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Urmi Ghosh-Dastidar* (ughosh-dastidar@citytech.cuny.edu), **Margaret Cozzens,**
Steven Lora and **Alma Cabral-Reynoso.** *A Study of Hudson Food Web and its Competition*
Graph. Preliminary report.

Food web analysis provides important information regarding the nature of competition among species. In this paper we use a graph theory approach to develop digraphs, competition graphs and weighted competition graphs to analyze relationships of competition among various Hudson River species. Investigation of this food web based on species richness, connectance, and links per species showed strong negative correlation between the change in normalized connectance and number of links lost. Loss of poorly connected species (i.e. species that have relatively fewer links to the other species in the food web) results in positive change in connectance. The loss of highly connected species results in a negative change in the normalized connectance. Furthermore an analysis of Laplacian eigenvalues showed $\text{connectivity}_{\text{marsh}} > \text{connectivity}_{\text{freshwater shallows}} > \text{connectivity}_{\text{brackish}} > \text{connectivity}_{\text{freshwater channel}}$. Partitions are also obtained based on spectral clustering to separate each competition graph in two separate groups such that the edges between these two groups have very low weights and the edges within the same group have high weights. (Received September 22, 2011)