

Section 5. Aquatic Habitats

Definition

Ecobasins are a version of the seven (level III) ecoregions (Woods and others 2004) further subdivided by six major river basins to form 18 ecobasins to describe aquatic habitats in Arkansas.

Ranking

Arkansas ranked which ecobasins have more species of greatest conservation concern and/or more greatly imperiled species. Ecoregion Scores (Table 5.1) equal the sum of all Species Priority Scores within an ecoregion. A higher score implies a larger total number of species of greatest conservation need and/or species with a greater need for conservation.

Table 5.1. Aquatic habitats ranked by priority scores.

Ecobasin	Sum of Priority Scores
Ozark Highlands - White River	2539
Ouachita Mountains - Ouachita River	1565
South Central Plains - Ouachita River	1564
South Central Plains - Red River	1515
Boston Mountains - White River	1326
Ozark Highlands - Arkansas River	1212
Mississippi River Alluvial Plain - White River	1192
Arkansas Valley - Arkansas River	1178
Boston Mountains - Arkansas River	1045
Mississippi River Alluvial Plain - St. Francis River	827
Ouachita Mountains - Red River	737
Ouachita Mountains - Arkansas River	565
Mississippi River Alluvial Plain (Lake Chicot) - Mississippi River	546
Mississippi River Alluvial Plain - Arkansas River	395
Mississippi River Alluvial Plain (Bayou Bartholomew) - Ouachita River	306
Arkansas Valley - White River	177
Mississippi Valley Loess Plains - St. Francis River	114
Mississippi Valley Loess Plains - White River	19

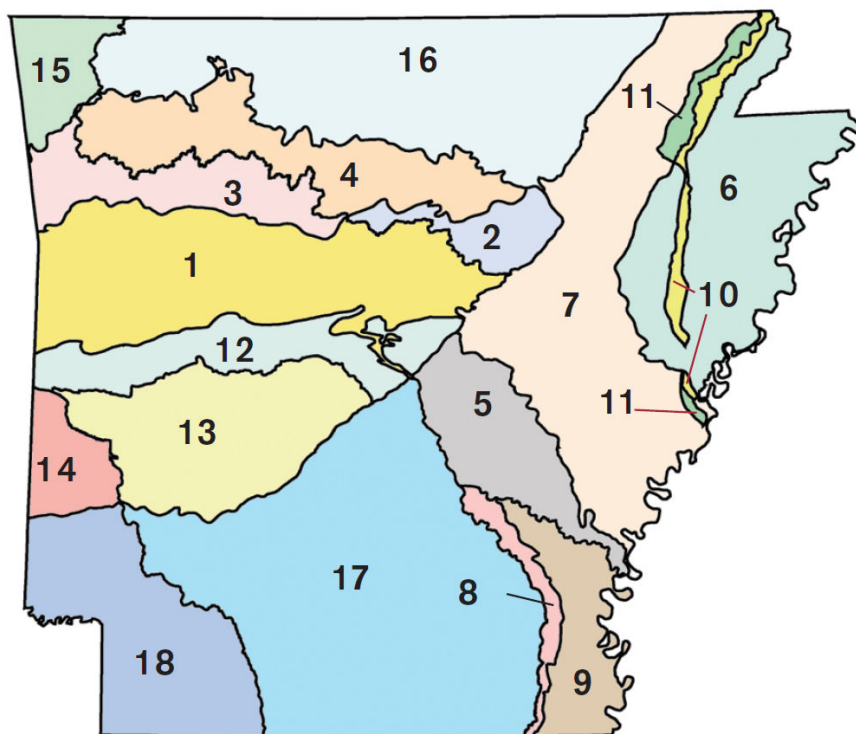
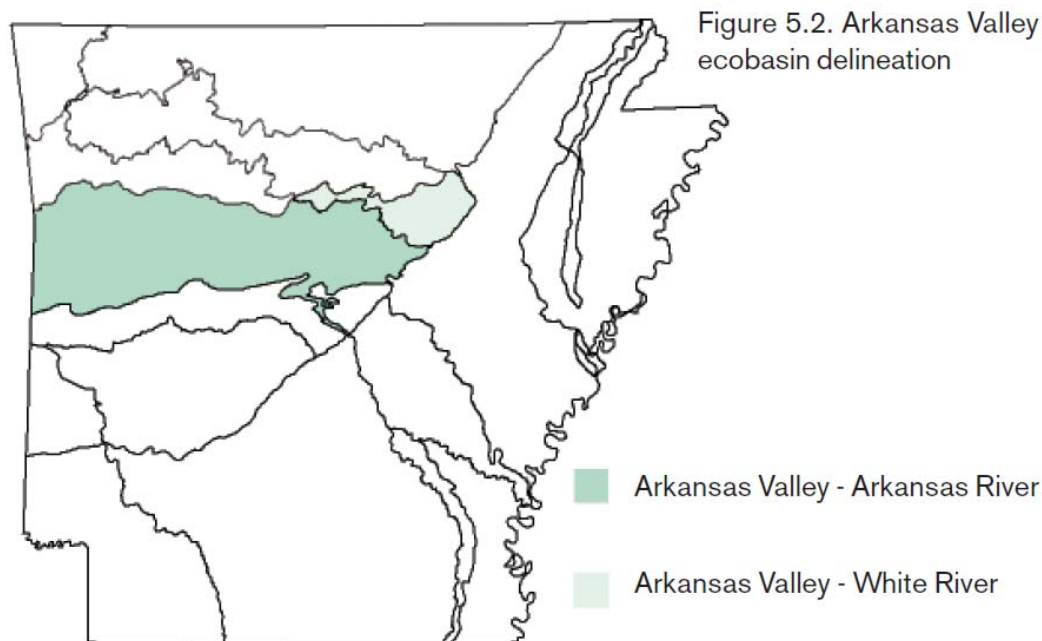


Figure 5.1 Arkansas Ecobasins.

Key	Ecobasin
1	Arkansas Valley - Arkansas River
2	Arkansas Valley - White River
3	Boston Mountains - Arkansas River
4	Boston Mountains - White River
5	Mississippi Alluvial Plain - Arkansas River
6	Mississippi Alluvial Plain - St. Francis River
7	Mississippi Alluvial Plain - White River
8	Mississippi Alluvial Plain (Bayou Bartholomew) - Ouachita River
9	Mississippi Alluvial Plain (Lake Chicot) - Mississippi River
10	Mississippi River Loess Plains - St. Francis River
11	Mississippi River Loess Plains - White River
12	Ouachita Mountains - Arkansas River
13	Ouachita Mountains - Ouachita River
14	Ouachita Mountains - Red River
15	Ozark Highlands - Arkansas River
16	Ozark Highlands - White River
17	South Central Plains - Ouachita River
18	South Central Plains - Red River

Arkansas Valley Ecobasins



Arkansas Valley - Arkansas River ecobasin

Streams in this ecobasin (Figure 5.2) vary from slow, meandering streams following major valley floors to smaller, riffle and pool types in the smaller watersheds. Arkansas Valley – Arkansas River streams generally flow over moderately permeable soils having sandy to clayey consistency in the lower gradient valleys to those same soils underlain by sandstones and shales in the upper, smaller watersheds. Stream substrates range widely from silt, gravel, shale, rubble to solid bedrock depending on the valley gradient and localized stream gradient. Many streams in this region are somewhat turbid due to erosion of the soils and shales. Representative streams include the Fourche la Pave, Petit Jean and Poteau Rivers and Dutch Creek.

Table 5.2. Land cover types in Arkansas Valley - Arkansas River ecobasin (percentage).

Arkansas Valley - Arkansas River	Water	Urban	Forest*	Pasture	Crop
2004	3	1	55	36	5
2011	3	7	48	33	3

* Includes forested wetlands



Photo: MAWPT

Arkansas Valley - Arkansas River from Petit Jean Mountain

Table 5.3. Species of Greatest Conservation Need associated with Arkansas Valley - Arkansas River ecobasin.

Common Name	Scientific Name	Priority Score
Magazine Stripetail	<i>Isoperla szczytkoi</i>	80
Microcaddisfly	<i>Paucicalcaria ozarkensis</i>	80
Nearctic Paduniellan Caddisfly	<i>Paduniella nearctica</i>	65
Mayfly	<i>Paraleptophlebia calcarica</i>	65
Elevated Spring Amphipod	<i>Stygobromus elatus</i>	65
Boston Mountains Crayfish	<i>Cambarus causeyi</i>	62
Alabama Shad	<i>Alosa alabamae</i>	52
Arkansas River Shiner	<i>Notropis girardi</i>	50
Pyramid Pigtoe	<i>Pleurobema rubrum</i>	38
Purple Lilliput	<i>Toxolasma lividum</i>	33
Isopod	<i>Lirceus bicuspidatus</i>	30
Queen Snake	<i>Regina septemvittata</i>	29
Alligator Gar	<i>Atractosteus spatula</i>	27
Plains Minnow	<i>Hybognathus placitus</i>	27
Longnose Darter	<i>Percina nasuta</i>	27
American Eel	<i>Anguilla rostrata</i>	24
Paddlefish	<i>Polyodon spathula</i>	24
Blue Sucker	<i>Cycleptus elongatus</i>	23
Bluntnose Shiner	<i>Cyprinella camura</i>	23

Suckermouth Minnow	<i>Phenacobius mirabilis</i>	23
Elktoe	<i>Alasmidonta marginata</i>	19
Brown Bullhead	<i>Ameiurus nebulosus</i>	19
Sunburst Darter	<i>Etheostoma mihileze</i>	19
Goldeye	<i>Hiodon alosoides</i>	19
Mooneye	<i>Hiodon tergisus</i>	19
Pealip Redhorse	<i>Moxostoma pisolabrum</i>	19
Striped Mullet	<i>Mugil cephalus</i>	19
Slenderhead Darter	<i>Percina phoxocephala</i>	19
Bismark Burrowing Crayfish	<i>Procambarus parasimulans</i>	19
Lilliput	<i>Toxolasma parvum</i>	19
Highfin Carpsucker	<i>Carpionodes velifer</i>	17
Round Pigtoe	<i>Pleurobema sintoxia</i>	17
Little Spectaclecase group	<i>Villosa sp. cf. lienosa</i>	17
Lake Chubsucker	<i>Erimyzon sucetta</i>	15
Highland Darter	<i>Etheostoma teddyroosevelt</i>	15
"Arkoma" Fatmucket	<i>Lampsilis sp. A cf. hydiana</i>	15
Shoal Chub	<i>Macrhybopsis hyostoma</i>	15
Saddleback Darter	<i>Percina vigil</i>	15
Fawnsfoot	<i>Truncilla donaciformis</i>	15

Arkansas Valley - White River

While some streams in this ecobasin, especially those near the main stem White River and lower Little Red River, are lower gradient, meandering streams flowing over moderately permeable soils, many of the streams in this ecobasin flow over moderate gradient channels underlain primarily by sandstone, shale and silt- stone. Higher in the subwatersheds, the terrain is mountainous with well-drained rockier soils. Stream substrates range from silt, sand, gravel, shale, rubble, boulders to bedrock ledges. Streams in the lower gradient valleys still retain some of the brownish turbidity of the Arkansas Valley ecoregion, while more upland streams have lower turbidity values due to stony, rockier soils. Representative streams include the Little Red River and Tenmile Creek.

Table 5.4. Land cover types in Arkansas Valley - White River ecobasin (percentage).

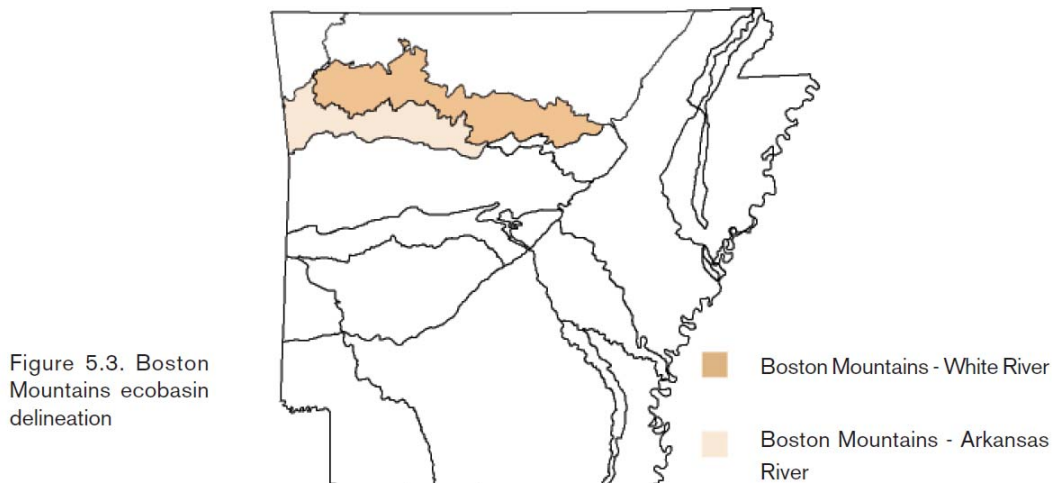
Arkansas Valley - White River	Water	Urban	Forest*	Pasture	Crop
2004	5	1	67	25	2
2011	5	5	61	25	1

* Includes forested wetlands

Table 5.5. Species of Greatest Conservation Need associated with Arkansas Valley – White River ecobasin.

Common Name	Scientific Name	Priority Score
Hubricht's Long-tailed Amphipod	<i>Allocrangonyx hubrichti</i>	42
Isopod	<i>Caecidotea dimorpha</i>	38
Isopod	<i>Lirceus bicuspidatus</i>	30
Queensnake	<i>Regina septemvittata</i>	29
Brown Bullhead	<i>Ameiurus nebulosus</i>	19
Autumn Darter	<i>Etheostoma autumnale</i>	19

Boston Mountains Ecobasins



Boston Mountains - White River

Water quality is high in this ecobasin (Figure 5.3) due the predominant land use, which is generally forested except for some pasture land and small farms. Streams have a moderate gradient consisting of riffle/pool complexes flowing over slow to moderately permeable soils. Stream substrates vary from gravel, rubble, boulder to bedrock. Because of the rugged to precipitous local relief, runoff is rapid allowing stream levels to rise quickly, causing seasonal scouring of stream channels. This ecobasin is the source of several of the highest quality streams in the state including the Buffalo, White and Kings Rivers.

Table 5.6. Land cover types in Boston Mountains - White River ecobasin (percentage).

Boston Mountains - White River	Water	Urban	Forest*	Pasture	Crop
2004	1	0	82	15	1
2011	1	4	78	16	1

* Includes forested wetlands

Table 5.7. Species of Greatest Conservation Need associated with Boston Mountain - White River ecobasin.

Common Name	Scientific Name	Priority Score
Yellowcheek Darter	<i>Etheostoma moorei</i>	100
Bowed Snowfly	<i>Allocaonia oribata</i>	80
Speckled Pocketbook	<i>Lampsilis streckeri</i>	80
Boston Mountains Crayfish	<i>Cambarus causeyi</i>	62
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	52
Winter Stonefly	<i>Allocaonia jeanae</i>	50
Winter Stonefly	<i>Allocaonia ozarkana</i>	50
Predaceous Diving Beetle	<i>Heterosternuta phoebeae</i>	46
Western Fanshell	<i>Cyprogenia aberti</i>	43
Isopod	<i>Caecidotea oculata</i>	42
Cave Obligate Planarian	<i>Dendrocoelopsis americana</i>	42
Isopod	<i>Caecidotea dimorpha</i>	38
Williams' Crayfish	<i>Orconectes williamsi</i>	34
Salamander Mussel	<i>Simpsonaias ambigua</i>	34
Ozark Shiner	<i>Notropis ozarcanus</i>	33
Purple Lilliput	<i>Toxolasma lividum</i>	33
Isopod	<i>Lirceus bicuspidatus</i>	30
Queen Snake	<i>Regina septemvittata</i>	29
Isopod	<i>Caecidotea ancyla</i>	27
Hubbs' Crayfish	<i>Cambarus hubbsi</i>	27
Midget Crayfish	<i>Orconectes nana</i>	27
Longnose Darter	<i>Percina nasuta</i>	27
American Eel	<i>Anguilla rostrata</i>	24
Paddlefish	<i>Polyodon spathula</i>	24
Isopod	<i>Caecidotea stiladactyla</i>	23
Ouachita Kidneyshell	<i>Ptychobranhus occidentalis</i>	23
Ozark Cave Amphipod	<i>Stygobromus ozarkensis</i>	23
Bleedingtooth Mussel	<i>Venustaconcha pleasii</i>	23
Elktoe	<i>Alasmidonta marginata</i>	19
Autumn Darter	<i>Etheostoma autumnale</i>	19
Ouachita Diving Beetle	<i>Heterosternuta ouachita</i>	19

American Brook Lamprey	<i>Lethenteron appendix</i>	19
"White" Hickorynut	<i>Obovaria sp. cf arkansasensis</i>	19
Gilt Darter	<i>Percina evides</i>	19
Lilliput	<i>Toxolasma parvum</i>	19
Pondhorn	<i>Uniomerus tetralasmus</i>	19
Highfin Carpsucker	<i>Carpionodes velifer</i>	17
Little Spectaclecase group	<i>Villosa sp. cf lienosa</i>	17
Rainbow	<i>Villosa iris</i>	15

Boston Mountains - Arkansas River

Streams in this ecobasin (Figure 5.3) generally have a moderate gradient and consist of typical pool/riffle complexes flowing through pastureland, small farms and large blocks of forest. Soils are slow/moderately permeable with a significant shale component, giving the water a greenish-blue tinge due to weathering, erosion and sedimentation. Stream substrates vary from sand, gravel, rubble, to car-sized boulders and bedrock. Due to their moderate gradient, rocky/bedrock substrates and streamside areas with high bluffs, these are high quality streams, from a water quality, recreational, as well as, an aquatic biota standpoint. Representative streams include the Mulberry River, part of Big Piney Creek, Lee Creek, forks of the Little Red River and Illinois Bayou.

Table 5.8. Land cover types in Boston Mountains - Arkansas River ecobasin (percentage).

Boston Mountains - Arkansas River	Water	Urban	Forest*	Pasture	Crop
2004	1	0	90	9	0
2011	1	3	87	9	0

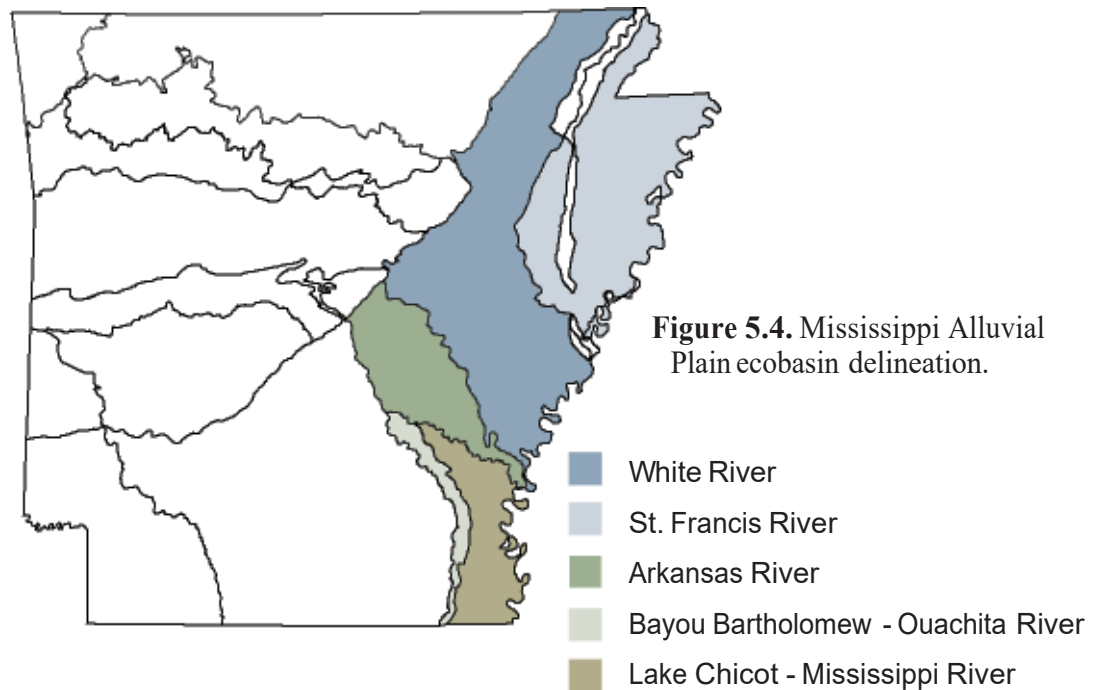
* Includes forested wetlands

Table 5.9. Species of Greatest Conservation Need associated with Boston Mountains - Arkansas River ecobasin.

Common Name	Scientific Name	Priority Score
Winter Stonefly	<i>Allocaonia warreni</i>	80
Nearctic Paduniellan Caddisfly	<i>Paduniella nearctica</i>	65
Boston Mountains Crayfish	<i>Cambarus causeyi</i>	62
Neosho Mucket	<i>Lampsilis rafinesqueana</i>	62
Winter Stonefly	<i>Allocaonia jeanae</i>	50
Western Fanshell	<i>Cyprogenia aberti</i>	43
Cave Obligate Isopod	<i>Caecidotea simulator</i>	42
Cave Obligate Planarian	<i>Dendrocoelopsis americana</i>	42
Bat Cave Isopod	<i>Caecidotea macropoda</i>	38
Spectaclecase	<i>Cumberlandia monodonta</i>	38
Pyramid Pigtoe	<i>Pleurobema rubrum</i>	38

Williams' Crayfish	<i>Orconectes williamsi</i>	34
Purple Lilliput	<i>Toxolasma lividum</i>	33
Mayfly	<i>Dannella provonshai</i>	30
"Elongate" Pigtoe	<i>Fusconaia sp. cf. flava</i>	29
Queen Snake	<i>Regina septemvittata</i>	29
Isopod	<i>Caecidotea ancyla</i>	27
Ozark Clubtail Dragonfly	<i>Gomphus ozarkensis</i>	27
Midget Crayfish	<i>Orconectes nana</i>	27
Longnose Darter	<i>Percina nasuta</i>	27
American Eel	<i>Anguilla rostrata</i>	24
Bluntnose Shiner	<i>Cyprinella camura</i>	23
Oklahoma Salamander	<i>Eurycea tynerensis</i>	23
Ozark Cave Amphipod	<i>Stygobromus ozarkensis</i>	23
Ellipse	<i>Venustaconcha ellipsiformis</i>	23
Elktoe	<i>Alasmidonta marginata</i>	19
Sunburst Darter	<i>Etheostoma mihileze</i>	19
Ouachita Diving Beetle	<i>Heterosternuta ouachita</i>	19
Gulf Mapleleaf	<i>Quadrula nobilis</i>	19
Little Spectaclecase group	<i>Villosa sp. cf. lienosa</i>	17
Highland Darter	<i>Etheostoma teddyroosevelt</i>	15

Mississippi Alluvial Plain Ecobasins



Mississippi Alluvial Plain (Bayou Bartholomew) - Ouachita River

This is a very narrow ecobasin (Figure 5.4) with varying gradient ranging from essentially flat to low hills. Streams in this ecobasin reflect this varying gradient and range from incised channels to meandering, flat channels with extensive flood-plain benches. Sedimentation in this ecobasin can be high depending on land use practices and extensiveness of the localized riparian zone. Besides Bayou Bartholomew, few streams flow or carry water year round. Bayou Bartholomew is aquatic species rich with much fish habitat, including large woody debris and instream cypress and tupelo brakes. Representative streams include Bayou Bartholomew and Cut-Off Creek.

Table 5.10. Land cover types in Mississippi Alluvial Plain (Bayou Bartholomew) - Ouachita River ecobasin (percentage).

MAP (Bayou Bartholomew) - Ouachita River	Water	Urban	Forest*	Pasture	Crop
2004	2	1	22	9	65
2011	2	5	26	1	66

* Includes forested wetlands

Table 5.11. Species of Greatest Conservation Need associated with Mississippi Alluvial Plain (Bayou Bartholomew) - Ouachita River ecobasin.

Common Name	Scientific Name	Priority Score
Texas Pigtoe	<i>Pleurobema riddellii</i>	65
Crystal Darter	<i>Crystallaria asprella</i>	38
Pyramid Pigtoe	<i>Pleurobema rubrum</i>	38
Bluehead Shiner	<i>Pteronotropis hubbsi</i>	33
Alligator Gar	<i>Atractosteus spatula</i>	27
Brown Bullhead	<i>Ameiurus nebulosus</i>	19
Goldeye	<i>Hiodon alosoides</i>	19
Tapered Pondhorn	<i>Uniomereus declivis</i>	19
Goldstripe Darter	<i>Etheostoma parvipinne</i>	17
Lake Chubsucker	<i>Erimyzon sucetta</i>	15
Southern Mapleleaf	<i>Quadrula apiculata</i>	15

Mississippi Alluvial Plain (Lake Chicot) - Mississippi River

This ecobasin (Figure 5.4) includes the main stem of the Mississippi River in the Lake Chicot area of extreme SE Arkansas. Soils are alluvial deposits of clay, sand and gravel and permeability is generally low, making drainage poor. Stream substrates mirror the soils in the area but have higher embeddedness values than elsewhere in the state. Stream gradients here are very flat, with numerous meandering and braided channels. Channel scar lakes (oxbows), abandoned channels and wetlands are common. Water resources here include marshes, swamps, sloughs and seasonally inundated wetlands. Oxbows and backwaters off larger rivers provide acceptable lentic habitat. Smaller lotic systems are incised, turbid, with generally low water quality and often low aquatic species diversity. Representative water bodies include the Mississippi River, Lake Chicot and Bayou Macon.

Table 5.12. Land cover types in Mississippi Alluvial Plain (Lake Chicot) - Mississippi River ecobasin (percentage).

MAP (Lake Chicot) - Mississippi River	Water	Urban	Forest*	Pasture	Crop
2004	5	1	16	7	71
2011	6	5	15	1	73

* Includes forested wetlands

Table 5.13. Species of Greatest Conservation Need associated with Mississippi Alluvial Plain - Lake Chicot ecobasin.

Common Name	Scientific Name	Priority Score
Alabama Shad	<i>Alosa alabamiae</i>	52
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	48
Sicklefin Chub	<i>Macrhybopsis meeki</i>	43
Bluehead Shiner	<i>Pteronotropis hubbsi</i>	33
Purple Pimpleback	<i>Quadrula refulgens</i>	30
Stonecat	<i>Noturus flavus</i>	29
Lake Sturgeon	<i>Acipenser fulvescens</i>	27
Alligator Gar	<i>Atractosteus spatula</i>	27
American Eel	<i>Anguilla rostrata</i>	24
Paddlefish	<i>Polyodon spathula</i>	24
Blue Sucker	<i>Cycleptus elongatus</i>	23
Flathead Chub	<i>Platygobio gracilis</i>	23
Ouachita Kidneyshell	<i>Ptychobranhus occidentalis</i>	23
Goldeye	<i>Hiodon alosoides</i>	19
Mooneye	<i>Hiodon tergisus</i>	19
Striped Mullet	<i>Mugil cephalus</i>	19
Channel Shiner	<i>Notropis wickliffi</i>	19
Pondhorn	<i>Uniomerus tetralasmus</i>	19
Swamp Darter	<i>Etheostoma fusiforme</i>	15
Shoal Chub	<i>Macrhybopsis hyostoma</i>	15

Mississippi Alluvial Plain - Arkansas River

This ecobasin (Figure 5.4) is the lower Arkansas River section of the Mississippi Alluvial Plain. It has fairly low stream gradients with decreases in elevation of only a few feet per mile. Underlying soils are composed of alluvial deposits of clay, sand and gravel, are deep and generally impermeable. As a result, natural streams in this ecobasin meander strongly, are deeply incised with bottoms composed of silt or clays. Conversion of native forests/vegetation to agricultural fields has decreased riparian zones next to streams and plowed land has added heavy loads of sediment to ecobasin streams. Representative streams in this ecobasin include the lower Arkansas River on one end of the size scale and Bayou Meto and Bayou Two Prairie on the other end of the scale.

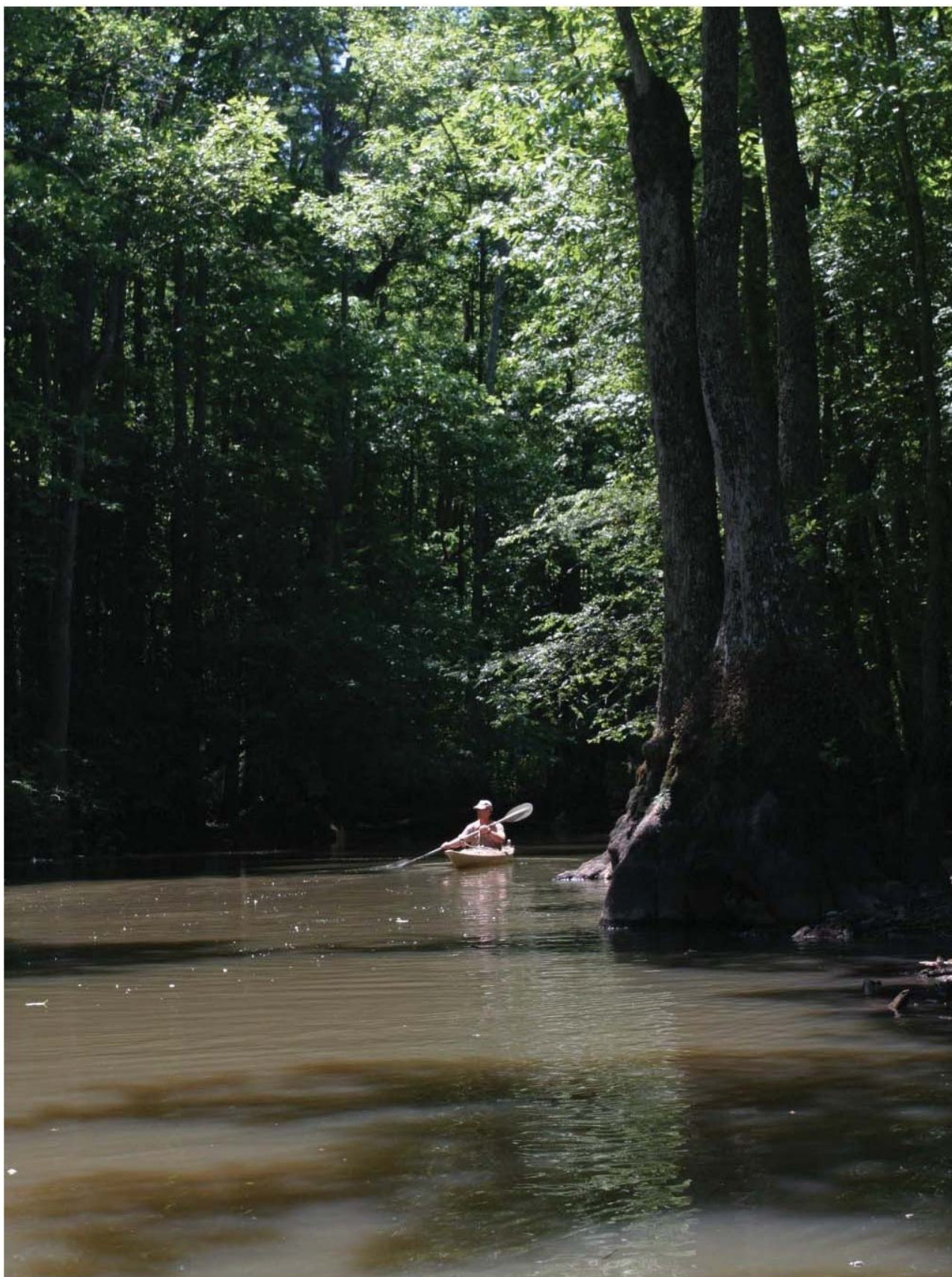
Table 5.14. Land cover types in Mississippi Alluvial Plain - Arkansas River ecobasin (percentage).

Mississippi Alluvial Plain – Arkansas River	Water	Urban	Forest*	Pasture	Crop
2004	6	2	23	5	63
2011	7	6	26	2	59

* Includes forested wetlands

Table 5.15. Species of Greatest Conservation Need associated with Mississippi Alluvial Plain - Arkansas River ecobasin.

Common Name	Scientific Name	Priority Score
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	48
Sicklefin Chub	<i>Macrhybopsis meeki</i>	43
Lake Sturgeon	<i>Acipenser fulvescens</i>	27
Alligator Gar	<i>Atractosteus spatula</i>	27
American Eel	<i>Anguilla rostrata</i>	24
Paddlefish	<i>Polyodon spathula</i>	24
Blue Sucker	<i>Cycleptus elongatus</i>	23
Flathead Chub	<i>Platygobio gracilis</i>	23
Brown Bullhead	<i>Ameiurus nebulosus</i>	19
Goldeye	<i>Hiodon alosoides</i>	19
Pealip Redhorse	<i>Moxostoma pisolabrum</i>	19
Striped Mullet	<i>Mugil cephalus</i>	19
Channel Shiner	<i>Notropis wickliffi</i>	19
Highfin Carpsucker	<i>Carpionodes velifer</i>	17
Lake Chubsucker	<i>Erimyzon sucetta</i>	15
Swamp Darter	<i>Etheostoma fusiforme</i>	15
Shoal Chub	<i>Macrhybopsis hyostoma</i>	15



Mississippi Alluvial Plain - White River (Bayou DeView)

AGFC File Photo

Mississippi Alluvial Plain - White River

Streams in this ecobasin (Figure 5.4) are some of the most productive, speciose, bottomland hardwood, low gradient systems in the state. Natural channels in this ecobasin were tortuously meandering, having silt, sand and gravel substrates and abundant cover consisting of mainly large, woody debris. Riparian zones were dense, having some of the largest hardwood trees in the state. Currently, land use changes have decreased riparian zones significantly and caused substantial increases in turbidity due to sedimentation. While stream and connected oxbow lakes are still some of the most productive in the state, native fish fauna, especially large river fishes, have decreased due to upstream flow and thermal modifications from numerous impoundments. Soils in some sub-watersheds have high levels of magnesium and sodium, contributing to higher total dissolved solids. Representative streams include the lower White River, the Cache River and Boat Gunwale Slash.

Table 5.16. Land cover types in Mississippi Alluvial Plain - White River ecobasin (percentage).

Mississippi Alluvial Plain - White River	Water	Urban	Forest*	Pasture	Crop
2004	3	1	23	5	68
2011	3	5	25	2	65

* Includes forested wetlands

Table 5.17. Species of Greatest Conservation Need associated with Mississippi Alluvial Plain - White River ecobasin.

Common Name	Scientific Name	Priority Score
Alabama Shad	<i>Alosa alabamae</i>	52
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	52
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	48
Pink Mucket	<i>Lampsilis abrupta</i>	46
Fat Pocketbook	<i>Potamilus capax</i>	46
Western Fanshell	<i>Cyprogenia aberti</i>	43
Sicklefin Chub	<i>Macrhybopsis meeki</i>	43
Crystal Darter	<i>Crystallaria asprella</i>	38
Stargazing Darter	<i>Percina uranidea</i>	38
Pyramid Pigtoe	<i>Pleurobema rubrum</i>	38
Salamander Mussel	<i>Simpsonaias ambigua</i>	34
Western Sand Darter	<i>Ammocrypta clara</i>	33
Purple Lilliput	<i>Toxolasma lividum</i>	33
Silver Redhorse	<i>Moxostoma anisurum</i>	29
Lake Sturgeon	<i>Acipenser fulvescens</i>	27
Alligator Gar	<i>Atractosteus spatula</i>	27
American Eel	<i>Anguilla rostrata</i>	24
Paddlefish	<i>Polyodon spathula</i>	24
Blue Sucker	<i>Cycleptus elongatus</i>	23
Sabine Shiner	<i>Notropis sabiniae</i>	23
Flathead Chub	<i>Platygobio gracilis</i>	23

Ouachita Kidneyshell	<i>Ptychobranhus occidentalis</i>	23
Elktoe	<i>Alasmidonta marginata</i>	19
Brown Bullhead	<i>Ameiurus nebulosus</i>	19
Goldeye	<i>Hiodon alosoides</i>	19
Mooneye	<i>Hiodon tergisus</i>	19
American Brook Lamprey	<i>Lethenteron appendix</i>	19
Pealip Redhorse	<i>Moxostoma pisolabrum</i>	19
Striped Mullet	<i>Mugil cephalus</i>	19
Channel Shiner	<i>Notropis wickliffi</i>	19
Hickorynut	<i>Obovaria olivaria</i>	19
Gilt Darter	<i>Percina evides</i>	19
Ohio Pigtoe	<i>Pleurobema cordatum</i>	19
Lilliput	<i>Toxolasma parvum</i>	19
Texas Lilliput	<i>Toxolasma texasiense</i>	19
Pondhorn	<i>Uniomerus tetralasmus</i>	19
Highfin Carpsucker	<i>Carpionodes velifer</i>	17
Goldstripe Darter	<i>Etheostoma parvipinne</i>	17
Round Pigtoe	<i>Pleurobema sintoxia</i>	17
Little Spectaclecase group	<i>Villosa sp. cf. lienosa</i>	17
Lake Chubsucker	<i>Erimyzon sucetta</i>	15
Swamp Darter	<i>Etheostoma fusiforme</i>	15
Shoal Chub	<i>Macrhybopsis hyostoma</i>	15
Southern Mapleleaf	<i>Quadrula apiculata</i>	15
Fawnsfoot	<i>Truncilla donaciformis</i>	15
Rainbow	<i>Villosa iris</i>	15

Mississippi Alluvial Plain - St. Francis River

The topography within this ecobasin has only small differences in elevation with some stream gradients of less than a foot per mile. Natural streams within this ecobasin are low gradient, meandering, incised channels with extensive riparian zones and forested floodplains. Oxbows and backwater areas are abundant on natural channel areas and are home to a variety of aquatic species. However, many of the streams in this ecobasin are extensively modified, including channelization and flood way modification. Stream sedimentation is extreme, reflected in decreased diversity of aquatic fauna. Representative streams include the main stem St. Francis River, L'Anguille River and Second Creek.

Table 5.18. Land cover types in Mississippi Alluvial Plain – St. Francis River ecobasin (percentage).

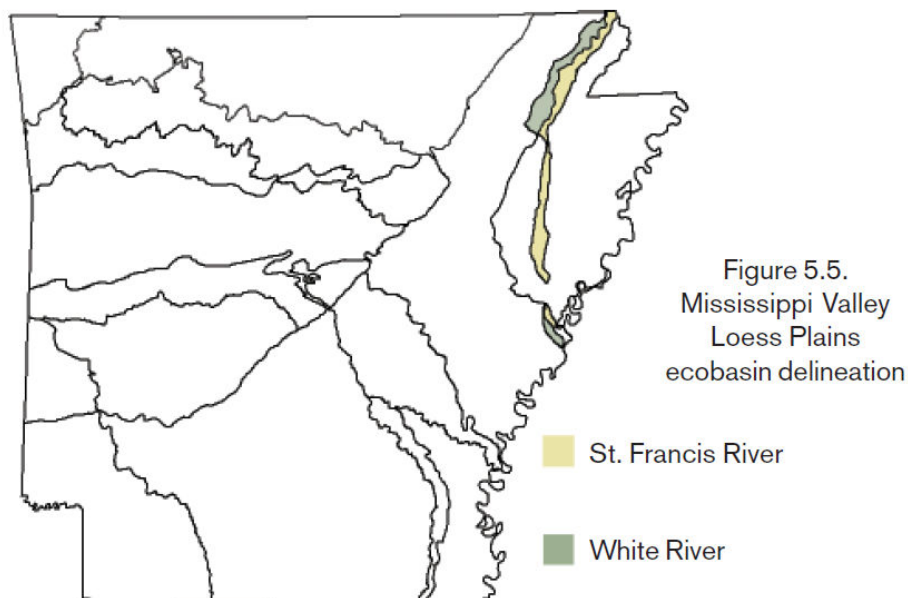
Mississippi Alluvial Plain - St. Francis	Water	Urban	Forest*	Pasture	Crop
2004	2	1	10	3	83
2011	2	7	8	1	81

* Includes forested wetlands

Table 5.19. Species of Greatest Conservation Need associated with Mississippi Alluvial Plain – St. Francis River ecobasin.

Common Name	Scientific Name	Priority Score
Scaleshell	<i>Leptodea leptodon</i>	76
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	48
Fat Pocketbook	<i>Potamilus capax</i>	46
Western Fanshell	<i>Cyprogenia aberti</i>	43
Sicklefin Chub	<i>Macrhybopsis meeki</i>	43
Western Sand Darter	<i>Ammocrypta clara</i>	33
Purple Lilliput	<i>Toxolasma lividum</i>	33
Stonecat	<i>Noturus flavus</i>	29
Lake Sturgeon	<i>Acipenser fulvescens</i>	27
Alligator Gar	<i>Atractosteus spatula</i>	27
American Eel	<i>Anguilla rostrata</i>	24
Paddlefish	<i>Polyodon spathula</i>	24
Blue Sucker	<i>Cycleptus elongatus</i>	23
Sabine Shiner	<i>Notropis sabinae</i>	23
Suckermouth Minnow	<i>Phenacobius mirabilis</i>	23
Flathead Chub	<i>Platygobio gracilis</i>	23
Pink Heelsplitter	<i>Potamilus alatus</i>	23
Central Mudminnow	<i>Umbra limi</i>	23
Bleedingtooth Mussel	<i>Venustaconcha pleasii</i>	23
Goldeye	<i>Hiodon alosoides</i>	19
Pealip Redhorse	<i>Moxostoma pisolabrum</i>	19
Hickorynut	<i>Obovaria olivaria</i>	19
Ohio Pigtoe	<i>Pleurobema cordatum</i>	19
Gulf Mapleleaf	<i>Quadrula nobilis</i>	19
Lilliput	<i>Toxolasma parvum</i>	19
Tapered Pondhorn	<i>Unio merus declivis</i>	19
Pondhorn	<i>Unio merus tetralasmus</i>	19
Little Spectaclecase group	<i>Villosa sp. cf. lienosa</i>	17
Swamp Darter	<i>Etheostoma fusiforme</i>	15
Southern Mapleleaf	<i>Quadrula apiculata</i>	15
Fawnsfoot	<i>Truncilla donaciformis</i>	15

Mississippi Valley Loess Plains Ecobasins



Mississippi Valley Loess Plains – White River

This narrow ecobasin in northeast Arkansas (Figure 5.5) is veneered with windblown silt deposits (loess) and underlain by erosion-prone, unconsolidated coastal plain sediments. The topography includes hills and ridges. Streams tend to have lower gradients and more silty substrates than the loess plains draining into the St. Francis River. Includes the headwaters of Bayou deView but few other large, perennial streams.

Table 5.20. Land cover types in Mississippi River Loess Plains - White River ecobasin (percentage).

Mississippi River Loess Plains - White River	Water	Urban	Forest	Pasture	Crop
2004	1	4	53	14	28
2011	1	11	52	18	18

* Includes forested wetlands

Table 5.21. Species of Greatest Conservation Need associated with Mississippi River Loess Plains – White River ecobasin.

Common Name	Scientific Name	Priority Score
Brown Bullhead	<i>Ameiurus nebulosus</i>	19

Mississippi Valley Loess Plains - St. Francis River

This Northeast Arkansas ecobasin is narrow and a disjunct series of loess-capped hills surrounded by lower elevation Mississippi Alluvial Plain. Spring- fed streams and seep areas occur on the lower slopes and basal areas. Soils are generally well drained and larger creeks deeply incised into the soft substrates. Along with silt and sandy substrates, there are some gravel-bottomed streams in this ecobasin, replete with sensitive fish species. Several of the larger creeks in this ecobasin (Storm Creek, Bear Creek) are impounded by federal and state agencies.

Table 5.22. Land cover types in Mississippi River Loess Plains - St. Francis River ecobasin (percentage).

Mississippi River Loess Plains - St. Francis	Water	Urban	Forest	Pasture	Crop
2004	1	4	55	15	25
2011	1	12	53	19	15

* Includes forested wetlands

Table 5.23. Species of Greatest Conservation Need associated with Mississippi River Loess Plains - St. Francis River ecobasin.

Common Name	Scientific Name	Priority Score
Pyramid Pigtoe	<i>Pleurobema rubrum</i>	38
Plains Minnow	<i>Hybognathus placitus</i>	27
Goldstripe Darter	<i>Etheostoma parvipinne</i>	17
Round Pigtoe	<i>Pleurobema sintoxia</i>	17
Shoal Chub	<i>Macrhybopsis hyostoma</i>	15

Ouachita Mountains Ecobasins

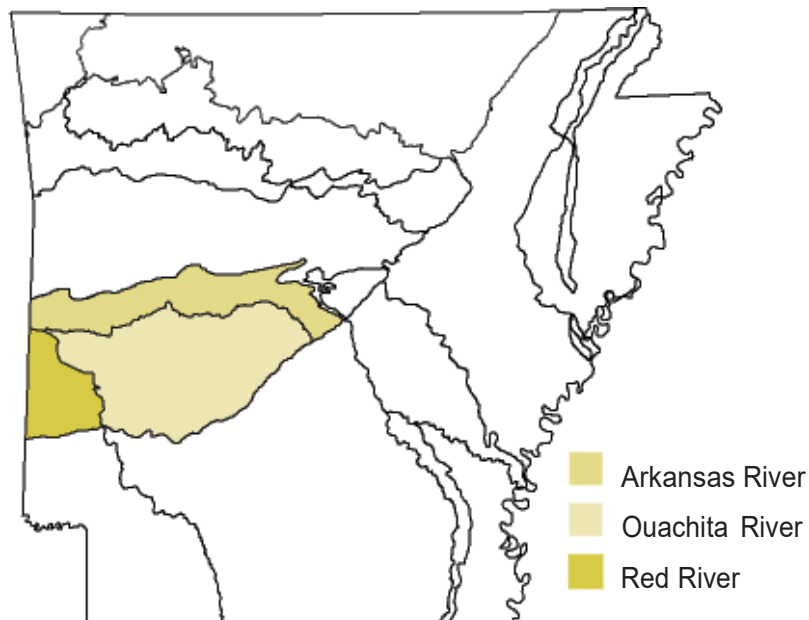


Figure 5.6. Ouachita Mountains ecobasin delineation.

Ouachita Mountains - Ouachita River

Streams in this ecobasin (Figure 5.6) usually follow the east-west valleys in this rugged, interior highland mountain range although occasionally they will cut across the ridges, producing cascades, rapids and waterfalls. Perennial springs and seeps are common. Stream substrates are composed of gravel, cobble, boulder and bedrock. Water quality, in general, is very high in this ecobasin with dissolved solids, turbidity, total phosphorous and biological oxygen demand lower than in most ecobasins and dissolved oxygen levels higher. Some of the state's most sensitive aquatic communities are found in this ecobasin. Stream fish populations are dominated by sensitive species including minnows, sunfish, darters and bass, especially smallmouth bass. Most of the larger rivers in this ecobasin have been dammed, forming large, deep reservoirs with high quality sport fisheries. Representative streams include the Ouachita River, Caddo River, Big Mazarn Creek and Prairie Bayou.

Table 5.24. Land cover types in Ouachita Mountains - Ouachita River ecobasin (percentage).

Ouachita Mountains - Ouachita River	Water	Urban	Forest	Pasture	Crop
2004	3	1	86	10	0
2011	3	6	83	8	0

* Includes forested wetlands

Table 5.25. Species of Greatest Conservation Need associated with Ouachita Mountains – Ouachita River ecobasin.

Common Name	Scientific Name	Priority Score
Caddo Madtom	<i>Noturus taylori</i>	80
Irons Fork Burrowing Crayfish	<i>Procambarus reimeri</i>	80
Caddo Sallfly	<i>Alloperla caddo</i>	65
Saline Burrowing Crayfish	<i>Fallicambarus strawni</i>	65
Arkansas Fatmucket	<i>Lampsilis powellii</i>	57
Alabama Shad	<i>Alosa alabamae</i>	52
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	52
Arkansas Agapetus Caddisfly	<i>Agapetus medicus</i>	50
Stonefly	<i>Leuctra paleo</i>	50
Paleback Darter	<i>Etheostoma pallididorsum</i>	46
Ouachita Burrowing Crayfish	<i>Fallicambarus harpi</i>	46
Daisy Burrowing Crayfish	<i>Fallicambarus jeanae</i>	46
Ouachita Madtom	<i>Noturus lachneri</i>	46
Ouachita Darter	<i>Percina brucethompsoni</i>	46
Crystal Darter	<i>Crystallaria asprella</i>	38
Spectaclecase	<i>Cumberlandia monodonta</i>	38
Stargazing Darter	<i>Percina uranidea</i>	38
Pyramid Pigtoe	<i>Pleurobema rubrum</i>	38
Kiamichi Shiner	<i>Notropis ortenburgeri</i>	33
Peppered Shiner	<i>Notropis perpallidus</i>	33
Purple Lilliput	<i>Toxolasma lividum</i>	33
Ozark Snaketail Dragonfly	<i>Ophiogomphus westfalli</i>	32
Ouachita Mountain Crayfish	<i>Procambarus tenuis</i>	30
Ozark Clubtail Dragonfly	<i>Gomphus ozarkensis</i>	27
Mena Crayfish	<i>Orconectes menae</i>	27
American Eel	<i>Anguilla rostrata</i>	24
Paddlefish	<i>Polyodon spathula</i>	24
Isopod	<i>Caecidotea fonticulus</i>	23
Ouachita Streambed Salamander	<i>Eurycea subfluvicola</i>	23
Ouachita Shore Bug	<i>Pentacora ouachita</i>	23
Ouachita Kidneyshell	<i>Ptychobranhus occidentalis</i>	23
Elktoe	<i>Alasmidonta marginata</i>	19
Brown Bullhead	<i>Ameiurus nebulosus</i>	19
"Ouachita" Fanshell	<i>Cyprogenia sp. cf aberti</i>	19
Beaded Darter	<i>Etheostoma clinton</i>	19
Southern Pocketbook	<i>Lampsilis ornata</i>	19
Redspot Chub	<i>Nocomis asper</i>	19
Redspotted Stream Crayfish	<i>Orconectes acares</i>	19
Little River Creek Crayfish	<i>Orconectes leptogonopodus</i>	19
Bismark Burrowing Crayfish	<i>Procambarus parasimulans</i>	19
Lilliput	<i>Toxolasma parvum</i>	19

Texas Lilliput	<i>Toxolasma texasiense</i>	19
Pondhorn	<i>Uniomerus tetralasmus</i>	19
Round Pigtoe	<i>Pleurobema sintoxia</i>	17
Little Spectaclecase group	<i>Villosa sp. cf. lienosa</i>	17
Saddleback Darter	<i>Percina vigil</i>	15

Ouachita Mountains - Arkansas River

The Ouachita Mountain ecoregion, in general, is generally composed of sandstones, shales and novaculite, with the Arkansas River basin part of it (Fourche Mountains) having characteristic long east-west ridges (even longer in this ecobasin). This ecobasin also has a higher component of silts and sands, causing north-draining streams to be more turbid due to smaller sediments than other areas of the Ouachitas. Stream gradients are moderate and nutrient, mineral and biochemical water quality parameters are low in the surface waters here. Streams have a typical riffle/pool pattern and structure with silt, sand, gravel, boulder and shale bedrock substrates. Representative streams include the Fourche la Pave, upper Petit Jean River and Little Maumelle Creek.

Table 5.26. Land cover types in Ouachita Mountains - Arkansas River ecobasin (percentage).

Ouachita Mountains - Arkansas River	Water	Urban	Forest	Pasture	Crop
2004	2	3	85	9	1
2011	2	8	81	8	1

* Includes forested wetlands

Table 5.27. Species of Greatest Conservation Need associated with Ouachita Mountains - Arkansas River ecobasin.

Common Name	Scientific Name	Priority Score
Scaleshell	<i>Leptodea leptodon</i>	76
Mountain Cave Amphipod	<i>Stygobromus montanus</i>	65
Microcaddisfly	<i>Ochrotrichia robisoni</i>	57
Kiamichi Shiner	<i>Notropis ortenburgeri</i>	33
Purple Lilliput	<i>Toxolasma lividum</i>	33
Isopod	<i>Lirceus bicuspidatus</i>	30
Ouachita Mountain Crayfish	<i>Procambarus tenuis</i>	30
Longnose Darter	<i>Percina nasuta</i>	27
American Eel	<i>Anguilla rostrata</i>	24
Blue Sucker	<i>Cycleptus elongatus</i>	23
Suckermouth Minnow	<i>Phenacobius mirabilis</i>	23
Ouachita Kidneyshell	<i>Ptychobranhus occidentalis</i>	23
Pealip Redhorse	<i>Moxostoma pisolabrum</i>	19
Redspotted Stream Crayfish	<i>Orconectes acares</i>	19
Lilliput	<i>Toxolasma parvum</i>	19

Little Spectaclecase group	<i>Villosa sp. cf lienosa</i>	17
Highland Darter	<i>Etheostoma teddyroosevelt</i>	15
"Arkoma" Fatmucket	<i>Lampsilis sp. A cf hydiana</i>	15
Fawnsfoot	<i>Truncilla donaciformis</i>	15

Ouachita Mountains - Red River

This western ecobasin (Figure 5.6) in the Ouachita ecoregion has medium to occasionally high gradients reflected in the streams coursing through this ecobasin. Due to these higher gradients, substrates are coarser than in other ecobasins with more gravels, cobbles, boulders and bedrock and less silts and sands. Turbidity is very low because of the higher gradient and lower fine sediments and riparian zones are generally fairly intact, except for some intensively logged areas. Channel structure is generally riffle/pool/run and rocky, boulder substrates and bedrock ledges provide adequate cover for a variety of sensitive fish and other aquatic species (i.e. leopard darter, a federally-listed threatened species). Representative streams include the Cossatot River, the Rolling Fork Creek and Board Camp Creek.

Table 5.28. Land cover types in Ouachita Mountains - Red River ecobasin (percentage).

Ouachita Mountains - Red River	Water	Urban	Forest	Pasture	Crop
2004	1	0	88	11	0
2011	1	5	84	10	0

* Includes forested wetlands

Table 5.29. Species of Greatest Conservation Need associated with Ouachita Mountains - Red River ecobasin.

Common Name	Scientific Name	Priority Score
Saline Burrowing Crayfish	<i>Fallicambarus strawni</i>	65
Leopard Darter	<i>Percina pantherina</i>	62
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	52
Arkansas Agapetus Caddisfly	<i>Agapetus medicus</i>	50
Bayou Bodcau Crayfish	<i>Bouchardina robisoni</i>	50
Ouachita Needlefly	<i>Zealeuctra wachita</i>	50
Kiamichi Shiner	<i>Notropis ortenburgeri</i>	33
Purple Lilliput	<i>Toxolasma lividum</i>	33
Ozark Snaketail Dragonfly	<i>Ophiogomphus westfalli</i>	32
Ouachita Mountain Crayfish	<i>Procambarus tenuis</i>	30
Ouachita Shiner	<i>Lythrurus snelsoni</i>	27
Rocky Shiner	<i>Notropis suttkusi</i>	27
Mena Crayfish	<i>Orconectes menae</i>	27
Lowland Topminnow	<i>Fundulus blairae</i>	23

Ouachita Shore Bug	<i>Pentacora ouachita</i>	23
Ouachita Kidneyshell	<i>Ptychobranhus occidentalis</i>	23
Brown Bullhead	<i>Ameiurus nebulosus</i>	19
Ouachita Diving Beetle	<i>Heterosternuta ouachita</i>	19
Blackspot Shiner	<i>Notropis atrocaudalis</i>	19
Little River Creek Crayfish	<i>Orconectes leptogonopodus</i>	19
Bismark Burrowing Crayfish	<i>Procambarus parasimulans</i>	19
Lilliput	<i>Toxolasma parvum</i>	19
Little Spectaclecase group	<i>Villosa sp. cf lienosa</i>	17

Ozark Highlands Ecobasins

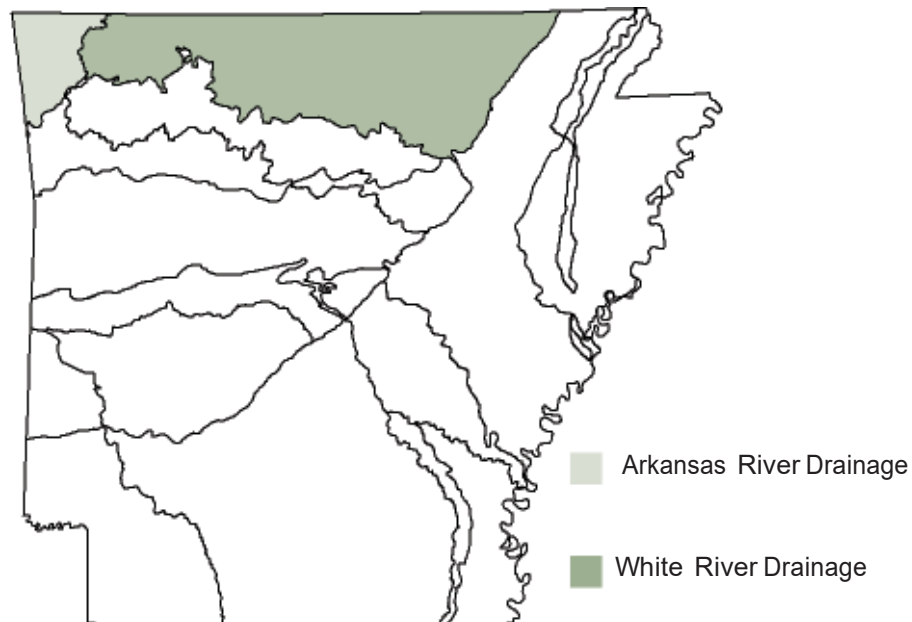


Figure 5.7. Ozark Highlands ecobasin delineation.

Ozark Highlands - Arkansas River

This ecobasin (Figure 5.7) is underlain by cherty limestone with karst features making sinkholes, caves, and cold, spring-fed streams common. Gaining or losing streams are common due to the springs and sinkholes in the region. Streams are composed of riffles and pools with chert gravel and rubble common. Bedrock is also common, forming overhead cover in the way of bedrock ledges for fish, salamanders and aquatic invertebrates. Stream gradients are moderate to high. Ambient natural turbidity is low. Nutrient input from various anthropogenic activities in the watersheds here can be

significant and impact aquatic biota in a number of ways. Representative streams here include the Illinois River and Spavinaw Creek.

Table 5.30. Land cover types in Ozark Highlands - Arkansas River ecobasin (percentage).

Ozark Highlands - Arkansas River	Water	Urban	Forest	Pasture	Crop
2004	1	5	30	57	7
2011	1	16	32	50	1

* Includes forested wetlands

Table 5.31. Species of Greatest Conservation Need associated with Ozark Mountains - Arkansas River ecobasin.

Common Name	Scientific Name	Priority Score
Benton County Cave Crayfish	<i>Cambarus aculabrum</i>	80
Sulphur Springs Diving Beetle	<i>Heterosternuta sulphuria</i>	80
Neosho Mucket	<i>Lampsilis rafinesqueana</i>	62
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	52
Arkansas Agapetus Caddisfly	<i>Agapetus medicus</i>	50
Contorted Ochrotrichian	<i>Ochrotrichia contorta</i>	50
Ozark Cavefish	<i>Troglichthys rosae</i>	43
Cave Obligate Planarian	<i>Dendrocoelopsis americana</i>	42
Bat Cave Isopod	<i>Caecidotea macropropoda</i>	38
Arkansas Darter	<i>Etheostoma cragini</i>	38
Bristly Cave Crayfish	<i>Cambarus setosus</i>	34
Williams' Crayfish	<i>Orconectes williamsi</i>	34
Purple Lilliput	<i>Toxolasma lividum</i>	33
Isopod	<i>Caecidotea steevesi</i>	30
Meek's Short Pointed Crayfish	<i>Orconectes meeki brevis</i>	30
Least Darter	<i>Etheostoma microperca</i>	29
"Elongate" Pigtoe	<i>Fusconaia sp. cf. flava</i>	29
Isopod	<i>Caecidotea ancyla</i>	27
Midget Crayfish	<i>Orconectes nana</i>	27
American Eel	<i>Anguilla rostrata</i>	24
Isopod	<i>Caecidotea stiladactyla</i>	23
Bluntnose Shiner	<i>Cyprinella camura</i>	23
Spotfin Shiner	<i>Cyprinella spiloptera</i>	23
Oklahoma Salamander	<i>Eurycea tynnerensis</i>	23
Neosho Midget Crayfish	<i>Orconectes macrus</i>	23
Ouachita Kidneyshell	<i>Ptychobranhus occidentalis</i>	23
Ozark Cave Amphipod	<i>Stygobromus ozarkensis</i>	23
Ellipse	<i>Venustaconcha ellipsiformis</i>	23
Elktoe	<i>Alasmodonta marginata</i>	19
Sunburst Darter	<i>Etheostoma mihileze</i>	19
Grotto Salamander "western	<i>Eurycea spelaea western</i>	19
Pealip Redhorse	<i>Moxostoma pisolabrum</i>	19

Redspot Chub	<i>Nocomis asper</i>	19
Slenderhead Darter	<i>Percina phoxocephala</i>	19
Lilliput	<i>Toxolasma parvum</i>	19
Highfin Carpsucker	<i>Carpionodes velifer</i>	17
Little Spectaclecase group	<i>Villosa sp. cf. lienosa</i>	17
Highland Darter	<i>Etheostoma teddyroosevelt</i>	15
Grotto Salamander "eastern clade"	<i>Eurycea spelaea eastern</i>	15



Ozark Highlands - White River (Buffalo River)

Ozark Highlands - White River

Streams in the White River ecobasin (Figure 5.7) of the Ozarks Highlands ecoregion are some of the most productive yet have some of the highest water quality in the state. Underlain generally by dolomite and highly fractured and soluble limestone, these streams have alkalinity, total dissolved solids (TDS), and total hardness that are all relatively high. Streams are mostly clear, cold, highly oxygenated, perennial, and often spring-fed, typically with gravel, cobble, boulder, and bedrock substrates. Limestone bluffs arching up from streams are indicative of this ecobasin. Gradients are usually at least moderate. All of the above characteristics meld together to produce aquatic habitat conducive to an aquatic community with many sensitive species. For example, the fish community is dominated by minnows, sunfish, darters, and catostomids. Conversely, significant human and confined animal population growth in areas within this ecobasin in the past decade have caused increases in nitrates, fecal coliform bacteria, orthophosphorous, sedimentation and other water quality metrics that typically have a negative impact on sensitive aquatic species of vertebrates and invertebrates. Representative streams include the middle and lower Buffalo River, upper White River, Spring River, Kings River, Crooked Creek and Yokum Creek.

Table 5.32. Land cover types in Ozark Highlands - White River ecobasin (percentage).

Ozark Highlands - White River	Water	Urban	Forest	Pasture	Crop
2004	3	1	68	26	2
2011	2	5	66	26	1

* Includes forested wetlands

Table 5.33. Species of Greatest Conservation Need associated with Ozark Mountains – White River ecobasin.

Common Name	Scientific Name	Priority Score
Curtis Pearlymussel	<i>Epioblasma florentina curtisii</i>	100
Turgid Blossom	<i>Epioblasma turgidula</i>	100
Foushee Cavesnail	<i>Amnicola cora</i>	80
Hell Creek Cave Crayfish	<i>Cambarus zophonastes</i>	80
Isopod	<i>Lirceus bidentatus</i>	80
Scaleshell	<i>Leptodea leptodon</i>	76
Ozark Hellbender	<i>Cryptobranchus alleganiensis</i>	71
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	52
Arkansas Agapetus Caddisfly	<i>Agapetus medicus</i>	50
Winter Stonefly	<i>Allocaonia jeanae</i>	50
Coldwater Crayfish	<i>Orconectes eupunctus</i>	50
Predaceous Diving Beetle	<i>Heterosternuta phoebeae</i>	46
Pink Mucket	<i>Lampsilis abrupta</i>	46
Mammoth Spring Crayfish	<i>Orconectes marchandi</i>	46
Western Fanshell	<i>Cyprogenia aberti</i>	43
Snuffbox	<i>Epioblasma triquetra</i>	43
Ozark Cavefish	<i>Troglichthys rosae</i>	43
Amphipod	<i>Baetis pseudomucronatus</i>	42
Cave Obligate Planarian	<i>Dendrocoelopsis americana</i>	42
Isopod	<i>Caecidotea dimorpha</i>	38
Crystal Darter	<i>Crystallaria asprella</i>	38
Stargazing Darter	<i>Percina uranidea</i>	38
Pyramid Pigtoe	<i>Pleurobema rubrum</i>	38
Bristly Cave Crayfish	<i>Cambarus setosus</i>	34
Williams' Crayfish	<i>Orconectes williamsi</i>	34
Salamander Mussel	<i>Simpsonaias ambigua</i>	34
Western Sand Darter	<i>Ammocrypta clara</i>	33
Ozark Shiner	<i>Notropis ozarcanus</i>	33
Purple Lilliput	<i>Toxolasma lividum</i>	33
Ozark Snaketail Dragonfly	<i>Ophiogomphus westfalli</i>	32
Slippershell Mussel	<i>Alasmodonta viridis</i>	31
Isopod	<i>Caecidotea steevesi</i>	30

Isopod	<i>Lirceus bicuspidatus</i>	30
Strawberry River Darter	<i>Etheostoma fragi</i>	29
Silver Redhorse	<i>Moxostoma anisurum</i>	29
Isopod	<i>Caecidotea ancyla</i>	27
Isopod	<i>Caecidotea salemensis</i>	27
Hubbs' Crayfish	<i>Cambarus hubbsi</i>	27
Midget Crayfish	<i>Orconectes nana</i>	27
Longnose Darter	<i>Percina nasuta</i>	27
Southern Cavefish	<i>Typhlichthys subterraneus</i>	27
American Eel	<i>Anguilla rostrata</i>	24
Paddlefish	<i>Polyodon spathula</i>	24
Isopod	<i>Caecidotea stiladactyla</i>	23
Blue Sucker	<i>Cycleptus elongatus</i>	23
Spotfin Shiner	<i>Cyprinella spiloptera</i>	23
Oklahoma Salamander	<i>Eurycea tynerensis</i>	23
Ozark Pigtoe	<i>Fusconaia ozarkensis</i>	23
Sabine Shiner	<i>Notropis sabinae</i>	23
Ouachita Kidneyshell	<i>Ptychobranchus occidentalis</i>	23
Ozark Cave Amphipod	<i>Stygobromus ozarkensis</i>	23
Bleedingtooth Mussel	<i>Venustaconcha pleasii</i>	23
Gapped Ringed Crayfish	<i>Orconectes neglectus</i>	20
Elktoe	<i>Alasmidonta marginata</i>	19
Autumn Darter	<i>Etheostoma autumnale</i>	19
Current Darter	<i>Etheostoma uniporum</i>	19
Grotto Salamander "northern	<i>Eurycea spelaea northern</i>	19
Ouachita Diving Beetle	<i>Heterosternuta ouachita</i>	19
Mooneye	<i>Hiodon tergisus</i>	19
American Brook Lamprey	<i>Lethenteron appendix</i>	19
Pealip Redhorse	<i>Moxostoma pisolabrum</i>	19
Striped Mullet	<i>Mugil cephalus</i>	19
Channel Shiner	<i>Notropis wickliffi</i>	19
Hickorynut	<i>Obovaria olivaria</i>	19
"White" Hickorynut	<i>Obovaria sp. cf arkansasensis</i>	19
Gilt Darter	<i>Percina evides</i>	19
Slenderhead Darter	<i>Percina phoxocephala</i>	19
Ohio Pigtoe	<i>Pleurobema cordatum</i>	19
Lilliput	<i>Toxolasma parvum</i>	19
Highfin Carpsucker	<i>Carpionodes velifer</i>	17
Little Spectaclecase group	<i>Villosa sp. cf lienosa</i>	17
Lake Chubsucker	<i>Erimyzon sucetta</i>	15
Grotto Salamander "eastern	<i>Eurycea spelaea eastern</i>	15
Least Brook Lamprey	<i>Lampetra aepyptera</i>	15
Shoal Chub	<i>Macrhybopsis hyostoma</i>	15
Saddleback Darter	<i>Percina vigil</i>	15
Rainbow	<i>Villosa iris</i>	15

South Central Plains Ecobasins

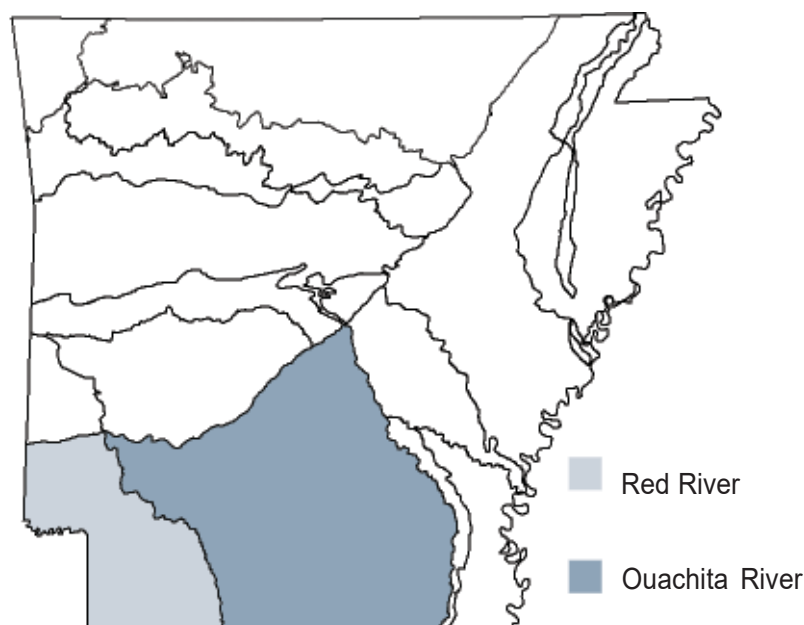


Figure 5.8. South Central Plains ecobasins delineation.

South Central Plains - Red River

Underlain by coastal plain deposits (this ecoregion is sometimes called the Gulf Coastal Plain) and marginal marine sediments, the landscape in this ecobasin (Figure 5.8) of the South Central Plains is dominated by the Red River, which is highly turbid with high suspended sediment loads, hardness and conductivity. The aquatic species in the Red River are those of a large river community including blue suckers and paddlefish, catfishes and minnows. The underlying alluvium allows the formation of oxbow lakes, low terraces, meander scars, backswamps, natural river levees, and tortuous meandering of the main stem Red River. Gradients are typically low to moderate. Smaller streams in this ecobasin are highly incised, either turbid or tannin stained due to predominant pine watersheds, mildly acidic from the tannic acid, with low levels of alkalinity, hardness, pH and often dissolved oxygen. Summer flow in these smaller streams is limited to non-existent with en- during pools forming between dewatered shoal areas. Fish communities are com- posed of a fairly diverse fish complex with limited sensitive species but having a high proportion of sunfishes with darters and minnows common. Representative streams in this ecobasin include the Red River, the Little River, western Saline River and McKinney Creek.

Table 5.34. Land cover types in South Central Plains - Red River ecobasin (percentage).

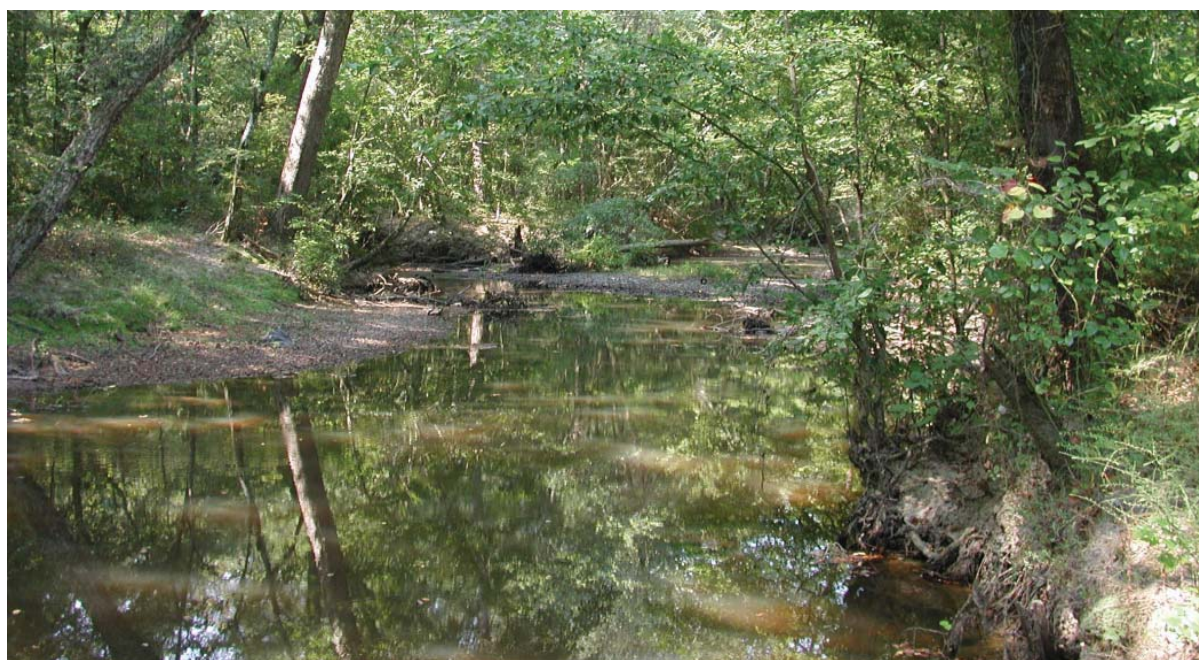
South Central Plains - Red River	Water	Urban	Forest	Pasture	Crop
2004	3	1	65	23	8
2011	3	6	66	18	6

* Includes forested wetlands

Table 5.35. Species of Greatest Conservation Need associated with South Central Plains - Red River ecobasin.

Common Name	Scientific Name	Priority Score
Ouachita Rock Pocketbook	<i>Arcidens wheeleri</i>	80
Scaleshell	<i>Leptodea leptodon</i>	76
Saline Burrowing Crayfish	<i>Fallicambarus strawni</i>	65
Louisiana Pearlshell	<i>Margaritifera hembeli</i>	65
Texas Pigtoe	<i>Pleurobema riddellii</i>	65
Leopard Darter	<i>Percina pantherina</i>	62
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	52
Bayou Bodcau Crayfish	<i>Bouchardina robisoni</i>	50
Blair's Fencing Crayfish	<i>Faxonella blairi</i>	46
Pink Mucket	<i>Lampsilis abrupta</i>	46
Crystal Darter	<i>Crystallaria asprella</i>	38
Pyramid Pigtoe	<i>Pleurobema rubrum</i>	38
Regal Burrowing Crayfish	<i>Procambarus regalis</i>	38
Western Sand Darter	<i>Ammocrypta clara</i>	33
Kiamichi Shiner	<i>Notropis ortonburgeri</i>	33
Bluehead Shiner	<i>Pteronotropis hubbsi</i>	33
Pine Hills Digger	<i>Fallicambarus dissitus</i>	32
Alligator Gar	<i>Atractosteus spatula</i>	27
Ozark Clubtail Dragonfly	<i>Gomphus ozarkensis</i>	27
Plains Minnow	<i>Hybognathus placitus</i>	27
Ouachita Shiner	<i>Lythrurus snelsoni</i>	27
Red River Shiner	<i>Notropis bairdi</i>	27
Rocky Shiner	<i>Notropis suttkusi</i>	27
Brown Madtom	<i>Noturus phaeus</i>	27
American Eel	<i>Anguilla rostrata</i>	24
Paddlefish	<i>Polyodon spathula</i>	24
Blue Sucker	<i>Cycleptus elongatus</i>	23
Lowland Topminnow	<i>Fundulus blairae</i>	23
Chub Shiner	<i>Notropis potteri</i>	23
Ouachita Kidneyshell	<i>Ptychobranhus occidentalis</i>	23
Brown Bullhead	<i>Ameiurus nebulosus</i>	19
Goldeye	<i>Hiodon alosoides</i>	19
"Red River" Mucket	<i>Lampsilis sp. B cf hydiana</i>	19
Blackspot Shiner	<i>Notropis atrocaudalis</i>	19
Slenderhead Darter	<i>Percina phoxocephala</i>	19
Bismark Burrowing Crayfish	<i>Procambarus parasimulans</i>	19
Gulf Mapleleaf	<i>Quadrula nobilis</i>	19
Lilliput	<i>Toxolasma parvum</i>	19
Texas Lilliput	<i>Toxolasma texasiense</i>	19
Tapered Pondhorn	<i>Uniomereus declivis</i>	19
Pondhorn	<i>Uniomereus tetralasmus</i>	19

Highfin Carpsucker	<i>Carpionodes velifer</i>	17
Goldstripe Darter	<i>Etheostoma parvipinne</i>	17
Round Pigtoe	<i>Pleurobema sintoxia</i>	17
Lake Chubsucker	<i>Erimyzon sucetta</i>	15
Swamp Darter	<i>Etheostoma fusiforme</i>	15
Shoal Chub	<i>Macrhybopsis hyostoma</i>	15
Southern Mapleleaf	<i>Quadrula apiculata</i>	15
Fawnsfoot	<i>Truncilla donaciformis</i>	15



South Central Plains - Ouachita River (Lower L'Eau Frais Creek)

South Central Plains - Ouachita River

Marine and ocean-bed sediments and alluvium are the base for stream substrates in this ecobasin (Figure 5.8). Streams are typically of a riffle/pool configuration with medium sinuosity and low to medium gradient. Stream substrates are generally sand, gravel, and silt. The water color in the smaller stream systems is often tannic acid stained (brown, coffee-colored) with fairly high levels of total organic carbon and biochemical oxygen demand. Large areas of this ecobasin are frequently inundated adding to the BOD. Streams with sandy bottoms and spring-fed will often have lower TDS, total suspended solids, alkalinity and hardness values. Although dissolved oxygen values can be fairly low in the early morning hours, fish populations often may have 5-6 species of darters represented along with numerous minnows, sunfishes, and suckers albeit not necessarily many sensitive species. Representative streams include the lower Ouachita River, Dorcheat Bayou, the lower Saline River, L'Aigle Creek and Moro Creek.

Table 5.36. Land cover types in South Central Plains - Ouachita River ecobasin (percentage).

South Central Plains - Ouachita River	Water	Urban	Forest	Pasture	Crop
2004	1	1	87	7	3
2011	1	6	86	6	1

* Includes forested wetlands

Table 5.37. Species of Greatest Conservation Need associated with South Central Plains - Ouachita River ecobasin.

Common Name	Scientific Name	Priority Score
Ouachita Rock Pocketbook	<i>Arcidens wheeleri</i>	80
Slenderwrist Burrowing Crayfish	<i>Fallicambarus petilicarpus</i>	80
Winged Mapleleaf	<i>Quadrula fragosa</i>	80
Scaleshell	<i>Leptodea leptodon</i>	76
Texas Pigtoe	<i>Pleurobema riddellii</i>	65
Arkansas Fatmucket	<i>Lampsilis powellii</i>	57
Alabama Shad	<i>Alosa alabamae</i>	52
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	52
Jefferson County Crayfish	<i>Fallicambarus gilpini</i>	50
Daisy Burrowing Crayfish	<i>Fallicambarus jeanae</i>	46
Pink Mucket	<i>Lampsilis abrupta</i>	46
Ouachita Darter	<i>Percina brucethompsoni</i>	46
Crystal Darter	<i>Crystallaria asprella</i>	38
Spectaclecase	<i>Cumberlandia monodonta</i>	38
Stargazing Darter	<i>Percina uranidea</i>	38
Pyramid Pigtoe	<i>Pleurobema rubrum</i>	38
Western Sand Darter	<i>Ammocrypta clara</i>	33
Peppered Shiner	<i>Notropis perpallidus</i>	33
Bluehead Shiner	<i>Pteronotropis hubbsi</i>	33
Purple Lilliput	<i>Toxolasma lividum</i>	33
Pine Hills Digger	<i>Fallicambarus dissitus</i>	32
Alligator Gar	<i>Atractosteus spatula</i>	27
American Eel	<i>Anguilla rostrata</i>	24
Paddlefish	<i>Polyodon spathula</i>	24
Ouachita Kidneyshell	<i>Ptychobranhus occidentalis</i>	23
Elktoe	<i>Alasmidonta marginata</i>	19
Brown Bullhead	<i>Ameiurus nebulosus</i>	19
"Ouachita" Fanshell	<i>Cyprogenia sp. cf aberti</i>	19
Goldeye	<i>Hiodon alosoides</i>	19
Mooneye	<i>Hiodon tergisus</i>	19
American Brook Lamprey	<i>Lethenteron appendix</i>	19
Striped Mullet	<i>Mugil cephalus</i>	19
Ohio Pigtoe	<i>Pleurobema cordatum</i>	19
Bismark Burrowing Crayfish	<i>Procambarus parasimulans</i>	19

Gulf Mapleleaf	<i>Quadrula nobilis</i>	19
Lilliput	<i>Toxolasma parvum</i>	19
Texas Lilliput	<i>Toxolasma texasiense</i>	19
Pondhorn	<i>Uniomerus tetralasmus</i>	19
Highfin Carpsucker	<i>Carpionodes velifer</i>	17
Goldstripe Darter	<i>Etheostoma parvipinne</i>	17
Round Pigtoe	<i>Pleurobema sintoxia</i>	17
Little Spectaclecase group	<i>Villosa sp. cf. lienosa</i>	17
Lake Chubsucker	<i>Erimyzon sucetta</i>	15
Swamp Darter	<i>Etheostoma fusiforme</i>	15
Shoal Chub	<i>Macrhybopsis hyostoma</i>	15
Saddleback Darter	<i>Percina vigil</i>	15
Southern Mapleleaf	<i>Quadrula apiculata</i>	15
Fawnsfoot	<i>Truncilla donaciformis</i>	15
Winter Stonefly	<i>Allocaonia malverna</i>	11

Aquatic Habitat Health

Aquatic habitats differ from terrestrial habitats in that the mobility of associated aquatic species is often limited to these habitats. Habitat alteration is the major cause of decline of aquatic diversity in the South. Channelization, impoundment, sedimentation and flow alterations are the most common physical habitat alterations associated with the decline of aquatic species (Etnier 1997, Burkhead and others 1997). Other human-induced impacts to aquatic species include pollution, introduced species and over-harvesting (Miller 1989). Habitat quality within a fresh- water ecosystem is determined by activities within the watershed (Abell 2000; Scott and others 2002). Therefore, the influence of these activities upon habitats, or waterbodies, can be described to determine the condition of the habitat. Arkansas chose to use six measures as markers of aquatic health. As a general rule, better aquatic health usually means fewer dams, fewer roads and road crossings, and more forested areas. Healthier riparian corridors have more forest buffer and fewer roads. The GIS methodology used to develop this information is provided in Appendix 4.1.

Indicators of Aquatic Condition

Dams in ecobasins

Table 5.38 shows the size of the ecobasin in square miles and the number of dams within the ecobasin, calculates the density of dams per square mile and ranks their density using Jenks Optimization. A lower numerical rank (1) indicates a higher density of dams in the ecobasin.

Ecobasin	Total Area (square miles)	Dam Count	Dam Density	Dam Density Rank
Mississippi River Loess Plains - St. Francis River	477	62	0.130	1
Mississippi River Loess Plains - White River	313	34	0.108	1
Ozark Highlands - Arkansas River	984	30	0.030	1
Arkansas Valley - White River	850	23	0.027	2
Ouachita Mountains - Ouachita River	3367	84	0.025	2
South Central Plains - Red River	3466	79	0.023	2
Mississippi Alluvial Plain - Arkansas River	1962	39	0.020	2
Ouachita Mountains - Red River	889	12	0.013	2
Mississippi Alluvial Plain (Bayou Bartholomew) - Ouachita River	491	6	0.012	3
Boston Mountains - Arkansas River	1758	21	0.012	3
Boston Mountains - White River	2876	25	0.009	3
Ouachita Mountains - Arkansas River	2051	12	0.006	4
Mississippi Alluvial Plain (Lake Chicot) - Mississippi River	1520	7	0.005	4
Arkansas Valley - Arkansas River	5285	20	0.004	4
South Central Plains - Ouachita River	9512	18	0.002	4
Ozark Highlands - White River	6553	11	0.002	5
Mississippi Alluvial Plain - White River	6403	10	0.002	5
Mississippi Alluvial Plain - St. Francis River	4123	5	0.001	5

Hydrologic modification is the manipulation or change of stream flow conditions. The altering of flow can be permanent and significant (such as a large impoundment) that creates a physical barrier to migration and movement of aquatic species. For many species of greatest conservation need, dams pose a significant threat to their viability. In addition to impeding flow, dams also affect physical attributes (such as water temperature, width, depth, instream flow) with corresponding impacts on SGCN.

The GIS dam layer was taken from EPA Basins and includes every impounding structure greater than six feet high within the state. This number was normalized by converting it to dams per square mile for each ecobasin. Table 5.38 ranks dam densities to indicate the relative degree of hydrologic disturbance among ecobasins.

Roads in ecobasins

Table 5.39 shows the size of the ecobasin in square miles and the calculated density of road miles per square mile area of ecobasin. The density is ranked using Jenks Optimization. A lower numerical rank (1) indicates a greater number of road miles in the ecobasin. Road density was calculated using the Tiger Census road data. The data was normalized by calculating miles of road per square mile.

Roads have a much greater influence on sediment production than do most landuse activities (cultivated lands are an exception). The range of road densities by ecobasin is broadly indicative of disturbance associated with increases in sediment. In Table 5.39, a lower numerical rank (1) indicates greater disturbance within an ecobasin.

Ecobasin	Total Area (square miles)	Road Density	Road Density Rank
Ozark Highlands - Arkansas River	984	4.102	1
Mississippi River Loess Plains - St. Francis River	477	3.424	1
Mississippi River Loess Plains - White River	313	3.268	1
Arkansas Valley - Arkansas River	5,285	2.570	1
Ouachita Mountains - Red River	889	2.544	2
Ouachita Mountains - Ouachita River	3,367	2.490	2
Ouachita Mountains - Arkansas River	2,051	2.420	2
Ozark Highlands - White River	6,553	2.336	3
Arkansas Valley - White River	850	2.270	3
Mississippi Alluvial Plain - St. Francis River	4,123	2.231	3
Mississippi Alluvial Plain - Arkansas River	1,962	2.219	3
South Central Plains - Ouachita River	9,512	2.157	4
South Central Plains - Red River	3,466	2.102	4
Mississippi Alluvial Plain - White River	6,403	1.906	4
Mississippi Alluvial Plain (Lake Chicot) - Miss. River	1,520	1.887	5
Boston Mountains - White River	2,876	1.853	5
Mississippi Alluvial Plain (Bayou Bartholomew) - Ouachita River	491	1.848	5
Boston Mountains - Arkansas River	1,758	1.665	5

Roads within riparian zones

The riparian zone includes 100 meters on each side of the stream reach. Table 5.40 shows the total area of the riparian zone in square miles within the ecobasin, calculates the density of road miles within the riparian zone and ranks the density using Jenks Optimization. A lower numerical rank (1) indicates a higher density of roads within the riparian zone in each ecobasin.

The Tiger Census roads data were clipped using the riparian shapefile created from the RF3s. From this, the road density within riparian areas was calculated for each ecobasin. This was normalized by calculating the miles of road per square mile of riparian area for each ecobasin.

The effects of road density within riparian areas are similar to those of ecobasin road density: general increases in sediment but may also include flowage disturbance and impediment to movement and migration of aquatic species. In table 5.39, a lower numerical rank (1) expresses greater hydrologic disturbance indicative of a more direct effect of roads within a sensitive riparian area.

			Riparian Road Density
Table 5.40			
Ecobasin	Total Riparian Area (Sq. Miles)	Road Density	Rank
Ozark Highlands - Arkansas River	177	3.38	1
Ouachita Mountains - Ouachita River	730	2.37	1
Mississippi Alluvial Plain (Lake Chicot) - Miss. River	412	2.37	2
Mississippi River Loess Plains - St. Francis River	113	2.29	2
Mississippi Alluvial Plain - St. Francis River	914	2.27	2
Mississippi River Loess Plains - White River	79	2.26	2
Ouachita Mountains - Arkansas River	451	2.24	2
Mississippi Alluvial Plain - Arkansas River	534	2.07	2
Ouachita Mountains - Red River	127	1.93	3
Arkansas Valley - Arkansas River	1,221	1.91	3
Mississippi Alluvial Plain (Bayou Bartholomew) - Ouachita River	151	1.90	3
Ozark Highlands - White River	1,364	1.85	3
Mississippi Alluvial Plain - White River	1,578	1.73	3
Boston Mountains - White River	506	1.69	4
Arkansas Valley - White River	207	1.66	4
Boston Mountains - Arkansas River	309	1.41	5
South Central Plains - Red River	734	1.30	5
South Central Plains - Ouachita River	2,211	1.29	5

Road crossings in ecobasins

Table 5.41 shows the size of the ecobasin in square miles and the calculated density of road crossings of waterways per square mile area of ecobasin. The density is ranked using Jenks Optimization. A lower numerical rank (1) indicates a greater number of road crossings in the ecobasin.

Road crossing within ecobasins are an indicator of hydrologic modification with manipulation or change of stream flow conditions. The altering of flow can be temporal as in a stream crossing that limits the migration and movement of many aquatic species, in part or completely. In many cases, increased sedimentary loads or poorer water quality are associated with road crossings.

Roads and crossings were calculated by intersecting the Tiger roads layer with the RF3 layer. This number was normalized by converting it to crossings per square mile for each ecobasin. Table 5.40 indicates the relative degree of hydrologic disturbance associated with road crossings (among ecobasins).

Ecobasin	Total Area (Sq. Miles)	Crossing density	Road Crossing Density
			Rank
Ozark Highlands - Arkansas River	984	2.05	1
Mississippi River Loess Plains - White River	313	1.91	1
Mississippi River Loess Plains - St. Francis River	477	1.76	1
Arkansas Valley - Arkansas River	5,285	1.61	1
Ouachita Mountains - Arkansas River	2,051	1.43	2
Ouachita Mountains - Ouachita River	3,367	1.42	2
Arkansas Valley - White River	850	1.40	2
South Central Plains - Ouachita River	9,512	1.19	3
Mississippi Alluvial Plain - St. Francis River	4,123	1.17	3
Ozark Highlands - White River	6,553	1.09	3
Mississippi Alluvial Plain (Lake Chicot) - Miss. River	1,520	1.08	4
Mississippi Alluvial Plain - White River	6,403	1.05	4
Mississippi Alluvial Plain - Arkansas River	1,962	1.00	4
South Central Plains - Red River	3,466	1.00	4
Ouachita Mountains - Red River	889	0.80	5
Mississippi Alluvial Plain (Bayou Bartholomew) - Ouachita River	491	0.77	5
Boston Mountains - White River	2,876	0.77	5
Boston Mountains - Arkansas River	1,758	0.67	5

Forested areas in ecobasins

Table 5.42 shows the size of the ecobasin in square miles, percent of forested area per square mile and ranks their density using Jenks Optimization. A lower numerical rank (1) indicates a lower percentage of forested area in the ecobasin.

The percent of each ecobasin that was forested was calculated using the 1994 National Land Cover Database (NLCD). Though somewhat dated, it is the most current available. A newer NLCD version should be available in the near future, when it can be compared to the existing NLCD as a monitoring exercise.

The percent of forest in ecobasins was used as a watershed condition parameter because Scott and Helfman (2002) demonstrated that as watersheds become less forested, the relative abundance of native endemic species decline. This measure broadly addresses aquatic condition based on landuse. A lower numerical rank (1) in Table 5.42 indicates a poorer condition and a lower percentage of forested area in the ecobasin.

Table 5.42

Ecobasin	Total Area (Sq. Miles)	Percent forested	Rank
Mississippi Alluvial Plain - St. Francis River	4,123	11	1
Mississippi Alluvial Plain (Lake Chicot) - Miss. River	1,520	17	1
Mississippi Alluvial Plain (Bayou Bartholomew) - Ouachita River	491	23	2
Mississippi Alluvial Plain - Arkansas River	1,962	25	2
Ozark Highlands - Arkansas River	984	31	3
Mississippi Alluvial Plain - White River	6,403	24	2
Mississippi River Loess Plains - White River	313	53	3
Mississippi River Loess Plains - St. Francis River	477	56	3
Arkansas Valley - Arkansas River	5,285	56	4
South Central Plains - Red River	3,466	66	4
Ozark Highlands - White River	6,553	70	4
Arkansas Valley - White River	850	70	4
Boston Mountains - White River	2,876	83	5
Ouachita Mountains - Arkansas River	2,051	87	5
Ouachita Mountains - Ouachita River	3,367	89	5
South Central Plains - Ouachita River	9,512	88	5
Ouachita Mountains - Red River	889	89	5
Boston Mountains - Arkansas River	1,758	90	5

Forested areas within riparian zones

The riparian zone includes 100 meters on each side of the stream reach. The data presented here show the total area of riparian zone within an ecobasin, the calculated percentage of forest occurring within the riparian zone and ranks the percentage using Jenks Optimization. A lower numerical rank (1) indicates a lower percentage of forest within the riparian zone in each ecobasin.

Disturbance within areas immediately adjacent to streams or lakes is generally associated with direct disturbance to aquatic integrity. This measure assumes that a forested riparian area is less likely to be impaired than an urbanized or cultivated riparian area. Forested riparian areas provide shading over a stream, affecting water temperature; provide habitat for vertebrates and invertebrates; provide bank stability and thus, better sediment control and filtering capability and provide an energy source for the aquatic species ecosystem.

Within the GIS data, riparian areas were created by buffering (100 feet) the EPA RF3 data layer (lakes and streams). This area was then overlain with the landuse layer. The percent of the riparian area that was forested (not pasture, cultivated, mined or urban) was determined for each ecobasin.

Table 5.43 compares the extent of direct disturbance to aquatic systems within ecobasins. A higher numerical rank (5) indicates a higher percentage of forest (better condition) within the riparian zone of each ecobasin.

Table 5.43. Total area of riparian zone within ecobasins, the calculated percentage of forest occurring within riparian zones and rank.

Ecobasin	Total Riparian Area (Sq. Miles)	Percent Forested	Rank
Mississippi Alluvial Plain - St. Francis River	914	16	1
Mississippi Alluvial Plain (Lake Chicot) - Miss. River	412	18	1
Mississippi Alluvial Plain (Bayou Bartholomew) - Ouachita	151	29	2
Mississippi Alluvial Plain - Arkansas River	534	32	2
Ozark Highlands - Arkansas River	177	32	2
Mississippi Alluvial Plain - White River	1,578	33	2
Mississippi River Loess Plains - White River	79	51	3
Mississippi River Loess Plains - St. Francis River	113	54	3
Arkansas Valley - Arkansas River	1,221	58	3
South Central Plains - Red River	734	68	4
Ozark Highlands - White River	1,364	70	4
Arkansas Valley - White River	207	72	4
Boston Mountains - White River	506	83	5
Ouachita Mountains - Arkansas River	451	85	5
Ouachita Mountains - Ouachita River	730	88	5
South Central Plains - Ouachita River	2,211	89	5
Ouachita Mountains - Red River	127	89	5
Boston Mountains - Arkansas River	309	90	5

Ranking and overall condition

Each of these criteria (dams in ecobasins, roads in ecobasins, roads within riparian zones, road crossings in ecobasins, forested areas in ecobasins, and forested areas within riparian zones) is unique. The effects of road density within riparian areas cannot be directly compared with the percent of the ecobasin that is forested. By calculating a total of the rankings by ecobasin, it is possible to express an overall ecobasin condition to provide an extremely broad measure to monitor. These indicators can be re- run for the biennial AWAP symposia to evaluate trends.

The Ozark Highlands - Arkansas River ecobasin Habitat Score (9 out of a possible 30) demonstrate the greatest degree of anthropogenic impacts. This is an area that is urbanizing rapidly under considerable development pressure. A lower overall score implies greater disturbance and impaired waters.

In contrast, the Boston Mountains - Arkansas River ecobasin (with a 28 score out of a possible 30), an ecobasin that lies adjacent to the Ozark Highlands - Arkansas River, is far more undeveloped with much of the land protected within the Ozark National Forest. This ecobasin is known for high quality streams from water quality, recreational and aquatic biota standpoints.

In table 5.44, the sum of ranks is an indicator of overall aquatic habitat condition. A higher score implies a less disturbed aquatic condition. The lowest (least disturbed) possible score is 5 and the highest (most disturbed) possible score is 30.

Table 5.44. Aquatic Habitat Scores.

Ecobasin	Dam Density Rank	Road Density Rank	Riparian Road Density Rank	Crossing Density Rank	Percent Forest Rank	% Forest in Riparian Rank	Sum of Ranks
Ozark Highlands - Arkansas River	1	1	1	1	3	2	9
Mississippi Valley Loess Plains - St. Francis River	1	1	2	1	3	3	11
Mississippi Valley Loess Plains - White River	1	1	2	1	3	3	11
Mississippi R. Alluvial Plain - Arkansas River	2	3	2	4	2	2	15
Mississippi R. Alluvial Plain - St. Francis River	5	3	2	3	1	1	15
Arkansas Valley - Arkansas River	4	1	3	1	4	3	16
Mississippi River Alluvial Plain - Mississippi River	4	5	2	4	1	1	17
Ouachita Mountains - Ouachita River	2	2	1	2	5	5	17
Arkansas Valley - White River	2	3	4	2	4	4	19
Mississippi River Alluvial Plain - Ouachita River	3	5	3	5	2	2	20
Mississippi R. Alluvial Plain - White River	5	4	3	4	2	2	20
Ouachita Mountains - Arkansas River	4	2	2	2	5	5	20
Ouachita Mountains - Red River	2	2	3	5	5	5	22
Ozark Highlands - White River	5	3	3	3	5	4	23
South Central Plains - Red River	2	4	5	4	4	4	23
South Central Plains - Ouachita River	4	4	5	3	5	5	26
Boston Mountains - White River	3	5	4	5	5	5	27
Boston Mountains - Arkansas River	3	5	5	5	5	5	28



Boston Mountains - White River (Cave Creek)

Photo by Jane Anderson