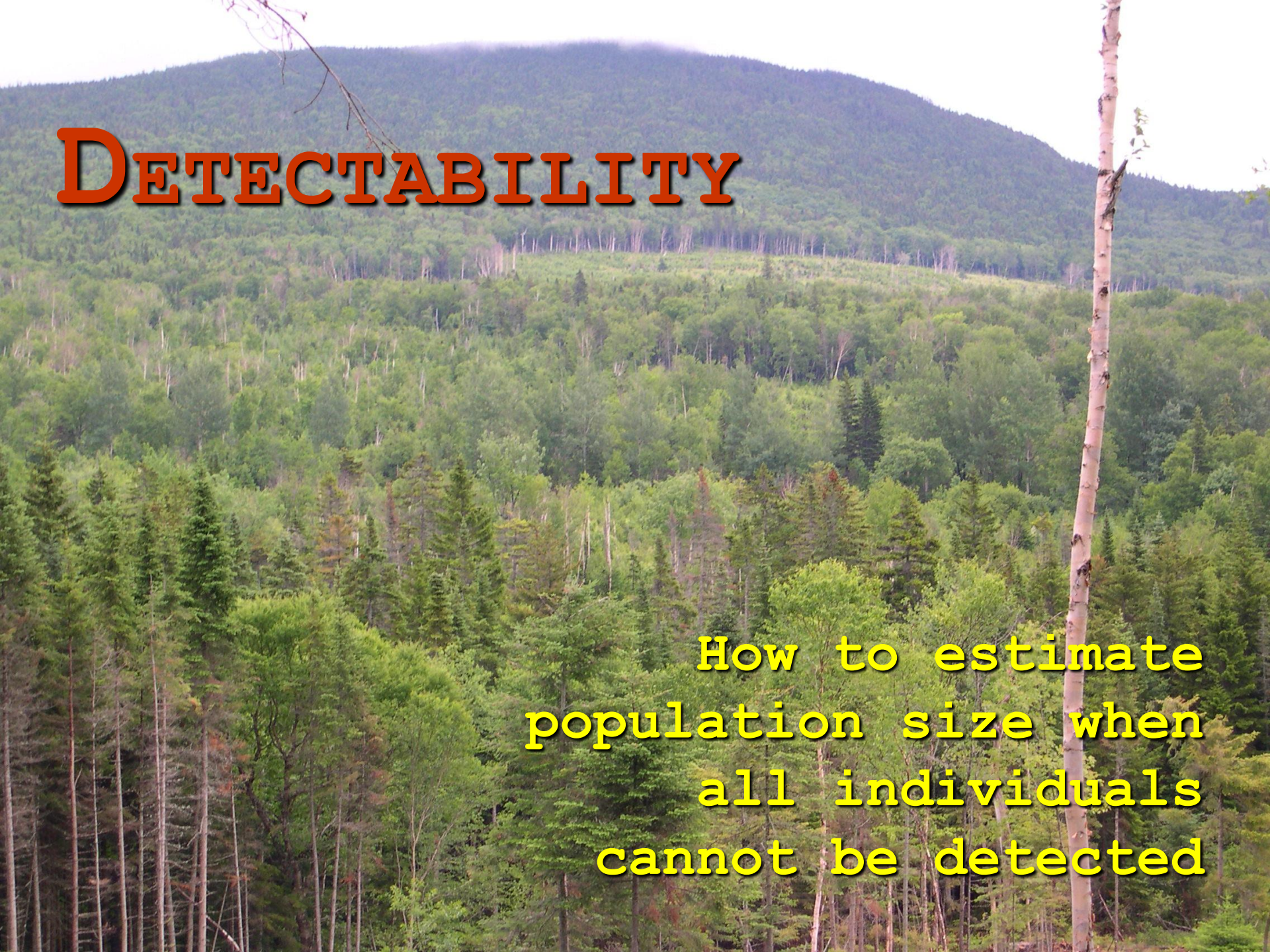
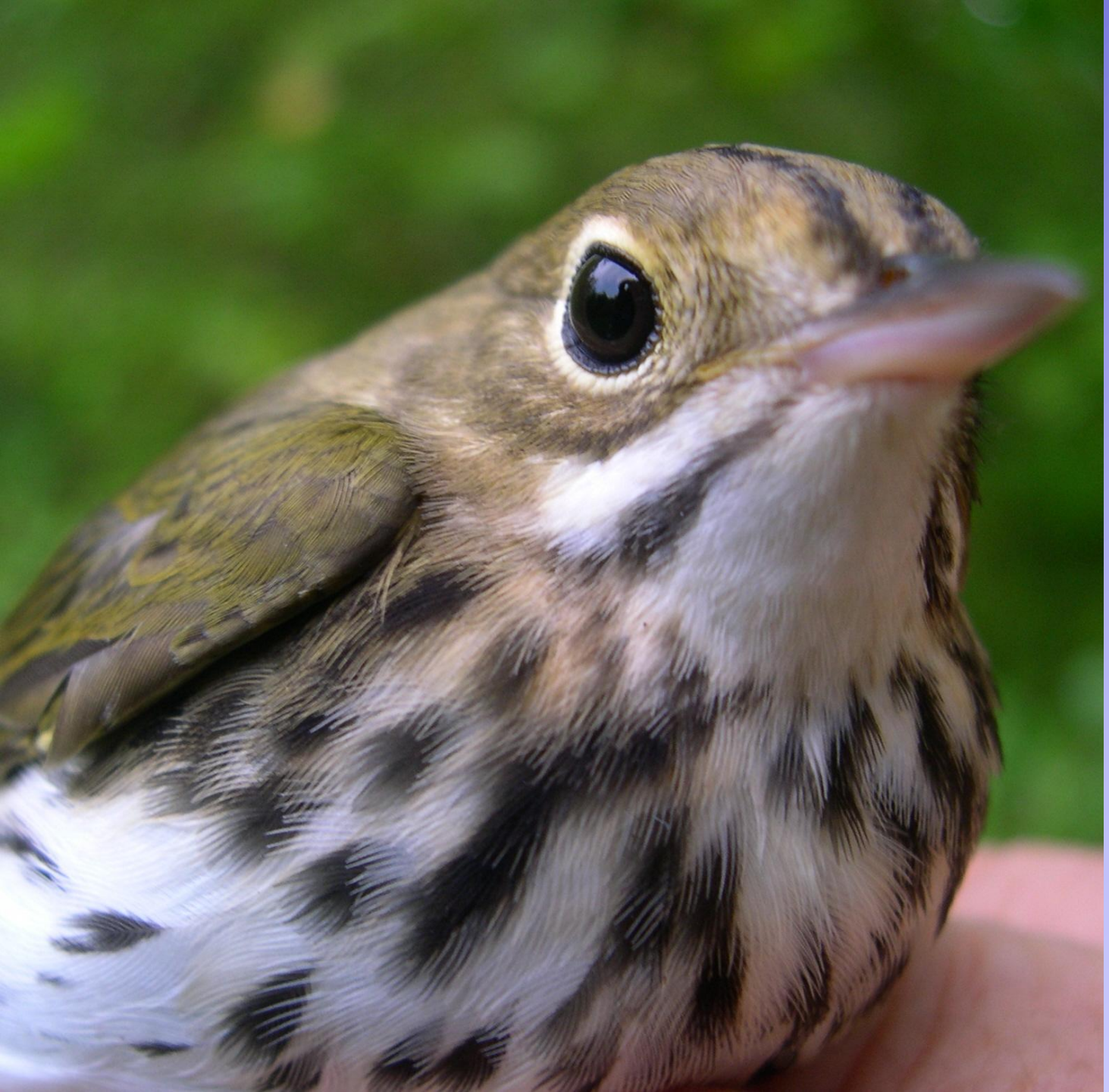

Detectability
How to estimate
population size when
all individuals
cannot be detected

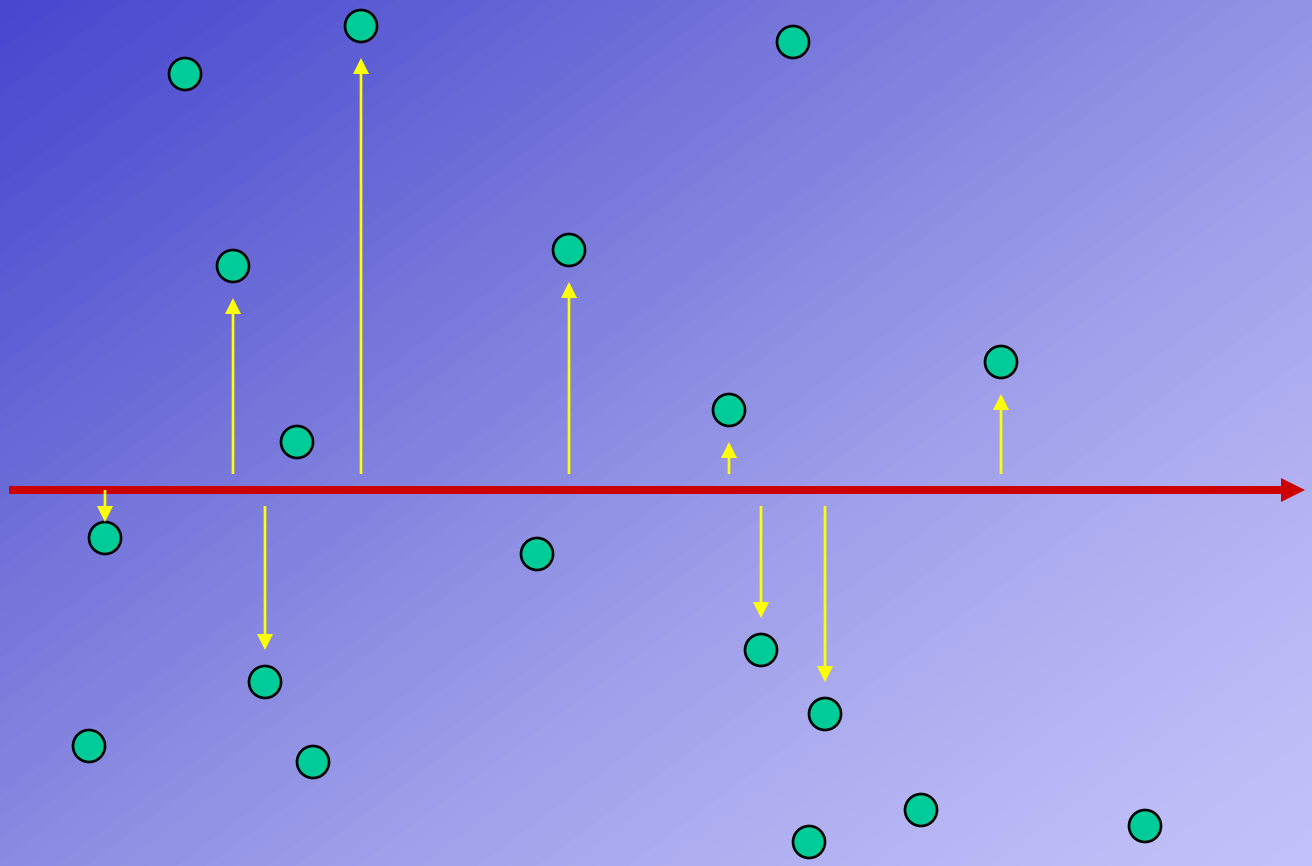


Secretive

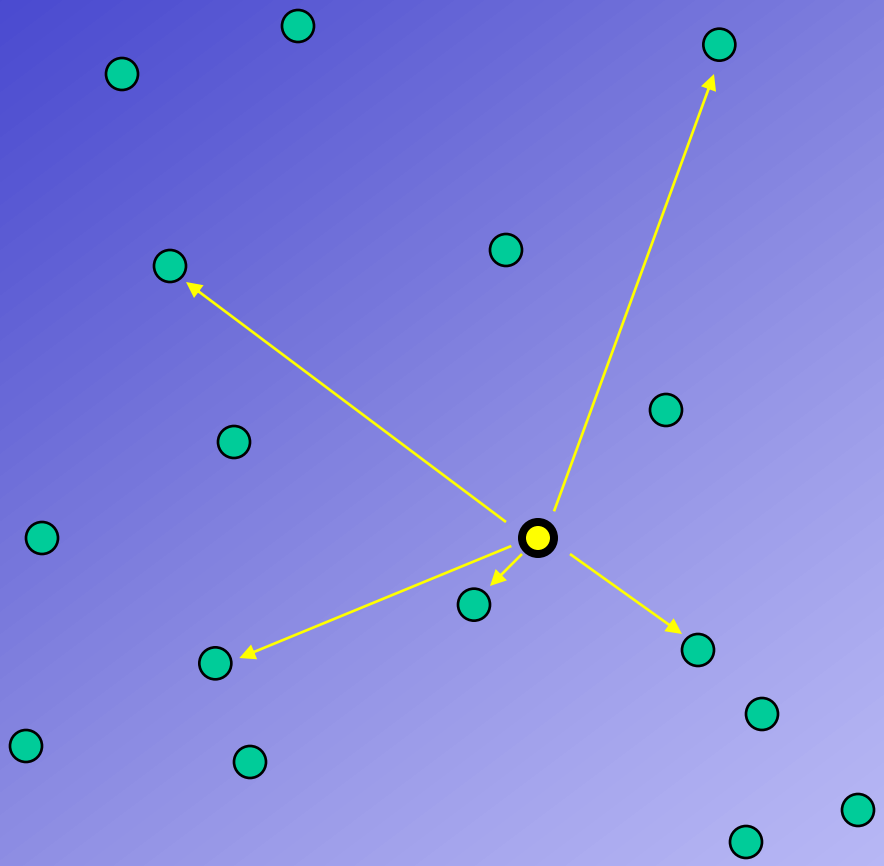
Non-Vocal

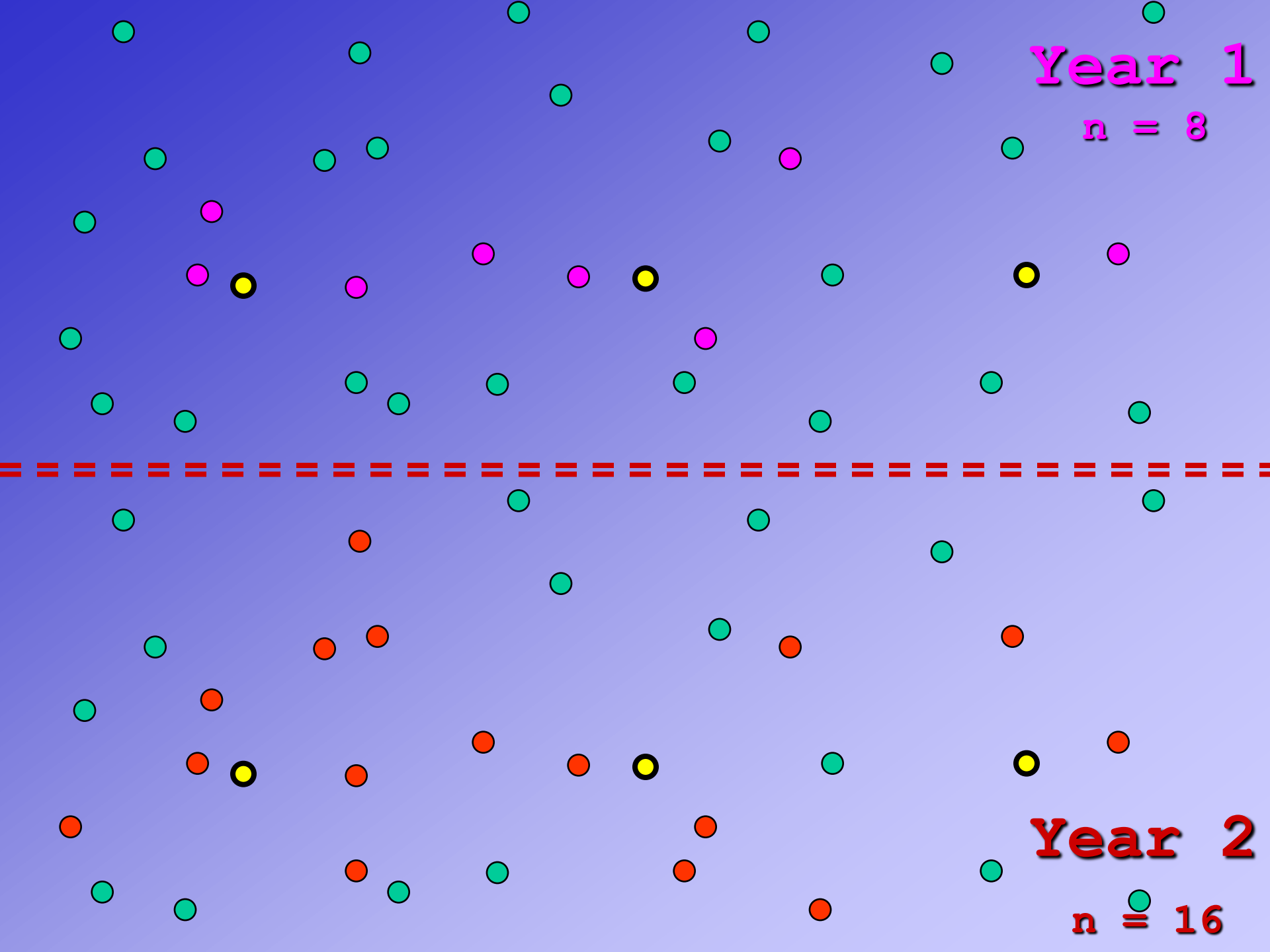
Cryptic

Transects



Point Count

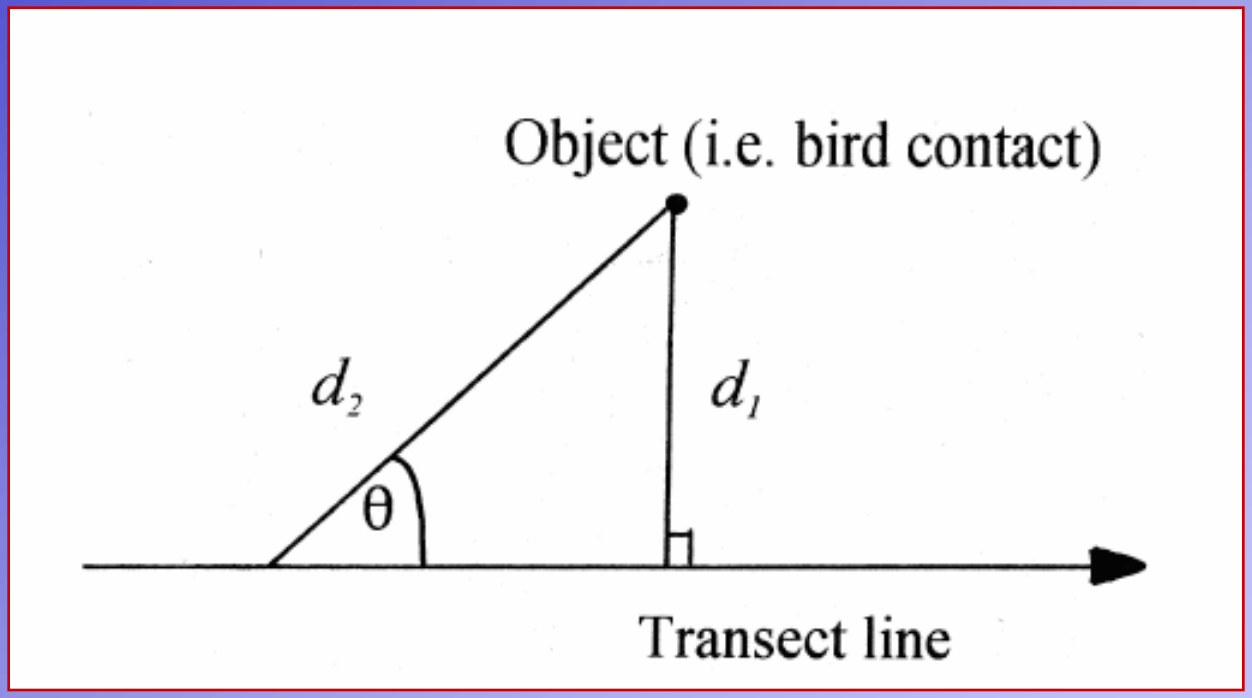



Year 1
n = 8
Year 2
n = 16

Three broad sets of techniques to help estimate density

- **Double Sampling**
  Adjust incomplete counts with complete counts
- **Double Observers**
  Adjust observer-specific biases through multiple observers
- **Distance Sampling**
  Calculation of detectability functions

Distance Sampling



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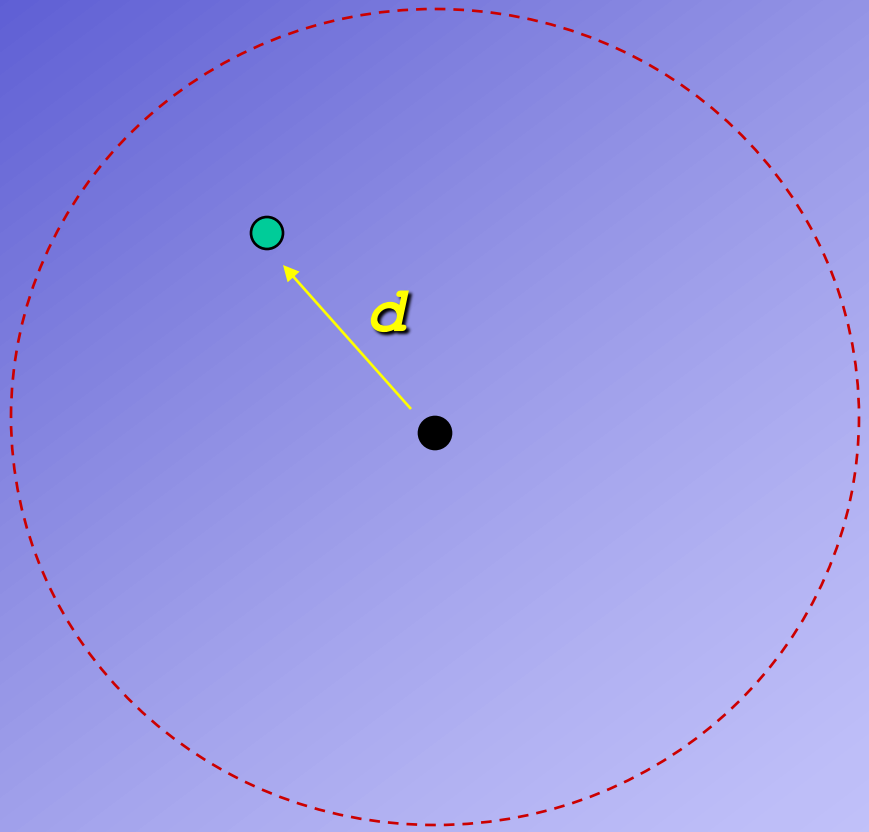
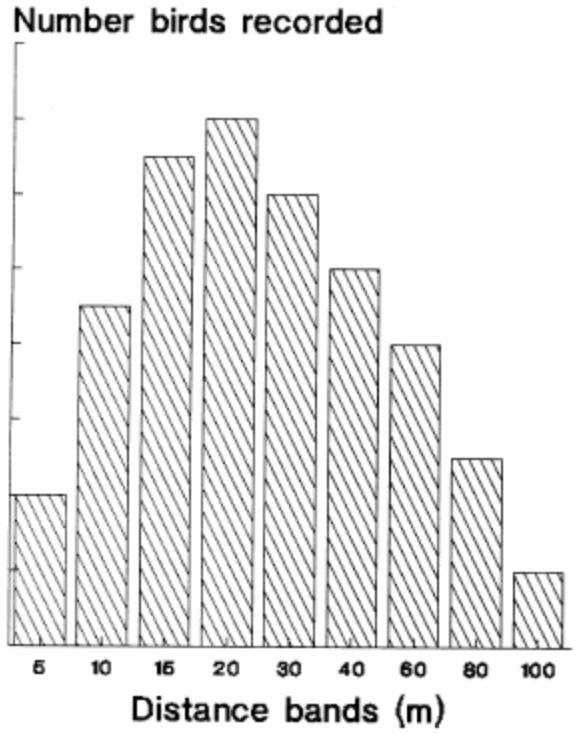
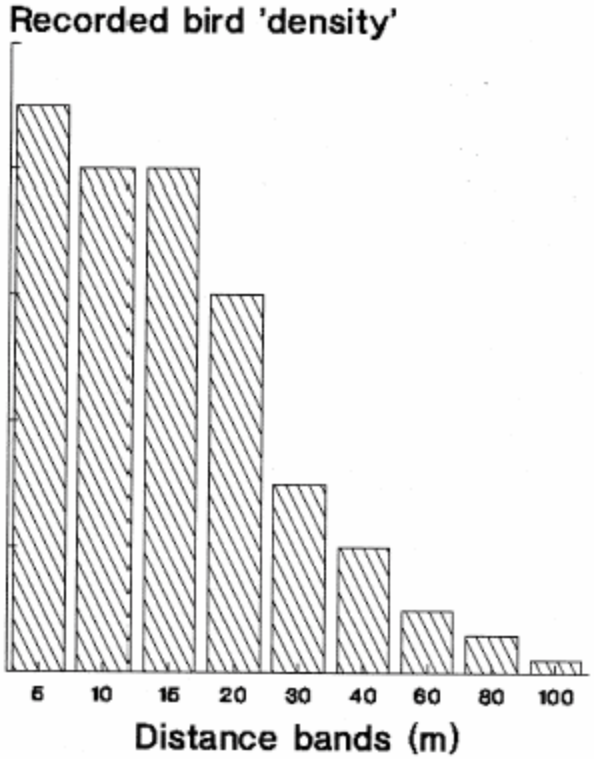
Distance Sampling



Distance Sampling



c) Point count – birds recorded



d) Point count – detection curve

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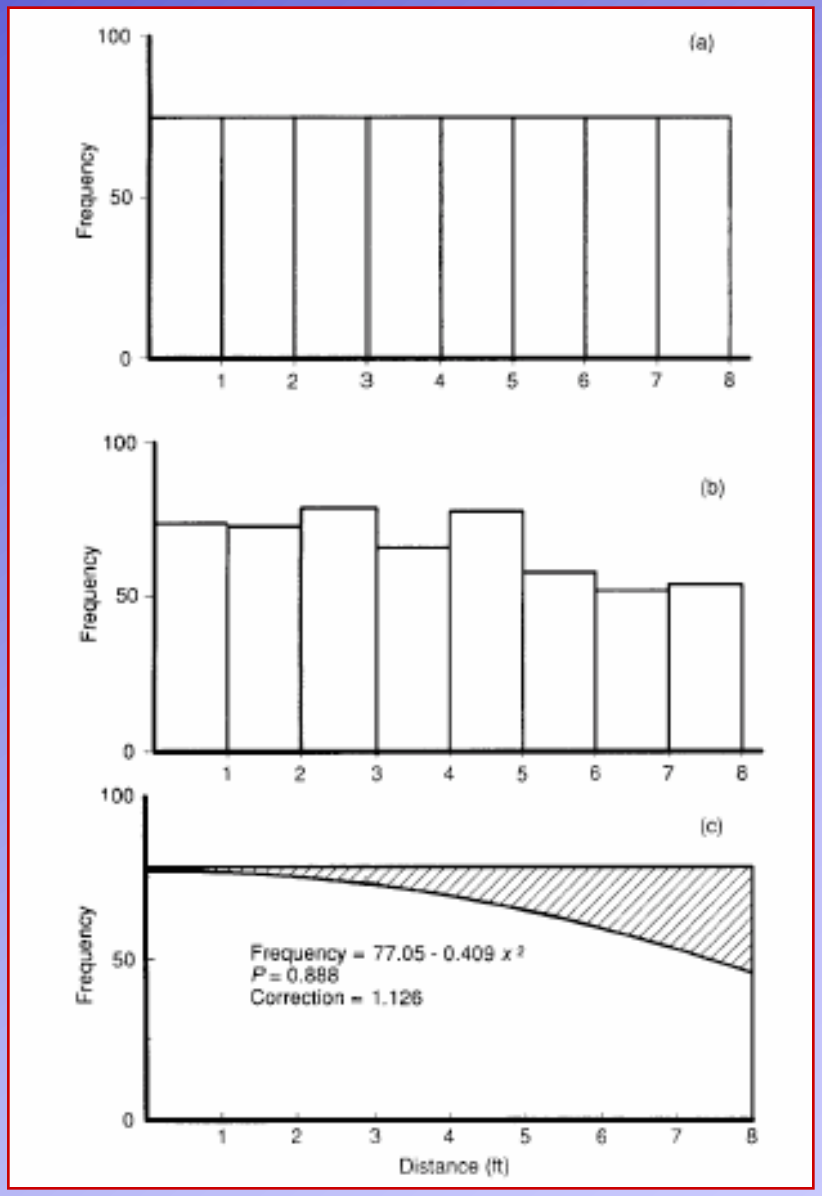
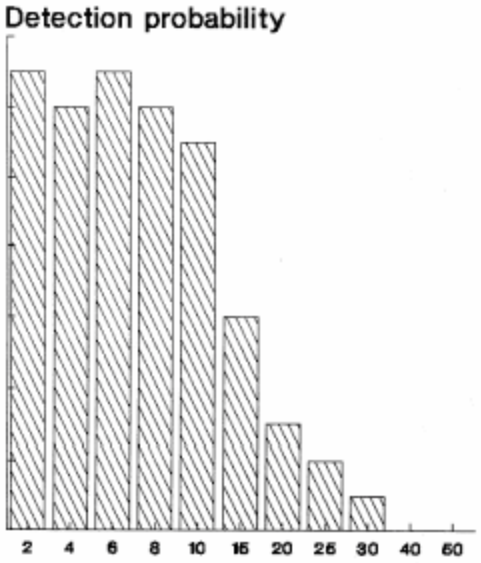
Distance Sampling



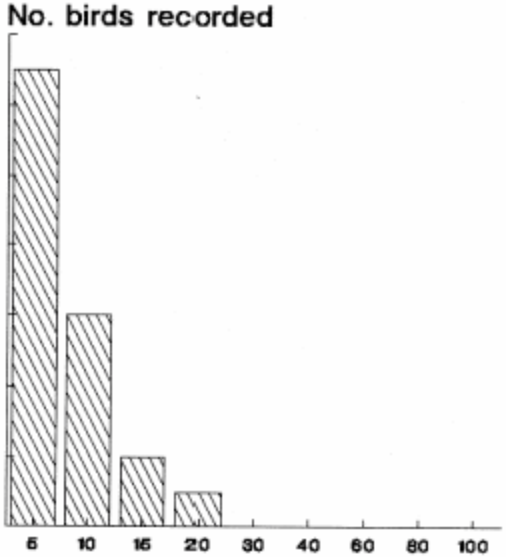
Buckland et al. 1993

Distance Sampling

Figure 14. Bird detection curves – some problems.



a) Good detection curve with broad shoulder and steep tail



b) Skulking bird often recorded on paths

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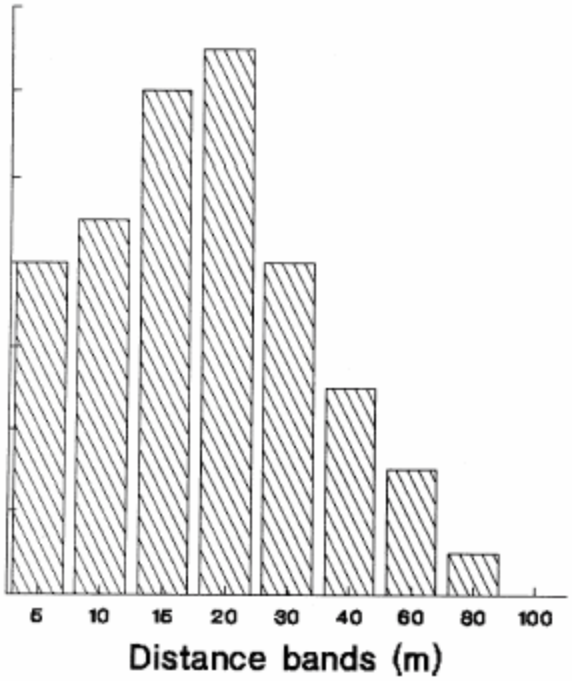
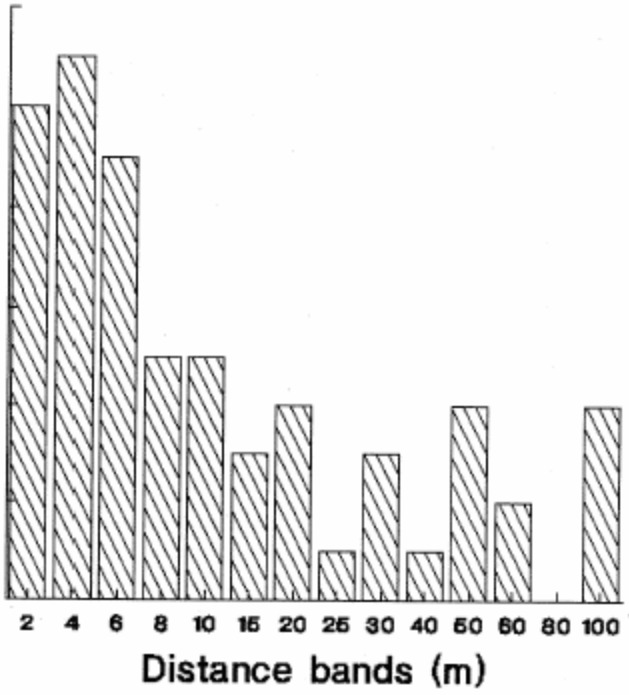
Distance Sampling



c) Birds move in response to recorder presence



d) Outliers. There may also be a problem with heaping (at 50 and 100m)

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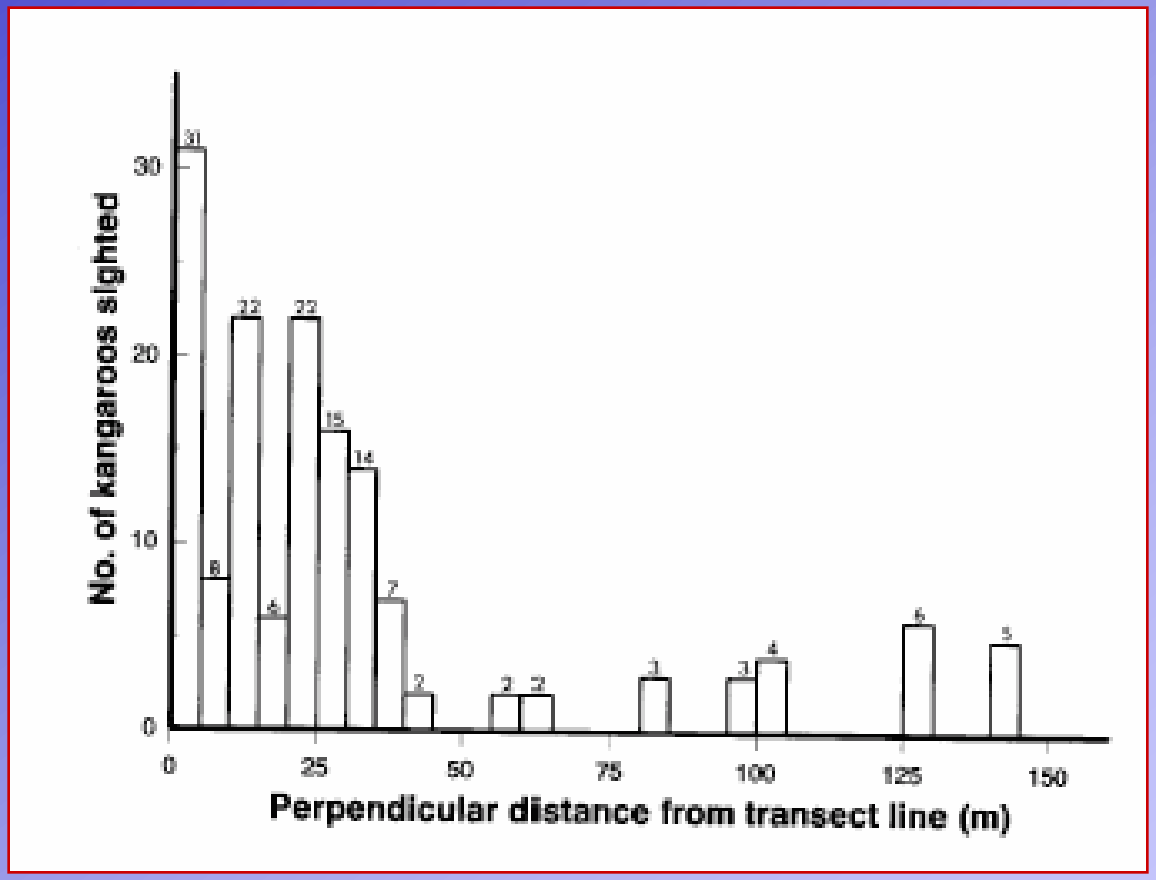
Distance Sampling



Buckland et al. 1993

Distance Sampling

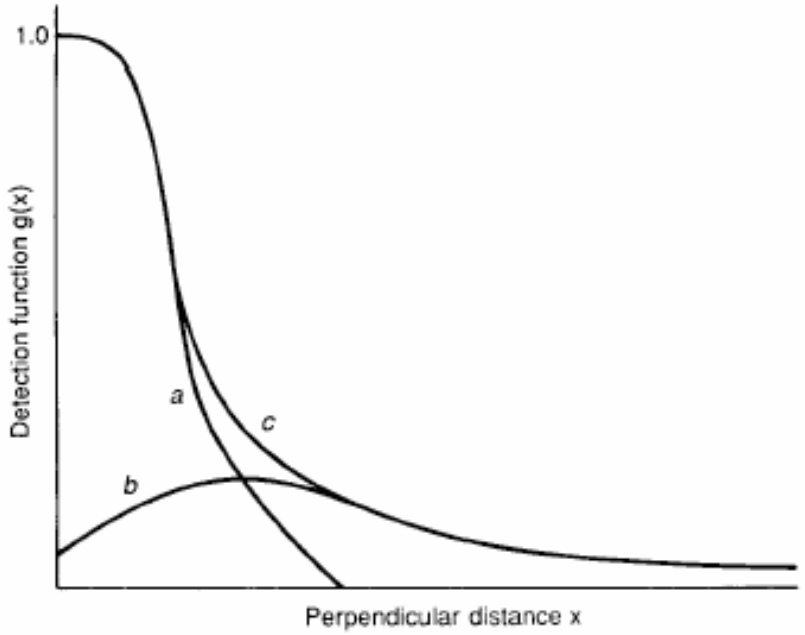
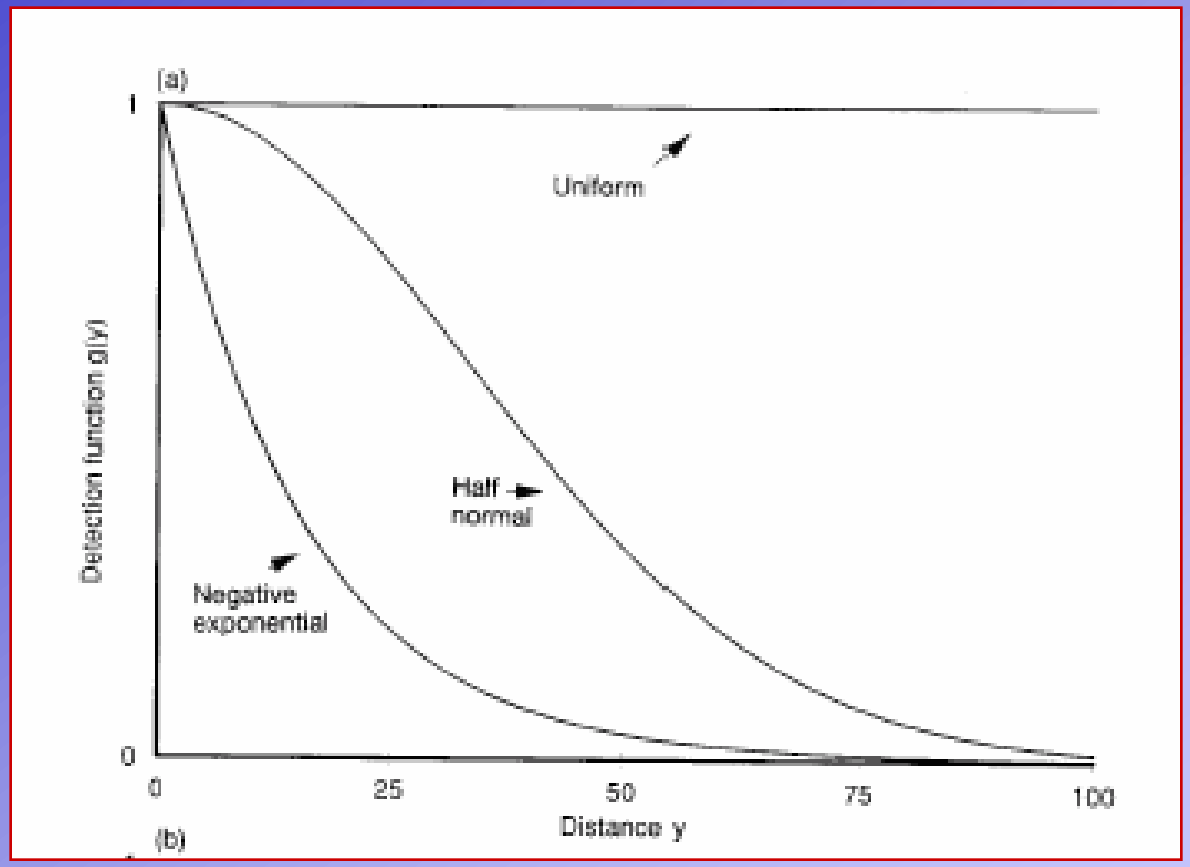


Fig. 6.5. The detection function *c*, which is the same as in Fig. 6.4, can arise from a mixture of curves *a* and *b* corresponding perhaps to two observers, one (*a*) 'guarding' the transect line and the other (*b*) scanning laterally; such minimal overlap of effort is undesirable.

Buckland et al. 1993

Distance Sampling



Buckland et al. 1993