ST 506 Homework Set 11
Due December 2, 2008.

Q1. The robust design was originally developed to allow for heterogeneity and trap response of capture probabilities in long-term capture-recapture studies where closure could not be assumed for the whole study. More recently temporary emigration modeling has come to the fore as a critical reason why the robust design is important. I would like you to briefly consider Section 19.4.1 p.538-543 and answer the following questions.

i) Give the two models for temporary emigration discussed and state their crucial differences.

ii) Consider the white-footed mouse example presented in the text and briefly list the key findings and any thoughts you had on the analyses.

Q2. I would like you to analyze the insect species abundance data from Mehninick(1964) that was anayzed by Burnham and Overton (1979) in their original paper. There were 124 total species detected and the number of species with 1 to 5 individuals detected in order were 50, 20, 11, 6 and 5. (There were also species that had more than 5 individulas detected). Give an estimate for species richness and its SE. Use appropriate software from Patuxent website.

Q3. Three observers went out and assessed the bird community on an island. In 1990 the first observer detected 51 total species, the second 55, and the third 48 with 36 seen by 1 observer, 36 seen by two observers, and 12 seen by all three observers. In 2005 they went back again and the first observer detected 60 total species, the second 64, and the third 59 with 18 seen by 1 observer, 45 seen by two observers, and 22 seen by all three observers.

a) Give an estimate for the species richness and its SE for each year. Use appropriate software from Patuxent website.

b) Give an estimate for the change in species richness over the 15 year period. (No SE needed).

Q4. Optional. Run the robust design option in MARK using one of the test data sets in MARK.