**Assignment 3 – Exercise 3**

**John Hopkins University – Computational Modeling for Policy and Security Analysis**

In the Mushroom Hunt model at setup four patches are randomly selected. These patches are the center of clusters of mushrooms. After the four patches are selected, more patches around each center are randomly selected. Around each center, 20 patches that are within 5 units of the center are randomly selected. Based on these procedures, one would assume that 80 patches are created – there are 4 centers, and 20 patches around each center are created, for a total of 80 patches. However, upon checking the model after setup, one realizes that there are usually less than 80 mushrooms created. One possible explanation would be that the patches are randomly selected with replacement, so there is a chance that a patch is selected twice. However, NetLogo user documentation explicitly states that the patches are selected without replacement. But, every selection of 20 patches is a distinct random selection, so while the same patch cannot be selected twice for one center, it may be selected twice for two different centers. For example, if four patches (A, B, C, D) are selected as the center, and patch X is within 5 units of both patch A and patch B, then there is a slight chance that it is randomly selected as one of the 20 patches around patch A, and as one of the 20 patches around patch B.