

Introduction to Distance Sampling

Line transect estimation by hand

1) Plot a histogram of the following duck nest data, and fit a detection function by eye. From your histogram, estimate the proportion of nests within 2.4m of the line that are seen, P_a . Hence estimate nest density D (number of nests per square meter or per square kilometer – be careful of units!).

$n=534$ nests. $L=2575$ km.

Perpendicular distance band (meters)	0.0-0.3	0.3-0.6	0.6-0.9	0.9-1.2	1.2-1.5	1.5-1.8	1.8-2.1	2.1-2.4
Frequency	74	73	79	66	78	58	52	54

Having produced your fit to the histogram, to assist in producing your estimate of nest density, fill in these blanks.

Area of rectangle =

Area under your fitted detection function =

$$P_a = \frac{\text{area}_{\text{curve}}}{\text{area}_{\text{rectangle}}} =$$

$$\hat{N}_a = \frac{n}{P_a} =$$

$$\hat{D} = \frac{\hat{N}_a}{a} = \frac{\hat{N}_a}{2wL} =$$