

Analysis of Environmental Data - Lab 5

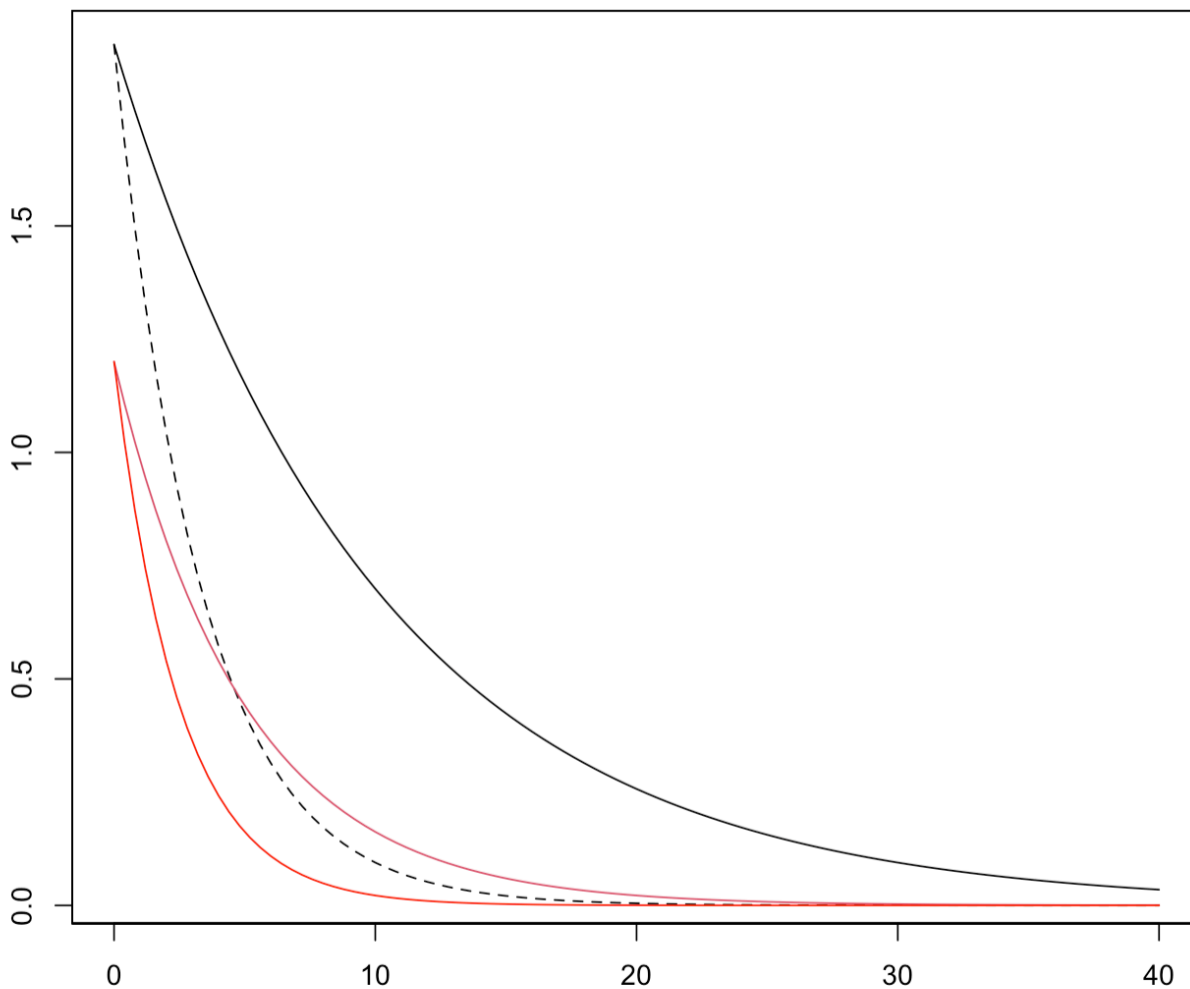
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Q1:

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

curve(
  exp_fun(x, 2.2, 1/15), add = FALSE, from = 0, to = 50,
  ann = FALSE, axes = TRUE, ylab = "f(x)"); box()
```

Q2:



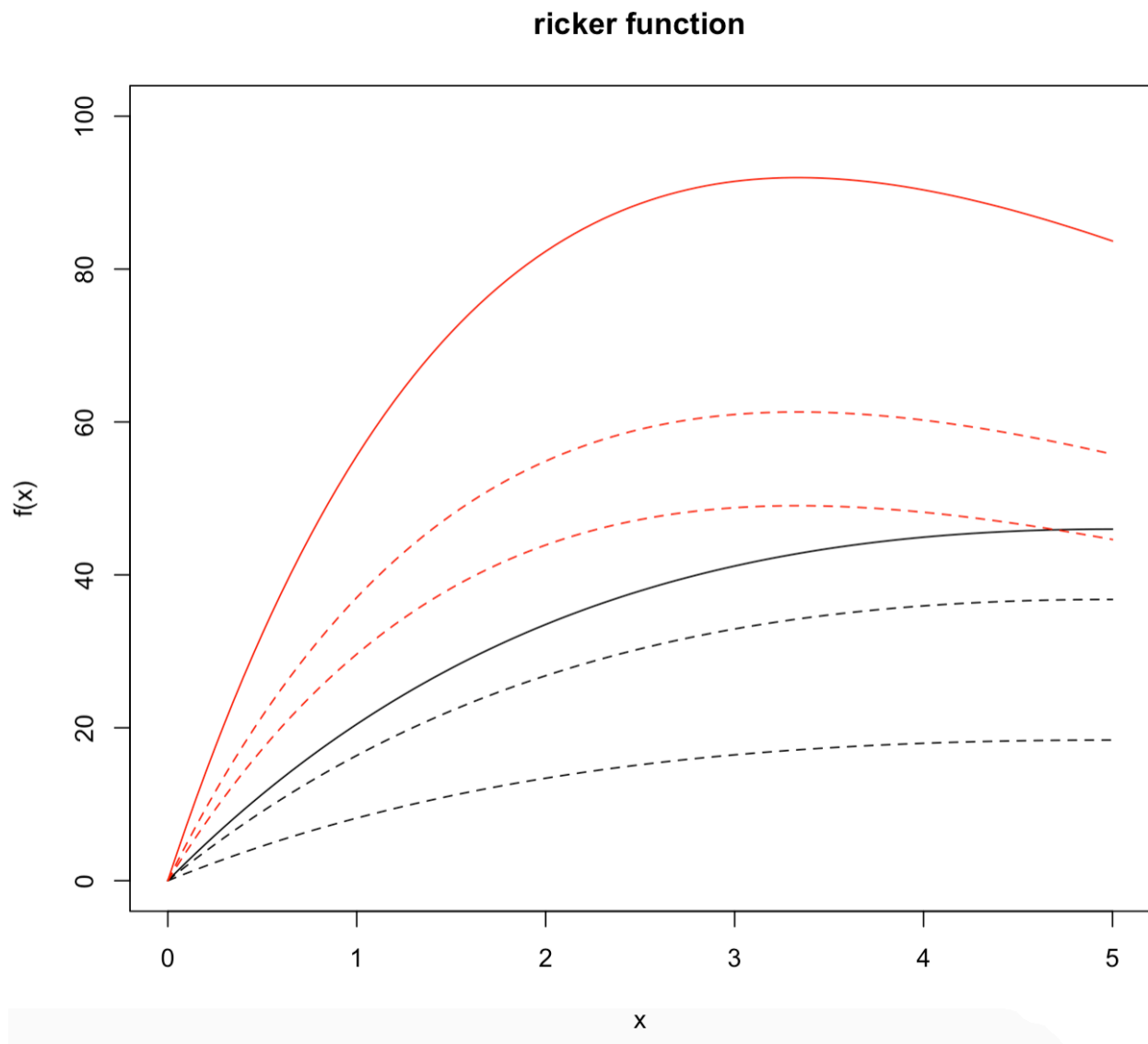
Q3:

a is the parameter that determines the starting height of the curve.

Q4:

The parameter b determines the rate of decay.

Q5:



Q6:

The a parameter is the initial slope.

Q7:

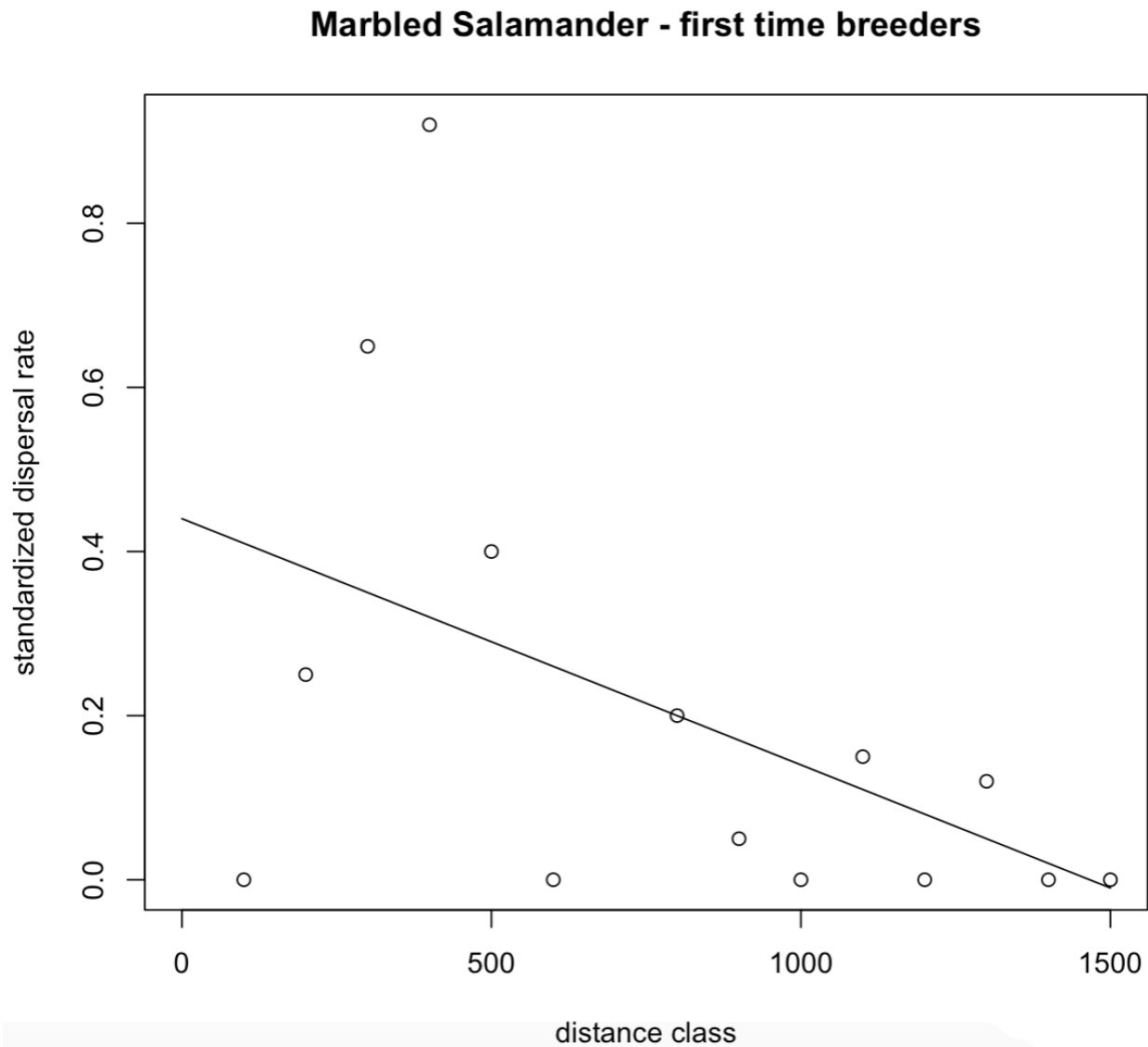
The parameter b determines the height of a graph .
The highest point of the curve occurs at an x value of $1/b$.

Q8:

`curve(line_point_slope(x, 800, 0.2, -0.0003), add = TRUE)`

I chose the x value by taking a value in the middle of the x axis, and the y axis because it fitted the data well.

Q9:



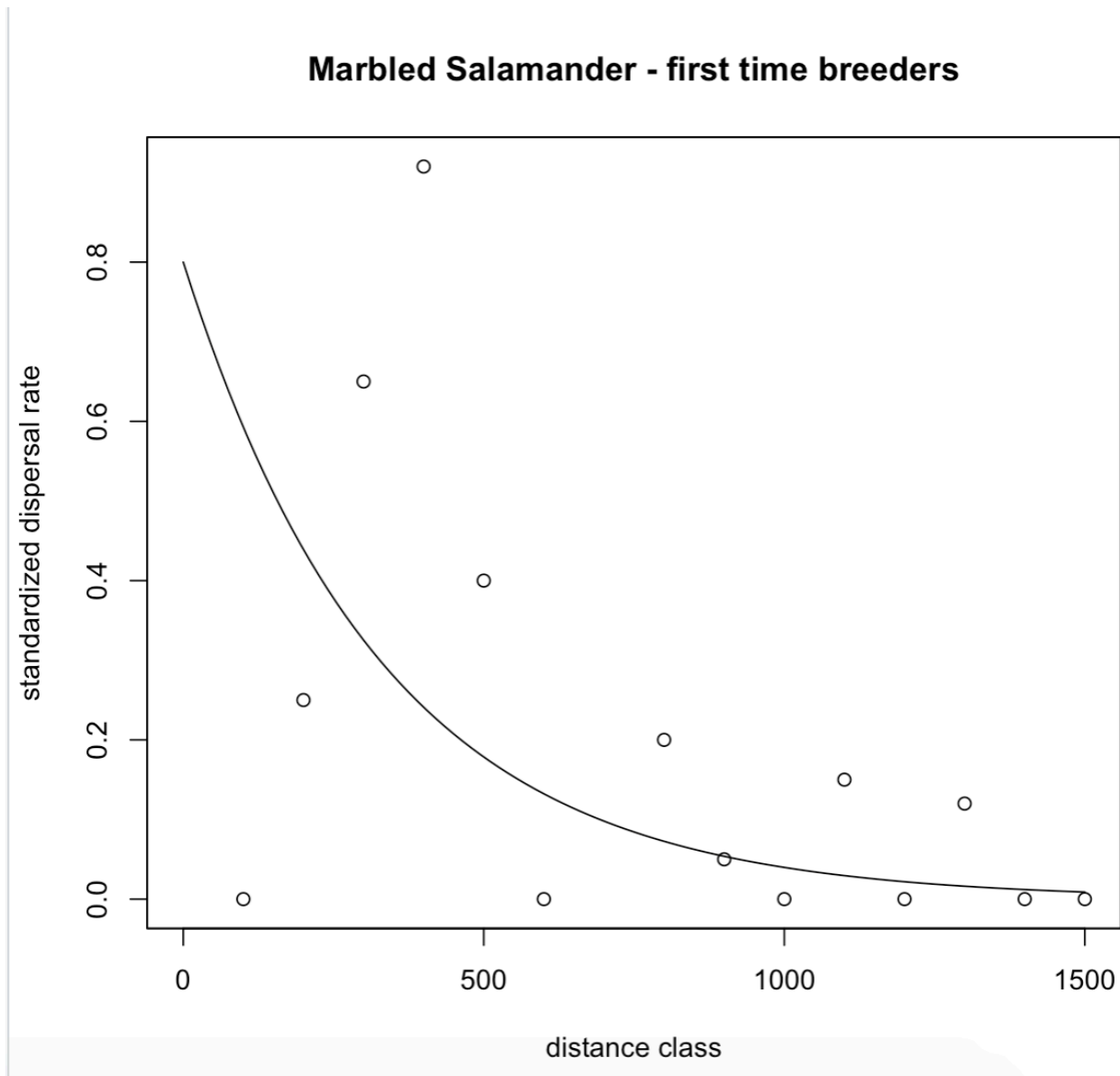
Q10:

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

curve(
  exp_fun(x, 0.8, 0.003), add = TRUE, from = 0, to = 1500,
  ann = FALSE, axes = TRUE, ylab = "f(x)"); box()
```

I chose these values because I tested many different ones and they resulted in the best fit.

Q11:



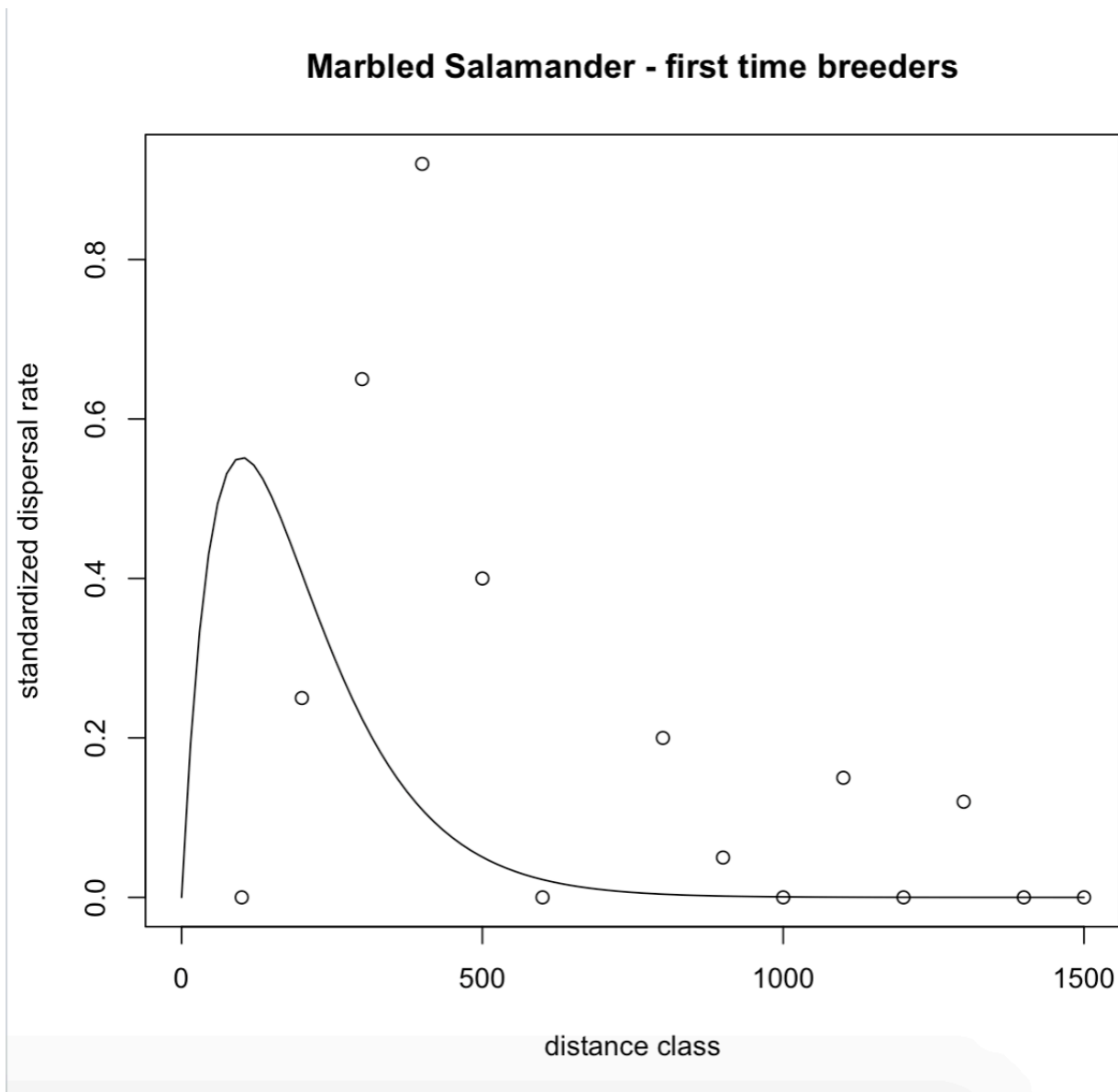
Q12:

I chose those parameters based on guesses. 0.015 and 0.01 resulted in the best fit.

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

```
#create curve
curve(
  ricker_fun(x, 0.015, 0.01),
  from = 0, to = 1500, add = TRUE,
  main = "Ricker function: a = 1, b = 1",
  ylab = "f(x)", xlab = "x")
```

Q13:



Q14:

```
dat_dispersal$residlinear <- dat_dispersal$disp.rate.ftb - predicted
```

```
dat_dispersal$residsexpo <- dat_dispersal$disp.rate.ftb - predicted2
```

```
dat_dispersal$residsricker <- dat_dispersal$disp.rate.ftb - predicted3
```

Q15:

