BIOTIC COMMUNITIES

AQUATIC COMMUNITY DATA

Since the basin contains two major aquatic community divisions, the Ozark-Neosho and the Prairie-Neosho, the Spring River Basin is probably one of the most diverse in fish community structure in the state. The Ozark-Neosho region is the most unique of the Ozark divisions and has numerous species distinctive to the region. These species include the redspot chub, bluntface shiner, cardinal shiner, southwestern mimic shiner, western slim minnow, Neosho madtom, Arkansas darter, Neosho orangethroat darter, redfin darter, and channel darter. The fishes of the Prairie-Neosho Division are common to most prairie streams, however this particular prairie division includes species which are common to the Ozark-Neosho Division as well. These species include the bluntface shiner, spotfin shiner, western slim minnow, southwestern mimic shiner, Arkansas darter, Neosho orangethroat darter, redfin darter, and channel darter. The spotted sucker and brindled madtom are unique to the Prairie-Neosho Division (Pflieger 1989).

This drainage includes only five crayfish species--the bristley cave crayfish (*Cambarus setosus*), the Neosho midget crayfish (*Orconectes macrus*), the ringed crayfish (*Orconectes neglectus*), the northern crayfish (*Orconectes virilis*), and the grassland crayfish (*Procambarus gracilis*) (Pflieger 1996). The Neosho midget crayfish and the ringed crayfish are limited to this region (Pflieger 1989).

The graybelly salamander (*Eurycea multiplicata griesogaster*), the Oklahoma salamander (*Eurycea tynerensis*), the yellow mud turtle (*Kinosternon flavescens*), the Texas horned lizard (*Phrynosoma cornutum*), and the ground snake (*Sonora semiannulata*) all have distributions limited to this region of the state (Johnson 1987).

The Spring River Basin has a very diverse naiad fauna, (Table 19). The rabbit's foot (*Quadrula cylindrica cylindrica*) and the western fanshell (*Cyprogenia aberti*) have localized distributions in the basin (Oesch 1984). It is thought that the Neosho mucket (*Lampsilis rafinesqueana*) is restricted to the basin (Pflieger 1989).

FISH COMMUNITY DATA

Fish collections have been made in various locations throughout the basin since the 1930s (Table 20). Eighty-six species have been collected in the basin since that time (Table 21). Fish were collected in 1991 and 1992 by MDCs Fisheries District 9 staff (Table 22 and Figures 6A-F). Fish species distributions by stream are found in Table 23a. In addition to collections made by MDC staff, Dan Beckman, Ph.D., at Southwest Missouri State regularly samples the Spring River at Verona as part of his ichthyologycourse (Table 24).

There are several species which were collected by Pflieger historically but have been absent from collections made recently by Beckman and District 9 staff. These species are:

Bigmouth buffalo *Ictiobus cyprinellus*

River carpsucker *Carpiodes carpio*

River redhorse *Moxostoma carinatum*

Goldfish*Carassius auratus*

Table 19. Mussel species found in the Spring River Basin.

Common Name	Scientific Name
Paper floater	*Anodonta imbecilis*
Giant floater	*Anodonta grandis grandis*
Squaw foot	*Strophitus undulatus undulatus*
Elk toe	*Alasmidonta marginata*
Slipper shell	*Alasmidonta viridis*
White heel-splitter	*Lasmigona complanata*
Fluted shell	*Lasmigona costata*
Pistol-grip	*Tritogonia verrucosa*
Maple leaf	*Quadrula quadrula*
Rabbit's foot	*Quadrula cylindrica cylindrica*
Monkey face	*Quadrula metanevra*
Pimple-back	*Quadrula pustulosa*
Three-ridge	*Amblema plicata plicata*
Wabash pig-toe	*Fusconaia flava*
Ozark shell	*Fusconaia ozarkensis*
Round pig-toe	*Pleurobema coccineum*
Lady-finger	*Elliptio dilata*
Kidney-shell	*Ptychobranchus occidentalis*
Western fanshell	*Cyprogenia aberti*
Mucket	*Actinonaias ligamentina carinata*
Plea's mussel	*Venustaconcha ellipsiformis*
Fawn's foot	*Truncilla donaciformis*
Deer-toe	*Truncilla truncata*
Fragile paper shell	*Leptodea fragilis*
Liliput shell	*Toxolasma parvus*
Little purple	*Toxolasma lividus glans*
Pond mussel	*Ligumia subrostrata*
Slough sand shell	*Lampsilis teres teres*
Yellow sand shell	*Lampsilis teres anodontoides*
Fat mucket	*Lampsilis radiata luteola*
Neosho mucket	*Lampsilis rafinesqueana*
Pocketbook	*Lampsilis ventricosa*
Broken rays	*Lampsilis reeviana brevicula*
Purple pimpleback	*Cyclonaias tuberculata*
Black sand shell	*Ligumia recta*

Source: Oesch (1984).

Table 20. Fish species of the Spring River Basin.

COMMON NAME	SPECIES NAME	STATUS
Shortnose gar	*Lepisosteus platostomus*	D
Longnose gar	*Lepisosteus osseus*	A, B, D, E
Gizzard shad	*Dorosoma cepedianum*	A, B, C, E
Bigmouth buffalo	*Ictiobus cyprinellus*	B
Black buffalo	*Ictiobus niger*	A, E
River carpsucker	*Carpiodes carpio*	B
Spotted sucker	*Minytrema melanops*	A, B, C, D, E, F
White sucker	*Catostomus commersoni*	A, B, C, D, E, F
River redhorse	*Moxostoma carinatum*	A, B
Black redhorse	*Moxostoma duquesnei*	A, B, D, E, F
Golden redhorse	*Moxostoma erythrurum*	A, B, C, D, E, F
Shorthead redhorse	*Moxostoma macrolepidotum*	A, B, C, D, E, F
Northern hog sucker	*Hypentelium nigricans*	A, B, C, D, E, F
Rainbow trout	*Oncorhynchus mykiss*	B, C, D
Common Carp	*Cyprinus carpio*	B, C, D, F
Flathead catfish	*Pylodictis olivaris*	B, C, E, F
Channel catfish	*Ictalurus punctatus*	A, B, C, D, E, F
Black bullhead	*Ameiurus melas*	A, B, C, D, E, F
Yellow bullhead	*Ameiurus natalis*	A, B, C, D, E, F
Warmouth	*Lepomis gulosus*	D, E
Redear sunfish	*Lepomis microlophus*	E, F
Pumpkinseed sunfish	*Lepomis gibbosus*	E
Orangespotted sunfish	*Lepomis humilis*	A, B, C, D, E, F
Green sunfish	*Lepomis cyanellus*	A, B, C, D, E, F
Bluegill	*Lepomis macrochirus*	A, B, C, D, E, F
Longear sunfish	*Lepomis megalotis*	A, B, C, D, E, F
Largemouth bass	*Micropterus salmoides*	A, B, C, D, E, F
Spotted bass	*Micropterus punctulatus*	A, B, C, D, E, F
Smallmouth bass	*Micropterus dolomieui*	A, B, C, D, E, F
White crappie	*Pomoxis annularis*	A, B, C, D, E, F
Black crappie	*Pomoxis nigromaculatus*	B, E, F
Rock bass	*Ambloplites rupestris*	A, B, C, D, E, F
Goldfish	*Carassius auratus*	B
Pugnose minnow	*Opsopoeodus emiliae*	A
Central stoneroller	*Campostoma anomalum*	A, B, C, D, E, F
Fathead minnow	*Pimephales promelas*	B, C, F

Slim minnow	*Pimephales tenellus tenellus*	A, B, C, D, E, F
Bluntnose minnow	*Pimephales notatus*	A, B, C, D, E, F
Bullhead minnow	*Pimephales vigilax*	F
Cardinal shiner	*Luxilus cardinalis*	A, B, C, D, E, F
Striped shiner	*Luxilus crysocephalus*	A, B, D, E, F
Bluntface shiner	*Cyprinella camura*	A, B, C, D, E, F
Red shiner	*Cyprinella lutrensis*	A, B, C, D, E, F
Spotfin shiner	*Cyprinella spilotera*	A, B, C, E, F
Western redfin shiner	*Lythrurus umbratilis umbratilis*	A, B, C, D, E, F
Creek chub	*Semotilus atromaculatus*	A, B, C, D, E, F
Ozark minnow	*Notropis nubilus*	A, B, C, D, E, F
Bigeye shiner	*Notropis boops*	A, B, C, D, E, F
Mimic shiner	*Notropis volucellus*	A, B, C, E, F
Ghost shiner	*Notropis buchanani*	B, C, F
Rosyface shiner	*Notropis rubellus*	A, B, C, D, E, F
Southern redbelly dace	*Phoxinus erythrogaster*	A, B, C, D, E, F
COMMON NAME	**SPECIES NAME**	**STATUS**
Suckermouth minnow	*Phenacobis mirabilis*	A, B, C, D, E, F
Bigeye chub	*Hybopsis amblops*	A, B
Gravel chub	*Hybopsis x punctatus*	B, C, E, F
Redspot chub	*Nocomis asper*	A, B, C, D, E, F
Hornyhead chub	*Nocomis biguttatus*	E
Golden shiner	*Notemigonus crysoleucas*	B, C, D, E
Blackspotted topminnow	*Fundulus olivaceus*	D, F
Blackstriped topminnow	*Fundulus notatus*	A, B, C, D, E, F
Northern sudfish	*Fundulus catenatus*	E
Plains topminnow	*Fundulus sciadicus*	A, B, E
Mosquitofish	*Gambusia affinis*	B, C, D, E, F
Brook silverside	*Labidesthes sicculus*	A, B, C, D, E, F
Banded sculpin	*Cottus carolinae*	A, B, C, D, E, F
Slender madtom	*Noturus exilis*	A, B, C, D, E, F
Brindled madtom	*Noturus miurus*	A, B, C, E, F
Stonecat	*Noturus flavus*	B, C, E, F
Neosho madtom	*Noturus placidus*	B, C, E, F
Freckled madtom	*Noturus nocturnus*	A
Tadpole madtom	*Noturus gyrinus*	B
Logperch	*Percina caprodes*	A, B, C, D, E, F
Channel darter	*Percina copelandi*	A, B, C, D, E, F

Slenderhead darter	***Percina phoxocephala***	**B, C, E, F**
Greenside darter	***Etheostoma blennioides***	**A, B, C, D, E, F**
Stippled darter	***Etheostoma punctulatum***	**A, B, C, D, E, F**
Johnny darter	***Etheostoma nigrum***	**A, B, C, D, E, F**
Speckled darter	***Etheostoma stigmaeum***	**A, B, C, D, E, F**
Banded darter	***Etheostoma zonale***	**A, B, C, D, E, F**
Fantail darter	***Etheostoma flabellare***	**A, B, C, D, E, F**
Orangethroat darter	***Etheostoma spectabile***	**A, B, C, D, E, F**
Arkansas darter	***Etheostoma cragini***	**A, B, C, D, E, F**
Redfin darter	***Etheostoma whipplei***	**A, B, C, E**
Slough darter	***Etheostoma gracile***	**A, C, F**
Bluntnose darter	***Etheostoma chlorosomum***	**A**
Least darter	***Etheostoma microperca***	**A, B, C, D, E**

Source: MDC Fish Collection Database Records and Summary dated 1995, Wilkinson and Edds (1996), Wildhaber et. al (1996), USFWS (1991).
Status:
A---Collected before 1946
B---Collected between 1947 and 1973

Table 23. Fish species list by stream in the Spring River Basin.

Species	Big Spring	Blackberry Creek	Buck Branch	Buffalo Creek	Capps Creek	Cedar Creek
Lepisosteus platostomus						
Lepisosteus osseus						
Dorosoma cepedianum						
Ictiobus niger			X			
Carpiodes carpio						
Minytrema melanops						
Catostomus commersoni					X	
Moxostoma carinatum						
Moxostoma duquesnei						
Moxostoma erythrurum		X				
Moxostoma macrolepidotum						
Hypentelium nigricans				X	X	
Oncorhynchus mykiss	X					
Cyprinus carpio						
Pylodictis olivaris						
Ictalurus punctatus						
Ameiurus melas						
Ameiurus natalis		X				
Lepomis gulosus		X				

Species	Center Creek	Clear Creek	Coon Creek	Deer Creek	Doris Creek	Douthit Creek
Lepisosteus platostomus	X					
Lepisosteus osseus			X			
Dorosoma cepedianum						
Ictiobus niger						
Carpiodes carpio						
Minytrema melanops			X	X		
Catostomus commersoni	X	X				
Moxostoma carinatum	X					
Moxostoma duquesnei	X	X				
Moxostoma erythrurum	X	X	X			
Moxostoma macrolepidotum	X					
Hypentelium nigricans	X	X				
Oncorhynchus mykiss		X				
Cyprinus carpio	X					
Pylodictis olivaris						
Ictalurus punctatus	X					
Ameiurus melas	X				X	
Ameiurus natalis						
Lepomis gulosus	X					

Table 23. Fish Species list by Stream (continued).

Species	Big Spring	Blackberry Creek	Buck Branch	Buffalo Creek	Capps Creek	Cedar Creek
Lepomis microlophus						
Lepomis gibbosus						
Lepomis humilis			X			
Lepomis cyanellus	X	X	X		X	
Lepomis macrochirus		X	X	X	X	
Lepomis megalotis		X	X		X	
Micropterus salmoides		X	X			
Micropterus punctulatus			X			
Micropterus dolomieui				X		
Pomoxis annularis			X			
Pomoxis nigromaculatus						
Ambloplites rupestria						
Carassius auratus						
Opsopoeodus emiliae						
Campostoma anomalum		X	X	X	X	
Pimephales promelas						
Pimephales tenellus						
Pimephales notatus		X	X			

Species	Center Creek	Clear Creek	Coon Creek	Deer Creek	Dorria Creek	Douthit Creek
Lepomis microlophus						
Lepomis gibbosus						
Lepomis humilis	X		X			
Lepomis cyanellus	X	X	X	X	X	X
Lepomis macrochirus	X		X	X	X	X
Lepomis megalotis	X		X	X		
Micropterus salmoides	X	X	X	X	X	
Micropterus punctulatus	X		X			
Micropterus dolomieui	X					
Pomoxis annularis	X					
Pomoxis nigromaculatus						
Ambloplites rupestria	X					
Carassius auratus						
Opsopoeodus emiliae						
Campostoma anomalum	X	X	X	X		X
Pimephales promelas						
Pimephales tenellus	X		X			
Pimephales notatus	X	X	X	X		

Table 23. Fish Species list by Stream (continued).

Species	Big Spring	Blackberry Creek	Buck Branch	Buffalo Creek	Capps Creek	Cedar Creek
Nocomis buguttatus				X		
Notemigonus crysoleucas			X			
Fundulus olivaceus					X	
Fundulus notatus		X	X			
Fundulus catenatus				X		
Fundulus sciadicus						X
Gambusia affinis		X	X	X		
Labidesthes sicculus			X			
Cottus carolinae	X			X	X	
Noturus exilis				X	X	
Noturus miurus						
Noturus flavus						
Noturus placidus						
Noturus nocturnus						
Noturus gyrinus						
Percina caprodes			X			
Percina copelandi						
Percina phoxocephala						

Species	Center Creek	Clear Creek	Coon Creek	Deer Creek	Dorris Creek	Douthit Creek
Nocomis buguttatus						
Notemigonus crysoleucas	X		X			
Fundulus olivaceus		X				
Fundulus notatus	X		X	X	X	
Fundulus catenatus						
Fundulus sciadicus						
Gambusia affinis	X		X	X		
Labidesthes sicculus	X		X	X	X	
Cottus carolinae	X	X				X
Noturus exilis	X					
Noturus miurus	X					
Noturus flavus						
Noturus placidus						
Noturus nocturnus						
Noturus gyrinus						
Percina caprodes	X		X	X		
Percina copelandi	X					
Percina phoxocephala						

Table 23. Fish Species list by Stream (continued).

Species	Big Spring	Blackberry Creek	Buck Creek	Buffalo Creek	Capps Creek	Cedar Creek
Etheostoma blennioides		X			X	
Etheostoma punctulatum					X	
Etheostoma nigrum						
Etheostoma stigmaeum						
Etheostoma zonale						
Etheostoma flabellare		X		X	X	
Etheostoma spectabile		X	X	X	X	X
Ethestoma cragini			X			
Ethestoma whipplei						
Ethestoma gracile						
Ethestoma Chlorosomum						
Ethestoma microperca						

Species	Center Creek	Clear Creek	Coon Creek	Deer Creek	Dorris Creek	Douthit Creek
Etheostoma blennioides	X	X			X	
Etheostoma punctulatum	X				X	X
Etheostoma nigrum	X		X	X		
Etheostoma stigmaeum	X					
Etheostoma zonale	X					
Etheostoma flabellare	X		X		X	
Etheostoma spectabile	X	X	X	X	X	X
Ethestoma cragini	X			X		
Ethestoma whipplei						
Ethestoma gracile						
Ethestoma Chlorosomum						
Ethestoma microperca				X		

Table 23. Fish Species list by Stream (continued).

Species	Dry Fork	Elm Branch	Elm Spring Branch	Glendale Fork	Hickory Creek	Honey Creek
Lepisosteus platostomus						
Lepisosteus osseus						
Dorosoma cepedianum						
Ictiobus cyprinellus						
Ictiobus niger						
Carpiodes carpio						
Minytrema melanops	X	X				
Catostomus commersoni						X
Moxostoma carinatum						
Moxostoma duquesnei						X
Moxostoma erythrurum	X			X		X
Moxostoma macrolepidotum						
Hypentelium nigricians					X	X
Oncorhynchus mykiss					X	
Cyprinus carpio		X		X		X
Pylodictis olivaris						
Ictalurus punctatus						
Ameiurus melas	X	X		X		
Ameiurus natalis						
Lepomis gulosus						

Species	Indian Creek	Jenkins Creek	Jones Creek	Joyce Creek	Little North Fork	Lost Creek
Lepisosteus platostomus					X	
Lepisosteus osseus						
Dorosoma cepedianum						
Ictiobus cyprinellus						
Ictiobus niger						
Carpiodes carpio						
Minytrema melanops					X	
Catostomus commersoni						
Moxostoma carinatum						
Moxostoma duquesnei			X			
Moxostoma erythrurum			X		X	
Moxostoma macrolepidotum						
Hypentelium nigricians		X	X			X
Oncorhynchus mykiss				X		
Cyprinus carpio						
Pylodictis olivaris						
Ictalurus punctatus						
Ameiurus melas			X			
Ameiurus natalis					X	
Lepomis gulosus					X	

Table 23. Fish Species list by Stream (continued).

Species	Dry Fork	Elm Branch	Elm Spring Branch	Glendale Fork	Hickory Creek	Honey Creek
Lepomis microlophus						
Lepomis gibbosus						
Lepomis humilis	X	X		X		
Lepomis cyanellus	X		X	X	X	X
Lepomis macrochirus	X	X		X		X
Lepomis megalotis	X			X		X
Micropterus salmoides	X	X			X	X
Micropterus punctulatus	X					
Micropterus dolomieui			X			X
Pomoxis annularis	X	X		X		
Pomoxis nigromaculatus						
Ambloplites rupestris					X	X
Carassius auratus						
Opsopoeodus emiliae						
Campostoma anomalum	X		X		X	X
Pimephales promelas						
Pimephales tenellus						
Pimephales notatus	X			X		X

Species	Indian Creek	Jenkins Creek	Jones Creek	Joyce Creek	Little North Fork	Lost Creek
Lepomis microlophus						
Lepomis gibbosus						
Lepomis humilis			X		X	
Lepomis cyanellus			X		X	X
Lepomis macrochirus		X	X		X	X
Lepomis megalotis	X	X	X		X	X
Micropterus salmoides	X	X			X	X
Micropterus punctulatus					X	
Micropterus dolomieui	X		X			X
Pomoxis annularis						
Pomoxis nigromaculatus						
Ambloplites rupestris		X	X			X
Carassius auratus						
Opsopoeodus emiliae						
Campostoma anomalum	X	X	X	X	X	X
Pimephales promelas						
Pimephales tenellus						
Pimephales notatus	X		X			X

Table 23. Fish Species list by Stream (continued).

Species	Dry Fork	Elm Branch	Elm Spring Branch	Glendale Fork	Hickory Creek	Honey Creek
Pimephales vigilax						
Luxilus cardinalis	X		X		X	X
Luxilus crysocephalus			X			
Cyprinella camura	X					
Cyprinella lutrensis				X		
Cyprinella spilotera						
Luthrurus umbratilis	X			X		
Semotilus atromaculatus					X	X
Notropis nubilus	X		X			X
Notropis boops	X					X
Notropis buchanani						
Notropis volucellus	X					
Notropis rubellus	X		X			X
Phoxinus erythrogaster			X		X	
Phenacobis morabilis						
Hybopsis amblops						
Hybopsis x punctatus						
Nocomis asper	X		X		X	X

Species	Indian Creek	Jenkins Creek	Jones Creek	Joyce Creek	Little North Fork	Lost Creek
Pimephales vigilax						
Luxilus cardinalis	X	X	X			X
Luxilus crysocephalus						
Cyprinella camura					X	X
Cyprinella lutrensis					X	
Cyprinella spilotera						
Luthrurus umbratilis			X		X	
Semotilus atromaculatus	X	X	X	X		X
Notropis nubilus	X	X	X			X

Notropis boops			X			
Notropis buchanani						
Notropis volucellus						
Notropis rubellus		X	X			X
Phoxinus erythrogaster		X	X	X		X
Phenacobis morabilis					X	
Hybopsis amblops			X			X
Hybopsis x punctatus						
Nocomis asper	X	X	X			X

Table 23. Fish Species list by Stream (continued).

Species	Dry Fork	Elm Branch	Elm Spring Branch	Glendale Fork	Hickory Creek	Honey Creek
Notemigonus crysoleucas	X	X		X		
Fundulus olivaceus						
Fundulus notatus	X					X
Fundulus catenatus						
Fundulua sciadicus						
Gambusia affinis		X				X
Labidesthes sicculus	X	X				
Cottus carolinae	X				X	X
Noturus exilis	X				X	X
Noturus miurus						
Noturus flavus						
Noturus placidus						
Noturus nocturnus						
Noturus gyrinus	X					
Percina caprodes	X					
Percina copelandi	X					
Percina phoxocephala						
Etheostoma blennioides	X		X			X

Table 23. Fish Species list by Stream (continued).

Species	North Fork	Pettis Creek	Shoal Creek	Spring River	Stahl Creek	Truitt Creek
Lepisosteus platostomus						
Lepisosteus osseus	X			X		
Dorosoma cepedianum	X			X		
Ictiobus cyprinellus						
Ictiobus niger			X			
Carpiodes carpio				X		
Minytrema melanops	X	X		X		
Catostomus commersoni			X	X	X	X
Moxostoma carinatum	X			X		
Moxostoma duquesnei			X	X	X	
Moxostoma erythrurum	X		X	X		
Moxostoma macrolepidotum	X			X		
Hypentelium nigricians			X	X	X	X
Oncorhynchus mykiss				X		
Cyprinus carpio	X			X		
Pylodictis olivaris	X		X	X		
Ictalurus punctatus	X			X		
Ameiurus melas	X		X	X		X
Ameiurus natalis	X	X				
Lepomis gulosus			X			

Species	Turkey Creek	T26 R32 S28*	T28 R33 S15*	T29 R33 S15*	White Oak Creek	West Fork	Lost Creek
Lepisosteus platostomus							
Lepisosteus osseus							
Dorosoma cepedianum							
Ictiobus cyprinellus						X	
Ictiobus niger							
Carpiodes carpio							
Minytrema melanops	X				X		
Catostomus commersoni					X		X
Moxostoma carinatum							
Moxostoma duquesnei	X				X		
Moxostoma erythrurum					X		
Moxostoma macrolepidotum							X
Hypentelium nigricians					X		
Oncorhynchus mykiss							
Cyprinus carpio						X	
Pylodictis olivaris							
Ictalurus punctatus							
Ameiurus melas				X		X	
Ameiurus natalis							
Lepomis gulosus							

* T26N, R32W,S28 = unnamed trib. to Cedar Creek

*T28N, R33W,S15 = unnamed trib to Center Creek

*T29N, R29W. S15 = unnamed trib. to White Oak Creek

Table 23. Fish Species list by Stream (continued).

Species	North Fork	Pettis Creek	Shoal Creek	Spring River	Stahl Creek	Truitt Creek
Pimephales vigilax	X			X		
Luxilus cardinalis	X		X	X	X	X
Luxilus crysocephalus	X		X	X		X
Cyprinella camura	X		X	X		
Cyprinella lutrensis	X		X	X		
Cyprinella spilotera	X			X		
Luthrurus umbratilis	X			X		X
Semotilus atromaculatus	X		X	X	X	X
Notropis nubilus			X	X	X	X
Notropis boops	X		X	X		X
Notropis buchanani	X			X		
Notropis volucellus	X			X		
Notropis rubellus	X		X	X	X	X
Phoxinus erythrogaster			X	X		X
Phenacobis morabilis	X			X		X
Hybopsis amblops			X	X		
Hybopsis x punctatus			X	X		
Nocomis asper	X		X	X	X	X

Species	Turkey Creek	T26 R32 S28	T28 R33 S15	T29 R29 S15	White Oak Creek	West Fork	Williams Creek
Pimephales vigilax							
Luxilus cardinalis	X				X		X
Luxilus crysocephalus					X		X
Cyprinella camura	X						
Cyprinella lutrensis						X	
Cyprinella spilotera							
Luthrurus umbratilis	X			X	X	X	X
Semotilus atromaculatus	X	X			X		X
Notropis nubilus					X		X
Notropis boops	X				X		X
Notropis buchanani							
Notropis volucellus							
Notropis rubellus	X				X		X
Phoxinus erythrogaster		X	X		X		X
Phenacobis morabilis							
Hybopsis amblops							
Hybopsis x punctatus							
Nocomis asper					X		X

Table 23. Fish Species list by Stream (continued).

Species	North Fork	Pettis Creek	Shoal Creek	Spring River	Stahl Creek	Truitt Creek
Notemigonus crysoleucas	X	X		X		
Fundulus olivaceus			X			
Fundulus notatus	X		X	X		X
Fundulus catenatus						
Fundulua sciadicus				X		
Gambusia affinis	X		X	X	X	
Labidesthes sicculus	X		X	X		
Cottus carolinae			X	X	X	X
Noturus exilis	X		X	X	X	X
Noturus miurus	X			X		
Noturus flavus				X		
Noturus placidus				X		
Noturus nocturnus				X		
Noturus gyrinus						
Percina caprodes	X		X	X		
Percina copelandi	X		X	X		
Percina phoxocephala	X			X		
Etheostoma blennioides	X		X	X		

Species	Turkey Creek	T26 R32 S28	T28 R33 S15	T29 R29 S15	White Oak Creek	West Fork	Williams Creek
Notemigonus crysoleucas				X		X	X
Fundulus olivaceus							
Fundulus notatus	X		X	X			X
Fundulus catenatus							
Fundulua sciadicus							
Gambusia affinis			X		X	X	X
Labidesthes sicculus	X				X		X
Cottus carolinae					X		X
Noturus exilis	X	X	X		X		
Noturus miurus							
Noturus flavus							
Noturus placidus							
Noturus nocturnus							
Noturus gyrinus							
Percina caprodes							
Percina copelandi							
Percina phoxocephala							
Etheostoma blennioides							

Table 23. Fish Species list by Stream (continued).

Species	North Fork	Pettis Creek	Shoal Creek	Spring River	Stahl Creek	Truitt Creek
Etheostoma punctulatum			X	X	X	X
Etheostoma nigrum	X			X		
Etheostoma stigmaeum	X		X	X		
Etheostoma zonale	X		X	X		
Etheostoma flabellare	X		X	X	X	X
Etheostoma spectabile	X	X	X	X	X	X
Ehteostoma cragini	X		X	X		
Etheostoma whipplei	X			X		
Etheostoma gracile	X					
Etheostoma chlorosomum	X					
Etheostoma microperca			X	X		

Species	Turkey Creek	T29 R32 S28	T28 R33 S15	T29 R29 S15	White Oak Creek	West Fork	Williams Creek
Etheostoma punctulatum		X					X
Etheostoma nigrum					X		
Etheostoma stigmaeum							
Etheostoma zonale							
Etheostoma flabellare		X			X		X
Etheostoma spectabile	X	X	X		X		X
Ehteostoma cragini		X	X				
Etheostoma whipplei							
Etheostoma gracile							
Etheostoma chlorosomum							
Etheostoma microperca							

Pugnose minnow *Opsopoeodus emiliae*

Bigeye chub *Hybopsis amblops*

Freckled madtom *Noturus nocturnus*

Tadpole madtom *Noturus gyrinus*

Bluntnose darter *Etheostoma chlorosomum*

Inadequate sampling methods could explain the absence of all these species in collections made by District 9 staff and Beckman. The goldfish is usually introduced through bait or pet releases, so the absence of this species could be due to poor survival.

Bigmouth buffalo, river carpsucker, and the river redhorse are all large species. It is possible that they were not collected by Beckman and Fisheries District 9 staff because of net avoidance and inability to reach the deeper, preferred habitats of these fishes.

The pugnose minnow, freckled madtom, and bluntnose darter have not been collected by anyone in the basin since the 1940s. All of these species have very limited distributions in the basin and may therefore be lost to this region of the state.

The bigeye chub and tadpole madtom have not been collected since at least 1973. The tadpole madtom has a very limited distribution in the northern portion of the basin. The bigeye chub, however, does not have a limited distribution and may be absent from collections due to extirpation or sampling error.

RARE, THREATENED, AND ENDANGERED SPECIES

The Spring River Basin contains a unique and equally diverse flora and fauna that includes three federally endangered species; the gray bat (*Myotis grisescens*), running buffalo clover (*Trifolium stoloniferum*), and the American burying beetle (*Nicrophorus americanus*). There are several federally threatened species in the basin as well. Federally threatened species are: the Ozark cavefish (*Amblyopsis rosae*), the Neosho madtom (*Noturus placidus*), geocarpon (*Geocarpon minimum*), western prairie fringed orchid (*Platanthera praeclara*), and the Mead's milkweed, (*Asclepias meadii*).

State endangered species are:

Northern harrier *Circus cyaneus*

Ozark cavefish *Amblyopsis rosae*

Redfin darter *Etheostoma whipplei*

Neosho madtom *Noturus placidus*

Black-tailed jack rabbit *Lepus californicus*

Gray bat *Myotis grisescens*

Plains spotted skunk *Spilogale putorius intemipta*

Rabbits foot *Quadrula cylindrica cylindrica*

Prairie false foxglove *Agalinis heterophylla*

Green false foxglove *Agalinis viridis*

Mead's milkweed *Asclepias meadii*

Marsh bellflower *Campanula aparinoides*

Lake-bank sedge *Carex lacustris*

Alabama lip-fern *Chalanthes alabamensis*

Joint grass *Coelorachis cylindrica*

Tansy mustard *Descurainia pinnata*

Geocarpon *Geocarpon minimum*

A wild pea *Lathyrus pusillus*

Pinnate dog shade *Limnosciadium pinnatum*

A lipocarpha *Lipocarpha drummondii*

Water hyssop *Mecardonia acuminata*

Mudbank paspalum *Paspalum dissectum*

Western prairie fringed orchid *Planthera praeclara*

Slender pondweed *Potamogeton pusillus var pusillus*

Kansas arrowhead *Sagittaria ambigua*

Running buffalo clover *Trifolium stoloniferum*

Yellow-eyed grass *Xyris torta*

At least one species originally found in this basin is now extirpated from the drainage; the federally endangered American burying beetle.

Species that are considered rare or threatened in Missouri that inhabit the Spring River Basin are:
Cooper's hawk *Accipiter cooperii*

Henslow's sparrow *Ammodramus henslowii*

Pied-billed grebe *Podilymbus podiceps*

Greater prairie-chicken *Tympanuchus cupido*

Barn owl *Tyto alba*

Bluntface shiner *Cyprinella camura*

Arkansas darter *Etheostoma cragini*

Western slim minnow *Pimephales tenellus tenellus*

Auriculate false foxglove *Agalinis auriculata*

Tradescant aster *Aster dumosus var strictior*

Oklahoma sedge *Carex oklahomensis*

Small spike rush *Eleocharis parvula var anachaeta*

A moss *Leska polycarpa*

Low prickly pear *Opuntia macrorhiza*

Ozark wake robin *Trillium pusillum var ozarkanum*

A Venus' looking glass *Triodanis lamprosperma*

Prairie mole cricket *Gryllotalpa major*

Arkansas snaketail dragonfly *Ophiogomphus westfalli*

Western fanshell *Cyprogenia aberti*

Neosho mucket *Lampsilis rafinesqueana*

Great plains skink *Eumeces obsoletus*

Long-tailed weasel *Mustella frenata*

Swamp rabbit *Sylvilagus aquaticus*

State watch list species in the Spring River Basin include:

Northern crayfish frog *Rana areolata circulosa*

Grotto salamander *Typhlotriton spelaeus*

Upland sandpiper *Bartramia longicauda*

Bristly cave crayfish *Cambarus setosus*

Least darter *Etheostoma microperca*

Ghost shiner *Notropis buchanani*

Pugnose minnow *Opsopoeodus emiliae*

Purple lilliput *Toxolasma lirudus*

A false foxglove *Agalinis skinneriana*

Sixteenweeks three-awn *Aristida adscensionis*

Brush's poppy mallow *Callirhoe bushii*

Yellow false mallow *Malvastrum*

An adder's tongue fern *Ophioglossum vulgatum*

Soapberry *Sapindus drummondii*

Royal catchfly *Silene regia*

Yellow-flowered leafcup *Smallanthus wedalius*

Slender ladies' tresses *Spiranthes lacera var gracilis*

Regal fritillary *Speyeria idalia*

There are several species of concern in the basin which have been studied extensively--the Neosho madtom, the Arkansas darter, the Neosho mucket (Figures 7A-F), and the Ozark cavefish.

The Neosho madtom is listed by the state as endangered and is federally threatened. Low densities may be characteristic of the species, but the population densities are the lowest in the Spring River portion of its range (Wilkinson and Edds 1996). Even considering low densities, one of the areas important to maintaining the population is the area from the North Fork of the Spring River to the Kansas border (Wilkinson and Edds 1996). There are several factors which pose a threat to this population. These include gravel removal, drought, chemical pollution, nutrient loading from feedlot runoff, and flow alterations (USFWS 1991). There is also a possibility that competition with the slender and brindled madtoms and stonecats may contribute to low numbers of the Neosho madtom.

Restoring artificial riffle habitat (Fuselier and Edds 1995) and maintaining base flow (USFWS 1991) would be beneficial strategies for maintaining or improving current Neosho madtom population densities.

Arkansas darters are typically found in small, springfed streams associated with beds of submerged aquatic plants (Pflieger 1992), most specifically watercress (Robison and Buchanan 1988). The habitat is characterized by shallow water and the absence of strong current (Pflieger 1992). In collections, it is commonly associated with stippled darters, orangethroat darters, and fantail darters. The collections made by Pflieger (1992) indicate that there has been no decline in abundance of this species in this portion of its range. Threats to the species include flow changes, water quality problems (Loeffler and Krieger 1994), urbanization, and livestock husbandry (Pflieger 1992).

Obermeyer et. al (1995) conducted a survey of the unionid species in southeast Kansas, including the Spring River. The authors found the Neosho mucket in shallow riffle and run habitats with gravel substrates in the Spring River. The youngest individual collected was four years old, and there was no evidence of reproduction. It is believed that the range reductions observed for this species are due to poor water quality of the Spring River downstream from the confluence of Turkey and Center creeks. It is also possible that channelization, gravel dredging, strip-mine runoff, feedlot runoff, isolation of downstream populations due to dams, and isolation from host fishes play key roles in the current distribution of this species.

The Ozark cavefish has been listed as a state endangered and federally threatened species. It is restricted to the southwest Ozarks in Missouri and Arkansas (Pflieger 1975). Approximate locations of the Ozark cavefish sites are shown in Figure 8.

ANGLER SURVEY DATA

No on-site creel data have been collected from streams or reservoirs within the Missouri portion of the basin. Statewide angler survey data are available through MDC.

COMMERCIAL FISH HARVEST

No recent commercial fish harvest has occurred within the Missouri portion of the basin.

FISH INTRODUCTIONS

Documented stockings of streams are limited. A number of authorized resource agency fish introductions have occurred in the streams in the Missouri portion of the basin. This includes the stocking of various salmonids. The earliest recorded release of salmonids was the introduction of "California salmon" to "Arkansas River tributaries" in Missouri (Turner 1979). As early as 1879, brook trout were stocked in the Spring River. The first recorded stocking of rainbow trout in Capps Creek occurred in 1886. Shoal Creek, Center Creek, Turkey Creek, Hickory Creek, and others received intermittent stocking of salmonids throughout the late 1800s and early 1900s. The spread of the common carp was probably hastened by purposeful stocking of area streams in the latter half of the last century.

Capps Creek near Jolly Mill is presently stocked with both rainbow and brown trout. Rainbow trout from the Neosho National Fish Hatchery are found in nearby Hickory Creek. A self-sustaining wild rainbow trout population has been documented in the Spring River. Limited natural reproduction has been documented in Spring River and Hickory Creek. Other wild, self-sustaining populations may exist.

Numerous ponds and small reservoirs throughout the basin have been stocked with a variety fish including largemouth bass, bluegill, grass carp, flathead catfish, and channel catfish. Escapement of stocked fish from impoundments probably occurs, but the extent is undocumented.

FISHING REGULATIONS

Statewide fishing regulations (daily limits, size limits, methods, and seasons) apply to streams throughout the Spring River Basin. Please refer to the most recent version of the Wildlife Code of Missouri and signs posted at public accesses for specific regulations.

AQUATIC INVERTEBRATES

Dieffenbach and Ryck (1976) assessed the effects of pollutants on stream water quality using the density, diversity, and composition of bottom-dwelling invertebrates as a reflection of water quality at several sites throughout the basin. They concluded that the upper Spring River, the lower Spring River, the North Fork of the Spring River, Turkey Creek, and lower Center Creek had invertebrate communities indicative of polluted streams. The diversity indices were especially low in Turkey Creek, which had only nine invertebrate taxa recorded. The lower Spring River (near the Kansas border) area community structure was different and could perhaps be due to a difference in habitat types (more of a prairie stream than an Ozark stream) rather than extreme pollution problems. The upper Center Creek and Shoal Creek areas had invertebrate communities similar to unpolluted streams, suggesting that water quality was good in these areas. Sewage effluent and industrial discharge were the authors' explanation for the poor invertebrate communities.

To our knowledge no recent studies have been conducted on the invertebrate communities of the region to determine present water quality. Table 25 lists the invertebrates collected throughout the basin.