VALIDATING MISSOURI LANDTYPE ASSOCIATIONS USING TREE SPECIES COMPOSITION, FOREST STRUCTURE, AND PRODUCTIVITY

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by

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The undersigned, appointed by the Dean of the Graduate School, have examined the thesis entitled:

VALIDATING MISSOURI LANDTYPE ASSOCIATIONS USING TREE SPECIES COMPOSITION, FOREST STRUCTURE, AND PRODUCTIVITY

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A candidate for the degree of Master of Science, and hereby certify that in their opinion it is worthy of acceptance.

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ABSTRACT

Missouri's Landtype Associations (LTAs) were delineated from 1995-1998, and are currently being used by natural resource managers, but these LTAs have never undergone a validation showing that they can encompass patterns in natural systems. The Eastwide Forest Inventory Database was used as an independent source for a validation of Missouri's LTAs. Adjacent LTAs were compared using Forest Type Similarity, Species Composition Similarity, Species Diversity, Species Richness, Stand Age, Site Index, Density of all trees 1 inch dbh and greater, and Density of all trees 5 inches dbh and greater. Analysis of these measures resulted in the validation of 618 of the 625 compared adjacencies, showing a significant difference in at least one measure. A neutral model approach was used to validate the methods used in the study, and it was shown that Stand Age and the two Density measures validated LTA adjacencies no more often than randomly delineated LTAs. Therefore, these three measures were removed from the analysis, and one adjacency was added to the list of those left un-validated by this study (resulting in a total of eight). LTA Types were examined, and this study suggests that species composition is more similar within LTA Type than among LTA Types, however, it is improbable that LTA Type could be predicted by species composition. Electivity was used to show tree species' affinities for LTAs based upon abundance ratios.

CHAPTER I: INTRODUCTION

ECOLOGICAL LAND CLASSIFICATION

One of the objectives of natural resource management is to make ecologically sound management decisions that support multiple land-use requirements. Ecological land classification (ELC) provides a tool for managers to use in the decision making process. ELCs institute a hierarchical method of delineating ecoregions at multiple ecological scales (Host, et al., 1996). Omernik and Bailey (1997) define ecoregions as areas with relatively homogeneous ecosystems, which differ in fundamental structure from surrounding ecosystems. Phrased differently, “the biological and physical components are more similar within an ecoregion than among ecoregions” (Gordon, 2003). This ecoregion concept functions on the premise that these regions are present in nature and can be identified and classified (Brewer, 1999).

The USDA Forest Service created the National Hierarchy of Ecological Units (ECOMAP, USDA Forest Service, 1993; Cleland, et al., 1997) (Table 1) for use as a systematic framework in the creation of ecological regions. These regions are developed at multiple scales including ecoregion, subregion, landscape, and land unit. Each level in this hierarchy provides a different view of what exists inside the region since the scale is different at each level. The focus is different at each level, thus, different design criteria are used with each ecological unit. The design criteria, at the broadest scale (Domain), are based on large zones of similar climate. A domain may be composed of millions of square miles. At the finest scale (landtype phase), the design criteria are based on soil properties, slope position, and plant associations, and may contain fewer than 100 acres (Table 1).

Landtype associations (LTAs) are the construct chosen to represent the landscape level in the national hierarchy, and are delineated based on geomorphic processes, geologic formation, surficial geology, elevation, soil phases, local climate, and plant associations. LTAs are intended for use in forest or area-wide planning, as well as watershed management, and encompass thousands to tens of thousands of acres.

Table 1: The National Hierarchy of Ecological Units.

Ecological Unit:	Design Criteria:	Map Scale:	Polygon Size:
Ecoregion			
-Domain	-Broad climatic zones or groups	1:30,000,000 or smaller	1,000,000s of square miles
-Division	-Regional climatic types -Vegetational affinities -Soil order	1:30,000,000 to 1:7,500,000	100,000s of square miles
-Province	-Dominant potential natural vegetation -Highlands or mountains with complex vertical climate-vegetation-soil zonation	1:15,000,000 to 1:5,000,000	10,000s of square miles
Subregion			
-Section	-Geomorphic province, geologic age, stratigaphy, lithology -Regional climatic data -Phases of soil orders, suborders, or great groups -Potential natural vegetation -Potential natural communities (PNC)	1:7,500,000 to 1:3,500,000	1,000s of square miles
-Subsection	-Geomorphic processes, surficial geology, lithology -Phases of soil orders, suborders, or great groups -Subregional climatic data -PNC-formation or series	1:3,500,000 to 1:250,000	10s to 1,000s of square miles
Landscape			
-Landtype Association	-Geomorphic processes, geologic formation, surficial geology, and elevation -Phases of soil subgroups, families, or series -Local climate -PNC-series, subseries, plant associations	1:250,000 to 1:60,000	1,000s to 10,000s of acres
Land Unit			
-Landtype	-Landform and topography -Phases of soil subgroups, families, or series -Rock type, geomorphic process -PNC-plant associations	1:60,000 to 1:24,000	100s to 1,000s of acres
-Landtype Phase	-Phases of soil subfamilies or series -Landform and slope position -PNC-plant associations or phases	1:24,000 or larger	Less than 100 acres

THE MISSOURI ECOLOGICAL CLASSIFICATION PROJECT

Missouri's LTAs were created by the Missouri Ecological Classification Project, an inter-agency sponsored research team brought together under the auspices of the Missouri Resource Assessment Partnership (MoRAP), using the framework provided by the National Hierarchy of Ecological Units (ECOMAP, USDA Forest Service, 1993). The LTAs were systematically mapped by subsection using published and unpublished maps, consultations with experts, and personal knowledge gathered from field work (Nigh and Schroeder, 2002). LTA classes were identified and boundaries delineated between the years of 1995-1998. "The mapping process was an iterative one of visual integration of numerous physical and biological maps, along with expert input from written and verbal sources" (Nigh and Schroeder, 2002, p. 6).

Existing regionalizations of Missouri (consisting of landform, soil and digital elevation regions) provided a starting point where course patterns were manually delineated based upon superimposed layers of information including higher resolution soils, topography, and historic and current vegetation. LTA boundaries were digitized and adjusted until a consensus was reached that the boundary was in the proper location (Nigh and Schroeder, 2002). LTAs were mapped using 1:100,000 scale with contours from USGS quadrangles at 1:100,000 as a backdrop (Nigh and Schroeder, 2002). "Ground and aerial field reconnaissance, as well as consultation with local experts, was carried out to further evaluate and adjust the lines" (Nigh and Schroeder, 2002, p.6).

LTA Creation

Currently, 377 LTA polygons exist in the state of Missouri comprising 264 individual LTAs, ranging in size from 206 to 442,904 hectares (Nigh and Schroeder, 2002). Sections and subsections were first created for the state in 1993-1994 and matched to the boundaries created by surrounding states (Nigh and Schroeder, 2002). Missouri's sections include the Ozark Highlands (OZ), Central Dissected Till Plains (TP), Osage Plains (OP), and Mississippi River Alluvial Basin (MB) (Figure 1). Within these four sections, the state has 31 subsections (Table 2 and Figure 2). LTAs were then delineated within the subsections.

Figure 1: Missouri's four Sections displayed over a hill-shade map of Missouri (provided by the Missouri Department of Conservation).

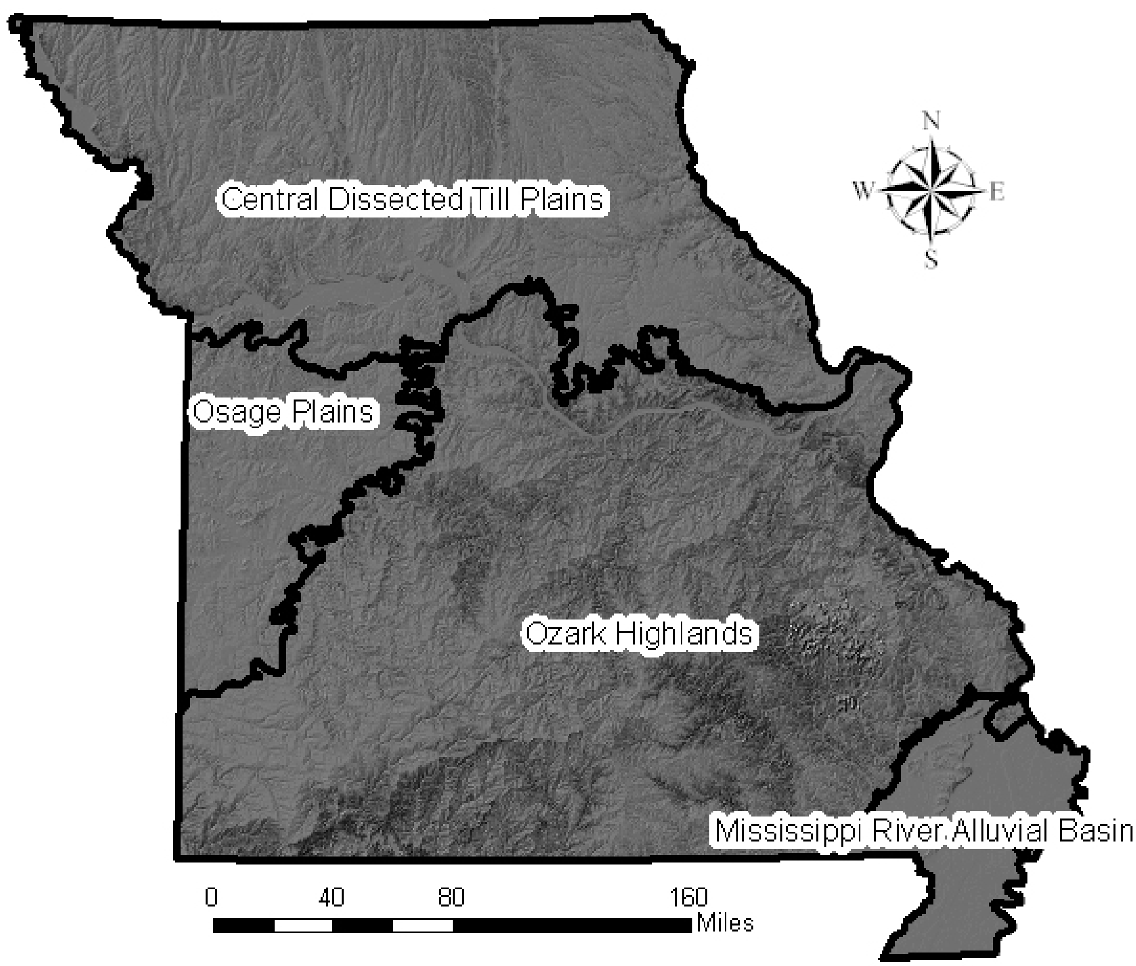
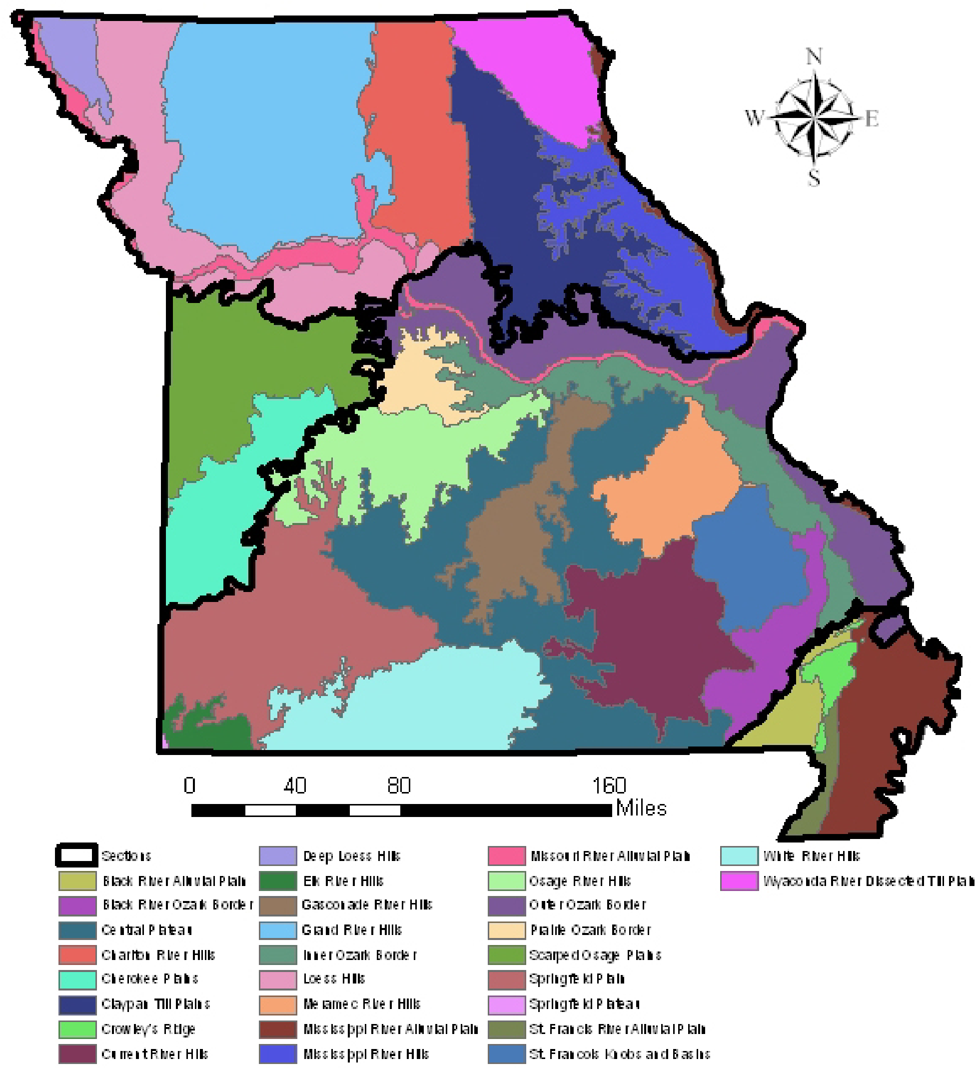


Figure 2: Missouri's subsections shown within the sections they are part of.



LTA creation is approached by two basic methods. The top-down method (regionalization) separates subsections into LTAs using the classification criteria mentioned earlier (DeMeo, et al., 2002). The bottom-up method (agglomeration) uses existing landtypes or landtype phases, which are aggregated into LTAs (DeMeo et al., 2002). Since landtype and landtype phase creation occurs from using extensive quantitative ground data this method provides more information on the composition of the LTA (DeMeo et al., 2002). DeMeo et al. (2002) recommend using an integrated approach when delineating LTAs, using both top-down and bottom-up methods. The top-down method should be used first to quickly stratify the landscape, and in turn, a bottom-up approach be used to verify and refine the top-down results (DeMeo et al., 2002). “For example, plant species diversity within and across landscapes can be estimated, serving to map one aspect of biodiversity” (DeMeo et al., 2002, p. 6).

Table 2: Missouri’s Sections and Subsections.

Section:	Subsection:	LTA polygons in section:
Missouri Alluvial Basin (MB):	Black River Alluvial Plain	8
	Crowley's Ridge	11
	Mississippi River Alluvial Plain	22
	St. Francis River Alluvial Plain	4
Osage Plains (OP):	Cherokee Plains	17
	Scarped Osage Plains	24
Ozark Highlands (OZ):	Black River Ozark Border	4
	Central Plateau	31
	Current River Hills	13
	Elk River Hills	2
	Gasconade River Hills	14
	Inner Ozark Border	18
	Meramec River Hills	11
	Missouri River Alluvial Plain	7
	Osage River Hills	8
	Outer Ozark Border	38
	Prairie Ozark Border	2
	Springfield Plain	14
	Springfield Plateau	2
	St. Francois Knobs and Basins	13
	White River Hills	17
Central Dissected Till Plains (TP):	Chariton River Hills	8
	Claypan Till Plains	9
	Deep Loess Hills	5
	Grand River Hills	24
	Loess Hills	28
	Mississippi River Hills	7
	Wyaconda River Dissected Till Plains	16

Analysis of ground data is suggested as a method to find differences (or a lack of differences) in LTAs.

> For example, if a large, random sample of plant association plots in two nominal LTAs shows a similar plant community composition, perhaps they should be joined into one LTA map unit. Similarly, if breaks or discontinuities are found within an LTA, perhaps it should be split into two LTAs. Such an analysis tests the hypothesis that a similar geomorphology and bedrock influence should generate similar vegetation (DeMeo et al., 2002, p. 8).

LTAs are components of a spatially-nested hierarchy, where the interacting components found at any level become the functional aggregates of the next higher level (Urban, et al., 1987). LTAs should therefore be considered as the functional aggregates of the next higher level of the hierarchy, the subsection. In turn, levels below the LTA in the hierarchy should be considered functional aggregates of the LTA. Ideally, LTAs should be constructed based on these functional aggregates (as the aggregation groups similar components together). However, in Missouri the levels below the LTAs were, for the most part, not yet identified, so the LTAs were created using a top-down process of division rather than a bottom-up agglomeration.

LTA Types

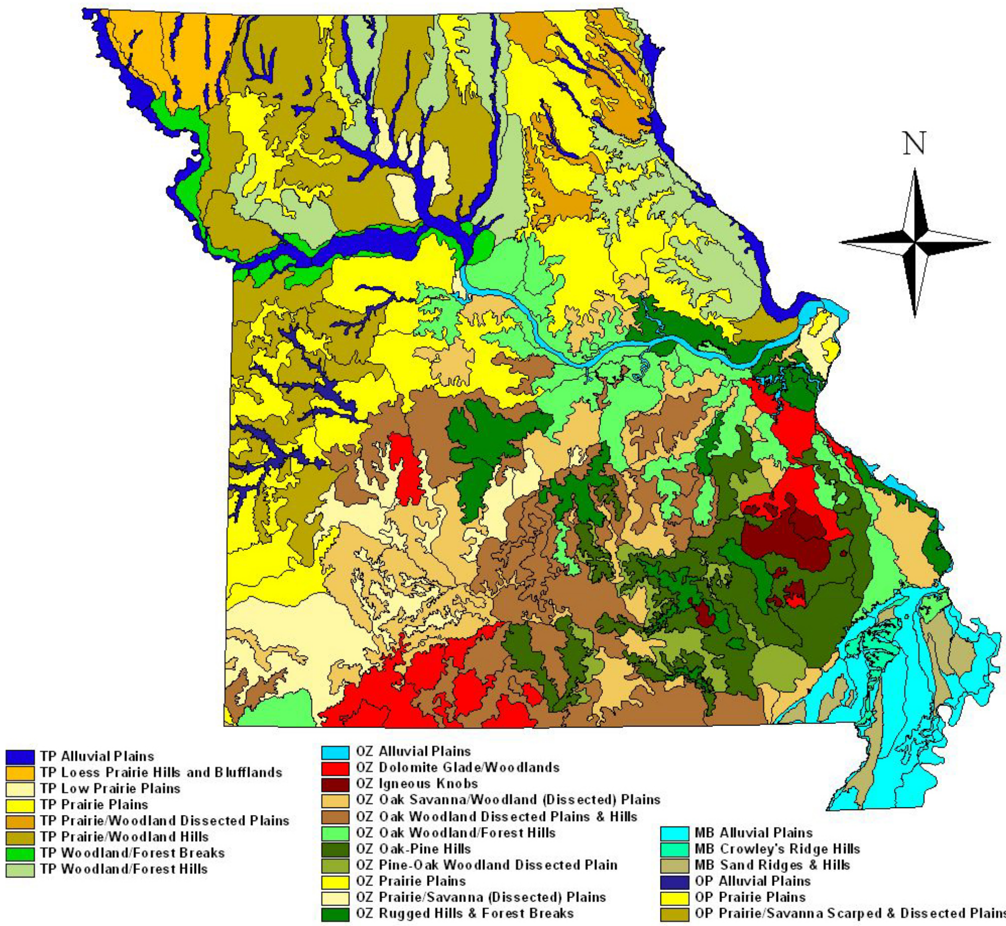
LTA type is a classification system grouping similar LTAs together based on LTA creation criteria. LTA types are not a part of the National Hierarchy of Ecological Units (ECOMAP, 1993), they are simply constructs of convenience in using the National Hierarchy of Ecological Units framework for making natural resource decisions. Twenty five LTA types are identified for the state of Missouri (Figure 2). However, since LTA types do not cross section boundaries they are unique in each section, but may be repeated in multiple subsections (Nigh and Schroeder, 2002) (Table 3).

Table 3: Missouri's LTA Types and the Sections they are found in.

LTA Type:	**Sections where the type is found:**
Alluvial Plains	MB, OP, OZ, TP
Mississippi Basin Lowlands	MB
Prairie Plains	OP, OZ, TP
Loess Prairie Hills and Blufflands	TP
Prairie/Savanna Plains and Dissected Plains	MB, OP, OZ, TP
Glaciated Prairie/Woodland Hills and Scarped Plains	TP
Ozark Oak Woodland Dissected Plains and Hills	OZ
Ozark Pine-Oak Woodland/Forest Dissected Plains and Hills	OZ
Woodland/Forest Hills	MB, OZ, TP
Ozark Oak and Mixed Hardwood Forest Rugged Hills and Breaks	OZ
Ozark Limestone/Dolomite Glade/Woodland Hills, Knobs, and Basins	OZ
Ozark Igneous Glade/Woodland Knobs	OZ

*** Refer to table 2 for section names**

Figure 3: Missouri's LTA boundaries color coded by LTA type. Courtesy of the Missouri Ecosystem Classification Project.



Bailey (1996) and Nigh and Schroeder (2002) recognized landform as a controlling mechanism in vegetation patterns across landscapes, finding that it is one of the determining factors in the delineation of LTAs, and that higher level landforms within a hierarchy apply constraints upon the lower levels. These constraints provide for the characteristics found within the lower levels (Urban et al., 1987). As such, it is expected that the variation found within these lower levels should be more similar within groups than among groups.

PURPOSE AND OBJECTIVES

Currently, Missouri's LTAs are used as a tool by natural resources managers (Trombley, 2003; Kabrick, et al., 2004; Kolaks, et al., 2004; Nigh, 2004;), and since one of the principle uses of LTAs is to set vegetation management objectives, it is imperative that these LTAs accurately capture Missouri's natural processes (DeMeo, et al., 2002) and reflect relationships between the landscape and vegetation attributes. However, Missouri's LTAs were created using a potentially biased classification process. Classes were subjectively identified and the boundaries were manually delineated, therefore, a need exists to determine if Missouri's current delineation of LTAs captures measurable distinctions in vegetation. Missouri's LTAs are a useful tool, but to be reliable, they must capture the environment effectively. Therefore, a test of classification accuracy through an LTA validation is proposed.

Ecological Basis for LTA Validation

West (1966) suggests plants indicate specific information about their environments by their presence or absence, abundance, and growth rate. He further notes that combinations of species in an area indicate more about the potential of a landscape than an individual species. Hunter (1990) agrees that there exists "a considerable degree of concordance between the distribution of trees and their environment", cautioning that "it is not a rigid equation (exceptions are commonplace)…but the basic relationship is reasonably sound and predictable" (p. 34). Gordon (2003) suggests since vegetation reflects the differences found in the physical environment, and ecoregions are based on groupings of similar abiotic factors, ecoregions should contain relatively homogenous vegetation patterns.

Lapin and Barnes (1995) advise that vegetation be used as a phytometer gauging differences in physical features rather than using the vegetation itself to indicate ecosystems. Areas containing a large amount of vegetational similarity and separated by easily distinguishable boundaries make it feasible to determine habitat types. However, in areas where these sharp changes do not exist, it is more difficult to distinguish between plant associations (West 1966).

McCune and Allen (1985) devised a study focusing on whether similar forests would develop in similar environments. Their results demonstrate that a propensity exists for diverse plant species compositions to form on comparable sites due to historic variability and chance fluctuations, providing a mechanism for slight differences in species composition between sites with similar abiotic factors.

> The distribution of plant species is controlled by a series of factors that limit the dispersal and survival of individuals on the landscape. Some of these factors stem from the life history of the species, including modes of pollination and dispersal, as well as various genetic factors relating to the degree of potential self-fertilization and competitive fitness of inbred vs. outcrossed lineages. Other ecological factors include how well a species competes with others for nutrients, light, and space to grow. A final set of limitations involves environmental conditions, such as climate, exposure, and types of soil and bedrock. The sum of these and other factors determines the survival and distribution of a species in the state (Yatskievych 1999, p.60).

The purpose of this study is to quantitatively validate the ability of Missouri's LTAs to capture the variation present in tree species composition, structure, and productivity. Analyzing current tree records will suggest whether the forest patterns have been captured by LTAs. Completion of Missouri's LTA validation will be accomplished through four different objectives:

1) Evaluate the delineation of individual LTAs and determine if LTAs compartmentalize forest patterns in features such as forest type, tree species composition, forest structure, productivity, and stand age.

Null Hypothesis: Forest types, tree species composition, forest structure, productivity, and stand age are not significantly different among adjacent LTAs.

Alternate Hypothesis: At least one of the characteristics (forest types, tree species composition, forest structure, productivity, or stand age) are significantly different among adjacent LTAs.

2) Validate the methods used in evaluating individual LTA delineation by comparing the results with those derived from using randomly delineated or "neutral" LTAs.

Null Hypothesis: The validation percentage of comparisons made using the actual LTAs is not significantly different than the validation percentage of comparisons made using neutral LTAs.

Alternate Hypothesis: The validation percentage of comparisons made using the actual LTAs are significantly different than the validation percentage of comparisons made using neutral LTAs.

3) Evaluate LTA characterization into LTA types by determining whether LTAs are more similar within LTA types or among LTA types.

Null Hypothesis: Similarity in tree species composition is not significantly higher in LTAs of the same LTA Type than in LTAs of different LTA Types.

Alternate Hypothesis: Similarity in tree species composition is significantly higher in LTAs of the same LTA Type than in LTAs of different LTA Types.

4) Evaluate species abundance ratios for the state of Missouri at the LTA level to determine if species are found at higher rates in certain portions of the state.

Null Hypothesis: Tree species do not show a fidelity for certain LTAs based on their abundance in these LTAs and their absence in other LTAs.

Alternate Hypothesis: Tree species do show a fidelity for certain LTAs based on their abundance in these LTAs and their absence in other LTAs.

CHAPTER II: MATERIALS AND METHODS

MATERIALS

Study Area

The study area for this research is the state of Missouri. Missouri is located near the center of North America, and is the meeting place of two of the nation's largest rivers: the Missouri and the Mississippi (Nigh and Schroeder, 2002; Yatskievych, 1999). Missouri contains over 5,000 plant species and more than 20,000 animal species in 115 counties, comprising 69,697 square miles (~31% is currently covered with forests) (Nigh and Schroeder, 2002; Yatskievych, 1999).

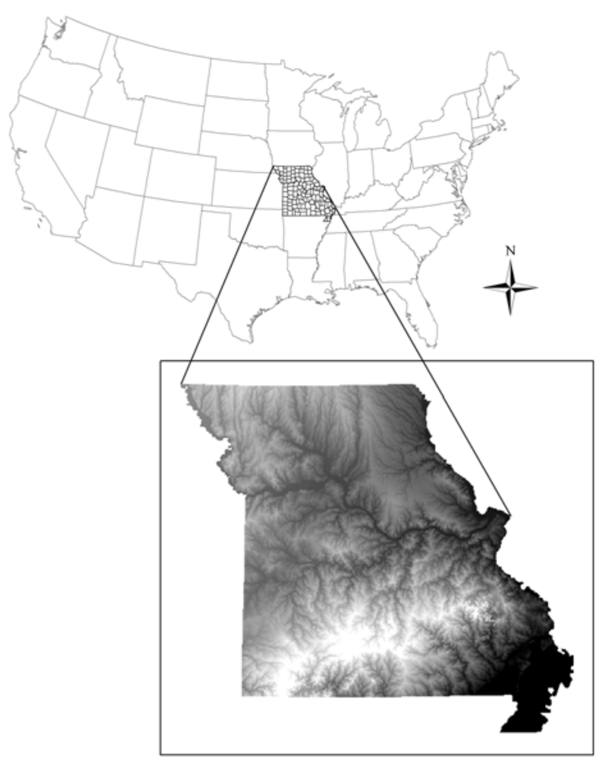


Figure 4: Study Area-30 meter digital elevation model (DEM) of the state of Missouri. DEM courtesy of the Missouri Department of Conservation. US state boundaries courtesy of ESRI. Missouri county boundaries courtesy of the Missouri Spatial Data Information Service.

Characterized LTA Boundaries

The Missouri Ecosystem Classification Project produced the *Atlas of Missouri Ecoregions* with a companion CD-ROM (Nigh and Schroeder, 2002) containing a data layer of Missouri's LTAs in ESRI's ArcInfo coverage format. This CD is the source of the LTA information for this project. The *Atlas* consists of three major sections including: the theory, history and methods used in the development of Missouri's ecological classification, an overview of Missouri's physical characteristics, and finally the section, subsection and LTA descriptions for the state (Nigh and Schroeder, 2002).

Eastwide Forest Inventory Database

It is important that validation is performed using a dataset that was not involved in the original delineation process in order to ensure impartiality in the data. "Testing of regional-scale maps is confounded by the difficulty of obtaining independent data and sufficient numbers of samples to characterize regional areas" (Host, et al., 1996, p. 609). The Forest Inventory and Analysis (FIA) database serves well as a surrogate for actual vegetation in this validation because it was not involved in the delineation of Missouri's LTAs, and because of the extensive collection of tree records for the state (the database contains records for 165,616 trees in the state of Missouri for the cycle completed in 1989).

FIA is an on-going process that began in 1930 as a periodic assessment of timber resources (Husch, et al., 2003), and was mandated by the Forest and Rangeland Renewable Resource Planning Act of 1974 in order to keep track of the condition of the nation's forest land (Hansen, et al., 1992). Maintained by the USDA Forest Service, the Eastwide Forest Inventory Database is the product of many years worth of data collection and field work. The inventories include the states from North Dakota to Texas and east. This area is divided between three USDA Forest Service experiment stations (North Central, Northeastern, and Southern). These four experiment stations are responsible for periodically collecting forest information in each state within their regions, usually every 5 to 15 years (Hansen et al., 1992).

Analysis of aerial photographs is the first stage of the inventory, and results in the classification of the land into various photo classes based upon land use (Hansen et al., 1992). For areas deemed as forested land, detailed classes are created based upon characteristics such as forest type, volume per acre, stand size, stand density, ownership, and stand age. Next, ground plots are measured so that classification estimates can be adjusted, as well as to take measurements that cannot be made from photographs. These photo interpretations and plot data are then used to assign area expansion factors to the ground plots.

FIA plots are designed to sample one-acre areas, but not all trees in this one-acre are measured (Hansen et al., 1992). Both fixed radius and variable radius sample points are used to select trees for measurement in the data used for this study (Hansen et al., 1992). Multiple observations are made for each tree found in the inventory, including the species and diameter at breast height (dbh), and several other measurements used to estimate the volume, growth rate, and quality of the tree (Hansen et al., 1992). Some of the database information comes directly from field measurements, while other data are calculated from tree measurements (such as net cubic foot volume) (Hansen et al., 1992).

Hansen et al. (1992) warns that as the size of the geographic area analyzed decreases, the chance of sampling errors increases.

> For example, a State with 5 million acres of timberland would have a maximum allowable sampling error of 1.3 percent, a geographic unit within that State with 1 million acres of timberland would have a 3.0 percent maximum allowable sampling error, and a county within that State with 100 thousand acres would have a 9.5 percent maximum allowable sampling error at the 67-percent level (Hansen et al., 1992, p. 3).

The FIA database has a hierarchical structure with tables for county, plot, and tree level information (Hansen et al., 1992). At the broadest scale (county) data are very generalized and inappropriate for inclusion in this study. Two additional levels of the hierarchy (plot and tree levels) are site specific and can be analyzed at the landscape scale. However, exact plot locations are not given for the data due to landowner privacy issues. The current policy used by the FIA program distorts actual plot locations up to one mile (http://www.fia.fs.fed.us/). While exact locations of the plots cannot be obtained, a special request can be made directly to the FIA team to determine which plots are in each LTA. With these data some analyses can be performed for the entire LTA, but other analyses are not appropriate due to the altered spatial precision. The FIA data would be more valuable to this study if exact plot locations were available.

Missouri FIA data from the fourth sampling cycle (completed in 1989) was utilized in this study because the data were complete at the launch of the research. The North Central Research Station's Forest Inventory and Analysis Program began fieldwork in 1999 for Missouri's fifth sampling cycle, with the goal of sampling one-fifth of the state annually until the completion of the cycle in 2004 (Schmidt, 2000). However, that inventory was incomplete at the start of this study.

Trees reaching diameter at breast height (dbh) of 2 inches were used in this study (except for one density measure to be introduced later). This minimum diameter limit eliminated many small trees that typically have high mortality rates, and concentrates on those trees that are more enduring in their forest communities.

Missouri contained 14 million acres of forest land in 1989, an increase of 10% from 1972 (Hahn, 1991). The Eastern Ozarks region contained the largest percentage of land covered in timber in the state (67% of the land area), followed by the Southwest Ozarks (45%), Northwest Ozarks (43%), Riverborder (26%), and the Prairie (13%) (Hahn, 1991).

METHODS

This study consisted of two similar types of analyses. First, adjacent LTAs were compared to determine if they were different enough to actually represent separate entities. Next, LTA types were compared statewide to determine if similar LTAs (based on abiotic similarities) had similar vegetation (biotic similarities).

Evaluating LTA Delineation

In the process of developing a validation method, several issues had to be addressed. Specifically, how does one compare the similarities and differences of forest characteristics in adjacent ecoregions? Is it appropriate to find one measure to examine? If so, what is the appropriate measure? Forests are complex ecosystems with many different characteristics (Hunter, 1990). Just because the same species occur in the same relative proportions in two forests, those forests may be dissimilar in other important ways. Additional factors help determine how forest ecosystems function and must be taken into consideration when devising a research design. Drawing from McGarigal, Cushman, and Stafford (2000) and Brower, Zar, and von Ende (1998), a suite of measures was chosen for this study in order to capture as many facets of the forest ecosystem as possible from the FIA database. These measures examined forest type, species composition, species richness, diversity, stand age, density, and productivity. These multiple measures provide a multi-faceted view of forest characteristics and associated land type.

Statistical Analysis of Sections

In the process of examining LTA patterns, it becomes important to determine differences further up in the hierarchy of ecological units, specifically at the Section level. Therefore, a more in depth analysis was performed on how sections interact with each other according to most of the chosen measures. Forest Type similarity and Species Composition similarity were not looked at because of the challenge of setting up a comparison.

Species Richness

An analysis of variance (ANOVA) test was run on the data in order to determine if species richness was significantly different between sections. Data was tested for normality using the Kolmogorov-Smirnov test for normality, determining that species richness was normal for all sections (p-values for: MB=0.811, OP=0.579, OZ=0.402, and TP=0.331).

Diversity

Data was tested for normality using the Kolmogorov-Smirnov test for normality, determining that diversity was not normal for two of the four sections (p-values for: MB=0.533, OP=0.136, OZ<0.001, and TP=0.001). Therefore, individual comparisons of sections were performed using the Mann-Whitney U comparison of means test.

Density (1 inch dbh and greater)

Data was tested for normality using the Kolmogorov-Smirnov test for normality, determining that density was not normal for one of the four sections (p-values for: MB=0.819, OP=0.983, OZ=0.286, and TP=0.020). Therefore, individual comparisons of sections was performed using the Mann-Whitney U comparison of means test.

Density (5 inches dbh and greater)

Data was tested for normality using the Kolmogorov-Smirnov test for normality, determining that diversity was normal for all four sections (p-values for: MB=0.929, OP=0.989, OZ=0.059, and TP=0.355). Therefore, ANOVA was run on the data in order to determine if density was significantly different between sections.

Productivity

Data was tested for normality using the Kolmogorov-Smirnov test for normality, determining that site index was normal for all four sections (p-values for: MB=0.776, OP=0.907, OZ=0.161, and TP=0.583). Therefore, ANOVA was run on the data in order to determine if density was significantly different between sections.

Stand Age

Data was tested for normality using the Kolmogorov-Smirnov test for normality, determining that stand age was normal for only three of the four sections (p-values for: MB=0.963, OP=0.651, OZ=0.039, and TP=0.256). Therefore, individual comparisons of sections were performed using the Mann-Whitney U comparison of means test.

Adjacent LTA Analysis

Forest Type Similarity

Forest types were evaluated for each LTA at the FIA plot level. The FIA database includes the forest type of all sampled plots. All FIA classifications were used for this study except the Post Oak- Black Oak- Bear Oak forest type. This group was split into four new forest types: Post Oak, Black Oak, Post Oak-Black Oak, and Mixed Oak. The Bear Oak forest type was dropped because no records for this species existed in the Missouri FIA database.

Using ArcGIS, a forest type split was performed through detailed analysis of tree species importance values. Curtis and McIntosh (1951) introduced the concept of the *importance value* (IV) as a method of determining the significance a particular species has at a particular site. They determined that the summation of the relative density, relative frequency, and relative dominance gives an accurate assessment of this importance. The highest summation of these three factors in a plot is 300. Species IVs were calculated by plot for each species at the tree level of the FIA database, and since the relative frequency of all species in a single plot is the same, the relative frequency value can be dropped from the calculation, producing a total IV of 200 for each plot, rather than 300. Each plot species will contain a percentage of this 200, resulting in a relative importance value for each species in the plot.

In plots where the forest type was split, the IV of post oak and black oak was evaluated. The rule for the split was as follows:

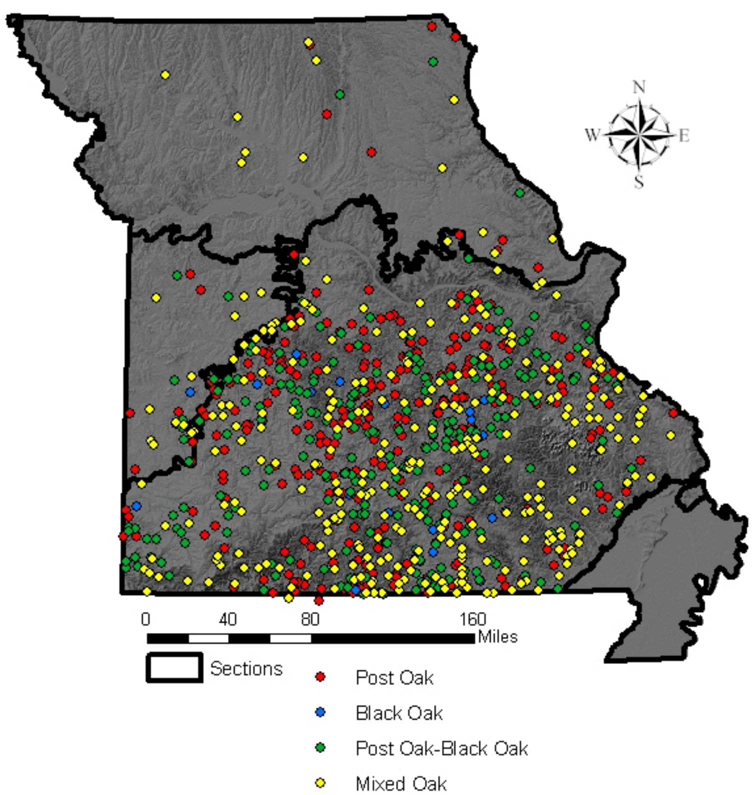
- If post oak > 50% of the relative IV, the new forest type will be Post Oak.
- If black oak > 50% of the relative IV, the new forest type will be Black Oak.
- If post oak and black oak are each ≤ 50% of the relative IV but combine to be >50%, the new forest type will be Post Oak-Black Oak.
- If post oak and black oak are each < 50% of the relative IV and combine to be < 50% of the relative IV, the new forest type will be Mixed Oak.

Of the original 885 plots classified as Post Oak-Black Oak-Bear Oak, 296 were re-classified as Post Oak, 19 as Black Oak, 254 as Post Oak-Black Oak and 316 as Mixed Oak. No Post Oak-Black Oak-Bear Oak plots existed in the Mississippi River Alluvial Basin (MB), 33 in the Osage Plains (OP), 827 in the Ozark Highlands (OZ), and 25 in the Central Dissected Till Plains (TP). After the split, there are still no plots in the MB section, but 10 Post Oak, one Black Oak, nine Post Oak-Black Oak, and 13 Mixed Oak plots in the OP section, 278 Post Oak, 18 Black Oak, 241 Post Oak-Black Oak and 290 Mixed Oak in the OZ section, and in the TP section there are eight Post Oak, zero Black Oak, four Post Oak-Black Oak, and 13 Mixed Oak plots are found (Table 4 and Figure 5).

Table 4: The breakdown of plots in the Post Oak-Black Oak-Bear Oak forest type split. Section corresponds to the section code that the plots are found within (MB-Mississippi River Alluvial Basin, OP-Osage Plains, OZ-Ozark Highlands, TP-Central Dissected Till Plains); original data refers to the number of plots from the original forest type found within each section; the remaining columns represent the number of plots of each new forest type found within each section followed by the percentage of the original data that the new forest type represents.

Section	Original Data	Post Oak	Black Oak	Post Oak-Black Oak	Mixed Oak
MB	0	0	0	0	0
OP	33	10 (30%)	1 (3%)	9 (27%)	13 (39%)
OZ	827	278 (34%)	18 (2%)	241 (29%)	290 (35%)
TP	25	8 (32%)	0 (0%)	4 (16%)	13 (52%)
Total	**885**	**296 (33%)**	**19 (2%)**	**254 (29%)**	**316 (36%)**

Figure 5: The spatial breakdown of the new forest types created from the Post Oak-Black Oak-Bear Oak forest type split. New forest types include Post Oak (shown in red), Black Oak (shown in blue), Post Oak-Black Oak (shown in green), and Mixed oak (shown in yellow). Hill-shade provided by the Missouri Department of Conservation.



Forest type patterns were contrasted for adjacent LTAs. In this study, the term 'adjacency' refers to the line segment shared by any pair of LTAs. Using the summary function in ArcGIS, the number of plots by forest type were established. These counts were converted into relative values by determining what percentage of the total each forest type represented in each LTA. In other words, the relative frequency of each forest type was computed for each LTA. LTA characterization by forest type percentages were used to determine the forest type similarity (Bray and Curtis, 1957). West (1966) used a coefficient of similarity based on the following equation:

$$\frac{2W}{A+B} \qquad (1),$$

where A is the sum of all measures for stand A, B is the sum of all measures for stand B, and W is the sum of the lower values for each species which the two stands have in common. Bray and Curtis (1957) reduced the equation, noting that by using relative values $A + B$ is equal to 2.00, and equation 1 becomes just W. The mean value of all adjacent LTA comparisons was then determined, and one standard deviation above this mean was chosen as the cut-off value. Any similarity above this value is considered too similar to classify the forest communities in these adjacent LTAs as different by this measure alone. Therefore, any LTA adjacency comparison with a higher similarity than the cut-off value will fail to be validated by this measure.

Tree Species Compositions

"A fundamental hypothesis of ecological land classification is that the land units differ in forest composition" (Host, et al., 1996, p. 612). The FIA database was used to evaluate tree species composition patterns for each forested Missouri LTA. For each LTA, a count of each species was performed using the summarize function in ArcGIS.

These counts were used to determine similarity (Bray and Curtis, 1957) for all Missouri LTAs. Next, in the same manner as the Forest Type validation, a mean similarity value was determined from all adjacent LTA comparisons, and one standard deviation above this mean was used as the cut-off value.

Tree species composition is similar to the forest type analysis except for one major difference. Forest types are determined by one or a few dominant tree species in the stand. Similarity comparisons are based on the distribution of species that are dominant in each stand, and does not take into account any other species. Tree species composition looks at the percentage that each species represents and determines a similarity value based on all species. Therefore, these measures can be quite distinct depending on species domination.

Forest Structure

Species richness, diversity, and density was used to determine structural patterns for each Missouri LTA. Differences in these measures would suggest structural differences or similarities existing between adjacent LTAs. These LTA differences should be captured through statistical analysis, and if statistical significance is determined, then the adjacent LTAs should be considered different populations.

Species richness is the total number of species found in an area. Margalef's Index (*Da*) is a measure of species richness that takes into account not only the total number of species found, but also the total number of individuals sampled (Magurran, 1998). This is a necessary adjustment due to the fact that as the sample size increases so does the number of species found (Lack, 1942). The formula for Margalef's Index is:

$$Da = \frac{s-1}{\log N} \qquad (2),$$

where s is the number of species present and N is the total number of individuals (Brower, et al., 1998). Margalef's Index was calculated for each plot, and plots were summarized to determine a mean value for each LTA. The mean values were compared for adjacent LTAs using a comparison of means test to determine if significant differences were present between LTAs.

Diversity is a measure of how evenly individuals are dispersed among the species found in the area. Several methods of determining species diversity have been widely used in ecological research, but for this study, Simpson's Diversity will be used (Simpson, 1949). Simpson's Diversity is calculated with the formula:

$$Ds = 1 - \frac{\sum n_i(n_i - 1)}{N(N-1)} \qquad (3),$$

where n_i is the number of individuals of species i and N is the total number of individuals found in the sample. Simpson's Diversity was calculated for each LTA using pooled tree data. Simpson's Diversity values, once calculated, were compared to test the null hypothesis that the two samples come from aggregations having the same diversity. First, the variance must be calculated as:

$$s^2 = 4[\sum p_i^3 - (\sum p_i^2)^2] / N \qquad (4),$$

where p_i is a proportion calculated as:

$$p_i = \frac{n_i}{N} \qquad (5).$$

Then the test statistic is calculated as:

$$t = \frac{(D_s)_1 - (D_s)_2}{\sqrt{s_1^2 + s_2^2}} \qquad (6),$$

and is then compared to the critical value of the Student's *t*. If the resulting p-value was less than 0.05 then the two LTAs were considered significantly different.

Density is a measure of how many trees exist in a given area (Husch, et al., 2003). This value is not included in the FIA database, but can be calculated from other measures found in the data. Due to time constraints, a special request for plot density values was made to the US Forest Service North Central Research Station's FIA office in St. Paul, Minnesota, which is in charge of the FIA database for the state of Missouri. Two density measures were used in this study, each of which has a unique purpose. First, the density of all trees five inches and greater was used to determine the density of only those trees which are well established and have survived the high rates of mortality associated with smaller trees. Second, the density of all trees one inch dbh and greater was also used as a means of analyzing the regenerating layer of the forest. This measure is the exception to the rule established earlier that only trees two inches and greater were used in the analysis. Information on forest regeneration is important when determining its current status, survival, and future (Husch et al., 2003). Forest regeneration examines a temporal question within the forests. Are the forests regenerating? If the answer to this question is different for each ecoregion, then the forests should be considered distinct.

The density values for each plot were examined within each LTA determining a mean density value for each LTA. Adjacent LTAs were then compared using a comparison of means test to determine whether the plots in each ecoregion came from the same statistical population. Significant differences in this comparison lead to the validation of the LTAs using these two density measures.

Productivity

Site quality is an examination of the ability of a site's abiotic factors to produce biomass, and can be evaluated in two different ways (Husch, et al., 2003). The first measures site factors involved in tree growth, rating the site by the abiotic factors themselves (Husch, et al., 2003). The other method involves the measurement of the trees themselves, assessing the quality of the site through the biotic output (Husch, et al., 2003).

The measurement method used in this study is a site index involving the comparison of tree height to the age of the tree (Husch, et al., 2003). The FIA database has records for each site index plot which were used to determine the mean site index for each LTA. The mean values were then used to compare adjacent LTAs with each other using a Student's t-test with an alpha of five percent.

This measure is analyzed and compared for adjacent LTAs under the assumption that the species used to determine site index does not influence the resulting site index value. However, Carmean and Hahn (1983) warn that the species does have an affect on site index, and that certain species consistently show a higher site index than certain other species.

Stand Age

Every FIA plot has data on stand age. These stand ages were used to calculate the mean stand age for each LTA. Adjacent LTA means were then compared using a Student's t-test with an alpha of five percent. However, as important as knowing forest age is to determine their similarity to each other, there is a risk involved in using this measurement. Missouri's forests have been altered greatly by humans (Yatskievych, 1999), and as such it becomes likely that stand age is going to be simply a residual effect of human intervention.

VALIDATION OF METHODS

Through the use of the aforementioned methods, it becomes possible to determine whether statistically significant differences exist between LTAs for selected characteristics. This may not, however, reflect the fact that differences could be present simply due to chance, or that a measure chosen for this study simply does not reflect the spatial characteristics of the LTAs. By running the same tests on randomly delineated LTAs with simplified shapes, it becomes possible to see whether the actual LTAs capture characteristics in the environment due to their intricate shapes which result from conditions found in the landscape. This technique is known as a neutral model approach (Gardner et al., 1987; Pearson and Gardner, 1997) and can be used as a validation of the methods used for this study, since the actual LTA delineations should, ideally, be validated more often than random LTAs.

Random LTAs were created using a neutral landscape model (FLOSS), which randomly delineates regions based upon the size distribution of the actual LTAs. FLOSS is a forest land ownership simulator that creates simplified shapes (rectangles), which represent forest land ownership boundaries (Ko, He, and Larsen, in press). These simulated human boundaries are ideal for contrasting with Missouri's natural LTA boundaries since the simplified shapes and random locations of the FLOSS simulations can be used to examine how much influence the shape and location of features in the landscape have over forest characteristics. Ten sets of random LTAs were generated to come up with a distribution of the percentage of LTA Adjacencies validated for each measure. Forest Type Similarity, Species Composition Similarity, Simpson's Diversity, Margalef's Index, Stand Age, Site Index, and Density (both 1 inch and greater and 5 inch and greater d.b.h.) were calculated for each of the 10 FLOSS simulations, and the adjacencies were compared in the same manner described in the above sections in regard to the actual LTA delineations. The 10 sets of random LTAs resulted in a distribution of validation percentage for each index. Then the percentage of validation for the actual LTAs was compared to the distribution produced by the random delineations to conclude whether the actual LTAs validated more often than the random LTAs.

In order to determine whether a measure validated more often with the actual LTAs than the random LTAs, the means and standard deviations were first calculated for the simulated LTA distribution. Next, the percentage of validation for the actual LTAs was compared to the distribution, and if the percentage value was within one standard deviation of the mean value, it was not considered different, and subsequently the measure would not be appropriate for use in this study.

EVALUATING LTA TYPE CHARACTERIZATION

Cluster Analysis

All LTAs were compared with all other LTAs (not only adjacent LTAs) in order to test whether similarity is higher within LTA type than among LTA types. Species relative abundance within each LTA was used in a cluster analysis in order to develop clusters of similar LTAs based on species composition. The cluster analysis was run in SPSS for Windows, Release 12.0.0 (September, 2003), using the hierarchical clustering option. The input data consisted of the relative abundance values, with the variables being the LTAs themselves. The clustering method was set up as between-groups linkage (or average linkage), where the between-group similarity is defined as the average similarity between all possible pairs of members, and the measure was squared Euclidean distance (van Tongeren, 1995, McGarigal, Cushman, and Stafford, 2000). As LTA types are similar LTAs based on their classifying criteria (eg. landform, geology, soils, and potential natural vegetation) the resulting clusters should match up well with LTA types. The clustering will show LTAs of the same species compositional type. If LTA types are found to cluster together then LTAs of the same type will have similar compositions. If types do not cluster together, then the LTA types are not representative of the species compositions they are often used to represent. A separate cluster analysis was run for each section in order to match up with the LTA Type classifications. LTA Types do not cross section boundaries, therefore the cluster analysis did not either.

Within Type vs. Among Types

A similarity matrix was created comparing the relative abundance of each species in each LTA with the relative abundance of each species in all of the other LTAs (not just adjacent LTAs). Similarity scores were then divided into two groups to determine if similarity is higher within LTA types than among LTA types. The first group included those scores representing comparisons of LTAs from within the same LTA type. The second group included the scores of the comparisons of LTAs from different types. Means were calculated for each group and these means were compared using a one-tailed t-test with an alpha set at the 5% level. This is set up as a one-tailed test because the prediction is that the similarity will be greater in group one (within type). A significant result indicates that similarity is higher within LTA type, while an insignificant result indicates that similarity is not greater within LTA type.

Species Affinity for LTAs

Species affinity for certain habitat types is determined from species abundances using a modification of Ivlev's Electivity Index (Jacobs, 1974; Lechowicz, 1982; Pastor and Broschart, 1990). Originally created as a method of quantifying food selection, the electivity index is defined as the relative difference between *r* and *p* where *r* is the relative fraction of a given food type in the feeder's ration and *p* is the relative fraction of the same food in the environment, and is calculated as (Jacobs, 1974)

$$E = \frac{r - p}{r + p} \qquad (7).$$

An item is assumed to be eaten at random if its proportion in the animal's diet is equal to the proportion in the environment (Lechowicz, 1982). Foods making up a higher proportion in the diet than in the environment are classified as preferred, while those that constitute a smaller proportion in the diet than in the environment are thought to be avoided (Lechowicz, 1982). The index provides values ranging from -1 (complete avoidance) to +1 (complete preference). Pastor and Broschart (1990) used this method to show cover type preference or avoidance for soils, slope classes and proximal cover types. Host et al. (1996) used the method to determine positive or negative associations of cover type with regional ecosystems, and Huber (1998) used it to determine habitat preference of nase (*Chondrostoma nasus*) in medium-sized rivers.

By changing the values of *r* and *p* to represent LTA "selection" by tree species, certain species can be shown to have a greater affinity for certain LTAs. In this new form, *r* is calculated as the count of the tree species in question in the LTA divided by the total number of trees in the LTA, and *p* is calculated as the count of the tree species in question statewide divided by the total number of trees statewide. With these new values the calculation of *E* will show species preference for individual LTAs. Count of individual trees was chosen as the method of evaluation in this study, however, an approach using total basal area or relative basal area would work just as well, and may actually prove to be a better measure, because counts do not take into account the size of the individual tree.

CHAPTER III: RESULTS

LTA DELINEATIONS

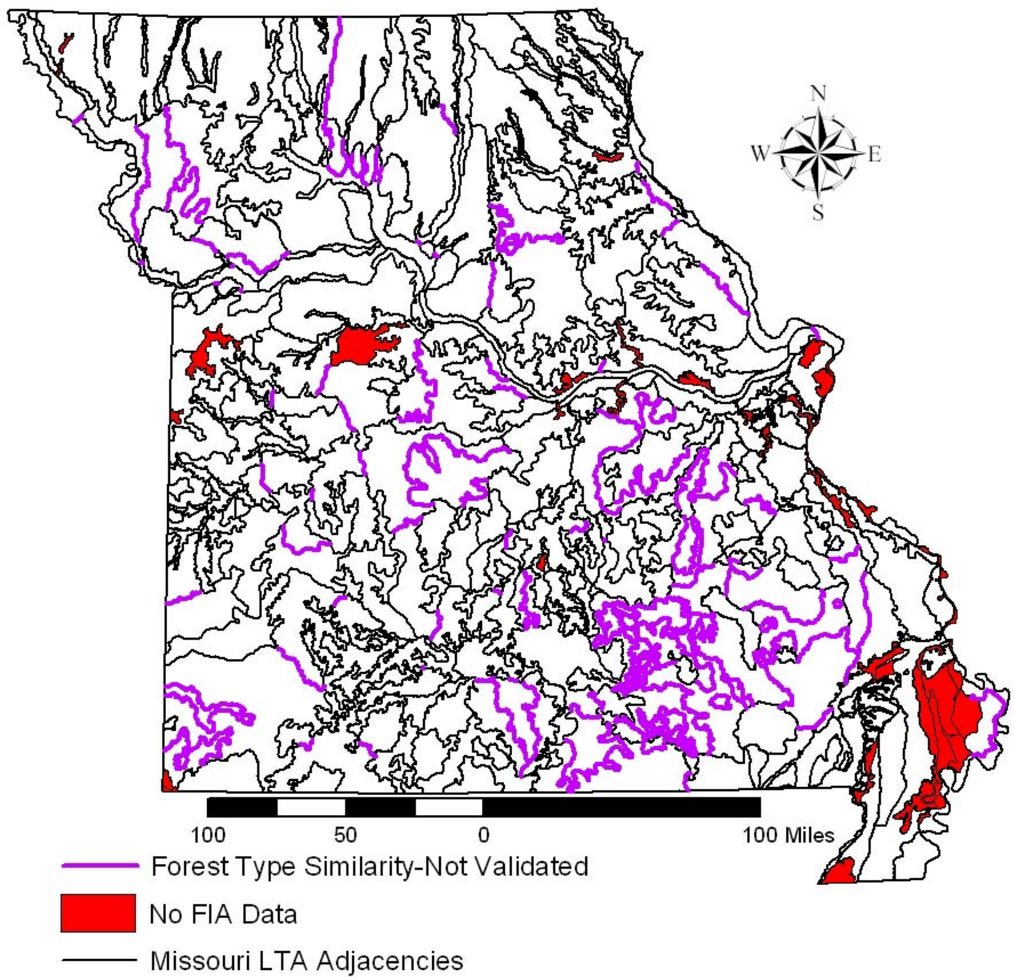
Missouri has 743 LTA adjacencies, however, only 632 adjacencies were analyzed in this study due to the lack of sufficient data for 33 of the LTAs (see Table 6 for information on which LTAs were not included in the study).

Forest Type Similarity

The 632 LTA adjacencies used in the analysis for this study produced similarity scores ranging from 0% to 100%, with a mean similarity of 51% and a standard deviation of 23%. Zero percent indicates no similarity, while 100% indicates complete similarity. Five hundred and forty two (86%) of the LTA adjacencies produced lower similarity values than the critical value of 74% (as determined by one standard deviation above the mean similarity score of all adjacent LTAs) (Appendix A), leaving 90 (14%) LTAs un-validated by this method (Figure 3). The validated adjacencies ranged in similarity from 0% to 74%, with a mean similarity of 46% and a standard deviation of 20%.

Forest Type validations were distributed evenly throughout most of the state. However, the Current River Hills subsection stands out as an area with a low rate of validation (Figure 3). Low rates of validation are likely due to the low diversity of forest types in this area. The vast majority of forest types were White Oak-Red Oak-Hickory, White Oak, Shortleaf Pine-Oak, and Shortleaf Pine. Low diversity leads to high similarity, and in turn, a low validation rate.

Figure 5: LTA adjacencies not validated by the Forest Type Similarity measure.



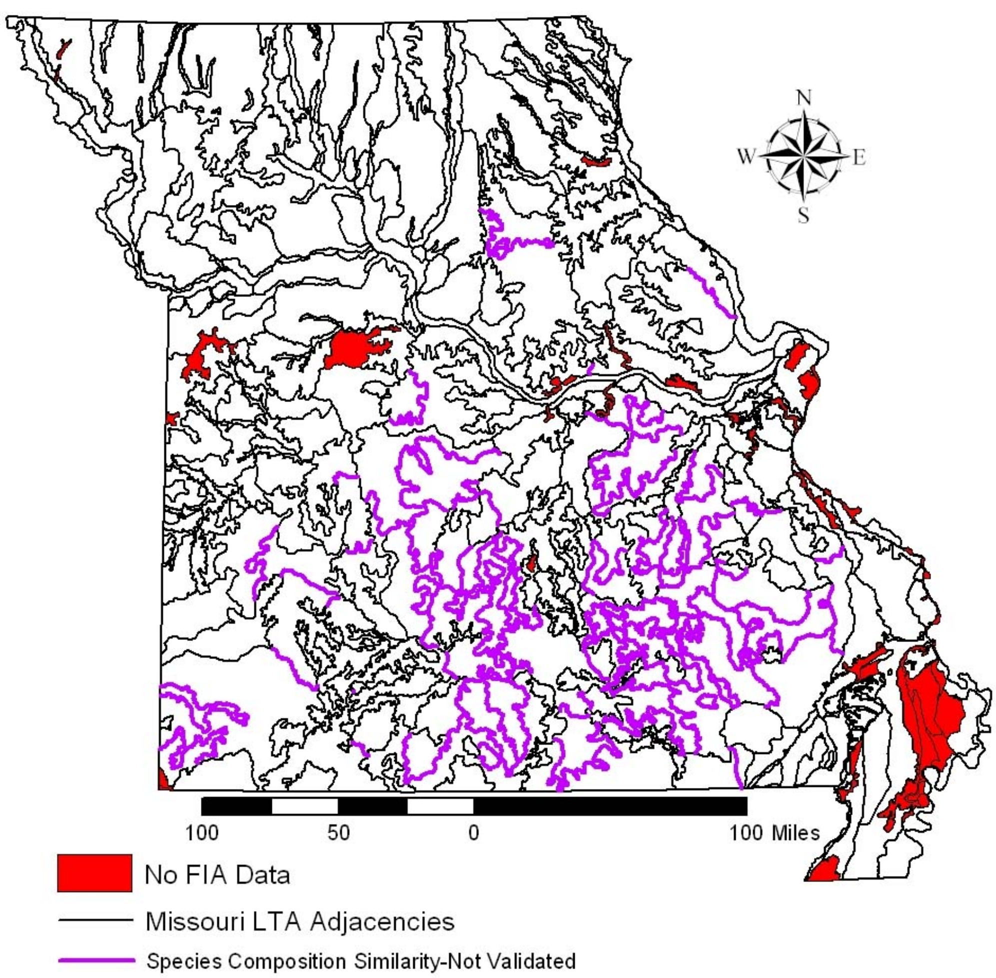
Tree Species Composition

The 632 adjacencies used in this analysis produced similarity scores ranging from 0% to 91%, with a mean similarity of 52% and a standard deviation of 22%. Five hundred and thirty six (85%) of the LTA adjacencies produced lower similarity scores than the critical value of 74% (Appendix A). These adjacencies ranged in similarity from 0% to 73%, with a mean similarity of 48% and a standard deviation of 20%.

This measure validated most of the adjacencies outside of the Ozark Highlands section of Missouri (with the exception being two adjacencies in the Central Dissected

Till Plains). However, a great deal of the Ozark Highlands failed species composition validation (Figure 4). This could again be because of the similarity of the tree species found in the Ozark Highlands. Validation patterns seem to correspond with the lowest species richness values in the Ozark Highlands (Figure 6), as well as the distribution of Shortleaf Pine (Figure 33). Many tree species are found in the Ozark Highlands, but the vast majority of individuals are white oak, black oak, post oak, and shortleaf pine (in certain regions), thus these overwhelming numbers of a relatively few species will limit the ability to distinguish differences in LTAs based on the species composition.

Figure 6: Species Composition Similarity.



Forest Structure

Species Richness

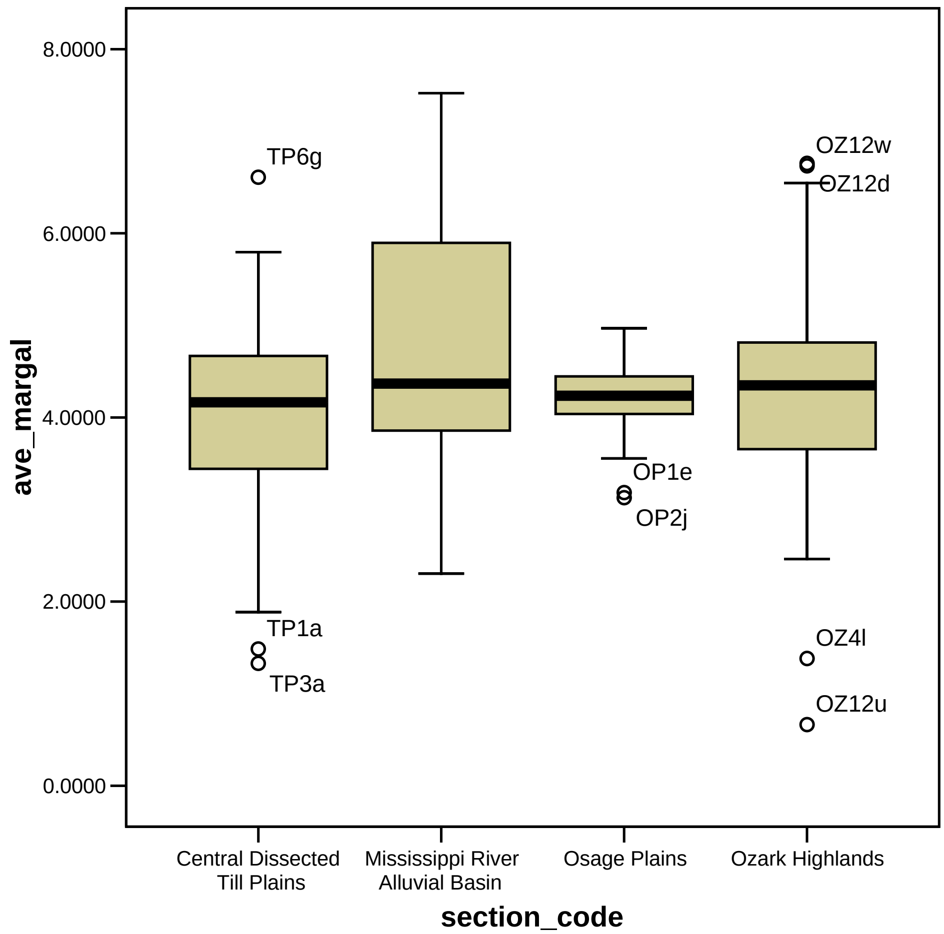
Mean values for Margalef's Index values range from 0.66 to 7.52 in Missouri's LTAs with an average of 4.24 and a standard deviation of 1.02. LTAs in the Mississippi River Alluvial Basin (MB) Section have a minimum species richness of 2.30 and a maximum of 7.52 with a mean of 4.84 and a standard deviation of 1.53. The Osage Plains (OP) has a minimum species richness of 3.13 and a maximum of 4.97 with a mean of 4.18 and a standard deviation of 0.48. The Ozark Highlands (OZ) has a minimum species richness of 0.66 and a maximum of 6.76 with a mean of 4.28 and a standard deviation of 0.99. The Central Dissected Till Plains (TP) have a minimum species richness of 1.33 and a maximum of 6.61 with a mean of 4.03 and a standard deviation of 1.04 (Table 5).

Table 5: Margalef's Index values by section (minimum, maximum, mean, and standard deviation).

Section	Minimum	Maximum	Mean	Standard Deviation
MB	2.30	7.52	4.84	1.53
OP	3.13	4.97	4.18	0.48
OZ	0.66	6.76	4.28	0.99
TP	1.33	6.61	4.03	1.04

Overall, the ANOVA found no significant difference between the sections (F=2.165, p=0.093), however, the Least Significant Difference (lsd) post-hoc test determined that there was actually a significant difference present between the TP and MB sections (p=0.016).

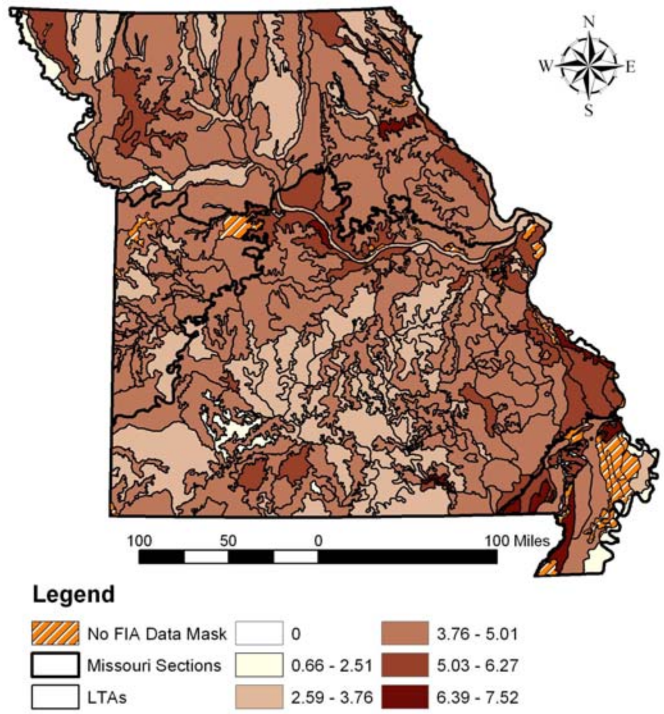
Figure 7: Boxplot of Margalef's Index by section.



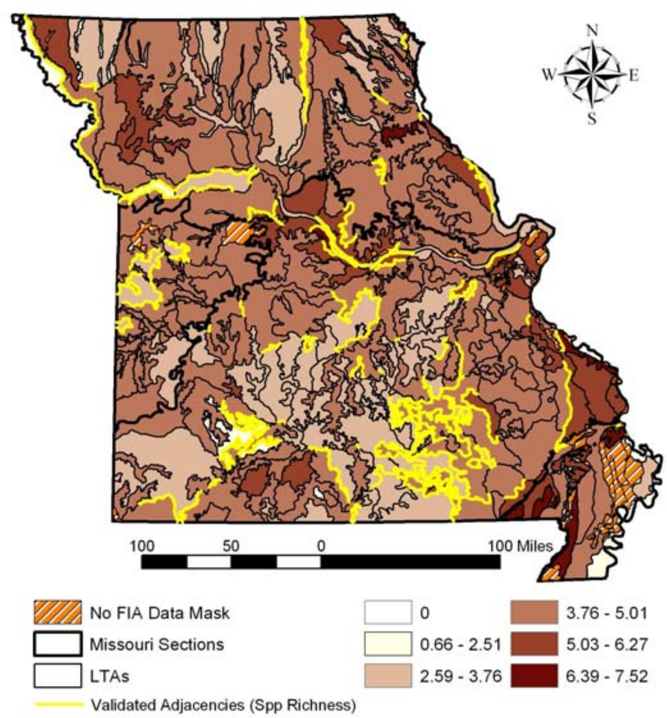
Statewide, there were 106 LTA adjacencies calculated with p-values ≤ 0.05 showing a significant difference between the adjacent LTAs (Figure 6). In many areas the Missouri and Mississippi Rivers had a great influence on the species richness, with very high values near the rivers and lower richness values away from the rivers. The Central Dissected Till Plains and the Ozark Highlands were lower in species richness than the less rugged landscapes of the Osage Plains and the nearly flat Mississippi River Alluvial Basin. Perhaps it is the rugged landscape in the Till Plains and the Ozarks that limits the number of total species that can occupy certain areas. After all, it takes a very specialized species to be able to survive in such difficult conditions found in rugged landscapes. The Current River Hills subsection has a low degree validation and this is likely due to the few species that dominate the area.

Figure 8: Species Richness (Margalef's Index) for the state of Missouri. A) mean species richness for each LTA, and B) LTA adjacencies validated by species richness.

A)



B)



Diversity

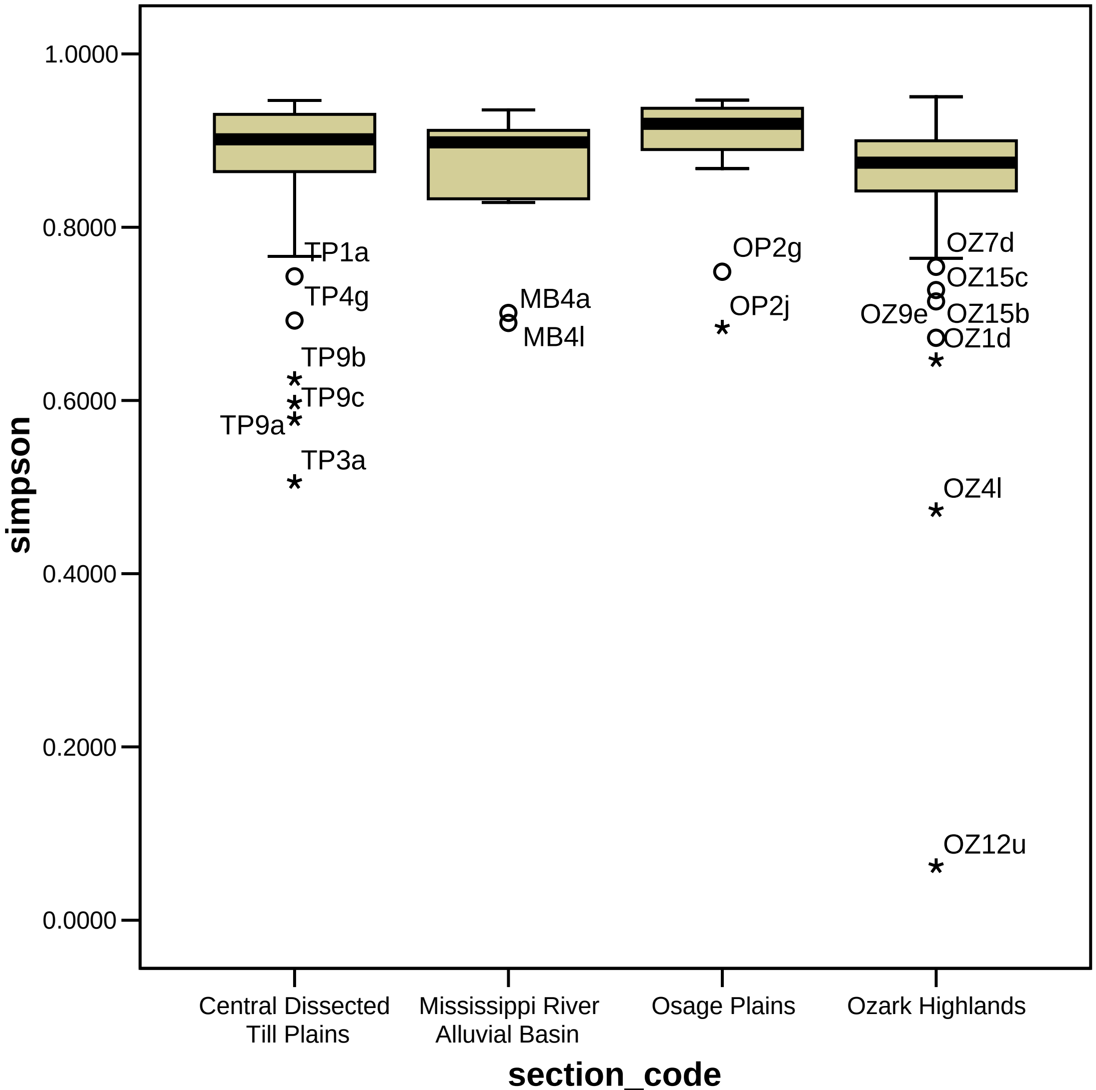
Mean Simpson's Diversity values for the state of Missouri ranged from 0.06 to 0.95 with an average of 0.86 and a standard deviation of 0.09 (Figure 7). The Mississippi River Alluvial Basin (MB) has a minimum Simpson's Diversity value of 0.690 and a maximum of 0.935 with a mean of 0.856 and a standard deviation of 0.082. The Osage Plains (OP) has a minimum diversity of 0.684 and a maximum of 0.947 with a mean of 0.897 and a standard deviation of 0.068. The Ozark Highlands (OZ) has a minimum diversity of 0.063 and a maximum of 0.950 with a mean of 0.858 and a standard deviation of 0.089. The Central Dissected Till Plains (TP) has a minimum diversity of 0.506 and a maximum of 0.946 with a mean of 0.867 and a standard deviation of 0.100 (Table 6).

Table 6: Simpson's Diversity values by section (minimum, maximum, mean, and standard deviation).

Section	Minimum	Maximum	Mean	Standard Deviation
MB	0.690	0.935	0.856	0.082
OP	0.684	0.947	0.897	0.068
OZ	0.063	0.950	0.858	0.089
TP	0.506	0.946	0.867	0.100

The Mann-Whitney U test found insignificant differences between the sections TP and MB ($p=0.331$), TP and OP ($p=0.126$), and MB and OZ ($p=0.545$), however, significant differences were detected between TP and OZ ($p=0.002$), MB and OP ($p=0.048$), and OP and OZ ($p<0.001$).

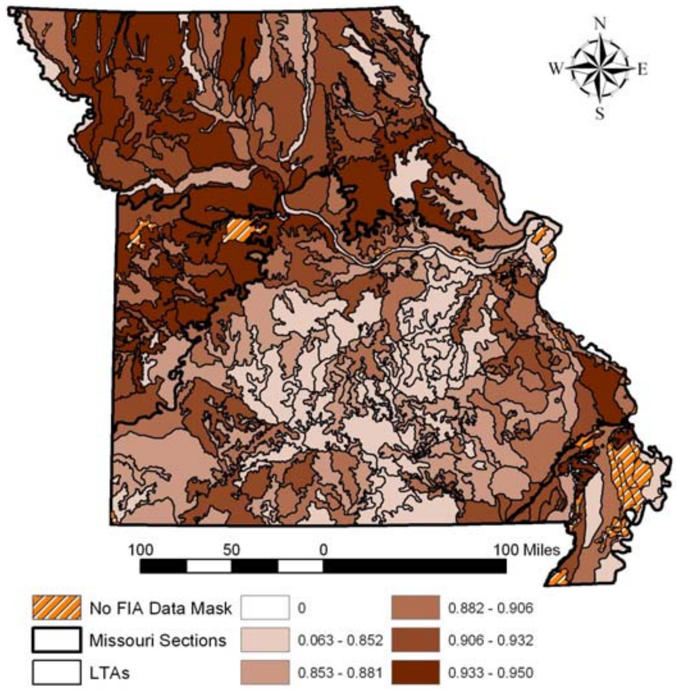
Figure 9: Boxplot of Simpson's diversity by section.



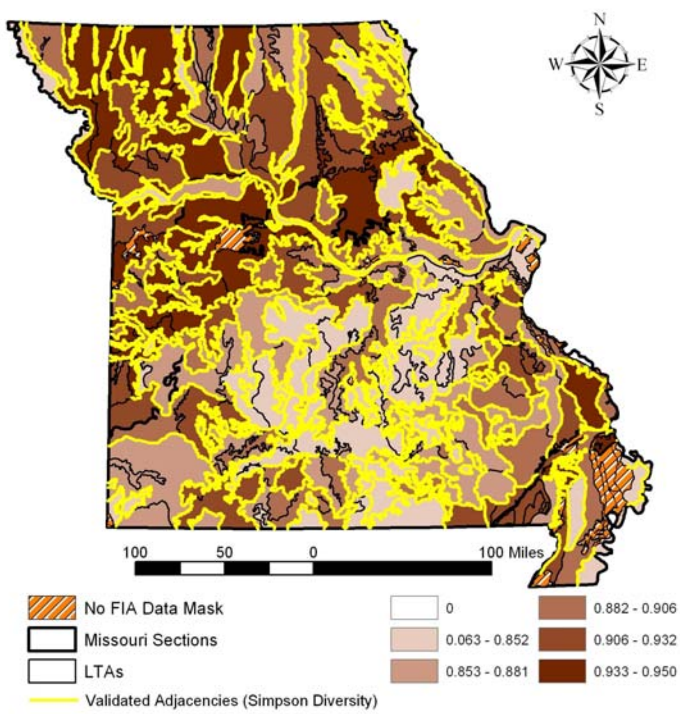
Statewide there were 425 LTA adjacencies with calculated p-values ≤ 0.05 showing a significant difference between the adjacent LTAs (Figure 8). The pattern of validation seems random in distribution, with no real clustering of validated LTAs.

Figure 10: Diversity (Simpson's Diversity Index) for the state of Missouri. A) mean diversity for each LTA, and B) LTA adjacencies validated by diversity.

A)



B)



Density (1 inch dbh and greater)

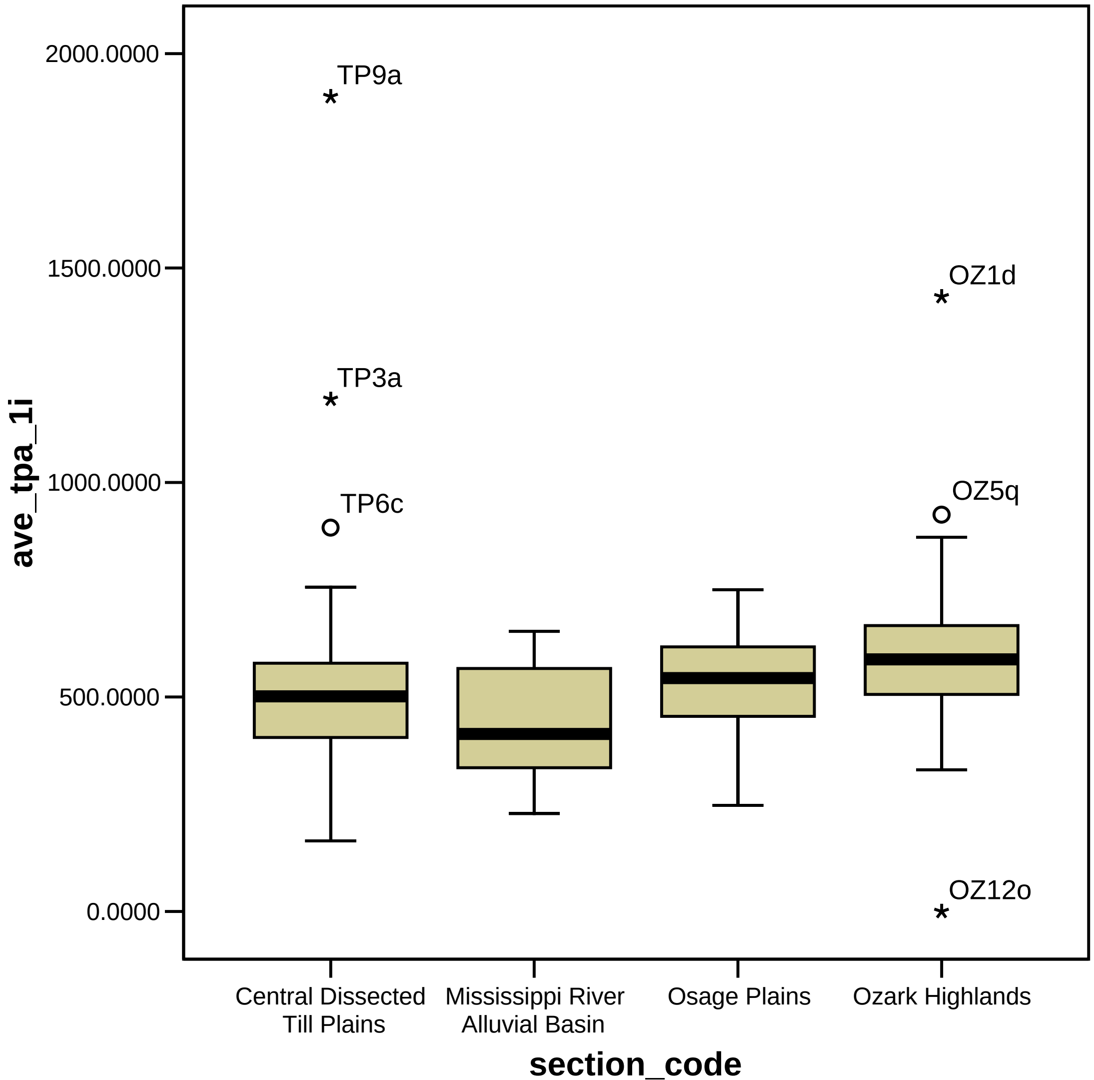
Mean density (trees per acre) for trees one inch in diameter (dbh) or greater for the state of Missouri ranged from 0 to 1900 with an average of 560 and a standard deviation of 181. The Mississippi River Alluvial Basin (MB) has a minimum density of 228 and a maximum of 653 with a mean of 431 and a standard deviation of 135. The Osage Plains (OP) have a minimum density of 247 and a maximum of 750 with a mean of 523 and a standard deviation of 137. The Ozark Highlands (OZ) have a minimum density of 0 and a maximum of 1433 with a mean of 589 and a standard deviation of 143. The Central Dissected Till Plains (TP) have a minimum density of 165 and a maximum of 1900 with a mean of 523 and a standard deviation of 256 (Table 7).

Table 7: Density (1 inch dbh and greater) values by section (minimum, maximum, mean, and standard deviation).

Section	Minimum	Maximum	Mean	Standard Deviation
MB	228	653	431	135
OP	247	750	523	137
OZ	0	1433	589	143
TP	165	1900	523	256

The Mann-Whitney U test found insignificant differences between the sections TP and MB ($p=0.290$), TP and OP ($p=0.337$), MB and OP ($p=0.116$), and OP and OZ ($p=0.100$), however, significant differences were detected between TP and OZ ($p<0.001$), and MB and OZ ($p=0.001$).

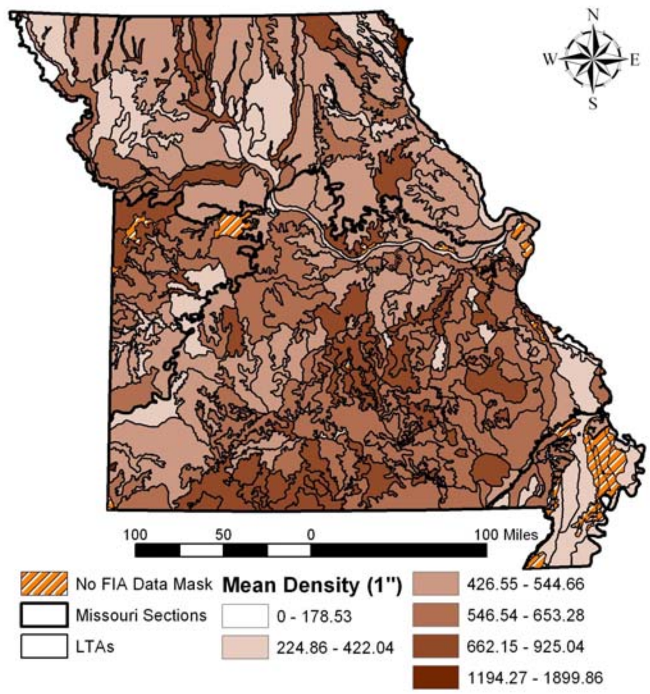
Figure 11: Boxplot of density (1” dbh and greater) by section.



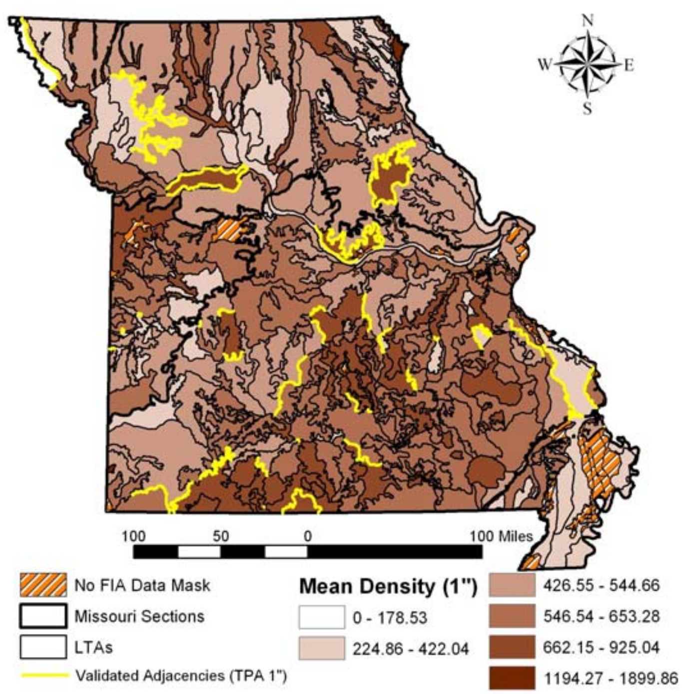
Statewide there were 57 LTA adjacencies with calculated p-values ≤ 0.05 showing a significant difference between the adjacent LTAs (Appendix A).

Figure 12: Density (trees per acre 1 inch and greater) for the state of Missouri. A) mean density for each LTA, and B) LTA adjacencies validated by density.

A)



B)



Density (5 inches dbh and greater)

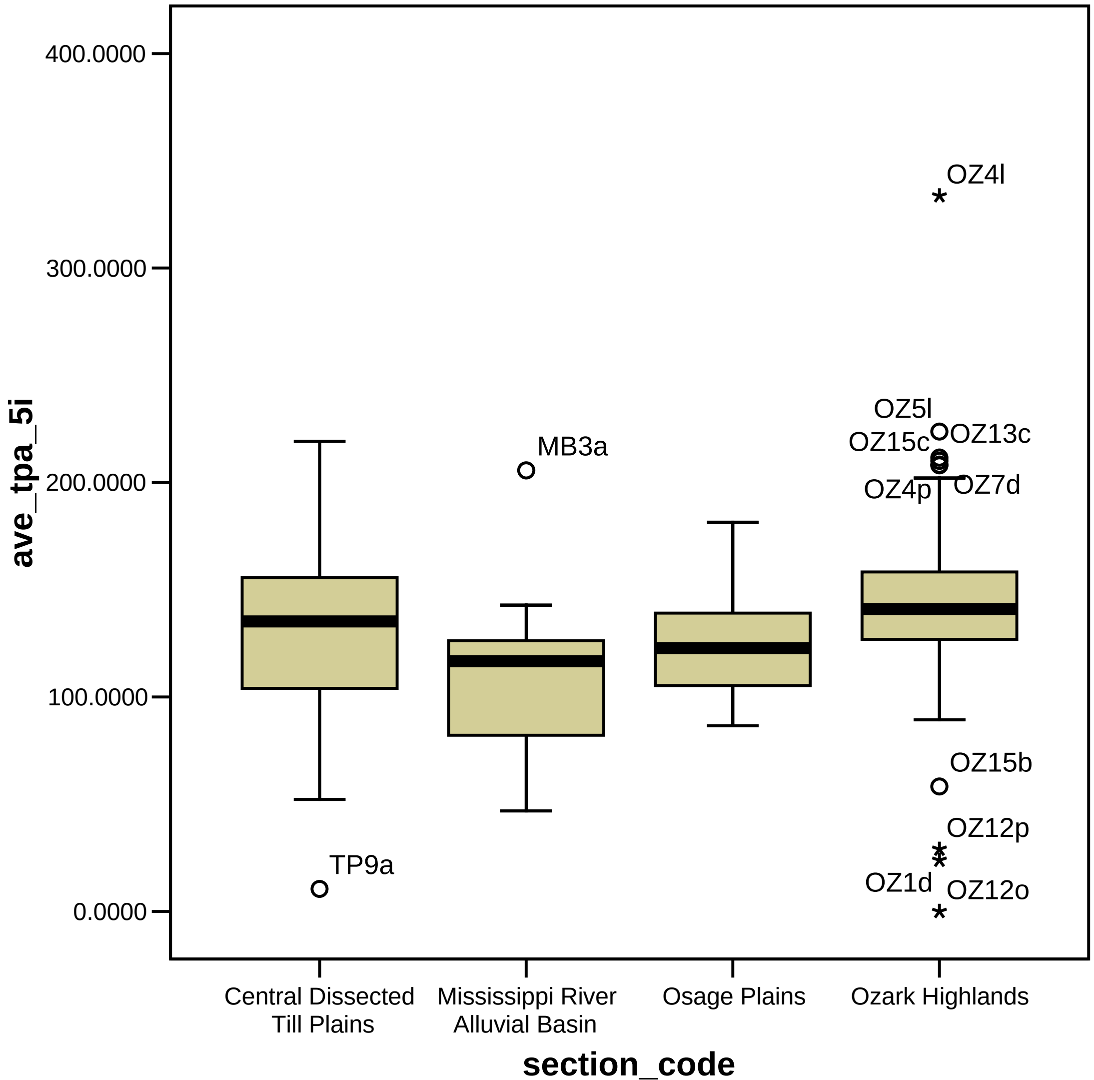
Mean density (trees per acre) for trees five inches in diameter (dbh) or greater for the state of Missouri ranged from 0 to 334 with an average of 137 and a standard deviation of 37. The Mississippi River Alluvial Basin (MB) has a minimum density of 47 and a maximum of 206 with a mean of 109 and a standard deviation of 42. The Osage Plains (OP) have a minimum density of 87 and a maximum of 182 with a mean of 124 and a standard deviation of 23. The Ozark Highlands (OZ) have a minimum density of 0 and a maximum of 334 with a mean of 142 and a standard deviation of 35. The Central Dissected Till Plains (TP) have a minimum density of 11 and a maximum of 219 with a mean of 132 and a standard deviation of 41.

Table 8: Density (5 inches dbh and greater) values by section (minimum, maximum, mean, and standard deviation).

Section	Minimum	Maximum	Mean	Standard Deviation
MB	47	206	109	42
OP	87	182	124	23
OZ	0	334	142	35
TP	11	219	132	41

The ANOVA found a significant difference between at least two of the sections ($F=4.288$, $p=0.006$), and the Least Significant Difference (lsd) post-hoc test determined that there were actually two significant differences present between the MB and OZ sections ($p=0.004$) and the OP and OZ sections ($p=0.042$).

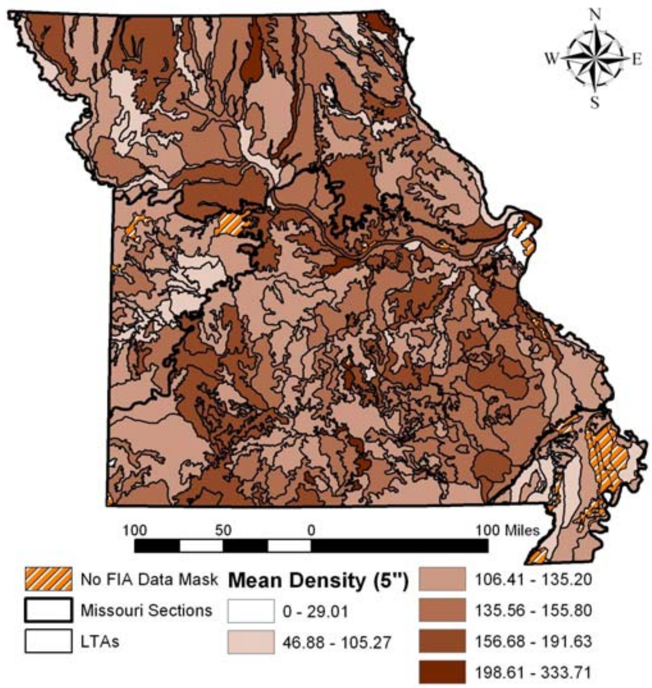
Figure 13: Boxplot of density (5" dbh and greater) by section.



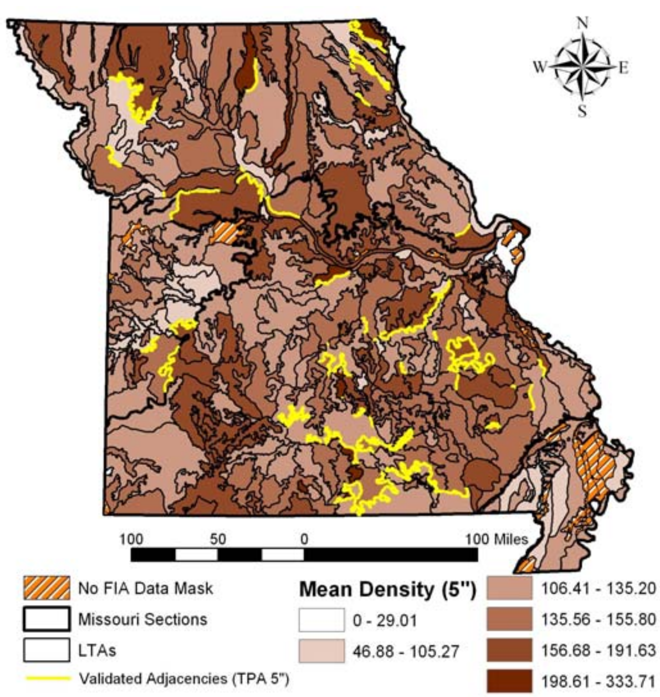
Statewide there were 58 LTA adjacencies with calculated p-values ≤ 0.05 showing a significant difference between the adjacent LTAs (Appendix A).

Figure 14: Density (trees per acre 5 inches and greater) for the state of Missouri. A) mean density for each LTA, and B) LTA adjacencies validated by density.

A)



B)



Productivity

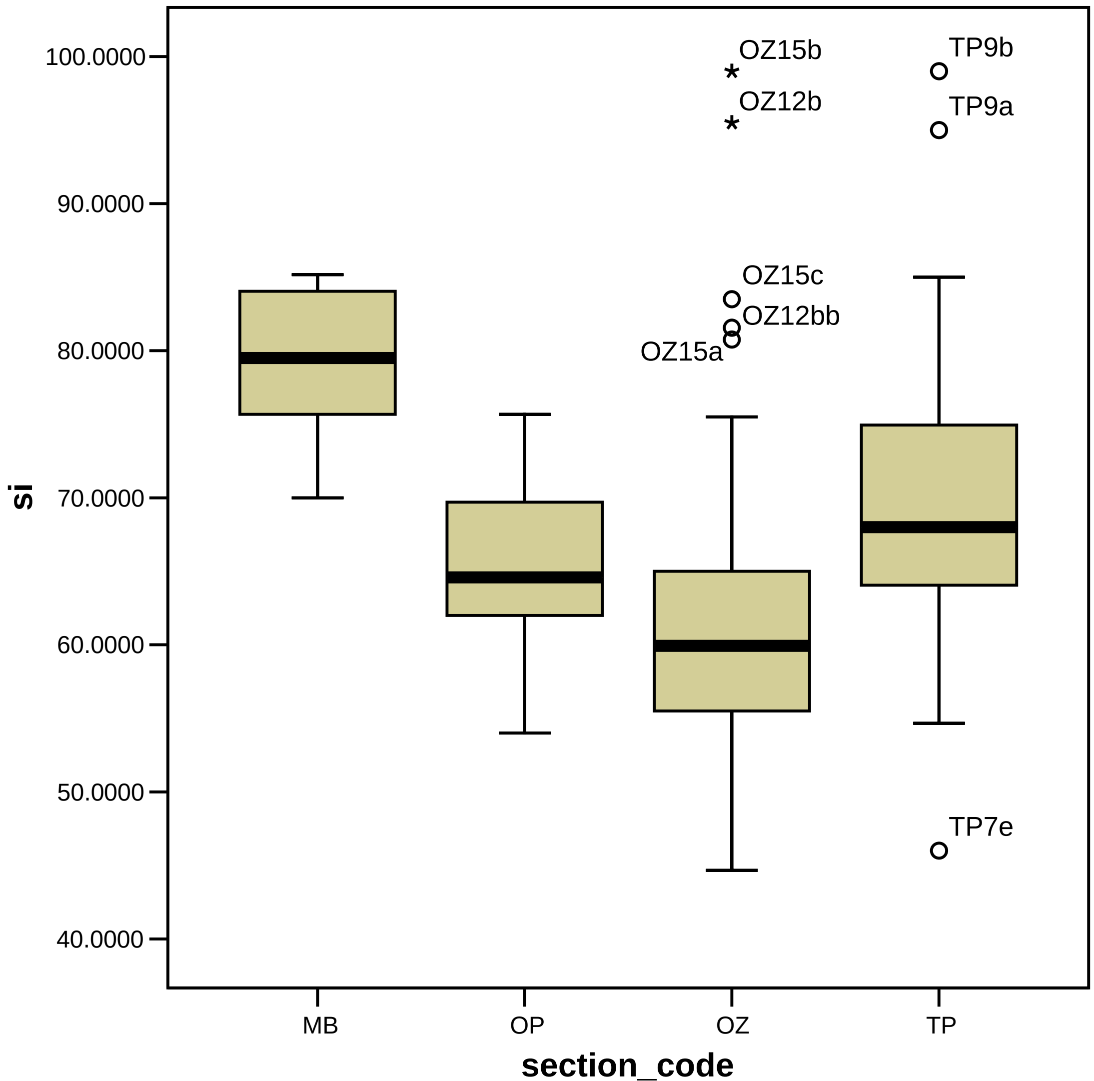
Mean Site Index (SI) values for the state of Missouri ranged from 45 to 99 with an average of 64 and a standard deviation of 10. The Mississippi River Alluvial Basin (MB) has a minimum site index of 70 and a maximum of 85 with a mean of 80 and a standard deviation of 5. The Osage Plains (OP) has a minimum site index of 54 and a maximum of 76 with a mean of 66 and a standard deviation of 6. The Ozark Highlands (OZ) has a minimum site index of 45 and a maximum of 99 with a mean of 61 and a standard deviation of 8. The Central Dissected Till Plains (TP) has a minimum site index of 46 and a maximum of 99 with a mean of 70 and a standard deviation of 9 (Table 9).

Table 9: Site Index values by section (minimum, maximum, mean, and standard deviation).

Section	Minimum	Maximum	Mean	Standard Deviation
MB	70	85	80	5
OP	54	76	66	6
OZ	45	99	61	8
TP	46	99	70	9

The ANOVA found a significant difference between at least two of the sections ($F=29.087$, $p<0.001$), and the lsd post-hoc test determined that there were actually five significant differences present between the MB and OP sections ($p<0.001$), MB and OZ sections ($p<0.001$), MB and TP sections ($p<0.001$), OP and OZ sections ($p=0.018$), and the OZ and TP sections ($p<0.001$).

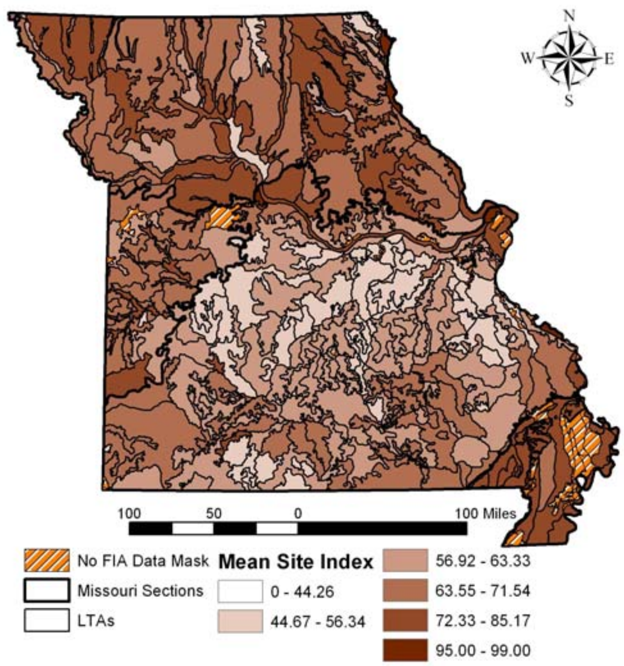
Figure 15: Boxplot of site indices by section.



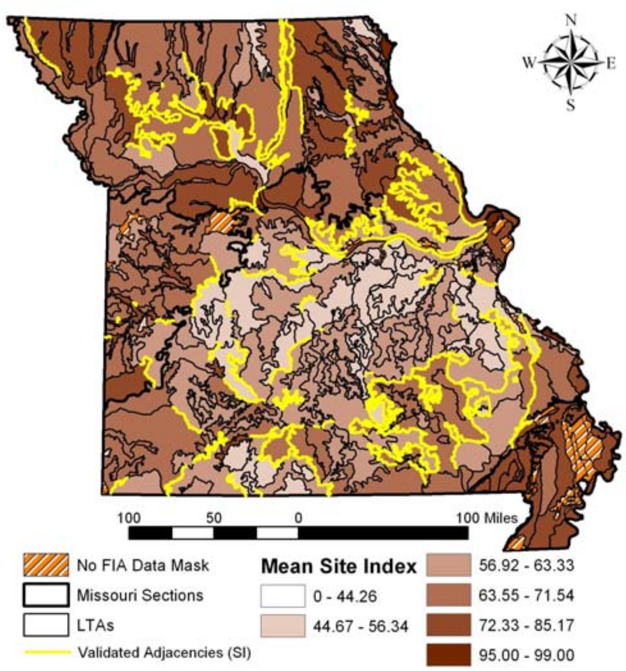
Statewide there were 147 LTA adjacencies with calculated p-values ≤ 0.05 showing a significant difference between the adjacent LTAs (Appendix A).

Figure 16: Productivity (Site Index) for the state of Missouri. A) mean site index for each LTA, and B) LTA adjacencies validated by site index.

A)



B)



Stand Age

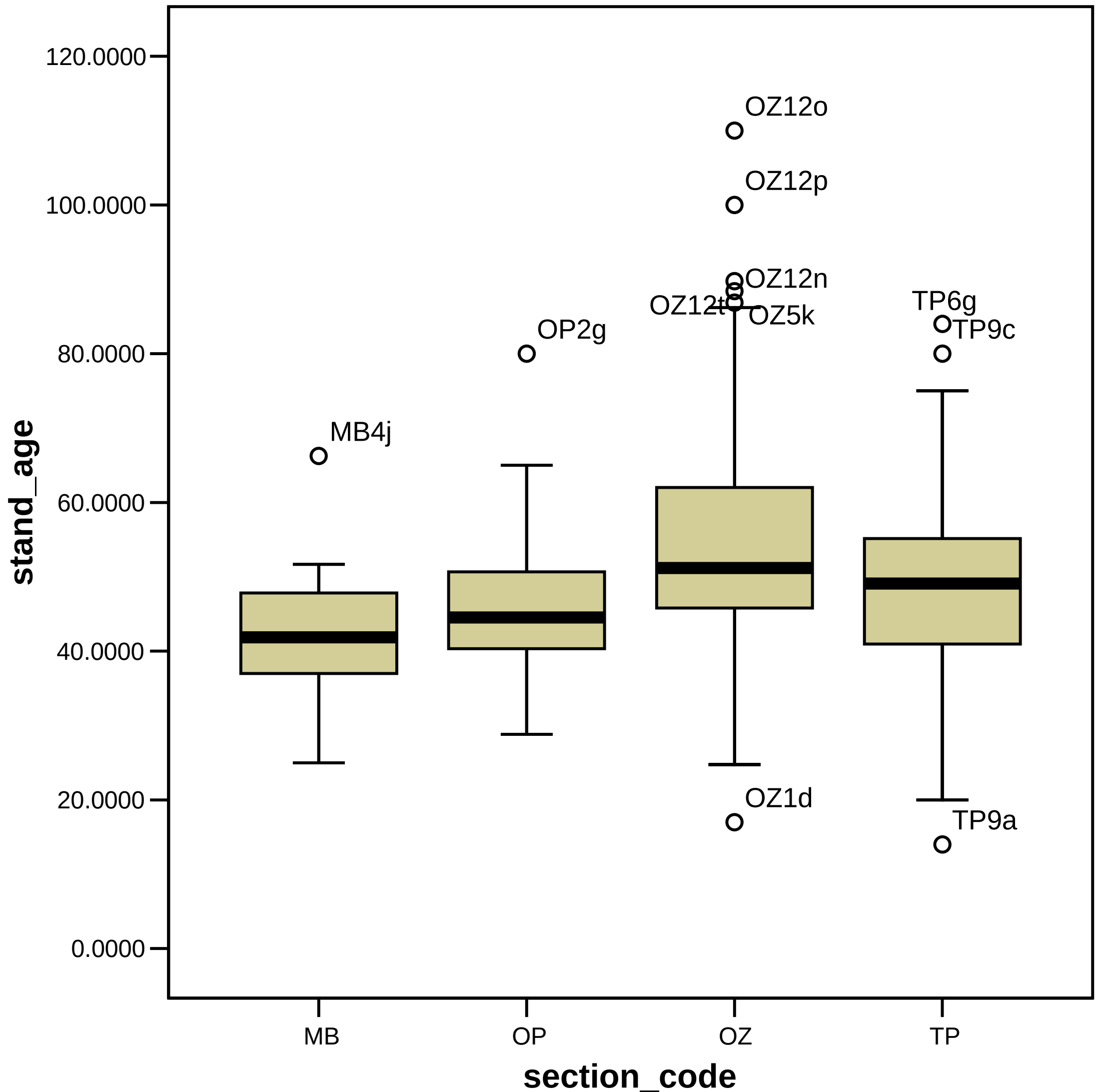
Mean Stand Age values for the state of Missouri ranged from 14.0 to 110.0 with an average of 51.82 and a standard deviation of 14.50. The Mississippi River Alluvial Basin (MB) has a minimum stand age of 25 and a maximum of 66 with a mean of 42 and a standard deviation of 11. The Osage Plains (OP) has a minimum stand age of 29 and a maximum of 80 with a mean of 48 and a standard deviation of 11. The Ozark Highlands (OZ) has a minimum stand age of 17 and a maximum of 110 with a mean of 54 and a standard deviation of 15. The Central Dissected Till Plains (TP) has a minimum stand age of 14 and a maximum of 84 with a mean of 49 and a standard deviation of 14 (Table 10).

Table 10: Stand Age values by section (minimum, maximum, mean, and standard deviation).

Section	Minimum	Maximum	Mean	Standard Deviation
MB	25	66	42	11
OP	29	80	48	11
OZ	17	110	54	15
TP	14	84	49	14

The Mann-Whitney U test found insignificant differences between the sections MB and OP (p=0.381), MB and TP (p=0.081), OP and TP (p=0.391), and OZ and TP (p=0.067), however, significant differences were detected between MB and OZ (p=0.004), and OP and OZ (p=0.015).

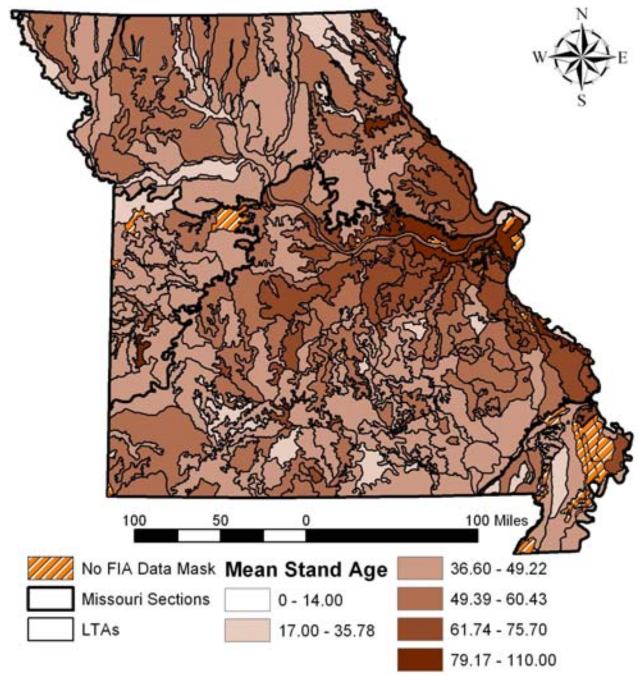
Figure 17: Boxplot of stand age by section.



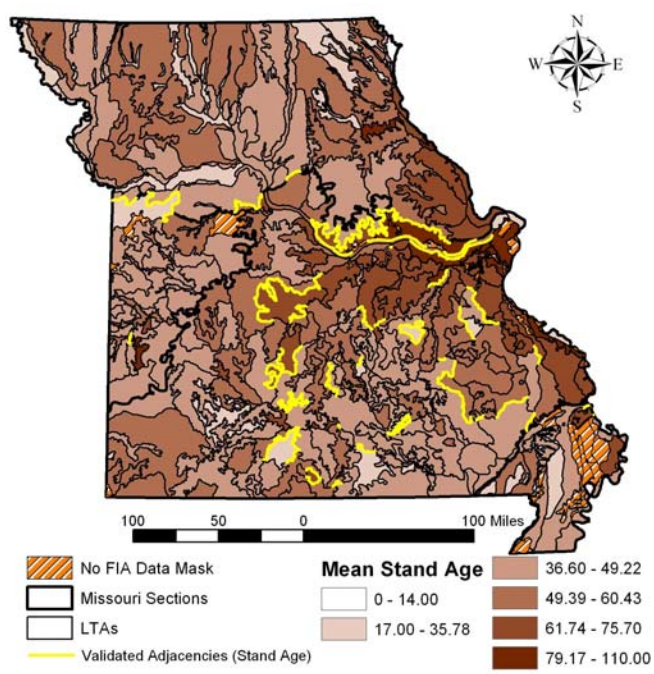
Statewide there were 57 LTA adjacencies with calculated stand age p-values ≤ 0.05 showing a significant difference between the adjacent LTAs (Figure 16 and Appendix A).

Figure 18: Stand Age for the state of Missouri. A) mean stand age for each LTA, and B) LTA adjacencies validated by stand age.

A)



B)



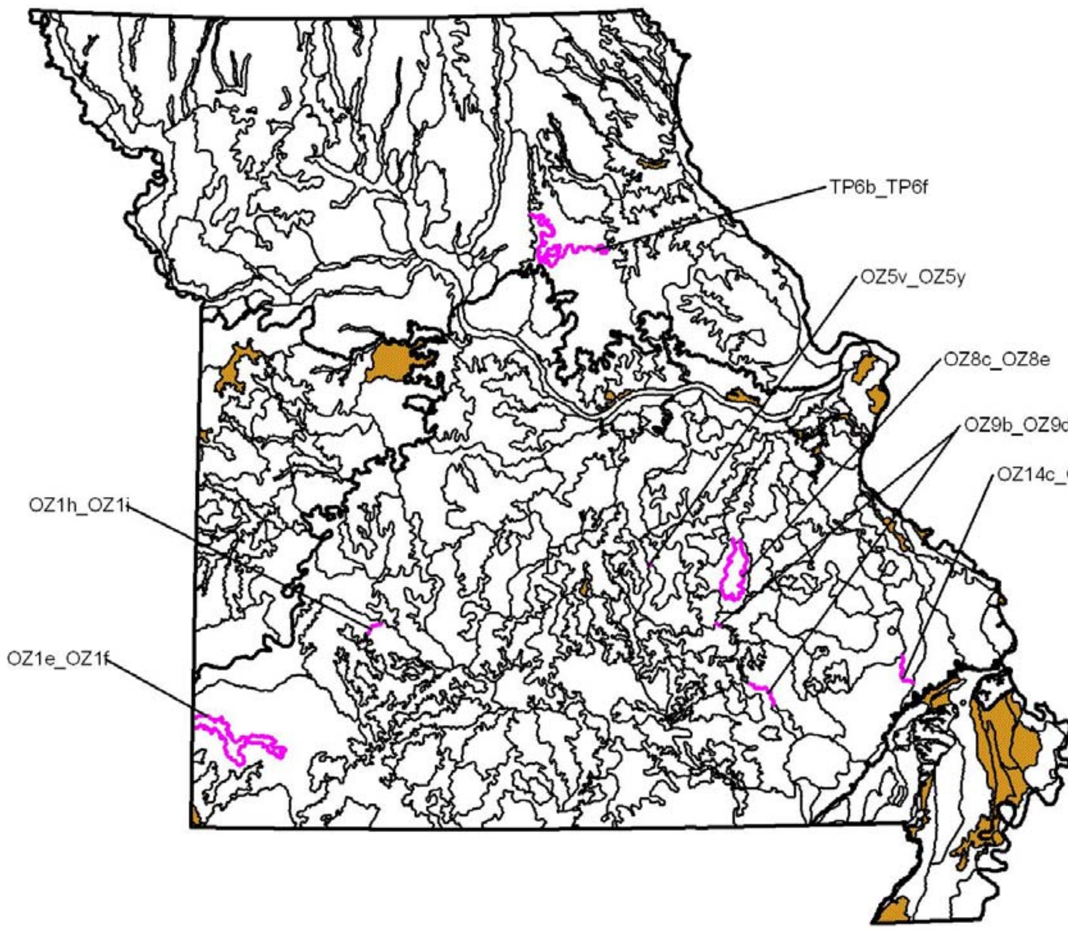
Overall Validation of Missouri LTA Delineation

Out of the 743 LTA adjacencies, 186 lacked enough data to make at least one measure un-calculable. Of the adjacencies that were calculated, 42 were only validated by one measure, 157 by two measures, 222 by three measures, 133 by four measures, 55 by five measures, 13 by six measures, 3 by seven measures, and 0 by all eight measures. This leaves 111 adjacencies unable to be tested by any measure due to missing tree data in the compared LTAs, and 7 LTAs which were not significantly different in any of the eight measures.

Forest Type Similarity validated the highest percentage of LTA adjacencies (86.72% of the adjacencies with enough data to be compared), followed by Species Composition Similarity (85.76%), Simpson's Diversity (68.00%), Site Index (23.52%), Margalef's Index (16.96%), Density of trees 5 inches and greater (9.28%), Density of trees 1 inch and greater (9.12%), and Stand Age (9.12%), leaving only seven LTA adjacencies not validated. These un-validated adjacencies include the Shoal Creek Oak Savanna/Woodland Low Hills and Spring River Prairie/Savanna Dissected Plains (OZ1e_OZ1f) adjacency, the Upper Sac River Oak Savanna/Woodland Low Hills and Little Sac River Oak Savanna/Woodland Low Hills (OZ1h_OZ1i) adjacency, the Little Piney Oak Woodland Dissected Plain and Dry Fork Oak Woodland Dissected Plain (OZ5v_OZ5y) adjacency, the Huzzah-Courtois Oak Woodland Dissected Plain and Huzzah Oak Woodland/Forest Hills (OZ8c_OZ8e) adjacency, the Current River Oak-Pine Woodland/Forest Hills and Black River Oak-Pine Woodland/Forest Hills (OZ9b_OZ9d) adjacency, the Wappappello Oak-Pine Woodland/Forest Hills and West Bollinger Oak-Pine Woodland/Forest Hills (OZ14c_OZ14d) adjacency, and the Grand

River Prairie Plain, and Upper Salt River Prairie/Woodland Dissected Plain (TP6b_TP6f) adjacency.

Figure 19: LTA Adjacencies not validated by any measure used in this study.



VALIDATION OF METHODS

The adjacency analysis validated all but 7 LTA adjacencies with the methods chosen for this study. The results of the adjacency analysis were compared with the results of the same measures run on randomly delineated LTAs (Figure 23). Table 5 shows the percentage of LTA Adjacencies validated in each of the 10 randomly generated LTA maps by each of the measures presented in this study.

Table 11: The percentage of LTAs validated in each of the 10 randomly generated LTA maps by each of the measures presented in this study, including Forest Type Similarity (FT), Species Composition Similarity (SC), Simpson's Diversity (Ds), Margalef's Index (Da), Stand Age (SA), Site Index (SI), Density of Trees 1 Inch dbh and Greater (D1), and Density of Trees 5 Inches dbh and Greater (D5). The last row indicates the validation percentages of the actual LTAs, which can be compared to the mean of the randomly generated LTAs.

Map	**% validated:**	**FT**	**SC**	**Ds**	**Da**	**SA**	**SI**	**D1**	**D5**
1		82.20	82.06	59.05	15.49	11.20	16.41	12.58	10.74
2		83.39	83.22	57.44	16.26	13.49	20.76	12.80	9.17
3		81.79	81.79	57.99	11.50	12.30	16.93	9.74	13.10
4		80.74	81.93	54.22	12.84	15.54	13.68	11.82	8.95
5		81.03	83.61	55.08	17.15	14.42	15.63	12.14	14.26
6		80.69	83.33	55.12	16.17	13.20	20.13	12.87	8.42
7		82.70	82.54	56.51	12.56	11.64	15.16	7.96	12.71
8		80.50	82.52	57.14	13.45	9.08	15.63	11.60	10.25
9		80.94	81.47	51.75	16.26	13.29	18.18	13.64	10.14
10		78.09	83.68	51.62	13.82	12.21	13.68	12.79	11.76
Mean		**81.21**	**82.61**	**55.59**	**14.55**	**12.64**	**16.62**	**11.79**	**10.95**
SD		**1.46**	**0.80**	**2.52**	**1.95**	**1.80**	**2.44**	**1.70**	**1.95**
Actual LTAs		86.72	85.76	68.00	16.96	9.12	23.52	9.12	9.28

These distributions were then compared with the values of the actual LTAs, and 5 of the 8 measures validated the actual adjacencies by at least one standard deviation more than the mean value of the random maps. Forest Type Similarity validated 86.72% of the actual adjacencies, which is over three standard deviations greater than the random distribution mean. Species Composition Similarity validated 85.76% of the actual adjacencies, which is also over three standard deviations greater than the random distribution mean. Simpson's Diversity validated 68.00% of the actual adjacencies, which is once again over three standard deviations greater than the random distribution mean. Margalef's Index validated 16.96% of the actual adjacencies, which is over one standard deviation greater than the random distribution mean. Stand Age validated 9.12% of the actual adjacencies, which is over one standard deviation less than the random distribution mean. Site Index validated 23.52% of the actual adjacencies, which is over two standard deviations greater than the random distribution mean. Trees per Acre 1 inch and greater validated 9.12% of the actual adjacencies, which is over one standard deviation less than the random distribution mean. Finally, Trees per Acre 5 inches and greater validated 9.28% of the actual adjacencies, which is within one standard deviation of the random distribution mean, not effectively any different than the random distribution.

Measures which were shown to best distinguish LTAs for this study after the validation of methods include Forest Type Similarity, Species Composition Similarity, Simpson's Diversity, Margalef's Index, and Site Index. Stand Age and both Density measures were therefore dropped from the analysis for not being able to distinguish LTAs. This results in a change in the number of adjacencies not validated by any appropriate measure from 7 to 8. Besides those adjacencies listed in Figure 17, OZ7b_OZ7c (Upper Gasconade Hills Oak Woodland Dissected Plain_Roubidoux Creek Oak Woodland/Forest Hills) also failed to be validated (Figure 25).

Figure 25: LTA Adjacencies not validated by Forest Type Similarity, Species Composition Similarity, Simpson's Diversity, Margalef's Index or Site Index.

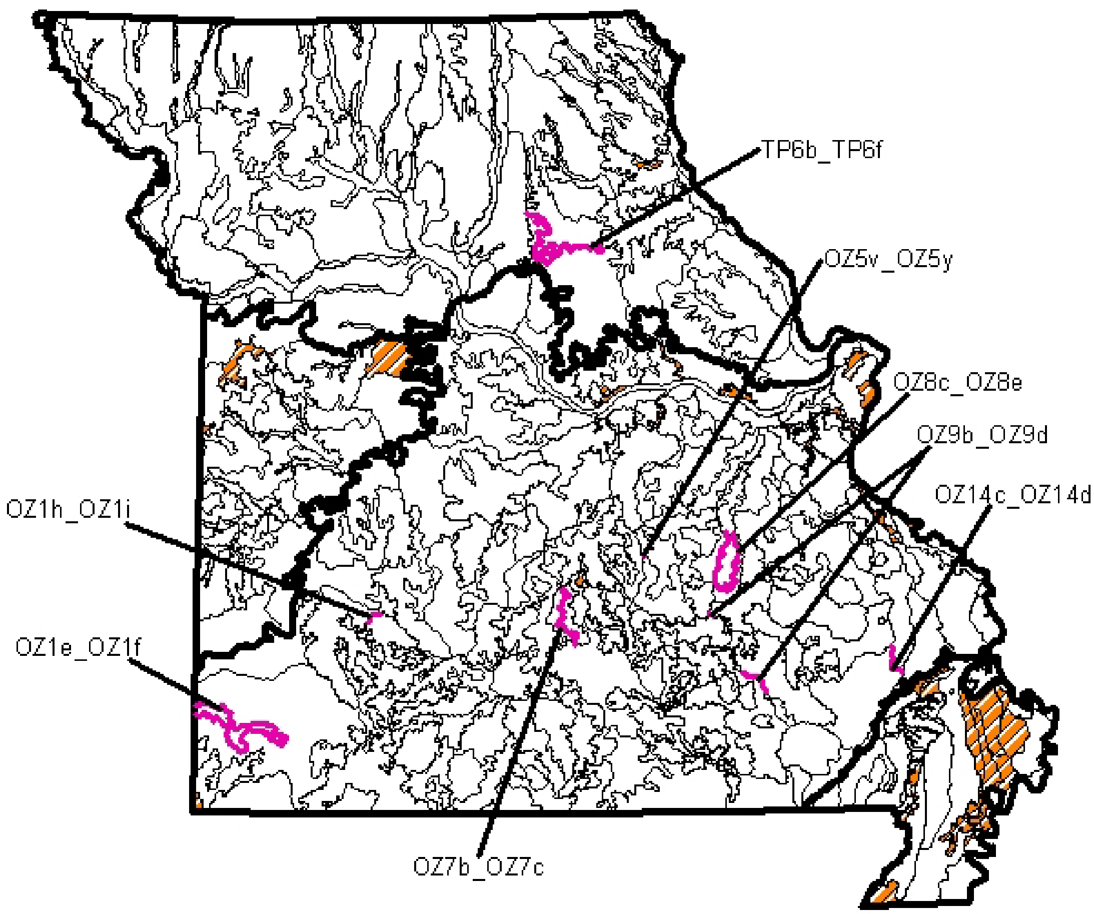
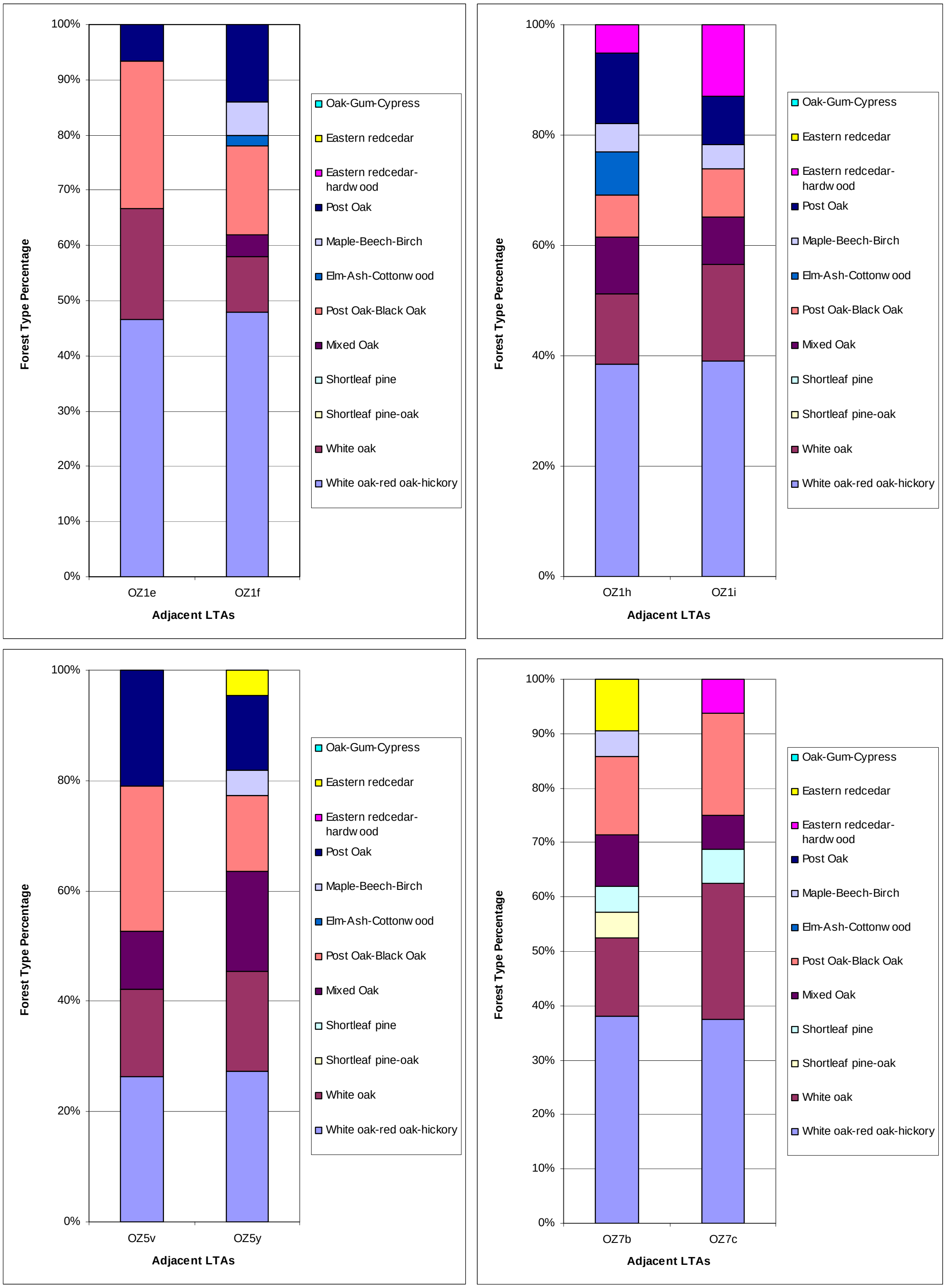
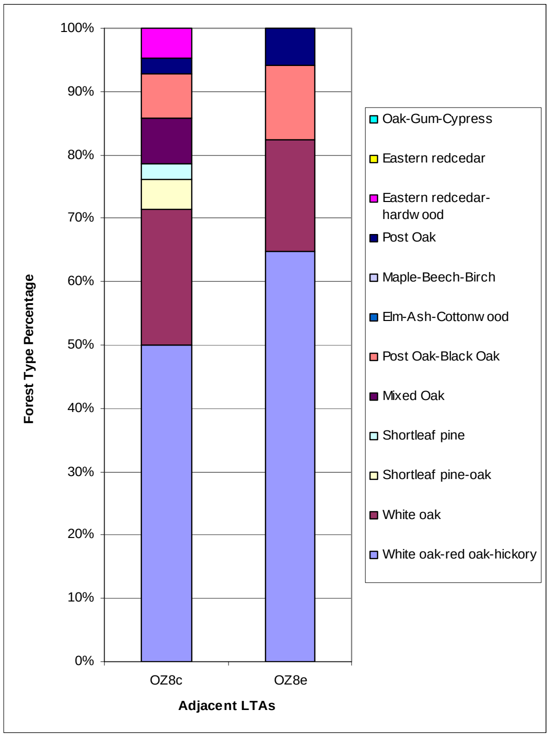


Table 12: Forest type comparisons of those LTAs whose adjacencies were not validated by this study. Values indicate the percentage of the LTA's plots that were that forest type. Forest types include: White Oak-Red Oak-Hickory (WH), White Oak (WO), Shortleaf Pine-Oak (SO), Shortleaf Pine (SP), Mixed Oak (MO), Post Oak-Black Oak (PB), Elm-Ash-Cottonwood (EC), Maple-Beech-Birch (MB), Post Oak (PO), Eastern Redcedar-Hardwood (EH), Eastern Redcedar (ER), Oak-Gum-Cypress (OC).

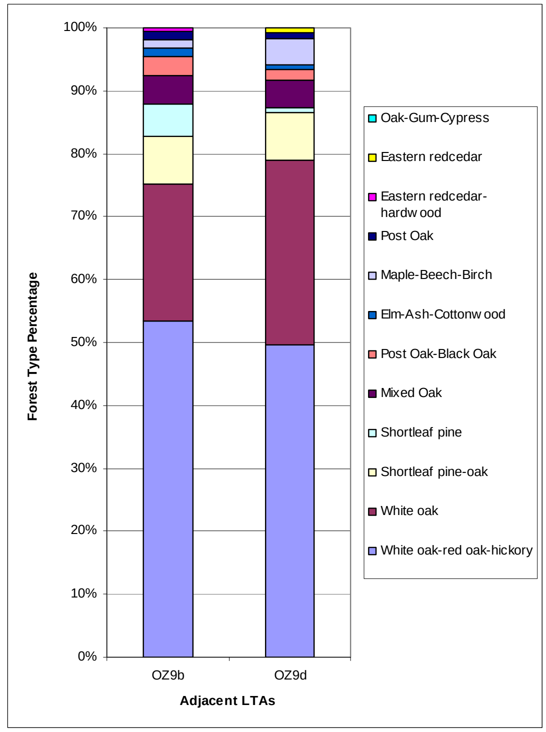
	WH	WO	SO	SP	MO	PB	EC	MB	PO	EH	ER	OC
OZ1e	47	20	0	0	0	27	0	0	7	0	0	0
OZ1f	47	10	0	0	4	16	2	6	14	0	0	0
OZ1h	38	13	0	0	10	8	8	5	13	5	0	0
OZ1i	39	17	0	0	9	9	0	4	9	13	0	0
OZ5v	26	16	0	0	11	26	0	0	21	0	0	0
OZ5y	26	17	0	0	17	13	0	4	13	0	4	0
OZ7b	38	14	5	5	10	14	0	5	0	0	10	0
OZ7c	38	25	0	6	6	19	0	0	0	6	0	0
OZ8c	50	21	5	2	7	7	0	0	2	5	0	0
OZ8e	65	18	0	0	0	12	0	0	6	0	0	0
OZ9b	54	22	8	5	4	3	1	1	1	1	0	0
OZ9d	50	29	8	1	4	2	1	4	1	0	1	0
OZ14c	59	21	3	3	3	2	1	6	5	0	0	0
OZ14d	55	17	0	0	14	3	0	3	7	0	0	0
TP6b	35	19	0	0	0	0	6	32	0	6	0	0
TP6f	36	21	0	0	0	0	0	36	0	0	0	7

Figure 26: Side-by-side bar charts showing the relative percentages of each forest type found in each of the two compared LTAs for those comparisons not validated in this study. This method allows for visual interpretation of similarity.

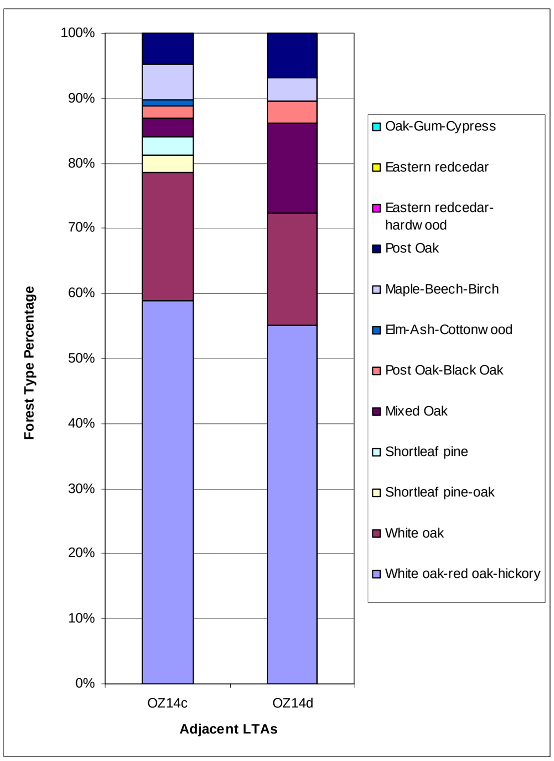




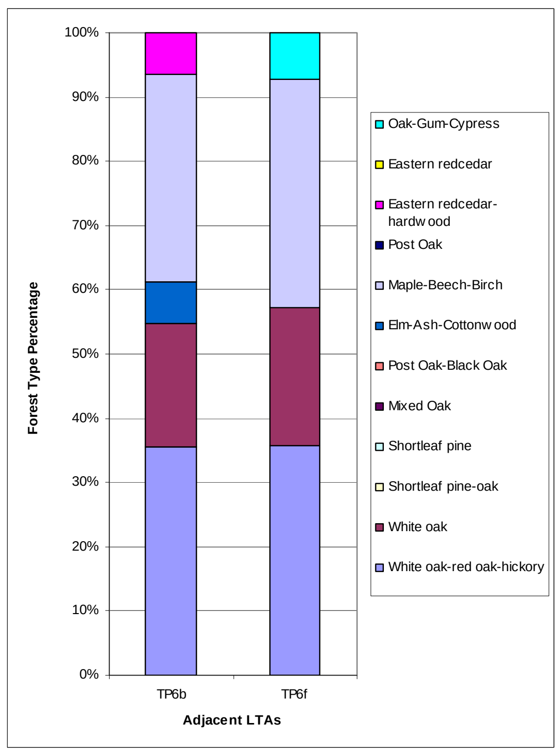
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Forest Type Percentage
OZ8c
OZ8e
Adjacent LTAs
Oak-Gum-Cypress
Eastern redcedar
Eastern redcedar-hardwood
Post Oak
Maple-Beech-Birch
Elm-Ash-Cottonwood
Post Oak-Black Oak
Mixed Oak
Shortleaf pine
Shortleaf pine-oak
White oak
White oak-red oak-hickory



100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Forest Type Percentage
OZ9b
OZ9d
Adjacent LTAs
Oak-Gum-Cypress
Eastern redcedar
Eastern redcedar-hardwood
Post Oak
Maple-Beech-Birch
Elm-Ash-Cottonwood
Post Oak-Black Oak
Mixed Oak
Shortleaf pine
Shortleaf pine-oak
White oak
White oak-red oak-hickory



100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Forest Type Percentage
OZ14c
OZ14d
Adjacent LTAs
Oak-Gum-Cypress
Eastern redcedar
Eastern redcedar-hardwood
Post Oak
Maple-Beech-Birch
Elm-Ash-Cottonwood
Post Oak-Black Oak
Mixed Oak
Shortleaf pine
Shortleaf pine-oak
White oak
White oak-red oak-hickory



100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Forest Type Percentage
TP6b
TP6f
Adjacent LTAs
Oak-Gum-Cypress
Eastern redcedar
Eastern redcedar-hardwood
Post Oak
Maple-Beech-Birch
Elm-Ash-Cottonwood
Post Oak-Black Oak
Mixed Oak
Shortleaf pine
Shortleaf pine-oak
White oak
White oak-red oak-hickory

Figure 27: Random LTA delineations created by FLOSS to validate methods used in this study.

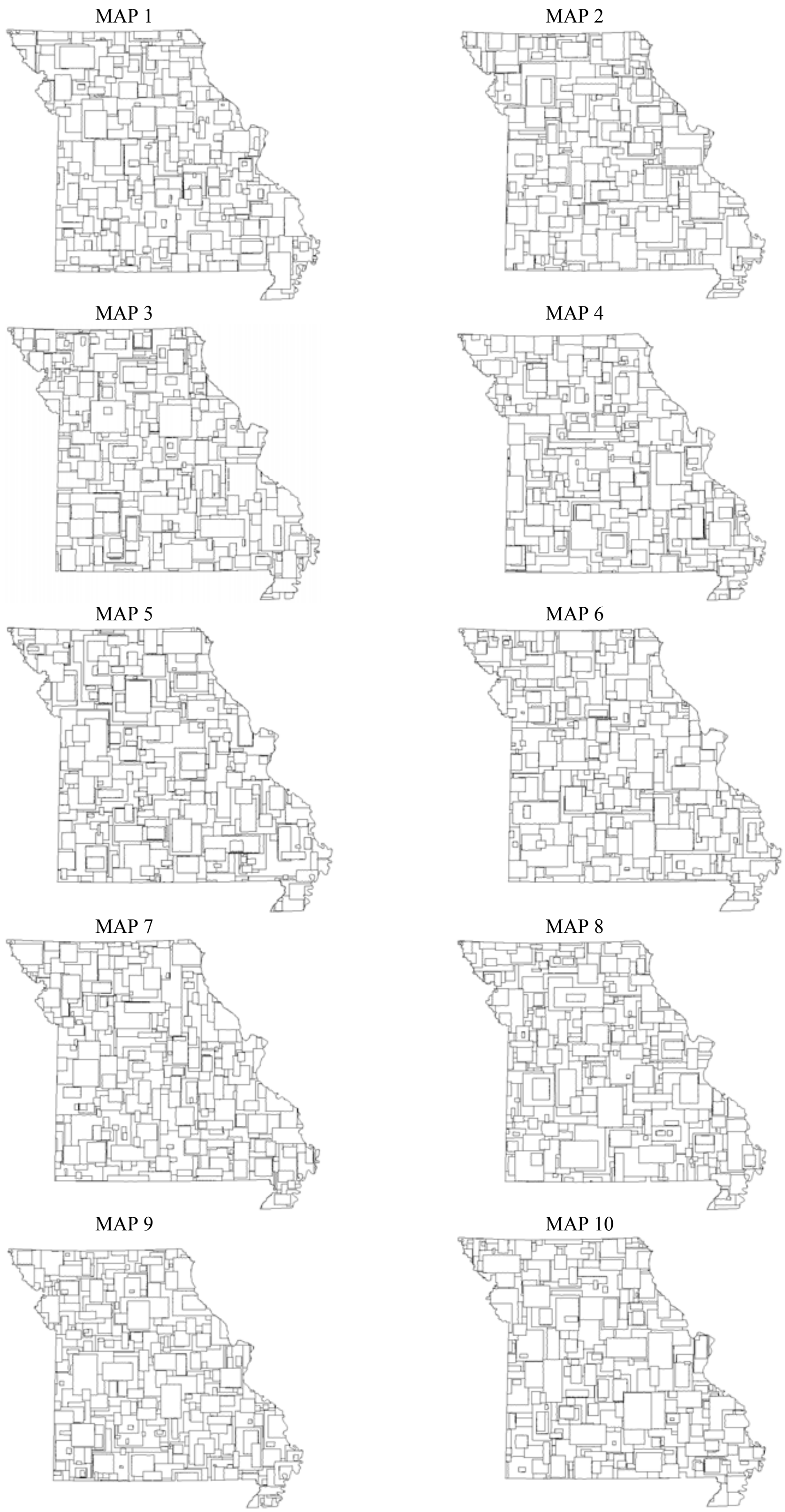
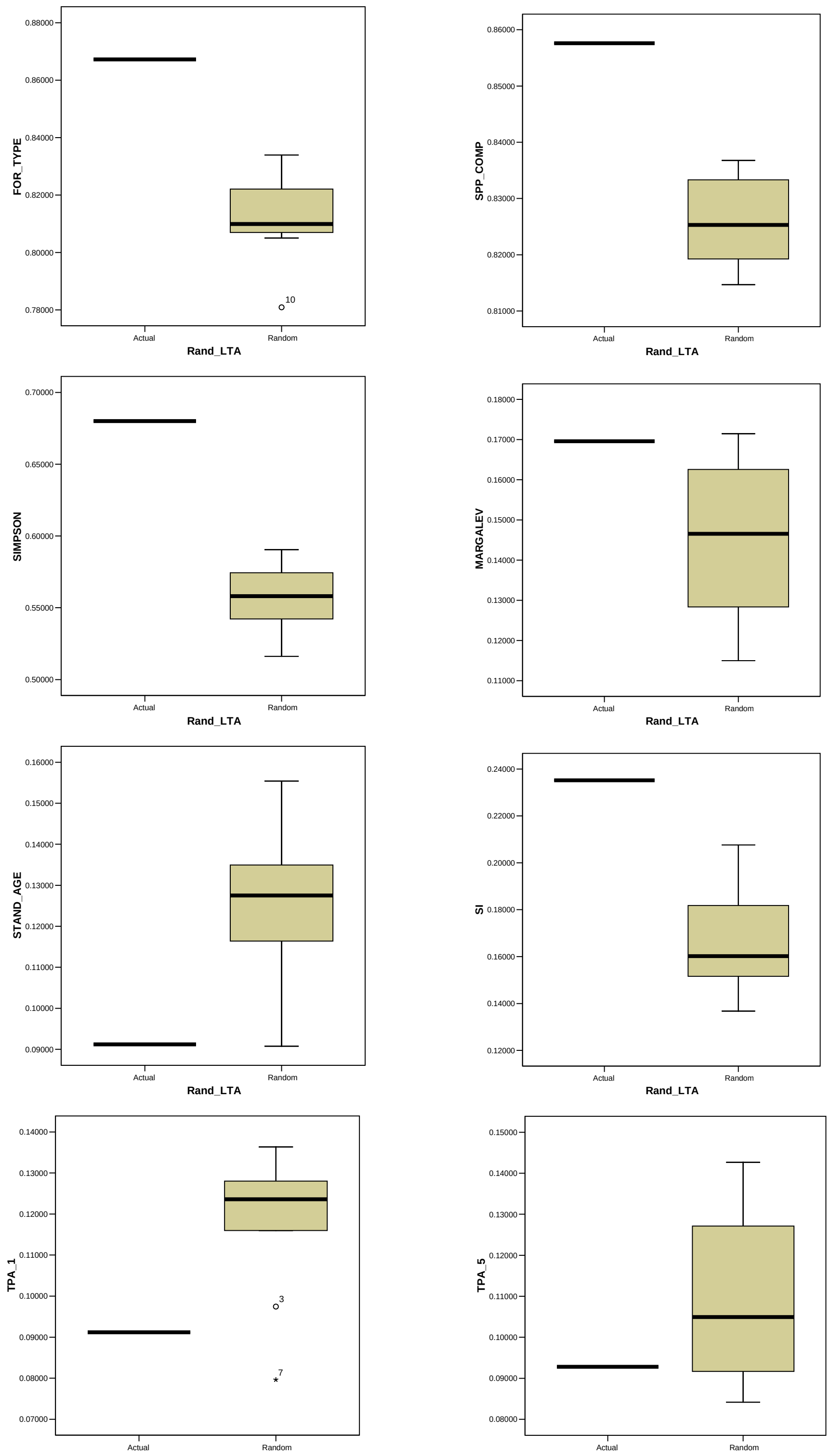


Figure 28: Boxplots illustrating the percentage of compared LTA adjacencies validated between actual LTAs and the distribution of randomly delineated LTAs for each of this study's adjacency measures.



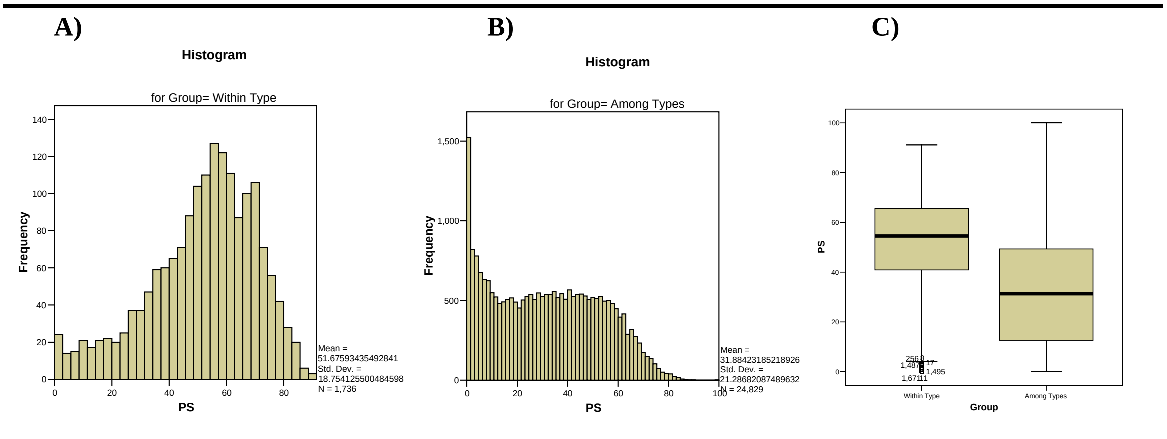
VALIDATION OF LTA (CHARACTERIZATION) TYPES

Within Type vs. Among Types

Percent similarity was calculated for comparisons of all LTAs (not just adjacent LTAs). The resulting similarity score was put into one of two groups dependent upon the compared LTA types. If the two LTAs were of the same type, the similarity score was put into the "Within" group (n=1,736). If the two LTAs were of different LTA types, the similarity score was put into the "Among" group (n=24,829). Neither group was normally distributed (Figure 18) according to a One Sample Kolmogorov-Smirnov Test for normality ($p<0.001$ for both groups), therefore the comparison of means was performed using a Mann-Whitney U Comparison of Means test in SPSS 12.0.

The "Within" group had a mean similarity score of 51.7% (SD=18.75%) and the "Among" group had a mean similarity score of 31.9% (SD=21.29%). The Mann-Whitney U Comparison of Means test showed a significant difference between the two groups ($p<0.001$), supporting the idea that similarity is higher within LTA Type than among LTA Types.

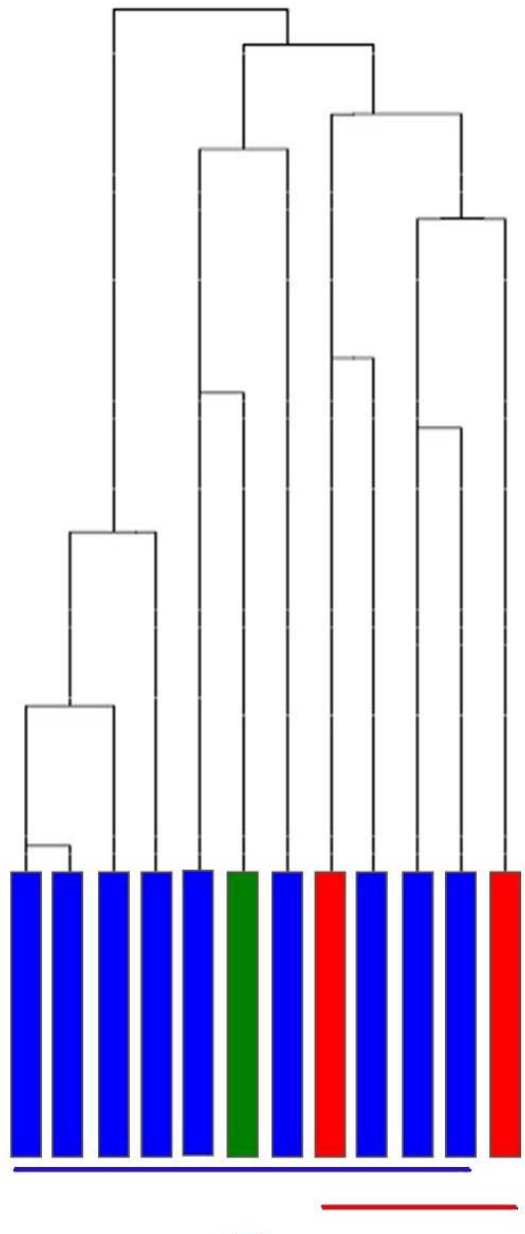
Figure 20: Frequency histograms showing the distributions of A) "Within" type similarity scores, B) "Among" types similarity scores, and C) a boxplot showing side-by-side comparisons of the distributions of the data.



Cluster Analysis

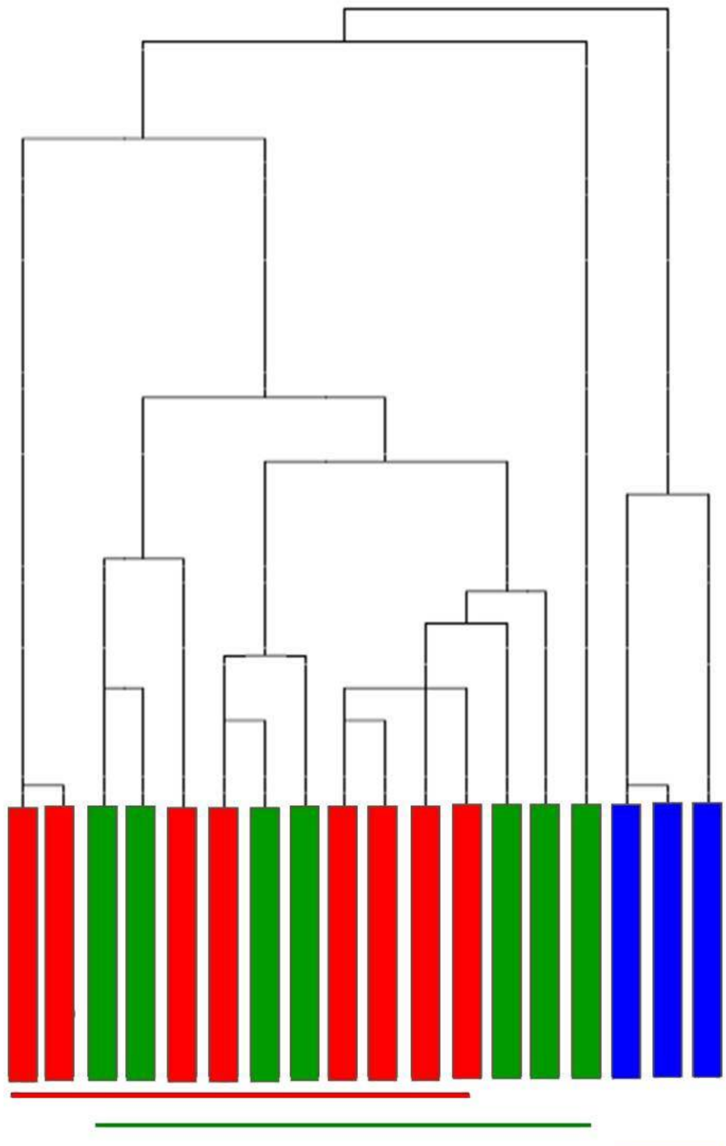
The cluster analysis produced a dendrogram for each of Missouri's sections. The Mississippi River Alluvial Basin contains 12 LTAs in 3 LTA Types, including 1 LTA in the Crowley's Ridge Hills, 2 LTAs in the Sand Ridges and Hills, and 9 LTAs in the Alluvial Plains (Figure 19). Since this section is dominated by the Alluvial Plains LTA Type it becomes difficult to determine how well species composition relates to type. In general, the Crowley's Ridge Hills and the Sand Ridges and Hills are shown to be different from the first group of Alluvial Plains, which are separated by the first split in the dendrogram. The next major split goes on to separate the Crowley's Ridge Hills from the Sand Ridges and Hills. However, there are Alluvial Plains closely related to each of these groups. To summarize, a distinct group of Alluvial Plains are different from everything else, and the Crowley's Ridge Hills are distinguishable from the Sand Ridges and Hills, but the Alluvial Plains in this section are so diverse that they fall into each of the other distinct groups.

Figure 21: Dendrogram depicting the similarity of LTAs within the **Mississippi River Alluvial Basin** section of Missouri based on relative species abundance using the between-groups linkage method in SPSS 12.0. The blue line represents the range of LTAs in the Alluvial Plains LTA Type. The red line represents the range of the LTAs in the Sand Ridges and Hills LTA Type. The green line represents the single LTA in the Crowley's Ridge Hills LTA Type.



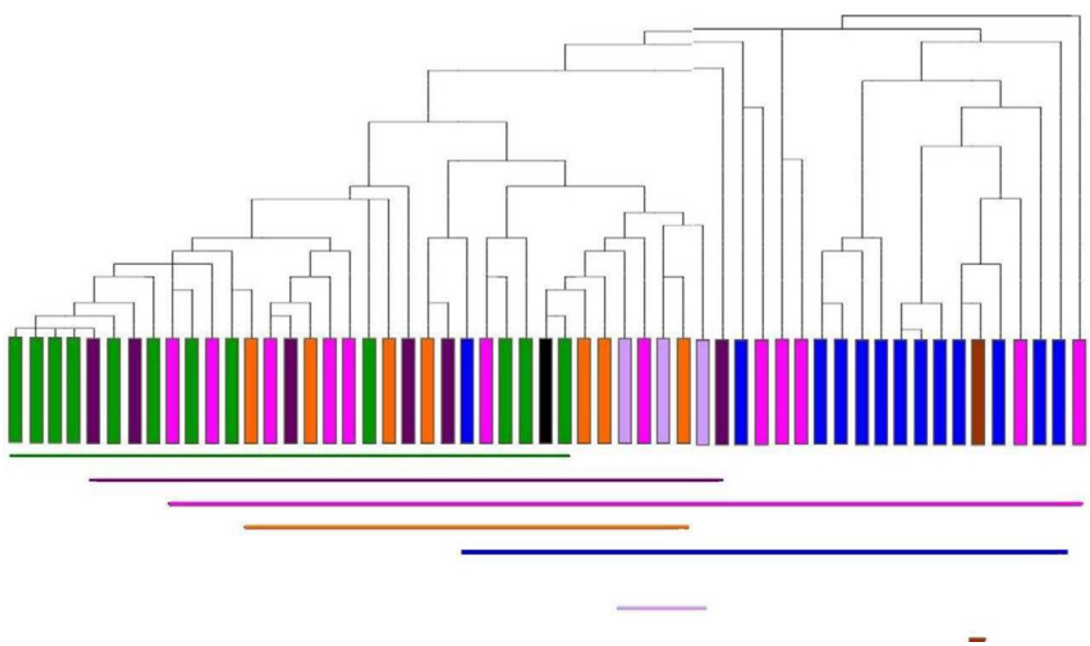
The Osage Plains section contains 18 LTAs in 3 LTA Types, including 3 LTAs in the Alluvial Plains, 7 LTAs in the Prairie Plains, and 8 LTAs in the Prairie/Savanna Scarped and Dissected Plains (Figure 20). The Alluvial Plains are split into their own group immediately, showing that they are quite distinct. The next major split shows that one of the Prairie Plains is distinct from everything else, including the other Prairie Plains, proving itself to be an outlier. The third split separates two Prairie/Savanna Scarped and Dissected Plains from everything else, making it a distinct group as well. From this point, however, it proves difficult to discern distinct groups. The Prairie Plains intermix with the Prairie/Savanna Scarped and Dissected Plains suggesting that since the two groups are both plains, they may still share the plains species. To summarize this section, the Alluvial Plains are distinct from everything else, but the Prairie Plains and the Prairie/Savanna Scarped and Dissected Plains are too similar to be easily distinguished.

Figure 22: Dendrogram depicting the similarity of LTAs within the **Osage Plains** section of Missouri based on relative species abundance using the between-groups linkage method in SPSS 12.0. The blue line represents the range of LTAs in the Alluvial Plains LTA Type. The red line represents the range of the LTAs in the Prairie/Savanna Scarped and Dissected Plains LTA Type. The green line represents the LTAs in the Prairie Plains LTA Type.



The Central Dissected Till Plains section contains 55 LTAs in 8 LTA Types, including 12 LTAs in the Woodland/Forest Hills, 6 LTAs in the Prairie/Woodland Dissected Plains, 12 LTAs in the Prairie Plains, 7 LTAs in the Prairie/Woodland Hills, 13 LTAs in the Alluvial Plains, 1 LTA in the Woodland/Forest Breaks, 3 LTAs in the Loess Prairie Hills and Blufflands, and 1 LTA in the Low Prairie Plains (Figure 21). This section seems to form a sort of elevational continuum in the species composition. Starting at the left of the dendrogram there are the Woodland/Forest Hills, Prairie/Woodland Dissected Plains, and the Prairie Woodland Hills. To the right are the Alluvial Plains and Low Prairie Plains. Intermixed near the center are the Loess Prairie Hills and Blufflands and the Prairie Plains, which are dispersed throughout the dendrogram, suggesting a great amount of variation in the Prairie Plains. This variation could be due to the fact that the Prairie Plains serve as buffer zones between the other LTA Types, actually contacting every other TP LTA Type except the Low Prairie Plains. There is also a bit of spatial autocorrelation involved in the dendrogram. For instance, the Prairie Plains LTA (TP4c-Cameron Upland Prairie Plain) that falls in the same group with the Loess Prairie Hills and Blufflands (which are located in the extreme Northwest of the state) is the closest Prairie Plain to them, and actually shares an adjacency. The Prairie Plain (TP7e-Fox River Prairie Plain) farthest from the Loess Prairie Hills and Blufflands by similarity on the dendrogram (the farthest right on the dendrogram) is on the extreme opposite side of the state from them.

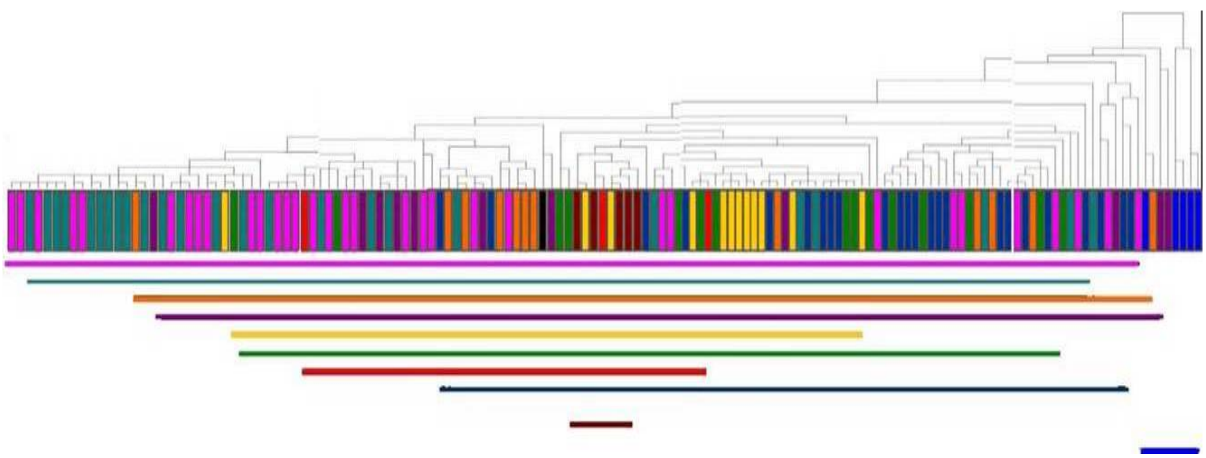
Figure 23: Dendrogram depicting the similarity of LTAs within the **Central Dissected Till Plains** section of Missouri based on relative species abundance using the between-groups linkage method in SPSS 12.0. The green line represents the range of LTAs in the Woodland/Forest Hills LTA Type. The purple line represents the range of the LTAs in the Prairie/Woodland Dissected Plains LTA Type. The pink line represents the LTAs in the Prairie Plains LTA Type. The orange line represents the range of the LTAs in the Prairie/Woodland Hills LTA Type. The blue line represents the range of the LTAs in the Alluvial Plains LTA Type. The black line represents the single LTA in the Woodland/Forest Breaks LTA Type. The lavendar line represents the range of the LTAs in the Loess Prairie Hills and Blufflands LTA Type. The brown line represents the range of the LTAs in the Low Prairie Plains LTA Type.



The Ozark Highlands section contains 146 LTAs in 11 LTA Types, including 32 LTAs in the Oak Savanna/Woodland Dissected Plains, 25 LTAs in the Oak Woodland Dissected Plains and Hills, 12 LTAs in the Dolomite Glade Woodlands, 11 LTAs in the Prairie/Savanna Dissected Plains, 12 LTAs in the Oak-Pine Hills, 15 LTAs in the Rugged Hills and Forest Breaks, 3 LTAs in the Igneous Knobs, 24 LTAs in the Oak Woodland/Forest Hills, 2 LTAs in the Prairie Plains, 5 LTAs in the Pine-Oak Woodland Dissected Plains, and 5 LTAs in the Alluvial Plains (Figure 22). Upon examination of this dendrogram, it becomes apparent that certain LTA Types group together well, with a little bit of overlap with other LTA Types. However, every group seems to have an outlier non-congruent with the rest of the group. Spatial autocorrelation appears to be the reason for this discrepancy. For example, in the Oak-Pine Hills LTA Type, one LTA falls farther to the left of the dendrogram than the other LTAs, and in fact, this LTA (OZ4m-Bryant Creek Oak-Pine Woodland/Forest Hills) is the furthermost LTA from the main cluster of LTAs belonging to this type.

Spatial autocorrelation seems to be an underlying factor involved in the distribution of species in the state of Missouri. While it was shown in the previous section that LTAs of the same LTA Type are more similar than LTAs of different LTA Types, spatial autocorrelation makes it possible for LTAs of different types to be more similar because of spatial positioning. LTA Types with members spread farther apart geographically seem to have more diverse species compositions. So while LTA Types are generally a good measure of similarity, it should not be assumed that LTAs of the same type will have the same species compositions, due to spatial autocorrelation.

Figure 24: Dendrogram depicting the similarity of LTAs within the **Ozark Highlands** section of Missouri based on relative species abundance using the between-groups linkage method in SPSS 12.0. The pink line represents the range of LTAs in the Oak Savanna/Woodland Dissected Plains LTA Type. The teal line represents the range of the LTAs in the Oak Woodland Dissected Plains and Hills LTA Type. The orange line represents the LTAs in the Dolomite Glade Woodlands LTA Type. The purple line represents the range of the LTAs in the Prairie/Savanna Dissected Plains LTA Type. The yellow line represents the range of the LTAs in the Oak-Pine Hills LTA Type. The green line represents the range of LTAs in the Rugged Hills and Forest Breaks LTA Type. The red line represents the range of the LTAs in the Igneous Knobs LTA Type. The navy blue line represents the range of the LTAs in the Oak Woodland/Forest Hills LTA Type. The black line represents the single LTA in the Prairie Plains LTA Type. The brown line represents the range of the LTAs in the Pine-Oak Woodland Dissected Plains LTA Type. The blue line represents the range of the LTAs in the Alluvial Plains LTA Type.



LTA APPLICATION

Electivity was calculated for every species found in the Eastwide Forest Inventory Database for the state of Missouri. Each LTA has a complete listing of electivity for every species, which can be found in Appendix B, and maps for the 20 most abundant species in Missouri (by count, as determined by the Eastwide Forest Inventory Database) can be found in Figures 25 through 44. The value in this result is in the ability of this measure to identify conditions associated with locations where a species occurs. In forestry, it is important to be able to determine where species are likely to be found. In a normal map of a species distribution, all areas are given an equal likelihood of containing the species in question (the species exists there or it does not). What electivity allows for is adding a probability factor to the chance of finding the species. If the species has an affinity for an LTA, the probability of finding that species in a forest stand is higher than if the species is shown to have a negative association for the LTA. For example, black walnut (*Juglans nigra*) is an economically valuable species in Missouri, found much less often than many other species. It is apparent by examining the map in Figure 39 that the range of black walnut includes most of the state (it was seldom found in the MB section of the state). However, economically it makes more sense to look for black walnut in portions of the state where it thrives. Therefore, according to the electivity measure one is more likely to find black walnut in the northwestern portion of the state than in the Eastern Ozarks.

Figure 25: Electivity of white oak in Missouri calculated from a modification in Ivlev's Electivity Index.

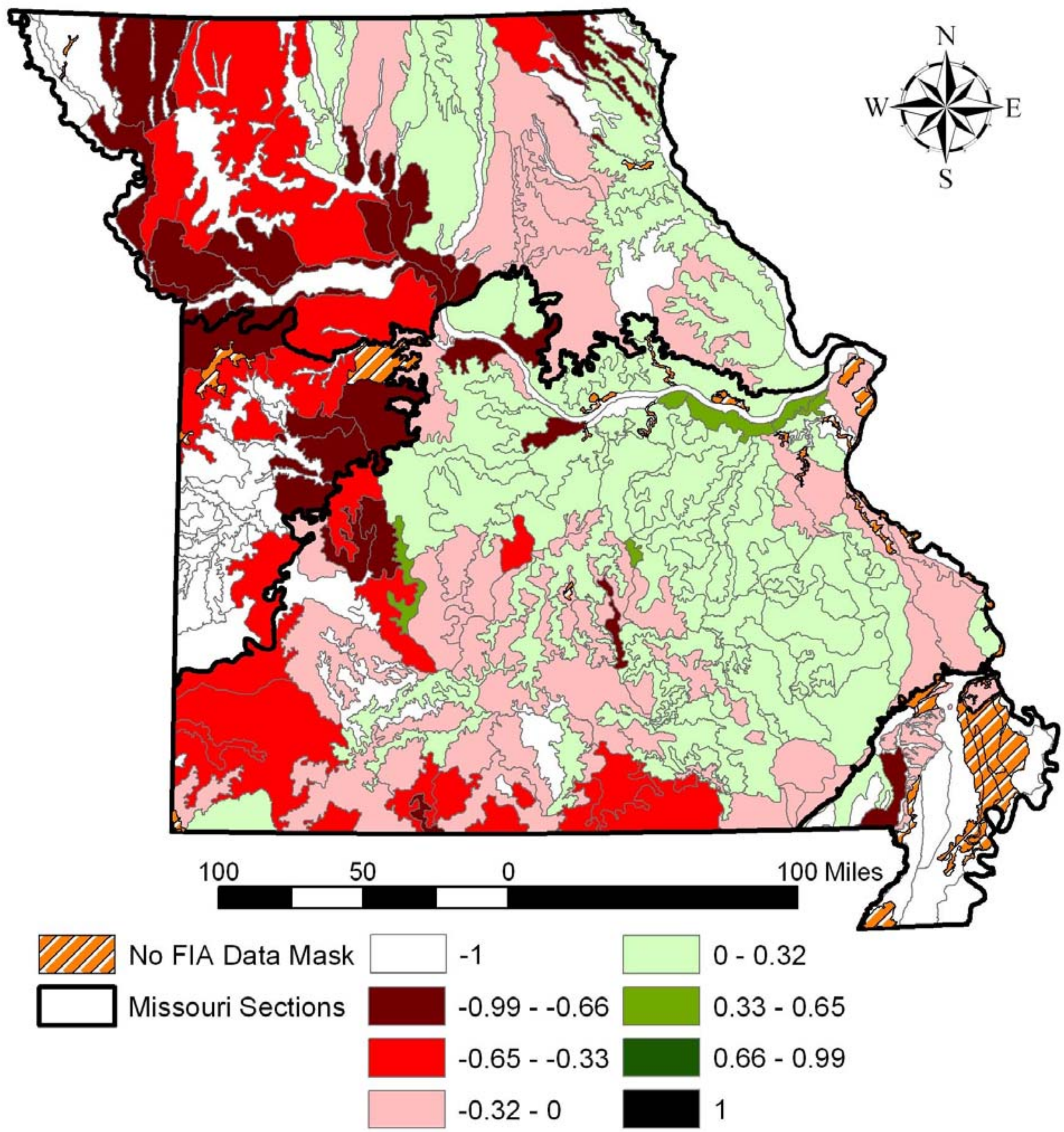


Figure 26: Electivity of black oak in Missouri calculated from a modification in Ivlev's Electivity Index.

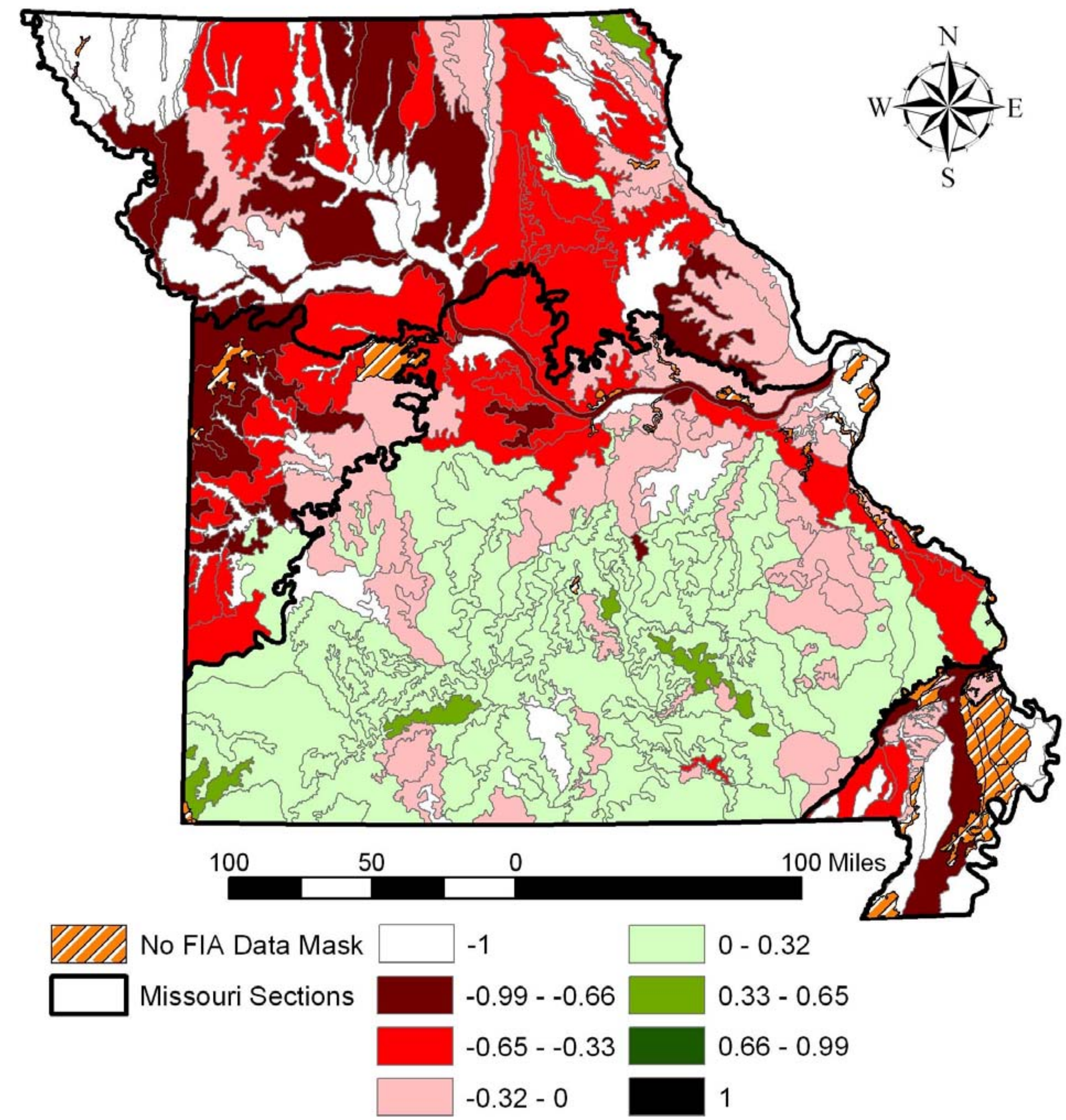


Figure 27: Electivity of post oak in Missouri calculated from a modification in Ivlev's Electivity Index.

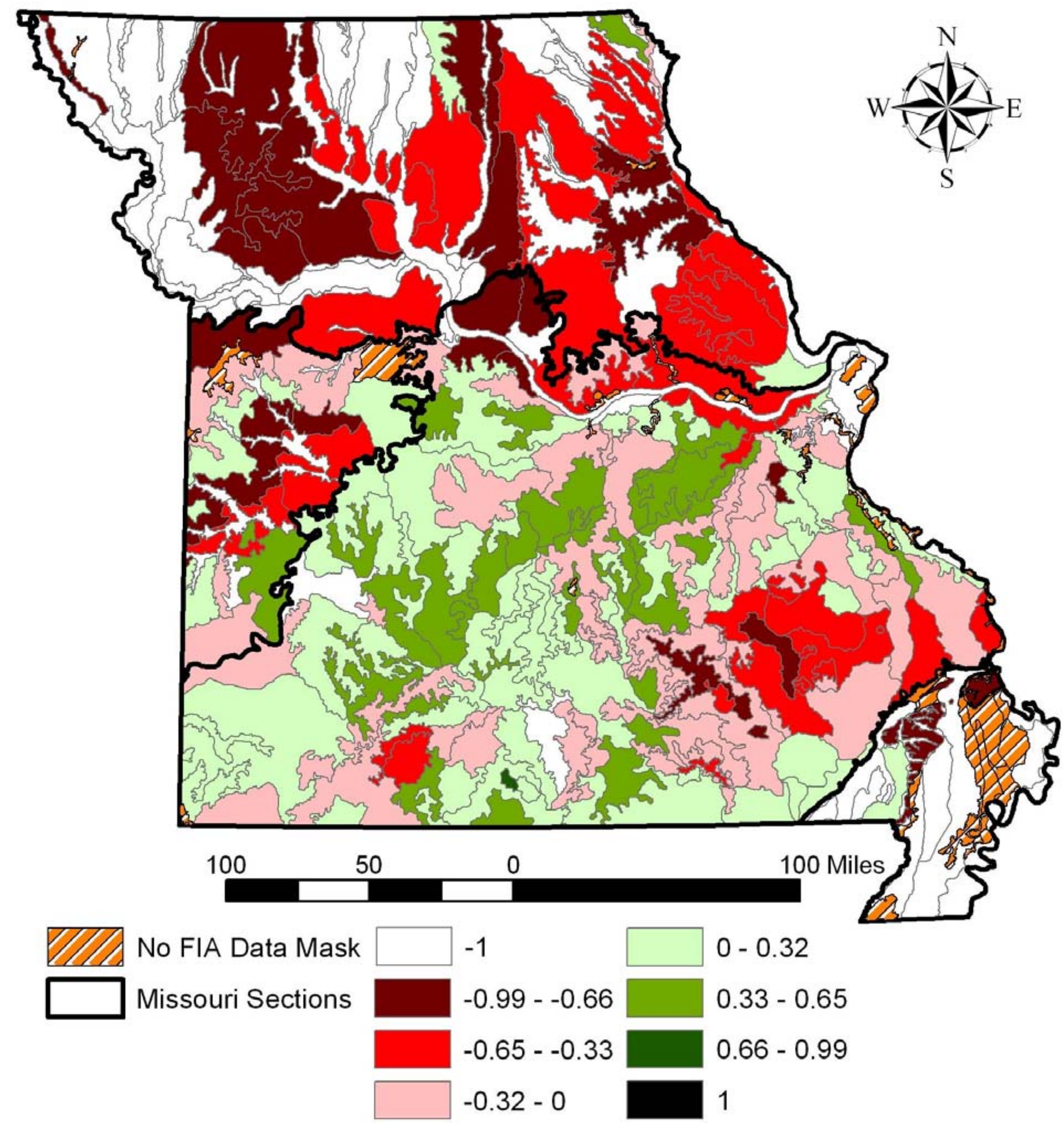


Figure 28: Electivity of scarlet oak in Missouri calculated from a modification in Ivlev's Electivity Index.

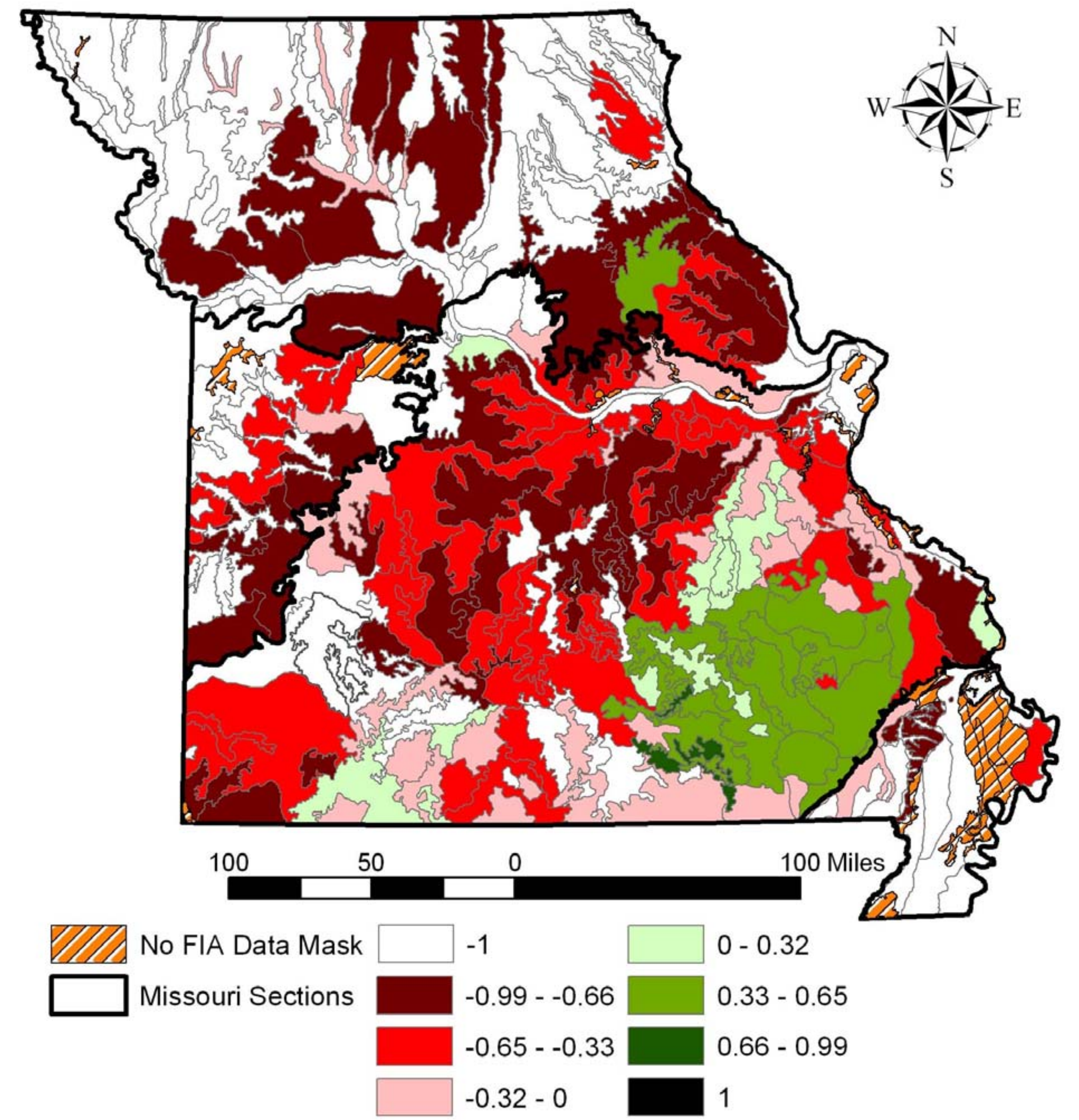


Figure 29: Electivity of American elm in Missouri calculated from a modification in Ivlev's Electivity Index.

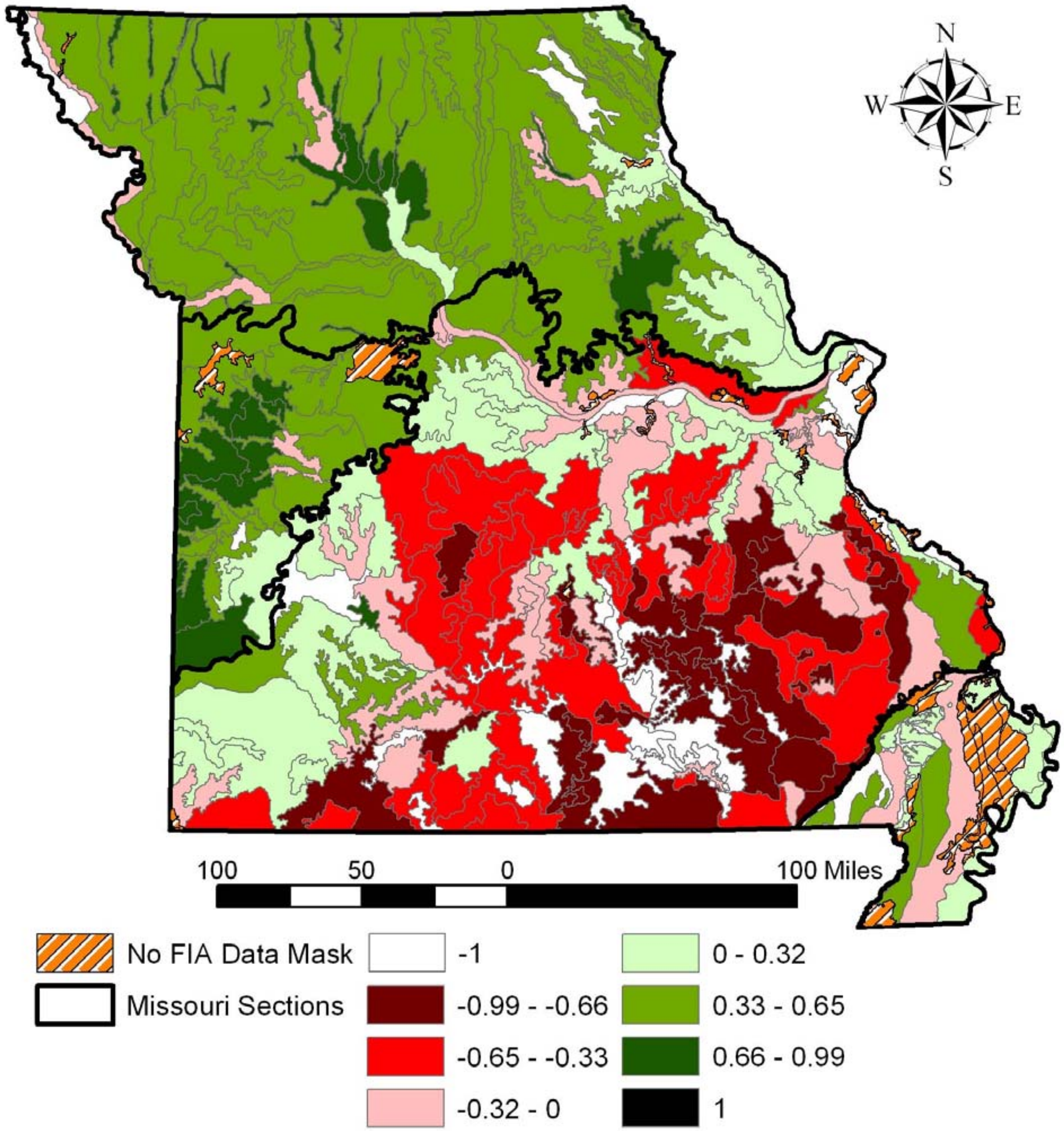


Figure 30: Electivity of eastern redcedar in Missouri calculated from a modification in Ivlev's Electivity Index.

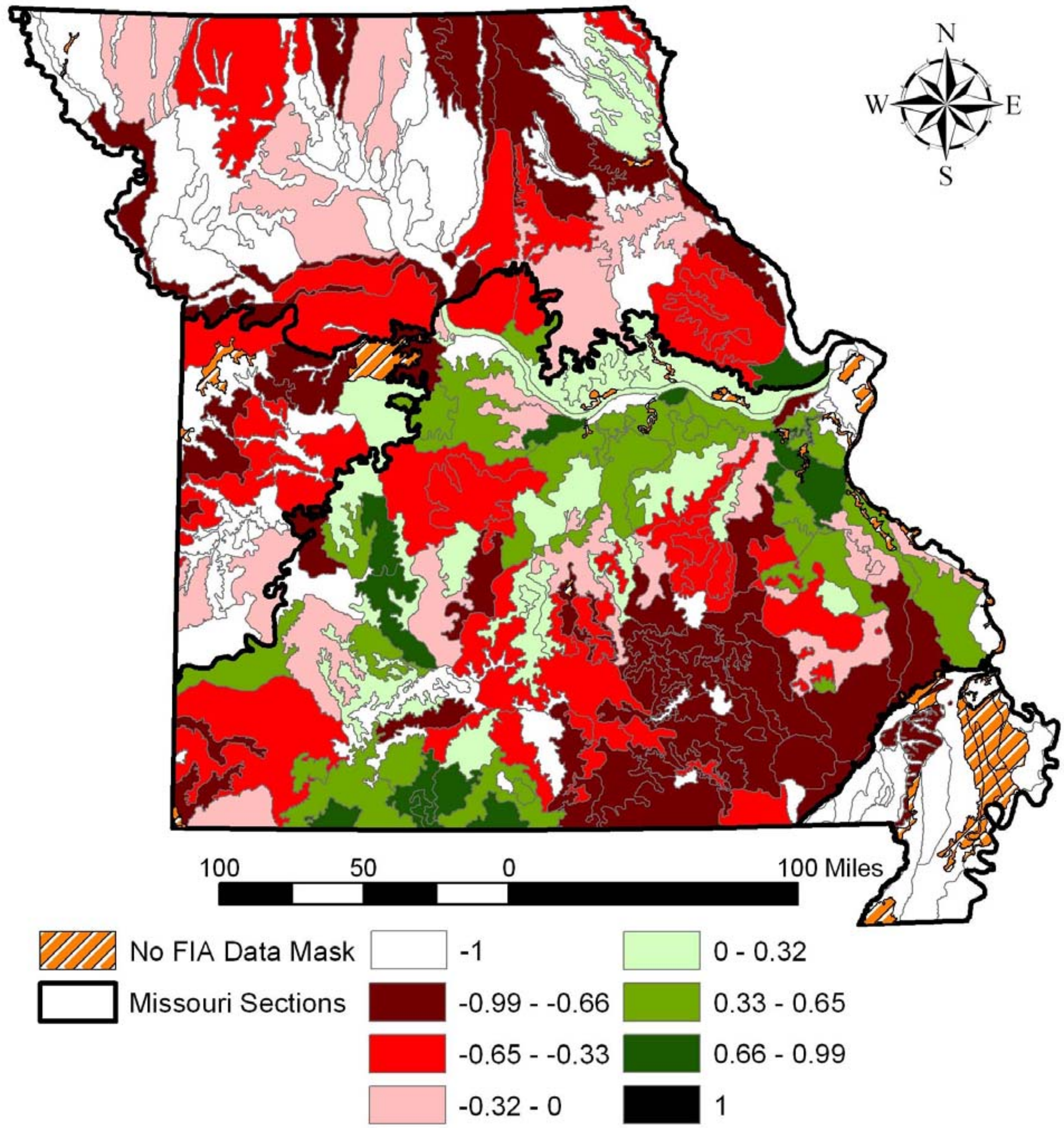


Figure 31: Electivity of shortleaf pine in Missouri calculated from a modification in Ivlev's Electivity Index.

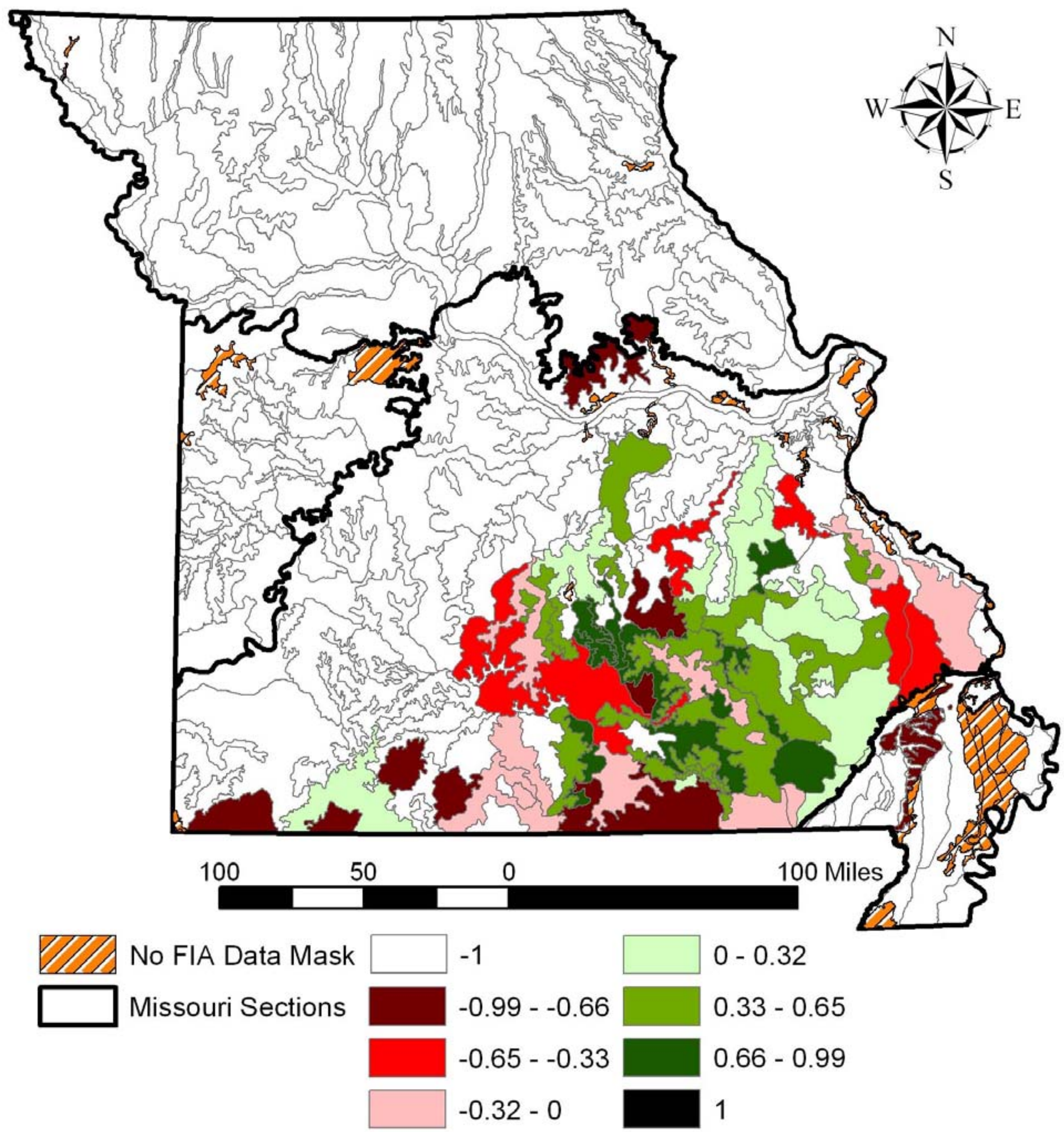


Figure 32: Electivity of blackjack oak in Missouri calculated from a modification in Ivlev's Electivity Index.

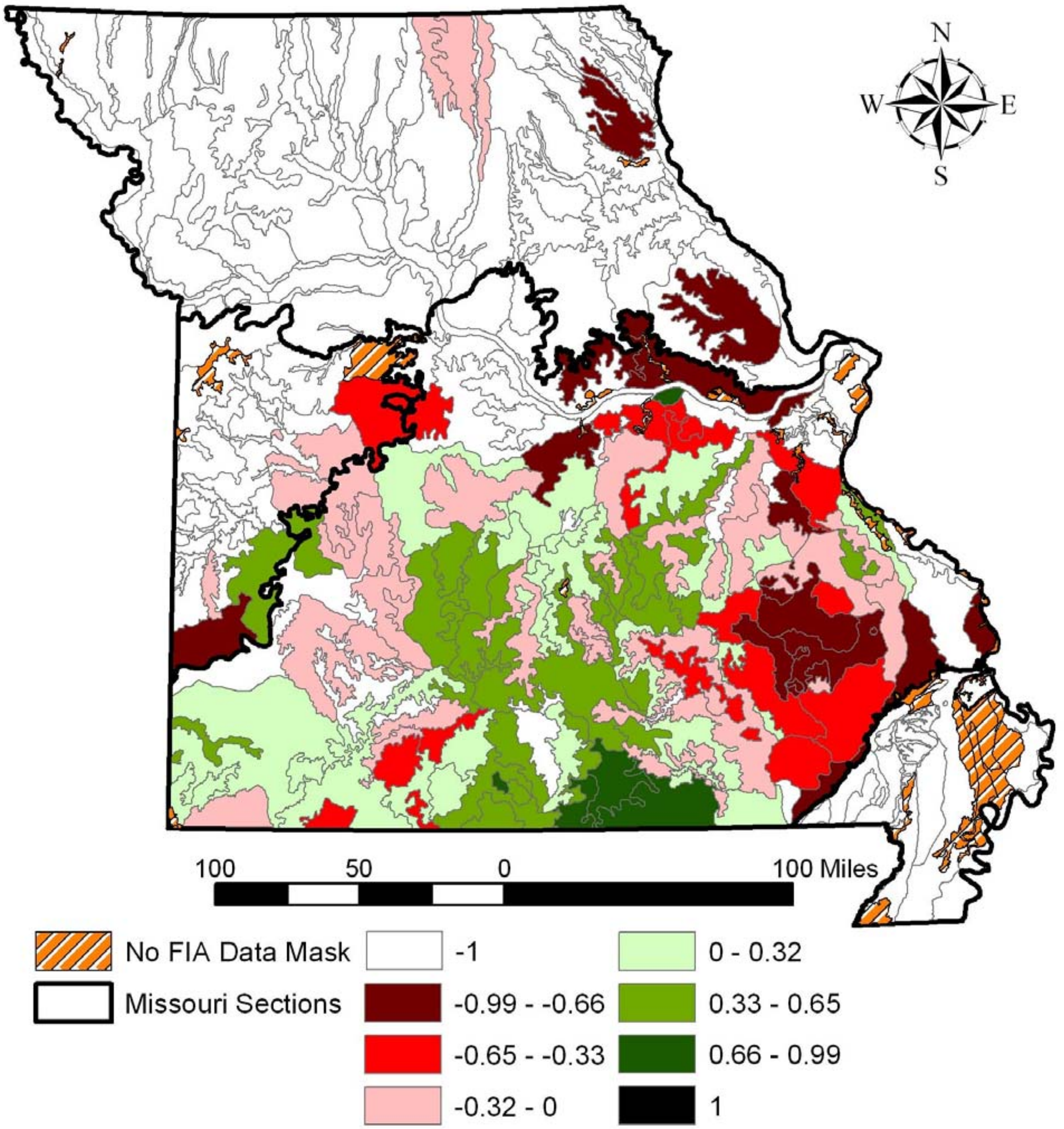


Figure 33: Electivity of northern red oak in Missouri calculated from a modification in Ivlev's Electivity Index.

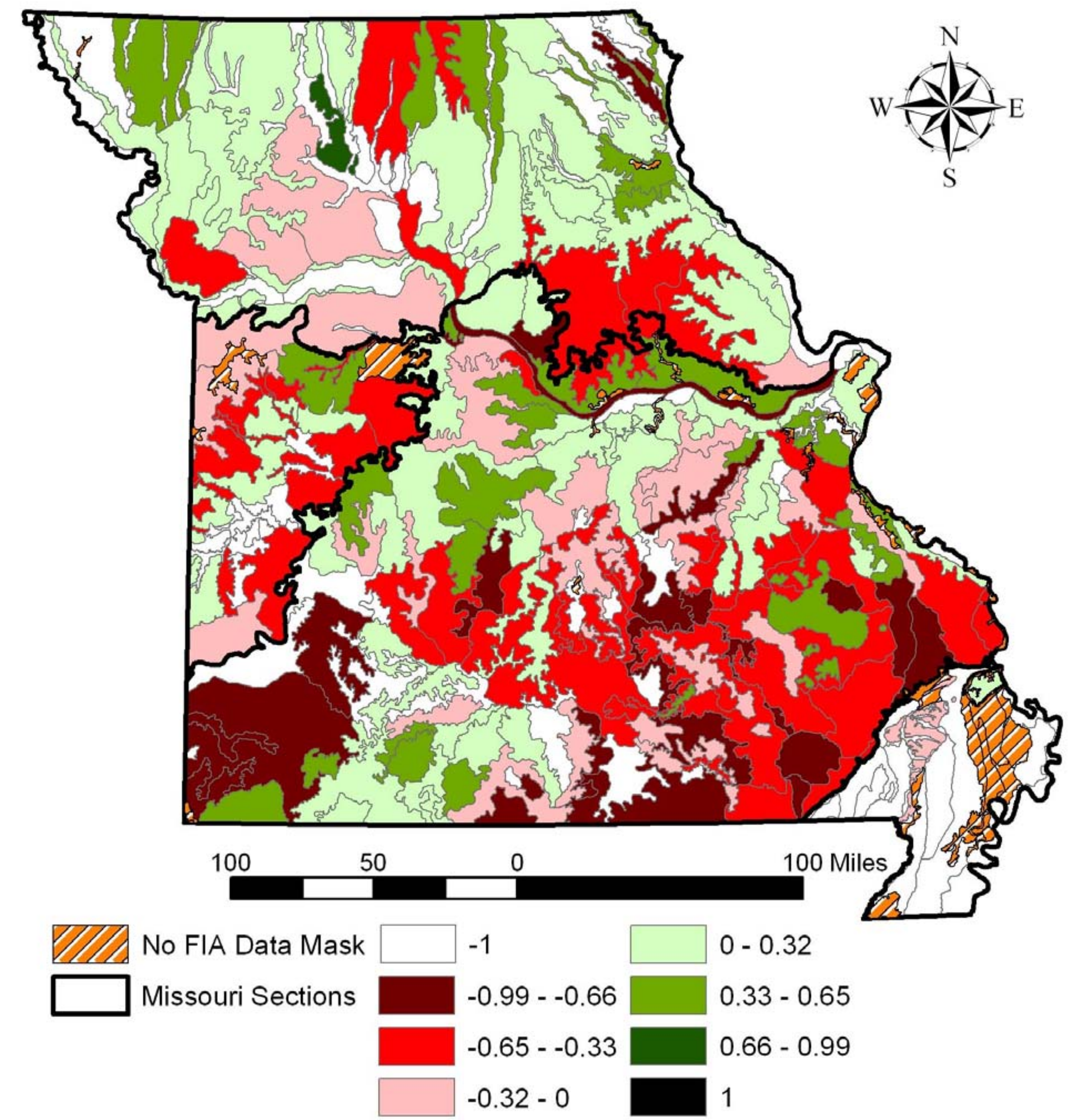


Figure 34: Electivity of black hickory in Missouri calculated from a modification in Ivlev's Electivity Index.

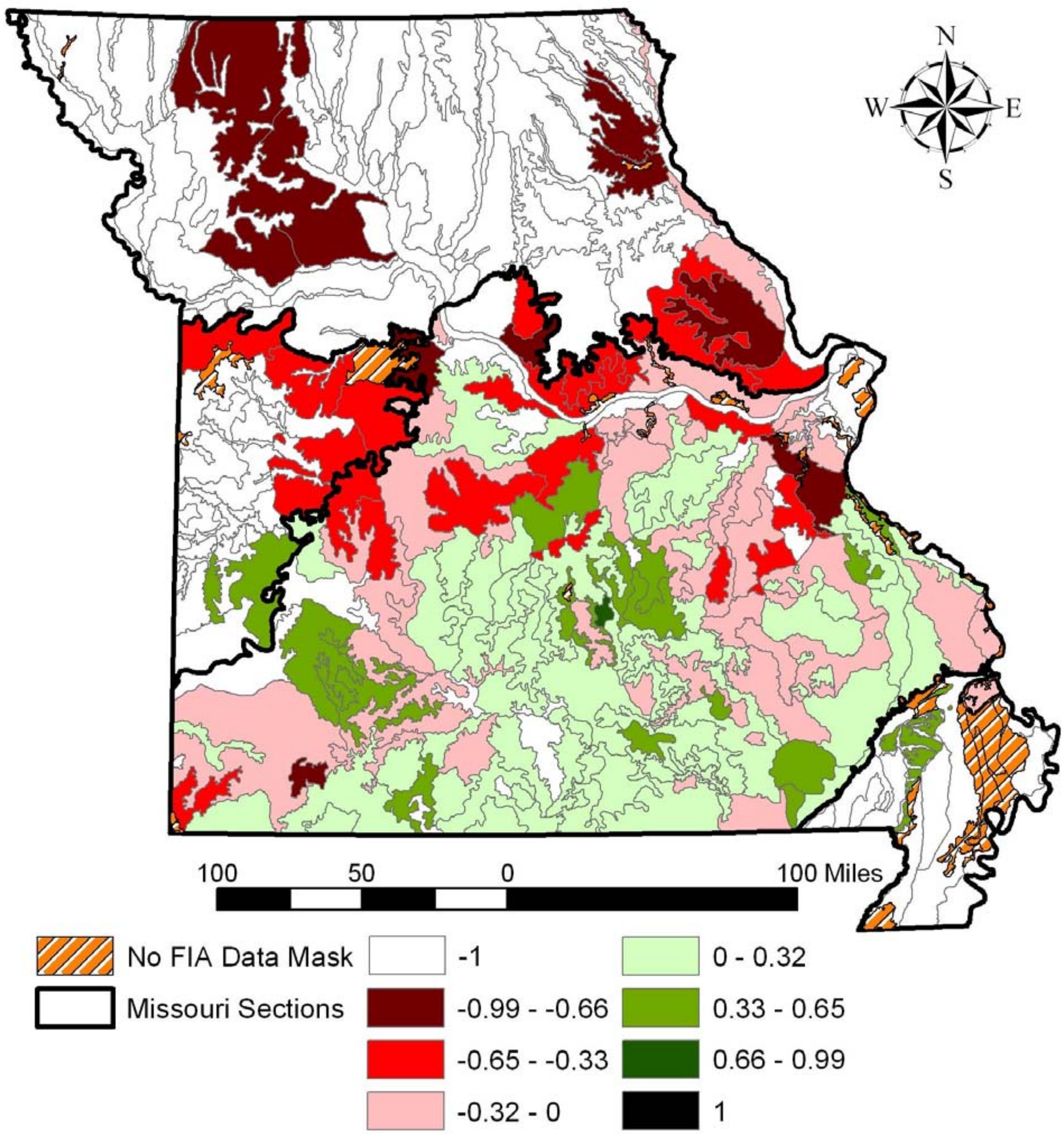


Figure 35: Electivity of pignut hickory in Missouri calculated from a modification in Ivlev's Electivity Index.

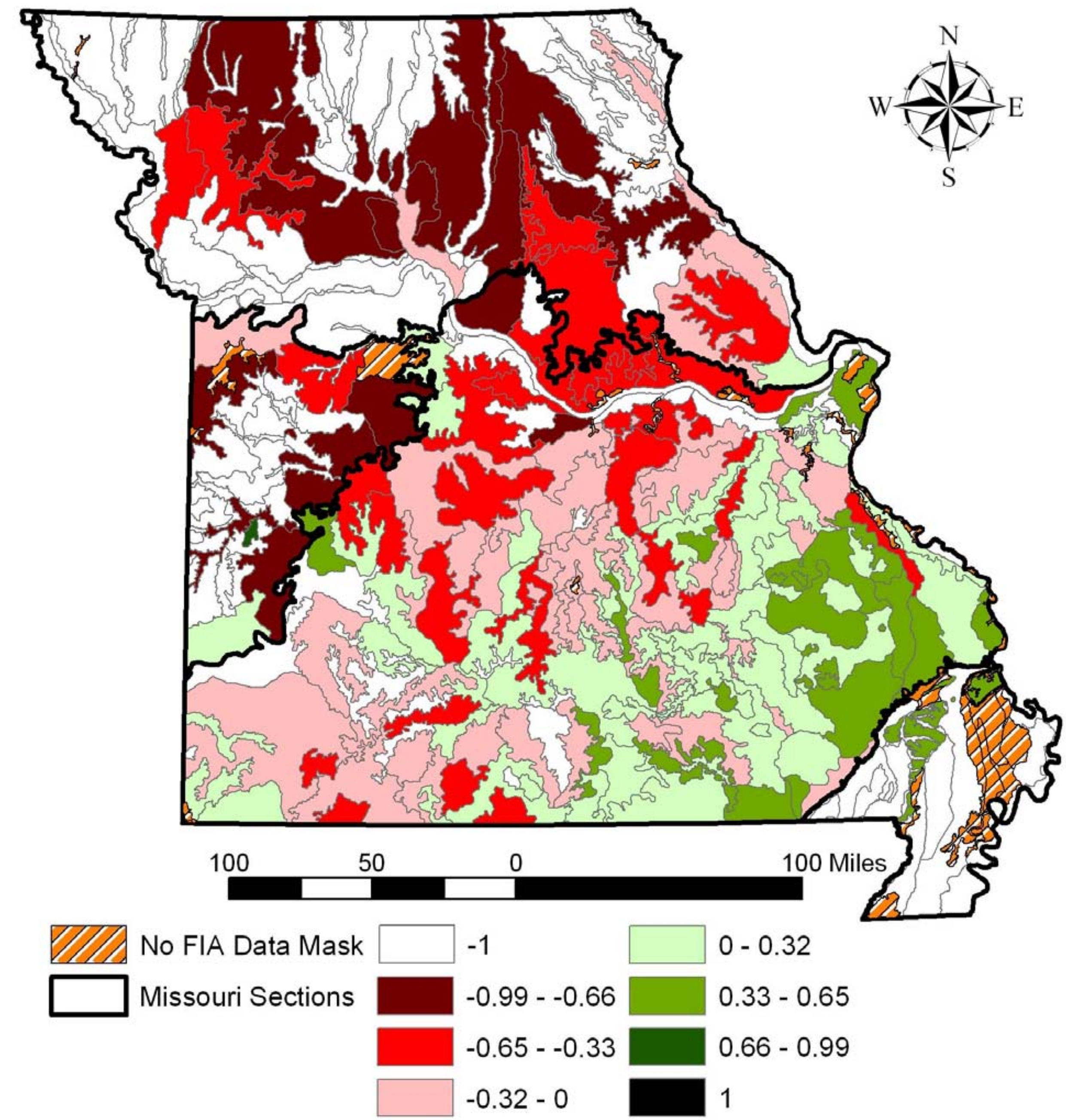


Figure 36: Electivity of flowering dogwood in Missouri calculated from a modification in Ivlev's Electivity Index.

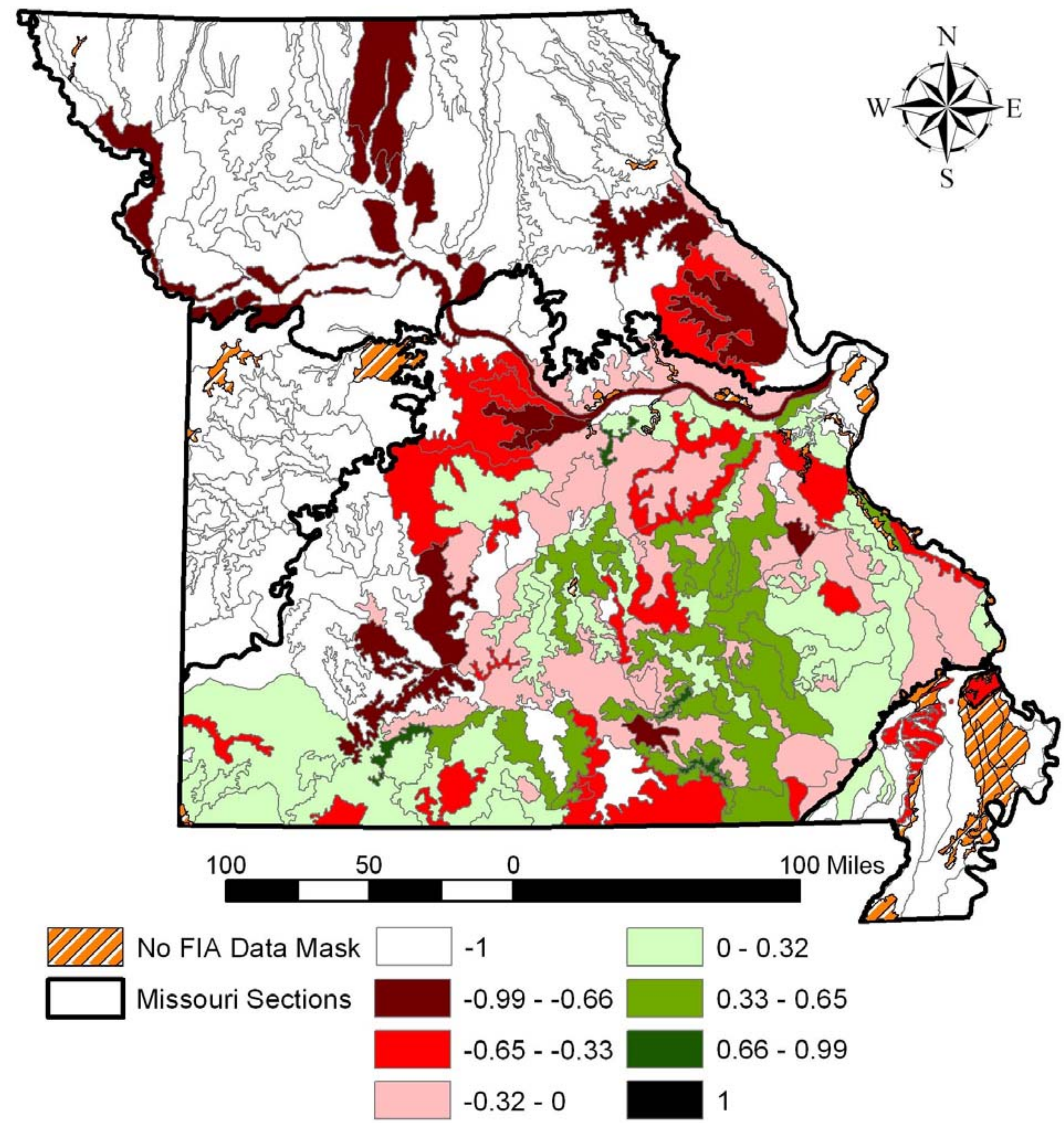


Figure 37: Electivity of shagbark hickory Missouri calculated from a modification in Ivlev's Electivity Index.

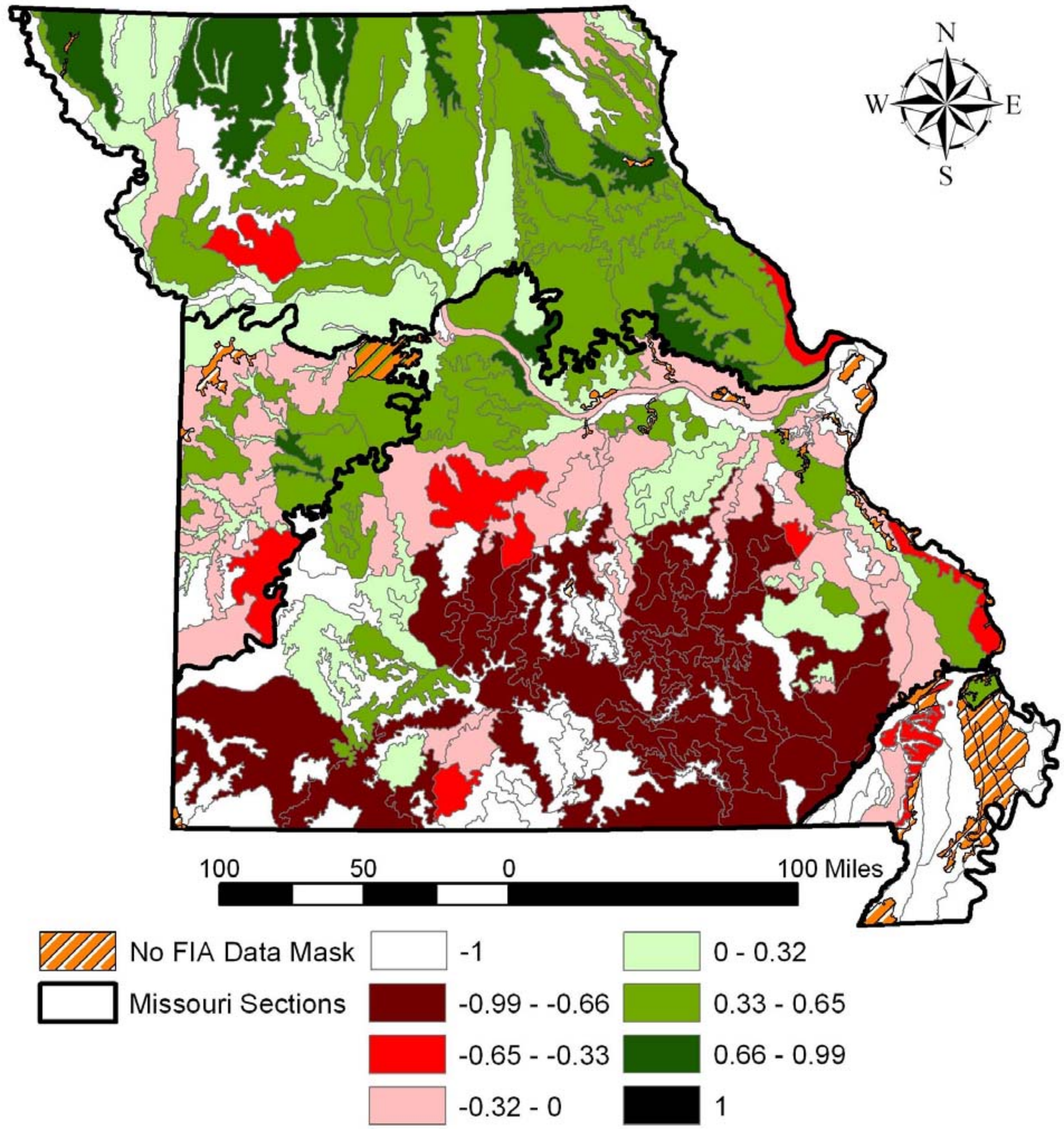


Figure 38: Electivity of mockernut hickory in Missouri calculated from a modification in Ivlev's Electivity Index.

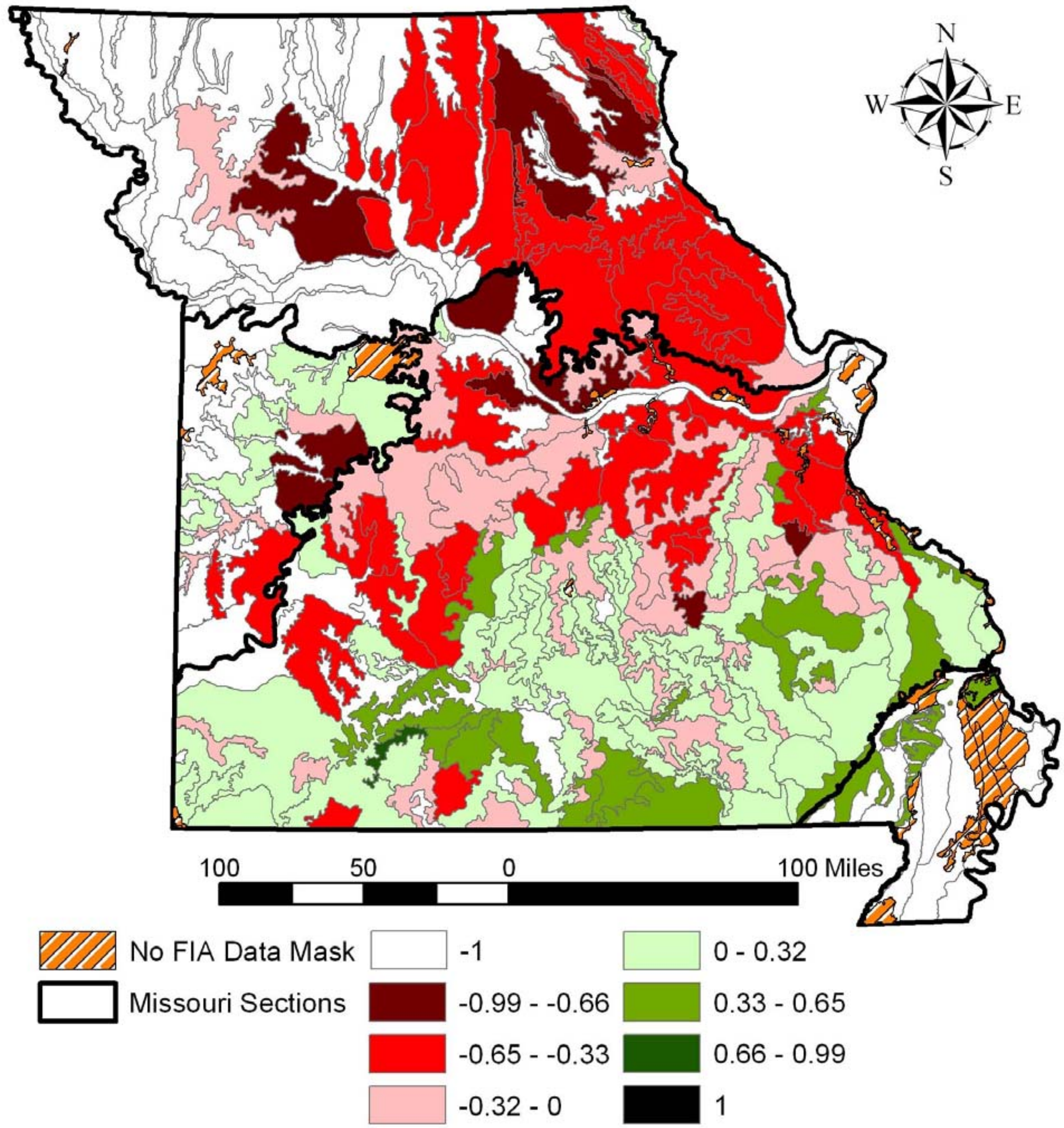


Figure 39: Electivity of black walnut in Missouri calculated from a modification in Ivlev's Electivity Index.

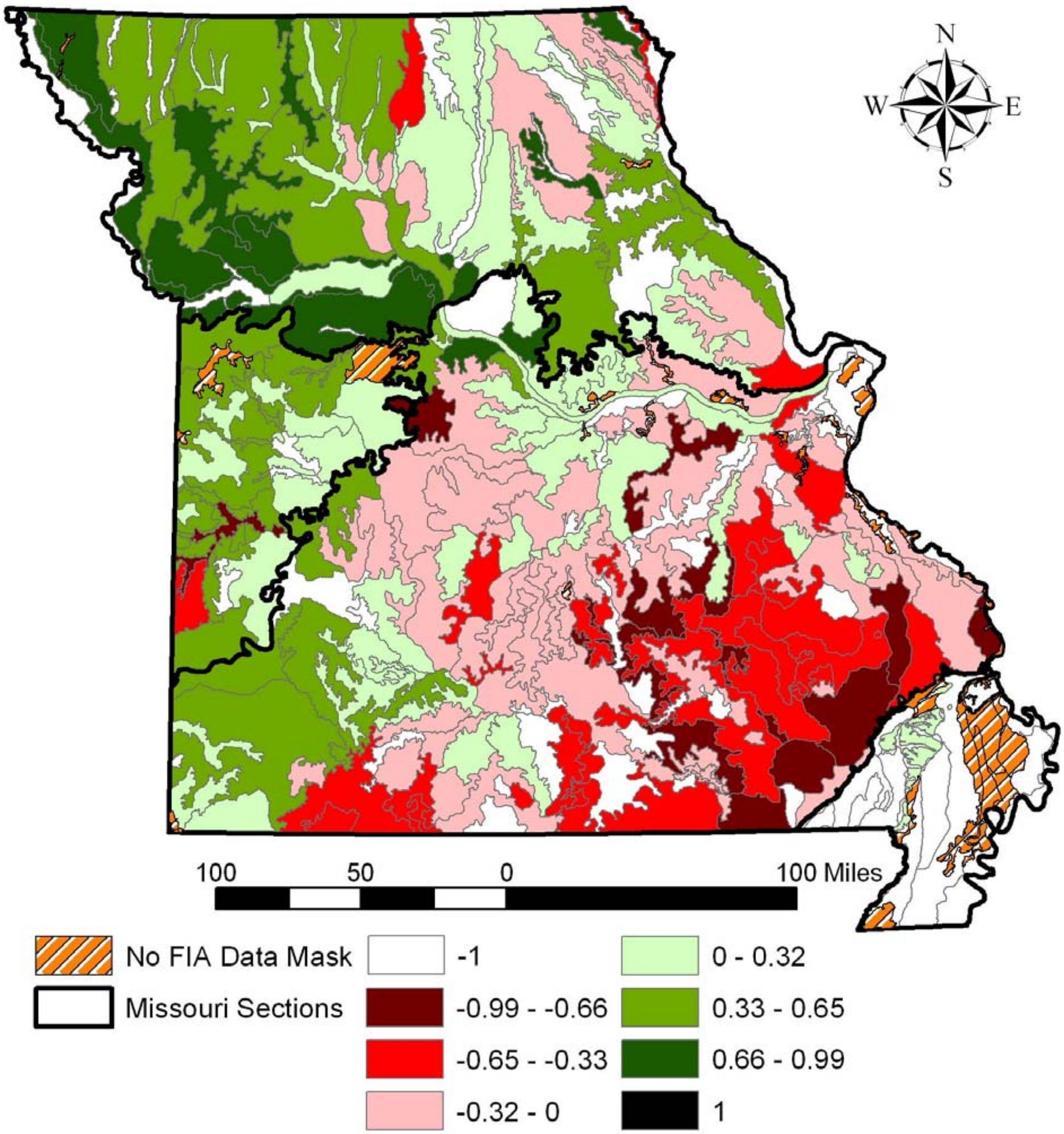


Figure 40: Electivity of white ash in Missouri calculated from a modification in Ivlev's Electivity Index.

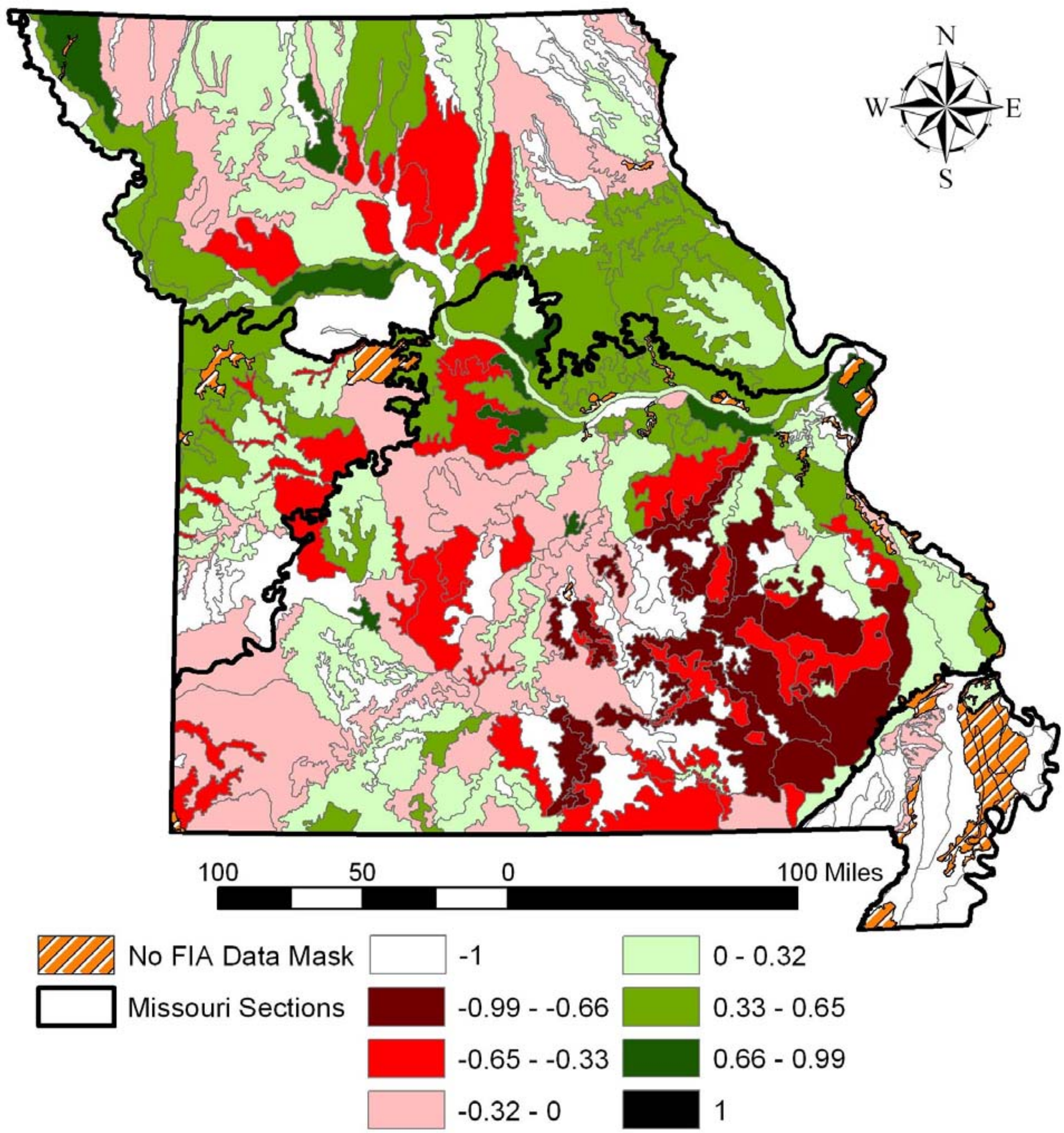


Figure 41: Electivity of chinkapin oak in Missouri calculated from a modification in Ivlev's Electivity Index.

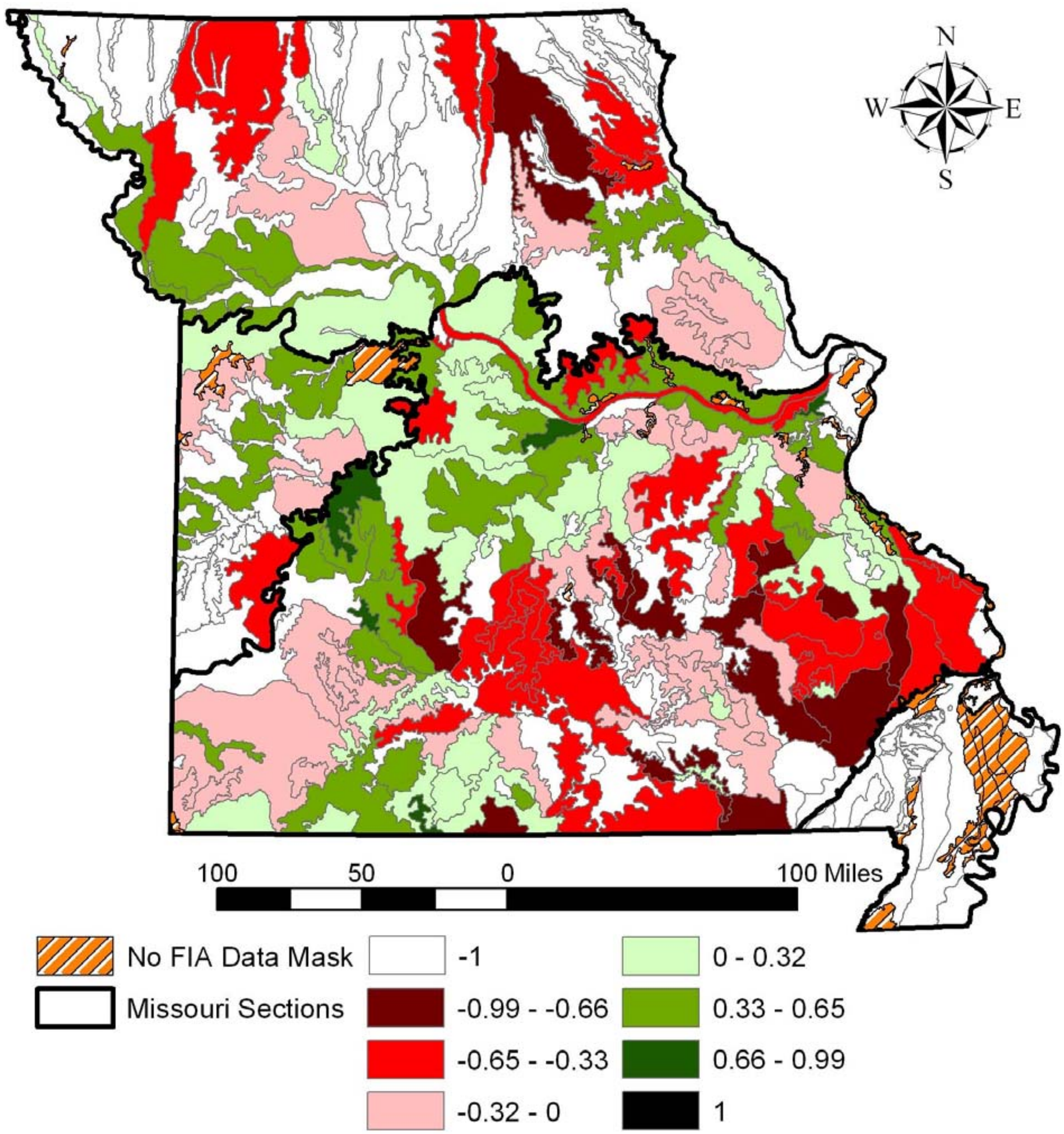


Figure 42: Electivity of hackberry in Missouri calculated from a modification in Ivlev's Electivity Index.

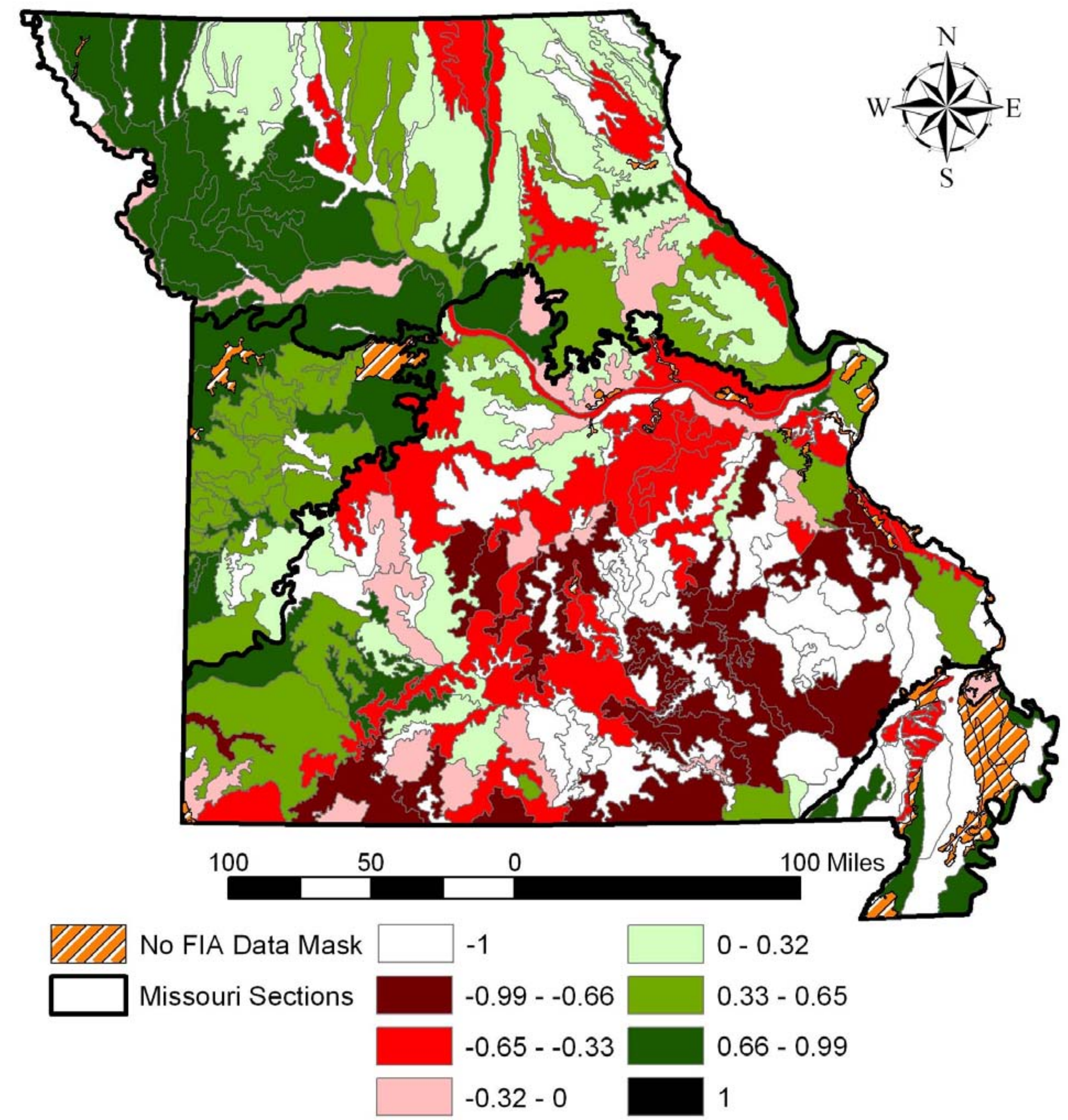


Figure 43: Electivity of sugar maple in Missouri calculated from a modification in Ivlev's Electivity Index.

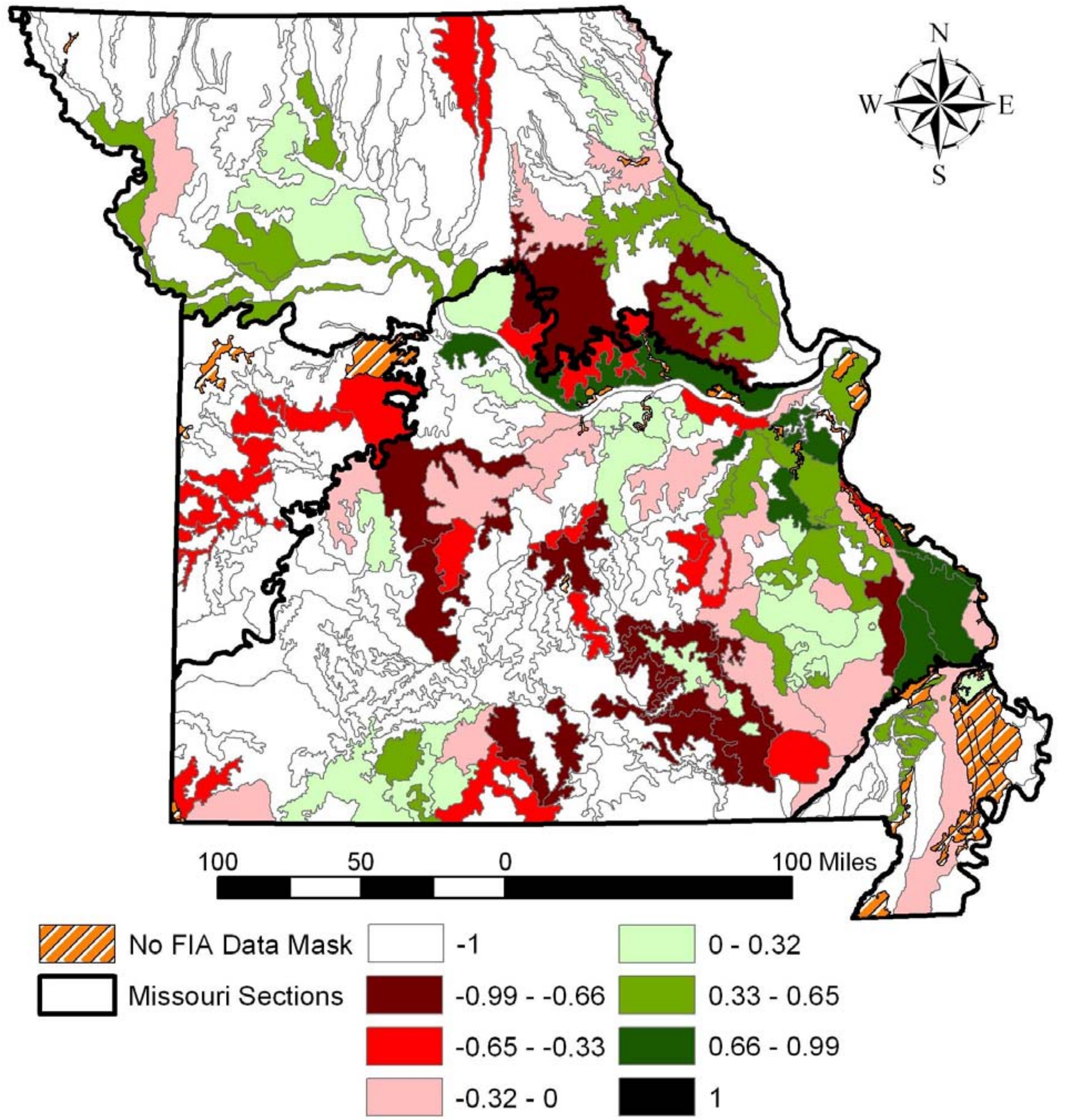
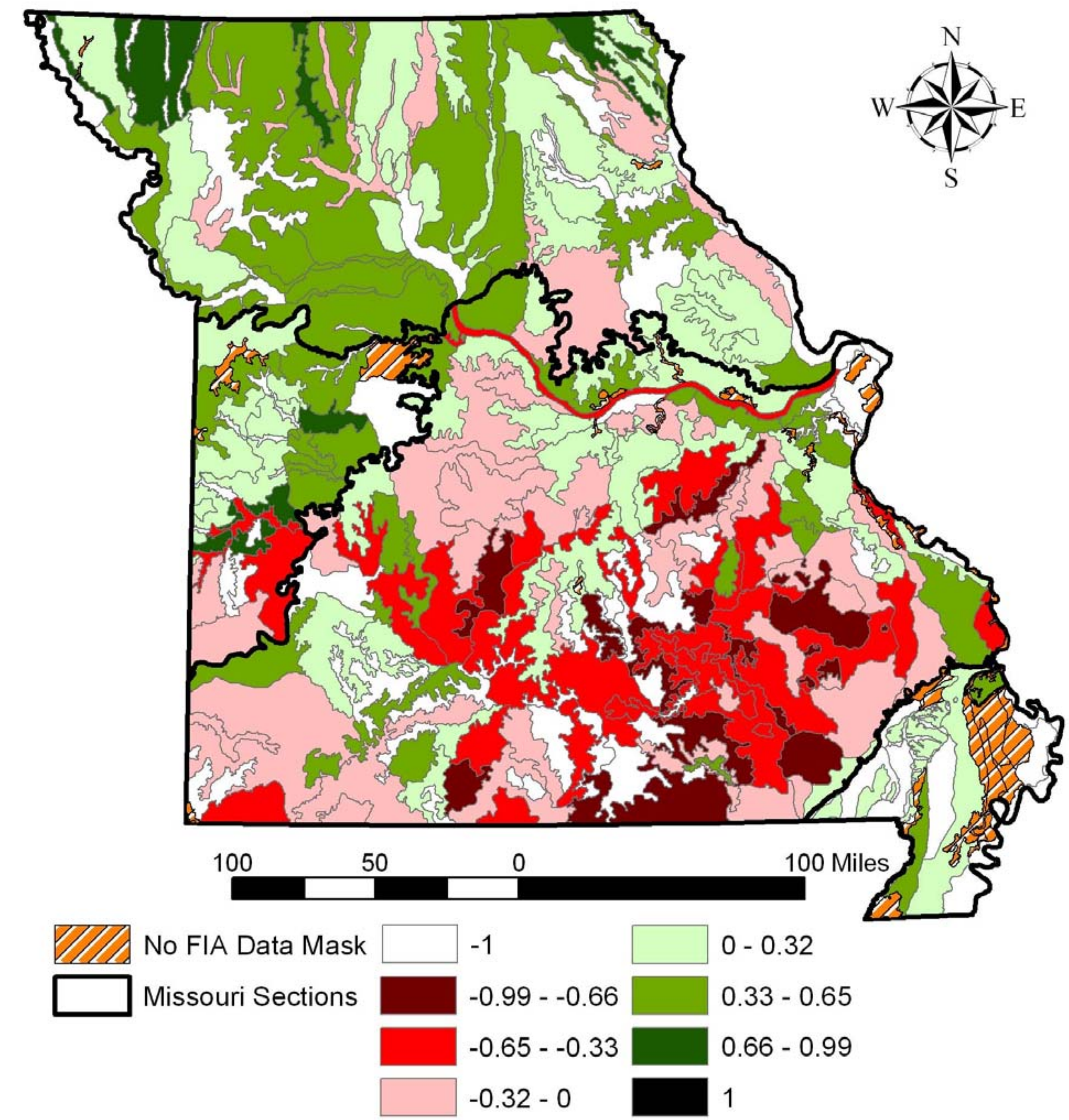


Figure 44: Electivity of slippery elm in Missouri calculated from a modification in Ivlev's Electivity Index.



CHAPTER IV: DISCUSSION

Grabner (2002) showed evidence that geologic, topographic, landform, and soil parameters were an effective means of ecological classification in Missouri's Ozarks. Grabner (2002) also indicated that observed vegetation was associated with these landscape characteristics, but it should not be assumed that species composition and structure would be different among ecological units. This study supports Grabner's (2002) contention. While it is clear that the ecological units can be differentiated most of the time, cases exist where the characteristics do not differentiate the LTAs.

VALIDATING LTA DELINEATIONS

This study examined the delineation of Missouri's LTAs using forest type, tree species composition, species diversity, species richness, stand age, site index, and density (both ≥1 inch dbh and ≥ 5 inches dbh) in order to determine whether the LTAs actually compartmentalize patterns found in forest systems. Through analysis this study validated 624 of the 632 compared LTA Adjacencies for the state of Missouri using measures intended to reflect many different aspects of forest communities, thereby rejecting the first null hypothesis which predicted no significant differences between adjacent LTAs. Instead, the alternate hypothesis was accepted for all but 8 adjacencies, leading to the conclusion that LTAs do compartmentalize forest patterns (for those LTAs whose adjacencies were valid).

This validation is meaningful in that it was not a single measure, or even a single type of measure used in the validation process. No single measure is able to capture the essence of a forest. Therefore, it is crucial that all aspects of the forest are examined.

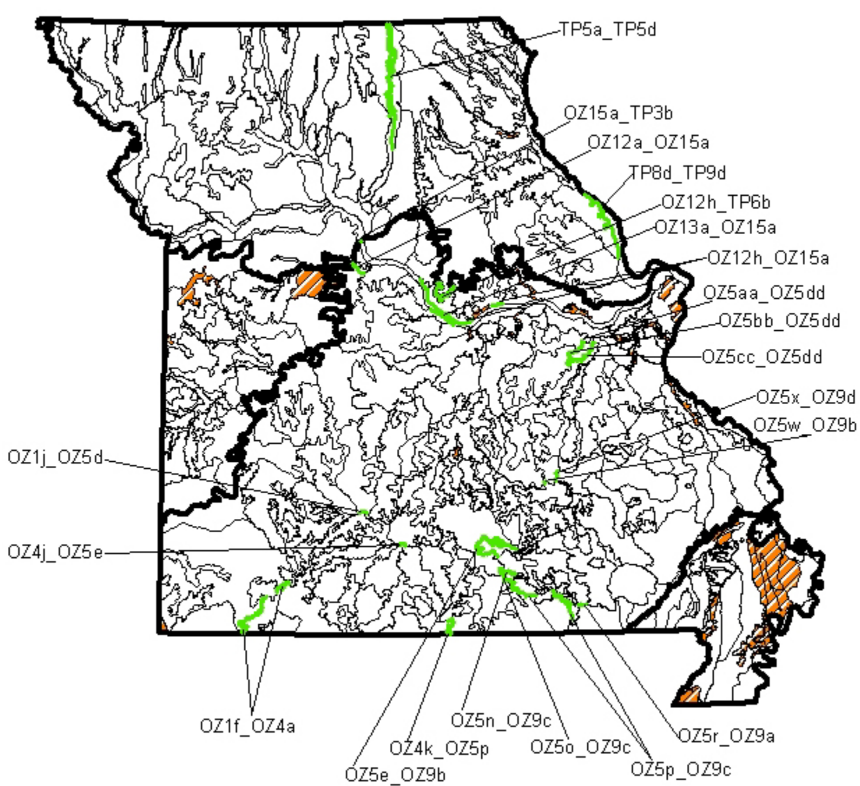
Forest Type similarity validated 542 of 632 LTA adjacencies. However, within the Current River Hills subsection only two LTAs were significantly different from their adjacent counterparts. The Eminence Igneous Glade/Oak Forest Knobs and the Black River Oak Forest Breaks were shown to be significantly different from all adjacent LTAs. This subsection is in the heart of the Shortleaf Pine woodlands of Missouri, and is dominated by this species. Shortleaf Pine's distribution also seems to coincide with many of the un-validated LTAs with respect to the Species Composition measure.

Species richness was lowest in each section within Alluvial Plains LTAs, with the exception of the Osage Plains. In this section the lowest species richness is in the prairie plains and prairie/savanna dissected plains. Diversity is also lowest in the Alluvial Plains for all sections except the Ozark Highlands. In the Ozarks the lowest diversity values are found in the Central Plateau subsection where conditions are very dry, and only a few species are able to compete. The Central Plateau, the Springfield Plains, the Black River Alluvial Plains, and the Claypan Till Plains are all subsections where diversity validation was low.

Forest types, species compositions, and diversity are the most important measures in this study, each validating over 400 adjacencies. This suggests that the combination of species (either the importance of the actual species or the number and arrangement of species) that are present in the compared areas is the most important factor in determining whether a significant difference exists.

The use of so many measures in the validation process brings to mind the question, "Were any LTA adjacencies validated by all of the appropriate measures?" Those LTAs whose adjacencies were validated by all five of the final measures would be considered different from each other in all of the facets of the forest used in this study, and could be used in further studies as clear examples of contrasting ecosystems. In fact, there were 21 LTA adjacencies which showed significant differences in all five measures (Figure 26). All 21 were either in the Central Dissected Till Plains or the Ozark Highlands sections, just like those adjacencies which were not validated by any measure (Figure 25), showing that all LTAs in the Osage Plains and the Mississippi River Alluvial Basin had at least one difference in each adjacency, but also that all LTA adjacencies in these sections had at least one measure not significantly different among LTAs. Also, 17 of the 21 adjacencies were between LTAs of different subsections, suggesting a greater difference between LTAs of different subsections. This study did not look at this aspect, but it would be an interesting aspect to consider in future studies.

Figure 45: LTA Adjacencies validated by all five appropriate measures (highlighted in green).



Scale becomes an issue in a validation of this type, since Missouri's LTAs have such a broad range in size. Ranging from 206 to 442,904 hectares, Missouri's LTAs vary in their ability to be characterized by the FIA data. Thirty-three LTAs lacked FIA data completely (either due to their size or lack of forest components in the area), and many others were limited to only a few plots. With this little amount of information it becomes difficult to characterize an LTA. That said, a small LTA will likely be more easily characterized by fewer plots simply because of the decreased land area. Therefore, if the data is limited simply by the size of an LTA, it is better off than if the limiting factor is a lack of forest components in a larger LTA, because it should have a higher amount of correct characterization (although for those LTAs with only one or two plots it is still difficult to have an accurate characterization). Because of this issue, comparisons made between a large LTA and a small LTA may have fairly substantial inaccuracies, but with the data that was available for this analysis the results were as accurate as possible.

Are LTAs an effective mechanism for determining management differences? This study suggests that they are. It has been shown that LTAs can capture differences in forest characteristics, and managers can use this ability to determine the best management practices on an individual basis depending upon their specific needs.

VALIDATING METHODS USED FOR EVALUATION

The methods used in adjacent LTA validation were examined in order to determine which, if any of the measures were effective in the validation process, thereby being validated themselves. A series of 10 randomly delineated LTAs were used to create a distribution of validation percentages for each of the measures. The means of these distributions were compared with the validation percentages produced by the actual

LTAs in order to determine whether each measure produced results that were any different than they would if the LTA boundaries were random. One standard deviation from the distribution mean was used for each measure as the determinant of significance, in order to test the second null hypothesis (that there is no significant difference between the validation percentages of the actual LTAs and randomly delineated LTAs).

Stand age and both of the density measures (all trees 1-inch and greater and all trees 5-inches and greater) were dropped from the study because they failed to validate adjacencies better than randomly delineated LTAs. This is unfortunate because of the loss of data, but of all the measures introduced, these three are the most susceptible to human influence. The age of forest stands in Missouri can be confounded by human influence. Current stand age is a remnant of the last time the forest was harvested or the current management regime. Since this study is looking at how LTA attributes could affect forest characteristics, stand age becomes a moot point, as it is largely controlled by humans. Very few pristine forests remain in Missouri, and without an extensive examination it is impossible to determine where current stand ages were altered through anthropogenic means.

Density is also susceptible to human influence, as many forests in Missouri are being actively managed in one way or another. While some forests have returned to at least an approximation of their pre-harvest densities, most have not (and many never will). Therefore, this important measure of the forest is no longer an accurate representation of how the landscape affects the forest.

Neutral models are an effective way of determining significance of a measure when the quality of a measure is in doubt. While significant differences can be found in many measures, those same significances could be found by chance, skewing the results of a study.

VALIDATING LTA TYPE CHARACTERIZATION

LTA Type characterization was evaluated to determine whether LTAs of the same LTA Type were more similar than LTAs of different types. Each LTA was compared with every other LTA to calculate percent similarity. Results of this calculation were put into one of two groups ("within" or "among") depending on whether the compared LTAs were of the same LTA Type. This was done to test null hypothesis number three, that the "within" group would not be significantly higher in similarity than the "among" group.

This study shows that there is a tendency for LTAs to be more similar to each other if they are from the same LTA type. The "within" versus "among" analysis resulted in significantly higher similarity within type than among types, but the distinction was not as clear from the cluster analysis. Visually the cluster analysis displays patterns in the clustering of LTAs of the same type, but there is enough variation to confuse the results. Certain LTA types cluster together better than others. This is due to the simple fact that these LTA types contain species that are not able to compete well in LTAs of different types. For example, a Sycamore is only going to be competitive (and therefore abundant) in an Alluvial Plains LTA. In contrast, a post oak will not compete well in an Alluvial Plain since it prefers dryer conditions.

LTA Types are not a part of the National Hierarchy of Ecological Units (citation), but they are capable of capturing subtle patterns LTAs (as determined through tree species composition). While not accurate enough to make predictions, LTA Types may prove useful in natural resources management.

ELECTIVITY

Tree species abundance ratios were evaluated for each LTA in order to determine whether the tree species showed an affinity for certain LTAs. Electivity was used as a mechanism to test the fourth null hypothesis, which is that tree species do not show any fidelity for certain LTAs. It was shown through the electivity procedure that fidelity can be determined , actually broadening the ability of a distribution map to convey information. In this study, the electivity concept was used to show associations between ecoregions and tree species. However, a potential exists to determine relationships between tree species and their favored ecoregions by examining the characteristics of those ecoregions having high electivity values, and contrasting these characteristics with those of LTAs with low electivity values. It should become apparent why certain species "prefer" the LTA, while others "avoid" it.

Electivity can be a highly effective tool for natural resource managers, and others interested in the distribution of tree species. Electivity adds another dimension to the typical range map, which only shows where a species can be found. Electivity goes the next step and shows where in that range the species is most likely to be found.

FUTURE RESEARCH AND ALTERNATIVE METHODS

Missouri's FIA data has been updated since the start of this study, and it would be important and interesting to see this research carried on with the 2004 release of data, both for an updated analysis of Missouri's forest characteristics, and as a comparison with the present study to see change present in the 15 years between data sets.

An interesting note to this study is that all un-validated LTAs were comparisons of LTAs within the same subsection. This suggests that within subsection, the similarity of LTAs is greater than among subsections. It would be interesting to see if this holds true through an analysis like the one performed in this study examining LTA Type similarity.

The results that electivity brings to this study are invaluable. Put into a spatial context, this measure brings new ecological insight into forest dynamics. Electivity has the potential to draw out characteristics that tree species find important by showing where the trees “prefer” to be. An examination of LTA types using electivity would be a great source of information, for instance, showing whether species had positive or negative affinities for specific LTA types.

In future studies, electivity should be calculated differently. In this analysis, every species was evaluated locally against the statewide ratio of that species. For future studies, it makes more sense to only include those regions where the species is found, rather than a statewide comparison (as some species were only found in relatively small portions of the state). This would require additional work, but it would provide a more accurate representation of electivity.

An additional aspect to be approached would be to analyze historic tree data. General Land Office (GLO) records are now available in a spatial format, which would be ideal to use in a similar examination as this study. While GLO data is not a complete forest inventory, broad scale patterns could be examined to see if current LTA delineations reflected historic forests.

It would also be intriguing to incorporate other types of organisms into the validation process. Organisms such as mammals, insects, birds, and aquatics would serve to further validate Missouri’s LTAs, since only trees were examined in this study.

CHAPTER V: CONCLUSIONS

Forest Type similarity, Species Composition similarity, Simpson's Diversity, Margalef's Index, and Site Index are effective in the validation of Missouri's Landtype Associations using forest characteristics gathered from the Eastwide Forest Inventory Database. Of the 632 LTA adjacencies analyzed in this study 624 were shown to be significantly different by at least one of these measures, and 21 adjacencies were validated by all five measures. Through this validation, credibility is given to studies already using Landtype Associations as an environmental control agent, at least for forest characteristics. Stand age and density were dropped from the analysis on the support of a series of neutral LTAs, which validated adjacencies at least as often as the actual LTAs for these measures. Similarity in species composition was found to be higher within LTA types than among LTA types. The abiotic factors that were used to delineate LTAs (e.g. landform, geology, soils…) were also used to group similar LTAs into LTA types, thereby suggesting that similar abiotic factors lead to similar species compositions.
Tree species were shown to "prefer" certain LTAs through the use of an electivity index modified from predator-prey relationship studies. Maps produced from these electivity values are able to show graphically where tree species are found in higher ratios than they are statewide.

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APPENDIX A: Adjacency Test Results

Table A1: Missouri's LTA Adjacencies (by LTA Code) and test results. FT=Forest Type Similarity (reported in percent similarity), SC=Species Composition Similarity (reported in percent similarity), MI=Margalef's Index (reported as a p-value), SD=Simpson's Diversity (reported as a p-value), TPA-1=Trees per Acre for trees 1 inch and greater (reported as a p-value), TPA-5=Trees per Acre for trees 5 inches and greater (reported as a p-value), SI-Site Index (reported as a p-value), SA-Stand Age (reported as a p-value). NA is used in place of a value if a) there was no FIA information associated with one or both LTAs, or b) in the case of the t-test there were not enough plots within an LTA to calculate the test.

ADJACENCY	FT	SC	MI	SD	TPA-1	TPA-5	SI	SA
MB1a_MB1b	50.00	28.03	0.46	0.38	NA	NA	0.84	0.42
MB1a_MB1c	33.33	33.44	0.39	0.14	NA	NA	0.84	0.90
MB1a_MB1d	50.00	36.16	0.17	1.00	NA	NA	0.30	0.80
MB1a_OZ14b	21.05	37.51	1.00	0.26	NA	NA	0.29	0.86
MB1b_MB1c	66.67	35.49	0.15	0.06	NA	NA	0.90	0.26
MB1c_MB1d	33.33	14.77	0.81	0.14	0.96	0.38	0.30	0.70
MB1c_MB2a	6.67	19.76	0.23	0.00	0.98	0.59	0.75	0.98
MB1c_MB2b	33.33	0.00	NA	0.00	NA	NA	NA	NA
MB1d_MB1e	NA	NA	NA	NA	NA	NA	NA	NA
MB1d_MB2a	6.67	21.08	0.06	0.10	0.94	0.26	0.36	0.85
MB1d_MB2b	0.00	1.56	NA	0.00	NA	NA	NA	NA
MB1d_OZ13p	0.00	13.05	0.04	0.28	0.97	0.33	0.01	0.19
MB1d_OZ14b	5.26	13.55	0.09	0.26	0.85	0.65	0.00	0.79
MB1d_OZ14c	0.00	7.64	0.25	0.15	0.70	0.59	0.00	0.93
MB1e_MB1f	NA	NA	NA	NA	NA	NA	NA	NA
MB1e_MB2a	NA	NA	NA	NA	NA	NA	NA	NA
MB1e_MB2b	NA	NA	NA	NA	NA	NA	NA	NA
MB1e_MB4d	NA	NA	NA	NA	NA	NA	NA	NA
MB1e_OZ13p	NA	NA	NA	NA	NA	NA	NA	NA
MB1f_MB2a	NA	NA	NA	NA	NA	NA	NA	NA
MB1f_MB2b	NA	NA	NA	NA	NA	NA	NA	NA
MB1f_MB4d	NA	NA	NA	NA	NA	NA	NA	NA
MB2a_MB2b	0.00	0.27	NA	0.00	NA	NA	NA	NA
MB2a_MB3b	NA	NA	NA	NA	NA	NA	NA	NA
MB2a_MB3c	0.00	18.38	NA	0.25	NA	NA	NA	NA
MB2a_MB4a	0.00	16.89	NA	0.01	NA	NA	NA	NA
MB2a_MB4d	33.33	20.60	0.27	0.00	0.10	0.76	0.65	0.80
MB2b_MB3a	33.33	26.32	NA	0.00	NA	NA	NA	NA
MB2b_MB3b	NA	NA	NA	NA	NA	NA	NA	NA
MB2b_MB4a	NA	NA	NA	NA	NA	NA	NA	NA
MB2b_MB4d	66.67	3.41	NA	0.00	NA	NA	NA	NA
MB3a_MB3b	NA	NA	NA	NA	NA	NA	NA	NA
MB3a_MB3c	33.33	15.17	NA	0.00	NA	NA	NA	NA
MB3a_MB3d	NA	NA	NA	NA	NA	NA	NA	NA
MB3b_MB3c	NA	NA	NA	NA	NA	NA	NA	NA
MB3c_MB3d	NA	NA	NA	NA	NA	NA	NA	NA
MB3c_MB4a	0.00	28.79	NA	0.01	NA	NA	NA	NA
MB3c_MB4d	66.67	29.70	NA	0.17	NA	NA	NA	NA
MB4a_MB4d	0.00	26.59	NA	0.02	NA	NA	NA	NA
MB4b_MB4c	NA	NA	NA	NA	NA	NA	NA	NA
MB4b_MB4d	NA	NA	NA	NA	NA	NA	NA	NA
MB4b_MB4e	NA	NA	NA	NA	NA	NA	NA	NA
MB4b_MB4f	NA	NA	NA	NA	NA	NA	NA	NA
MB4b_OZ12cc	NA	NA	NA	NA	NA	NA	NA	NA
MB4c_MB4d	NA	NA	NA	NA	NA	NA	NA	NA
MB4c_MB4e	NA	NA	NA	NA	NA	NA	NA	NA
MB4c_MB4k	NA	NA	NA	NA	NA	NA	NA	NA
MB4c_MB4l	NA	NA	NA	NA	NA	NA	NA	NA
MB4d_MB4l	66.67	35.61	0.06	0.00	0.40	0.95	0.81	0.80
MB4d_OZ12aa	35.71	15.59	0.14	0.00	0.55	0.89	0.16	0.11
MB4d_OZ12bb	41.67	14.82	0.04	0.00	0.44	0.87	0.68	0.05
MB4d_OZ12cc	NA	NA	NA	NA	NA	NA	NA	NA

ADJACENCY	FT	SC	MI	SD	TPA-1	TPA-5	SI	SA
MB4d_OZ13p	36.90	14.30	0.27	0.05	0.03	0.53	0.10	0.35
MB4d_OZ16a	NA	NA	NA	NA	NA	NA	NA	NA
MB4e_MB4f	NA	NA	NA	NA	NA	NA	NA	NA
MB4e_MB4i	NA	NA	NA	NA	NA	NA	NA	NA
MB4e_MB4k	NA	NA	NA	NA	NA	NA	NA	NA
MB4e_MB4l	NA	NA	NA	NA	NA	NA	NA	NA
MB4f_MB4g	NA	NA	NA	NA	NA	NA	NA	NA
MB4f_MB4h	NA	NA	NA	NA	NA	NA	NA	NA
MB4f_MB4i	NA	NA	NA	NA	NA	NA	NA	NA
MB4f_OZ12bb	NA	NA	NA	NA	NA	NA	NA	NA
MB4f_OZ12cc	NA	NA	NA	NA	NA	NA	NA	NA
MB4g_MB4h	NA	NA	NA	NA	NA	NA	NA	NA
MB4g_MB4i	NA	NA	NA	NA	NA	NA	NA	NA
MB4g_MB4j	NA	NA	NA	NA	NA	NA	NA	NA
MB4g_MB4l	NA	NA	NA	NA	NA	NA	NA	NA
MB4h_MB4l	NA	NA	NA	NA	NA	NA	NA	NA
MB4h_OZ12cc	NA	NA	NA	NA	NA	NA	NA	NA
MB4i_MB4j	NA	NA	NA	NA	NA	NA	NA	NA
MB4i_MB4l	NA	NA	NA	NA	NA	NA	NA	NA
MB4j_MB4l	75.00	50.04	0.20	0.00	0.53	0.62	0.86	0.17
MB4k_MB4l	NA	NA	NA	NA	NA	NA	NA	NA
MB4l_OZ12bb	8.33	15.20	0.00	0.00	0.03	0.75	0.36	0.00
MB4l_OZ12cc	NA	NA	NA	NA	NA	NA	NA	NA
MB4l_OZ16a	NA	NA	NA	NA	NA	NA	NA	NA
OP1a_OP1d	61.11	42.64	0.90	0.02	0.24	0.27	0.10	0.23
OP1a_OP1e	68.18	40.19	0.14	0.06	0.22	0.91	0.15	0.51
OP1a_OP1f	63.33	46.05	0.84	0.03	0.49	0.56	0.19	0.45
OP1a_OP1g	40.48	41.22	0.67	0.00	0.58	0.49	0.19	0.84
OP1a_OP1h	66.67	36.56	0.81	0.27	0.85	0.16	0.27	0.81
OP1a_OP1i	NA	NA	NA	NA	NA	NA	NA	NA
OP1a_OP2a	33.33	43.08	0.73	0.12	0.19	0.36	0.94	0.41
OP1a_OP2b	60.00	70.27	0.63	0.32	0.07	0.07	0.65	0.43
OP1a_OP2d	72.22	51.61	0.65	0.01	0.83	0.05	0.29	0.83
OP1a_OZ12a	34.31	35.79	0.52	0.01	0.46	0.32	0.15	0.38
OP1a_TP3a	33.33	18.25	NA	0.00	NA	NA	NA	NA
OP1a_TP3f	38.10	39.11	0.51	0.02	0.58	0.45	0.94	0.35
OP1b_OP1c	NA	NA	NA	NA	NA	NA	NA	NA
OP1b_OP1d	57.84	67.90	0.45	0.07	0.61	0.77	0.11	0.18
OP1b_OP1g	71.99	57.66	0.68	0.00	1.00	0.45	0.24	0.00
OP1b_TP1b	0.00	8.79	0.00	0.00	0.71	0.44	0.77	0.80
OP1b_TP3a	0.00	17.19	NA	0.00	NA	NA	NA	NA
OP1b_TP3b	71.12	64.04	0.12	0.00	0.66	0.16	0.47	0.00
OP1b_TP3f	62.61	64.37	0.81	0.06	0.18	0.02	0.49	0.05
OP1c_OP1d	NA	NA	NA	NA	NA	NA	NA	NA
OP1d_OP1e	69.70	60.79	0.03	0.00	0.77	0.31	0.61	0.88
OP1d_OP1g	45.24	63.70	0.66	0.03	0.60	0.63	0.63	0.17
OP1e_OP1f	63.03	55.45	0.04	0.00	0.99	0.62	0.90	0.93
OP1e_OP1g	60.17	49.22	0.04	0.00	0.80	0.53	0.93	0.31
OP1e_OP1h	65.66	57.46	0.22	0.01	0.35	0.23	0.85	0.71
OP1f_OP1h	80.00	58.71	0.60	0.07	0.55	0.37	0.94	0.62
OP1f_OP2a	6.67	16.48	0.62	0.01	0.53	0.66	0.33	0.99
OP1f_OP2b	33.33	38.63	0.36	0.00	0.03	0.21	0.02	0.07
OP1f_OP2c	51.67	53.49	0.23	0.20	0.12	0.33	0.32	0.82
OP1f_OP2d	71.11	52.14	0.42	0.23	0.32	0.08	0.77	0.54
OP1f_OP2e	46.67	58.58	0.66	0.07	0.48	0.51	0.95	0.93
OP1g_OP1h	46.03	56.91	0.99	0.00	0.66	0.38	0.91	0.65
OP1g_OP1i	NA	NA	NA	NA	NA	NA	NA	NA
OP1g_OP1j	75.35	62.50	0.93	0.04	0.58	0.84	0.14	0.39
OP1g_TP3f	73.81	61.52	0.46	0.02	0.19	0.06	0.05	0.29
OP1h_OP1j	40.52	46.88	0.95	0.05	0.95	0.35	0.17	0.85
OP1h_OP2a	22.22	19.08	0.88	0.06	0.24	0.92	0.39	0.80
OP1h_OP2c	58.33	52.95	0.72	0.01	0.32	0.85	0.45	0.70
OP1i_OP1j	NA	NA	NA	NA	NA	NA	NA	NA
OP1i_OZ12a	NA	NA	NA	NA	NA	NA	NA	NA
OP1j_OP2c	74.41	65.31	0.71	0.19	0.18	0.28	0.01	0.82
OP1j_OZ11a	55.15	67.28	0.81	0.00	0.63	0.91	0.22	0.90
OP1j_OZ11b	53.87	60.74	0.88	0.00	0.47	0.07	0.76	0.58
OP1j_OZ12a	70.59	58.99	0.18	0.31	0.65	0.07	0.07	0.11
OP1j_OZ6b	57.92	58.30	0.34	0.00	0.71	0.83	0.40	0.38

ADJACENCY	FT	SC	MI	SD	TPA-1	TPA-5	SI	SA
OP1j_OZ6d	64.05	44.02	0.23	0.00	0.44	0.84	0.67	0.25
OP2a_OP2c	25.00	21.02	0.98	0.00	0.41	1.00	0.61	0.90
OP2a_OZ6b	0.00	13.08	0.53	0.06	0.17	0.53	0.01	0.56
OP2b_OP2d	35.56	49.46	0.94	0.00	0.08	0.57	0.07	0.33
OP2b_OP2e	53.33	36.58	0.81	0.20	0.24	0.84	0.16	0.15
OP2b_OP2f	58.79	36.89	0.90	0.00	0.34	0.27	0.16	0.04
OP2b_OP2h	29.03	19.31	0.27	0.00	0.05	0.13	0.00	0.25
OP2b_OP2j	0.00	4.28	NA	0.01	NA	NA	NA	NA
OP2b_OZ6a	16.67	18.28	0.45	0.28	0.18	0.05	0.01	0.07
OP2c_OP2d	74.44	56.04	0.96	0.48	0.63	0.34	0.56	0.61
OP2c_OZ6a	45.00	41.98	0.51	0.00	0.81	0.05	0.16	0.73
OP2c_OZ6b	51.15	49.04	0.11	0.00	0.06	0.10	0.00	0.22
OP2d_OP2f	51.52	45.69	0.86	0.18	0.70	0.19	0.75	0.53
OP2d_OP2g	22.22	29.85	NA	0.01	NA	NA	NA	NA
OP2d_OP2h	48.03	25.15	0.33	0.00	0.96	0.02	0.24	0.93
OP2d_OP2j	0.00	12.91	NA	0.00	NA	NA	NA	NA
OP2d_OZ6a	43.33	25.98	0.59	0.00	0.52	0.01	0.56	0.75
OP2e_OP2f	54.55	52.89	0.85	0.07	0.78	0.58	0.73	0.86
OP2e_OP2i	82.86	59.43	0.53	0.34	0.47	0.24	0.34	0.74
OP2f_OP2g	0.00	20.61	NA	0.01	NA	NA	NA	NA
OP2f_OP2i	55.84	61.04	0.65	0.02	0.19	0.69	0.23	0.79
OP2g_OP2h	22.58	8.65	NA	0.07	NA	NA	NA	NA
OP2g_OP2i	0.00	10.92	NA	0.02	NA	NA	NA	NA
OP2h_OP2i	36.87	40.29	0.39	0.00	0.22	0.64	0.01	0.69
OP2h_OZ1a	48.39	53.27	0.24	0.01	0.46	0.90	0.19	0.77
OP2h_OZ1b	68.59	74.56	0.70	0.20	0.75	0.03	0.78	0.86
OP2h_OZ6a	73.71	68.34	0.63	0.00	0.39	0.18	0.44	0.57
OP2i_OZ1a	16.67	38.05	0.71	0.33	0.16	0.76	0.14	0.92
OZ10a_OZ10b	45.94	56.62	0.21	0.00	0.06	0.05	0.19	0.13
OZ10a_OZ10c	62.50	61.12	0.91	0.32	0.25	0.79	0.08	0.75
OZ10a_OZ10d	90.91	84.45	0.67	0.00	0.29	0.93	0.04	0.06
OZ10a_OZ9d	87.74	79.18	0.16	0.04	0.44	0.05	0.00	0.00
OZ10a_OZ9h	72.35	76.48	0.17	0.03	0.62	0.32	0.00	0.78
OZ10b_OZ10c	38.10	64.72	0.50	0.00	0.79	0.17	0.51	0.22
OZ10b_OZ10d	40.26	55.61	0.33	0.00	0.27	0.06	0.01	0.98
OZ10b_OZ13k	72.62	72.45	0.60	0.00	0.86	0.22	0.41	0.03
OZ10b_OZ13m	43.72	66.28	0.08	0.00	0.10	0.72	0.03	0.06
OZ10b_OZ13o	47.62	60.11	0.40	0.14	0.63	0.31	0.28	0.27
OZ10b_OZ14c	43.26	60.30	0.13	0.00	0.53	0.49	0.00	0.10
OZ10b_OZ14d	48.77	61.38	0.69	0.00	0.91	0.36	0.00	0.77
OZ10b_OZ8i	59.85	77.59	0.19	0.35	0.09	0.99	0.34	0.37
OZ10b_OZ8j	41.87	59.94	0.95	0.00	0.16	0.00	0.53	1.00
OZ10b_OZ8k	60.95	72.71	0.69	0.01	0.13	0.54	0.91	0.06
OZ10d_OZ14c	76.98	84.04	0.48	0.00	0.52	0.11	0.44	0.05
OZ10d_OZ14d	70.65	76.61	0.67	0.02	0.25	0.01	0.15	0.74
OZ10d_OZ8j	56.19	70.44	0.32	0.37	0.43	0.01	0.06	0.98
OZ10d_OZ9d	90.51	88.68	0.35	0.00	0.84	0.06	0.00	0.19
OZ10d_OZ9h	71.21	80.70	0.08	0.00	0.79	0.36	0.00	0.11
OZ11a_OZ11b	80.59	73.43	0.90	0.01	0.86	0.07	0.09	0.50
OZ11a_OZ12a	74.26	57.57	0.33	0.00	0.90	0.07	0.44	0.09
OZ11a_OZ12c	37.50	36.15	0.65	0.03	0.97	0.21	0.17	0.99
OZ11a_OZ12d	47.92	52.60	0.06	0.00	0.64	0.18	0.46	0.18
OZ11a_OZ13a	61.36	69.13	0.60	0.12	0.49	0.20	0.67	0.27
OZ11a_OZ13b	55.00	65.06	0.85	0.00	0.45	0.79	0.01	0.14
OZ11a_OZ13c	47.22	53.30	0.50	0.00	0.82	0.02	0.00	0.17
OZ11a_OZ6d	70.14	61.21	0.12	0.00	0.82	0.72	0.03	0.20
OZ11a_OZ6g	63.97	61.67	0.59	0.33	0.96	0.30	0.43	0.02
OZ11b_OZ12a	59.13	55.79	0.18	0.00	0.72	0.71	0.02	0.26
OZ12a_OZ12c	57.65	45.48	0.81	0.21	0.86	0.92	0.49	0.15
OZ12a_OZ15a	11.11	15.08	0.01	0.00	0.08	0.55	0.01	0.31
OZ12a_TP3f	62.61	62.76	0.03	0.31	0.08	0.94	0.04	0.05
OZ12aa_OZ12w	59.52	62.45	0.35	0.00	0.77	0.87	0.19	0.75
OZ12aa_OZ12z	35.71	45.69	0.58	0.00	0.02	0.70	0.35	0.36
OZ12aa_OZ13n	31.68	53.54	0.45	0.00	0.00	0.07	0.00	0.88
OZ12aa_OZ13p	53.57	57.99	0.82	0.00	0.01	0.35	0.76	0.13
OZ12aa_OZ16a	NA	NA	NA	NA	NA	NA	NA	NA
OZ12b_OZ15a	0.00	12.78	0.06	0.00	0.44	0.10	0.36	0.19
OZ12b_TP3b	18.18	33.86	0.46	0.19	0.35	0.44	0.00	0.29
OZ12b_TP3f	71.43	35.73	0.05	0.43	0.53	0.22	0.02	0.00

ADJACENCY	FT	SC	MI	SD	TPA-1	TPA-5	SI	SA
OZ12bb_OZ12cc	NA	NA	NA	NA	NA	NA	NA	NA
OZ12bb_OZ16a	NA	NA	NA	NA	NA	NA	NA	NA
OZ12c_OZ12d	50.00	39.31	0.03	0.11	0.67	0.34	0.84	0.16
OZ12c_OZ15a	31.11	13.91	0.05	0.00	0.20	0.71	0.19	0.41
OZ12cc_OZ16a	NA	NA	NA	NA	NA	NA	NA	NA
OZ12d_OZ13a	78.79	58.55	0.03	0.00	0.94	0.68	0.47	0.65
OZ12d_OZ15a	27.78	35.00	0.00	0.00	0.52	0.20	0.17	0.29
OZ12e_OZ12f	89.41	64.83	0.29	0.01	0.93	0.68	0.20	0.42
OZ12e_OZ12g	54.41	54.52	0.34	0.40	0.92	0.43	0.54	0.66
OZ12e_OZ15a	16.99	21.65	0.06	0.00	0.32	0.04	0.25	0.63
OZ12e_TP1d	29.41	29.48	0.62	0.45	0.17	0.24	0.00	0.52
OZ12e_TP3b	61.23	56.83	0.88	0.00	0.72	0.65	0.08	0.29
OZ12e_TP5f	52.94	60.26	0.15	0.23	1.00	0.24	0.30	0.05
OZ12e_TP6b	47.06	21.95	0.09	0.17	0.35	0.57	0.64	0.07
OZ12f_OZ12g	58.33	45.24	0.07	0.00	0.84	0.81	0.14	0.79
OZ12f_TP6b	46.67	18.98	0.62	0.00	0.41	0.94	0.54	0.40
OZ12g_OZ12h	56.02	39.47	0.48	0.00	0.07	0.50	0.00	0.04
OZ12g_OZ15a	25.00	23.16	0.02	0.00	0.19	0.25	0.43	0.99
OZ12g_TP6b	25.00	26.09	0.02	0.23	0.40	0.87	0.34	0.33
OZ12h_OZ12i	85.39	84.51	0.03	0.03	0.00	0.17	0.88	0.13
OZ12h_OZ12j	NA	NA	NA	NA	NA	NA	NA	NA
OZ12h_OZ12m	60.54	56.42	0.19	0.00	0.02	0.30	0.02	0.00
OZ12h_OZ15a	22.22	18.12	0.01	0.00	0.00	0.37	0.01	0.02
OZ12h_TP6b	59.26	7.26	0.01	0.00	0.00	0.32	0.00	0.00
OZ12i_OZ12k	NA	NA	NA	NA	NA	NA	NA	NA
OZ12i_OZ12l	NA	NA	NA	NA	NA	NA	NA	NA
OZ12i_OZ12m	72.45	55.66	0.71	0.00	0.75	0.99	0.03	0.00
OZ12i_OZ15a	16.22	15.28	0.07	0.00	0.26	0.07	0.00	0.01
OZ12i_TP6b	52.70	4.64	0.17	0.00	0.18	0.89	0.00	0.00
OZ12i_TP6d	57.40	37.99	0.74	0.00	0.13	0.92	0.00	0.00
OZ12i_TP8f	40.20	52.92	0.65	0.02	0.93	0.10	0.55	0.27
OZ12j_OZ15a	NA	NA	NA	NA	NA	NA	NA	NA
OZ12k_OZ15a	NA	NA	NA	NA	NA	NA	NA	NA
OZ12l_OZ12m	NA	NA	NA	NA	NA	NA	NA	NA
OZ12l_OZ15a	NA	NA	NA	NA	NA	NA	NA	NA
OZ12m_TP6b	26.92	21.01	0.21	0.11	0.25	0.91	0.15	0.38
OZ12m_TP6c	7.69	27.23	0.43	0.00	0.01	0.90	0.31	0.99
OZ12m_TP6d	72.47	62.83	0.99	0.00	0.19	0.94	0.01	0.33
OZ12n_OZ12o	71.43	41.92	NA	0.37	NA	NA	NA	NA
OZ12n_OZ12p	0.00	31.66	NA	0.41	NA	NA	NA	NA
OZ12n_OZ12v	42.86	65.74	0.44	0.00	0.28	0.36	0.70	0.21
OZ12n_OZ13i	40.00	65.97	0.23	0.35	0.97	0.93	0.84	0.95
OZ12n_OZ15a	0.00	11.05	0.02	0.15	0.26	0.06	0.02	0.00
OZ12o_OZ12p	0.00	21.05	NA	0.34	NA	NA	NA	NA
OZ12o_OZ12t	50.00	40.91	NA	0.36	NA	NA	NA	NA
OZ12o_OZ12v	28.57	36.69	NA	0.26	NA	NA	NA	NA
OZ12p_OZ12q	NA	NA	NA	NA	NA	NA	NA	NA
OZ12p_OZ12r	NA	NA	NA	NA	NA	NA	NA	NA
OZ12p_OZ12t	0.00	21.24	NA	0.43	NA	NA	NA	NA
OZ12p_OZ15a	11.11	7.70	NA	0.44	NA	NA	NA	NA
OZ12p_OZ15b	0.00	5.26	NA	0.04	NA	NA	NA	NA
OZ12p_OZ15c	0.00	4.29	NA	0.04	NA	NA	NA	NA
OZ12p_OZ16a	NA	NA	NA	NA	NA	NA	NA	NA
OZ12q_OZ15c	NA	NA	NA	NA	NA	NA	NA	NA
OZ12r_OZ16a	NA	NA	NA	NA	NA	NA	NA	NA
OZ12s_OZ12t	NA	NA	NA	NA	NA	NA	NA	NA
OZ12s_OZ12u	NA	NA	NA	NA	NA	NA	NA	NA
OZ12s_OZ16a	NA	NA	NA	NA	NA	NA	NA	NA
OZ12t_OZ12v	53.57	48.80	0.08	0.00	0.92	0.85	0.96	0.27
OZ12t_OZ16a	NA	NA	NA	NA	NA	NA	NA	NA
OZ12u_OZ12v	9.52	10.84	NA	0.00	NA	NA	NA	NA
OZ12u_OZ13j	NA	NA	NA	NA	NA	NA	NA	NA
OZ12u_OZ13l	NA	NA	NA	NA	NA	NA	NA	NA
OZ12v_OZ13j	NA	NA	NA	NA	NA	NA	NA	NA
OZ12v_OZ13k	62.70	63.68	0.23	0.00	0.19	0.84	0.04	0.59
OZ12v_OZ13l	NA	NA	NA	NA	NA	NA	NA	NA
OZ12v_OZ16a	NA	NA	NA	NA	NA	NA	NA	NA
OZ12w_OZ12x	53.33	55.19	0.02	0.32	0.08	0.19	0.02	0.85
OZ12w_OZ13n	50.72	62.52	0.11	0.00	0.01	0.26	0.07	0.69

ADJACENCY	FT	SC	MI	SD	TPA-1	TPA-5	SI	SA
OZ12w_OZ16a	NA	NA	NA	NA	NA	NA	NA	NA
OZ12w_OZ16b	NA	NA	NA	NA	NA	NA	NA	NA
OZ12w_OZ16c	NA	NA	NA	NA	NA	NA	NA	NA
OZ12x_OZ12y	NA	NA	NA	NA	NA	NA	NA	NA
OZ12x_OZ13k	49.44	59.24	0.60	0.09	0.32	0.72	0.09	0.38
OZ12x_OZ13n	57.39	65.51	0.01	0.00	0.94	0.93	0.09	0.80
OZ12x_OZ16a	NA	NA	NA	NA	NA	NA	NA	NA
OZ12y_OZ13k	NA	NA	NA	NA	NA	NA	NA	NA
OZ12y_OZ13n	NA	NA	NA	NA	NA	NA	NA	NA
OZ12z_OZ16a	NA	NA	NA	NA	NA	NA	NA	NA
OZ13a_OZ13b	74.55	69.30	0.45	0.05	0.89	0.40	0.27	0.49
OZ13a_OZ13c	31.31	52.20	0.78	0.02	0.37	0.17	0.11	0.82
OZ13a_OZ15a	18.18	18.05	0.04	0.00	0.51	0.51	0.02	0.58
OZ13b_OZ13c	32.22	60.90	0.40	0.27	0.36	0.06	0.28	0.56
OZ13c_OZ13g	NA	NA	NA	NA	NA	NA	NA	NA
OZ13c_OZ15a	11.11	17.47	0.06	0.01	0.11	0.48	0.00	0.31
OZ13c_OZ6g	42.81	58.49	0.63	0.00	0.76	0.01	0.07	0.25
OZ13d_OZ13e	52.08	69.73	0.03	0.10	0.73	0.45	0.17	0.19
OZ13d_OZ13f	48.96	51.21	0.10	0.00	0.81	0.11	0.23	0.74
OZ13d_OZ13h	NA	NA	NA	NA	NA	NA	NA	NA
OZ13d_OZ13i	46.88	67.53	0.86	0.10	0.71	0.31	0.70	0.51
OZ13d_OZ15a	9.38	16.50	0.19	0.00	0.15	0.35	0.00	0.01
OZ13d_OZ5aa	86.76	80.25	0.25	0.00	0.14	0.08	0.96	0.90
OZ13d_OZ5j	55.21	63.85	0.33	0.00	0.54	0.64	0.90	0.15
OZ13d_OZ7k	83.70	83.98	0.77	0.00	0.19	0.68	0.84	0.49
OZ13e_OZ13g	NA	NA	NA	NA	NA	NA	NA	NA
OZ13e_OZ13h	NA	NA	NA	NA	NA	NA	NA	NA
OZ13e_OZ15a	27.78	18.21	0.00	0.00	0.26	0.25	0.06	0.87
OZ13e_OZ5j	33.33	59.49	0.78	0.16	0.66	0.96	0.54	0.59
OZ13e_OZ6g	50.98	68.78	0.15	0.07	0.82	0.93	0.56	0.29
OZ13f_OZ13i	66.67	65.98	0.15	0.06	0.96	0.45	0.37	0.42
OZ13f_OZ15a	22.22	10.80	0.39	0.08	0.41	0.09	0.02	0.57
OZ13g_OZ15a	NA	NA	NA	NA	NA	NA	NA	NA
OZ13g_OZ6g	NA	NA	NA	NA	NA	NA	NA	NA
OZ13h_OZ15a	NA	NA	NA	NA	NA	NA	NA	NA
OZ13h_OZ7k	NA	NA	NA	NA	NA	NA	NA	NA
OZ13i_OZ13k	50.00	59.53	0.96	0.02	0.78	0.51	0.53	0.18
OZ13i_OZ15a	33.33	15.78	0.25	0.30	0.39	0.14	0.04	0.01
OZ13i_OZ5aa	42.86	57.95	0.36	0.44	0.57	0.95	0.63	0.45
OZ13i_OZ5dd	56.67	59.82	0.24	0.08	0.45	0.37	0.19	0.83
OZ13i_OZ8g	42.86	57.97	0.71	0.03	0.94	0.83	0.78	0.12
OZ13j_OZ13k	NA	NA	NA	NA	NA	NA	NA	NA
OZ13k_OZ13l	NA	NA	NA	NA	NA	NA	NA	NA
OZ13k_OZ13m	40.15	50.93	0.25	0.16	0.09	0.39	0.01	0.80
OZ13k_OZ13n	53.14	71.97	0.02	0.02	0.11	0.73	0.80	0.45
OZ13k_OZ16a	NA	NA	NA	NA	NA	NA	NA	NA
OZ13k_OZ8g	53.17	53.22	0.42	0.34	0.71	0.49	0.05	0.61
OZ13k_OZ8h	38.89	55.25	0.44	0.05	0.47	0.22	0.92	0.48
OZ13k_OZ8i	70.59	72.22	0.49	0.00	0.05	0.28	0.91	0.01
OZ13l_OZ8i	NA	NA	NA	NA	NA	NA	NA	NA
OZ13m_OZ13n	35.57	53.48	0.53	0.00	0.00	0.26	0.00	0.33
OZ13m_OZ13o	39.39	59.56	0.77	0.10	0.60	0.29	0.02	0.96
OZ13m_OZ14d	80.25	76.04	0.17	0.01	0.12	0.20	0.60	0.06
OZ13n_OZ13p	20.96	47.88	0.65	0.00	0.12	0.13	0.00	0.17
OZ13n_OZ14d	41.53	49.73	0.01	0.19	0.18	0.03	0.00	0.02
OZ13p_OZ14c	86.11	66.68	0.01	0.00	0.47	0.51	0.00	0.00
OZ13p_OZ14d	79.43	67.10	0.01	0.00	0.99	0.33	0.03	0.15
OZ14a_OZ14b	52.04	67.64	0.01	0.00	0.14	0.50	0.09	0.33
OZ14a_OZ14c	56.46	69.88	0.06	0.00	0.26	0.21	0.29	0.73
OZ14a_OZ5s	70.94	61.66	0.95	0.00	0.38	0.83	0.18	0.43
OZ14a_OZ9a	71.56	75.00	0.00	0.01	0.76	0.21	0.55	0.39
OZ14a_OZ9b	63.17	67.88	0.52	0.01	0.99	0.41	0.02	0.23
OZ14a_OZ9d	56.64	63.29	0.69	0.17	0.70	0.14	0.00	0.29
OZ14b_OZ14c	80.28	73.19	0.28	0.00	0.30	0.90	0.30	0.50
OZ14b_OZ5s	60.53	70.28	0.19	0.06	0.80	0.76	0.98	0.21
OZ14c_OZ14d	85.21	84.21	0.38	0.12	0.48	0.09	0.41	0.44
OZ14c_OZ9d	83.22	85.45	0.08	0.00	0.40	0.75	0.00	0.40
OZ15a_OZ15b	44.44	53.57	NA	0.02	NA	NA	NA	NA
OZ15a_TP1d	44.44	17.67	0.36	0.00	0.39	0.05	0.03	0.70

ADJACENCY	FT	SC	MI	SD	TPA-1	TPA-5	SI	SA
OZ15a_TP3b	33.84	29.40	0.02	0.00	0.30	0.01	0.01	0.70
OZ15a_TP3f	18.25	21.07	0.32	0.00	0.99	0.58	0.21	0.38
OZ15a_TP8f	12.50	15.12	0.38	0.00	0.47	0.93	0.03	0.12
OZ15b_OZ15c	100.00	27.66	NA	0.31	NA	NA	NA	NA
OZ15b_TP8f	12.50	4.27	NA	0.00	NA	NA	NA	NA
OZ15b_TP9d	50.00	48.28	NA	0.01	NA	NA	NA	NA
OZ15c_OZ16a	NA	NA	NA	NA	NA	NA	NA	NA
OZ15c_TP9d	50.00	37.80	0.87	0.00	0.98	0.72	0.72	0.06
OZ16a_OZ16b	NA	NA	NA	NA	NA	NA	NA	NA
OZ16a_OZ16c	NA	NA	NA	NA	NA	NA	NA	NA
OZ1a_OZ1b	57.89	53.76	0.57	0.00	0.36	0.23	0.24	0.85
OZ1a_OZ1f	54.49	55.92	0.44	0.00	0.36	0.95	0.67	0.53
OZ1a_OZ1h	61.54	59.76	0.71	0.41	0.22	0.55	0.18	0.98
OZ1b_OZ1c	55.02	71.16	0.73	0.08	0.10	0.06	0.16	0.46
OZ1b_OZ1h	70.31	76.64	0.69	0.00	0.16	0.37	0.85	0.81
OZ1b_OZ5a	0.00	26.84	NA	0.07	NA	NA	NA	NA
OZ1b_OZ5b	45.82	71.89	0.78	0.30	0.35	0.67	0.00	0.71
OZ1b_OZ6a	75.26	66.03	1.00	0.00	0.48	0.76	0.65	0.74
OZ1b_OZ6c	59.09	58.64	0.30	0.05	0.00	0.48	0.02	0.98
OZ1c_OZ6a	54.09	58.99	0.69	0.05	0.06	0.30	0.09	0.27
OZ1c_OZ6b	59.21	70.18	0.33	0.00	0.33	0.70	0.86	0.75
OZ1c_OZ6c	40.91	71.97	0.65	0.50	0.87	0.24	0.57	0.48
OZ1d_OZ1f	46.15	57.12	NA	0.00	NA	NA	NA	NA
OZ1e_OZ1f	77.82	77.04	0.45	0.38	0.30	0.31	0.63	0.10
OZ1f_OZ1g	61.54	60.38	0.14	0.34	0.42	0.74	0.57	0.12
OZ1f_OZ1h	79.49	74.00	0.51	0.00	0.38	0.13	0.03	0.26
OZ1f_OZ1j	64.62	69.58	0.08	0.00	0.36	0.15	0.65	0.21
OZ1f_OZ3a	61.54	66.76	0.02	0.16	0.04	0.41	0.12	0.89
OZ1f_OZ3b	80.26	76.41	0.39	0.00	0.13	0.46	0.16	0.73
OZ1f_OZ4a	65.29	60.80	0.01	0.00	0.00	0.09	0.00	0.38
OZ1f_OZ4q	50.00	59.15	0.08	0.00	0.14	0.79	0.52	0.58
OZ1g_OZ1h	46.15	65.23	0.12	0.02	0.69	0.77	0.78	0.34
OZ1g_OZ1i	47.83	57.05	0.03	0.01	0.80	0.85	0.77	0.24
OZ1g_OZ1j	50.00	37.74	0.04	0.09	0.81	0.72	0.69	0.35
OZ1g_OZ1k	50.00	43.34	0.12	0.02	0.73	0.77	0.50	0.30
OZ1g_OZ1m	75.00	47.75	0.32	0.04	0.58	0.60	0.95	0.18
OZ1h_OZ1i	85.84	77.54	0.24	0.33	0.22	0.34	0.21	0.61
OZ1h_OZ5a	12.82	28.37	NA	0.13	NA	NA	NA	NA
OZ1i_OZ1j	66.52	70.08	0.98	0.06	0.43	0.33	0.35	0.49
OZ1i_OZ5a	17.39	32.52	NA	0.10	NA	NA	NA	NA
OZ1i_OZ5b	61.38	70.11	0.11	0.00	0.32	0.24	0.00	0.87
OZ1j_OZ1k	71.67	74.14	0.50	0.00	0.83	0.34	0.80	0.67
OZ1j_OZ1m	50.00	68.32	0.30	0.00	0.39	0.33	0.27	0.13
OZ1j_OZ4a	61.47	65.34	0.95	0.02	0.02	0.70	0.00	0.50
OZ1j_OZ5b	45.29	50.43	0.14	0.00	0.75	0.93	0.00	0.43
OZ1j_OZ5d	58.94	65.31	0.00	0.00	0.41	0.29	0.00	0.54
OZ1k_OZ1l	66.67	49.02	0.87	0.21	0.74	0.83	0.46	0.74
OZ1k_OZ1m	50.00	71.06	0.57	0.30	0.39	0.65	0.33	0.30
OZ1k_OZ4a	67.06	60.16	0.48	0.00	0.04	0.34	0.03	0.96
OZ1k_OZ4g	62.50	63.14	0.58	0.00	0.65	0.49	0.01	0.57
OZ1l_OZ4a	54.12	44.19	0.90	0.01	0.58	0.55	0.14	0.68
OZ1l_OZ4c	62.86	50.27	0.56	0.00	0.62	0.61	0.07	0.53
OZ1l_OZ4g	70.83	61.01	0.94	0.05	0.48	0.92	0.05	0.52
OZ1m_OZ4g	37.50	58.82	0.24	0.00	0.12	0.95	0.41	0.37
OZ1m_OZ5d	48.94	82.51	0.48	0.36	0.15	0.49	0.52	0.21
OZ1m_OZ5e	51.59	80.62	0.89	0.15	0.66	0.73	0.75	0.16
OZ1m_OZ5k	40.00	71.37	0.49	0.01	0.26	0.23	0.12	0.37
OZ2a_OZ2b	NA	NA	NA	NA	NA	NA	NA	NA
OZ2a_OZ3a	NA	NA	NA	NA	NA	NA	NA	NA
OZ2a_OZ3b	NA	NA	NA	NA	NA	NA	NA	NA
OZ3a_OZ3b	71.03	71.99	0.27	0.00	0.87	0.96	0.01	0.66
OZ4a_OZ4b	68.51	68.56	0.15	0.00	0.36	0.25	0.93	0.15
OZ4a_OZ4c	76.13	76.03	0.06	0.00	0.86	0.57	0.38	0.26
OZ4a_OZ4e	63.92	71.13	0.96	0.00	0.42	0.58	0.03	0.92
OZ4a_OZ4q	78.24	72.62	0.64	0.39	0.21	0.50	0.44	0.91
OZ4c_OZ4e	61.90	66.63	0.15	0.00	0.40	0.98	0.23	0.34
OZ4c_OZ4g	61.67	73.16	0.12	0.00	0.00	0.09	0.56	0.80
OZ4d_OZ4e	60.00	56.71	0.34	0.06	0.52	0.57	0.30	0.56
OZ4d_OZ4k	32.76	44.33	0.30	0.00	0.74	0.44	0.05	0.42

ADJACENCY	FT	SC	MI	SD	TPA-1	TPA-5	SI	SA
OZ4e_OZ4g	56.67	56.18	0.92	0.05	0.00	0.07	0.08	0.48
OZ4e_OZ4i	51.21	79.71	0.63	0.08	0.55	0.81	0.79	0.83
OZ4e_OZ4j	44.55	59.46	0.13	0.00	0.03	0.06	0.00	0.05
OZ4e_OZ4k	72.76	74.36	0.95	0.00	0.03	0.43	0.05	0.64
OZ4f_OZ4k	65.83	72.05	0.08	0.00	0.03	0.23	0.22	0.82
OZ4g_OZ4j	63.64	65.50	0.07	0.00	0.06	0.86	0.00	0.01
OZ4g_OZ5e	67.66	58.21	0.01	0.00	0.03	0.56	0.19	0.31
OZ4h_OZ4k	73.35	82.48	0.29	0.10	0.61	0.95	0.56	0.04
OZ4h_OZ4l	18.18	31.82	NA	0.00	NA	NA	NA	NA
OZ4i_OZ4j	50.00	67.39	0.31	0.00	0.12	0.10	0.00	0.12
OZ4i_OZ4k	52.82	73.54	0.62	0.06	0.16	0.61	0.16	0.52
OZ4j_OZ4k	61.44	73.45	0.10	0.00	0.79	0.28	0.00	0.02
OZ4j_OZ4m	72.95	77.11	0.07	0.00	0.43	0.37	0.00	0.04
OZ4j_OZ5e	69.05	69.11	0.00	0.00	0.91	0.46	0.00	0.01
OZ4k_OZ4l	13.79	31.79	NA	0.00	NA	NA	NA	NA
OZ4k_OZ4m	69.66	77.79	0.88	0.00	0.57	0.71	0.01	0.44
OZ4k_OZ4o	61.38	65.41	0.83	0.00	0.74	0.14	0.04	0.32
OZ4k_OZ5p	72.21	70.27	0.00	0.00	0.77	0.07	0.01	0.05
OZ4m_OZ4n	76.67	81.54	0.05	0.31	0.35	0.56	0.65	1.00
OZ4m_OZ4o	75.00	77.74	0.95	0.00	0.80	0.07	0.44	0.08
OZ4m_OZ5e	79.09	84.33	0.00	0.00	0.29	0.84	0.05	0.98
OZ4m_OZ5l	53.33	69.98	1.00	0.15	0.14	0.33	0.12	0.20
OZ4n_OZ4o	74.72	75.49	0.06	0.00	0.42	0.36	0.29	0.12
OZ4n_OZ5e	78.57	83.04	0.53	0.00	0.91	0.41	0.04	0.98
OZ4n_OZ5l	48.15	75.16	0.40	0.10	0.17	0.16	0.66	0.22
OZ4o_OZ4p	55.00	67.47	0.11	0.00	0.09	0.08	0.38	0.21
OZ4o_OZ5e	67.82	70.87	0.00	0.06	0.41	0.02	0.24	0.04
OZ4o_OZ5l	45.83	62.44	0.98	0.37	0.09	0.23	0.02	0.60
OZ4o_OZ5p	60.26	63.96	0.00	0.00	0.52	0.00	0.47	0.00
OZ4p_OZ5e	42.86	62.30	0.66	0.02	0.03	0.03	0.76	0.99
OZ4p_OZ5o	43.86	52.01	0.02	0.00	0.96	0.12	0.38	0.08
OZ4p_OZ5p	38.60	54.70	0.29	0.12	0.08	0.01	0.07	0.50
OZ5a_OZ5b	23.53	25.75	NA	0.03	NA	NA	NA	NA
OZ5aa_OZ5bb	64.60	74.79	0.10	0.00	0.05	0.04	0.82	0.04
OZ5aa_OZ5cc	69.05	81.20	0.74	0.31	0.49	0.17	0.61	0.54
OZ5aa_OZ5dd	57.14	54.71	0.01	0.01	0.07	0.49	0.01	0.60
OZ5aa_OZ7k	77.35	72.24	0.16	0.00	0.68	0.18	0.88	0.62
OZ5b_OZ5c	52.94	51.46	0.88	0.03	0.88	0.59	0.05	0.70
OZ5b_OZ5d	57.57	60.49	0.30	0.07	0.66	0.24	0.00	0.73
OZ5b_OZ6c	69.79	77.82	0.19	0.02	0.02	0.81	0.34	0.71
OZ5bb_OZ5cc	81.16	84.83	0.18	0.00	0.13	0.26	0.46	0.08
OZ5bb_OZ5dd	55.07	45.87	0.00	0.00	0.92	0.01	0.01	0.03
OZ5bb_OZ5y	82.61	80.79	0.33	0.00	0.65	0.05	0.25	0.42
OZ5bb_OZ8a	52.17	61.92	0.35	0.00	0.61	0.01	0.14	0.53
OZ5bb_OZ8g	55.38	61.24	0.00	0.00	0.18	0.07	0.23	0.28
OZ5c_OZ5d	63.12	67.00	0.62	0.14	0.66	0.86	0.64	0.49
OZ5c_OZ6c	53.03	49.48	0.29	0.00	0.16	0.71	0.15	0.48
OZ5c_OZ6d	62.96	74.66	0.58	0.01	0.67	0.64	0.34	0.73
OZ5cc_OZ5dd	47.22	50.64	0.01	0.00	0.35	0.17	0.01	0.30
OZ5d_OZ5e	85.48	86.05	0.12	0.00	0.04	0.26	0.25	0.71
OZ5d_OZ5f	62.04	74.41	0.74	0.02	0.72	0.60	0.38	0.04
OZ5d_OZ6d	81.90	80.40	0.01	0.00	0.05	0.55	0.42	0.34
OZ5d_OZ6e	61.92	79.16	0.15	0.00	0.96	0.05	0.84	0.40
OZ5dd_OZ8g	57.14	70.84	0.24	0.39	0.42	0.43	0.12	0.17
OZ5e_OZ5f	62.19	76.42	0.37	0.00	0.01	0.63	0.04	0.01
OZ5e_OZ5g	41.20	60.11	0.47	0.02	0.18	0.50	0.01	0.41
OZ5e_OZ5k	54.92	69.17	0.41	0.00	0.41	0.01	0.03	0.00
OZ5e_OZ5l	64.29	79.71	0.28	0.16	0.24	0.04	0.37	0.25
OZ5e_OZ5m	72.22	80.63	0.71	0.07	0.88	0.87	0.02	0.54
OZ5e_OZ5n	86.69	87.58	0.18	0.00	0.68	0.90	0.76	0.61
OZ5e_OZ5o	84.29	76.94	0.05	0.00	0.03	0.17	0.33	0.01
OZ5e_OZ5t	28.37	68.93	0.15	0.38	0.50	0.24	0.13	0.27
OZ5e_OZ7a	71.28	78.51	0.17	0.00	0.88	0.31	0.98	0.58
OZ5e_OZ7b	75.40	81.56	0.63	0.00	0.50	0.05	0.26	0.19
OZ5e_OZ7c	67.56	78.23	0.26	0.11	0.50	0.93	0.57	0.21
OZ5e_OZ7d	57.94	75.04	0.37	0.00	0.75	0.01	0.84	0.87
OZ5e_OZ7e	33.49	53.03	0.42	0.00	0.06	0.01	0.95	0.44
OZ5e_OZ7j	56.35	65.24	0.86	0.12	0.05	0.32	0.83	0.65
OZ5e_OZ9a	63.51	60.78	0.33	0.00	0.51	0.03	0.78	0.72

ADJACENCY	FT	SC	MI	SD	TPA-1	TPA-5	SI	SA
OZ5e_OZ9b	59.24	61.70	0.00	0.00	0.23	0.00	0.00	0.98
OZ5e_OZ9c	53.43	57.84	0.01	0.00	0.82	0.60	0.00	0.95
OZ5f_OZ5g	62.18	70.01	0.90	0.39	0.96	0.66	0.36	0.40
OZ5f_OZ6d	53.00	65.37	0.03	0.00	0.06	0.97	0.63	0.10
OZ5f_OZ6e	41.79	60.73	0.30	0.00	0.80	0.14	0.50	0.29
OZ5f_OZ6f	41.70	53.06	0.04	0.00	0.11	0.91	0.49	0.78
OZ5g_OZ5h	65.73	75.83	0.35	0.08	0.02	0.68	0.87	0.92
OZ5g_OZ6d	38.38	62.75	0.20	0.01	0.20	0.70	0.14	0.87
OZ5g_OZ7a	43.18	59.75	0.12	0.00	0.18	1.00	0.08	0.65
OZ5g_OZ7h	45.45	70.42	0.00	0.00	0.56	0.98	0.16	0.36
OZ5h_OZ5i	45.51	63.14	0.72	0.15	0.31	0.49	0.20	0.59
OZ5h_OZ5j	38.46	57.27	0.10	0.00	0.20	0.94	0.80	0.43
OZ5h_OZ6d	64.96	72.47	0.61	0.03	0.13	0.15	0.03	0.64
OZ5h_OZ6f	54.90	60.00	0.61	0.48	0.04	0.14	0.04	0.15
OZ5h_OZ6g	46.61	52.52	0.00	0.00	0.08	0.79	0.05	0.09
OZ5h_OZ7g	50.96	62.98	0.09	0.00	0.68	0.03	0.03	0.47
OZ5h_OZ7h	62.00	71.84	0.00	0.00	0.09	0.73	0.14	0.26
OZ5h_OZ7k	55.51	70.06	0.04	0.00	0.00	0.65	0.42	0.07
OZ5i_OZ7h	59.09	61.65	0.01	0.00	0.96	0.49	0.57	0.86
OZ5j_OZ6g	56.86	62.88	0.65	0.43	0.58	0.99	0.79	0.19
OZ5j_OZ7k	54.96	65.87	0.41	0.14	0.86	0.79	0.84	0.14
OZ5m_OZ9a	42.59	59.07	0.38	0.01	0.96	0.59	0.01	0.50
OZ5n_OZ9a	61.08	60.90	0.02	0.00	0.46	0.36	0.86	0.67
OZ5n_OZ9b	55.98	58.23	0.00	0.00	0.48	0.24	0.11	0.55
OZ5n_OZ9c	54.95	55.46	0.00	0.00	0.62	0.67	0.02	0.65
OZ5o_OZ5p	81.05	84.04	0.14	0.00	0.07	0.04	0.66	0.08
OZ5o_OZ9c	50.00	44.69	0.00	0.00	0.07	0.13	0.03	0.07
OZ5p_OZ5q	83.68	56.55	0.00	0.00	0.12	0.12	0.72	0.24
OZ5p_OZ5r	77.49	58.16	0.00	0.00	0.59	0.51	0.38	0.44
OZ5p_OZ9c	58.42	51.22	0.00	0.00	0.96	0.53	0.03	0.39
OZ5q_OZ9c	52.63	52.68	0.01	0.09	0.07	0.18	0.63	0.15
OZ5q_OZ9g	37.50	46.12	0.53	0.03	0.30	0.66	0.72	0.30
OZ5r_OZ5s	63.89	75.48	0.27	0.03	0.85	0.12	0.99	0.26
OZ5r_OZ9a	72.33	58.87	0.00	0.00	0.39	0.05	0.03	0.92
OZ5r_OZ9b	69.80	64.78	0.03	0.00	0.15	0.02	0.97	0.90
OZ5r_OZ9c	60.96	65.70	0.03	0.00	0.60	0.98	0.33	0.95
OZ5t_OZ5u	37.50	66.39	1.00	0.01	0.91	0.54	0.89	0.18
OZ5t_OZ5v	36.84	68.64	0.12	0.31	0.52	0.84	0.76	0.66
OZ5t_OZ7g	10.71	50.90	0.01	0.00	0.85	0.18	0.42	0.13
OZ5t_OZ7j	54.17	69.75	0.12	0.15	0.54	0.79	0.21	0.29
OZ5t_OZ9a	31.19	62.14	0.02	0.06	0.63	0.69	0.08	0.47
OZ5u_OZ7g	51.79	57.93	0.07	0.00	0.78	0.94	0.65	0.02
OZ5u_OZ7j	41.67	57.95	0.18	0.00	0.60	0.46	0.39	0.09
OZ5v_OZ5w	73.88	83.20	0.42	0.00	0.06	0.68	0.15	0.60
OZ5v_OZ5y	78.49	80.85	0.93	0.12	0.35	0.55	0.16	0.69
OZ5v_OZ5z	36.84	63.49	0.50	0.01	0.00	0.27	0.42	0.17
OZ5v_OZ7g	52.82	69.28	0.10	0.00	0.20	0.08	0.39	0.42
OZ5v_OZ7i	67.11	70.79	0.98	0.01	0.09	0.87	0.33	0.90
OZ5v_OZ7k	48.22	62.64	0.05	0.00	0.16	0.63	0.84	0.01
OZ5v_OZ9a	52.48	60.38	0.73	0.17	0.62	0.82	0.03	0.81
OZ5w_OZ5x	56.34	70.18	0.03	0.10	0.04	0.93	0.62	0.50
OZ5w_OZ5y	73.27	82.35	0.33	0.06	0.57	0.30	0.97	0.31
OZ5w_OZ8a	50.00	65.36	0.33	0.03	0.07	0.04	0.73	0.19
OZ5w_OZ9a	55.69	60.77	0.47	0.00	0.14	0.42	0.51	0.28
OZ5w_OZ9b	49.66	57.34	0.04	0.00	0.10	0.64	0.01	0.19
OZ5x_OZ8a	67.85	76.42	0.23	0.34	0.83	0.04	0.44	0.64
OZ5x_OZ8c	72.18	81.49	0.08	0.05	0.89	0.23	0.62	0.47
OZ5x_OZ9b	74.29	73.97	0.00	0.00	0.25	0.60	0.00	0.83
OZ5x_OZ9d	71.12	71.30	0.00	0.00	0.45	0.33	0.00	0.90
OZ5y_OZ5z	30.43	58.69	0.49	0.03	0.23	0.42	0.18	0.22
OZ5y_OZ7k	56.87	64.41	0.02	0.00	0.02	0.25	0.16	0.01
OZ5y_OZ8a	58.70	72.31	0.97	0.42	0.32	0.38	0.72	0.81
OZ5z_OZ7k	59.46	56.04	0.23	0.00	0.00	0.00	0.67	0.83
OZ6a_OZ6b	85.90	65.75	0.01	0.01	0.04	0.25	0.01	0.34
OZ6b_OZ6c	62.59	73.81	0.33	0.00	0.03	0.17	0.25	0.54
OZ6b_OZ6d	77.35	60.19	0.00	0.00	0.51	0.95	0.43	0.89
OZ6c_OZ6d	58.84	58.08	0.15	0.00	0.13	0.09	0.05	0.40
OZ6d_OZ6e	70.95	78.83	0.57	0.08	0.10	0.06	0.65	0.82
OZ6d_OZ6f	82.22	82.22	0.96	0.01	0.46	0.83	0.64	0.01

ADJACENCY	FT	SC	MI	SD	TPA-1	TPA-5	SI	SA
OZ6d_OZ6g	46.51	57.74	0.00	0.00	0.69	0.25	0.37	0.02
OZ6e_OZ6f	65.80	78.43	0.57	0.00	0.31	0.20	0.93	0.14
OZ6f_OZ6g	53.26	59.48	0.00	0.00	0.84	0.21	0.53	0.52
OZ7a_OZ7b	64.88	83.42	0.52	0.34	0.40	0.45	0.42	0.46
OZ7a_OZ7g	82.14	80.58	0.28	0.02	0.11	0.17	0.47	0.92
OZ7a_OZ7h	71.31	72.84	0.04	0.33	0.49	0.97	0.61	0.50
OZ7b_OZ7c	77.08	81.40	0.52	0.10	0.92	0.19	0.72	0.04
OZ7b_OZ7g	66.67	79.35	0.14	0.08	0.51	0.03	0.80	0.52
OZ7c_OZ7d	55.56	63.76	0.12	0.00	0.86	0.09	0.59	0.41
OZ7c_OZ7g	69.64	80.73	0.48	0.01	0.62	0.69	0.89	0.05
OZ7d_OZ7e	36.00	42.37	0.21	0.02	0.44	0.50	0.84	0.52
OZ7d_OZ7f	NA	NA	NA	NA	NA	NA	NA	NA
OZ7d_OZ7g	52.58	59.18	0.04	0.00	0.58	0.01	0.53	0.62
OZ7d_OZ7j	50.00	56.86	0.33	0.00	0.37	0.24	1.00	0.63
OZ7e_OZ7g	40.93	59.49	0.20	0.00	0.71	0.01	0.53	0.88
OZ7e_OZ7j	65.33	72.05	0.71	0.00	0.63	0.39	0.84	0.93
OZ7g_OZ7h	73.38	65.54	0.10	0.23	0.12	0.33	0.97	0.49
OZ7g_OZ7i	75.60	72.62	0.65	0.13	0.69	0.35	0.16	0.61
OZ7g_OZ7j	50.60	68.69	0.18	0.00	0.42	0.19	0.49	0.99
OZ7g_OZ7k	56.42	70.37	0.56	0.09	0.00	0.01	0.22	0.01
OZ7h_OZ7k	47.91	64.71	0.43	0.07	0.71	0.51	0.44	0.02
OZ8a_OZ8b	58.70	68.66	0.12	0.01	0.77	0.20	0.42	0.05
OZ8a_OZ8c	71.43	80.74	0.42	0.09	0.67	0.42	0.61	0.77
OZ8a_OZ8d	80.75	66.59	0.05	0.00	0.31	0.58	0.86	0.59
OZ8a_OZ8g	82.71	74.97	0.00	0.00	0.38	0.21	0.90	0.08
OZ8b_OZ8c	63.10	76.39	0.05	0.00	0.93	0.55	0.53	0.02
OZ8c_OZ8d	61.90	62.08	0.20	0.00	0.14	0.22	0.65	0.75
OZ8c_OZ8e	77.17	83.84	0.16	0.41	0.10	0.72	0.73	0.96
OZ8c_OZ8f	79.25	82.12	0.04	0.40	0.44	0.35	0.63	0.19
OZ8c_OZ9d	83.33	75.51	0.03	0.00	0.23	0.56	0.00	0.31
OZ8d_OZ8e	55.74	66.85	0.88	0.00	0.01	0.50	0.85	0.84
OZ8d_OZ8f	73.47	62.37	0.78	0.00	0.28	0.03	0.83	0.48
OZ8d_OZ8g	85.71	73.86	0.34	0.01	0.06	0.18	0.80	0.36
OZ8f_OZ8g	81.97	80.81	0.33	0.00	0.17	0.79	0.93	0.65
OZ8f_OZ8h	36.73	55.21	0.68	0.44	0.31	0.20	0.68	0.65
OZ8f_OZ8i	58.48	55.50	0.40	0.00	0.20	0.45	0.01	0.03
OZ8f_OZ8j	69.32	74.55	0.45	0.13	0.35	0.00	0.47	0.16
OZ8f_OZ8k	66.94	59.64	0.35	0.00	0.02	0.18	0.39	0.00
OZ8f_OZ9d	84.51	80.98	0.58	0.00	0.66	0.62	0.00	0.00
OZ8g_OZ8h	38.10	58.65	0.59	0.07	0.63	0.44	0.69	0.61
OZ8h_OZ8i	20.69	53.47	0.27	0.00	0.25	0.48	0.94	0.70
OZ8i_OZ8k	77.47	74.29	0.20	0.01	0.01	0.60	0.60	0.29
OZ8j_OZ8k	50.80	60.77	0.71	0.00	0.01	0.00	0.59	0.03
OZ8j_OZ9d	63.40	72.21	0.63	0.00	0.57	0.00	0.00	0.31
OZ9a_OZ9b	83.98	82.39	0.00	0.00	0.68	0.54	0.00	0.71
OZ9a_OZ9c	77.47	81.00	0.01	0.00	0.81	0.04	0.00	0.85
OZ9a_OZ9d	76.81	77.92	0.00	0.00	0.95	0.79	0.00	0.84
OZ9b_OZ9d	88.48	90.95	0.77	0.06	0.58	0.36	0.08	0.86
OZ9b_OZ9e	81.43	83.71	0.02	0.00	0.51	0.82	0.47	0.29
OZ9b_OZ9f	75.16	66.08	0.44	0.11	0.67	0.02	0.29	0.01
OZ9b_OZ9i	67.58	78.23	0.26	0.21	0.97	0.64	0.25	0.94
OZ9c_OZ9g	76.97	70.97	0.00	0.00	0.28	0.39	0.94	0.74
OZ9d_OZ9h	71.29	81.29	0.01	0.00	0.92	0.68	0.33	0.00
OZ9e_OZ9f	90.83	64.77	0.84	0.00	0.90	0.29	0.14	0.02
OZ9e_OZ9i	62.50	69.61	0.90	0.00	0.73	0.72	0.57	0.54
TP1a_TP1b	83.33	55.46	0.55	0.13	0.03	0.58	0.92	0.70
TP1a_TP2a	NA	NA	NA	NA	NA	NA	NA	NA
TP1a_TP2b	40.00	1.05	0.02	0.00	0.02	0.14	0.08	0.26
TP1a_TP3b	20.45	10.44	0.00	0.00	0.05	0.06	0.85	0.34
TP1b_TP1c	33.33	34.50	0.31	0.00	0.36	0.02	0.47	0.63
TP1b_TP3a	83.33	5.65	NA	0.00	NA	NA	NA	NA
TP1b_TP3b	20.45	19.05	0.00	0.00	0.44	0.07	0.89	0.08
TP1c_TP1d	58.33	27.73	0.20	0.01	0.00	0.04	0.15	0.34
TP1c_TP3b	69.70	41.46	0.03	0.00	0.00	0.13	0.25	0.39
TP1c_TP3f	54.76	31.05	0.06	0.00	0.02	0.80	0.73	0.47
TP1c_TP4e	54.76	29.33	0.05	0.00	0.03	0.18	0.44	0.43
TP1c_TP4f	65.38	37.10	0.03	0.00	0.09	0.48	0.12	0.23
TP1d_TP3b	36.36	40.30	0.59	0.04	0.24	0.41	0.08	0.98
TP1d_TP4a	72.22	37.73	0.50	0.00	0.19	0.17	0.03	0.36

ADJACENCY	FT	SC	MI	SD	TPA-1	TPA-5	SI	SA
TP1d_TP4f	34.62	40.06	0.64	0.08	0.14	0.11	0.17	0.68
TP1d_TP4k	57.14	39.54	0.80	0.05	0.73	0.46	0.00	0.88
TP1d_TP5a	75.00	20.31	0.27	0.00	0.59	0.30	0.00	0.97
TP1d_TP5e	33.70	33.84	0.22	0.10	0.43	0.47	0.09	0.70
TP2a_TP2b	NA	NA	NA	NA	NA	NA	NA	NA
TP2a_TP2c	NA	NA	NA	NA	NA	NA	NA	NA
TP2b_TP2c	20.00	52.29	0.63	0.00	0.23	0.72	0.04	0.91
TP2b_TP3b	56.36	52.91	0.54	0.01	0.96	0.71	0.21	0.40
TP2c_TP3a	0.00	9.84	NA	0.00	NA	NA	NA	NA
TP2c_TP3b	45.45	45.31	0.96	0.00	0.37	0.23	0.28	0.68
TP2c_TP3c	10.00	41.15	0.26	0.00	0.43	0.62	0.77	0.39
TP3a_TP3b	18.18	18.16	NA	0.00	NA	NA	NA	NA
TP3a_TP3c	40.00	12.53	NA	0.00	NA	NA	NA	NA
TP3a_TP3d	12.50	18.54	NA	0.00	NA	NA	NA	NA
TP3a_TP3e	7.14	9.07	NA	0.00	NA	NA	NA	NA
TP3a_TP3f	7.14	10.48	NA	0.00	NA	NA	NA	NA
TP3a_TP4b	10.81	14.17	NA	0.00	NA	NA	NA	NA
TP3a_TP4e	14.29	18.81	NA	0.00	NA	NA	NA	NA
TP3b_TP3c	54.09	61.17	0.04	0.03	0.55	0.58	0.22	0.95
TP3b_TP3d	80.68	70.97	0.49	0.36	0.40	0.67	0.51	0.92
TP3b_TP3e	70.78	69.78	0.29	0.00	0.86	0.35	0.87	0.30
TP3b_TP3f	46.75	62.77	0.08	0.02	0.22	0.04	0.11	0.62
TP3b_TP4e	80.52	72.33	0.48	0.00	0.37	0.90	0.28	0.96
TP3b_TP4f	66.43	72.95	0.88	0.16	0.85	0.08	0.28	0.43
TP3b_TP5a	18.18	26.39	0.07	0.00	0.96	0.28	0.02	0.96
TP3b_TP5f	53.48	52.10	0.10	0.00	0.72	0.09	0.52	0.31
TP3c_TP3d	45.00	59.06	0.40	0.20	0.78	0.92	0.75	0.98
TP3c_TP4b	50.81	63.07	0.08	0.30	0.57	0.08	0.22	0.64
TP3c_TP4c	40.00	55.35	0.10	0.02	0.05	0.47	0.50	0.52
TP3d_TP4c	87.50	53.31	0.57	0.01	0.09	0.44	0.33	0.56
TP3d_TP4d	91.07	61.65	0.31	0.14	0.70	0.29	0.62	0.56
TP3d_TP4e	69.64	57.92	0.89	0.03	0.87	0.64	0.20	0.96
TP3e_TP4d	64.29	56.50	0.19	0.24	0.35	0.05	0.94	0.96
TP3e_TP4e	78.57	64.30	0.74	0.41	0.53	0.50	0.49	0.34
TP4a_TP4b	35.44	31.57	0.07	0.00	0.35	0.95	0.10	0.10
TP4a_TP4f	56.84	39.91	0.06	0.00	0.18	0.95	0.03	0.11
TP4a_TP4h	25.40	13.54	0.35	0.08	0.68	0.55	0.05	0.52
TP4a_TP4i	36.36	33.77	0.93	0.15	0.59	0.31	0.24	0.14
TP4a_TP4j	49.49	39.19	0.30	0.00	0.41	0.84	0.28	0.09
TP4a_TP4k	76.19	65.64	0.46	0.10	0.08	0.62	0.30	0.24
TP4a_TP5b	36.11	24.87	0.47	0.45	0.37	0.09	0.17	0.38
TP4a_TP5e	42.03	44.75	1.00	0.02	0.07	0.32	0.21	0.64
TP4b_TP4c	64.32	56.48	0.58	0.01	0.01	0.05	0.04	0.64
TP4b_TP4f	53.95	69.37	0.70	0.25	0.93	0.99	0.24	0.76
TP4b_TP4g	13.51	22.94	NA	0.00	NA	NA	NA	NA
TP4b_TP4h	69.11	48.01	0.66	0.00	0.37	0.39	0.24	0.69
TP4c_TP4d	82.86	50.70	0.65	0.03	0.35	0.78	0.07	0.97
TP4c_TP4e	61.43	58.38	0.47	0.09	0.05	0.27	0.01	0.53
TP4c_TP4f	54.62	54.25	0.74	0.01	0.01	0.05	0.01	0.80
TP4d_TP4e	64.29	47.55	0.18	0.18	0.55	0.14	0.41	0.52
TP4e_TP4f	71.98	65.77	0.57	0.01	0.36	0.23	0.83	0.52
TP4f_TP4g	30.77	23.63	NA	0.00	NA	NA	NA	NA
TP4f_TP4h	48.90	47.56	0.50	0.00	0.41	0.42	0.67	0.61
TP4f_TP4k	70.33	50.26	0.23	0.00	0.11	0.44	0.00	0.67
TP4g_TP4h	14.29	10.37	NA	0.01	NA	NA	NA	NA
TP4h_TP4k	35.71	18.73	0.69	0.44	0.08	0.93	0.00	0.85
TP4i_TP4j	81.82	63.60	0.19	0.00	0.83	0.25	0.77	0.88
TP4j_TP4k	54.55	43.78	0.66	0.00	0.11	0.63	0.00	0.33
TP4j_TP5b	70.45	53.74	1.00	0.00	0.44	0.19	0.31	0.57
TP4k_TP5e	49.07	54.39	0.20	0.25	0.51	0.72	0.00	0.40
TP5a_TP5d	3.92	17.83	0.02	0.00	0.93	0.43	0.01	0.89
TP5a_TP5e	8.70	27.00	0.61	0.00	0.78	0.34	0.04	0.75
TP5a_TP5f	11.76	27.54	0.09	0.00	0.91	0.78	0.03	0.58
TP5b_TP5c	39.29	51.65	0.29	0.35	0.55	0.14	0.48	0.88
TP5b_TP5e	64.13	50.88	0.19	0.07	0.99	0.01	0.49	0.56
TP5c_TP5d	39.78	62.57	0.21	0.39	0.75	0.53	0.15	0.88
TP5c_TP5e	44.72	53.41	0.64	0.03	0.37	0.41	0.07	0.62
TP5d_TP5e	77.49	64.33	0.16	0.00	0.30	0.82	0.34	0.31
TP5d_TP5f	52.94	55.68	0.59	0.00	0.92	0.21	0.20	0.16

ADJACENCY	FT	SC	MI	SD	TPA-1	TPA-5	SI	SA
TP5d_TP6e	49.35	56.27	0.58	0.00	0.51	0.56	0.00	0.97
TP5d_TP7b	69.41	52.38	0.09	0.00	0.29	0.63	0.02	0.12
TP5f_TP6b	5.88	25.52	0.70	0.42	0.34	0.68	0.65	0.87
TP5f_TP6e	40.85	57.34	0.90	0.16	0.64	0.56	0.04	0.25
TP5f_TP6f	59.24	71.74	0.37	0.50	0.67	0.29	0.12	0.13
TP6a_TP6e	22.22	30.13	NA	0.00	NA	NA	NA	NA
TP6a_TP6h	50.00	29.22	NA	0.01	NA	NA	NA	NA
TP6b_TP6c	32.26	38.16	0.78	0.00	0.00	0.96	0.91	0.72
TP6b_TP6f	87.10	77.31	0.26	0.41	0.20	0.67	0.31	0.19
TP6b_TP8c	70.54	72.78	0.04	0.28	0.14	0.88	0.13	0.06
TP6c_TP6d	21.05	37.07	0.37	0.00	0.00	0.92	0.72	0.72
TP6c_TP8c	21.05	28.45	0.21	0.00	0.00	0.90	0.32	0.72
TP6d_TP8c	57.89	58.84	0.61	0.10	0.10	0.92	0.01	0.86
TP6d_TP8d	67.49	52.94	0.35	0.00	0.20	0.58	0.01	0.30
TP6d_TP8e	54.39	56.04	0.72	0.00	0.23	0.27	0.00	0.16
TP6d_TP8f	38.82	46.09	0.58	0.00	0.48	0.15	0.01	0.24
TP6e_TP6f	61.90	70.49	0.52	0.16	0.44	0.75	0.95	0.80
TP6e_TP6g	5.56	36.89	NA	0.35	NA	NA	NA	NA
TP6e_TP6h	27.78	40.81	0.71	0.04	0.41	0.15	0.09	0.43
TP6e_TP7a	47.62	60.19	0.20	0.06	0.49	0.11	0.43	0.69
TP6e_TP7b	57.78	54.24	0.33	0.48	0.22	0.39	0.86	0.10
TP6e_TP7c	5.56	17.03	NA	0.00	NA	NA	NA	NA
TP6e_TP8b	45.96	55.69	0.64	0.02	0.26	0.50	0.02	0.55
TP6e_TP8c	61.99	58.54	0.20	0.03	0.43	0.76	0.00	0.65
TP6f_TP8c	68.80	70.61	0.72	0.22	0.74	0.50	0.01	0.89
TP6g_TP6h	50.00	40.72	NA	0.17	NA	NA	NA	NA
TP6g_TP8b	45.45	61.66	NA	0.40	NA	NA	NA	NA
TP6g_TP8c	26.32	52.95	NA	0.21	NA	NA	NA	NA
TP6g_TP8d	35.29	56.56	NA	0.41	NA	NA	NA	NA
TP6h_TP8c	63.16	44.80	0.31	0.01	0.13	0.07	0.69	0.28
TP7a_TP7b	70.00	55.19	0.74	0.11	0.61	0.35	0.64	0.15
TP7a_TP7c	42.86	6.88	NA	0.00	NA	NA	NA	NA
TP7a_TP7d	28.57	43.94	0.06	0.18	0.07	0.82	0.43	0.35
TP7a_TP7f	60.00	38.51	0.09	0.00	0.07	0.19	0.13	0.84
TP7a_TP7g	28.57	47.65	0.09	0.00	0.19	0.04	0.21	0.97
TP7a_TP8b	61.04	43.49	0.05	0.00	0.80	0.07	0.29	0.99
TP7b_TP7c	40.00	14.56	NA	0.00	NA	NA	NA	NA
TP7b_TP7d	38.57	41.14	0.12	0.42	0.05	0.28	0.24	0.83
TP7c_TP7g	9.52	8.12	NA	0.00	NA	NA	NA	NA
TP7c_TP8b	45.45	9.26	NA	0.00	NA	NA	NA	NA
TP7d_TP7f	28.57	39.33	0.45	0.00	0.58	0.16	0.41	0.26
TP7d_TP7g	38.10	34.08	0.30	0.01	0.37	0.03	0.69	0.14
TP7d_TP7h	57.14	40.24	0.06	0.47	0.05	0.18	0.77	0.43
TP7d_TP7i	47.62	17.73	0.86	0.00	0.74	0.05	0.09	0.41
TP7e_TP7h	14.29	13.51	NA	0.00	NA	NA	NA	NA
TP7e_TP7i	33.33	5.13	NA	0.13	NA	NA	NA	NA
TP7f_TP7g	39.05	67.51	0.87	0.29	0.64	0.69	0.51	0.78
TP7f_TP7h	34.29	61.54	0.09	0.00	0.05	0.90	0.57	0.77
TP7g_TP7h	61.90	59.98	0.10	0.00	0.15	0.85	0.94	0.58
TP7g_TP8b	59.96	68.21	0.78	0.12	0.08	0.45	0.74	0.94
TP7g_TP9b	0.00	6.27	NA	0.00	NA	NA	NA	NA
TP7h_TP7i	57.14	31.31	0.04	0.00	0.14	0.27	0.13	0.76
TP7h_TP9a	0.00	8.72	NA	0.00	NA	NA	NA	NA
TP7h_TP9b	NA	NA	NA	NA	NA	NA	NA	NA
TP8a_TP8b	NA	NA	NA	NA	NA	NA	NA	NA
TP8b_TP8d	80.48	70.61	0.04	0.46	0.28	0.32	0.43	0.39
TP8b_TP9b	0.00	3.77	NA	0.00	NA	NA	NA	NA
TP8c_TP8d	74.61	70.26	0.61	0.00	0.70	0.46	0.79	0.12
TP8c_TP9c	13.16	17.51	NA	0.00	NA	NA	NA	NA
TP8d_TP8e	86.27	75.62	0.11	0.00	0.74	0.45	0.73	0.67
TP8d_TP9b	0.00	1.29	NA	0.00	NA	NA	NA	NA
TP8d_TP9c	2.94	10.64	NA	0.00	NA	NA	NA	NA
TP8d_TP9d	2.94	15.10	0.04	0.00	0.09	0.22	0.05	0.64
TP8e_TP8f	49.26	62.21	0.69	0.09	0.94	0.03	0.67	0.82
TP8e_TP9d	5.88	19.34	0.22	0.12	0.08	0.45	0.02	0.79
TP8f_TP9d	12.50	13.93	0.49	0.02	0.16	0.08	0.05	0.92
TP9a_TP9b	0.00	37.04	NA	0.37	NA	NA	NA	NA
TP9b_TP9c	0.00	43.01	NA	0.34	NA	NA	NA	NA
TP9c_TP9d	50.00	38.91	NA	0.00	NA	NA	NA	NA

APPENDIX B: Electivity

Table B1: Electivity of eastern redcedar (068), shortleaf pine (110), eastern white pine (129), Scotch pine (130), loblolly pine (131), baldcypress (221), boxelder (313), black maple (314), red maple (316), silver maple (317), and sugar maple (318) in Missouri's LTAs. The number in parentheses is the species code identifier from the FIA database. "NA" indicates where no information is available.

LTA	068	110	129	130	131	221	313	314	316	317	318
MB1a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB1b	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.78	-1
MB1c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB1d	-1	-1	-1	-1	-1	0.98	-1	-1	0.9	-1	-1
MB1e	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB1f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB2a	-0.72	-0.84	-1	-1	-1	-1	0.68	-1	0.49	-0.58	0.39
MB2b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB3a	-1	-1	-1	-1	-1	0.99	0.29	-1	0.82	0.19	-1
MB3b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB3c	-1	-1	-1	-1	-1	-1	0.79	-1	0.9	-1	-1
MB3d	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4a	-1	-1	-1	-1	-1	-1	0.85	-1	-1	-1	-1
MB4b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4c	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4d	-1	-1	-1	-1	-1	0.98	0.94	-1	0.9	0.86	-0.03
MB4e	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4j	-1	-1	-1	-1	-1	0.99	-1	-1	0.37	0.87	-1
MB4k	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4l	-1	-1	-1	-1	-1	0.88	0.89	-1	0.69	0.71	-1
OP1a	-1	-1	-1	-1	-1	-1	0.68	-1	-1	0.91	-1
OP1b	-0.35	-1	-1	-1	-1	-1	0.58	-1	-1	-0.53	-1
OP1c	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OP1d	-0.82	-1	-1	-1	-1	0.11	1.02	-1	0.09	0.49	-0.87
OP1e	-0.8	-1	-1	-1	-1	0.17	1.16	-1	0.12	0.58	-0.87
OP1f	-0.59	-1	-1	-1	-1	-1	0.74	-1	-1	-0.57	-0.36
OP1g	-0.89	-1	-1	-1	-1	-1	-1	-1	-1	0.43	-1
OP1h	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-0.34
OP1i	0.08	-1	-1	-1	-1	-1	-1	-1	-1	-1	-0.65
OP1j	0.08	-1	-1	-1	-1	-1	-1	-1	-1	-1	-0.65
OP2a	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.92	-1
OP2b	-1	-1	-1	-1	-1	-1	0.88	-1	-1	0.87	-0.57
OP2c	-0.51	-1	-1	-1	-1	-1	0.12	-1	-1	-0.59	-1
OP2d	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.66	-1
OP2e	-0.27	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OP2f	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.42	-1
OP2g	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OP2h	-0.15	-1	-1	-1	-1	-1	0.27	-1	-1	0.26	-1
OP2i	-1	-1	-1	-1	-1	-1	0.64	-1	0.54	0.7	-1
OP2j	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ10a	-0.36	0.07	-1	-1	-1	-1	-1	-1	0.37	-1	0.19
OZ10b	0.55	-1	-1	-1	-1	-1	0.34	-1	-0.09	-0.53	0.45
OZ10c	0.02	0.16	-1	-1	-1	-1	-1	-1	0.47	-1	-0.21
OZ10d	-0.31	0.37	-1	-1	-1	-1	-1	-1	0.33	-1	0.17
OZ11a	0.46	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ11b	0.44	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ12a	-0.86	-1	-1	-1	-1	-1	-0.25	-1	-1	-1	-1
OZ12aa	0.39	-0.03	-1	-1	-1	-1	-0.25	-1	-1	0.46	0.77
OZ12b	-0.18	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ12bb	-1	-1	-1	-1	-1	-1	0.39	-1	0.44	-0.23	0.14
OZ12c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.71
OZ12cc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12d	0.06	-1	-1	-1	-1	-1	0.85	0.98	-1	0.74	-1

OZ12e	-0.38	-1	-1	-1	-1	-1	-0.26	0.99	-1	0.67	0.1
OZ12f	-0.38	-1	-1	-1	-1	-1	-0.26	-1	-1	-0.02	-0.66
OZ12g	0.59	-1	-1	-1	-1	-1	0.35	-1	-1	-1	-0.47
OZ12h	0.31	-1	-1	-1	-1	-1	-0.57	0.92	-1	-1	0.8
OZ12i	0.2	-1	0.96	-1	-1	-1	-1	-1	-0.78	-1	0.81
OZ12j	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12k	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12m	0.1	-0.91	-1	-1	-1	-1	-0.47	-1	-1	-0.55	-0.33
OZ12n	-0.73	-1	-1	-1	-1	-1	-1	-1	-1	-1	-0.08
OZ12o	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ12p	-1	-1	-1	-1	-1	-1	0.85	-1	-1	-1	0.63
OZ12q	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12r	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12s	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12t	-0.29	-1	-1	-1	-1	-1	0.74	-1	-1	0.28	-1
OZ12u	0.93	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ12v	0.44	-1	-1	-1	-1	-1	-0.46	-1	-0.42	-1	0.68
OZ12w	-0.19	-1	-1	-1	-1	-1	-1	-1	0.5	-1	0.78
OZ12x	0.6	-1	-1	-1	-1	-1	-1	-1	0.39	-1	-0.61
OZ12y	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12z	-1	-1	-1	-1	-1	-1	-1	-1	0.01	-1	-0.02
OZ13a	-0.21	-1	-1	-1	-1	-1	-1	-1	-0.1	-1	0.01
OZ13b	-0.09	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ13c	0.76	-1	-1	-1	-1	-1	-1	-1	-1	-1	0
OZ13d	0.47	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.11
OZ13e	0.35	-1	-1	-1	-1	-1	0.12	-1	-1	-1	0.51
OZ13f	0.69	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ13g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13i	0.55	-1	-1	-1	-1	-1	-1	-1	-1	-1	-0.35
OZ13j	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13k	0.69	-1	-1	0.98	-1	-1	0.5	-1	-1	-0.11	0.43
OZ13l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13m	-0.04	-0.27	-1	-1	-1	-1	-1	-1	0.14	-1	0.64
OZ13n	0.49	-1	-1	-1	-1	-1	-1	-1	-1	-1	-0.13
OZ13o	-0.1	0.49	-1	-1	-1	-1	-1	-1	0.68	-1	-1
OZ13p	-0.92	-0.45	-1	-1	0.99	-1	-1	-1	0.48	-0.2	0.69
OZ14a	-0.96	0.7	-1	-1	-1	-1	-1	-1	0.03	-1	-0.64
OZ14b	-0.77	0.25	-1	-1	-1	-1	-1	-1	0.07	-1	-0.16
OZ14c	-0.96	0.31	-1	-1	-1	-1	-0.84	-1	0.12	-0.93	-0.07
OZ14d	-0.74	-0.48	-1	-1	-1	-1	-1	-1	0.55	-1	-0.76
OZ15a	0.28	-1	-1	-1	-1	-1	0.95	-1	0.42	0.91	-1
OZ15b	-1	-1	-1	-1	-1	-1	0.93	-1	-1	0.5	-1
OZ15c	-1	-1	-1	-1	-1	-1	0.75	-1	0.97	-1	-1
OZ16a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ16b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ16c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1a	0.34	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1b	-0.53	-1	-1	-1	-1	-1	0.19	-1	-1	0	-1
OZ1c	0.46	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1d	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1e	-0.73	-1	-1	-1	-1	-1	0.51	-1	-1	-1	-1
OZ1f	-0.62	-1	-1	-1	-1	-1	-1	-1	-0.66	-1	-1
OZ1g	0.2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1h	-0.2	-1	-1	-1	-1	-1	0.38	-1	-1	-0.1	-1
OZ1i	0.37	-1	-1	-1	-1	-1	-0.4	-1	-1	-0.48	-1
OZ1j	-1	-1	-1	-1	-1	-1	-1	-1	-0.28	-1	-1
OZ1k	-0.8	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1l	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1m	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ2a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ2b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ3a	-0.12	-0.74	-1	-1	-1	-1	-1	-1	-0.08	-0.73	-0.25
OZ3b	-0.85	-1	-1	-1	-1	-1	0.12	-1	-1	-1	-0.5
OZ4a	0.57	0.23	-1	-1	-1	-1	-0.23	-1	0.12	-0.44	0.08
OZ4b	0.75	-0.69	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ4c	0.56	-0.87	-1	-1	-1	-1	-1	-1	-0.54	-1	0.49
OZ4d	0.81	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.63
OZ4e	0.69	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.08

OZ4f	0.7	-1	-1	-1	-1	-1	-0.4	-1	-1	-1	-1
OZ4g	-0.4	-1	-1	-1	-1	-1	-1	-1	0.36	-1	0.08
OZ4h	0.43	-0.09	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ4i	0.7	-0.89	-1	-1	-1	-1	-1	-1	-1	-1	0.18
OZ4j	0.05	-1	-1	-1	-1	-1	-1	-1	0.06	-0.65	-0.3
OZ4k	0.45	-0.03	-1	-1	-1	-1	-1	-1	-1	-1	-0.34
OZ4l	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ4m	-0.49	-0.1	-1	-1	-1	-1	-1	-1	0.1	-1	-0.83
OZ4n	-0.24	0.51	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ4o	-0.95	0.47	-1	-1	-1	-1	-1	-1	0.52	-1	-0.87
OZ4p	-0.58	0.82	-1	-1	-1	-1	-1	-1	0.08	-1	-1
OZ4q	0.57	-1	-1	-1	-1	-1	0.02	-1	-1	-1	-1
OZ5a	0.16	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5aa	0.39	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5b	0.71	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5bb	-0.46	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5c	0.11	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5cc	0.23	-1	-1	-1	-1	-1	-1	-1	-0.57	0.04	-0.04
OZ5d	-0.05	-1	-1	-1	-1	-1	-1	-1	-1	-0.15	-0.85
OZ5dd	-0.31	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.77
OZ5e	-0.51	-0.59	-1	-1	-1	-1	-1	-1	-0.1	-1	-1
OZ5f	-0.81	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5g	0.58	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5h	0.26	-1	-1	0.9	-1	-1	-1	-1	-1	-1	-1
OZ5i	-0.28	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5j	0.58	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5k	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5l	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5m	-0.7	-0.7	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5n	-0.62	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5o	-0.73	-0.08	-1	-1	0.88	-1	-1	-1	-1	-1	-1
OZ5p	-0.76	-0.97	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5q	-1	0.23	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5r	-0.58	-0.15	-1	-1	-1	-1	0.4	-1	-1	-0.31	-1
OZ5s	-1	-0.09	-1	-1	-1	-1	-1	-1	0.6	-1	-1
OZ5t	-0.01	0.73	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5u	-0.6	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5v	0.13	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5w	-0.75	-0.82	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5x	-1	0.56	-1	-1	-1	-1	-1	-1	0.51	-1	-1
OZ5y	-0.07	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5z	0.32	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ6a	-0.77	-1	-1	-1	-1	-1	-1	-1	-1	0.54	-1
OZ6b	0.27	-1	-1	-1	-1	-1	-0.57	-1	-1	-1	-0.08
OZ6c	0.72	-1	-1	-1	-1	-1	-1	-1	-0.34	-1	0.11
OZ6d	-0.48	-1	-1	-1	-1	-1	-0.82	-1	-1	-0.48	-0.67
OZ6e	0.24	-1	-1	0.94	-1	-1	-1	-1	0.15	-1	-0.41
OZ6f	-0.45	-1	-1	-1	-1	-1	-1	-1	-0.05	-1	-0.31
OZ6g	0.6	-1	-1	-1	-1	-1	0.09	-1	-1	0.56	0
OZ7a	0.04	-0.18	-1	-1	-1	-1	-0.54	-1	-1	-1	-1
OZ7b	0.14	0.47	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ7c	-0.46	0.41	-1	-1	-1	-1	-1	-1	0.53	-1	-1
OZ7d	-0.78	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ7e	-0.42	0.85	-1	-1	-1	-1	0.45	-1	-1	-0.04	-0.63
OZ7f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ7g	-0.09	0.02	-1	-1	-1	-1	-0.1	-1	0.04	-0.04	-0.8
OZ7h	0.34	-1	-1	-1	-1	-1	-1	-1	-1	-1	-0.49
OZ7i	-0.41	0.65	-1	-1	-1	-1	-1	-1	0.38	-1	-1
OZ7j	-0.73	0.74	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ7k	0.43	0.53	-1	-1	-1	-1	-1	-1	-1	-1	0.09
OZ8a	-0.59	-0.58	-1	-1	-1	-1	-0.05	-1	0.27	-0.83	-1
OZ8b	-0.33	-1	-1	-1	-1	-1	-1	-1	-1	-1	-0.57
OZ8c	-0.62	0.05	-1	-1	-1	0.71	-1	-1	0.47	-0.56	-0.61
OZ8d	0.27	-1	-1	-1	-1	-1	0.77	-1	-0.33	0.2	0.43
OZ8e	-0.57	-1	-1	-1	-1	-1	-1	-1	0.09	-1	-0.14
OZ8f	-0.92	0.32	-1	-1	-1	-1	-1	-1	0.61	-0.87	-0.13
OZ8g	-0.31	0.32	-1	-1	-1	-1	0.14	-1	-0.61	-1	0.54
OZ8h	0.77	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ8i	0.53	-0.6	-1	-1	-1	-1	-1	-1	-1	-1	0.71
OZ8j	-0.35	0.66	-1	-1	-1	-1	-1	-1	-0.25	-1	-1

OZ8k	0.43	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.27
OZ9a	-0.83	0.67	-1	-1	-1	-1	-1	-1	0.34	-1	-0.94
OZ9b	-0.76	0.52	-1	-1	-1	-1	-1	-1	0.29	-1	-0.93
OZ9c	-0.93	0.4	-1	-1	-1	-1	-1	-1	0.46	-1	-1
OZ9d	-0.71	0.44	-1	-1	-1	-1	-0.86	-1	0.25	-1	-0.14
OZ9e	-0.81	-0.05	-1	-1	-1	-1	-1	-1	0.34	-1	0.12
OZ9f	-1	-0.46	-1	-1	-1	-1	-1	-1	0.77	-1	-1
OZ9g	-0.57	0.44	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ9h	-0.93	0.25	-1	-1	-1	-1	-1	-1	0.79	-0.61	0.44
OZ9i	-1	0.72	-1	-1	-1	-1	-1	-1	0.62	-1	-0.01
TP1a	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.9	-1
TP1b	-1	-1	-1	-1	-1	-1	0.96	-1	-1	0.25	-1
TP1c	-0.44	-1	-1	-1	-1	-1	0.51	-1	-1	0.87	-1
TP1d	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP2a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP2b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP2c	-1	-1	-1	-1	-1	-1	0.6	-1	-1	-1	-1
TP3a	-1	-1	-1	-1	-1	-1	0.77	-1	-1	-1	-1
TP3b	-0.77	-1	-1	-1	-1	-1	0.72	-1	-0.56	0.37	0.34
TP3c	-0.05	-1	-1	-1	-1	-1	0.92	-1	-1	-1	-1
TP3d	-1	-1	-1	-1	-1	-1	0.52	-1	-1	0.71	-0.29
TP3e	-1	-1	-1	-1	-1	-1	0.46	-1	-1	0.7	-1
TP3f	-0.49	-1	-1	-1	-1	-1	-0.19	-1	-1	0.72	-1
TP4a	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.91	-1
TP4b	-0.46	-1	-1	-1	-1	-1	0.77	-1	-1	0.17	-1
TP4c	-1	-1	-1	-1	-1	-1	0.42	-1	-1	-1	-1
TP4d	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.69	-1
TP4e	-1	-1	-1	-1	-1	-1	0.75	-1	-1	-1	0.43
TP4f	-0.1	-1	-1	-1	-1	-1	0.74	-1	-1	0.42	0.22
TP4g	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP4h	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.34
TP4i	-0.77	-1	-1	-1	-1	-1	0.51	-1	-1	-1	-1
TP4j	-0.1	-1	-1	-1	-1	-1	0.7	-1	-1	0.31	-1
TP4k	-1	-1	-1	-1	-1	-1	0.4	-1	0.26	0.87	-1
TP5a	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.95	-1
TP5b	-1	-1	-1	-1	-1	-1	0.62	-1	0.94	-1	-1
TP5c	-0.7	-1	-1	-1	-1	-1	-1	-1	-1	-0.28	-1
TP5d	-0.95	-1	-1	-1	-1	-1	-0.42	-1	-1	0.55	-0.47
TP5e	-1	-1	-1	-1	-1	-1	0.15	-1	-1	0.81	-1
TP5f	-0.43	-1	-1	-1	-1	-1	0.31	-1	-1	0.73	-0.39
TP6a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP6b	-0.13	-1	-1	-1	-1	-1	-1	-1	-1	0.68	-0.79
TP6c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP6d	-0.47	-1	-1	-1	-1	-1	-0.36	-1	0.45	-1	-0.72
TP6e	-0.88	-1	-1	-1	-1	-1	-1	-1	-1	0.87	-1
TP6f	-0.43	-1	-1	-1	-1	-1	-1	-1	-1	0.82	-0.21
TP6g	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP6h	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP7a	-1	-1	-1	-1	-1	-1	-1	-1	0.79	0.8	-1
TP7b	-0.74	-1	-1	-1	-1	-1	0.65	-1	-1	0.48	-1
TP7c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP7d	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.63	-1
TP7e	-1	-1	-1	-1	-1	-1	0.64	-1	-1	0.3	-1
TP7f	0.07	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP7g	0.03	-1	-1	-1	-1	-1	-1	-1	-1	0.49	0.3
TP7h	-0.48	-1	-1	-1	-1	-1	-1	-1	-1	-1	-0.01
TP7i	-0.44	-1	-1	-1	-1	-1	0.51	-1	-1	-1	-1
TP8a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP8b	-0.81	-1	-1	-1	-1	-1	0.11	-1	-1	0.34	-0.16
TP8c	-0.27	-1	-1	-1	-1	-1	-0.02	-1	-1	0.16	0.53
TP8d	-0.81	-1	-1	-1	-1	-1	0.26	-1	-1	-1	0.42
TP8e	-0.39	-1	-1	-1	-1	-1	0.07	-1	-1	0.44	0.57
TP8f	0.68	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP9a	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.97	-1
TP9b	-1	-1	-1	-1	-1	-1	0.94	-1	-1	0.94	-1
TP9c	-1	-1	-1	-1	-1	-1	0.77	-1	-1	0.97	-1
TP9d	-1	-1	-1	-1	-1	-1	0.91	-1	-1	0.9	-1

Table B2: Electivity of Ohio buckeye (331), ailianthus (341), pawpaw (367), river birch (373), chittamwood (381), American hornbeam (391), water hickory (401), bitternut hickory (402), pignut hickory (403), pecan (404), and shellbark hickory (407) in Missouri's LTAs. The number in parentheses is the species code identifier from the FIA database. "NA" indicates where no information is available.

LTA	331	341	367	373	381	391	401	402	403	404	407
MB1a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.86
MB1b	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.9	0.82
MB1c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.95
MB1d	-1	-1	-1	-1	-1	-1	0.99	-1	-1	-1	-1
MB1e	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB1f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB2a	-1	-1	-1	0.71	0.85	0.86	-1	-0.55	0.41	-1	0.69
MB2b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB3a	-1	-1	-1	0.97	-1	-1	-1	-1	-1	-1	-1
MB3b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB3c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB3d	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB4b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4c	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4d	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB4e	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4j	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.77	0.85
MB4k	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4l	-1	-1	0.85	-1	-1	-1	-1	-0.57	-1	0.66	-1
OP1a	-1	-1	-1	-1	-1	-1	-1	-0.12	-1	0.98	0.76
OP1b	-1	-1	-1	-1	-1	-1	-1	0.57	-0.32	-1	0.23
OP1c	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OP1d	-1	-1	-0.59	-0.91	-1.02	-1.02	-1.09	-0.24	-0.82	-0.01	-0.49
OP1e	-1	-1	-0.56	-0.93	-1.04	-1.04	-1.12	-0.17	-0.82	0.05	-0.54
OP1f	-1	0.99	-1	-1	-1	-1	-1	-0.25	-1	0.86	-1
OP1g	0.4	-1	-1	-1	-1	-1	-1	0.57	-0.6	-1	0
OP1h	-1	-1	-1	-1	-1	-1	-1	0.52	-1	-1	0.5
OP1i	0.72	-1	0.86	0.3	-1	-1	-1	0.32	-0.81	-1	0.45
OP1j	0.72	-1	0.86	0.3	-1	-1	-1	0.32	-0.81	-1	0.45
OP2a	-1	-1	-1	0.93	-1	-1	-1	-1	-1	-1	-1
OP2b	-1	-1	-1	0.56	-1	-1	-1	0.36	-0.76	0.98	0.88
OP2c	-1	-1	-1	0.84	-1	-1	-1	0.64	-0.8	-1	-1
OP2d	-1	-1	-1	0.33	-1	-1	-1	0.56	-1	0.94	-1
OP2e	-1	-1	-1	0.74	-1	-1	-1	0.6	-1	-1	-1
OP2f	-1	-1	-1	0.94	-1	-1	-1	0.45	-1	0.87	-1
OP2g	-1	-1	-1	0.95	-1	-1	-1	-1	-1	0.99	-1
OP2h	-1	-1	-1	0.81	-1	-1	-1	-0.73	-0.79	0.69	0.19
OP2i	-1	-1	-1	0.8	-1	-1	-1	-1	0.02	-1	-1
OP2j	-1	-1	-1	-1	-1	-1	-1	-1	0.74	-1	-1
OZ10a	-1	-1	-1	-1	-1	0.37	-1	-0.42	0.39	-1	0.27
OZ10b	0.58	-1	0.77	0.5	-1	-1	-1	-0.19	0.33	0.6	-0.3
OZ10c	-1	-1	-1	0.48	-1	0.63	-1	-0.56	0.04	-1	0.14
OZ10d	-1	-1	-1	-1	-1	0.16	-1	-0.43	0.3	-1	-0.65
OZ11a	-1	-1	-1	-1	-1	-1	-1	-0.29	-0.51	-1	0.13
OZ11b	-1	-1	-1	-1	-1	-1	-1	-0.07	0.25	-1	-1
OZ12a	-1	-1	-1	-1	-1	-1	-1	0.78	0.02	0.4	0.67
OZ12aa	-1	-1	-1	0.29	-1	-1	-1	-1	0.07	-1	0.12
OZ12b	-1	-1	-1	-1	-1	-1	-1	0.81	-1	-1	-1
OZ12bb	0.58	-1	-1	-1	-1	-1	-1	-0.49	0.49	0.5	0.81
OZ12c	-1	-1	0.97	-1	-1	-1	-1	0.61	-1	-1	-1
OZ12cc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12d	-1	-1	0.94	-1	-1	-1	-1	-1	-1	-1	-1
OZ12e	0.49	-1	-1	-0.07	-1	-1	-1	0.71	-0.82	-1	0.11
OZ12f	-1	-1	-1	0.63	-1	-1	-1	0.45	-1	-1	-1
OZ12g	-1	-1	-1	-1	-1	-1	-1	0.3	-0.47	-1	0.38
OZ12h	0.16	-1	-1	-0.09	0.44	0.71	-1	0.1	-0.5	-1	-1

OZ12i	0.72	-1	0.4	-0.5	0.01	0.4	-1	-0.29	-0.65	-1	0.4
OZ12j	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12k	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12m	-1	-1	0.87	0.03	-1	-1	0.97	0.46	-0.39	-1	0.2
OZ12n	-1	-1	-1	-1	-1	-1	-1	-1	0.49	-1	0.44
OZ12o	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ12p	-1	-1	0.99	-1	-1	-1	-1	-1	0.37	-1	-1
OZ12q	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12r	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12s	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12t	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ12u	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ12v	-1	-1	0.59	-1	-1	-1	-1	-0.72	0.21	-1	-1
OZ12w	-1	-1	0.95	-1	-1	0.81	-1	-1	0.3	-1	0.79
OZ12x	-1	-1	-1	-1	-1	-1	-1	-1	0.18	-1	-1
OZ12y	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12z	-1	-1	-1	-1	-1	-1	-1	-0.1	0.56	-1	0.71
OZ13a	-1	-1	0.94	-1	-1	-1	-1	0.14	-0.44	-1	-1
OZ13b	0.87	-1	-1	-1	0.79	-1	-1	-0.41	-1	-1	-1
OZ13c	-1	-1	-1	-1	0.89	-1	-1	-1	-0.71	-1	0.72
OZ13d	-1	-1	-1	-1	0.37	-1	-1	-0.08	-0.46	-1	-1
OZ13e	0.72	-1	-1	-1	-1	-1	-1	-0.28	-0.64	-1	-1
OZ13f	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ13g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13i	-1	-1	-1	-1	-1	-1	-1	0.1	-1	-1	-1
OZ13j	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13k	0.1	-1	-1	-1	0.64	-1	-1	-0.39	-0.19	-1	-0.32
OZ13l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13m	-1	-1	-1	-1	-1	-1	-1	-0.7	0.42	-1	0.26
OZ13n	-1	-1	-1	-1	0.82	-1	-1	-1	-0.33	-1	0.22
OZ13o	-1	-1	-1	0.93	-1	-1	-1	-1	0.16	-1	-1
OZ13p	-1	-1	0.74	-1	-1	-1	-1	-0.55	0.6	-1	-0.19
OZ14a	-1	-1	-1	-1	-1	-1	-1	-0.87	0.25	-1	-1
OZ14b	-1	-1	-1	-1	-1	-1	-1	-0.18	-0.06	-1	0.04
OZ14c	-1	-1	-1	-0.31	-1	0.72	-1	-0.85	0.38	-1	-0.45
OZ14d	-1	-1	-1	-1	-1	0.69	-1	-1	0.49	-1	-0.1
OZ15a	-1	-1	-1	-1	0.74	-1	-1	-1	-1	-1	-1
OZ15b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ15c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ16a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ16b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ16c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1b	-1	-1	0.67	-1	-1	-1	-1	0.04	0.15	-1	-1
OZ1c	-1	-1	-1	-1	0.77	-1	-1	0.29	0.12	-1	-1
OZ1d	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1e	-1	-1	-1	-1	-1	-1	-1	0.24	0.29	-1	-1
OZ1f	-1	-1	-1	-1	-1	-1	-1	0.5	-0.19	-1	-0.44
OZ1g	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1h	-1	-1	-1	-1	-1	-1	-1	-0.13	-0.1	-1	-1
OZ1i	-1	-1	-1	-1	0.78	-1	-1	0.15	0.05	-1	-1
OZ1j	-1	-1	-1	-1	-1	-1	-1	0.64	-0.07	-1	-1
OZ1k	-1	-1	-1	-1	-1	-1	-1	-1	-0.39	-1	-1
OZ1l	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1m	-1	-1	-1	-1	-1	-1	-1	-1	0.32	0.9	0.96
OZ2a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ2b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ3a	-1	-1	-1	-1	-1	0.69	-1	0.21	0.08	-1	-1
OZ3b	-1	-1	-1	-1	0.79	-1	-1	0.06	0.02	-1	-1
OZ4a	-1	-1	-1	-1	-1	-1	-1	-0.32	-0.21	-1	-0.39
OZ4b	-1	-1	-1	-1	-1	-1	-1	-1	-0.46	-1	-1
OZ4c	0.6	-1	0.7	-1	0.43	-1	-1	-0.25	-0.24	-1	-1
OZ4d	-1	-1	-1	-1	0.95	-1	-1	-1	0.04	-1	-1
OZ4e	-1	-1	-1	-1	-1	-1	-1	0.1	-0.31	-1	-1
OZ4f	-1	-1	-1	-1	-1	-1	-1	-0.13	-0.45	-1	-1
OZ4g	-1	-1	-1	-1	-1	-1	-1	-1	0.25	-1	-1
OZ4h	0.8	-1	-1	-1	0.79	-1	-1	-0.42	0.31	-1	-1
OZ4i	0.84	-1	-1	-1	0.79	-1	-1	-0.24	-0.35	-1	-1

OZ4j	0.43	-1	-1	-1	-1	0.56	-1	-0.19	-0.06	-1	-1
OZ4k	-0.07	-1	-1	-1	0.53	-1	-1	-0.17	0.02	-1	-1
OZ4l	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ4m	0.46	-1	-1	-1	0.85	-1	-1	-0.16	-0.11	-1	-1
OZ4n	-1	-1	-1	-1	-1	-1	-1	-1	0.13	-1	-0.12
OZ4o	-1	-1	-1	-1	-1	-1	-1	-0.37	-0.1	-1	-1
OZ4p	-1	-1	-1	-1	-1	-1	-1	-1	0.36	-1	-1
OZ4q	-1	-1	-1	-1	-1	-1	-1	0.75	-0.47	-1	-1
OZ5a	-1	-1	-1	-1	-1	-1	-1	0.87	-1	-1	-1
OZ5aa	-1	-1	-1	-1	-1	-1	-1	-0.66	-0.17	-1	-0.02
OZ5b	0.53	-1	-1	-1	-1	-1	-1	-0.55	0.15	0.44	-1
OZ5bb	-1	-1	-1	-1	-1	-1	-1	-0.11	0.06	-1	-1
OZ5c	-1	-1	-1	-1	-1	-1	-1	-1	-0.15	-1	-1
OZ5cc	-1	-1	-1	-1	-1	-1	-1	0.04	-0.11	-1	0.56
OZ5d	-1	-1	-1	-1	0.35	-1	-1	-0.67	-0.36	-1	-0.36
OZ5dd	-1	-1	-1	-1	0.85	0.81	-1	0.11	-0.61	-1	0.49
OZ5e	-0.42	-1	-1	-1	-1	-1	-1	-0.51	0.04	-1	-1
OZ5f	-1	-1	-1	-1	-1	-1	-1	-1	-0.12	-1	-1
OZ5g	-1	-1	-1	-1	0.79	-1	-1	-0.08	0.13	-1	-1
OZ5h	-1	-1	-1	-1	-1	-1	-1	-0.23	-0.08	-1	-0.34
OZ5i	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5j	-1	-1	-1	-1	-1	-1	-1	0.15	-0.32	-1	-1
OZ5k	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5l	-1	-1	-1	-1	-1	-1	-1	-1	0.57	0.95	0.95
OZ5m	-1	-1	-1	-1	-1	-1	-1	-1	0.45	-1	-1
OZ5n	-1	-1	-1	-1	-1	-1	-1	-1	-0.23	-1	-1
OZ5o	-1	-1	-1	-1	-1	-1	-1	-1	0.1	-1	-1
OZ5p	-1	-1	-1	-1	-1	-1	-1	-0.15	0.02	-1	-1
OZ5q	-1	-1	-1	-1	-1	-1	-1	-1	0.62	-1	-1
OZ5r	-1	-1	-1	0.32	-1	0.87	-1	-0.49	0.56	-1	0.37
OZ5s	-1	-1	-1	0.46	-1	0.73	-1	-1	0.55	-1	-1
OZ5t	-1	-1	-1	-1	-1	-1	-1	-1	0.56	-1	-1
OZ5u	-1	-1	-1	-1	-1	-1	-1	-1	0.15	-1	-1
OZ5v	-1	-1	-1	-1	-1	-1	-1	-1	0.23	-1	-1
OZ5w	-1	-1	-1	-1	-1	-1	-1	-0.71	-0.01	-1	-1
OZ5x	-1	-1	-1	-1	-1	-1	-1	-0.66	-0.35	-1	-1
OZ5y	-1	-1	-1	-1	-1	-1	-1	-0.3	-0.56	-1	-1
OZ5z	-1	-1	-1	-1	-1	-1	-1	-1	-0.06	-1	-1
OZ6a	-1	-1	-1	0.21	-1	-1	-1	0.16	0.44	0.78	-1
OZ6b	-1	-1	-1	-1	-1	-1	-1	0.22	-0.41	0.36	-0.27
OZ6c	0.38	-1	-1	-1	0.78	-1	-1	0.23	-0.37	-1	-1
OZ6d	-0.35	-1	-1	-1	0.45	0.54	-1	-0.05	0	-1	-0.1
OZ6e	-1	-1	0.79	-1	-1	-1	-1	0.11	-0.28	-1	-1
OZ6f	-1	-1	-1	-1	0.43	0.31	-1	-0.35	-0.4	-1	-0.55
OZ6g	-1	-1	-1	-1	0.86	-1	-1	0.12	-0.27	-1	-1
OZ7a	-1	-1	0.51	-1	-1	-1	-1	-1	-0.59	-1	-1
OZ7b	-1	-1	-1	-1	-1	-1	-1	-0.68	-0.07	-1	-1
OZ7c	-1	-1	-1	-1	-1	-1	-1	-1	0	-1	-1
OZ7d	-1	-1	-1	-1	-1	-1	-1	-1	-0.18	-1	-1
OZ7e	-1	-1	-1	-1	-1	-1	-1	-0.75	-0.12	-1	-1
OZ7f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ7g	-1	-1	-1	-1	0.5	-1	-1	-0.21	-0.16	-1	-0.19
OZ7h	-1	-1	-1	-1	-1	-1	-1	0.56	-0.18	0.59	0.35
OZ7i	-1	-1	-1	-1	-1	-1	-1	-0.54	-0.18	-1	-1
OZ7j	-1	-1	-1	-1	-1	-1	-1	-1	0.11	-1	-1
OZ7k	0.06	-1	-1	-1	0.73	-1	-1	-0.17	-0.39	-1	-1
OZ8a	-1	-1	-1	0.46	-1	-1	-1	-0.43	0.09	-1	-1
OZ8b	-1	-1	-1	-1	-1	-1	-1	-0.48	0.44	-1	-1
OZ8c	-1	-1	-1	-1	-1	-1	-1	-0.42	-0.03	-1	-1
OZ8d	-1	-1	-1	-1	-1	0.52	-1	0.29	-0.52	-1	-1
OZ8e	-1	-1	-1	-1	-1	0.58	-1	-0.16	-0.03	-1	-1
OZ8f	-1	-1	-1	-1	-1	-1	-1	-0.63	0.18	-1	-1
OZ8g	-1	-1	-1	-1	-1	-1	-1	-0.01	0.08	-1	0.3
OZ8h	-1	-1	-1	-1	-1	-1	-1	-1	-0.17	-1	-1
OZ8i	0.65	-1	-1	-1	-1	-1	-1	0	0.31	-1	-0.19
OZ8j	-1	-1	-1	-1	-1	-1	-1	0.14	0.26	-1	0.07
OZ8k	-1	-1	-1	-1	-1	-1	-1	0.44	-0.07	-1	-1
OZ9a	-1	-1	-1	-1	-1	-1	-1	-0.86	-0.12	-1	-1
OZ9b	-1	-1	0.07	-1	-1	0.4	-1	-0.54	0.27	-1	-0.62
OZ9c	-1	-1	-1	-1	-1	-1	-1	-0.79	0.47	-1	-1

OZ9d	-1	-1	-1	0.44	-1	0.02	-1	-0.94	0.2	-0.55	-0.73
OZ9e	-1	-1	-1	-1	-1	0.66	-1	-0.23	0.07	-1	-1
OZ9f	-1	-1	-1	-1	-1	-1	-1	-1	0.26	-1	-1
OZ9g	-1	-1	-1	-1	-1	0.77	-1	0.49	0.31	-1	-1
OZ9h	-1	-1	-1	0.14	-1	0.35	-1	-0.43	0.27	-1	-0.23
OZ9i	-1	-1	-1	-1	-1	-1	-1	-0.08	0.39	-1	-1
TP1a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP1b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP1c	-1	-1	-1	-1	-1	-1	-1	0.61	-1	-1	-1
TP1d	-1	-1	-1	0.9	-1	-1	-1	0.49	-0.27	0.98	0.98
TP2a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP2b	-1	-1	-1	-1	-1	-1	-1	0.39	-1	-1	-1
TP2c	-1	-1	-1	-1	-1	-1	-1	0.87	-1	-1	-1
TP3a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP3b	0.11	-1	0.68	-1	-1	-1	-1	0.52	-1	0.32	-1
TP3c	-1	-1	-1	-1	-1	-1	-1	0.45	-1	-1	-1
TP3d	-1	-1	-1	-1	-1	-1	-1	-0.17	-0.57	-1	-1
TP3e	-1	-1	0.93	-1	-1	-1	-1	0.7	-1	-1	-1
TP3f	-1	-1	-1	-1	-1	-1	-1	0.21	-1	-1	-1
TP4a	0.71	-1	-1	0.27	-1	-1	-1	-1	-1	-1	-1
TP4b	-1	-1	0.47	-1	-1	-1	-1	0.68	-0.91	0.79	0.25
TP4c	-1	-1	-1	-1	-1	-1	-1	0.69	-0.41	-1	-1
TP4d	-1	-1	0.88	-1	-1	-1	-1	0.33	-1	-1	-1
TP4e	-1	-1	-1	-1	-1	-1	-1	0.48	-1	-1	0.74
TP4f	0.3	-1	-1	-1	-1	-1	-1	0.2	-0.88	-1	0.73
TP4g	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP4h	-1	-1	-1	-1	-1	-1	-1	0.32	-1	-1	-1
TP4i	0.67	-1	-1	0.5	-1	-1	-1	-0.38	-1	-1	0.73
TP4j	0.8	-1	-1	0.89	-1	-1	-1	-0.42	-1	-1	-1
TP4k	-1	-1	-1	0.9	-1	-1	-1	-1	-0.76	-1	0.73
TP5a	-1	-1	-1	0.84	-1	-1	-1	-1	-1	0.82	-1
TP5b	-1	-1	-1	0.52	-1	-1	-1	-1	-1	-1	-1
TP5c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP5d	0.51	-1	-1	0.6	-1	-1	0.94	0.58	-0.81	-1	0.5
TP5e	0.74	-1	-1	0.15	-1	-1	-1	0.38	-0.73	0.75	-0.02
TP5f	-1	-1	-1	0.65	-1	-1	-1	0.59	-0.64	-1	-1
TP6a	-1	-1	-1	-1	-1	-1	-1	0.73	-1	-1	-1
TP6b	0.25	-1	-1	0.85	-1	-1	-1	0.39	-0.48	-1	-1
TP6c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP6d	-1	-1	-1	0.75	-1	-1	-1	0.74	-0.1	-1	0.88
TP6e	0.92	-1	0.67	0.78	-1	-1	-1	0.04	-0.85	-1	0.51
TP6f	-1	-1	-1	0.82	-1	-1	-1	0.47	-0.64	-1	0.45
TP6g	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP6h	-1	-1	-1	0.85	-1	-1	-1	0.75	-1	-1	-1
TP7a	0.91	-1	-1	0.89	-1	-1	-1	0.34	-1	-1	0.91
TP7b	-1	-1	-1	-1	-1	-1	-1	0.77	-1	-1	-1
TP7c	-1	-1	-1	-1	-1	-1	-1	0.89	-1	-1	-1
TP7d	-1	-1	-1	0.52	-1	-1	-1	-1	-1	-1	0.86
TP7e	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP7f	-1	-1	-1	0.82	-1	-1	-1	0.01	-0.25	-1	-1
TP7g	-1	-1	-1	0.79	-1	-1	-1	0.33	-1	-1	-0.03
TP7h	-1	-1	-1	-1	-1	-1	-1	0.43	-1	-1	-1
TP7i	-1	-1	-1	-1	-1	-1	-1	0.78	-1	-1	0.9
TP8a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP8b	-1	-1	-1	0.51	-1	0.84	-1	0.49	-1	-1	0.45
TP8c	0.83	-1	-1	-0.17	-1	-1	-1	0.23	-0.72	-1	-1
TP8d	0.7	-1	-1	-1	-1	-1	-1	-0.07	-0.3	-1	0.65
TP8e	0.7	-1	-1	-1	-1	-1	-1	0.44	-0.4	-1	0.72
TP8f	0.92	-1	-1	-1	-1	-1	-1	-0.04	0.03	-1	-1
TP9a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP9b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP9c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP9d	-1	-1	-1	-1	-1	-1	-1	-0.1	-1	-1	-1

Table B3: Electivity of shagbark hickory (407), black hickory (408), mockernut hickory (409), Ozark chinkapin (423), northern catalpa (452), sugarberry (461), hackberry (462), eastern redbud (471), flowering dogwood (491), hawthorn (500), and common persimmon (521) in Missouri's LTAs. The number in parentheses is the species code identifier from the FIA database. "NA" indicates where no information is available.

LTA	407	408	409	423	452	461	462	471	491	500	521
MB1a	-1	-1	0.41	-1	-1	-1	-1	-1	0.07	-1	0.79
MB1b	-1	-1	-1	-1	-1	-1	0.87	-1	-1	-1	0.74
MB1c	-0.3	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB1d	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.79
MB1e	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB1f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB2a	-0.61	0.39	0.48	-1	-1	-1	-0.4	0.1	-0.48	-1	0.7
MB2b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB3a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB3b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB3c	-1	-1	-1	-1	-1	-1	0.78	-1	-1	-1	-1
MB3d	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB4b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4c	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4d	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.8
MB4e	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4j	-1	-1	-1	-1	-1	0.99	-1	-1	-1	-1	0.45
MB4k	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4l	-1	-1	-1	-1	-1	0.98	0.68	-1	-1	-1	-1
OP1a	0.32	-1	-1	-1	-1	0.99	0.6	0.25	-1	0.89	-1
OP1b	0.21	-0.37	-1	-1	-1	-1	0.69	0.86	-1	-1	-0.33
OP1c	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OP1d	-0.38	-0.84	-1.22	-1	-1	0.31	0.2	-0.16	-1.16	-0.52	-0.8
OP1e	-0.33	-0.83	-1.27	-1	-1	0.43	0.27	-0.09	-1.19	-0.48	-0.88
OP1f	-0.07	-1	0.01	-1	-1	-1	0.6	0.44	-1	0.89	0.39
OP1g	0.49	-0.39	0.31	-1	-1	-1	0.48	0.38	-1	0.4	-1
OP1h	0.48	-1	-0.3	-1	-1	-1	0.85	-1	-1	-1	-1
OP1i	0.55	-0.36	0.21	-1	-1	-1	0.67	0.08	-1	-1	0.54
OP1j	0.55	-0.36	0.21	-1	-1	-1	0.67	0.08	-1	-1	0.54
OP2a	0.69	-1	-1	-1	-1	-1	-1	-1	-1	0.97	-1
OP2b	0.19	-1	-0.25	-1	-1	-1	0.69	-1	-1	0.59	-0.3
OP2c	0.46	-0.35	-0.79	-1	-1	0.92	0.46	0.09	-1	-1	0.67
OP2d	-0.16	-1	-1	-1	-1	-1	0.65	-1	-1	-1	-1
OP2e	-1	-1	-1	-1	-1	-1	0.81	-1	-1	-1	0.21
OP2f	-0.06	0.63	-0.63	-1	-1	-1	0.22	-1	-1	-1	0.6
OP2g	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OP2h	-0.52	0.5	-0.44	-1	-1	-1	0.26	-0.21	-1	-1	0.62
OP2i	-0.09	-1	-1	-1	-1	-1	0.33	-1	-1	-1	0.61
OP2j	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ10a	0.02	0.11	0.37	-1	-1	-1	-1	-0.67	0.12	-1	-0.35
OZ10b	-0.15	0	-0.1	-1	-1	-1	-0.71	0.48	-0.07	0.11	0.41
OZ10c	0.4	0.11	-0.25	-1	-1	-1	-1	-1	-0.37	-1	0.36
OZ10d	-0.66	-0.05	0.2	-1	-1	-1	-1	-0.83	0.12	-1	0.04
OZ11a	0.65	0.14	-0.48	-1	-1	-1	0.24	-0.26	-0.5	-1	0.54
OZ11b	0.59	-0.15	-0.15	-1	-1	-1	-0.35	-0.04	-1	-1	0.39
OZ12a	0.28	-0.69	-0.28	-1	-1	-1	0.75	-1	-1	-1	0.1
OZ12aa	0.38	-0.29	0.19	-1	-1	-1	0.5	-1	-0.29	-1	0.24
OZ12b	-1	-0.09	0.02	-1	-1	-1	0.29	-1	-1	-1	0.57
OZ12bb	0.33	-0.1	0.34	-1	-1	-1	0	-1	-0.56	-1	0.35
OZ12c	0.55	-1	-1	-1	-1	-1	0.57	-1	-1	-1	-1
OZ12cc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12d	0.68	-1	-1	-1	-1	-1	0.32	0.17	-0.58	-1	0.5
OZ12e	0.56	-1	-0.8	-1	-1	-1	0.71	0.69	-1	-1	-0.12
OZ12f	0.09	-0.58	-1	-1	-1	-1	-0.27	0.25	-1	-1	-1
OZ12g	0.68	-0.72	-1	-1	0.99	-1	0.77	0.5	-1	-1	-1

OZ12h	0.24	-0.33	-0.9	-1	-1	-1	-0.1	0.22	-0.14	-1	-0.03
OZ12i	-0.01	-0.25	-0.47	-1	-1	0.6	-0.42	0.03	-0.09	-1	0.12
OZ12j	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12k	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12m	0.6	-0.39	-0.03	-1	-1	-1	0.21	0.01	-1	-1	0.26
OZ12n	0.56	-0.15	-0.04	-1	-1	-1	-1	0.07	0.42	-1	0.24
OZ12o	-1	-1	0.5	-1	-1	-1	0.83	-1	-1	-1	-1
OZ12p	-1	-1	-1	-1	-1	-1	0.61	-1	-1	-1	-1
OZ12q	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12r	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12s	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12t	-0.43	-1	0.11	-1	-1	-1	-1	-1	0.09	-1	-1
OZ12u	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ12v	-0.02	-0.19	-0.56	-1	-1	-1	-0.34	0.17	0.24	-1	0.53
OZ12w	-0.34	0.1	0.34	-1	-1	-1	-0.39	0.12	-0.61	-1	-0.05
OZ12x	-0.06	0.45	-0.59	-1	-1	-1	-0.63	-1	0.36	-1	-1
OZ12y	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12z	-0.49	-0.17	0.32	-1	-1	-1	-1	-0.07	0.3	-1	-0.23
OZ13a	0.65	-0.38	-0.75	-1	-1	-1	0.42	0.66	-0.58	-1	-1
OZ13b	0.62	-1	-1	-1	-1	-1	-1	-0.06	-0.71	-1	0.43
OZ13c	0.18	0.02	-0.29	-1	-1	-1	-0.22	0.29	-0.7	-1	-0.21
OZ13d	0.46	-0.05	-0.57	-1	-1	-1	-0.44	0.15	0.06	-1	0.32
OZ13e	0.16	-0.68	-0.17	-1	-1	-1	-0.09	-1	0.5	-1	0.26
OZ13f	0.09	-1	-1	-1	-1	-1	-1	-1	-0.26	-1	-1
OZ13g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13i	-1	-0.65	-0.59	-1	-1	-1	-0.05	0.44	0.2	-1	0.64
OZ13j	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13k	0.33	-0.68	-0.41	-1	-1	-1	0.34	0.47	-0.43	-1	0.5
OZ13l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13m	-0.2	0.21	-0.19	-1	-1	-1	-0.77	-0.45	0.31	-1	-1
OZ13n	0.28	0.15	-0.35	-1	-1	-1	-0.78	0.42	0.06	-1	0.27
OZ13o	-1	0.46	0.21	-1	-1	-1	-1	-1	-0.26	-1	-1
OZ13p	-0.02	0.28	0.48	-1	-1	-1	-1	0.47	-0.1	-1	0.55
OZ14a	-0.94	0.5	0.08	-1	-1	-1	-1	-1	-0.03	0.22	-0.81
OZ14b	-0.68	0.14	0.4	-1	-1	-1	-1	-1	-0.28	-1	-0.18
OZ14c	-0.97	0.2	0.16	-1	-1	-1	-0.94	-0.6	0.1	0.51	-0.12
OZ14d	-0.16	0.11	0.24	-1	-1	-1	-1	-1	0.3	-1	0.3
OZ15a	-0.19	-1	-1	-1	-1	-1	-0.61	-1	-0.77	-1	-1
OZ15b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ15c	-1	-1	-1	-1	-1	-1	0.06	-1	-1	-1	-1
OZ16a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ16b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ16c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1a	-1	-1	-1	-1	-1	-1	0.76	-1	-1	-1	0.51
OZ1b	0.33	0.17	-0.29	-1	-1	-1	0.63	-0.37	-1	-1	-0.5
OZ1c	0.33	-0.23	-0.52	-1	-1	-1	-1	0.59	-1	-1	0.38
OZ1d	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.85
OZ1e	-1	0.06	-0.04	-1	-1	-1	-0.66	-0.27	-0.5	-1	-1
OZ1f	-0.76	-0.13	0.03	-1	-1	-1	0.36	-0.17	0.15	-0.04	0.16
OZ1g	-1	0.39	-1	-1	-1	-1	0.77	-1	-1	-1	0.71
OZ1h	0.03	0.41	-0.41	-1	-1	-1	0.39	-0.36	-1	-1	0.4
OZ1i	0.39	-0.12	0.16	-1	-1	-1	0.12	0.1	-0.73	-1	-0.27
OZ1j	0.43	-0.3	0.36	-1	-1	-1	-0.33	-0.35	-0.69	-1	-0.19
OZ1k	-0.73	-0.05	0.35	-1	-1	-1	0.17	-1	-0.24	-1	0.39
OZ1l	-1	-0.17	0.72	-1	-1	-1	-1	-1	0.77	-1	-1
OZ1m	-1	-1	-1	-1	-1	-1	0.02	-1	-1	0.78	-1
OZ2a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ2b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ3a	-1	0.12	0.24	-1	-1	-1	-0.39	0.37	0.31	-1	-0.44
OZ3b	-1	-0.55	0.2	-1	-1	-1	-0.16	-0.25	0.04	-1	-0.4
OZ4a	-0.68	0.01	0.05	-1	-1	-1	-0.66	-0.18	0.11	-1	-0.12
OZ4b	-1	0.24	-0.43	-1	-1	-1	-0.18	-1	-0.59	-1	-0.35
OZ4c	0.09	0.09	0.21	-1	-1	-1	-0.3	0.21	0.27	-1	0.05
OZ4d	-1	-1	-1	-1	-1	-1	-1	-1	-0.45	-1	-1
OZ4e	-0.89	0.35	-0.14	-1	-1	-1	-0.66	-0.07	0.08	-1	0.18
OZ4f	-1	0.21	-0.1	-1	-1	-1	-0.75	-0.42	0.05	-1	0.19
OZ4g	-0.31	0.05	0.33	-1	-1	-1	-0.52	0.15	0.35	-1	-0.01
OZ4h	-1	0.05	-0.32	-1	-1	-1	0.36	0.55	-0.2	-1	-0.24

OZ4i	-0.49	0.32	-0.59	-1	-1	-1	-0.25	-0.07	-0.6	-1	0.37
OZ4j	-0.2	-0.17	0.38	-1	0.97	-1	0.21	0.42	0.13	-1	0.47
OZ4k	-1	0.2	0.05	0.98	-1	-1	-0.62	0	0.3	-1	0.22
OZ4l	-1	-1	-1	-1	-1	-1	-1	-1	0.22	-1	-1
OZ4m	-0.82	0.25	0.37	-1	-1	-1	-0.3	0.44	0.34	-1	0.19
OZ4n	-1	0.21	0.22	-1	-1	-1	-0.46	0.17	0.24	-1	0.27
OZ4o	-1	0.13	0.15	-1	-1	-1	-1	-0.12	0.48	-1	-0.76
OZ4p	-1	0.23	0	-1	-1	-1	-1	-0.33	-0.55	-1	-1
OZ4q	-1	-0.73	-0.12	-1	-1	-1	-0.49	0.33	0.06	-1	-1
OZ5a	-1	-1	-1	-1	-1	-1	0.76	-1	0	-1	-1
OZ5aa	0.23	0.16	-0.13	-1	-1	-1	-0.38	0.13	-0.51	-1	-0.24
OZ5b	0.04	-0.25	-0.6	-1	-1	-1	-0.07	-1	-1	-1	0.56
OZ5bb	0.25	0.32	-0.24	-1	-1	-1	-1	-0.49	-0.51	-1	-0.01
OZ5c	0.22	-0.07	0.03	-1	-1	-1	-1	-1	-1	-1	-1
OZ5cc	0.25	0.17	-0.33	-1	-1	0.79	-0.35	-0.37	-0.31	0.41	-0.51
OZ5d	-0.66	0.24	-0.36	-1	-1	-1	0.02	-0.4	-0.66	-1	0.15
OZ5dd	-0.32	-1	0.03	-1	-1	-1	-1	-1	0.5	-1	-0.03
OZ5e	-0.83	0.31	0.16	-1	-1	-1	-0.45	-0.53	-0.19	-0.42	0.02
OZ5f	-0.86	0.27	0.56	-1	-1	-1	-0.76	-0.44	-1	-1	-1
OZ5g	-0.48	0.01	0.11	-1	-1	-1	-0.23	-0.05	-1	-1	-0.22
OZ5h	-0.1	0.44	-0.48	-1	-1	-1	-0.44	-0.64	-0.13	-1	0.59
OZ5i	0.34	0.01	-0.09	-1	-1	-1	-1	-1	-1	-1	-1
OZ5j	-0.29	-0.04	-1	-1	-1	-1	-1	0.7	0.66	-1	0.6
OZ5k	-1	-0.13	-0.02	-1	-1	-1	-1	0.23	-0.53	-1	0.07
OZ5l	-1	-1	-1	-1	-1	-1	0	-1	-1	-1	0.61
OZ5m	-1	-0.23	0.29	-1	-1	-1	-1	-1	0	-1	-1
OZ5n	-0.8	0.38	0.2	-1	-1	-1	-0.67	-1	-0.8	-1	-0.42
OZ5o	-1	0.18	0.4	-1	-1	-1	-1	-1	-1	-1	-0.57
OZ5p	-0.96	0.25	0.36	-1	-1	-1	-0.79	0.1	-0.59	-1	-0.52
OZ5q	-1	-0.23	0.32	-1	-1	-1	-1	-1	0.63	0.82	0.61
OZ5r	-0.83	-0.12	0.26	-1	-1	-1	0.51	0.26	0.35	-1	0.02
OZ5s	-1	0.45	0.02	-1	-1	-1	0.09	-1	-0.34	-1	-1
OZ5t	-1	0.27	0.18	-1	-1	-1	-1	-1	-0.37	-1	-1
OZ5u	-1	0.69	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5v	-0.18	0.41	0.01	-1	-1	-1	-1	-1	0.19	-1	-0.15
OZ5w	-0.66	0.39	-0.22	-1	-1	-1	-1	-1	-0.42	0.3	-0.6
OZ5x	-0.84	0.06	-0.84	-1	-1	-1	-0.74	-1	0.08	-1	-1
OZ5y	-0.86	0.33	-0.04	-1	-1	-1	-1	-1	-0.2	-1	-1
OZ5z	0.31	-1	0.32	-1	-1	-1	-1	-1	-0.04	-1	-1
OZ6a	-1	0.04	0.11	-1	-1	-1	0.15	-1	-1	-1	0.35
OZ6b	0.38	-0.38	-0.28	-1	-1	-1	-0.47	0.44	-1	-1	0.44
OZ6c	-0.15	-0.49	-0.6	-1	-1	-1	-0.15	0.36	-1	-1	0.29
OZ6d	-0.25	-0.04	-0.13	-1	-1	-1	-0.39	0.04	-0.33	-0.35	-0.17
OZ6e	-1	0.1	-0.45	-1	-1	-1	-0.77	0.31	-0.03	-1	-1
OZ6f	-0.33	-0.35	-0.04	-1	-1	-1	-1	-0.22	0.16	-1	0.01
OZ6g	-0.01	-0.55	-0.05	-1	-1	0.79	0.31	0.23	-0.07	-1	-0.35
OZ7a	-0.9	0.02	0.22	-1	-1	-1	-0.67	-1	0.23	-1	0.37
OZ7b	-1	0.27	0.2	-1	-1	-1	-1	0.33	0.03	-1	0.33
OZ7c	-0.81	0.3	-0.01	-1	-1	-1	-0.68	-0.29	0.53	0.7	-1
OZ7d	-1	0.39	0.06	-1	-1	-1	-0.51	-1	0.04	-1	-1
OZ7e	-1	-0.22	0.19	-1	-1	-1	-0.4	-1	0.31	-1	-0.07
OZ7f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ7g	-0.94	0.1	-0.06	-1	-1	-1	-0.81	0.49	0.45	-1	-0.29
OZ7h	-1	-0.37	0.56	-1	-1	-1	-0.21	-1	0.29	-1	0.54
OZ7i	-1	0.27	0.28	-1	-1	-1	-1	0.52	0.52	-1	0.15
OZ7j	-1	0.47	0.26	-1	-1	-1	-1	0.64	-0.01	-1	-1
OZ7k	-0.06	-0.28	-0.44	-1	-1	-1	-0.54	0.32	-0.02	-1	0.42
OZ8a	-0.92	-0.1	-0.36	-1	-1	-1	-0.64	-0.22	0.4	-1	-0.25
OZ8b	-1	0.25	-0.54	-1	-1	-1	-1	-1	0	-1	-1
OZ8c	-0.84	-0.09	-0.05	-1	-1	-1	-0.86	-0.64	0.37	0.64	0.21
OZ8d	-0.26	-0.09	0.13	-1	-1	-1	0.2	0.27	0.04	-1	0.1
OZ8e	-1	-0.34	0.01	-1	-1	-1	-1	0.44	0.38	-1	-1
OZ8f	-0.68	-0.11	0.2	-1	-1	-1	-1	-0.51	0.44	-0.08	-0.49
OZ8g	-0.06	-0.2	-0.04	-1	-1	-1	-0.86	0.35	-0.02	0.04	-0.15
OZ8h	-1	-1	0.51	-1	-1	-1	-1	-1	-1	-1	0.47
OZ8i	-0.09	-0.61	-0.53	-1	-1	-1	-0.15	-0.24	-0.03	0.52	0.32
OZ8j	-0.9	-0.5	-0.28	-1	-1	-1	-1	-1	-0.03	0.15	-0.29
OZ8k	-0.53	-1	-0.73	-1	-1	-1	-0.57	0.22	-0.74	-1	0.47
OZ9a	-0.97	0.25	-0.17	-1	-1	-1	-0.95	-1	-0.09	-1	-0.8
OZ9b	-0.96	0.1	0.18	-1	0.75	-1	-0.93	-0.31	0.42	-1	-0.41

OZ9c	-0.91	0.2	0.22	-1	-1	-1	-1	-1	0.46	-1	-0.47
OZ9d	-0.9	-0.04	0.27	-1	-1	-1	-0.74	-0.34	0.44	0.3	0.07
OZ9e	-0.95	-0.14	0.07	-1	-1	-1	-1	-0.3	0.15	-1	-0.45
OZ9f	-1	-0.07	0.46	-1	-1	-1	-1	0.46	0.74	-1	-1
OZ9g	-1	0.25	0.3	-1	-1	-1	-0.16	0.61	0.69	-1	-1
OZ9h	-1	-0.16	0.63	-1	-1	-1	-1	-1	0.4	-1	-0.67
OZ9i	-1	0.4	-0.17	-1	-1	-1	-1	0.46	0.35	-1	-1
TP1a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP1b	-1	-1	-1	-1	-1	-1	-0.2	-1	-1	-1	-1
TP1c	0.47	-1	-1	-1	-1	-1	0	-1	-1	-1	-1
TP1d	0.5	-1	-1	-1	-1	-1	0.53	-1	-1	0.88	-1
TP2a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP2b	0.58	-1	-1	-1	-1	-1	0.79	-1	-1	-1	-1
TP2c	0.73	-1	-1	-1	-1	-1	0.86	-1	-1	-1	-1
TP3a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP3b	0.19	-1	-1	-1	-1	-1	0.71	0.67	-0.69	0.72	-0.71
TP3c	0.05	-1	-1	-1	-1	-1	0.77	-1	-1	-1	-1
TP3d	-0.06	-1	-1	-1	-1	-1	0.68	0.2	-1	-1	-1
TP3e	0.36	-1	-1	-1	-1	-1	0.84	0.13	-1	0.86	-1
TP3f	0.11	-1	-1	-1	-1	-1	0.76	0.53	-1	-1	-1
TP4a	0.04	-1	-1	-1	-1	-1	0.46	0.38	-1	-1	-1
TP4b	0.72	-0.78	-1	-1	-1	-1	0.32	0.28	-1	0.14	-1
TP4c	-1	-1	-0.04	-1	-1	-1	0.8	0.39	-1	0.85	-1
TP4d	0.37	-1	-1	-1	-1	-1	0.71	-1	-1	-1	-1
TP4e	-0.39	-0.78	-1	-1	-1	-1	0.81	0.2	-1	0.77	-1
TP4f	0.5	-0.89	-0.87	-1	-1	0.86	0.77	0.56	-1	-1	-1
TP4g	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP4h	0.31	-1	-1	-1	-1	-1	-0.35	0.47	-1	-1	-1
TP4i	0.67	-1	-1	-1	-1	-1	0.6	-1	-1	0.67	-1
TP4j	0.65	-1	-1	-1	-1	-1	0.42	-0.07	-0.71	0.64	-1
TP4k	0.33	-1	-0.39	-1	-1	-1	0.47	-1	-0.75	0.88	-1
TP5a	-1	-1	-1	-1	-1	-1	0.75	-1	-1	-1	-1
TP5b	0.32	-1	-0.43	-1	-1	-1	0.16	-1	-1	-1	-1
TP5c	0.69	-1	-1	-1	-1	-1	-0.37	-1	-1	-1	-1
TP5d	0.6	-1	-0.62	-1	-1	-1	-0.49	-0.67	-1	0.51	-1
TP5e	0.49	-1	-0.49	-1	-1	-1	0.2	-1	-1	-1	-0.24
TP5f	0.24	-1	-0.79	-1	-1	-1	0.58	0.5	-1	-1	-1
TP6a	0.88	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP6b	0.6	-1	-0.45	-1	-1	-1	0.42	-0.22	-1	0.25	-0.63
TP6c	0.47	-1	-0.35	-1	-1	-1	-0.09	-1	-1	0.98	-1
TP6d	0.71	-0.55	-0.58	-1	-1	-1	0.59	-0.06	-0.4	-1	0.23
TP6e	0.63	-1	-0.83	-1	-1	-1	0.12	-1	-1	0.41	-0.21
TP6f	0.58	-1	-0.47	-1	-1	-1	-0.41	-1	-1	-1	-1
TP6g	0.59	-1	-1	-1	-1	-1	0.75	-1	-1	-1	-1
TP6h	0.8	-1	-1	-1	-1	-1	0.45	-1	-1	-1	-1
TP7a	0.57	-1	-0.56	-1	-1	-1	0.2	-1	-1	0.87	-1
TP7b	0.75	-1	-1	-1	-1	-1	0.07	0.38	-1	0.71	-1
TP7c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP7d	-0.12	-1	-0.43	-1	-1	-1	0.17	-1	-1	-1	-1
TP7e	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP7f	0.62	-1	-0.4	-1	-1	-1	0.2	-1	-1	-1	-1
TP7g	0.41	-0.87	-0.85	-1	-1	-1	-0.39	0.25	-1	0.74	-0.54
TP7h	0.54	-0.22	0.03	-1	-1	-1	0.73	-1	-1	0.75	-1
TP7i	0.06	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP8a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP8b	0.68	-0.88	-0.12	-1	-1	-1	0.28	-1	-1	-1	-1
TP8c	0.55	-1	-0.57	-1	-1	-1	0.12	-0.05	-0.77	-1	-0.72
TP8d	0.44	-0.25	-0.35	-1	-1	-1	-0.46	-0.11	-0.28	0.79	0.21
TP8e	0.58	-0.66	-0.36	-1	-1	-1	0.06	0.29	-0.76	0.31	-0.44
TP8f	0.45	-0.36	-0.26	-1	-1	-1	0.34	0.32	-1	-1	-0.18
TP9a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP9b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP9c	-1	-1	-1	-1	-1	-1	0.67	-1	-1	-1	-1
TP9d	-0.49	-1	-1	-1	-1	-1	0.66	-1	-1	-1	0.11

Table B4: Electivity of American beech (531), white ash (541), green ash (544), pumpkin ash (545), blue ash (546), waterlocust (551), honeylocust (552), Kentucky coffeetree (571), butternut (601), black walnut (602), and sweetgum (611) in Missouri's LTAs. The number in parentheses is the species code identifier from the FIA database. "NA" indicates where no information is available.

LTA	531	541	544	545	546	551	552	571	601	602	611
MB1a	-1	-1	0.78	-1	-1	-1	-1	-1	-1	-1	0.98
MB1b	-1	-1	0.93	1	-1	-1	-1	-1	-1	-1	0.98
MB1c	-1	-1	0.94	-1	-1	-1	0.18	-1	-1	-1	-1
MB1d	-1	0.32	0.52	-1	-1	1	-1	-1	-1	-1	0.96
MB1e	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB1f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB2a	0.88	-0.2	0.72	-1	-1	-1	-0.22	-1	0.78	0.05	0.97
MB2b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB3a	-1	-1	0.78	-1	-1	-1	-0.06	-1	-1	-1	0.9
MB3b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB3c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.99
MB3d	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.97
MB4b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4c	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4d	-1	-1	0.93	-1	-1	-1	-1	-1	-1	-1	0.86
MB4e	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4j	-1	-1	0.86	-1	-1	-1	0.31	-1	-1	-1	-1
MB4k	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4l	-1	-1	0.59	-1	-1	-1	0.09	-1	-1	-1	0.51
OP1a	-1	-0.38	0.84	-1	-1	-1	0.55	-1	-1	0.38	-1
OP1b	-1	0.46	-0.35	-1	-1	-1	0.8	0.73	-1	0.56	-1
OP1c	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OP1d	-1.02	-0.49	0.04	-1.22	-1	-1.09	0.34	-0.51	-1.02	-0.22	-0.47
OP1e	-1.04	-0.47	0	-1.27	-1	-1.12	0.44	-0.46	-1.04	-0.15	-0.56
OP1f	-1	0.31	0.12	-1	-1	-1	0.49	-1	-1	0.64	-1
OP1g	-1	0.15	0.75	-1	-1	-1	0.44	0.78	0.71	0.41	-1
OP1h	-1	0.57	-1	-1	-1	-1	0.16	-1	-1	0.29	-1
OP1i	-1	-0.11	-0.44	-1	-1	-1	0.46	-1	-1	0.14	-1
OP1j	-1	-0.11	-0.44	-1	-1	-1	0.46	-1	-1	0.14	-1
OP2a	-1	0.2	0.91	-1	-1	-1	-1	-1	-1	-1	-1
OP2b	-1	-0.24	0.93	-1	-1	-1	0.21	0.74	-1	-0.71	-1
OP2c	-1	-0.34	0.57	-1	-1	-1	0.37	0.88	-1	0.31	-1
OP2d	-1	0.25	0.8	-1	-1	-1	0.85	0.96	-1	0.47	-1
OP2e	-1	-1	0.48	-1	-1	-1	0.63	-1	-1	-0.35	-1
OP2f	-1	-1	0.72	-1	-1	-1	0.27	-1	-1	0.43	-1
OP2g	-1	-1	-1	-1	-1	-1	0.9	-1	-1	-1	-1
OP2h	-1	-1	-0.21	-1	-1	-1	-0.33	-1	-1	0.24	-1
OP2i	-1	-0.13	0.31	-1	-1	-1	-1	-1	-1	0.44	-1
OP2j	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.46	-1
OZ10a	-1	-0.77	-0.51	-1	-1	-1	-1	-1	-1	-0.64	0.35
OZ10b	-1	0.24	-0.11	-1	-1	-1	-0.46	-1	0.52	-0.18	-1
OZ10c	-1	-1	0.09	-1	-1	-1	-1	-1	-1	-1	-1
OZ10d	-1	-0.39	-0.6	-1	-1	-1	-0.91	-1	0.11	-0.65	0
OZ11a	-1	-0.52	-0.12	-1	-1	-1	0.2	-1	-1	-0.04	-1
OZ11b	-1	0.38	-1	-1	-1	-1	0.41	-1	-1	-0.66	-1
OZ12a	-1	0.47	-0.45	-1	-1	-1	0.45	0.67	-1	0.45	-1
OZ12aa	-1	0.1	0.58	-1	-1	-1	0.49	-1	-1	-0.06	0.91
OZ12b	-1	0.62	-1	-1	-1	-1	-1	-1	-1	0.55	-1
OZ12bb	0.99	0.16	0.42	-1	-1	-1	-0.46	-1	-1	-1	0.9
OZ12c	-1	-0.36	0.08	-1	-1	-1	0.84	-1	-1	0.71	-1
OZ12cc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12d	-1	0.72	0.48	-1	0.96	-1	0.57	-1	0.98	0.52	-1
OZ12e	-1	0.41	-0.46	-1	0.92	-1	-0.08	-1	0.87	0.36	-1
OZ12f	-1	0.2	-1	-1	0.71	-1	0.52	-1	0.76	0.2	-1
OZ12g	-1	0.66	-0.2	-1	-1	-1	0.72	0.95	-1	0.66	-1

OZ12h	-1	0.52	-1	-1	0.47	-1	-0.42	-1	-1	0.05	-1
OZ12i	-1	0.36	-0.75	-1	0.74	0.87	-0.8	-1	0.16	-0.24	-1
OZ12j	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12k	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12m	-1	0.44	-0.38	-1	-1	-1	0.22	0.85	-1	0.25	-1
OZ12n	-1	0.58	0.4	-1	-1	-1	-1	-1	-1	-0.59	-1
OZ12o	-1	-1	-1	-1	-1	-1	0.77	-1	-1	-1	-1
OZ12p	-1	0.92	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ12q	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12r	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12s	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12t	-1	-1	0.83	-1	-1	-1	-1	-1	-1	-0.37	-1
OZ12u	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ12v	-1	0.21	0.36	-1	0.76	-1	-1	-1	-1	-0.12	-1
OZ12w	-1	0.27	-0.08	-1	-1	-1	-1	-1	-1	-0.27	-1
OZ12x	-1	-0.06	-1	-1	-1	-1	-0.5	-1	-1	-1	-1
OZ12y	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12z	-1	0.45	0.4	-1	-1	-1	-1	-1	-1	-0.67	0.65
OZ13a	-1	0.58	-1	-1	0.76	-1	0.18	-1	-1	0.27	-1
OZ13b	-1	0.67	-1	-1	0.96	-1	0.15	-1	-1	0.08	-1
OZ13c	-1	0.55	-1	-1	0.93	-1	-0.36	-1	-1	0.24	-1
OZ13d	-1	0.34	-0.74	-1	-1	-1	-0.36	-1	-1	-0.08	-1
OZ13e	-1	0.64	-1	-1	-1	-1	-0.24	-1	-1	-0.11	-1
OZ13f	-1	-0.09	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ13g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13i	-1	0.71	-1	-1	-1	-1	-0.2	-1	-1	0.08	-1
OZ13j	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13k	-1	0.51	0.26	-1	-1	-1	-0.61	-1	-1	-0.46	-1
OZ13l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13m	-1	-0.53	0.01	-1	-1	-1	-1	-1	-1	-0.25	-1
OZ13n	-1	0.55	0.08	-1	-1	-1	-0.17	-1	-1	-0.3	-1
OZ13o	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.26	-1
OZ13p	-1	0.27	0.65	-1	-1	-1	-0.73	-1	-1	-0.42	-1
OZ14a	-1	-0.92	-1	-1	-1	-1	-1	-1	-1	-0.94	0.41
OZ14b	-1	0.19	0.62	-1	-1	-1	-1	-1	-1	-0.29	0.93
OZ14c	-1	-0.76	-0.43	-1	-1	-1	-0.7	-1	0.05	-0.71	0.6
OZ14d	-1	-0.82	-0.6	-1	-1	-1	-1	-1	-1	-0.85	-1
OZ15a	-1	0.06	0.3	-1	0.87	-1	0.03	-1	-1	0.04	-1
OZ15b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ15c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ16a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ16b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ16c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1a	-1	-0.26	0.76	-1	-1	-1	0.69	-1	-1	0.48	-1
OZ1b	-1	-0.6	0.37	-1	-1	-1	-1	0.61	-1	0.25	-1
OZ1c	-1	0.52	-1	-1	0.88	-1	0.34	-1	-1	-0.31	-1
OZ1d	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1e	-1	-0.52	-1	-1	-1	-1	-1	-1	-1	0.18	-1
OZ1f	-1	-0.27	-0.79	-1	-1	-1	-0.16	-1	-1	0.38	-1
OZ1g	-1	-1	-1	-1	-1	-1	0.63	-1	-1	0.31	-1
OZ1h	-1	0.14	-0.23	-1	-1	-1	0.66	-1	-1	0.48	-1
OZ1i	-1	0.21	-0.1	-1	-1	-1	-0.23	-1	-1	0.29	-1
OZ1j	-1	-0.13	0.38	-1	-1	-1	-1	-1	-1	0.47	-1
OZ1k	-1	0.21	0.46	-1	-1	-1	-0.41	-1	-1	-0.05	-1
OZ1l	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1m	-1	-0.1	-1	-1	-1	-1	-1	-1	-1	0.01	-1
OZ2a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ2b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ3a	-1	-0.26	-1	-1	-1	-1	-1	-1	-1	0.13	-1
OZ3b	-1	-0.42	0	-1	-1	-1	-0.73	-1	-1	0.14	-1
OZ4a	-1	0.13	-0.25	-1	0.02	-1	-0.9	-1	-1	-0.52	-1
OZ4b	-1	0.43	-0.05	-1	-1	-1	-0.49	-1	0.8	-0.38	-1
OZ4c	-1	0.32	-0.32	-1	0.86	-1	-0.31	-1	-1	-0.23	-1
OZ4d	-1	0.58	-1	-1	-1	-1	-1	-1	-1	-0.39	-1
OZ4e	-1	-0.07	-0.13	-1	-1	-1	-0.74	-1	0.58	-0.38	-1
OZ4f	-1	-0.13	-0.57	-1	-1	-1	-1	-1	-1	-1	-1
OZ4g	-1	0.4	-1	-1	-1	-1	-1	-1	-1	-0.1	-1
OZ4h	-1	0.08	-1	-1	-1	-1	-1	-1	-1	-0.44	-1

OZ4i	-1	0.28	-1	-1	-1	-1	-0.38	-1	-1	-0.13	-1
OZ4j	-1	-0.04	-0.01	-1	-1	-1	-0.33	-1	-1	0.17	-1
OZ4k	-1	0.14	-0.5	-1	-1	-1	-0.71	-1	-1	-0.07	-1
OZ4l	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ4m	-1	-0.34	-0.7	-1	-1	-1	-0.58	-1	-1	0.12	-1
OZ4n	-1	-0.35	-0.17	-1	-1	-1	-1	-1	-1	-0.03	-1
OZ4o	-1	-0.73	-0.59	-1	-1	-1	-1	-1	0.44	-0.35	-1
OZ4p	-1	-0.76	-1	-1	-1	-1	-1	-1	-1	-0.5	-1
OZ4q	-1	-0.3	-1	-1	-1	-1	-1	-1	-1	-0.2	-1
OZ5a	-1	0.75	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5aa	-1	0.33	0.18	-1	-1	-1	-1	-1	-1	-0.68	-1
OZ5b	-1	-0.09	-1	-1	-1	-1	-0.22	-1	-1	0.29	-1
OZ5bb	-1	-0.69	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5c	-1	-0.47	-1	-1	-1	-1	-1	-1	-1	-0.05	-1
OZ5cc	-1	-0.33	-0.73	-1	-1	-1	-1	-1	0.5	-0.2	-1
OZ5d	-1	-0.43	-1	-1	-1	-1	-0.13	-1	-1	-0.1	-1
OZ5dd	-1	-0.47	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5e	-1	-0.31	-0.59	-1	-1	-1	-0.52	-1	0.34	-0.25	-1
OZ5f	-1	-1	-1	-1	-1	-1	-1	-1	-1	-0.59	-1
OZ5g	-1	-0.61	-1	-1	-1	-1	-1	-1	-1	0.17	-1
OZ5h	-1	-0.21	-1	-1	-1	-1	-0.49	0.33	-1	-0.18	-1
OZ5i	-1	0.83	0.48	-1	-1	-1	0.37	-1	-1	-1	-1
OZ5j	-1	-0.13	-1	-1	-1	-1	0.49	-1	-1	-1	-1
OZ5k	-1	-0.39	0.04	-1	-1	-1	-1	-1	-1	-0.47	-1
OZ5l	-1	-1	-1	-1	-1	-1	-1	-1	-1	-0.22	-1
OZ5m	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5n	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5o	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5p	-1	-0.44	-0.31	-1	-1	-1	-0.49	-1	-1	-0.43	-1
OZ5q	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5r	-1	-0.25	0.42	-1	-1	-1	-0.6	-1	-1	-0.72	0.13
OZ5s	-1	-0.36	0.27	-1	-1	-1	-1	-1	-1	-1	0.92
OZ5t	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5u	-1	-1	-1	-1	-1	-1	-1	-1	-1	-0.41	-1
OZ5v	-1	-0.18	-1	-1	-1	-1	-1	-1	-1	-0.18	-1
OZ5w	-1	-1	-1	-1	-1	-1	-0.69	-1	-1	-0.85	-1
OZ5x	-1	-1	-1	-1	-1	-1	-1	-1	-1	-0.34	-1
OZ5y	-1	-1	-1	-1	-1	-1	-0.67	-1	-1	-0.13	-1
OZ5z	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ6a	-1	-0.44	-0.51	-1	-1	-1	0.11	-1	-1	0.41	-1
OZ6b	-1	0.32	-1	-1	-1	-1	0.56	-1	-1	0.49	-1
OZ6c	-1	0.01	-1	-1	-1	-1	-0.21	-1	-1	-0.28	-1
OZ6d	0.39	-0.15	-0.61	-1	-1	-1	-0.83	-1	-1	-0.03	-1
OZ6e	-1	-0.42	-0.59	-1	-1	-1	-0.44	-1	-1	0.12	-1
OZ6f	-1	-0.05	-0.59	-1	-1	-1	-0.77	-1	0.26	-0.25	-1
OZ6g	-1	0.17	0.81	-1	0.87	-1	-0.18	0.82	0.5	0.03	-1
OZ7a	-1	0.23	-1	-1	-1	-1	-0.75	-1	-1	-0.18	-1
OZ7b	-1	-0.14	-1	-1	-1	-1	-0.42	-1	-1	-0.3	-1
OZ7c	-1	-0.74	-1	-1	-1	-1	-1	-1	-1	-0.07	-1
OZ7d	-1	-1	-1	-1	-1	-1	-1	-1	-1	-0.23	-1
OZ7e	-1	-0.85	-1	-1	-1	-1	-1	-1	-1	-0.57	-1
OZ7f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ7g	-1	-0.09	-0.81	-1	0.23	-1	-0.17	-1	-1	-0.1	-1
OZ7h	-1	-0.13	-0.23	-1	-1	-1	-0.35	-1	-1	0.12	-1
OZ7i	-1	-0.71	-1	-1	-1	-1	-1	-1	-1	-0.56	-1
OZ7j	-1	-0.36	-1	-1	-1	-1	-1	-1	-1	-0.77	-1
OZ7k	-1	0.08	-1	-1	-1	-1	-0.8	-1	-1	0.03	-1
OZ8a	-1	-0.89	-0.75	-1	-1	-1	-0.64	-1	-1	-0.03	-1
OZ8b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ8c	-1	-0.7	-1	-1	-1	-1	0.05	-1	-1	-0.82	-1
OZ8d	-1	0.02	0.44	-1	-1	-1	-0.2	-1	-1	0.18	-1
OZ8e	-1	-0.41	-1	-1	-1	-1	-1	-1	-1	0.01	-1
OZ8f	-1	-0.7	-1	-1	-1	-1	-1	-1	0.36	-0.43	-0.08
OZ8g	-1	0.09	-1	-1	0.37	-1	-0.81	-1	0.69	-0.18	-1
OZ8h	-1	0.35	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ8i	-1	0.22	0.34	-1	-1	-1	-0.52	-1	-1	-0.14	-1
OZ8j	-1	-1	-0.32	-1	-1	-1	-1	-1	-1	-0.55	-1
OZ8k	-1	-0.22	-1	-1	-1	-1	-0.1	-1	0.82	0.1	-1
OZ9a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-0.93	-1
OZ9b	-1	-0.73	-0.6	-1	-1	-1	-0.68	-1	0.66	-0.54	0.25

OZ9c	-1	-0.57	-0.71	-1	-1	-1	-1	-1	-1	-0.32	-1
OZ9d	-1	-0.71	-0.56	-1	-1	-1	-0.86	-1	-1	-0.6	-1
OZ9e	-1	-0.55	-0.7	-1	-1	-1	-1	-1	0.27	-0.21	-1
OZ9f	-1	-0.47	-1	-1	-1	-1	-1	-1	0.89	-1	-1
OZ9g	0.93	0.32	-1	-1	-1	-1	-1	-1	-1	-0.04	-1
OZ9h	-1	-0.54	-0.28	-1	-1	-1	-1	-1	0.57	-0.46	-1
OZ9i	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP1a	-1	-1	0.89	-1	-1	-1	-1	-1	-1	-1	-1
TP1b	-1	0.02	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP1c	-1	0.82	-1	-1	-1	-1	0.19	-1	-1	0.32	-1
TP1d	-1	-1	-1	-1	-1	-1	0.84	-1	-1	0.55	-1
TP2a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP2b	-1	0.53	0.23	-1	-1	-1	0.85	-1	-1	0.75	-1
TP2c	-1	0.78	-1	-1	-1	-1	0.32	-1	-1	0.79	-1
TP3a	-1	-1	0.98	-1	-1	-1	-1	-1	-1	-1	-1
TP3b	-1	0.41	0.6	-1	-1	-1	0.77	0.86	0.51	0.68	-1
TP3c	-1	-0.24	-1	-1	-1	-1	0.71	-1	-1	0.62	-1
TP3d	-1	0.53	0.5	-1	-1	-1	0.65	-1	-1	0.58	-1
TP3e	-1	0.57	0.13	-1	-1	-1	0.76	0.71	-1	0.77	-1
TP3f	-1	-1	-0.4	-1	-1	-1	0.81	0.93	-1	0.66	-1
TP4a	-1	-0.05	0.74	-1	-1	-1	0.39	-1	0.87	0.11	-1
TP4b	-1	0.04	-0.71	-1	-1	-1	0.73	0.64	-1	0.58	-1
TP4c	-1	-0.23	-1	-1	-1	-1	0.65	-1	-1	0.83	-1
TP4d	-1	-0.14	0.7	-1	-1	-1	0.79	0.85	-1	0.37	-1
TP4e	-1	-0.42	-1	-1	-1	-1	0.77	0.97	0.82	0.74	-1
TP4f	-1	0.11	0.51	-1	-1	-1	0.69	-1	-1	0.63	-1
TP4g	-1	-1	-1	-1	-1	-1	0.97	-1	-1	0.87	-1
TP4h	-1	0.7	-1	-1	-1	-1	-1	-1	-1	0.43	-1
TP4i	-1	0.29	-1	-1	-1	-1	-1	-1	-1	0.36	-1
TP4j	-1	0.48	0.08	-1	-1	-1	0.57	-1	-1	0.44	-1
TP4k	-1	-0.43	0.8	-1	-1	-1	0.7	-1	-1	-0.21	-1
TP5a	-1	0.15	0.94	-1	-1	-1	-1	-1	-1	-1	-1
TP5b	-1	0.58	-1	-1	-1	-1	0.35	-1	-1	-0.38	-1
TP5c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP5d	-1	0.26	-0.59	-1	-1	-1	0.31	0.28	-1	0.15	-1
TP5e	-1	-0.62	0.07	-1	-1	-1	0.48	-1	-1	0.18	-1
TP5f	-1	-0.72	0.09	-1	-1	-1	0.51	-1	0.77	0.14	-1
TP6a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP6b	-1	0.44	0.12	-1	-1	-1	0.75	-1	-1	0.4	-1
TP6c	-1	0.44	-1	-1	-1	-1	0.57	-1	-1	-1	-1
TP6d	-1	0.41	-1	-1	-1	-1	0.47	-1	-1	0.05	-1
TP6e	-1	-0.24	0.51	-1	-1	-1	-0.17	-1	-1	-0.04	-1
TP6f	-1	0.18	0.23	-1	-1	-1	0.62	-1	-1	0.19	-1
TP6g	-1	0.46	-1	-1	-1	-1	0.82	-1	-1	-1	-1
TP6h	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.74	-1
TP7a	-1	-1	0.84	-1	-1	-1	0.57	-1	-1	0.23	-1
TP7b	-1	-1	-1	-1	-1	-1	0.85	-1	-1	0.11	-1
TP7c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP7d	-1	-1	-1	-1	-1	-1	0.35	-1	-1	-0.05	-1
TP7e	-1	-1	-1	-1	-1	-1	0.38	-1	-1	-1	-1
TP7f	-1	-1	-1	-1	-1	-1	0.47	-1	-1	-0.02	-1
TP7g	-1	0.19	0.06	-1	-1	-1	0.2	-1	-1	0.31	-1
TP7h	-1	-0.17	-1	-1	-1	-1	0.61	-1	-1	-0.54	-1
TP7i	-1	-0.12	-1	-1	-1	-1	-1	-1	-1	0.76	-1
TP8a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP8b	-1	-0.22	-0.59	-1	-1	-1	0.34	-1	-1	0.51	-1
TP8c	-1	0.39	0.25	-1	0.41	-1	0.27	-1	-1	0.43	-1
TP8d	-1	0.62	-0.06	-1	0.84	-1	0.64	0.66	-1	0.35	-1
TP8e	-1	0.29	-0.78	-1	0.31	-1	-0.21	-1	-1	-0.16	-1
TP8f	-1	0.55	0.13	-1	-1	-1	-1	-1	-1	-0.39	-1
TP9a	-1	0.55	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP9b	-1	-1	-1	-1	-1	-1	-1	0.96	-1	-1	-1
TP9c	-1	-1	0.66	-1	-1	-1	-1	-1	-1	-1	-1
TP9d	-1	0.31	-1	-1	-1	-1	-1	-1	-1	-1	-1

Table B5: Electivity of yellow-poplar (621), Osage-orange (641), apple spp. (660), white mulberry (681), red mulberry (682), water tupelo (691), blackgum (693), swamp tupelo (694), ironwood (701), sycamore (731), and eastern cottonwood (742) in Missouri's LTAs. The number in parentheses is the species code identifier from the FIA database. "NA" indicates where no information is available.

LTA	621	641	660	681	682	691	693	694	701	731	742
MB1a	-1	-1	-1	-1	-1	-1	-1	-1	0.75	-1	-1
MB1b	-1	-1	-1	-1	0.6	-1	-1	-1	-1	-1	-1
MB1c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB1d	-1	-1	-1	-1	-1	0.99	0.2	0.97	-1	-1	-1
MB1e	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB1f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB2a	-1	-1	-1	-1	-0.31	-1	0.33	0.76	0.18	-0.07	-0.08
MB2b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB3a	-1	-1	-1	-1	-1	1	0.93	-1	-1	-1	-1
MB3b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB3c	-1	-1	-1	-1	0.74	-1	-1	-1	-1	-1	0.88
MB3d	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4a	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.88	0.98
MB4b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4c	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4d	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.1	0.93
MB4e	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4j	-1	-1	-1	-1	0.52	-1	-1	-1	-1	-1	-1
MB4k	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4l	-1	0.03	-1	-1	-1	-1	-1	-1	-1	0.61	0.88
OP1a	-1	0.71	-1	-1	0.18	-1	-1	-1	-1	0.22	0.7
OP1b	-1	0.92	-1	-1	0.51	-1	-1	-1	-1	-0.5	-1
OP1c	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OP1d	-1	0.21	-1	-1	-0.02	-0.98	-0.96	-1.11	-1.26	0.19	0.54
OP1e	-1	0.32	-1	-1	0.03	-1.01	-1	-1.16	-1.33	0.28	0.64
OP1f	-1	0.84	-1	-1	0.24	-1	-1	-1	0.2	-0.05	0.45
OP1g	-1	0.73	-1	-1	0.46	-1	-1	-1	0.03	-0.08	-0.52
OP1h	-1	0.91	-1	-1	0.64	-1	-1	-1	-1	0.31	-1
OP1i	-1	0.71	-1	-1	0	-1	-1	-1	-1	-0.29	-0.42
OP1j	-1	0.71	-1	-1	0	-1	-1	-1	-1	-0.29	-0.42
OP2a	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.86	-1
OP2b	-1	0.15	-1	-1	0.75	-1	-1	-1	-1	-0.17	0.65
OP2c	-1	0.71	-1	0.74	0.51	-1	-1	-1	-1	-1	0.82
OP2d	-1	0.87	-1	0.96	0.73	-1	-1	-1	0.19	-0.26	0.82
OP2e	-1	0.81	-1	-1	0.3	-1	-1	-1	-1	0.01	0.63
OP2f	-1	0.67	-1	-1	0.32	-1	-1	-1	-1	0.81	-1
OP2g	-1	0.98	-1	-1	0.82	-1	-1	-1	-1	-1	-1
OP2h	-1	0.08	-1	0.76	0.26	-1	-1	-1	-1	0.04	-1
OP2i	-1	0.59	-1	-1	0.42	-1	-1	-1	-1	0.69	-1
OP2j	-1	-1	-1	-1	0.82	-1	-1	-1	-1	-1	-1
OZ10a	-1	-1	-1	-1	-0.71	-1	0.47	0.27	0.01	-0.63	-1
OZ10b	-1	-1	-1	-1	0.24	-1	0.21	-0.16	-0.56	0.7	-1
OZ10c	-1	-1	-1	-1	-1	-1	0.7	-1	-1	-0.56	-1
OZ10d	-1	-1	-1	0.35	-0.72	-1	0.57	0.52	0.1	-0.64	-1
OZ11a	-1	0.57	-1	-1	0.64	-1	-1	-1	-1	0.05	-1
OZ11b	-1	0.43	-1	-1	0.23	-1	-1	-1	-1	-0.39	-1
OZ12a	-1	0.21	-1	-1	0.42	-1	-1	-1	-1	0.23	-1
OZ12aa	0.92	-1	-1	0.72	-1	-1	-0.16	-1	-0.2	0.6	-1
OZ12b	-1	-1	-1	-1	-1	-1	-1	-1	0.95	0.42	-1
OZ12bb	0.99	-1	-1	-1	-1	-1	0.53	-1	0.26	0.63	-0.33
OZ12c	-1	0.88	-1	-1	0.2	-1	-1	-1	0.34	0.25	-1
OZ12cc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12d	-1	0.58	-1	-1	0.57	-1	-1	-1	0.66	0.45	-1
OZ12e	-1	-1	-1	-1	0.31	-1	-1	-1	0.75	0.22	-0.13
OZ12f	-1	-1	-1	-1	0.41	-1	-1	-1	0.71	0.7	0.77
OZ12g	-1	-1	-1	-1	0.62	-1	-1	-1	-1	0.47	-1

OZ12h	-1	-1	-1	-1	-0.05	-1	-1	-1	0.64	-0.15	-1
OZ12i	-1	-1	-1	0.07	-0.69	-1	-0.76	-0.52	0.58	-0.25	-1
OZ12j	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12k	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12m	-1	-1	-1	-1	0.27	-1	-1	-1	0.6	0.38	0.08
OZ12n	-1	-1	-1	-1	0.33	-1	-1	-1	0.15	-0.3	-1
OZ12o	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ12p	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ12q	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12r	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12s	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12t	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.49	0.92
OZ12u	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ12v	-1	-1	-1	0.59	-0.25	-1	-1	-1	-0.42	-0.09	-1
OZ12w	0.96	-1	-1	-1	0.37	-1	-1	-1	-1	0.41	-1
OZ12x	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ12y	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12z	0.94	-1	-1	-1	-1	-1	0.67	-1	0.76	-1	-1
OZ13a	-1	-1	-1	-1	0.29	-1	-1	-1	0.24	0.54	-1
OZ13b	-1	-1	-1	-1	0.39	-1	-1	-1	-1	-1	-1
OZ13c	-1	-1	-1	-1	-1	-1	-1	-1	0.03	-1	-1
OZ13d	-1	-1	-1	-1	-0.67	-1	-1	-1	-0.31	-0.81	-1
OZ13e	-1	-1	-1	-1	0.34	-1	-1	-1	0.47	-0.28	-1
OZ13f	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ13g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13i	-1	-1	-1	-1	0.06	-1	-1	-1	-1	-1	-1
OZ13j	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13k	-1	-1	-1	-1	-1	-1	-1	-1	-0.29	-0.5	-1
OZ13l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13m	-1	-1	-1	-1	-0.51	-1	0.55	-1	0.14	-0.16	-1
OZ13n	-1	-1	-1	0.58	-0.54	-1	0.05	-1	0.1	-0.72	-1
OZ13o	-1	-1	-1	-1	-1	-1	0.32	-1	-1	-1	-1
OZ13p	0.92	-1	0.82	0.54	0.03	-1	0.62	-1	-1	-0.07	-1
OZ14a	-1	-1	-1	-1	-1	-1	0.47	-0.38	-1	-1	-1
OZ14b	-1	-1	-1	-1	-1	-1	0.22	0.19	-1	-0.18	-1
OZ14c	0.55	-1	0.47	-1	-1	-1	0.47	0.68	-0.82	-0.29	-0.79
OZ14d	-1	-1	-1	-1	-1	-1	0.31	0.63	0.55	-0.7	-1
OZ15a	-1	-0.23	-1	0.92	0.81	-1	-1	-1	-1	0.68	0.96
OZ15b	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.88	0.98
OZ15c	-1	-1	-1	-1	0.91	-1	-1	-1	-1	0.21	0.92
OZ16a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ16b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ16c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1a	-1	0.92	-1	-1	0.3	-1	-1	-1	-1	-1	0.2
OZ1b	-1	0.75	-1	-1	0.41	-1	-1	-1	-1	0.14	-1
OZ1c	-1	0.75	-1	0.79	0.34	-1	-1	-1	-1	-1	-1
OZ1d	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1e	-1	-1	-1	0.73	0	-1	-0.46	-1	-1	-0.57	-1
OZ1f	-1	0.67	-1	-1	-0.05	-1	-0.38	-1	0.02	-1	-1
OZ1g	-1	0.91	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1h	-1	0.66	-1	-1	0.34	-1	-1	-1	-1	0.42	-1
OZ1i	-1	0.57	-1	-1	0.17	-1	-1	-1	-1	-0.68	-1
OZ1j	-1	-1	-1	0.68	-0.1	-1	-1	-1	-0.28	-1	-1
OZ1k	-1	-0.16	-1	-1	0.35	-1	-1	-1	-1	-1	-1
OZ1l	-1	-1	-1	-1	-1	-1	-1	0.93	-1	-1	-1
OZ1m	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ2a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ2b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ3a	-1	-0.51	-1	0.33	-0.03	-1	0.35	-1	-0.65	-0.71	-1
OZ3b	-1	-1	-1	-1	0.21	-1	-0.45	-1	-0.18	-0.08	-1
OZ4a	-1	-0.84	0.53	-1	-0.25	-1	-0.1	0.29	0.33	-0.68	-1
OZ4b	-1	-1	-1	-1	-0.27	-1	-0.4	-1	-1	-1	-1
OZ4c	-1	-1	-1	-1	-1	-1	-0.72	-1	0.59	-0.16	-1
OZ4d	-1	-1	-1	-1	-1	-1	-1	-1	0.9	-1	-1
OZ4e	-1	-1	-1	-1	-1	-1	-1	-1	0.26	-0.76	-1
OZ4f	-1	-1	0.86	-1	-0.17	-1	0.61	-1	-1	-0.27	-1
OZ4g	-1	-1	0.87	-1	-1	-1	0.18	0.16	0.52	-1	-1
OZ4h	-1	-1	-1	-1	-1	-1	0.25	-1	-1	0.1	-1

OZ4i	-1	-1	-1	0.65	-0.15	-1	-1	-1	-1	-0.24	-1
OZ4j	-1	-1	0.88	-1	0.25	-1	0.3	0.19	-1	0.43	-1
OZ4k	-1	-1	-1	0.57	-0.16	-1	0.2	0.34	-0.01	-0.29	-1
OZ4l	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ4m	-1	-0.62	-1	-1	0.05	-1	0.14	-0.12	-0.54	-0.01	-1
OZ4n	-1	-1	-1	0.59	-1	-1	-0.38	-1	-1	-0.2	-1
OZ4o	-1	-1	-1	-1	-0.5	-1	0.2	0.08	-1	0.01	-1
OZ4p	-1	-1	-1	-1	-1	-1	-0.02	-1	-1	-1	-1
OZ4q	-1	-1	-1	-1	-1	-1	-1	-1	0.07	0.3	-1
OZ5a	-1	-1	-1	-1	0.8	-1	-1	-1	-1	-1	-1
OZ5aa	-1	-1	-1	-1	0.44	-1	-1	-1	0.6	-1	-1
OZ5b	-1	0.06	-1	-1	0.03	-1	-1	-1	-1	-0.06	-1
OZ5bb	-1	-1	-1	-1	-0.55	-1	-1	0.02	-1	-1	-1
OZ5c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-0.23	-1
OZ5cc	-1	-1	0.88	0.43	-0.43	-1	-0.55	-1	-0.58	-0.39	-1
OZ5d	-1	-1	-1	0.4	-0.15	-1	-1	-1	-0.6	0.31	-1
OZ5dd	-1	-1	-1	-1	0.39	-1	0.43	-1	0.51	0.3	-1
OZ5e	-1	-1	-1	-1	-0.2	-1	-0.54	-1	-1	-0.13	-1
OZ5f	-1	-1	-1	-1	-0.5	-1	-1	-1	-1	-1	-1
OZ5g	-1	-1	-1	-1	-0.13	-1	-1	-1	-1	-1	-1
OZ5h	-1	-1	-1	0.41	-1	-1	-1	-1	-1	-0.81	-1
OZ5i	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5j	-1	-1	-1	-1	0.66	-1	-1	-1	-1	-1	-1
OZ5k	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5l	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5m	-1	-1	-1	-1	-1	-1	0.25	-1	-1	-1	-1
OZ5n	-1	-1	-1	-1	-1	-1	0.05	-1	-1	-1	-1
OZ5o	-1	-1	-1	-1	-1	-1	-0.6	-1	-1	-1	-1
OZ5p	-1	-0.82	0.57	0.1	-0.44	-1	-0.47	-0.19	-1	-0.46	-1
OZ5q	-1	-1	-1	-1	-1	-1	-1	0.94	-1	-1	-1
OZ5r	-1	-1	-1	-1	-1	-1	0.37	-1	-1	0.42	-1
OZ5s	-1	-1	-1	-1	-1	-1	0.25	-1	-1	-0.1	-1
OZ5t	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5u	-1	-1	-1	-1	0.23	-1	-1	-1	-1	-1	-1
OZ5v	-1	-1	-1	-1	-0.39	-1	-0.51	-1	-1	-1	-1
OZ5w	-1	-0.52	-1	-1	-1	-1	0.29	0.03	-1	-0.33	-1
OZ5x	-1	-1	-1	-1	-1	-1	-0.09	-1	-1	-1	-1
OZ5y	-1	-1	-1	-1	0.14	-1	0.26	-1	-1	0.29	-1
OZ5z	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ6a	-1	-1	-1	0.68	-0.41	-1	-1	-1	-1	-0.37	-1
OZ6b	-1	-0.04	-1	0.84	-0.06	-1	-1	-1	-0.54	0.29	-1
OZ6c	-1	-1	-1	-1	-0.16	-1	-1	-1	0.63	-0.11	-1
OZ6d	-1	-1	-1	-1	0.11	-1	-1	-1	0.16	-0.16	-1
OZ6e	-1	-0.49	-1	-1	-1	-1	-1	-1	-0.38	0.04	-1
OZ6f	-1	-1	-1	-1	0.14	-1	-0.85	-1	0.03	-0.24	-1
OZ6g	-1	-0.24	-1	-1	-0.12	-1	-1	-1	-1	0.16	-1
OZ7a	-1	-1	-1	-1	-0.16	-1	-0.7	-1	-0.51	0.03	-1
OZ7b	-1	-1	-1	-1	-0.49	-1	-0.59	-1	-1	0.06	-1
OZ7c	-1	-1	-1	-1	-0.36	-1	-1	-1	-0.22	-0.59	-1
OZ7d	-1	-1	-1	-1	-1	-1	-1	-1	0.05	-1	-1
OZ7e	-1	-1	-1	-1	-1	-1	-0.26	0.7	-0.16	-0.39	-1
OZ7f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ7g	-1	-1	-1	0.54	-0.77	-1	-0.19	-1	-0.7	0.62	-1
OZ7h	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.38	-1
OZ7i	-1	-1	-1	-1	0.04	-1	0.34	-1	-1	-0.54	-1
OZ7j	-1	-1	-1	-1	-0.34	-1	0.05	-1	-1	-1	-1
OZ7k	-1	-1	-1	-1	-0.15	-1	-1	-1	0.01	0.32	-1
OZ8a	-1	-1	-1	-1	-0.69	-1	0.2	0.44	-0.34	0.59	-1
OZ8b	-1	-1	0.92	-1	-1	-1	-0.02	-1	-1	-1	-1
OZ8c	0.86	-1	-1	-1	-0.69	-1	-0.09	0.32	-0.33	-0.42	-1
OZ8d	-1	-1	-1	-1	0.3	-1	-0.57	-1	-1	0.6	-1
OZ8e	-1	-1	-1	-1	-1	-1	0.32	-1	-1	-0.61	-1
OZ8f	-1	-1	-1	-1	-0.76	-1	0.35	0.19	-0.68	-1	-1
OZ8g	-1	-1	-1	-1	-0.05	-1	0.03	0.11	-0.61	-0.26	-1
OZ8h	-1	-1	-1	-1	-1	-1	0.42	-1	-1	-1	-1
OZ8i	-1	-1	-1	-1	-0.12	-1	-0.13	-1	-0.48	-0.75	-1
OZ8j	-1	-1	-1	-1	-0.39	-1	0.24	0.51	-1	-1	-1
OZ8k	-1	0.17	-1	-1	-1	-1	-1	-1	-1	0.38	-1
OZ9a	-1	-1	-1	-1	-0.58	-1	0.27	0.36	-1	-0.93	-1
OZ9b	-1	-1	-1	-1	-0.76	-1	0.43	0.27	-0.53	-0.07	-0.8

OZ9c	-1	-1	-1	-1	-0.64	-1	0.32	0.51	-0.54	-0.16	-1
OZ9d	-1	-1	-1	-0.13	-0.78	-1	0.48	0.6	-0.6	-0.2	-1
OZ9e	-1	-1	-1	-1	-0.49	-1	0.21	0.6	0.22	-0.23	-1
OZ9f	-1	-1	-1	-1	-1	-1	0.71	-1	-1	-1	-1
OZ9g	-1	-1	-1	-1	-1	-1	0.64	-1	-1	-1	-1
OZ9h	-1	-1	-1	-1	0.09	-1	0.62	-1	-1	-0.21	-1
OZ9i	-1	-1	-1	-1	-1	-1	0.26	0.69	-1	-1	-1
TP1a	-1	-1	-1	0.97	-1	-1	-1	-1	-1	-1	0.96
TP1b	-1	-1	-1	-1	0.94	-1	-1	-1	-1	0.29	0.96
TP1c	-1	-1	-1	-1	0.96	-1	-1	-1	-1	0.46	0.87
TP1d	-1	-1	-1	-1	0.46	-1	-1	-1	-1	0.19	0.79
TP2a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP2b	-1	-1	-1	-1	0.35	-1	-1	-1	0.47	-1	-1
TP2c	-1	-1	-1	-1	0.52	-1	-1	-1	-1	-1	-1
TP3a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP3b	-1	0.4	0.88	0.68	0.68	-1	-1	-1	0.7	0.52	0.75
TP3c	-1	0.78	-1	-1	0.77	-1	-1	-1	0.14	-1	0.89
TP3d	-1	0.69	0.99	-1	0.68	-1	-1	-1	0.28	0.56	0.68
TP3e	-1	-0.27	-1	-1	0.67	-1	-1	-1	0.2	-0.05	0.6
TP3f	-1	0.82	-1	-1	0.54	-1	-1	-1	-1	-1	-1
TP4a	-1	-1	-1	-1	-0.02	-1	-1	-1	-1	0.22	0.84
TP4b	-1	0.64	0.78	0.47	0.57	-1	-1	-1	0.49	-0.17	0.59
TP4c	-1	0.82	-1	-1	0.71	-1	-1	-1	-1	-1	-1
TP4d	-1	0.11	-1	-1	0.09	-1	-1	-1	0.73	0.6	-1
TP4e	-1	0.76	-1	-1	-0.22	-1	-1	-1	0.72	-1	0.81
TP4f	-1	0.56	-1	-1	0.37	-1	-1	-1	0.58	-0.09	0.62
TP4g	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP4h	-1	0.76	-1	-1	0.41	-1	-1	-1	0.66	-1	-0.02
TP4i	-1	-0.07	-1	-1	0.61	-1	-1	-1	-1	-1	0.9
TP4j	-1	0.59	-1	-1	-1	-1	-1	-1	0.89	0.11	0.81
TP4k	-1	0.45	-1	0.88	0.52	-1	-1	-1	-1	0.41	0.21
TP5a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.27
TP5b	-1	-1	-1	-1	-1	-1	-1	-1	0.4	-1	0.89
TP5c	-1	-1	-1	-1	0.06	-1	-1	-1	0.51	-1	0.57
TP5d	-1	-1	-1	-1	0.08	-1	-1	-1	0.29	-1	-0.1
TP5e	-1	-0.44	-1	-1	0.3	-1	-0.57	-1	-1	0.68	0.41
TP5f	-1	-1	-1	-1	-1	-1	-1	-1	-0.18	0.06	-0.1
TP6a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP6b	-1	0.34	-1	-1	0.24	-1	-1	-1	-0.46	0.36	0.05
TP6c	-1	0.89	-1	-1	0.35	-1	-1	-1	-1	-1	-1
TP6d	-1	-0.43	-1	-1	0.55	-1	-1	-1	-1	-1	-1
TP6e	-1	-0.1	-1	-1	0.22	-1	-1	-1	0.62	-0.4	0.12
TP6f	-1	-1	-1	0.73	-1	-1	-1	-1	-1	0.33	0.11
TP6g	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP6h	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP7a	-1	-1	-1	-1	-1	-1	-1	-1	0.25	0.34	0.78
TP7b	-1	0	-1	-1	0.7	-1	-1	-1	0.59	-1	0.79
TP7c	-1	0.96	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP7d	-1	0.85	-1	-1	0.55	-1	-1	-1	0.89	-1	0.62
TP7e	-1	0.9	-1	-1	0.91	-1	-1	-1	-1	-1	-1
TP7f	-1	0.49	-1	0.95	0.3	-1	-1	-1	-1	-1	-1
TP7g	-1	-1	-1	0.64	-0.47	-1	-1	-1	-0.01	-0.25	0.68
TP7h	-1	0.09	-1	-1	0.55	-1	-1	-1	0.81	-1	-1
TP7i	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP8a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP8b	-1	0.03	-1	-1	0.25	-1	-1	-1	0.76	0.59	0.31
TP8c	-1	0.38	-1	-1	-0.44	-1	-1	-1	0.45	0.69	0.41
TP8d	-1	-1	-1	-1	0.07	-1	-1	-1	0.55	0.43	-0.29
TP8e	-1	-0.35	-1	-1	0.26	-1	-1	-1	-0.22	0.26	-0.45
TP8f	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP9a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.71
TP9b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.98
TP9c	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.82	0.82
TP9d	-1	-1	-1	-1	-1	-1	-1	-1	-1	-0.1	0.95

Table B6: Electivity of swamp cottonwood (744), black cherry (762), chokecherry (763), wild plum (766), white oak (802), swamp white oak (804), scarlet oak (806), northern pin oak (809), southern red oak (812), cherrybark oak (813), and shingle oak (817) in Missouri's LTAs. The number in parentheses is the species code identifier from the FIA database. "NA" indicates where no information is available.

LTA	744	762	763	766	802	804	806	809	812	813	817
MB1a	-1	-1	-1	-1	0.07	-1	-0.17	-1	-1	-1	-1
MB1b	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.98	-1
MB1c	-1	-1	-1	-1	-0.86	-1	-1	-1	0.93	1	-1
MB1d	-1	-1	-1	-1	-1	0.24	-0.18	-1	-1	0.99	-1
MB1e	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB1f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB2a	-1	0.15	-1	0.77	-0.02	-1	-0.86	-1	0.65	0.89	-1
MB2b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB3a	1	-1	-1	-1	-1	-1	-1	-1	-1	0.96	-1
MB3b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB3c	-1	-1	-1	-1	-1	-1	-1	-1	0.95	-1	-1
MB3d	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4a	-1	0.78	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB4b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4c	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4d	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB4e	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4j	-1	-1	-1	-1	-1	-1	-0.39	-1	-1	-1	-1
MB4k	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4l	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OP1a	-1	-1	-1	-1	-1	-1	-1	1	-1	-1	-1
OP1b	-1	-1	-1	-1	-0.82	-1	-1	-1	-1	-1	0.84
OP1c	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OP1d	-0.89	-0.8	-1	-1.02	-1.12	-1.05	-1.04	-0.5	-1	-1.37	-0.48
OP1e	-0.89	-0.8	-1	-1.04	-1.16	-1.07	-1.07	-0.45	-1.05	-1.52	-0.42
OP1f	-1	0.67	-1	-1	-0.65	-1	-0.54	-1	-1	-1	-0.04
OP1g	-1	-0.21	-1	-1	-0.36	0.43	-0.35	-1	-1	-1	0.73
OP1h	-1	-0.01	-1	-1	-0.86	0.58	-0.22	-1	-1	-1	0.32
OP1i	-1	0.75	-1	-1	-0.75	0.53	-1	-1	-1	-1	0.84
OP1j	-1	0.75	-1	-1	-0.75	0.53	-1	-1	-1	-1	0.84
OP2a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OP2b	-1	-1	-1	-1	-1	0.35	-1	-1	-1	-1	-1
OP2c	-1	0.37	-1	-1	-0.69	-1	-0.87	-1	-1	-1	0.79
OP2d	-1	0.29	-1	-1	-1	0.68	-0.74	-1	-1	-1	-1
OP2e	-1	0.81	-1	-1	-1	-1	-1	-1	-1	-1	-1
OP2f	-1	0.53	-1	0.95	-1	-1	-1	-1	-1	-1	-1
OP2g	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OP2h	-1	0.48	-1	-1	-0.52	-0.37	-0.86	-1	-1	-1	-1
OP2i	-1	0.89	-1	-1	-1	-1	-0.71	-1	-1	-1	-1
OP2j	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ10a	-1	-0.48	-1	-1	0.22	-0.57	0.44	-1	-0.14	-1	-0.83
OZ10b	-1	0.22	-1	-1	0.06	-1	-0.49	-1	-1	-1	-0.27
OZ10c	-1	0.27	-1	-1	0.03	-0.09	-0.28	-1	-1	-1	0.06
OZ10d	-1	-0.76	-1	0.41	0.25	-1	0.56	-1	-0.55	-1	-0.57
OZ11a	-1	0.5	-1	-1	0.01	-0.1	-0.76	-1	-1	-1	0.74
OZ11b	-1	0	-1	-1	-0.27	-1	-1	-1	-1	-1	0.68
OZ12a	-1	0.11	-1	-1	-0.16	0.22	-1	-1	-1	-1	0.76
OZ12aa	-1	0.54	-1	-1	-0.28	-1	-0.76	-1	0.56	-1	-0.57
OZ12b	-1	-1	-1	-1	-0.28	0.93	-1	-1	-1	-1	0.82
OZ12bb	-1	0.62	-1	-1	-0.14	-1	-1	-1	0.74	-1	-0.48
OZ12c	-1	-1	-1	-1	-0.91	-1	0.25	-1	-1	-1	0.71
OZ12cc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12d	-1	-1	-1	-1	-0.16	0.32	-0.72	-1	-1	-1	-1
OZ12e	-1	-0.11	-1	-1	0.11	-0.13	-1	-1	-1	-1	0.52
OZ12f	-1	-0.42	0.97	-1	0.25	0.8	-1	-1	-1	-1	0.03
OZ12g	-1	-0.16	-1	-1	-0.76	0.47	-0.17	-1	-1	-1	0.48

OZ12h	-1	-0.68	-1	-1	0.25	-0.16	-0.37	-1	-1	-1	0.33
OZ12i	-1	-0.44	-1	-1	0.29	-0.26	-0.25	-1	-1	-1	-0.66
OZ12j	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12k	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12m	-1	-0.15	-1	-1	0.03	-0.03	-0.92	-1	-1	-1	0.78
OZ12n	-1	-1	-1	-1	0.35	-1	-0.76	-1	-1	-1	-0.29
OZ12o	-1	-1	-1	-1	0.35	-1	-1	-1	-1	-1	0.76
OZ12p	-1	-1	-1	-1	-0.01	-1	-1	-1	-1	-1	-1
OZ12q	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12r	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12s	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12t	-1	-1	-1	-1	0.29	-1	-1	-1	-1	-1	-1
OZ12u	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ12v	-1	-0.32	-1	-1	0.11	-1	-0.55	-1	0.04	-1	-0.33
OZ12w	-1	-0.04	-1	-1	-0.05	-1	-1	-1	-1	-1	-1
OZ12x	-1	-1	-1	-1	-0.19	-1	-0.44	-1	-1	-1	-1
OZ12y	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12z	-1	-1	-1	-1	0.12	-1	0.25	-1	-1	-1	-1
OZ13a	-1	-1	-1	-1	0.19	-0.01	-0.6	-1	-1	-1	0.25
OZ13b	-1	0.53	-1	-1	0.04	-1	-0.65	-1	-1	-1	-0.41
OZ13c	-1	-1	-1	-1	-0.67	-1	-0.51	-1	-1	-1	-0.39
OZ13d	-1	-0.01	-1	-1	0.22	-1	-0.65	-1	-1	-1	0.04
OZ13e	-1	-1	-1	-1	0.24	-1	-0.75	-1	-1	-1	-1
OZ13f	-1	-1	-1	-1	0.4	-1	-1	-1	-1	-1	-1
OZ13g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13i	-1	-0.03	-1	-1	0.37	-1	-0.53	-1	-1	-1	-1
OZ13j	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13k	-1	-0.08	-1	-1	-0.01	-0.01	-0.41	-1	-1	-1	0.14
OZ13l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13m	-1	-1	-1	-1	0.01	-1	-0.11	-1	-1	-1	-1
OZ13n	-1	-0.14	-1	0.63	-0.22	-1	-0.27	-1	-1	-1	-1
OZ13o	-1	0.05	-1	-1	0.04	-1	-0.7	-1	-1	-1	-1
OZ13p	-1	-1	-1	-1	-0.04	-1	-0.55	-1	0.58	-1	-0.74
OZ14a	-1	-0.13	-1	-1	-0.04	-1	0.43	-1	0.78	0.62	-0.87
OZ14b	-1	0.18	-1	-1	-0.05	-1	0.4	-1	0.94	0.87	-0.36
OZ14c	-1	-0.46	-1	-1	0.11	-0.48	0.52	-1	0.6	0.09	-0.47
OZ14d	-1	-0.3	0.96	-1	0.15	-1	0.39	-1	-0.27	-1	-1
OZ15a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ15b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ15c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ16a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ16b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ16c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1a	-1	0.22	-1	0.93	-0.48	-1	-1	-1	-1	-1	-1
OZ1b	-1	0.15	-1	-1	-0.5	-1	-0.5	-1	-1	-1	-1
OZ1c	-1	0.39	-1	-1	-0.74	-1	-0.69	-1	-1	-1	-1
OZ1d	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1e	-1	0.43	-1	-1	-0.4	-0.11	-0.49	-1	0.46	-1	-1
OZ1f	-1	0.51	-1	-1	-0.38	-1	-0.45	-1	-1	-1	-1
OZ1g	-1	0.34	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1h	-1	-0.08	-1	0.71	-0.3	-0.01	-0.41	-1	-1	-1	-0.05
OZ1i	-1	0.41	-1	-1	-0.25	-1	-0.91	-1	-1	-1	-0.12
OZ1j	-1	0.35	-1	-1	0.01	-1	-0.23	-1	-1	-1	-1
OZ1k	-1	0.4	-1	-1	0	-1	-1	-1	-1	-1	-1
OZ1l	-1	-1	-1	-1	0.31	-1	-1	-1	-1	-1	-1
OZ1m	-1	0.05	-1	-1	0.07	-1	-0.7	-1	-1	-1	-1
OZ2a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ2b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ3a	-1	-0.43	-1	-1	0.1	-1	-0.77	-1	-1	-1	-1
OZ3b	-1	-0.39	-1	-1	-0.15	-1	-0.75	-1	-0.04	-1	-1
OZ4a	-1	-0.55	-1	-1	-0.23	-0.76	0.15	-1	-1	-1	-1
OZ4b	-1	-0.01	-1	0.79	-0.46	-1	-0.12	-1	-1	-1	-1
OZ4c	-1	-0.14	-1	0.53	-0.09	-1	-0.05	-1	-1	-1	-1
OZ4d	-1	-1	-1	-1	-0.9	-1	0.17	-1	-1	-1	-1
OZ4e	-1	-0.65	-1	-1	-0.53	-1	0	-1	-0.38	-1	-1
OZ4f	-1	-0.54	-1	-1	-0.63	-1	-0.31	-1	0.52	-1	-1
OZ4g	-1	-0.5	-1	-1	0.2	-1	0.24	-1	-1	-1	-1
OZ4h	-1	-0.23	-1	-1	-0.43	-1	-0.32	-1	-1	-1	-1

OZ4i	-1	-0.52	-1	0.69	-0.57	-1	-0.42	-1	-1	-1	-1
OZ4j	-1	0.28	-1	0.72	-0.26	-1	-0.23	-1	-1	0.86	-1
OZ4k	-1	-0.78	-1	0.36	-0.3	-1	-0.41	-1	0.02	-1	-1
OZ4l	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ4m	-1	-0.14	-1	-1	-0.12	-1	-0.61	-1	-1	-1	-1
OZ4n	-1	0.01	-1	0.64	-0.19	-1	-0.45	-1	0.04	-1	-1
OZ4o	-1	-0.56	-1	-1	0.18	-1	-0.09	-1	-0.54	-1	-1
OZ4p	-1	0.04	-1	-1	-0.01	-1	-1	-1	-1	-1	-1
OZ4q	-1	0.18	-1	-1	-0.22	-1	-0.79	-1	-1	-1	-1
OZ5a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.42
OZ5aa	-1	-0.52	-1	-1	0.18	-1	-0.53	-1	-1	-1	-0.42
OZ5b	-1	-0.05	-1	-1	-0.36	-1	-0.46	-1	-1	-1	-1
OZ5bb	-1	-0.14	-1	-1	0.1	-1	-0.72	-1	-1	-1	-0.1
OZ5c	-1	-1	-1	0.89	0.38	-1	-0.52	-1	-1	-1	-1
OZ5cc	-1	0	-1	-1	0.07	-1	-0.85	-1	-1	-1	0
OZ5d	-1	0.22	-1	-1	0	-1	-0.9	-1	-1	-1	-1
OZ5dd	-1	-1	-1	-1	0.27	-1	-0.12	-1	0.34	-1	0.11
OZ5e	-1	-0.12	-1	0.66	-0.11	-0.65	-0.49	-1	-1	0.05	-1
OZ5f	-1	0.51	-1	-1	-0.2	-1	-0.91	-1	0.09	-1	0.25
OZ5g	-1	-1	-1	-1	-0.41	-1	-1	-1	-1	-1	-1
OZ5h	-1	0.18	-1	-1	0.02	-1	-0.9	-1	-1	-1	-0.15
OZ5i	-1	-1	-1	-1	-0.22	-1	-0.33	-1	-1	-1	-1
OZ5j	-1	-1	-1	-1	0.04	-1	-0.2	-1	-1	-1	0.15
OZ5k	-1	-1	-1	-1	0.31	-1	-0.68	-1	-1	-1	-1
OZ5l	-1	-1	-1	-1	0.01	-1	-1	-1	-1	-1	-1
OZ5m	-1	-1	-1	-1	-0.27	-1	0.26	-1	-1	-1	-1
OZ5n	-1	-1	-1	-1	-0.06	-1	-0.14	-1	-1	-1	-1
OZ5o	-1	-0.28	-1	-1	-0.59	-1	-1	-1	0.57	-1	-1
OZ5p	-1	-0.1	-1	-1	-0.4	-0.73	-0.09	-1	0.75	-1	-1
OZ5q	-1	0.7	0.99	-1	-0.65	-1	-1	-1	0.71	-1	-1
OZ5r	-1	-0.47	-1	0.52	-0.14	-1	-0.2	-1	0.91	-1	-1
OZ5s	-1	-1	-1	-1	-0.17	-1	-0.24	-1	0.94	-1	-1
OZ5t	-1	-1	-1	-1	-0.72	-1	-1	-1	-1	-1	-1
OZ5u	-1	-1	-1	-1	-0.1	-1	-1	-1	-1	-1	-1
OZ5v	-1	-0.45	-1	-1	-0.06	-1	-0.78	-1	-1	-1	-1
OZ5w	-1	0.54	0.96	-1	-0.09	-1	-0.5	-1	-1	-1	-0.71
OZ5x	-1	0.48	-1	-1	0.22	-1	0.06	-1	-1	-1	-1
OZ5y	-1	0.17	-1	0.66	0.1	-1	-0.76	-1	-1	-1	0.41
OZ5z	-1	-1	-1	-1	0.36	-1	-1	-1	-1	-1	-1
OZ6a	-1	-1	-1	-1	-0.08	-1	-0.32	-1	-1	-1	-1
OZ6b	-1	-1	-1	0.53	-0.49	0.28	-0.32	-1	-0.43	-1	0.05
OZ6c	-1	-1	-1	-1	-0.67	-0.26	-0.38	-1	-1	-1	-0.25
OZ6d	-1	-0.16	-1	0.08	0.12	-0.22	-0.63	-1	-0.08	-1	-0.48
OZ6e	-1	-0.29	-1	-1	-0.05	-0.31	-0.63	-1	-1	-1	-1
OZ6f	-1	-0.14	-1	-1	0.24	-1	-0.67	-1	-0.67	-1	-0.88
OZ6g	-1	-0.72	-1	0.49	0.14	-1	-0.51	-1	-1	-1	-1
OZ7a	-1	-0.42	-1	0.75	0.06	-1	-0.43	-1	-1	-1	-1
OZ7b	-1	-0.27	-1	-1	-0.06	-1	-1	-1	-0.24	-1	-1
OZ7c	-1	0.33	-1	-1	0.07	-1	-0.44	-1	-1	-1	-1
OZ7d	-1	-1	-1	0.85	-0.32	-1	-0.8	-1	-1	-1	-1
OZ7e	-1	-0.38	-1	-1	-0.08	0.12	-0.47	-1	-0.35	-1	-1
OZ7f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ7g	-1	0.15	-1	0.59	0.04	-1	-0.69	-1	-0.62	-1	-0.74
OZ7h	-1	-0.19	-1	-1	-0.3	-1	-1	-1	-1	-1	-1
OZ7i	-1	-1	-1	-1	0.03	-1	-0.74	-1	-1	-1	-1
OZ7j	-1	-1	-1	-1	0.09	-1	-0.49	-1	-1	-1	-1
OZ7k	-1	-0.36	-1	-1	0.17	-1	-0.7	-1	-1	-1	-1
OZ8a	-1	-0.53	-1	-1	0.27	-1	-0.54	-1	-1	-1	-0.66
OZ8b	-1	-0.3	-1	-1	0.08	-1	-0.31	-1	-1	-1	-1
OZ8c	-1	-0.12	-1	0.47	0.16	-1	0.17	-1	-1	-1	-0.32
OZ8d	-1	-0.03	-1	-1	0.17	-1	0.1	-1	-1	-1	-1
OZ8e	-1	0.2	-1	-1	0.2	-1	0.09	-1	-1	-1	-1
OZ8f	-1	-0.17	-1	-1	0.26	-1	0.01	-1	-1	-1	-0.73
OZ8g	-1	0.21	-1	0.45	0.23	-1	-0.02	-1	-0.21	-1	-0.18
OZ8h	-1	0.48	-1	-1	0.26	-1	0.16	-1	-1	-1	-1
OZ8i	-1	0.05	-1	-1	-0.08	-1	-0.09	-1	-1	-1	-0.16
OZ8j	-1	-0.68	-1	-1	0.11	-1	-0.08	-1	-1	-1	-0.78
OZ8k	-1	0.73	-1	-1	0.19	-1	-0.15	-1	-1	-1	0.54
OZ9a	-1	-0.32	-1	-1	0.09	-1	0.63	-1	-0.47	-1	-1
OZ9b	-1	-0.62	-1	-1	0.09	-1	0.58	-1	-0.1	-1	-0.9

OZ9c	-1	-1	-1	-1	0.07	-1	0.66	-1	0.33	-1	-1
OZ9d	-1	-0.24	-1	-1	0.17	-0.82	0.59	-1	-0.39	-1	-0.66
OZ9e	-1	-0.67	-1	-1	-0.05	-1	0.26	-1	-0.23	-1	-1
OZ9f	-1	-1	-1	-1	0.09	-1	0.73	-1	-1	-1	-1
OZ9g	-1	0.2	-1	-1	-0.01	-1	0.48	-1	0.23	-1	-1
OZ9h	-1	-0.66	-1	-1	0.12	-1	0.56	-1	-1	-1	-1
OZ9i	-1	0.32	-1	-1	0.08	-1	0.58	-1	-1	-1	-1
TP1a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP1b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP1c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP1d	-1	-1	-1	-1	-0.84	-1	-1	-1	-1	-1	-1
TP2a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP2b	-1	-1	-1	-1	-1	0.89	-1	-1	-1	-1	-1
TP2c	-1	-1	-1	-1	-1	0.68	-1	-1	-1	-1	-1
TP3a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP3b	-1	-0.18	-1	-1	-0.9	0.7	-1	-1	-1	-1	0.01
TP3c	-1	0.42	-1	-1	-0.69	0.81	-1	-1	-1	-1	-1
TP3d	-1	0.37	-1	-1	-0.46	-1	-1	-1	-1	-1	-1
TP3e	-1	-0.03	-1	-1	-0.68	0.64	-0.74	-1	-1	-1	0.1
TP3f	-1	-0.03	-1	-1	-0.46	-0.05	-0.86	-1	-1	-1	0.79
TP4a	-1	-1	-1	-1	-1	0.77	-0.21	-1	-1	-1	-1
TP4b	-1	-0.46	-1	-1	-0.57	0.47	-1	-1	-1	-1	0.66
TP4c	-1	0.25	-1	-1	-1	-1	-1	-1	-1	-1	0.8
TP4d	-1	0.01	-1	-1	-0.37	0.89	-1	-1	-1	-1	0.84
TP4e	-1	-0.29	-1	-1	-0.85	-1	-0.84	-1	-1	-1	-0.47
TP4f	-1	0.35	-1	-1	-0.34	0.55	-0.92	-1	-1	-1	0.16
TP4g	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP4h	-1	-1	-1	-1	0.08	0.32	-1	-1	-1	-1	-1
TP4i	-1	-0.18	-1	-1	0.18	0.78	-1	-1	-1	-1	0.16
TP4j	-1	0.52	-1	-1	-0.02	0.66	-0.66	-1	-1	-1	0.11
TP4k	-1	0.03	-1	-1	-0.89	0.91	-1	-1	-1	-1	0.17
TP5a	-1	-1	-1	-1	-1	0.91	-1	-1	-1	-1	-1
TP5b	-1	0.71	-1	-1	0.29	0.47	-1	-1	-1	-1	0.7
TP5c	-1	0.66	-1	-1	0.11	0.76	-1	-1	-1	-1	0.84
TP5d	-1	0.39	-1	-1	0.27	0.46	-0.96	-1	-1	-1	0.59
TP5e	-1	0.11	-1	-1	0.14	-0.25	-0.9	-1	-1	-1	0.45
TP5f	-1	0.62	-1	-1	-0.32	-0.1	-1	-1	-1	-1	0.87
TP6a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP6b	-1	0.3	-1	-1	-0.06	0.7	-0.86	-1	-1	-1	0.68
TP6c	-1	0.27	-1	-1	-1	-1	0.44	-1	-1	-1	0.39
TP6d	-1	0.56	-1	-1	-0.26	0.83	-0.46	-1	-1	-1	0.72
TP6e	-1	0	-1	-1	-0.27	0.87	-1	-1	-1	-1	0.61
TP6f	-1	0.13	-1	-1	-0.1	0.74	-1	-1	-1	-1	0.77
TP6g	-1	0.91	-1	-1	0.15	-1	-1	-1	-1	-1	0.87
TP6h	-1	-1	-1	-1	-0.09	0.95	-1	-1	-1	-1	-1
TP7a	-1	0.02	-1	-1	-0.67	0.89	-1	-1	-1	-1	-1
TP7b	-1	0.66	-1	-1	-0.61	-1	-1	-1	-1	-1	0.62
TP7c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.95
TP7d	-1	0.19	-1	-1	-0.8	0.96	-1	-1	-1	-1	0.84
TP7e	-1	0.91	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP7f	-1	-0.12	-1	-1	0.2	0.64	-1	-1	-1	-1	0.88
TP7g	-1	0.54	-1	-1	0.26	0.65	-0.38	-1	-1	-1	0.53
TP7h	-1	0.49	-1	-1	0.02	0.91	-1	-1	-1	-1	0.75
TP7i	-1	-1	-1	-1	-1	0.6	-1	-1	-1	-1	0.47
TP8a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP8b	-1	0.52	-1	-1	0.15	0.24	-1	-1	-1	-1	0.71
TP8c	-1	0.25	-1	-1	0.05	0.79	-0.72	-1	-1	-1	0.69
TP8d	-1	0.22	-1	0.92	0.18	0.5	-0.83	-1	-1	-1	0.17
TP8e	-1	0.36	-1	-1	0.3	0.43	-0.68	-1	-1	-1	0.5
TP8f	-1	0.48	-1	-1	0.03	-1	-1	-1	-1	-1	0.3
TP9a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP9b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP9c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP9d	-1	0.12	-1	-1	-1	0.76	-1	-1	-1	-1	0.54

Table B7: Electivity of overcup oak (822), bur oak (823), blackjack oak (824), swamp chestnut oak (825), chinkapin oak (826), pin oak (830), willow oak (831), chestnut oak (832), northern red oak (833), Shumard oak (834), and post oak (835) in Missouri's LTAs. The number in parentheses is the species code identifier from the FIA database. "NA" indicates where no information is available.

LTA	822	823	824	825	826	830	831	832	833	834	835
MB1a	0.99	-1	-1	-1	-1	0.65	1	-1	-1	-1	-1
MB1b	-1	0.88	-1	0.98	-1	0.76	0.99	-1	-1	-1	-1
MB1c	-1	-1	-1	-1	-1	0.62	1	-1	-1	0.94	0.17
MB1d	1	-1	-1	-1	-1	0.93	0.96	-1	-1	-1	-1
MB1e	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB1f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB2a	-1	-1	-1	-1	-1	-1	-1	-1	-0.28	-1	-0.76
MB2b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB3a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB3b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB3c	-1	-1	-1	-1	-1	-1	0.99	-1	-1	0.99	-1
MB3d	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB4b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4c	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4d	0.96	-1	-1	-1	-1	0.78	-1	-1	-1	0.93	-1
MB4e	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4j	0.99	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
MB4k	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4l	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OP1a	-1	0.56	-1	-1	-1	0.91	-1	-1	-0.33	-1	-1
OP1b	-1	0.72	-1	-1	0.28	-1	-1	-1	-0.07	-1	-0.9
OP1c	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OP1d	-0.7	-0.32	-1	-1.22	-0.63	-0.88	-1.57	-1	-0.57	-0.68	-1.06
OP1e	-0.73	-0.28	-1	-1.26	-0.6	-0.97	-1.74	-1	-0.54	-0.69	-1.09
OP1f	-1	0.8	-1	-1	0.54	0.83	-1	-1	0.27	-1	-0.91
OP1g	-1	0.49	-1	-1	0.38	0.17	-1	-1	0.38	-1	-0.24
OP1h	-1	0.87	-1	-1	0.11	0.72	-1	-1	0.1	-1	-0.82
OP1i	-1	0.43	-0.6	-1	0.12	0.71	-1	-1	-0.48	-1	0.09
OP1j	-1	0.43	-0.6	-1	0.12	0.71	-1	-1	-0.48	-1	0.09
OP2a	-1	-1	-1	-1	-1	0.79	-1	-1	-1	-1	-1
OP2b	-1	0.42	-1	-1	-1	0.84	-1	-1	-1	-1	-1
OP2c	-1	-0.21	-0.18	-1	-0.03	0.68	-1	-1	-0.57	-1	-0.37
OP2d	-1	0.69	-1	-1	-1	0.74	-1	-1	-1	-1	-0.52
OP2e	-1	0.75	-1	-1	-1	0.89	-1	-1	0.13	0.96	0.11
OP2f	-1	0.57	-0.1	-1	-1	0.89	-1	-1	-0.49	-1	-0.21
OP2g	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OP2h	-1	-0.48	0.34	-1	-0.53	0.69	-1	-1	-0.34	-1	0.37
OP2i	-1	-1	-0.66	-1	-1	0.94	-1	-1	-0.21	-1	-0.16
OP2j	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.62
OZ10a	-1	-1	-0.89	-1	-0.61	-1	-1	-1	0.48	-1	-0.45
OZ10b	0.26	-0.59	-0.14	0.79	0.12	-0.69	-1	-1	-0.36	-1	-0.01
OZ10c	-1	-1	-0.49	-1	-0.69	-1	-1	-1	-0.83	-1	0.32
OZ10d	-1	-1	-0.76	-1	-0.51	-0.86	-1	-1	-0.37	-1	-0.54
OZ11a	-1	-1	-1	0.82	0.18	-1	-1	-1	-0.06	-1	0.08
OZ11b	-1	-1	-0.5	-1	-0.4	-1	-1	-1	0.27	-1	0.33
OZ12a	-1	0.69	-1	-1	0.45	0.6	-1	-1	0.19	-1	-0.27
OZ12aa	-1	-1	-1	-1	-0.48	-1	-1	-1	-0.49	-1	-0.27
OZ12b	-1	-1	-1	-1	-1	-1	-1	-1	0.65	-1	-1
OZ12bb	-1	-1	-1	-1	-1	-1	-1	-1	0.14	-1	-0.77
OZ12c	-1	-1	-1	-1	0.04	-1	-1	-1	-0.31	-1	-0.88
OZ12cc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12d	-1	-1	-1	-1	0.51	-1	-1	-1	-0.4	-1	-0.9
OZ12e	-1	-0.25	-1	0.9	0.27	-0.4	-1	-1	0.08	0.85	-0.96
OZ12f	-1	0.61	-1	-1	0.51	0.13	-1	-1	0.32	-1	-0.82
OZ12g	-1	0.52	-1	-1	0.21	-0.13	-1	-1	-0.74	-1	-1

OZ12h	-1	-1	-1	0.9	0.65	-1	-1	-1	0.52	-1	-0.6
OZ12i	-1	-0.49	-0.91	-1	0.56	-0.6	-1	-1	0.51	0.07	-0.5
OZ12j	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12k	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12m	-1	0.29	-0.67	0.71	-0.41	0.36	-1	-1	-0.37	-1	-0.13
OZ12n	-1	-1	-0.72	-1	-0.47	-1	-1	-1	0.1	-1	-0.5
OZ12o	-1	-1	-1	-1	0.81	-1	-1	-1	-1	-1	0.05
OZ12p	-1	-1	-1	-1	-1	-1	-1	-1	0.29	-1	-1
OZ12q	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12r	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12s	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12t	-1	-1	-1	-1	-1	-1	-1	-1	-0.03	-1	-0.63
OZ12u	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ12v	-1	-1	-1	-1	0.43	-1	-1	-1	0.55	-1	-0.15
OZ12w	-1	-1	-1	-1	-0.43	-1	-1	-1	0.15	-1	0.3
OZ12x	-1	-1	0.55	-1	0.38	-1	-1	-1	0.39	-1	0.16
OZ12y	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12z	-1	-1	-0.78	-1	-1	-1	-1	-1	-0.43	0.98	-0.33
OZ13a	-1	-1	-1	-1	0.32	-1	-1	-1	0.44	-1	-0.12
OZ13b	-1	0.58	-1	-1	0.56	-1	-1	-1	0.51	-1	0.34
OZ13c	-1	-1	-1	-1	0.73	-1	-1	-1	0.29	-1	0.3
OZ13d	-1	-1	-0.59	-1	-0.01	-1	-1	-1	0.1	-1	0.22
OZ13e	-1	-1	-1	-1	0.3	-1	-1	-1	0.6	-1	-0.18
OZ13f	-1	-1	0.74	-1	0.59	-1	-1	-1	-1	-1	-0.38
OZ13g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13i	-1	-1	-1	-1	0.57	-1	-1	-1	0.16	-1	-0.41
OZ13j	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13k	-1	-0.6	-0.5	-1	-0.16	-0.69	-1	-1	-0.34	-1	0.25
OZ13l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13m	-1	-1	-0.21	-1	0.03	-1	-1	-1	0.46	-1	-0.19
OZ13n	-1	-1	0.05	0.72	0.32	-1	-1	-1	-0.27	-1	0.45
OZ13o	-1	-1	0.51	-1	-1	-1	-1	-1	0.16	-1	0.07
OZ13p	-1	-1	-0.92	-1	-0.36	-0.35	-1	-1	-0.83	-1	-0.39
OZ14a	-1	-1	-0.34	-1	-1	-0.79	-1	-1	-0.8	-1	0.28
OZ14b	-1	-1	-0.87	-1	-1	-0.45	0.9	-1	-0.64	-1	0.03
OZ14c	-1	-1	-0.48	-1	-0.85	-1	-1	-1	-0.61	0.47	-0.09
OZ14d	-1	-1	-0.05	-1	-0.79	-1	-1	-1	-0.89	-1	-0.06
OZ15a	-1	-1	-1	-1	-0.64	-0.3	-1	-1	-0.81	-1	-1
OZ15b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ15c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ16a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ16b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ16c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ1a	-1	-1	-1	-1	-1	0.25	-1	-1	-1	-1	-0.13
OZ1b	-1	-1	-0.03	-1	0.13	-1	-1	-1	-0.87	-1	0.44
OZ1c	-1	-1	-0.28	-1	0.64	-1	-1	-1	-0.17	-1	0.34
OZ1d	-1	-1	0.57	-1	-1	-1	-1	-1	-1	-1	0.29
OZ1e	-1	-1	0.56	-1	0.33	-1	-1	-1	-0.84	-1	0.14
OZ1f	-1	-0.68	0.24	-1	-0.07	-1	-1	-1	-0.81	0.59	0.32
OZ1g	-1	-1	-1	-1	-0.07	-1	-1	-1	-1	-1	0.34
OZ1h	-1	-1	-0.13	-1	-0.16	0.19	-1	-1	-0.81	-1	0.27
OZ1i	-1	-1	-0.06	-1	0.36	-1	-1	-1	0.27	-1	0.22
OZ1j	-1	-1	0.16	0.79	0.2	-1	-1	-1	0.04	0.68	-0.12
OZ1k	-1	-1	-0.26	-1	-0.33	-1	-1	-1	-0.08	-1	0.02
OZ1l	-1	-1	-0.23	-1	-1	-1	-1	-1	0.45	-1	-0.36
OZ1m	-1	-1	0.41	-1	-1	-1	-1	-1	-1	-1	0.31
OZ2a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ2b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ3a	-1	-1	-0.04	0.81	0.21	-1	-1	-1	0.4	0.6	-0.15
OZ3b	-1	-1	0.29	-1	-0.28	-1	-1	-1	-0.76	-1	0.22
OZ4a	-1	-1	0.13	-1	0.43	-1	-1	-1	0.28	0.37	-0.14
OZ4b	-1	-1	-0.44	-1	0.3	-1	-1	-1	0.14	-1	0.17
OZ4c	-1	-0.57	-0.54	-1	0.33	-1	-1	-1	0.47	0.47	-0.37
OZ4d	-1	-1	-0.56	-1	0.66	-1	-1	-1	0.09	-1	0.24
OZ4e	-1	-1	0.14	-1	0.21	-1	-1	-1	0.22	-1	0.35
OZ4f	-1	-1	0.54	-1	-0.77	-1	-1	-1	-0.78	-1	0.44
OZ4g	-1	-1	-0.58	-1	-0.28	-1	-1	-1	0.21	-1	-0.21
OZ4h	-1	-1	0.46	-1	0.53	-1	-1	-1	-0.77	-1	0.29

OZ4i	-1	-1	0.24	-1	0.31	-1	-1	-1	0.34	-1	0.11
OZ4j	-1	-1	0.32	-1	0.25	-1	-1	-1	0.01	0.68	-0.03
OZ4k	-1	-1	0.46	-1	0.07	-1	-1	-1	-0.17	0.29	0.25
OZ4l	-1	-1	0.81	-1	-1	-1	-1	-1	-1	-1	0.7
OZ4m	-1	-1	0.44	-1	-0.28	-1	-1	-1	0.01	-1	0.07
OZ4n	-1	-1	0.46	-1	-0.64	-1	-1	-1	-0.65	-1	0.21
OZ4o	-1	-1	0.13	-1	-0.35	-1	-1	-1	-0.31	-1	-0.04
OZ4p	-1	-1	0.43	-1	-1	-1	-1	-1	-0.74	-1	-0.03
OZ4q	-1	-1	0.3	-1	-0.24	-1	-1	-1	0.59	-1	-0.3
OZ5a	-1	-1	-1	-1	0.87	-1	-1	-1	-1	-1	-0.03
OZ5aa	-1	-1	-0.6	-1	-0.2	-1	-1	0.97	-0.26	-1	0.42
OZ5b	-1	-1	-0.05	-1	0.36	-1	-1	-1	-0.45	0.91	0.44
OZ5bb	-1	-1	0.41	-1	-1	-1	-1	-1	-0.81	-1	0.47
OZ5c	-1	-1	-0.27	-1	-0.41	-1	-1	-1	-0.24	-1	0.1
OZ5cc	-1	-1	0.16	-1	-0.47	-1	-1	-1	-0.18	-1	0.46
OZ5d	-1	-1	0.46	-1	-0.77	-1	-1	-1	-0.59	-1	0.34
OZ5dd	-1	-1	-1	-1	0.24	-1	-1	-1	0.58	-1	-0.4
OZ5e	-1	-0.85	0.56	-1	-0.61	-1	-1	-1	-0.52	0.43	0.28
OZ5f	-1	-1	0.51	-1	-1	-1	-1	-1	-0.89	-1	0.5
OZ5g	-1	-1	0.02	-1	0.54	-1	-1	-1	0.1	-1	0.52
OZ5h	-1	-1	0.17	-1	0.11	-1	-1	-1	-0.03	-1	0.46
OZ5i	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0.43
OZ5j	-1	-1	-1	-1	-1	-1	-1	-1	0.27	-1	-0.32
OZ5k	-1	-1	0.53	-1	-1	-1	-1	-1	0.1	-1	0.44
OZ5l	-1	-1	0.54	-1	-1	-1	-1	-1	-1	-1	0.3
OZ5m	-1	-1	0.65	-1	-1	-1	-1	-1	-1	-1	0.36
OZ5n	-1	-1	0.63	-1	-1	-1	-1	-1	-0.24	-1	0.35
OZ5o	-1	-1	0.68	-1	-1	-1	-1	-1	-1	-1	0.41
OZ5p	-1	-0.35	0.71	-1	-0.45	-1	-1	-1	-0.87	0.1	0.23
OZ5q	-1	-1	0.16	-1	-1	-1	-1	-1	-1	-1	0.25
OZ5r	-1	-1	0.03	-1	-0.74	-1	-1	-1	-0.46	-1	0.01
OZ5s	-1	-1	-1	-1	-1	0.83	-1	-1	-0.77	-1	0.13
OZ5t	-1	-1	0.61	-1	-1	-1	-1	-1	-0.46	-1	0.31
OZ5u	-1	-1	0.6	-1	-1	-1	-1	-1	-1	-1	0.31
OZ5v	-1	-1	0.41	-1	-0.72	-1	-1	-1	-0.36	-1	0.39
OZ5w	-1	-1	0.57	-1	-0.8	-1	-1	-1	-0.81	-1	0.38
OZ5x	-1	-1	0.41	-1	-1	-1	-1	-1	-0.77	0.65	-0.04
OZ5y	-1	-1	0.39	-1	-1	-1	-1	-1	-1	-1	0.3
OZ5z	-1	-1	0.55	-1	-1	-1	-1	-1	-1	-1	0.47
OZ6a	-1	-1	0.43	-1	0.36	0.5	-1	-1	0.19	-1	0.27
OZ6b	-1	-0.09	-0.04	-1	0.71	-1	-1	0.96	0.49	-1	0.24
OZ6c	-1	-1	-0.2	-1	0.62	-1	-1	-1	0.31	0.64	0.32
OZ6d	-1	-1	0.21	0.23	0.17	-1	-1	-1	0.2	-1	0.22
OZ6e	-1	-1	0.5	-1	0.31	-1	-1	-1	0.48	0.61	0.04
OZ6f	-1	-0.76	-0.27	-1	0.38	-1	-1	-1	0.5	-1	-0.02
OZ6g	-1	-0.34	-0.88	-1	0.58	-0.7	-1	-1	0.31	-1	-0.26
OZ7a	-1	-1	0	-1	-0.48	-1	-1	-1	0.17	0.51	0.21
OZ7b	-1	-1	0.26	-1	-0.6	-1	-1	-1	-0.47	-1	0.18
OZ7c	-1	-1	0.2	-1	-0.71	-1	-1	-1	-0.5	-1	0.04
OZ7d	-1	-1	0.39	-1	-1	-1	-1	-1	-1	-1	0.56
OZ7e	-1	-1	-0.31	-1	-0.83	-1	-1	-1	-0.41	-1	-0.14
OZ7f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ7g	-1	-1	0.15	-1	-0.11	-1	-1	-1	-0.15	-1	-0.14
OZ7h	-1	-1	0.1	-1	0.08	-1	-1	-1	-0.4	-1	0.36
OZ7i	-1	-1	-0.22	-1	-0.44	-1	-1	-1	-0.2	-1	0.19
OZ7j	-1	-1	-0.15	-1	-1	-1	-1	-1	-0.24	-1	-0.03
OZ7k	-1	-1	0	-1	0.29	-1	-1	-1	0.11	-1	-0.01
OZ8a	-1	-0.63	-0.01	-1	-0.5	-1	-1	-1	-0.04	-1	-0.14
OZ8b	-1	-1	0.34	-1	-1	-1	-1	-1	-0.49	-1	0.41
OZ8c	-1	-1	0.13	-1	-1	-1	-1	-1	-0.44	0.41	0.12
OZ8d	-1	-1	-1	-1	0.46	-1	-1	-1	-0.21	-1	-0.32
OZ8e	-1	-1	-0.06	-1	-0.22	-1	-1	-1	0.14	-1	-0.03
OZ8f	-1	-1	-0.25	-1	-0.43	-0.78	-1	-1	0.08	-1	-0.1
OZ8g	-1	-1	-0.2	-1	0.02	-1	-1	-1	0.21	-1	-0.28
OZ8h	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-0.76
OZ8i	-1	-0.51	-0.77	0.68	0.56	-0.62	-1	-1	-0.02	-1	0.12
OZ8j	-1	-1	0.04	-1	-0.85	-1	-1	-1	-0.4	-1	0.22
OZ8k	-1	-1	-0.28	-1	0.42	-1	-1	-1	-0.61	-1	0.08
OZ9a	-1	-1	0.18	-1	-1	-1	-1	-1	-0.87	-1	-0.02
OZ9b	-1	-1	-0.24	-1	-0.26	-1	-1	-1	-0.44	-1	-0.26

OZ9c	-1	-1	-0.11	-1	-0.73	-1	-1	-1	-0.3	-1	-0.32
OZ9d	-1	-0.86	-0.52	-1	-0.77	-1	-1	0.85	-0.44	-0.13	-0.39
OZ9e	-1	-1	-0.57	-1	-0.2	-1	-1	-1	-0.28	-1	-0.78
OZ9f	-1	-1	-1	-1	-1	-1	-1	-1	0.34	-1	-0.91
OZ9g	-1	-1	0.02	-1	0.32	-1	-1	-1	-0.36	-1	-0.63
OZ9h	-1	-0.54	-0.78	-1	-0.18	-1	-1	-1	-0.06	-1	-0.8
OZ9i	-1	-1	-0.22	-1	0.05	-1	-1	-1	-0.42	-1	-0.38
TP1a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP1b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP1c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP1d	-1	0.54	-1	-1	-1	0.87	-1	-1	-0.36	-1	-1
TP2a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP2b	-1	0.68	-1	1	0.2	-1	-1	-1	0.29	-1	-0.84
TP2c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP3a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP3b	-1	0.64	-1	-1	0.54	-0.69	-1	-1	0.04	-1	-1
TP3c	-1	0.88	-1	-1	-1	-1	-1	-1	0.34	-1	-1
TP3d	-1	0.81	-1	-1	-0.36	-1	-1	-1	0.23	-1	-1
TP3e	-1	0.81	-1	-1	0.57	-1	-1	-1	-0.34	-1	-1
TP3f	-1	0.66	-1	-1	0.29	-0.33	-1	-1	-0.26	-1	-0.59
TP4a	-1	0.09	-1	-1	-1	0.89	-1	-1	-1	-1	-1
TP4b	-1	0.9	-1	0.63	-0.52	-1	-1	-1	0.32	-1	-0.91
TP4c	-1	0.85	-1	-1	-1	-1	-1	-1	0.16	-1	-0.85
TP4d	-1	0.93	-1	-1	-1	-1	-1	-1	0.12	-1	-1
TP4e	-1	0.66	-1	-1	0.53	-1	-1	-1	-0.11	-1	-0.9
TP4f	-1	0.82	-1	-1	0	0.43	-1	-1	-0.14	-1	-0.68
TP4g	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP4h	-1	0.91	-1	-1	0.27	0.04	-1	-1	0.73	-1	-0.33
TP4i	-1	0.92	-1	-1	-1	-1	-1	-1	0.08	-1	-1
TP4j	-1	0.79	-1	-1	-1	0.65	-1	-1	-0.43	-1	-1
TP4k	-1	-0.12	-1	-1	-1	0.85	-1	-1	-1	-1	-0.62
TP5a	-1	-1	-1	-1	-1	0.84	-1	-1	-1	-1	-1
TP5b	-1	-1	-1	-1	-1	-1	-1	-1	0.41	-1	-1
TP5c	-1	0.84	-0.14	-1	-1	-1	-1	-1	-0.43	-1	0.19
TP5d	-1	0.67	-0.18	-1	-0.47	0.29	-1	-1	0.53	-1	-0.89
TP5e	-1	0.67	-1	-1	-1	0.7	-1	-1	0.08	-1	-0.37
TP5f	-1	0.12	-1	-1	-0.29	0.77	-1	-1	0.26	-1	-0.96
TP6a	-1	0.97	-1	-1	-1	0.83	-1	-1	-1	-1	-1
TP6b	-1	0.41	-1	-1	-1	0.68	-1	-1	-0.44	-1	-0.64
TP6c	-1	-1	-1	-1	-1	0.95	-1	-1	-0.47	-1	-1
TP6d	-1	0.59	-1	-1	-0.29	0.86	-1	-1	-0.5	-1	-0.51
TP6e	-1	0.75	-1	-1	-0.75	0.91	-1	-1	0.02	-1	-0.43
TP6f	-1	-0.22	-1	-1	-0.15	0.82	-1	-1	0.31	-1	-1
TP6g	-1	-1	-1	-1	-1	-1	-1	-1	0.5	-1	-1
TP6h	-1	-1	-1	-1	-1	-1	-1	-1	0.07	-1	-1
TP7a	-1	-1	-1	-1	-1	0.8	-1	-1	0.5	-1	-1
TP7b	-1	0.65	-1	-1	-1	0.68	-1	-1	0.2	-1	-1
TP7c	-1	-1	-1	-1	-1	0.96	-1	-1	-1	-1	-1
TP7d	-1	0.88	-1	-1	-1	0.9	-1	-1	-1	-1	-1
TP7e	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP7f	-1	-1	-1	-1	-1	0.74	-1	-1	-0.72	-1	-0.44
TP7g	-1	0.57	-0.78	-1	-0.44	0.71	-1	-1	0.3	-1	-0.48
TP7h	-1	-1	-1	-1	-1	-1	-1	-1	0.33	-1	-0.1
TP7i	-1	0.52	-1	-1	-1	0.39	-1	-1	-1	-1	0.36
TP8a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP8b	-1	-0.08	-1	-1	-0.61	0.1	-1	-1	0.35	-1	-0.82
TP8c	-1	0.55	-1	-1	0.45	0.58	-1	-1	0.18	-1	-0.82
TP8d	-1	0.18	-1	-1	0.27	-1	-1	-1	0.27	-1	-0.53
TP8e	-1	0.4	-0.95	-1	-0.02	-1	-1	-1	0.01	-1	-0.34
TP8f	-1	-1	-1	-1	-1	-1	-1	-1	-0.15	-1	0.12
TP9a	-1	-1	-1	-1	-1	0.74	-1	-1	-1	-1	-1
TP9b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP9c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP9d	-1	0.31	-1	-1	-1	0.88	-1	-1	-1	-1	-1

Table B8: Electivity of black oak (837), black locust (901), peachleaf willow (921), black willow (922), sassafras (931), American basswood (951), winged elm (971), American elm (972), Siberian elm (974), slippery elm (975), and rock elm (977) in Missouri's LTAs. The number in parentheses is the species code identifier from the FIA database. "NA" indicates where no information is available.

LTA	837	901	921	922	931	951	971	972	974	975	977
MB1a	-0.5	-1	-1	-1	-1	-1	0.85	-1	-1	-1	-1
MB1b	-1	-1	-1	-1	-1	-1	-1	0.42	-1	0.32	-1
MB1c	-0.52	-1	-1	-1	-1	-1	0.48	-0.16	-1	-1	0.91
MB1d	-0.94	-1	-1	0.48	-1	-1	-1	0.34	-1	-1	-1
MB1e	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB1f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB2a	-0.06	-1	-1	-0.34	0.26	-1	0.58	0.28	-1	0.01	0.42
MB2b	-1	-1	-1	0.99	-1	-1	-1	-1	-1	-1	-1
MB3a	-1	-1	-1	0.96	-1	-1	-1	-0.19	-1	-1	-1
MB3b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB3c	-1	-1	-1	0.85	-1	-1	-1	0.51	-1	0.53	-1
MB3d	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4a	-1	-1	-1	-1	0.68	-1	-1	0.5	-1	-1	-1
MB4b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4c	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4d	-0.75	-1	-1	0.72	-1	-1	-1	-0.19	-1	0.03	-1
MB4e	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4j	-1	-1	-1	0.97	-0.08	-1	-1	0.1	-1	-1	-1
MB4k	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MB4l	-1	-1	-1	0.98	-1	-1	-1	0.16	-1	-1	-1
OP1a	-1	-1	-1	-1	-1	-1	-1	0.45	-1	-1	-1
OP1b	-0.89	-1	-1	-1	-1	0.85	-1	0.64	-1	0.19	-1
OP1c	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OP1d	-1.05	-1	-1	0.31	-0.64	-0.47	-1.4	0.49	-1	-0.52	-1.16
OP1e	-1.08	-1	-1	0.35	-0.63	-0.42	-1.49	0.54	-1	-0.52	-1.22
OP1f	-0.58	0.68	-1	-0.32	-1	-1	-1	0.69	-1	0.03	-1
OP1g	-0.48	-1	-1	-1	-1	-1	-1	0.57	-1	0.42	-1
OP1h	-0.86	-1	-1	-1	-1	-1	-1	0.64	-1	0.76	-1
OP1i	-0.32	0.81	-1	0.54	-1	-1	-1	0.37	-1	-1	-1
OP1j	-0.32	0.81	-1	0.54	-1	-1	-1	0.37	-1	-1	-1
OP2a	-1	-1	-1	0.91	-1	-1	-1	-0.16	-1	0.39	-1
OP2b	-1	0.22	-1	0.09	-1	-1	-1	0.45	-1	-0.53	-1
OP2c	-0.23	0.11	-1	-0.02	-1	-1	-0.24	0.62	-1	0.64	-1
OP2d	-0.93	-1	-1	-1	-1	-1	-1	0.58	-1	0.74	-1
OP2e	-0.54	-1	-1	0.27	-1	-1	-1	0.67	-1	-0.06	-1
OP2f	-0.45	0.4	-1	-0.05	-1	-1	-1	0.5	-1	-1	-1
OP2g	-1	-1	-1	-1	-1	-1	-1	0.22	-1	-1	-1
OP2h	0.15	-1	-1	-1	-1	-1	-1	0.04	-1	-0.57	-1
OP2i	-0.61	-1	-1	0.55	-1	-1	-1	0.68	-1	-0.26	-1
OP2j	0.15	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ10a	0	-0.42	-1	-1	0.07	-1	0.56	-0.79	-1	-0.78	-1
OZ10b	-0.29	-1	-1	-1	0.09	-1	0.1	-0.06	-1	0	-0.02
OZ10c	-0.1	-1	-1	-1	-0.29	-1	0.83	-0.17	-1	-0.01	0.75
OZ10d	0.12	-0.67	-1	-1	0.04	-1	-0.35	-0.65	-1	-0.4	-0.14
OZ11a	-0.33	0.57	-1	-1	-0.11	-1	-1	0.21	-1	-0.16	-1
OZ11b	-0.15	-1	-1	-1	-1	-1	-1	0.1	-1	0.31	-1
OZ12a	-0.55	-1	-1	-1	-1	-1	-1	0.5	-1	0.51	-1
OZ12aa	-0.35	-1	-1	-1	0.22	-1	0.49	0.38	-1	0.48	0.39
OZ12b	-0.55	-1	-1	-1	-1	-1	-1	-0.19	-1	0.36	-1
OZ12bb	-0.21	-1	-1	-1	0.76	-1	0.38	0.14	-1	0.62	-1
OZ12c	-1	0.57	-1	0.75	0.41	0.82	-1	0.61	-1	0.18	-1
OZ12cc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12d	-0.62	-1	-1	0.54	-1	0.61	-1	0.05	-1	0.08	0.84
OZ12e	-0.51	0.65	-1	-1	-0.59	0.53	-1	0.4	-1	0.55	-1
OZ12f	-0.47	0.78	-1	0.46	-1	-1	-1	0.55	-1	0.16	-1
OZ12g	-0.53	-1	-1	-1	-1	-1	-1	0.53	-1	-0.1	-1

OZ12h	-0.59	-1	-1	-0.65	-1	0.77	-1	-0.16	-1	0.39	-1
OZ12i	-0.28	0.58	-1	-1	-0.44	-0.03	-1	-0.35	-1	0.24	0.12
OZ12j	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12k	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12m	-0.23	-1	-1	-1	-0.36	0.6	-1	0.38	-1	0.17	-1
OZ12n	-0.17	-1	-1	-1	0.57	-1	-1	-0.38	-1	0.41	-1
OZ12o	-1	-1	-1	-1	-1	-1	-1	0.33	-1	-1	-1
OZ12p	-1	-1	-1	-1	-1	0.94	-1	-1	-1	-1	-1
OZ12q	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12r	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12s	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12t	0.08	-1	-1	0.54	-0.03	-1	-1	0.31	-1	-1	-1
OZ12u	-1	-1	-1	-1	-1	-1	-1	-0.03	-1	-1	-1
OZ12v	-0.19	-1	-1	-1	0.19	0.02	-1	-0.18	-1	0.45	-1
OZ12w	-0.33	-1	-1	-1	0.27	-1	-1	0.2	-1	0.22	0.67
OZ12x	-0.05	0.61	-1	-1	-0.05	-1	-0.2	-1	-1	-0.57	-1
OZ12y	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ12z	0.05	-1	-1	-1	0.53	-1	0.56	-0.37	-1	-0.47	-1
OZ13a	-0.4	-1	-1	-1	-1	0.35	-1	0.16	-1	-0.07	-1
OZ13b	-0.7	-1	-1	-1	-0.42	-1	-1	0.02	-1	0.19	-1
OZ13c	-0.47	-1	-1	-1	-1	0.46	-1	-0.09	-1	0.06	-1
OZ13d	-0.2	-1	-1	-1	-0.66	0.33	0.23	-0.09	-1	-0.09	0.57
OZ13e	-0.67	-1	-1	-1	-0.29	0.75	-1	0.27	-1	0.19	-1
OZ13f	-0.71	-1	-1	-1	-1	-1	-1	-1	-1	0.59	0.85
OZ13g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13i	-0.5	-1	-1	-1	-0.25	-1	-1	0.01	-1	0.58	-1
OZ13j	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13k	-0.49	-1	-1	-1	-0.65	-1	-0.62	0.08	-1	0.07	-0.03
OZ13l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ13m	0.17	-1	-1	-1	0.22	-1	0.08	-0.74	-1	0.05	-1
OZ13n	-0.46	-0.16	-1	-1	0.23	-1	0.28	-0.33	-1	-0.16	0.7
OZ13o	-0.25	-1	-1	-1	-1	-1	0.51	-0.43	-1	-1	-1
OZ13p	0.05	-1	-1	-1	0.29	-1	0.63	-0.25	-1	-0.14	0.57
OZ14a	-0.27	-1	-1	-1	-1	-1	0.44	-0.89	-1	-0.78	-1
OZ14b	-0.1	-1	-1	-1	-0.05	-1	0.67	-0.77	-1	0.17	0.81
OZ14c	0.12	-1	-1	-1	0.19	-0.6	0.63	-0.62	-1	-0.18	0.01
OZ14d	0.16	-1	-1	-1	0.41	-1	0.58	-0.74	-1	-0.37	0.5
OZ15a	-0.86	-1	-1	0.54	-1	-1	-1	-0.22	-1	-0.55	-1
OZ15b	-1	-1	-1	0.89	-1	-1	-1	0.29	-1	-1	-1
OZ15c	-1	-1	-1	0.98	-1	-1	-1	-1	-1	-1	-1
OZ16a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ16b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ16c	-1	-1	-1	0.99	-1	-1	-1	-1	-1	-1	-1
OZ1a	0.16	-1	-1	-1	-1	-1	-1	0.44	-1	0.56	-1
OZ1b	0.06	-1	-1	-1	-0.4	-1	-1	0.1	-1	-0.45	0.3
OZ1c	0.13	-1	-1	-1	-1	-1	-1	-0.1	-1	-0.51	-1
OZ1d	0.56	-1	-1	-1	-1	-1	-1	0.05	-1	-1	-1
OZ1e	0.31	-1	-1	-1	0.68	-1	-1	0.18	-1	-0.02	-1
OZ1f	0.24	-1	-1	-1	0.24	-1	-0.7	0.07	-1	-0.03	-0.17
OZ1g	0.05	-1	-1	-1	-1	-1	-1	0.61	-1	-1	-1
OZ1h	0.01	-1	-1	0.31	-0.51	-1	-1	0.13	-1	0.27	-1
OZ1i	0.02	-1	-1	-1	-0.15	-1	-1	0.14	-1	0.3	-1
OZ1j	0.19	-1	-1	-1	0.58	-1	-0.34	-0.18	-1	0.41	-1
OZ1k	0.4	-1	-1	-1	0.44	-1	-1	-0.08	-1	-0.2	-1
OZ1l	-0.15	-1	-1	-1	0.6	-1	-1	-1	-1	-1	-1
OZ1m	0.25	-1	-1	-1	-0.18	-1	-1	-0.43	-1	-1	-1
OZ2a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ2b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ3a	0.25	-1	-1	-1	0.11	-1	0.59	-0.52	-1	-0.38	0.19
OZ3b	0.39	-1	-1	-1	0.28	-1	0.64	-0.29	-1	-1	0.79
OZ4a	0.12	-1	-1	-1	0.38	-0.26	0.63	-0.67	-1	-0.24	0.73
OZ4b	0.06	-1	-1	-1	-1	-1	0.9	-0.58	-1	-0.29	-1
OZ4c	-0.06	-1	-1	-1	0.25	0.2	0.76	-0.27	-1	0.4	-1
OZ4d	-1	-1	-1	-1	-1	-1	0.34	-1	-1	-1	0.92
OZ4e	-0.14	-1	-1	-1	-0.58	-1	0.74	-0.45	-1	0.09	0.71
OZ4f	-0.19	-1	-1	-1	0.14	-1	0.74	-0.65	-1	-0.33	0.24
OZ4g	0.02	-1	-1	-1	0.31	-1	0.72	-0.79	-1	0.26	0.69
OZ4h	0.12	-1	-1	-1	0.52	-1	0.45	-1	-1	-1	-1

OZ4i	0.1	-1	-1	-1	0.23	-1	0.78	-0.49	-1	-0.7	-1
OZ4j	0.11	0.34	-1	-1	0.49	0.18	-0.01	0.23	-1	-0.43	-1
OZ4k	0.03	-0.48	-1	-0.2	0.23	-1	0.46	-0.43	-1	-0.14	0.14
OZ4l	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ4m	0.25	-1	-1	-1	0.03	-1	-0.31	-0.61	-1	-0.02	0.02
OZ4n	0.16	-1	-1	-1	0.39	-1	-0.16	-0.28	-1	-0.75	0.48
OZ4o	0.22	-0.42	-1	-1	-0.23	-1	-0.67	-0.77	-1	-0.51	0.4
OZ4p	0	-1	-1	-1	-0.37	-1	-1	-0.77	-1	-1	-1
OZ4q	0.1	-1	-1	-1	0.52	-1	0.78	0.18	-1	0.53	-1
OZ5a	-1	-1	-1	-1	-1	-1	-1	0.69	-1	0.36	-1
OZ5aa	-0.31	-1	-1	-1	-1	-1	-1	0.01	-1	0.32	0.26
OZ5b	-0.24	-1	-1	-1	-1	-1	-1	-0.01	-1	-0.59	-1
OZ5bb	0.08	-1	-1	-1	-1	-1	-1	-0.47	-1	-0.75	-1
OZ5c	0.15	-1	-1	-1	-1	-1	-1	-0.48	-1	0.38	-1
OZ5cc	-0.13	-1	-1	-1	-0.81	-1	-1	-0.35	-1	-0.45	-1
OZ5d	0.28	-1	-1	-1	-0.34	-1	-1	-0.5	-1	-0.58	-1
OZ5dd	-0.17	-1	-1	-1	0.09	-1	-1	0.1	-1	0.04	-1
OZ5e	0.27	-1	-1	-0.53	0.28	-1	-0.62	-0.33	-1	-0.38	-1
OZ5f	0.11	-1	-1	-1	0.4	-1	-1	-0.37	-1	-0.72	-1
OZ5g	-0.09	-1	-1	-1	-1	-1	-1	-0.36	-1	-0.46	-1
OZ5h	-0.14	-1	-1	-1	-0.53	-1	-1	-0.52	-1	-0.04	-1
OZ5i	0.19	-1	-1	-1	-1	-1	-1	-0.57	-1	-0.07	-1
OZ5j	0.02	-1	-1	-1	0.59	-1	-1	0.2	-1	0.08	-1
OZ5k	0.02	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5l	0.13	-1	-1	-1	0.45	-1	-1	-0.14	-1	-1	-1
OZ5m	0.27	-1	-1	-1	-0.25	-1	-1	-1	-1	-1	-1
OZ5n	0.27	-1	-1	-1	0.36	-1	-1	-1	-1	-1	-1
OZ5o	0.32	-1	-1	-1	0.48	-1	-1	-1	-1	-1	-1
OZ5p	0.29	-1	-1	-1	0.4	-1	-0.8	-0.7	-1	-0.91	-1
OZ5q	-0.01	-1	-1	-1	0.8	0.7	-1	-0.33	-1	-1	-1
OZ5r	0.02	-0.32	-1	0.28	-0.28	-1	0.6	-0.38	-1	-0.04	0.87
OZ5s	0.02	-1	-1	-1	-0.43	-1	0.72	-0.11	-1	-0.17	-1
OZ5t	0.11	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5u	0.33	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ5v	0.12	-1	-1	-1	0.4	-1	-1	-0.57	-1	-0.4	-1
OZ5w	0.27	-1	-1	-1	0.28	-1	-1	-0.69	-1	-1	-1
OZ5x	0.26	-1	-1	-1	0.23	-1	-1	-0.89	-1	-0.69	-1
OZ5y	0.24	0.41	-1	-1	-0.06	-1	-1	-0.42	-1	-0.22	-1
OZ5z	-0.76	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
OZ6a	-0.08	-1	-1	-1	-1	-1	-1	0.01	-1	-0.11	-1
OZ6b	-0.24	-1	-1	-1	-1	-1	-1	0.11	-1	0.16	-1
OZ6c	-0.14	-1	-1	-1	-1	-1	-1	0.27	-1	0.35	-1
OZ6d	0.23	-0.27	-1	-0.86	-0.12	-0.58	-1	-0.39	-1	-0.22	0.04
OZ6e	0.28	-1	-1	-1	-1	-1	-1	-0.67	-1	-0.23	0.21
OZ6f	0.25	-1	-1	-1	0.28	-1	-1	-0.55	-1	-0.02	-1
OZ6g	-0.5	-1	-1	-0.05	-0.66	0.33	-0.62	0.1	-1	0.31	-1
OZ7a	0.19	-1	-1	-1	0.52	-1	-1	-0.15	-1	0.02	-1
OZ7b	0.21	-1	-1	-1	-0.05	-1	-1	-0.03	-1	-0.01	-1
OZ7c	0.27	-1	-1	-1	0.12	-1	-1	-0.64	-1	-1	-1
OZ7d	0.18	-1	-1	-1	0.37	-1	-1	-0.78	-1	0.08	-1
OZ7e	-0.12	-1	-1	-1	-1	-1	-0.52	-0.24	-1	-0.77	-1
OZ7f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OZ7g	0.23	-1	-1	-1	0.34	-1	-1	0.13	-1	0.04	-1
OZ7h	0.1	-1	-1	-1	0.27	-1	-1	-0.34	-1	-0.44	-1
OZ7i	0.06	-1	-1	-1	0.07	-1	-1	-0.5	-1	-1	-1
OZ7j	0.11	-1	-1	-1	0.14	-1	-1	-0.74	-1	-1	-1
OZ7k	-0.14	-1	-1	-0.7	-0.34	-1	-1	-0.19	-1	0.29	-0.07
OZ8a	0.25	-1	-1	-1	0.25	-1	-1	-0.09	-1	-0.02	-1
OZ8b	0.23	-1	-1	-1	-1	-1	-1	-0.82	-1	-1	-1
OZ8c	0.25	-1	-1	-1	-0.18	-1	-1	-0.49	-1	-0.47	-1
OZ8d	-0.08	-1	-1	-1	0.16	-1	-1	0.11	0.99	-0.06	-1
OZ8e	0.26	-1	-1	-1	0.4	-1	-1	-0.58	-1	0.36	-1
OZ8f	0.19	-1	-1	-1	-0.06	-1	-0.72	-0.81	-1	-0.58	-1
OZ8g	0.05	-0.39	-1	-1	0.38	-1	-1	-0.31	-1	-0.13	-1
OZ8h	-0.07	-1	-1	-1	0.56	-1	-1	0.01	-1	0.23	-1
OZ8i	-0.17	-1	-1	-1	-0.01	-1	-0.23	0.02	-1	0.45	-1
OZ8j	0.1	-1	-1	-1	0.25	-1	-0.31	-0.82	-1	-0.14	-1
OZ8k	-0.14	0.24	-1	-1	0.04	-1	-0.11	-0.03	-1	0.49	-1
OZ9a	0.06	-1	-1	-1	-0.3	-1	-0.85	-1	-1	-0.88	-1
OZ9b	0.12	-1	-1	-1	0.11	-0.36	-0.45	-0.76	-1	-0.46	-0.22

OZ9c	0.03	-1	-1	-1	0.07	-1	-0.32	-1	-1	-0.31	-1
OZ9d	0.1	-1	-1	-0.8	0.13	-1	-0.27	-0.7	-1	-0.45	-0.56
OZ9e	0.52	-1	-1	-1	-0.11	-1	0.04	-0.78	-1	-0.5	-0.3
OZ9f	-0.19	-1	-1	-1	0.3	-1	-1	-1	-1	-1	-1
OZ9g	-0.39	-1	-1	-1	0.17	-1	0.03	-0.29	-1	0.36	-1
OZ9h	0.02	-1	-1	-1	0.34	0.24	-1	-0.42	-1	-0.27	0.06
OZ9i	-0.31	-1	-1	-1	-0.1	-1	-0.04	-1	-1	-0.15	-1
TP1a	-1	-1	-1	0.97	-1	-1	-1	-1	-1	-1	-1
TP1b	-1	-1	-1	0.95	-1	-1	-1	-0.14	-1	-1	-1
TP1c	-1	-1	-1	-1	-1	-1	-1	0.45	-1	0.41	-1
TP1d	-1	-1	-1	0.85	-1	-1	-1	0.1	-1	-1	-1
TP2a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP2b	-1	-1	-1	-1	-1	0.91	-1	-0.03	-1	0.82	-1
TP2c	-1	-1	-1	-1	-1	0.97	-1	0.42	-1	0.21	-1
TP3a	-1	-1	-1	-1	-1	-1	-1	0.82	-1	-1	-1
TP3b	-0.79	0.87	-1	0.26	-0.8	0.73	-1	0.59	-1	0.45	-0.03
TP3c	-1	0.65	-1	0.64	-1	0.54	-1	0.48	-1	0.7	-1
TP3d	-0.71	0.95	-1	0.42	-1	0.86	-1	0.64	-1	0.3	-1
TP3e	-1	0.74	-1	-0.32	-1	0.88	-1	0.36	-1	0.23	-1
TP3f	-0.6	0.96	-1	0.51	-1	-1	-1	0.5	-1	0.36	-1
TP4a	-1	-1	1	0.9	-1	-1	-1	0.74	-1	-0.04	-1
TP4b	-0.63	0.02	-1	0.5	-1	0.91	-1	0.53	-1	0.48	0
TP4c	-0.26	-1	-1	0.57	-1	-1	-1	0.59	-1	-1	-1
TP4d	-0.92	-1	-1	-1	-1	0.85	-1	0.59	-1	-0.27	-1
TP4e	-1	0.65	-1	0.74	-1	0.94	-1	0.65	-1	0.37	-1
TP4f	-0.89	-1	-1	0.07	-1	0.79	-1	0.61	-1	0.49	0.18
TP4g	-1	-1	-1	-1	-1	-1	-1	0.36	-1	0.86	-1
TP4h	-0.52	-1	-1	-1	-1	0.78	-1	-0.29	-1	0.55	-1
TP4i	-0.95	-1	-1	0.75	-1	-1	-1	0.39	-1	0.6	-1
TP4j	-0.74	-1	-1	-1	-1	0.82	-1	0.5	-1	0.04	-1
TP4k	-1	-1	-1	0.49	-1	-1	-1	0.76	-1	0.2	-1
TP5a	-1	-1	-1	-1	-1	-1	-1	0.39	-1	0.02	-1
TP5b	-0.5	-1	-1	-1	-1	-1	-1	0.36	-1	-0.09	-1
TP5c	-0.17	-1	-1	-1	-1	-1	-1	0.35	-1	0.24	0.68
TP5d	-0.23	-0.42	-1	-0.23	-1	0.7	-1	0.35	-1	0.35	-0.12
TP5e	-0.73	0.56	-1	0.35	-0.12	-1	-1	0.63	-1	0.43	-1
TP5f	-0.43	0.96	-1	-0.35	-1	0.27	-0.25	0.6	-1	0.33	0.65
TP6a	-1	-1	-1	-1	-1	-1	-1	0.75	-1	-1	-1
TP6b	-0.48	0.71	-1	-0.13	-1	0.31	-1	0.6	-1	-0.04	-1
TP6c	-1	-1	-1	-1	-1	-1	-1	0.79	-1	-1	-1
TP6d	-0.72	0.58	-1	-0.47	0.3	-1	-1	0.45	-1	0.05	-1
TP6e	-0.59	-0.02	-1	-1	-1	-1	-1	0.51	-1	0.31	-1
TP6f	-0.33	0.11	-1	0.54	-1	-1	-1	0.53	-1	0.27	0.41
TP6g	-0.28	-1	-1	-1	-1	-1	-1	0.13	-1	-1	-1
TP6h	0.12	-1	-1	-1	-1	-1	-1	0	-1	-1	-1
TP7a	-1	-1	-1	0.07	-1	-1	-1	0.62	-1	0.49	-1
TP7b	-0.56	-1	-1	0.63	-1	-1	-1	0.63	-1	0.64	-1
TP7c	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP7d	-1	-1	-1	-1	-1	0.96	-1	0.45	-1	0.67	-1
TP7e	-1	0.99	-1	-1	-1	-1	-1	0.7	-1	-1	-1
TP7f	-0.2	-1	-1	-0.07	-1	-1	-1	0.42	-1	0.28	-1
TP7g	-0.52	-1	-1	-0.5	-1	-1	-1	0.48	-1	-0.31	0.54
TP7h	-0.54	-1	-1	-1	-1	0.59	-1	0.39	-1	0.53	-1
TP7i	0.33	-1	-1	-1	-1	-1	-1	0.07	-1	0.09	-1
TP8a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP8b	-0.26	-0.1	-1	-1	-1	0.78	-1	0.3	-1	0.24	0.77
TP8c	-0.45	-0.03	-1	0.55	-0.81	-0.2	-1	0.36	-1	0.49	-1
TP8d	-0.18	0.63	-1	-1	-0.24	0.22	-1	0.3	-1	0	0.03
TP8e	-0.26	0.45	-1	-0.55	-0.05	-0.31	-1	0.19	-1	0.28	0.18
TP8f	-0.13	-1	-1	-1	-0.06	0.48	-1	0.12	-1	0.34	-1
TP9a	-1	-1	-1	0.93	-1	-1	-1	0.54	-1	-1	-1
TP9b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
TP9c	-1	-1	-1	-1	-1	-1	-1	0.32	-1	-1	-1
TP9d	-1	-1	-1	0.94	-1	-1	-1	0.07	-1	-1	-1

Table B9: Electivity of smoketree (985) and unknown or not listed (999) in Missouri's LTAs. The number in parentheses is the species code identifier from the FIA database. "NA" indicates where no information is available.

LTA	985	999
MB1a	-1	-1
MB1b	-1	0.87
MB1c	-1	-1
MB1d	-1	-1
MB1e	NA	NA
MB1f	NA	NA
MB2a	-1	-1
MB2b	-1	-1
MB3a	-1	-1
MB3b	NA	NA
MB3c	-1	-1
MB3d	NA	NA
MB4a	-1	-1
MB4b	NA	NA
MB4c	NA	NA
MB4d	-1	-1
MB4e	NA	NA
MB4f	NA	NA
MB4g	NA	NA
MB4h	NA	NA
MB4i	NA	NA
MB4j	-1	-1
MB4k	NA	NA
MB4l	-1	-1
OP1a	-1	0.83
OP1b	-1	0.74
OP1c	NA	NA
OP1d	-1	-0.25
OP1e	-1	-0.2
OP1f	-1	-1
OP1g	-1	0.17
OP1h	-1	-1
OP1i	-1	-1
OP1j	-1	-1
OP2a	-1	-1
OP2b	-1	0.4
OP2c	-1	-1
OP2d	-1	-1
OP2e	-1	0.74
OP2f	-1	-1
OP2g	-1	-1
OP2h	-1	-1
OP2i	-1	-1
OP2j	-1	-1
OZ10a	-1	0.54
OZ10b	-1	-1
OZ10c	-1	-1
OZ10d	-1	0.45
OZ11a	-1	0.29
OZ11b	-1	0.49
OZ12a	-1	-1
OZ12aa	-1	-1
OZ12b	-1	-1
OZ12bb	-1	-1
OZ12c	-1	0.69
OZ12cc	NA	NA
OZ12d	-1	-1
OZ12e	-1	-1
OZ12f	-1	-1
OZ12g	-1	-1
OZ12h	-1	-1
OZ12i	-1	-0.5
OZ12j	NA	NA

OZ12k	NA	NA
OZ12l	NA	NA
OZ12m	-1	-1
OZ12n	-1	-1
OZ12o	-1	-1
OZ12p	-1	-1
OZ12q	NA	NA
OZ12r	NA	NA
OZ12s	NA	NA
OZ12t	-1	-1
OZ12u	-1	-1
OZ12v	-1	-1
OZ12w	-1	-1
OZ12x	-1	-1
OZ12y	NA	NA
OZ12z	-1	-1
OZ13a	-1	0.63
OZ13b	-1	-1
OZ13c	-1	-1
OZ13d	-1	-1
OZ13e	-1	-1
OZ13f	-1	-1
OZ13g	NA	NA
OZ13h	NA	NA
OZ13i	-1	-1
OZ13j	NA	NA
OZ13k	-1	-1
OZ13l	NA	NA
OZ13m	-1	0.09
OZ13n	-1	-1
OZ13o	-1	-1
OZ13p	-1	-1
OZ14a	-1	0.31
OZ14b	-1	0.83
OZ14c	-1	0.14
OZ14d	-1	-1
OZ15a	-1	-1
OZ15b	-1	-1
OZ15c	-1	-1
OZ16a	NA	NA
OZ16b	NA	NA
OZ16c	-1	-1
OZ1a	-1	-1
OZ1b	-1	-1
OZ1c	-1	-1
OZ1d	-1	-1
OZ1e	-1	-1
OZ1f	-1	0.59
OZ1g	-1	-1
OZ1h	-1	-1
OZ1i	-1	-1
OZ1j	-1	0.2
OZ1k	-1	0.77
OZ1l	-1	0.86
OZ1m	-1	-1
OZ2a	NA	NA
OZ2b	NA	NA
OZ3a	-1	-0.27
OZ3b	-1	-0.03
OZ4a	-1	-0.52
OZ4b	-1	-1
OZ4c	-1	-0.11
OZ4d	-1	0.9
OZ4e	-1	-1
OZ4f	-1	-1
OZ4g	-1	0.86
OZ4h	-1	-1
OZ4i	-1	0.15
OZ4j	-1	-1
OZ4k	0.98	0.02

OZ4l	-1	-1
OZ4m	-1	-0.1
OZ4n	-1	-1
OZ4o	-1	-0.24
OZ4p	-1	-1
OZ4q	-1	-1
OZ5a	-1	-1
OZ5aa	-1	-1
OZ5b	-1	-1
OZ5bb	-1	-1
OZ5c	-1	0.85
OZ5cc	-1	-1
OZ5d	-1	-1
OZ5dd	-1	-1
OZ5e	-1	0.1
OZ5f	-1	-1
OZ5g	-1	-1
OZ5h	-1	-1
OZ5i	-1	-1
OZ5j	-1	-1
OZ5k	-1	-1
OZ5l	-1	-1
OZ5m	-1	-1
OZ5n	-1	-1
OZ5o	-1	0.1
OZ5p	-1	0.48
OZ5q	-1	-1
OZ5r	-1	-1
OZ5s	-1	-1
OZ5t	-1	-1
OZ5u	-1	-1
OZ5v	-1	-1
OZ5w	-1	-1
OZ5x	-1	-1
OZ5y	-1	-1
OZ5z	-1	-1
OZ6a	-1	0.51
OZ6b	-1	-0.11
OZ6c	-1	0.45
OZ6d	-1	0.26
OZ6e	-1	-1
OZ6f	-1	-0.1
OZ6g	-1	0.17
OZ7a	-1	-0.06
OZ7b	-1	-1
OZ7c	-1	-1
OZ7d	-1	-1
OZ7e	-1	-1
OZ7f	NA	NA
OZ7g	-1	-1
OZ7h	-1	0.49
OZ7i	-1	-1
OZ7j	-1	-1
OZ7k	-1	-1
OZ8a	-1	-1
OZ8b	-1	-1
OZ8c	-1	-1
OZ8d	-1	-1
OZ8e	-1	-1
OZ8f	-1	0.01
OZ8g	-1	0.13
OZ8h	-1	0.85
OZ8i	-1	-0.02
OZ8j	-1	-0.11
OZ8k	-1	0.42
OZ9a	-1	-0.61
OZ9b	-1	-0.72
OZ9c	-1	0.6
OZ9d	-1	0.33
OZ9e	-1	0.25

OZ9f	-1	-1
OZ9g	-1	-1
OZ9h	-1	0.56
OZ9i	-1	0.7
TP1a	-1	-1
TP1b	-1	-1
TP1c	-1	-1
TP1d	-1	-1
TP2a	NA	NA
TP2b	-1	0.88
TP2c	-1	-1
TP3a	-1	-1
TP3b	-1	0.2
TP3c	-1	-1
TP3d	-1	-1
TP3e	-1	-1
TP3f	-1	-1
TP4a	-1	-1
TP4b	-1	-1
TP4c	-1	-1
TP4d	-1	0.63
TP4e	-1	0.4
TP4f	-1	0.38
TP4g	-1	-1
TP4h	-1	-1
TP4i	-1	-1
TP4j	-1	-1
TP4k	-1	0.39
TP5a	-1	-1
TP5b	-1	-1
TP5c	-1	-1
TP5d	-1	-0.24
TP5e	-1	-1
TP5f	-1	-1
TP6a	-1	-1
TP6b	-1	-1
TP6c	-1	-1
TP6d	-1	-1
TP6e	-1	-1
TP6f	-1	-1
TP6g	-1	-1
TP6h	-1	-1
TP7a	-1	-1
TP7b	-1	-1
TP7c	-1	-1
TP7d	-1	-1
TP7e	-1	-1
TP7f	-1	-1
TP7g	-1	-1
TP7h	-1	-1
TP7i	-1	-1
TP8a	NA	NA
TP8b	-1	-1
TP8c	-1	0.17
TP8d	-1	-0.09
TP8e	-1	-1
TP8f	-1	-1
TP9a	-1	-1
TP9b	-1	-1
TP9c	-1	-1
TP9d	-1	-1