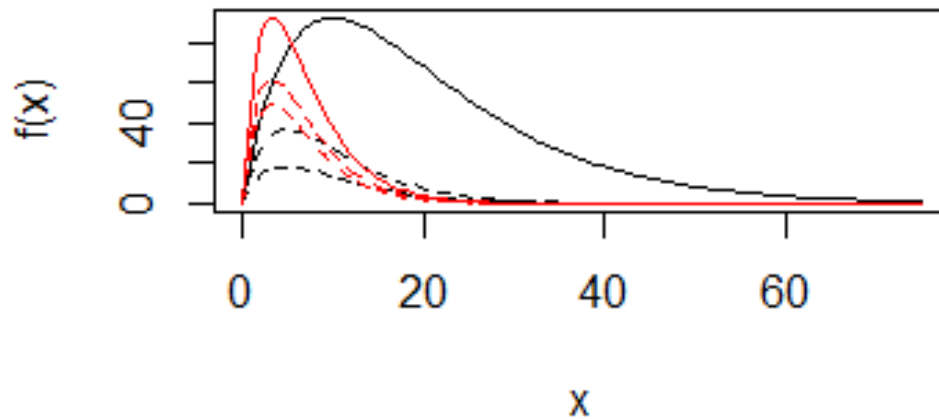
Q3: When you change parameter "a" the line begins at a different height on the y axis.
Q4: When you change parameter "b" it causes a drastic curve in the line along the x axis.
**Q5:**

Q6: By changing parameter "a" you change the slope of the line. The red lines have a much more dramatic curve where the black lines are rounder, and softer.
Q7: Changing parameter "b" changes how high the peak of the curve is on the graph.
Q8: To figure out the values for my line I used locator(1) and tried to pick a location that visually looked balanced within the data. This gave me and x value of 503.032, and a Y value of 0.3993503.
Q9:
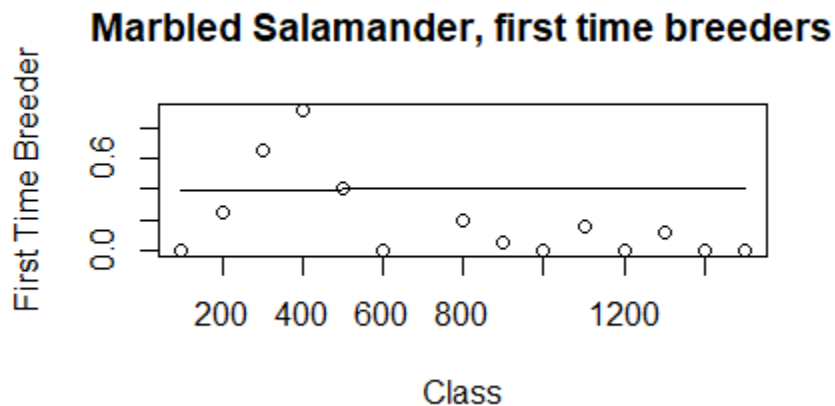
Q10: I used 0.97 for parameter "a" and 1/350 for parameter "b". I choice both of these values by changing them around and seeing visually what curve fit the data points best.
Q11:

Marbled Salamander, first time breeders

First Time Breeder

Class

Q12: I chose 0.0087 for parameter "a" and 1/225 for parameter "b". I used these values because they visually fit the data points best. My curve touches some data points but stays in the middle of them too.
Q13:

Marbled Salamander, first time breeders

First Time Breeder

Class

Q14:
Locator(15)
dat_dispersal$resids_ricker <- c(0.386, 0.386, 0.386, 0.386, 0.399,
            0.399, 0.399, 0.399, 0.412, 0.425,
            0.425, 0.412, 0.412, 0.412, 0.425)

dat_dispersal$resids_linear <- c(0.672, 0.646, 0.606, 0.550, 0.489, 0.454, 0.393, 0.332,
            0.241, 0.196, 0.150, 0.0850,
            0.0496, 0.00408, 0.00331)

```
dat_dispersal$resids_exp <- c(0.728, 0.531, 0.399, 0.307,
                0.241, 0.175, 0.135, 0.096,
                0.0961, 0.069, 0.056, 0.0301,
                0.0301, 0.0301, 0.043)

View(dat_dispersal)
resid_linear <- c(dat_dispersal$disp.rate.ftb - dat_dispersal$resids_linear)
resid_exp <- c(dat_dispersal$disp.rate.ftb - dat_dispersal$resids_exp)
resid_ricker <- c(dat_dispersal$disp.rate.ftb - dat_dispersal$resids_ricker)


disp_resids <- data.frame(dat_dispersal$resids_linear, dat_dispersal$resids_exp,
dat_dispersal$resids_ricker)

require(here)
png(
  filename = here("images", "lab_05_hist.png"))


par(mfrow = c(3, 1))
hist(resid_linear, main = "Histogram of Linear Resids", xlab = "", col = "darkorange1", xlim = c(-0.5, 0.5))
hist(resid_exp, main = "Histogram of Exponential Resids", xlab = "", col = "coral2", xlim = c(-0.5, 0.5))
hist(resid_ricker, main = "Histogram of Ricker Resids", xlab = "", col = "darkgoldenrod2", xlim = c(-0.7,
0.3))


dev.off()
```

Q15:

Histogram of Linear Resids

Histogram of Exponential Resids

Histogram of Ricker Resids