IB 153L
Fall 2003

Lab 5: Interspecific Associations

<u>Background</u>: The goal of this lab is to use presence-absence data from quadrat sampling to determine patterns of spatial association among several species of herbaceous plants.

Study area: We will be sampling an assemblage of weedy grasses and herbaceous plants growing in a large lawn in Tilden Park. At the start of the lab, the entire class will search the area for distinct species of herbaceous plants (grasses will not be considered in this study), collecting sample leaves from each. These leaves will form a voucher reference collection that will insure that identifications are consistent among sampling groups. Each sampling group will carry a set of named or numbered voucher specimens with them as they collect the data.

<u>Field sampling</u>

Working in three groups of two or three people, you will sample a series of 1 m x 1 m quadrats recording the presence or absence of the target herbaceous species in each quadrat.

Measure the length of the field to determine the length of the sampling transects. Each group should use a random numbers table to generate 30 points along a transect of this length. Use the transect tape to mark the transect, and sample at each random point, alternating sides of the transect tape. At each sample point, lay down the quadrat and record the presence or absence of each species.

<u>Data Analysis</u>

Enter your data so that you have a matrix of presence and absence data for each species in each quadrat. Combine your data with those of the other groups so that you have all 90 data points. Working collaboratively in your groups, perform the following analyses on the data.

Two-Species test of Association
For the two most abundant species in the data, perform a pairwise comparison to test for association. You will use a Chi-Squared test for Independence using a 2 x 2 species association table to test the null hypothesis that these two species are independent. Make sure that the cell counts for your data fit the assumptions of this test. If the counts are too low, apply Yates continuity correction.

Schluter's Multi-species Test: net positive or negative association in the community
Using all of the data, calculate the variances in number of samples per species and in species richness among quadrats. Use these variances to test the null hypothesis that there is no net association in this community.

Report Due Date: November 5