# Answers to Exercise 35
Neutral Landscape Theory and Connectivity

1. Because the landscape consists of two cover types, one cover type increases in total edge and number while the other decrease as the proportions of habitat in the landscape change. Thus, when the proportion of forest habitat is low, the proportion of non-forest habitat is high. At intermediate proportions where both habitats are approximately equal across the landscape, the total edge and total number of patches peaks for both types. As the landscape is altered to low proportions of a single habitat type, the edge is decreased. But at the same time, the edge is high for the second habitat type.

2. There are several different ways to determine when a landscape is fragmented. A conventional way is to determine the proportion of habitat when the number of patches, core area, or largest patch size suddenly changes. For example, one could argue that the graph below shows the greatest change in maximum patch size around 70% forest cover (at that point the slope of the tangent line is greatest). Another person might argue that around 50% forest cover there is a change in the relationship between n maximum patch size and proportion of forest cover. Exactly where the thresholds is not just a function of random, neutral model results, but also for the organism of interest as well as the nature of the matrix (non-forest habitat).
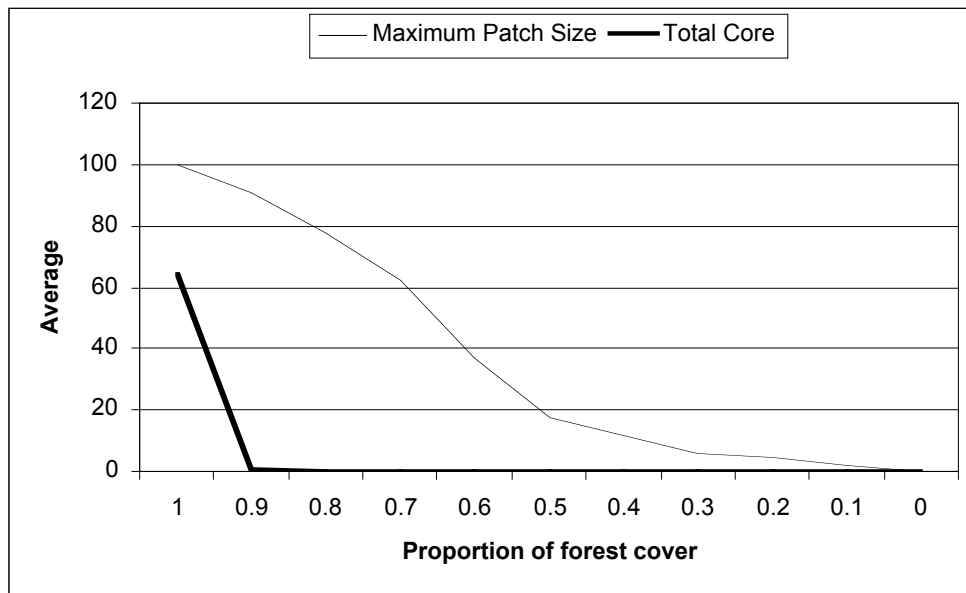
3. Certainly, the small extent of our landscape (100 cells) biases our results. It would be very insightful to repeat the analysis for much larger landscapes. When the landscape is 100% forest, only 64% of the landscape is core. This is strictly a function of the boundaries of the landscape, in which all cells are considered non-core habitat. With larger maps, this bias is limited and the percolation thresholds are much closer to the 59% habitat predicted by percolation theory (Gardener et al. 1987).