ST 506 Sampling Animal Populations

Instructor: Kenneth H. Pollock

Homework Set 4

Due Tuesday September 23, 2008

Brief Short Answer Questions

Q1. If a line transect survey is carried out on each of the following species, with the mode of travel stated, which assumption (if any) is most likely to be violated?

(a) Deer in scrub habitat (walking)

(b) Deer in scrub habitat (aerial)

(c) Blue Whales (aerial)

(d) Sagauro cacti (walking)

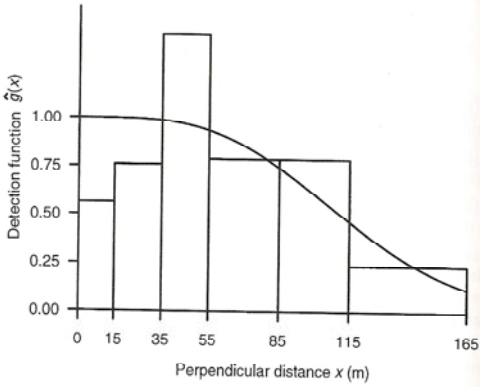
(e) Monkeys in rain forest (walking)

(f) Bottom fish (scuba diving)

Q2. In a point count survey of birds one researcher decides to use exact distance data out to 125 m whereas another decides to use 3 distance classes 0-25, 25-75, and 75-125. Very briefly can you think of advantages and disadvantages of each approach? Also if the assumptions of distance sampling were valid in both cases which estimate of density would have the smallest SE?

Q3. A night spotlight survey for red foxes used line transect distance sampling. Based on examination of the attached out put from distance what evidence is there that an assumption has been violated. Also what are the possible reasons for this violation (I can think of two possible answers here). I have attached the output next.

```
**************************************
*  Probability Function Estimation   *
*   Detection Probability Plot       *
**************************************
```




```
**************************************
*  Probability Function Estimation   *
* Chi-Square Goodness of Fit Test    *
**************************************
```

Cell i	Cut Points		Observed Values	Expected Values	Chi-square Values
1	0.00	15.0	10.0	17.77	3.395
2	15.0	35.0	18.0	23.59	1.325
3	35.0	55.0	34.0	22.90	5.377
4	55.0	85.0	28.0	30.27	0.170
5	85.0	115.	28.0	21.58	1.912
6	115.	165.	14.0	15.89	0.226

Total Chi-square value = 12.4041 Degrees of Freedom = 3

Probability of a greater chi-square value, P = 0.00612