ment of the intersection) divided by the total number of species in both lists (the union). This measure, called the Marczewski-Steinhaus distance in the literature of statistical ecology (Orlóci 1978; Pielou 1984), equals 1 – Jaccard's index. Questions in ecology and conservation biology often stress differences rather than similarities. Are two communities different? Is community *a* more different from *b* than it is from *c?* There is greater conservation value in two very different communities than two very similar ones. Because of this tendency to stress differences, Colwell and Coddington (1994) have argued that dissimilarity indexes are to be preferred over similarity indexes for reporting comparisons of communities. They propose *complementarity* as a replacement name for the Marczewski-Steinhaus distance. Complementarity thus becomes a positive measure of the dissimilarity between two species lists, and it varies from 0 to 1.

Sample complementarity (or other measures of dissimilarity or similarity) can be visually examined for gross patterns of association among samples. A matrix of complementarity values for a sample set may reveal patterns, such that within-habitat complementarities tend to be lower than between-habitat complementarities. For example, when complementarities for all pairs of Berlese samples are calculated, there is no apparent difference between within-habitat and between-habitat values (Table 13.4). Roth et al. (1994) used such a matrix approach (with a similarity index) to conclude that samples were more similar within land management categories than between them. Nonindependence of complementarity values in a matrix such as Table 13.4 (individual samples contribute to multiple complementarity values) makes statistical comparison of values in different blocks problematic.

When samples occur along a spatial or temporal gradient (rather than in habitat blocks, as in the earlier examples), complementarities can be plotted as a function of the distance between the sample pairs (for an example, see Belshaw and Bolton 1994a, using Morisita's index). Again statistical analysis of the resultant plot is

Table 13.4 Complementarity of Paired Berlese Samples[a]

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	0.75														
3	0.83	0.80													
4	0.89	0.83	0.67												
5	0.83	0.83	0.84	0.77											
6	0.79	0.68	0.62	0.74	0.85										
7	0.70	0.72	0.69	0.82	0.78	0.76									
8	0.87	0.92	0.77	0.84	0.85	0.83	0.82								
9	0.78	0.79	0.82	0.80	0.87	0.77	0.76	0.87							
10	0.78	0.85	0.80	0.80	0.91	0.73	0.78	0.83	0.84						
11	0.89	0.79	0.80	0.82	0.90	0.71	0.80	0.82	0.74	0.84					
12	0.80	0.83	0.85	0.78	0.85	0.75	0.79	0.91	0.75	0.87	0.77				
13	0.85	0.82	0.86	0.86	0.94	0.79	0.71	0.91	0.70	0.89	0.76	0.70			
14	0.89	0.89	0.68	0.71	0.91	0.72	0.76	0.81	0.82	0.84	0.74	0.82	0.81		
15	0.81	0.90	0.79	0.79	0.90	0.78	0.83	0.73	0.85	0.81	0.78	0.79	0.85	0.79	
16	0.79	0.76	0.87	0.81	0.84	0.71	0.82	0.91	0.82	0.89	0.79	0.71	0.79	0.78	0.70

[a]Mean complementarity: within-forest type, 0.79 (standard deviation 0.06); between-forest type, 0.82 (standard deviation 0.06).