CONCEPTUAL MODEL OF BLUEGRASS WOODLAND DYNAMICS

Extracted from draft proposal (pending literature review): Role of Browsing and Burning in Temperate Eutrophic Woodlands; Initial Experiments in the Bluegrass Region of Kentucky, U.S.A.

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"*Conservation is really applied historical ecology. ...conservationists need to combine the mind-sets of scientists and historians in an age which discourages dialogue between the two.*" (Rackham 2003, p. xviii)

Figure Caption. Hypothetical major gradients in composition and eco-morphology within Bluegrass Woodlands before settlement. This diagram is designed to allow application of Vera's (2000) concepts; see text for further explanation. The outline of vegetation types, and the location of each species' modal position, are first approximations, based on multivariate analysis of modern compositional data within the region, and of eco-morphological characters.

I (upper). Overview of structural types and dynamic relationships between them; note that these conceptual types would have intergraded extensively in composition, structure and processes; in reality, there may not have been any special consistency or stability within each of them.

II (middle). Typical plants suggested for each structural type; note that most species probably occurred widely in adjacent types. This is only a provisional sketch, to be explored further with ordination methods.

III (lower). Primary ecological processes that may have been involved in transitions between types; note that these are largely hypothetical within the context of Bluegrass woodlands, but several are consistent with literature elsewhere. Only the primary suggested directional trends are detailed here; the potential for reversed trends is discussed in the text.

These processes are identified by each transition (A1-3, B1-3, C1-3) and subcategories within each transition (a,b,c,d,e). Transitions B1, B2 and B3, with no room in the diagram, are detailed in following notes.

- **B1a Decrease in browsing-sensitive plants, especially grasses, elms, ashes.**
- **B1b Increase in browsing-resistant plants, especially trees with large/nutty seeds.**
- **B1c Decrease in prolonged winter/spring browsing; continued along trails and for fruit/nuts.**

- **B2a Decrease in cane, hog-peanut, and other browsed plants.**
- **B2b Increase in browsing-resistant plants, especially thorny/suckering locusts, weedy/toxic forbs & shrubs.**
- **B2c Regeneration of more resistant long-lived trees with large seeds.**
- **B2d Decrease in prolonged browsing; continued along trails, and for fruit/nuts.**

- **B3a Decrease in grasses and palatable forbs**
- **B3b Increase in browsing-resistant plants, especially toxic forbs & thorny scrub.**
- **B3c Decrease in browsing, except along trails.**
- **B3d Increase in birds feeding and roosting in scrub; local input of minerals in droppings.**