Distance from the roads species details in table

*Site Description and habitat characterization*

In June of 2004, research was conducted in a mixture *Quercus-Carya* (oak-hickory) and *Fagus-Acer* (beech-maple) dominated forests of varying successional ages in southern Indiana, USA. Dominant overstory species were dependent on a combination of land use history, environmental conditions, and successional age. We selected six mature (>60 years old) and six young (<40 years old) forest sites within 30 km of Bloomington, Indiana. Diameter at breast height, aerial photographs, and personal communications were used to determine forest successional age. Sites were located on private land, state forests, and on the Indiana University Research and Teaching Preserve. More details on the study area and site selection can be found in Flory and Clay (2009).

In the summer of 2005, light availability and soil moisture were measured at 0, 10, 20, 40, and 60 meters from the edge at each site. At each of these points, a 5m long transect was established and five measure of photosynthetically active radiation (PAR) were taken every meter along the transect for a total 25 measures per transect per point (AccuPAR Linear PAR/LAI ceptometer, Decagon Devices, Inc., Pullman, WA.). Percent canopy openness was calculated by subtracting these measurements from those taken in open sun. We quantified gravimetric water content from soil samples (125 cm3) collected from the center of each transect. Leaf litter was also quantified at each of these distances from the edge by collecting litter from a 25 X 25 cm PVC frame and weighing the litter after drying to a constant mass at 60°C. Forest structure was also documented at each of these 6 distances from edge. We quantified tree basal area (with a wedge prism), then measured the average tree diameter at breast height (DBH) of the five nearest trees at each point, and finally we identified these trees to determine species dominance.

*Seed germination experiment*

A germination experiment was established in October 2004 to determine the influence of distance from edge and forest age on seed germination of three native and three non-native woody species (Table 1). At each of the 12 sites, a 60 m transect perpendicular to the forest edge was set up at random points along the edge. Ten seeds of each species were placed in 10 x 10 cm seed bags and were then placed under leaf litter at 0, 5, 10, 20, and 40 m from the forest edge. For details regarding construction of seed bags, protection of seeds from herbivores, and how seed bags were secured to each point see Flory and Clay (2008). All seed bags were collected in late June 2005 and germination was scored. The proportion of seeds germinated was calculated as the number of seeds germinated divided by the total number of seeds recovered.

*Seedling experiment*

We established a seedling experiment in June of 2004 determine the influence of distance from edge and forest age on native and non-native seedling growth and survivorship. Four replicate seedlings of each species (Table 1) were planted 0.4 m apart in random locations within an 8 x 3 m grid at each of the aforementioned distances from the edge. The long axis of the grid was oriented parallel to the forest edge. Seedlings were reared at Indiana University greenhouse from either seeds or cuttings, were eight weeks old, and were between 10 to 15 cm in height at the time of planting. Seedlings that died within two weeks of planting were replaced. In September 2004, 2005, and 2006 we scored each seedling for survivorship and observed herbivore damage. We visually estimated herbivore damage as leaf area removed and categorized this damage on a scale of 0-5 with 0 = no herbivory, 1 = < 25% leaf area removed, 2 = 26 – 50% removed, 3 = 51 – 75% removed, 4 = >76% removed, and 5 = 100% removed by herbivores. The height and basal diameter of all seedlings surviving to September 2006 were measured and then seedlings were harvested. Above-ground biomass for harvested seedlings was then dried to a constant mass at 60°C and weighed. All seedlings planted in this experiment were removed before they reached a reproductive age.