Field Trip Summary Report
Missouri Bottoms #6319
Dyersburg NW
Popular Bluff NE

I. INTRODUCTION:

This field trip will be used as collaborative data in the mapping effort concerning the Missouri portions of Dyersburg NW and Poplar Bluff NE, 1:100,000 areas.

A. Personnel:

Nick Rowse* (USFWS)
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B. Field Trip Date:

October 30 to November 2, 1986
* Attended October 30-31, 1986

C. Photography Dates:

Type: CIR
Scale: 1:58,000

Dates:	Percent Coverage:	
3/23/81	30%	Dyersburg NW
5/10/81	10%	
4/05/80	60%	
2/08/84	25%	Poplar Bluff NE
4/19/84	50%	
3/18/85	12.5%	
3/15/85	12.5%	

D. Collateral Data:

1. Bailey, Robert G., "Description of the Ecoregions of the United States", USFS, 1980.

2. Clawson, Jerry (USFWS, Mingo National Wildlife Refuge)

3. Cliburn, Jerry and Ginny Klomps, "A Key to Missouri Trees in Winter", MO. Dept of Lns., 1980.

4. Denison, Edgar, "Missouri Wildflowers", MO Dept of Conservation, 1978.

5. Dieffenbach, William, "Straight-Line Streams", Missouri Conservationist, Vol 43, No. 1, 1982.

6. Festerrand, D.F., "Soil Survey of Cape Cirardeau, and Scott Counties, Missouri" USCS, 1981.

7. National Committee for Hydric Soils, "Hydric Soils of the State of Missouri, 1985", 1985.

8. NOAA, "Record of River and Climatoglogical Observations", for Sikeston Power Plant, Charleston, and Poplar Bluff, selected dates 1980-1986

9. Reed, Porter B. Jr, "1986 Wetland Plant List, Missouri", USFWS, 1986.

10. Teskey, Robert O. and Thomas M. Hinckley, "Impact of Water Level Changes and Woody Riperian and Wetland Communities, Vol II, The Southern Forest Region", USFWS, 1978.

11. Teskey, Robert O. and Thomas M. Hinckley, "Impact of Water Level Changes on Woody Riperian and Wetland Communities, Vol III: The Central Forest Region", USFGWS, 1978.

12. USFWS 1:250,000 Ecoregion and Land-Surface Form maps.

13. USGS topographic quadangles for entire study area, 7.5' and 15' maps.

II. GEOGRAPHICAL OVERVIEW:

A. Location:

The project area is located in the south eastern corner of Missouri, excluding the "boot-heel". The eastern boundary follows the Missouri state line in the Mississippi River. The boundary extends westward to 91°00 west longitude, northward to 37°00 N latitude, and southward to 36° N latitude. (See diagram 1)

B. Ecoregion and Vegetation:

Seventy-five percent of the study area is defined ecologically by Bailey (1981) as Southern Forest Flood Plain Section, Outer Coastal Plain Forest Province, Subtropical Division, Humid Temperature Domain (2312L- See diagram 2). Our mapping area represents the extreme northward extent of the ecoregion which extends from the Gulf of Mexico up the Mississippi River floodplain. Consequently, the vegetation in this area represents more of an ecocline situation. There is a diffusion of the more temperate evergreen species commonly found in the Outer Coastal Ecoregion, such as evergreen oaks, bald cypress, and members of the laurel and magnolia families with the temperate decidicous northern forest species of the neighboring oak-hickory ecoregion. The only species seen in the field that were indicative of the Outer Coastal Plain region were bald cypress and willow oak. In addition, it has been estimated that 90% of this natural forest vegetation in Southeast Missouri, some 2.2 million acres, has been cleared and converted to cropland, mostly cotton and soybeans. (Dieffenbach)

The remaining 25% of the study area, the northwestern corner, is catagorized as the Oak-Hickory Forest Section, Eastern Deciduous

Forest Province, Hot Continental Division, Humid Temperate Domain by Bailey (2215L, See diagram 2). Vegetationally, this ecoregion is dominated by tall, thick canopied, broadleaf deciduous trees. The shedding of the leaves in winter allows for the establishment of small trees, shrubs, and forbes in early spring. Common forest species include upland oaks, beech, hickory, walnut, maple, basswood, elm, and ash. In poorly drained communities, alder, willow, ash, and elm dominate. The natural vegetation in this region remains fairly intact as agricultural land use is not practical.

C. Physiography and Landforms:

Ecoregion areas can also be defined in terms of landforms and physical structure. Physiographically, the Southern Coastal Plain Ecoregion (2312L) is also known in our study area as the Lower Mississippi Allivial Plain. This plain is characterized as a flat depositional plain as it occurs directly adjacent to the Mississippi River. The flood plain becomes irregular and gently sloping as it moves westward across Crowley's Ridge, an ancient river escarpment. Here on the historic outwash plain, wind blown allivial material forms small ridges, dunes, and small pothole-like depressions. Old river terrraces and channel cuts are also prevalent. This entire area, with the exception of small tracks, has been cleared and altered for agricultural use.

In sharp contrast, the physiography of the Oak-Hickory Ecoregion (2215L), known also as the Ozark-Quachita Highlands, is described as open hills with 50-75% of the slope on the uplands. Elevations in these highlands can range from 300 to 800 feet above sea level. Rolling hills and confined streams and floodplains are typical. Because of this relief, agricultural practices, mostly grazing, have been confined to the lowlands valleys. Timber harvesting can be observed in the region.

D. Hydrology:

The major hydrologic features of the Mississippi Alluvial Plain is surface water drainage. The Mississippi River is the major drainage way. The Little River, St. Francis River, and Black River are direct tributaries to the Mississippi. Historically, these tributaries were slow moving, widely meandering channels with extensive floodplains and backswamps. However, a series of state and federal flood control and drainage programs beginning as early as 1850 have transformed them into a series of straight lined, leveed ditches. Overland flooding and consequent ground water and soil recharge has been greatly reduced by this action. Virtually no first or second order streams remain except as small drainage or field ditches.

In contrast, the Ozark Quachita Highlands,are hydrologically diverse. The Current River was designated as the first river of the National Scenic Waterways System and as such as been left practically undisturbed. The Little Black River and the upper sections of the Black River are faster moving than on the lowland although still meandering. Smaller streams and tributaries are abundant and drain the surface areas of the surrounding hills in a classic dendridic pattern.

Because of the relief and change is geologic structure, these highlands also have an extremely active ground water system. Big Springs, located in the extreme northwest corner of the study area is an important example. The spring is said to be the largest in North America with a maximum peak flow of over 840 million gallons daily. It directly feeds the Current River. Other smaller springs and ground water activity is common in the surrounding hills.

E. Climate:

The climate of the entire study area is classified by Koppin's Scheme as humid subtropical. The winters are absent of extreme cold and the summers are humid. However, once again the study area is just south of a transition zone into a moist continental climate where winters are more severe. Consequently this area of southeastern Missouri does experience frequent freezing temperatures in the winter.

More specific climatological data collected at the NOAA station in Sikeston, Missouri reveals that the average daily temperature range is from 35°F to 78°F. The average low is 26°F in the winter and average high is 89°F in the summer. Annual precipitation averages around 47 inches. Over half of this rain falls during the growing season of April through September. (Festerland)

F. Soils:

Soils within the study area fall into the broad taxonomic groups of Mollisols, Inceptisols, and Ultisols. These Mollisols which are characterized by thick black surface horizons formed under moist conditions are generally found on the flat floodplain directly adjacent to the Mississippi River. These are amoung the most fertile soils in the world. The Inceptisols are found on the irregular plain of the old floodplain. This allivial or loess material is very fine and forms where sedementation is no longer active. Soil water is available for more than three consecutive months through the growing season. The Ultisols are restricted to the highlands of the western study area. The soils form under forest vegetation in climates with seasonally alternating water-surplus, water-deficient regimes. These soils are low in plant nutrients.

More specific soil information was made available only for the Mississippi River counties of Mississippi and Scott. This area contains numerous soils that are considered hydric by the SCS. The Sharkey association, Commerce-Caruthersville association, Tifton-Reelfoot association, and Sikeston association are all poorly drained. Together, they cover approximately 75% of the county in our mapping area. (Festerland)

III. BIOLOGICAL CHARACTERISTICS OF WETLAND HABITATS:

A. Marine: Not present

B. Estuarine: Not present

C. Riverine:

The major riverine system within the mapping area is the Mississippi River. In this stretch of its course, it is a permanent lower perennial river with a well developed floodplain (R2UBH), wide meanders, unvegetated flats, and sandbars (R2USC,R2USA). It's tributaries, the Little River, St. Francis River, and Black River are, for the most part, lower perennial permanent streams, but are reduced to an intermittent flow in some sections. These rivers are controlled by levees and ditching (R2UBHx, R4BFx). They show less developed floodplains and flat deposition than the Mississippi.

Another major permanent river of the study area is the Current River. As previously discussed, this river is directly fed by a large spring and exhibits upper perennial characteristics for a short stretch (R3UBH). Directly at the spring head, aquatic bed species such as water cress (Rouppa, sp.), waterweed (Elodia sp.), and other unidentified species were observed (R3ABH) but were too small to be detected on the photography. The Current resumes more of a lower perennial status as it flows southward towards the Arkansas border (R2UBH). Because of it's pristine condition, wide sand bars and flats both seasonally and temporarily flooded are well developed along the shoreline (R2USC, R2USA).

The smaller streams and creeks of the study area are permanent lower perennial (R2UBH) or semipermanently flooded intermittent (R4SBF) and will be classified according to the designation portrayed on the USGS topographic maps. Field notes, checksites, or other collateral data will be consulted to determine classification. Intermittently exposed flooding conditions were observed on some permanent streams in the field due to the dry field conditions (R2UBG) and with beaver activity. Aquatic bed species were usually associated with this beaver activity (R2ABGb). Canals and ditches will be classified with the appropriate modifier (R2UBHx,R4SBFx).

D. Lacustrine:

Lacustrine water bodies were observed in both natural and man-made conditions. The largest lacustrine system in the study area is Lake Wappapello, formed by the impoundment of the St. Francis River by the Army Corps of Engineer. This lake is a deep permanent water body of 2-3,000 acres (L1UBHh). Depth information has been requested in order to approximate the littorial shores less than six feet and the extent and longevity of the fluctuating water levels (L2UBF, L2USC, L2USA).

Another man-made lake, Big Oak Tree Lake in Big Oak Tree State Park, is a shallow water body of approximately 25 acres (L2UBHh). It was formed by the construction of a circular levee and considered to be permanent regardless of its shallow nature. Scattered cypress (Taxodium distichum) grow throughout the lake but comprise less than 30% of the area.

Other man-made lakes are also found throughout the study area. These are formed both by impoundment structures and by excavating as in the case of levee pits. These water bodies greater than 20 acres were considered permanent and deep unless other information is available (L1UBHh, L1UBHx).

Natural lacustrine systems, on the other hand, were not widely found but confined mainly to the back waters and oxbows of the Mississippi River floodplain. If no vegetation was identified, these were also be considered to be permanent deep water habitats (L1UBH). Shallower areas, distinguished by photo signature or contour data were considered to be intermittently exposed or semipermanently flooded and less than six feet in depth (L2UBG, L2UBF).

Mingo National Wildlife Refuge is a natural lacustrine systems. Although no longer directly on the Mississippi River it was formed in an abandoned ancient channel of the Mississippi. The refuge contains a large vegetated shallow lacustrine community called Monopoly Marsh. The area was opended when the dense forest was cut for lumber in the early 1900s. Since then, and encouraged by management techniques to favor the growth of waterfowl food plants, this clearing supports large communities of American lotus (Nelumbo sp) (L2ABG).

E. Palustrine:

Palustrine wetland communities provide the most abundant and diverse habitat found in the mapping area. Both vegetated and unvegetated classes were observed with a wide range of flooding conditions.

Palustrine forested communities were observed in river floodplains and backwater swamps or as remnant stands of the bottomland hardwoods that once dominated the area. The floodplain communities found to be indicative of an intermittently exposed or semipermanent condition were dominated by bald cypress (Taxodium distichum) and to a lesser degree water tupulo (Nyssa aquatica) and willow (Salix sp). Where cypress, a needle leaf deciduous species (PFO2F), is mixed with the broadleaf deciduous species (PFO1F), the subclass "deciduous" was used (PFO6F).

Bottomland hardwood communities were observed to be mainly seasonally or temporarily flooded. The dominant species associated with the wetter bottomlands and floodplains were silver maple (Acer saccharinum), green ash (Fraxinus pennsylvanicus), willow, river birch (Betula nigra), overcup oak (Quercus lyrata), sweet gum (Liquidambar styraciflua), and sugarberry (Celtis laevigata) (PFO1C). Field observations indicated an absence or thinning of understory, undercomposed leaf letter, moist or mottled soil, high water marks on the tree, buttressing, and adventitious rooting.

Diversity is also common in the drier temporarily flooded forests (PF01A). Species more indicative of this condition are red maple (Acer rubrum), eastern cottonwood (Populus deltoides), hackberry (Celtis occidentalis), and sometimes a mixture of more upland species of walnut (Juglans sp), hickory (Carya sp), and several oaks (Quercus spp). The understory is much thicker and the soil less moist although mottling still occurs.

Scrub-shrub communities also occurred in all flooding conditions and throughout the mapping area. These were found invading in cleared forests and small canals, and naturally along rivers and streams. Semipermanently flooded shrub communities are dominated by buttonbush (Cephalanthus occidentalis), and willow (PSS1F). Seasonal communities were predominantly willow and small sapplings of the species indicative of the seasonal forest. Swamp holly (Ilex decidua) was also common in these areas (PSS1C). The drier, temporary shrub complexes were comprised of willows and cottonwood especially when the areas were distributed. In more natural stands, other forested sapplings indicative of temporarily flooded forests were intermixed (PSS1A).

Palustrine emergent wetlands were common throughout the region occurring on the recently cleared lowlands, invading smaller canals, on river flats and floodplains, and in the depressions formed in the loess plains. Cattail (Typha latifolia) is the predominant species indicative of semipermanently flooded communities (PEMF), and are often found mixed with aquatic species such as duckweed (Lemna minor) (PEM/ABF). Seasonally flooded emergent communities contained species such as lizard's tail (Saururus cernuus), nut sedge (Cyperus sp), giant cane (Arundinaria gigantea), and rushes (Juncus spp) (PEMC). These forbes were also indicative understory species for the seasonal forest communities. Emergents portraying temporarily flooded conditions were species such as smartweed (Polygonum sp), dock (Rumex sp), sedge (Carex sp), goldenrod (Solidago sp), morning glory (Ipomoea hederarea), and stinging nettle (Urtica diocia)(PEMA). These species were often found mixed with scattered seasonal species and showed a great range of tolerance.

Small unvegetated water bodies identified as intermittently exposed or semipermanently flooded palustrine wetlands were also found in the study area. These were normally small ponds that were excavated or impounded (PUBGh, PUBGx, PUBFh, PUBFh). However, natural ponds are common in the cut off oxbows and old channels of the larger rivers (PUBF,PUBG). These may be vegetated by aquatic species later in the growing season (PABG, PABF).

Special conditions suggesting the use of modifiers such as excavated, drained/ditched, beaver, and impounded were frequently encountered. These will be used in all cases where appropriate. Tilled areas were not considered as wetland unless remaining wetland community was confined to a well defined depression. The farmed modifier (f) was not used, but these areas are commonly drained and will be designated as such if conditions are prevalent on photography.

IV. IMAGERY OVERVIEW

Photographic coverage for the study area was taken on seven different dates in the late winter or spring seasons of 1980, 1981, 1984, and 1985. While photography shows water conditions of varying degrees, rainfall data indicates normal wetness for all dates. Some photography, for example the 5/10/81 and 4/19/84 dates, were taken closely after periods of rainfall and will therefore exhance temporary signatures that may be lost on drier dates and obscure semipermanent signatures . The rainfall records will be consulted when interpreting. Another possible problem includes the obcsurance of the understory caused by the forest canopy. Spring leafing is complete in many photos making temporary and seasonal forested breaks more difficult. Subtle changes in signatures, field mottling in surrounding area, overlap of surrounding frames, and topographic information will be used as interpretive clues. Finally, many changes have occurred, both natural and man-induced, since the time of photography. This was especially noticeable with the 1980-81 photography. Interpretation will reflect the date of photography unless the change was field documented.

The photography is generally of good quality and resolution high enough to accurately delineate all necessary wetland features with the exception of the remaining 3/23/81 photography that was not replaced. Photography contained in the outside quads of the Dyersburg NW study area was not replaced. This date photography has very poor resolution and is extremely grainy making determination of emergent and scrub/shrub communities extremely difficult. Ties will be used to help maintain consistency. The remainder of the 3/23/81 photography that was replaced is of good quality.

V. SUMMARY

Field reconnassiance exhibited drought conditions. Southeastern Missouri as well as the Southeastern United States suffered the worst drought of the century in 1986. This was very evident in the agricultural fields where many temporary and some seasonal emergent areas were not evident as they were tilled and planted. Many fields were left with withered crops. Consequently, observations other than water levels or presence played a greater role in the determination of wetland breaks. More reliance was given to photographic conditions where discrepancies were great.

PLANT LIST

FORESTED (FO)

Taxodium distichum (OBL)
Nyssa aquatica (OBL)
Betula nigra (OBL)
Acer saccarinum (FACW)
Fraxinus profunda (OBL)
Quercus lyrata (OBL)
Salix spp (OBL-FACW)
Platanus occidentalis (FACW)
Celtis laevigata (FACW)
Fraxinus pennsylvanica (FACW)
Quercus michauxii (FACW)
Quercus Phellos (FACW)
Quercus palustris (FACW)
Liquidambar styraciflua (FACW)
Ulmus americana (FACW-)
Acer negundo (FACW-)
Populus deltoides (FAC+)
Acer rubrum (FAC)
Asimina triloba (FAC)
Ulmus rubra (FAC)
Celtis occidentalis (FAC-)
Quercus macrocarpa (FAC-)
Catalpa speciosa (FACU)
Tilia americana (FACU)
Ostrya virginiana (FACU)
Juglans nigra (FACU)
Carya sp (FACV-OBL)
Fraxinus tomentosa (NL)
Cercis canadensis (NL)
Quercus stellata (FACU)
Ulmus alata (FACU)
Robinia Pseudocacia (NL)

SHRUB-SCRUB (SS)

Cephalanthus oxidentalis (OBL)
Salix spp (OBL to FACW)
Ilex decidua (FACW)
Gleditsia triacanthos (FAC)
Rosa sp (FACU)
Juniperus virginana (FACU)
(Forested species were also observed as shrubs and considered with corresponding regional wetness indicator)

EMERGENT (EM)

Typha latifolia (OBL)
Saururus cernuus (OBL)
Arundinaria giganteas (FACW)
Juncus spp (FAC to OBL)
Cyperus spp (FAC to OBL)
Carex spp (FAC to OBL)
Polygonum spp (FAC to OBL)
Rumex spp (FAC to OBL)
Solidago spp (FAC to OBL)
Urtica diocia (FAC+)
Toxicodenron ridicans (FAC+)
(AKA: Rhus radicans)
Ipomoea hederacea (FAC)
Ammosia sp (FACW-to FAC)
Hordium jubatum (FAC+ to DRA)
Chenopodium album (FAC-to DRA)
Xanthium strumarium (FAC- to DRA)
Phytolacca americana (FAC-)
Callicarpa americana (NL)

AQUATIC BED (AB)

Eleodia sp (OBL)
Rorippa sp (OBL)
Nelumbo sp (OBL)
Lemna minor (OBL)
Endomopha sp (OBL)

CB/ech/nwi#64

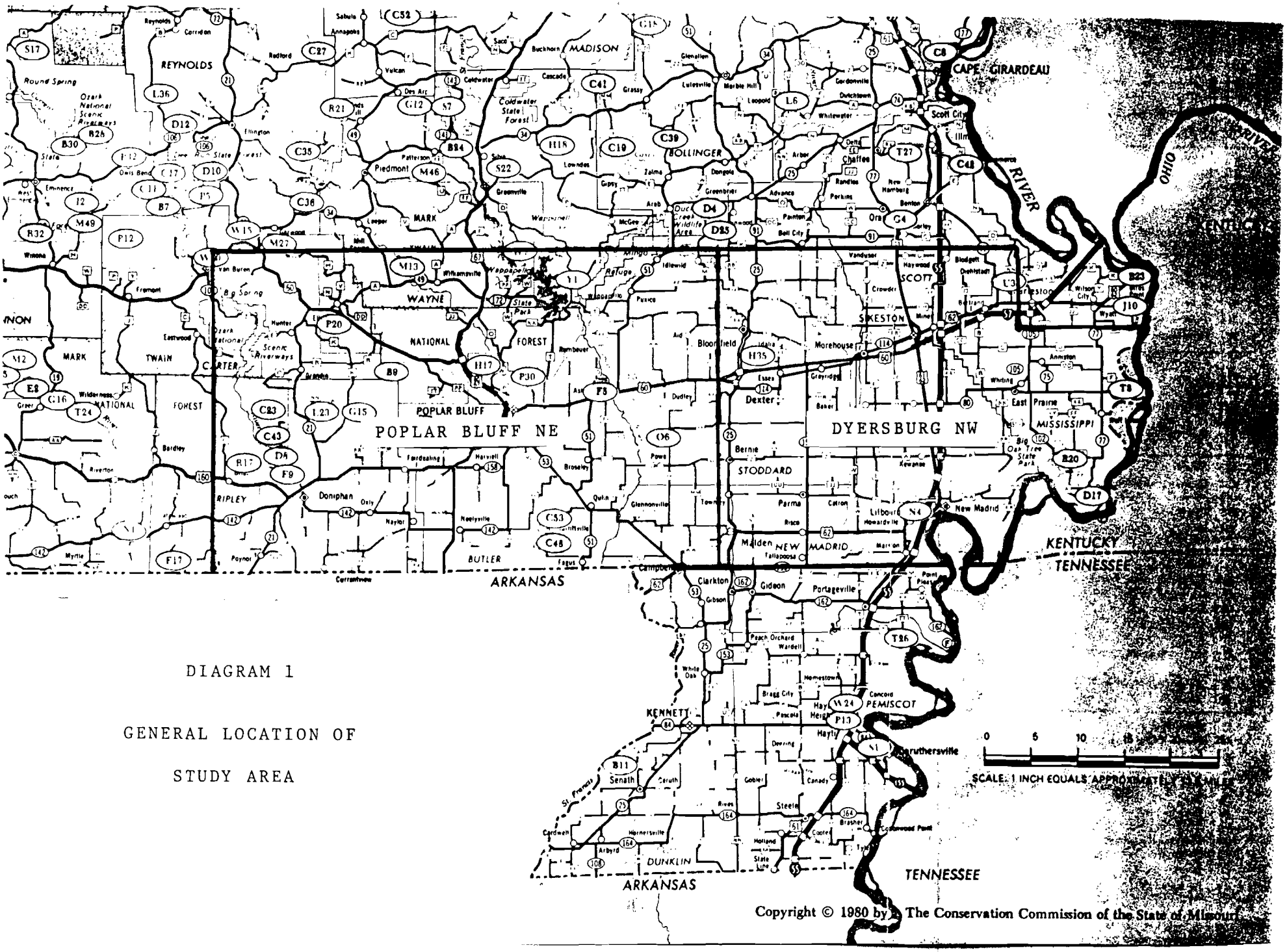

DIAGRAM 1

GENERAL LOCATION OF

STUDY AREA

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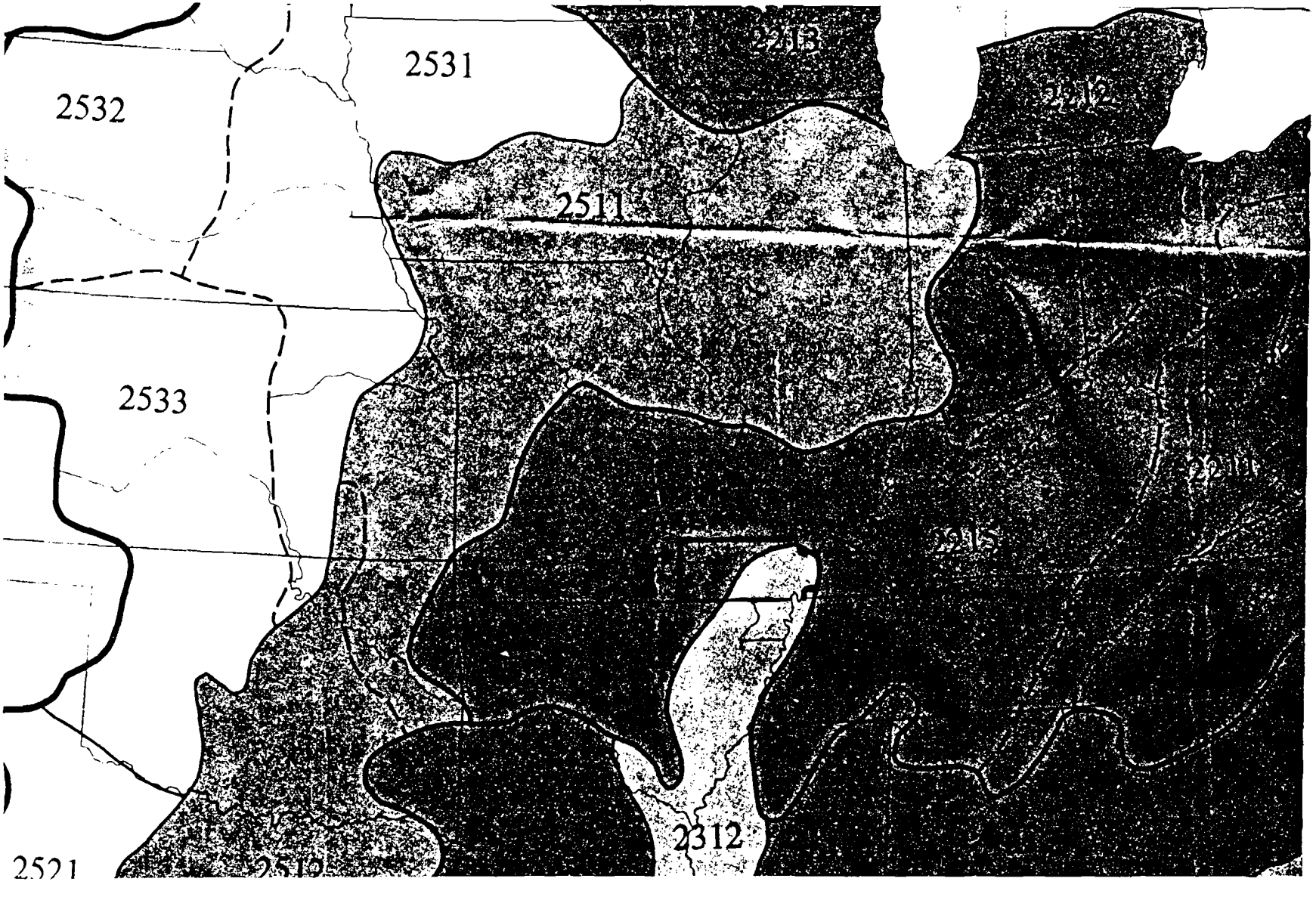
DIAGRAM 2

ECOREGION LOCATION OF STUDY AREA