

## Introduction to Distance Sampling

### Line transect estimation by hand

**1)** In the previous exercise, you used the data in the table below to create a histogram and fitted a detection function by eye. You also estimated the proportion of nests within 2.4m of the line that are seen,  $P_a$ , and an estimate of nest density  $D$  (number of nests per square meter or per square kilometer).

$n=534$  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

**2)** Now use your histogram created in the previous exercise to estimate the effective half-width of search  $\mu$ . Again estimate nest density  $D$ . How does it compare to your estimate from the previous exercise?

**3)** Rescale the y-axis to make your curve into the probability density function  $f(x)$ . Read off  $f(0)$ , and again estimate nest density  $D$ . How does it compare with your previous estimates?