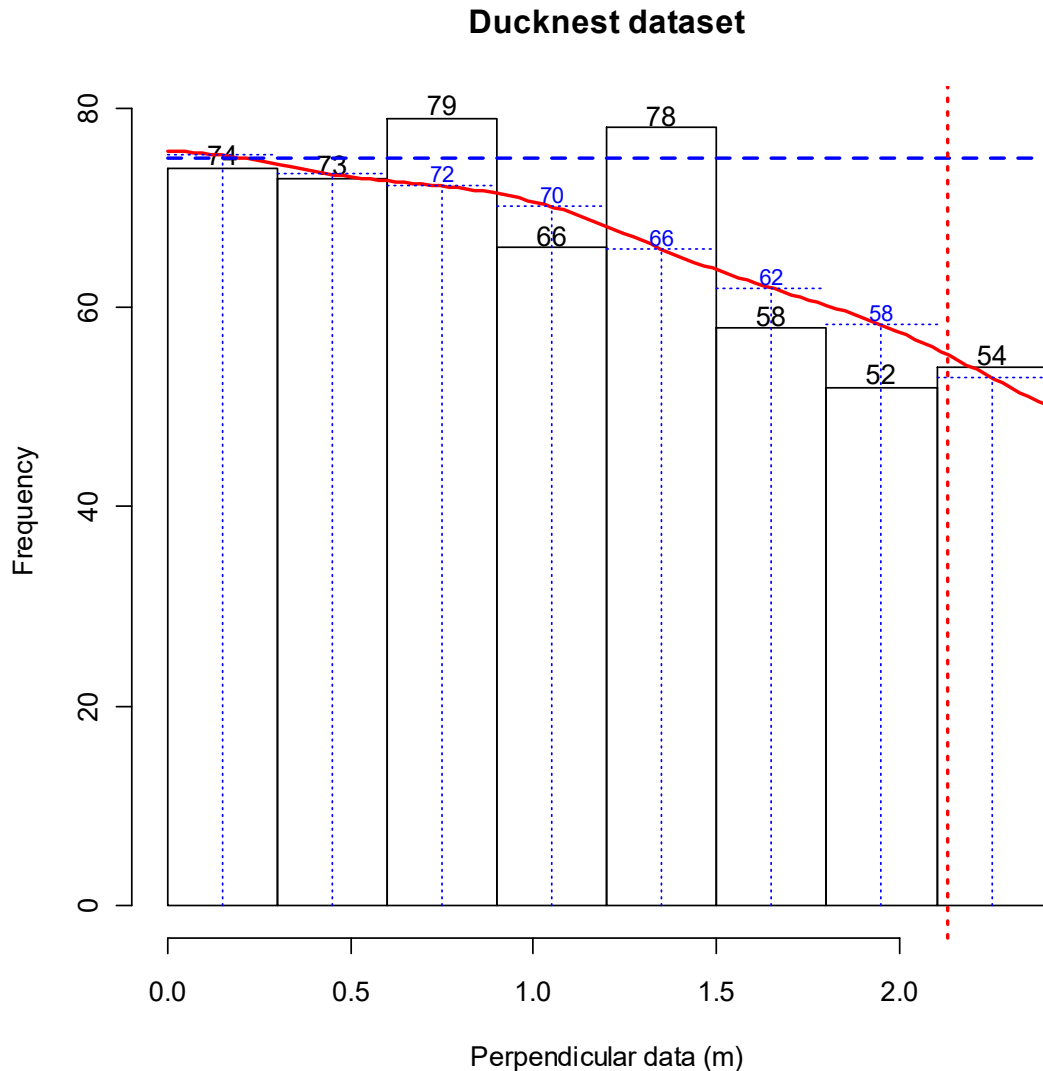


# Introduction to Distance Sampling

## Line transect Solutions



1)  $P_a$  = area under curve / area of rectangle.

To estimate the area under the curve, I read off the heights of the mid points (in blue) of my fitted curve (red) as follows: 75, 74, 72, 70, 66, 62, 58, 53. So my estimate of area is  $(75+74+72+70+66+62+58+53) \times 0.3 = 530 \times 0.3 = 159$ . There are lots of other ways to work out the area under a curve – e.g., counting the number of grid squares under the curve on your graph paper or using the trapezoidal rule.

Area of rectangle is height  $\times$  width =  $75 \times 2.4 = 180$ .

So, my estimate of  $P_a$  is  $159/180 = 0.883$ .

How many nests were in the surveyed area? I saw 534 nests, and I estimate the proportion seen is 0.883, so that means I estimate there were  $534/0.883=604.7$  nests in the surveyed area. This estimate is for a surveyed area of  $2wL = 2 \times (2.4/1000) \times 2575 = 12.36 \text{ km}^2$ . I therefore estimate nest density as  $604.7/12.36 = 48.9$  nests per  $\text{km}^2$ .