

# **BIOTIC COMMUNITIES**

## **Fish Community Data**

Aquatic sampling in the Sac River has been ongoing since before the initial elements occurrence record (EOR) was written in 1982. For example, Pflieger collected fish samples in 1971. Table 16 lists all species of fish collected in the Sac River basin and is further divided by sub-basin. Collections of fish were also made by the Missouri Department of Conservation's Southwest Regional staff during 1995, 1996, 1998, and 1999. Figure 20 lists fish sampling sites in the Sac River basin. Appendix C has collections by site and date for the Sac River basin.

Eighty-nine species of fish have been identified from the Sac River basin. Of these, the chestnut and southern brook lampreys have not been collected in recent sampling efforts. Lampreys are often difficult to collect and have short adult life spans. Other fishes also absent in recent collections include: longnose gar, mooneye, gravel chub, spotted sucker, river redhorse, and Ozark bass. These larger fishes commonly avoid seine hauls or are located in habitats too deep or too brushy to seine. Seining was the primary method used in recent samples, and could be the reason for their absence. The suckermouth minnow has not been collected since 1976; it is abundant in the Prairie Faunal region of north and west Missouri and is not tolerant of higher gradient Ozark streams. The ghost shiner has never had a wide occurrence in the Sac River basin and has not been collected since 1964. It occurs in the Missouri and Mississippi rivers and in prairie streams, but populations have been on the decline in recent years. The Ozark cavefish has never been collected in the Sac River basin, but has been observed in caves within the basin boundaries. Ozark cavefish are not usually captured unless sought in caves, or near spring openings flowing from subterranean sources during high flow or pollution related events.

It is possible that some species are being lost from the watershed. The Niangua darter, a federally threatened species, has been found in the Little Sac River, Bear Creek, and Brush Creek watersheds. Within these three streams, the Niangua darter was last sampled in 1991 from Bear Creek. Since 1991, Niangua darters have been observed during snorkeling surveys at three different locations within one reach of Bear Creek. The Brush Creek population of Niangua darters was believed to be extirpated before sampling efforts were increased beginning in 1997. During 1997, a total of 18 Niangua darters, including six young of the year fish, were observed in Brush Creek (Boyer 1998). These findings suggest that the Brush Creek Niangua darter population is both viable and reproducing. According to Pflieger (1997), reservoir construction has been a significant factor leading to the decline of the Niangua darter.

Bluestripe and gilt darters are two other rare fishes that have been collected in the Sac River basin. The bluestripe darter may have had widespread occurrence in the Sac River system before the turn of the century. Within this basin, it has only been collected from the Sac River and has not been seen since 1966. The gilt darter has a wide occurrence in the eastern and southern Ozarks and is frequently one of the most abundant darters in its preferred habitat (Pflieger 1997). However, it has only been collected in one sample from the Sac River in 1966. The least darter has a wide occurrence in the northern and western Ozarks and is frequently the most abundant darter in its preferred habitat. However, the least darter has only been collected in one sample from the Little Sac River in 1977. The blacknose shiner has been sampled in Brush Creek and Cedar Creek, but has not been collected there since 1977. Once having a wide distribution, the blacknose shiner has been extirpated from many streams in the northern Ozarks. Population declines are thought to be the result of habitat loss (Pflieger 1997).

## **Amphibians and Reptiles**

There is a diverse assemblage of amphibians and reptiles found in the Sac River basin. Table 17 lists the amphibians and Table 18 lists the reptiles. These tables also include the known range for each species in the basin.

## **Threatened and Endangered Species**

The Sac River basin has a unique and diverse biotic community. There are forty-two species of plants and animals of conservation concern. Three federally endangered (Missouri bladder-pod, gray bat, and pink mucket) and five federally threatened species (bald eagle, Ozark cavefish, Niangua darter, Mead's milkweed, and geocarpon) are known to occur in the watershed (Table 19). Several other species in the basin are rare in Missouri.

Table 16. Fish species collected in the Sac River watershed listed by sub-basin.

Common Name	Scientific Name	Sac River	L. Sac River	Bear Cr.	Brush Cr.	Cotton Cr.	Turlock Cr.	Limestone Cr.	Sands Cr.	Cedar Cr.	Horse Cr.
<b>Chestnut lamprey</b>	<i>Ichthyomyzon castaneus</i>	X									
<b>Southern brook lamprey</b>	<i>Ichthyomyzon gagei</i>				X						
<b>Paddlefish</b>	<i>Polyodon spathula</i>					X					
<b>Longnose gar</b>	<i>Lepisosteus osseus</i>	X	X		X					X	
<b>Shortnose gar</b>	<i>Lepisosteus platostomus</i>	X									
<b>Mooneye</b>	<i>Hiodon tergisus</i>	X									
<b>Gizzard shad</b>	<i>Dorosoma cepedianum</i>	X	X				X				
<b>Largescale stoneroller</b>	<i>Campostoma oligolepis</i>	X	X	X	X	X	X	X	X	X	X
<b>Central stoneroller</b>	<i>Capostoma pullum</i>	X	X	X	X	X	X	X	X	X	X
<b>Red shiner</b>	<i>Cyprinella lutrensis</i>	X	X	X	X	X	X		X	X	X
<b>Blacktail shiner</b>	<i>Cyprinella venusta</i>						X				
<b>Common carp</b>	<i>Cyprinus carpio</i>	X	X				X	X			
<b>Gravel chub</b>	<i>Erimystax x-punctatus</i>	X	X				X				
<b>Striped shiner</b>	<i>Luxilus chrysocephalus</i>	X	X	X	X		X	X	X	X	X
<b>Bleeding shiner</b>	<i>Luxilus zonatus</i>	X	X	X	X	X	X	X	X	X	X
<b>Redfin shiner</b>	<i>Lythrurus umbratilis</i>	X	X	X	X	X	X	X	X	X	X
<b>Hornyhead chub</b>	<i>Nocomis biguttatus</i>	X	X	X		X	X	X		X	X
<b>Golden shiner</b>	<i>Notemigonus crysoleucas</i>		X	X	X					X	X
<b>Emerald shiner</b>	<i>Notropis athernoides</i>	X									
<b>Ghost shiner</b>	<i>Notropis buchanani</i>	X	X								
<b>Blacknose shiner</b>	<i>Notropis heterolepis</i>				X					X	
<b>Sand shiner</b>	<i>Notropis ludibundus</i>	X	X	X	X	X	X			X	X
<b>Ozark minnow</b>	<i>Notropis nubilus</i>	X	X	X	X		X	X		X	
<b>Rosyface shiner</b>	<i>Notropis rubellus</i>	X	X	X	X	X	X	X		X	X
<b>Suckermouth minnow</b>	<i>Phenacobius mirabilis</i>	X	X			X				X	
<b>Southern redbelly dace</b>	<i>Phoxinus erythrogaster</i>	X	X		X		X	X			
<b>Bluntnose minnow</b>	<i>Pimephales notatus</i>	X	X	X	X	X	X	X	X	X	X
<b>Fathead minnow</b>	<i>Pimephales promelas</i>	X	X								
<b>Gravel Chub</b>	<i>Erimystax x-punctatus</i>		X								
<b>Creek chub</b>	<i>Semotilus atromaculatus</i>	X	X		X	X	X	X			X

<b>White sucker</b>	<i>Catostomus commersoni</i>	X	X	X	X	X	X	X		
<b>Northern hog sucker</b>	<i>Hypentelium nigricans</i>	X	X	X	X	X	X	X	X	
<b>Smallmouth buffalo</b>	<i>Ictiobus bubalus</i>	X				X				
<b>Largemouth buffalo</b>	<i>Ictiobus cyprinellus</i>					X				
<b>Black buffalo</b>	<i>Ictiobus niger</i>	X								
<b>Spotted sucker</b>	<i>Minytrema melanops</i>								X	
<b>Silver redhorse</b>	<i>Moxostoma anisurum</i>	X	X				X		X	
<b>River redhorse</b>	<i>Moxostoma carinatum</i>	X					X			
<b>Black redhorse</b>	<i>Moxostoma duquesnei</i>	X	X	X		X	X	X	X	
<b>Golden redhorse</b>	<i>Moxostoma erythrurum</i>	X	X	X	X	X	X	X	X	X
<b>Shorthead redhorse</b>	<i>Moxostoma macrolepidotum</i>	X	X	X	X		X	X	X	
<b>Black bullhead</b>	<i>Ameiurus melas</i>	X	X		X					
<b>Yellow bullhead</b>	<i>Ameiurus natalis</i>	X	X	X	X		X		X	X
<b>Channel catfish</b>	<i>Ictalurus punctatus</i>	X	X			X	X			X
<b>Slender madtom</b>	<i>Noturus exilis</i>	X	X	X	X	X	X	X	X	X
<b>Stonecat</b>	<i>Noturus flavus</i>	X	X						X	X
<b>Freckled madtom</b>	<i>Noturus nocturnus</i>	X								X
<b>Flathead catfish</b>	<i>Pylodictus olivaris</i>	X								X
<b>Northern pike*</b>	<i>Esox lucius</i>	X	X							
<b>Muskellunge*</b>	<i>Esox masquinongy</i>		X							
<b>Ozark cavefish</b>	<i>Ambyopsis rosae</i>									
<b>Northern studfish</b>	<i>Fundulus catenatus</i>	X	X		X		X			
<b>Blackstripe topminnow</b>	<i>Fundulus notatus</i>								X	X
<b>Blackspotted topminnow</b>	<i>Fundulus olivaceus</i>	X	X	X	X	X	X	X	X	X
<b>Western mosquitofish</b>	<i>Gambusia affinis</i>	X	X		X	X	X			
<b>Brook silverside</b>	<i>Labidesthes sicculus</i>	X	X	X	X	X	X	X	X	X
<b>Inland silverside</b>	<i>Menidia beryllina</i>									
<b>Mottled sculpin</b>	<i>Cottus bairdi</i>	X					X	X		
<b>Banded sculpin</b>	<i>Cottus carolinae</i>	X	X	X	X	X	X	X	X	X
<b>Ozark sculpin</b>	<i>Cottus hypselurus</i>	X				X	X			
<b>White bass</b>	<i>Morone chrysops</i>						X			
<b>Ozark bass</b>	<i>Ambloplites constellatus</i>		X		X			X		
<b>River carpsucker</b>	<i>Carpiodes carpio</i>	X								
<b>Green sunfish</b>	<i>Lepomis cyanellus</i>	X	X	X	X	X	X	X	X	X
<b>Warmouth</b>	<i>Lepomis gulosus</i>				X					

<b>Orangespotted sunfish</b>	<i>Lepomis humilis</i>	X	X	X		X	X			X	X
<b>Bluegill</b>	<i>Lepomis macrochirus</i>	X	X	X	X	X	X	X	X	X	X
<b>Longear sunfish</b>	<i>Lepomis megalotis</i>	X	X	X	X	X	X	X	X	X	X
<b>Smallmouth bass</b>	<i>Micropterus dolomieu</i>	X	X	X	X	X	X	X		X	
<b>Spotted bass</b>	<i>Micropterus punctulatus</i>	X	X	X	X	X	X			X	X
<b>Largemouth bass</b>	<i>Micropterus salmoides</i>	X	X	X		X	X	X	X	X	X
<b>White crappie</b>	<i>Pomoxis annularis</i>	X	X				X				X
<b>Black Crappie</b>	<i>Pomoxis nigromaculatus</i>	X	X								
<b>Greenside darter</b>	<i>Etheostoma blennioides</i>	X	X	X	X	X	X	X	X	X	X
<b>Rainbow darter</b>	<i>Etheostoma caeruleum</i>	X	X	X	X	X	X	X	X	X	
<b>Fantail darter</b>	<i>Etheostoma flabellare</i>	X	X	X	X	X	X	X	X	X	X
<b>Least Darter</b>	<i>Etheostoma microporca</i>		X								
<b>Niangua darter</b>	<i>Etheostoma nianguae</i>		X	X	X						
<b>Johnny darter</b>	<i>Etheostoma nigrum</i>	X	X	X	X	X	X				X
<b>Stippled darter</b>	<i>Etheostoma punctulatum</i>	X	X	X	X				X	X	
<b>Orangethroat darter</b>	<i>Etheostoma spectabile</i>	X	X	X	X	X	X	X	X	X	X
<b>Missouri saddled darter</b>	<i>Etheostoma tetrazonum</i>	X	X	X			X			X	
<b>Banded darter</b>	<i>Etheostoma zonale</i>	X	X	X	X		X			X	
<b>Logperch</b>	<i>Percina caprodes</i>	X	X	X	X	X	X	X	X	X	X
<b>Bluestripe darter</b>	<i>Percina cymatotaenia</i>	X									
<b>Gilt Darter</b>	<i>Percina evides</i>	X									
<b>Slenderhead darter</b>	<i>Percina phoxocephala</i>	X	X				X			X	X
<b>Walleye</b>	<i>Stizostedion vitreum</i>						X				
<b>Freshwater drum</b>	<i>Aplodinotus grunniens</i>	X				X	X			X	X

\* - Northern pike were stocked in Stockton Lake in the 1970s and muskellunge were stocked in Fellows Lake in 1996 and 1999

**Figure 20. Fish sampling sites in the Sac River basin.**

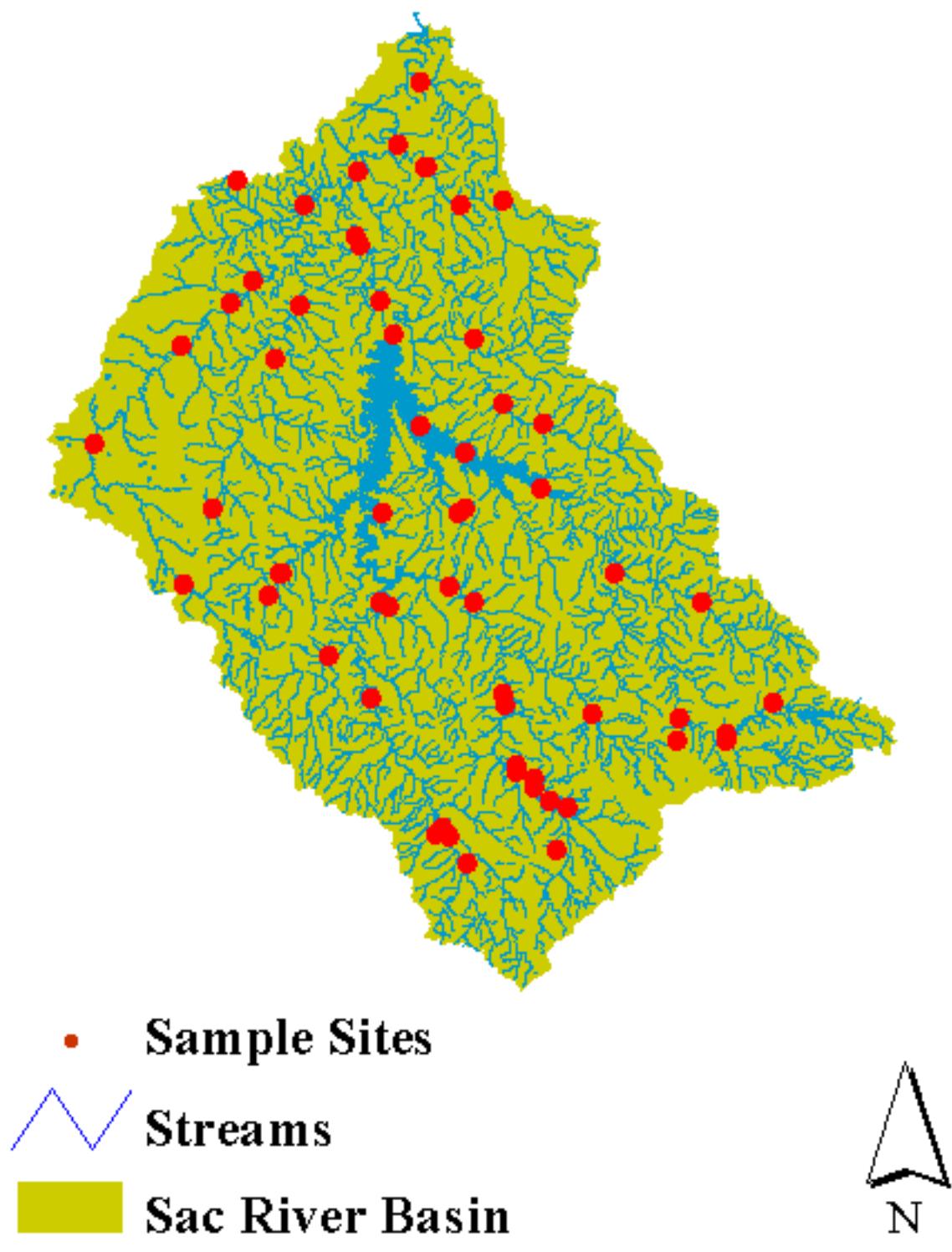


Table 17. Amphibians found in the Sac River basin.

Common Name	Scientific Name	Range (counties)
<b>Hellbender</b>	<i>Cryptobranchus alleganiensis</i>	Polk, Greene
<b>Ringed salamander</b>	<i>Ambystoma annulatum</i>	Polk, Greene
<b>Spotted salamander</b>	<i>Ambystoma maculatum</i>	Basin-wide
<b>Marbled salamander</b>	<i>Ambystoma opacum</i>	St. Clair
<b>Eastern tiger salamander</b>	<i>Ambystoma tigrinum tigrinum</i>	Basin-wide
<b>Central newt</b>	<i>Notophthalmus viridescens louisianensis</i>	Basin-wide
<b>Longtail salamander</b>	<i>Eurycea longicauda</i>	Basin-wide
<b>Cave salamander</b>	<i>Eurycea lucifuga</i>	Basin-wide
<b>Slimy salamander</b>	<i>Plethodon glutinosus glutinosus</i>	Polk, Dade, Greene
<b>Grotto salamander</b>	<i>Typhlotriton spelaeus</i>	Polk, Dade, Greene
<b>Mudpuppy</b>	<i>Necturus maculosus maculosus</i>	Basin-wide
<b>Dwarf American toad</b>	<i>Bufo americanus charlesmithi</i>	Basin-wide
<b>Eastern American toad</b>	<i>Bufo americanus americanus</i>	St. Clair
<b>Fowler's toad</b>	<i>Bufo woodhousei fowleri</i>	Greene
<b>Woodhouse's toad</b>	<i>Bufo woodhousei woodhousei</i>	Basin-wide
<b>Blanchard's cricket frog</b>	<i>Acris crepitans blanchardi</i>	Basin-wide
<b>Northern spring peeper</b>	<i>Hyla crucifer crucifer</i>	Basin-wide
<b>Eastern gray treefrog</b>	<i>Hyla versicolor</i>	Greene
<b>Cope's gray treefrog</b>	<i>Hyla chrysoscelis</i>	Basin-wide
<b>Western chorus frog</b>	<i>Pseudacris triseriata</i>	Basin-wide
<b>Eastern narrowmouth toad</b>	<i>Gastrophryne carolinensis</i>	Basin-wide
<b>Northern crawfish frog</b>	<i>Rana areolata circulosa</i>	Polk, Dade, Cedar, St. Clair, Barton, Vernon
<b>Plains leopard frog</b>	<i>Rana blairi</i>	Dade, Cedar, St. Clair, Barton
<b>Bullfrog</b>	<i>Rana catesbeiana</i>	Basin-wide
<b>Green frog</b>	<i>Rana clamitans</i>	Basin-wide
<b>Pickerel frog</b>	<i>Rana palustris</i>	Basin-wide
<b>Southern leopard frog</b>	<i>Rana sphenocephala</i>	Basin-wide

Source: Johnson (1987).

Table 18. Reptiles found in the Sac River basin.

Common Name	Scientific Name	Range
Common snapping turtle	<i>Chelydra serpentina serpentina</i>	Basin-wide
Stinkpot	<i>Sternotherus odoratus</i>	Basin-wide
Western painted turtle	<i>Chrysemys picta bellii</i>	Basin-wide
Map turtle	<i>Graptemys geographica</i>	Basin-wide
Mississippi map turtle	<i>Graptemys kohnii</i>	Basin-wide
Ouachita map turtle	<i>Graptemys pseudogeographica ouachitensis</i>	Basin-wide
Missouri River cooter	<i>Pseudemys concinna metteri</i>	Hickory, Polk, Greene, Lawrence, Dade, Cedar, Barton, Christian
Three-toed box turtle	<i>Terrapene carolina triunguis</i>	Basin-wide
Ornate box turtle	<i>Terrapene ornata ornata</i>	Basin-wide
Red-eared slider	<i>Trachemys scripta elegans</i>	Basin-wide
Midland smooth softshell	<i>Trionyx muticus muticus</i>	Basin-wide
Western spiny softshell	<i>Trionyx spinifer hartwegi</i>	Basin-wide
Eastern collared lizard	<i>Crotaphytus collaris collaris</i>	Basin-wide
Northern fence lizard	<i>Sceloporus undulatus hyacinthinus</i>	Basin-wide
Southern coal skink	<i>Eumeces anthracinus pluvialis</i>	Basin-wide
Five-lined skink	<i>Eumeces fasciatus</i>	Basin-wide
Broadhead skink	<i>Eumeces laticeps</i>	Basin-wide
Great Plains skink	<i>Eumeces obsoletus</i>	Barton, Vernon
Ground skink	<i>Scincella lateralis</i>	Basin-wide
Prairie-lined racerunner	<i>Cnemidophorus sexlineatus viridus</i>	Basin-wide
Western slender glass lizard	<i>Ophisaurus attenuatus attenuatus</i>	Basin-wide
Western worm snake	<i>Carphophis amoenus vermis</i>	Basin-wide

<b>Eastern yellowbelly racer</b>	<i>Coluber constrictor flaviventris</i>	Basin-wide
<b>Prairie ringneck snake</b>	<i>Diadophis punctatus arnyi</i>	Basin-wide
<b>Great Plains rat snake</b>	<i>Elaphe guttata emoryi</i>	Basin-wide
<b>Black rat snake</b>	<i>Elaphe obsoleta obsoleta</i>	Basin-wide
<b>Eastern hognose snake</b>	<i>Heterodon platyrhinos</i>	Basin-wide
<b>Prairie kingsnake</b>	<i>Lampropeltis calligaster calligaster</i>	Basin-wide
<b>Speckled kingsnake</b>	<i>Lampropeltis getulus holbrooki</i>	Basin-wide
<b>Red milk snake</b>	<i>Lampropeltis triangulum syspila</i>	Basin-wide
<b>Eastern coachwhip</b>	<i>Masticophis flagellum flagellum</i>	Basin-wide
<b>Blotched water snake</b>	<i>Nerodia erythrogaster transversa</i>	Lawrence, Barton, Vernon, Cedar, Dade, St. Clair, Polk, Hickory
<b>Diamondback water snake</b>	<i>Nerodia rhombifer rhombifer</i>	Lawrence, Barton, Vernon, Cedar, Dade, St. Clair, Polk, Hickory
<b>Midland water snake</b>	<i>Nerodia sipedon pleuralis</i>	Greene, Lawrence, Dade
<b>Northern water snake</b>	<i>Nerodia sipedon sipedon</i>	Basin-wide
<b>Rough green snake</b>	<i>Opheodrys aestivus</i>	Basin-wide
<b>Bullsnake</b>	<i>Pituophis melanoleucus sayi</i>	Basin-wide
<b>Graham's crayfish snake</b>	<i>Regina grahamii</i>	Barton, Vernon, Cedar, Dade, St. Clair, Polk
<b>Ground snake</b>	<i>Sonora semiannulata</i>	Basin-wide
<b>Midland brown snake</b>	<i>Storeria dekayi wrightorum</i>	Dade, Polk, Greene, Lawrence, Christian
<b>Texas brown snake</b>	<i>Storeria dekayi texana</i>	Basin-wide
<b>Northern redbelly snake</b>	<i>Storeria occipitomaculata occipitomaculata</i>	Basin-wide
<b>Flathead snake</b>	<i>Tantilla gracilis</i>	Basin-wide
<b>Western ribbon snake</b>	<i>Thamnophis proximus proximus</i>	Basin-wide
<b>Eastern garter snake</b>	<i>Thamnophis sirtalis sirtalis</i>	Christian, Greene, Lawrence

<b>Red-sided garter snake</b>	<i>Thamnophis sirtalis parietalis</i>	Basin-wide
<b>Central lined snake</b>	<i>Tropidoclonion lineatum annectens</i>	Barton, Vernon, Cedar, Dade, St. Clair, Polk, Hickory
<b>Rough earth snake</b>	<i>Virginia striatula</i>	Basin-wide
<b>Western earth snake</b>	<i>Virginia valeriae elegans</i>	Basin-wide
<b>Osage copperhead</b>	<i>Agkistrodon contortrix phaeogaster</i>	Basin-wide
<b>Southern copperhead</b>	<i>Agkistrodon contortrix contortrix</i>	Greene, Christian, Lawrence
<b>Western cottonmouth</b>	<i>Agkistrodon piscivorus leucostoma</i>	Cedar, Hickory, Dade, St. Clair, Polk, Greene, Christian, Lawrence
<b>Timber rattlesnake</b>	<i>Crotalus horridus</i>	Basin-wide

Source: Johnson (1987).

Table 19. Species of conservation concern in the Sac River basin.

Name	Species	State Rank	State Status	Federal Status
Northern crawfish frog	<i>Rana areolata circulosa</i>	S3		
Sharp-shinned hawk	<i>Accipiter striatus</i>	S2		
Henslow's sparrow	<i>Ammodramus henslowii</i>	S2		
Great blue heron	<i>Ardea herodias</i>	S5		
Upland sandpiper	<i>Bartramia longicauda</i>	S3		
Northern harrier	<i>Circus cyaneus</i>	S1-S2	Endangered	
Bald eagle	<i>Haliaeetus leucocephalus</i>	S2	Endangered	Threatened
Greater prairie-chicken	<i>Tympanuchus cupido</i>	S1	Endangered	
Bristly cave crayfish	<i>Cambarus setosus</i>	S3		
Ozark cavefish	<i>Amblyopsis rosae</i>	S2	Endangered	Threatened
Least darter	<i>Etheostoma microperca</i>	S2		
Niangua darter	<i>Etheostoma nianguae</i>	S2	Endangered	Threatened
Southern brook lamprey	<i>Icthyomyzon gagei</i>	S2-S3		
Blacknose shiner	<i>Notropis heterolepis</i>	S2		
Auriculate false foxglove	<i>Agalinis auriculata</i>	S2		
Pale gerardia	<i>Agalinis skinneriana</i>	S3		
Mead's milkweed	<i>Asclepias meadii</i>	S2	Endangered	Threatened
A sedge	<i>Carex arkansana</i>	S3		
Common least daisy	<i>Chaetopappa asteroides</i>	S2-S3		
Geocarpon	<i>Geocarpon minimum</i>	S2	Endangered	Threatened
Missouri bladder-pod	<i>Lesquerella filiformis</i>	S3	Endangered	Endangered
Harvey's beak-rush	<i>Rhynchospora harveyi</i>	S1		
Soapberry	<i>Sapindus drummondii</i>	S2		
Thelesperma	<i>Thelesperma filifolium var. <i>filifolium</i></i>	S2		
A Noseburn	<i>Tragia ramosa</i>	S2		
A liverwort	<i>Marsupella sphacelata</i>	S1		
A hornwort	<i>Notothylus orbicularis</i>	S1		
Prairie mole cricket	<i>Gryllotalpa major</i>	S3		
Regal fritillary	<i>Speyeria idalia</i>	S3		
Black-tailed jackrabbit	<i>Lepus californicus</i>	S1	Endangered	
Gray bat	<i>Myotis grisescens</i>	S3	Endangered	Endangered
Rock-pocketbook	<i>Arcidens confragosus</i>	S3		

<b>Spectaclecase</b>	<i>Cumberlandia monodonta</i>	S3		
<b>Elephant-ear</b>	<i>Elliptio crassidens</i>	S1	Endangered	
<b>Pink mucket</b>	<i>Lampsilis abrupta</i>	S2	Endangered	Endangered
<b>A moss</b>	<i>Anomobryum filiforme</i>	S1		
<b>A moss</b>	<i>Archidium alternifolium</i>	S1		
<b>Sword moss</b>	<i>Bryoxiphium novegicum</i>	S1		
<b>A moss</b>	<i>Helodium paludosum</i>	S1		
<b>A moss</b>	<i>Neckera besseri</i>	S1		
<b>A hair cap moss</b>	<i>Polytrichum piliferum</i>	S1		
<b>Sphagnum</b>	<i>Sphagnum fallax</i>	S1		

Source: MDC (1999b)

## **Fish Stocking**

With the exception of private impoundments, recorded fish stocking in the Sac River basin has been restricted to Stockton Lake and Fellows Lake. Hybrid striped bass stocked in Truman Lake can also be found in the Sac River below Stockton Dam. Table 20 lists the fish that have been stocked in public waters of the Sac River basin. Private ponds are regularly stocked by their owners with a variety of sportfishes. The most common private pond sportfish populations are a mix of largemouth bass, bluegill, and channel catfish.

## **Aquatic Invertebrates**

Extensive monitoring of aquatic macroinvertebrates by the MDNR has been conducted in the Brush Creek sub-basin. Streams that have had aquatic invertebrate surveys conducted on them are Little Sac River, Turnback Creek, Clear Creek, Bear Creek, and Brush Creek. Table 21 lists the crayfish whose range includes the Sac River basin in Missouri. Table 22 summarizes aquatic macroinvertebrate collections by stream. Additional macroinvertebrate samples are being collected from Brush Creek and summarized by staff and students from the University of Missouri-Columbia as a part of the Brush Creek EARTH project. These data are not included here.

Live mussels were observed in the lower Sac River, Bear Creek, Cedar Creek, and Horse Creek in 1999 with a number of relic shells collected from these locations for identification. These collections can be found in Tables 23 and 24. These collections confirmed that several mussels in the Sac River watershed are present in the tributaries as well as the mainstream Sac River. Figure 21 shows the invertebrate sampling sites in the Sac River basin.

## **Angler Survey**

There has been a creel survey conducted on Stockton Lake from 1971 through 2000 with the exception of the years 1993 through 1995. The two sportfish most commonly pursued by anglers have been crappie (black and white) and black bass (largemouth, smallmouth, and spotted). In the early years of impoundment crappie were the most fished for by anglers with black bass second in popularity. During the decade of the 1990s the trend has been increased pursuit of bass and a decrease in the pressure on crappie to the point that black bass have become the most sought after species of sportfish. Other fish sought by anglers in order of preference are walleye, white bass, catfish, and sunfish. More detailed analyses of these data are included in reports available from MDC's Southwest Fisheries Regional Office in Springfield.

## **Fishing Regulations**

The Sac River basin streams are managed under Missouri's statewide regulations. Regulations for Stockton Lake are different than the stream regulations. Restrictions and rules can and do change, so it is best to consult the latest fishing regulations before fishing.

Table 20. Sac River basin fish stocking history.

<b>Location</b>	<b>Species</b>	<b>Date</b>	<b>Size</b>	<b>Number</b>
<b>Stockton Lake</b>	Northern Pike	4/70	Fry	2,000,000
<b>Stockton Lake</b>	Northern Pike	4/70	1 - 2"	10,000
<b>Stockton Lake</b>	Walleye	4/70	Fry	4,220,000
<b>Stockton Lake</b>	Inland Silversides	4/71	Adult	11,000
<b>Stockton Lake</b>	Northern Pike	4/71	Fry	675,000
<b>Stockton Lake</b>	Threadfin Shad	4/71	Adults & Egg Matts	6,000
<b>Stockton Lake</b>	Walleye	4/71	Fry	5,000,000
<b>Stockton Lake</b>	Walleye	5/72	1 - 2"	35,000
<b>Stockton Lake</b>	Hybrid Muskellunge	9/75	10"	2,000
<b>Stockton Lake</b>	Hybrid Muskellunge	10/76	8"	10,000
<b>Stockton Lake</b>	Hybrid Muskellunge	10/76	10"	2,600
<b>Stockton Lake</b>	Channel Catfish	5/90	Adult	23
<b>Fellows Lake</b>	Walleye	8/91	4 - 6"	12,402
<b>Fellows Lake</b>	Channel Catfish	9/91	8 - 10"	8,200
<b>Fellows Lake</b>	Channel Catfish	3/92	4 - 6"	5,101
<b>Fellows Lake</b>	Channel Catfish	9/92	8 - 10"	4,200
<b>Fellows Lake</b>	Walleye	9/92	4 - 6"	12,473
<b>Stockton Lake</b>	Walleye	4/93	Fry	682,017
<b>Stockton Lake</b>	Walleye	5/93	2"	327,409
<b>Fellows Lake</b>	Channel Catfish	10/93	10 -12"	8,202
<b>Stockton Lake</b>	Walleye	5/94	2"	354,576
<b>Fellows Lake</b>	Channel Catfish	10/94	8 - 10"	8,214
<b>Fellows Lake</b>	Channel Catfish	10/95	8 - 10"	8,200
<b>Stockton Lake</b>	Walleye	4/96	Fry	278,207
<b>Stockton Lake</b>	Walleye	5/96	13.3"	42
<b>Fellows Lake</b>	Channel Catfish	10/96	8 - 10"	9,570
<b>Fellows Lake</b>	Muskellunge	10/96	11 - 14"	820
<b>Fellows Lake</b>	Channel Catfish	10/97	8 - 10"	8,196
<b>Stockton Lake</b>	Walleye	5/98	1.3 - 1.8"	481,089
<b>Stockton Lake</b>	Walleye	6/98	1.1 -1.6"	196,131
<b>Stockton Lake</b>	Walleye	6/98	1.5"	52,320
<b>Fellows Lake</b>	Channel Catfish	10/98	8 - 10"	12,304
<b>Fellows Lake</b>	Channel Catfish	10/99	8 - 10"	12,300

<b>Fellows Lake</b>	Muskellunge	10/99	10 - 12"	2,460
<b>Fellows Lake</b>	Channel Catfish	10/00	8 - 10"	11,956
<b>Stockton Lake</b>	Bluegill	10/00	2 - 4"	20,163
<b>Stockton Lake</b>	Channel Catfish	4/00	Adults	168
<b>Stockton Lake</b>	Walleye	5/00	1 - 2"	746,165

Table 21. Crayfish whose range includes the Sac River basin in Missouri (Pflieger 1996).

Common Name	Scientific Name	Collected
<b>Bristly cave crayfish</b>	<i>Cambarus setosus</i>	between 1971-1992
<b>Golden crayfish</b>	<i>Orconectes luteus</i>	between 1971-1992
<b>Northern crayfish</b>	<i>Orconectes virilis</i>	between 1971-1992
<b>Grassland crayfish</b>	<i>Procambarus gracilis</i>	between 1971-1992

Table 22. Macroinvertebrate information from streams in the Sac River basin.

Phylum	Class	Order	Family	Scientific Name	Site <sup>1</sup>				
					1	2	3	4	5
Arthropoda	Insecta	Ephemeroptera	Baetidae						
				<i>Acentrella sp.</i>		X	X		
				<i>Acerpenna sp.</i>	X		X	X	
				<i>Acerpenna pygmaea</i>					
				<i>Baetis sp.</i>	X	X	X	X	X
				<i>Baetis flavistriata</i>					
				<i>Callibaetis sp.</i>	X	X		X	
				<i>Diphetor sp.</i>		X	X		
				<i>Diphetor hageni</i>					
				<i>Labiobaetis sp.</i>	X	X			
				<i>Procloeon sp.</i>	X	X	X	X	X
			Caenidae	<i>Caenis anceps</i>	X	X	X		
				<i>Caenis latipennis</i>	X	X	X	X	X
				<i>Caenis punctata</i>					
			Ephemeridae	<i>Ephemera sp.</i>	X	X	X		
				<i>Ephemera simulans</i>				X	X
				<i>Hexagenia sp.</i>	X	X	X		
				<i>Hexagenia limbata</i>				X	X
			Ephemerellidae	<i>Ephemerella sp.</i>			X	X	
				<i>Ephemerella invaria</i>	X				
				<i>Ephemerella needhami</i>		X	X		
				<i>Eurylophella sp.</i>				X	
				<i>Eurylophella bicolor</i>			X		
				<i>Eurylophella temporalis</i>					X
			Heptageniidae		X	X	X		
				<i>Leucrocuta sp.</i>	X	X	X	X	X
				<i>Stenacron sp.</i>	X	X	X	X	X
				<i>Stenonema bednariki</i>					
				<i>Stenonema femoratum</i>	X	X	X	X	X

			<i>Stenonema mediopunctatum</i>	X	X	X	
			<i>Stenonema modestum</i>			X	
			<i>Stenonema pulchellum</i>	X	X	X	X
			<i>Stenonema terminatum</i>	X	X	X	X
	Isonychiidae		<i>Isonychia bicolor</i>	X	X	X	X
	Leptohyphidae		<i>Tricorythodes sp.</i>	X	X	X	X
	Leptophlebiidae		<i>Choroterpes sp.</i>	X	X	X	X
			<i>Leptophlebia sp.</i>	X	X		
			<i>Leptophlebia cupida</i>			X	
			<i>Paraleptophlebia sp.</i>	X	X	X	X
	Potamanthidae		<i>Anthopotamus sp.</i>	X	X	X	
			<i>Anthopotamus myops</i>			X	
	Siphlonuridae		<i>Siphlonurus sp.</i>	X	X	X	
			<i>Siphlonurus minnoi</i>				
	Odonata	Aeshnidae	<i>Aeshna sp.</i>			X	X
			<i>Basiaeschna sp.</i>				
			<i>Basiaeschna janata</i>				X
			<i>Boyeria sp.</i>	X	X	X	
			<i>Hagenius sp.</i>			X	
			<i>Hagenius brevistylus</i>	X		X	X
			<i>Nasiaeschna sp.</i>			X	
			<i>Nasiaeschna pentacantha</i>	X	X	X	X
	Calopterygidae		<i>Calopteryx sp.</i>	X	X	X	X
			<i>Calopteryx maculata</i>				
			<i>Hetaerina sp.</i>	X	X	X	X
	Coenagrionidae					X	X
			<i>Enallagma sp.</i>	X	X	X	X
	Corduliidae		<i>Epithica sp.</i>	X		X	
			<i>Neurocordulia sp.</i>			X	X
			<i>Somatochlora sp.</i>				X
	Gomphidae				X	X	
			<i>Argia sp.</i>	X	X	X	X

			<i>Dromogomphus</i> sp.	X		
			<i>Gomphus</i> sp.		X	X
			<i>Ophiogomphus</i> sp.			
			<i>Stylogomphus</i> sp.			
			<i>Stylogomphus albistylus</i>	X	X	
		Libellulidae	<i>Libellula</i> sp.		X	
			<i>Perithemis</i> sp.		X	
		Macromiidae	<i>Macromia</i> sp.	X	X	X
	Plecoptera	Nemouridae	<i>Amphinemura</i> sp.	X	X	X
			<i>Prostoia completa</i>			
		Taeniopterygidae	<i>Strophopteryx</i> sp.	X		
			<i>Taeniopteryx</i> sp.		X	
		Leuctridae				
			<i>Zealeuctra</i> sp.	X	X	
			<i>Leuctra</i> sp.	X	X	
		Perlidae/Perlodidae		X	X	X
		Perlidae		X		
			<i>Acroneuria</i> sp.	X	X	X
			<i>Acroneuria frisoni</i>	X	X	X
			<i>Agnetina capitata</i>			
			<i>Agnetina flavescens</i>	X	X	X
			<i>Neoperla</i> sp.			
			<i>Neoperla harpi</i>			X
			<i>Perlesta</i> sp.	X	X	
			<i>Perlesta decipiens</i>			X
			<i>Perlinella drymo</i>	X		X
			<i>Perlinella ephrye</i>			
		Perlodidae				
			<i>Clioperla clio</i>		X	X
			<i>Helopicus natalus</i>		X	
			<i>Hydroperla crosbyi</i>			X
			<i>Isoperla</i> sp.	X	X	
			<i>Isoperla decepta</i>			X

			<i>Isoperla namata</i>		
			<i>Isoperla ouachita</i>		X
			<i>Isoperla signata</i>		
		Chloroperlidae	<i>Alloperlidae sp.</i>	X	X
			<i>Alloperlidae caudata</i>		X
	Heteroptera	Belostomatidae	<i>Belostoma sp.</i>		X X
		Corixidae		X	X X X X
			<i>Palmocorixa buenoi</i>		
			<i>Trichocorixa sp.</i>	X	X
		Gerridae	<i>Gerris sp.</i>		X
			<i>Rheumatobates sp.</i>	X	X X X X X
			<i>Trepobates sp.</i>	X	X X X X
		Hebridae	<i>Hebrus sp.</i>		X X
		Mesoveliidae	<i>Mesovelia sp.</i>	X	
		Nepidae	<i>Ranatra fusca</i>	X	
			<i>Ranatra nigra</i>	X X	X
		Pleidae	<i>Neoplea sp.</i>	X	X X
		Veliidae	<i>Microvelia sp.</i>	X X	X X X
			<i>Rhagovelia sp.</i>		X
	Megaloptera	Sialidae	<i>Sialis sp.</i>	X X	X X X
		Corydalidae	<i>Corydalus sp.</i>	X X	X X X
			<i>Nigronia sp.</i>	X X	X
			<i>Nigronia serricornis</i>		
	Neuroptera				
	Coleoptera	Dryopidae	<i>Helichus sp.</i>		X X
			<i>Helichus basalis</i>		X
			<i>Helichus lithophilus</i>	X	X X
			<i>Hydrochus sp.</i>		X
			<i>Lutrochus sp.</i>	X	
		Dytiscidae	<i>Agabus sp.</i>	X X	X X X
			<i>Cybister sp.</i>		
			<i>Hydroporus sp.</i>	X X	X

			Elmidae	<i>Ancyronyx sp.</i>		X
				<i>Ancyronyx variegata</i>	X	X X X X
				<i>Disonycha sp.</i>		X
				<i>Dubiraphia sp.</i>	X X X X X	
				<i>Macronychus sp.</i>		X
				<i>Macronychus glabratus</i>	X X X X X	
				<i>Microcylloepus pusillus</i>		X
				<i>Optioservus sp.</i>		
				<i>Optioservus sandersoni</i>	X X	
				<i>Stenelmis sp.</i>	X X X X X	
				<i>Stenelmis beameri</i>	X X X X X	
				<i>Stenelmis cheryl</i>		X
				<i>Stenelmis crenata</i>	X X	
				<i>Stenelmis sexlineata</i>	X	X X
		Gyrinidae		<i>Dineutus sp.</i>		X
				<i>Gyretes sp.</i>		X
				<i>Gyrinus sp.</i>		
		Haliplidae		<i>Peltodytes sp.</i>	X	X
			Hydraenidae	<i>Hydraena sp.</i>		
			Hydrophilidae	<i>Berosus sp.</i>		X
				<i>Chaetarthria sp.</i>		
				<i>Hydrobius sp.</i>		X
				<i>Laccobius sp.</i>		X
				<i>Paracymus sp.</i>		X
				<i>Sperchopsis sp.</i>		X
				<i>Tropisternus sp.</i>	X	X
		Psephenidae		<i>Ectopria sp.</i>	X	
				<i>Ectopria nervosa</i>		X
				<i>Psephenus sp.</i>		X
				<i>Psephenus herricki</i>	X X X X X	
		Salpingidae				
			Scirtidae	<i>Scirtes sp.</i>	X X X X X	X

		Trichoptera	Brachycentridae	<i>Micrasema</i> sp.		X
			Glossosomatidae	<i>Agapetus</i> sp.	X	X X X X
			Helicopsychidae	<i>Helicopsyche</i> sp.	X	X X X X
				<i>Ceratopsyche</i> sp.		X
				<i>Ceratopsyche bronta/morosa</i>	X	X
				<i>Ceratopsyche slossonae</i>		X
				<i>Cheumatopsyche</i> sp.	X	X X X X X
		Hydropsychidae			X	
				<i>Hydropsyche</i> sp.		X
		Hydroptilidae	<i>Hydroptila</i> sp.		X	X X X X X
				<i>Oxyethira</i> sp.		X X
		Leptoceridae	<i>Ceraclea</i> sp.			X
				<i>Mystacides</i> sp.	X	X X
				<i>Nectopsyche</i> sp.	X	X X
				<i>Nectopsyche albida</i>		X
				<i>Nectopsyche exquisita</i>		X
				<i>Oecetis</i> sp.	X	X X X X
				<i>Triaenodes</i> sp.	X	X X X X
		Limnephilidae	<i>Ironoquia</i> sp.			X
				<i>Neophylax</i> sp.	X	X X
				<i>Platycentropus</i> sp.		X
				<i>Pycnopsyche</i> sp.		X X
		Odontoceridae	<i>Marilia flexousa</i>			
		Philopotamidae	<i>Chimarra</i> sp.		X	X X X X
		Phryganeidae	<i>Ptilostomis</i> sp.		X	X
		Polycentropidae			X	
		Polycentropodidae	<i>Cernotina</i> sp.		X	X X X X X
				<i>Neureclipsis</i> sp.		X X
				<i>Polycentropus</i> sp.		X X
		Psychomyiidae	<i>Lype diversa</i>		X	X
				<i>Psychomyia</i> sp.		X
		Rhyacophilidae	<i>Rhyacophila</i> sp.		X	X

		Lepidoptera	Noctuidae		X
			Pyralidae	<i>Petrophila sp.</i>	X
		Diptera			
			Athericidae	<i>Atherix sp.</i>	
			Ceratopogonidae		X
				<i>Dasyheleinae/Ceratopogoninae</i>	X X
				<i>Ceratopogoninae sp.</i>	X X X
				<i>Forcipomyiinae sp.</i>	X X
			Chaoboridae	<i>Chaoborus sp.</i>	X X X
			Chironomidae	<i>Ablabesmyia sp.</i>	X X X X X
				<i>Brillia sp.</i>	X
				<i>Chironomus sp.</i>	X X X X X
				<i>Cladopelma sp.</i>	X
				<i>Cladotanytarsus sp.</i>	X X X X
				<i>Clinotanypus sp.</i>	
				<i>Coelotanypus sp.</i>	X X
				<i>Constempellina sp.</i>	X
				<i>Corynoneura sp.</i>	X X X X X
				<i>Cricotopus/Orthocladius</i>	X X X X X
				<i>Pagastiella sp.</i>	X
				<i>Cryptochironomus sp.</i>	X X X X X
				<i>Cryptotendipes sp.</i>	X X X X
				<i>Diamesa sp.</i>	X
				<i>Dicrotendipes sp.</i>	X X X X X
				<i>Endochironomus sp.</i>	X X
				<i>Eukiefferiella sp.</i>	X X X X
				<i>Euorthocladius</i>	X X
				<i>Glyptotendipes sp.</i>	X X X
				<i>Hydrobaenus sp.</i>	X X X X
				<i>Labrudinia sp.</i>	X X X X X
				<i>Larsia sp.</i>	X X X X
				<i>Micropsectra sp.</i>	X

				<i>Microtendipes</i> sp.	X	X	X	X	X
				<i>Monodiamesa</i> sp.					X
				<i>Nanocladius</i> sp.	X	X	X	X	X
				<i>Nilotanypus</i> sp.	X	X	X	X	X
				<i>Parachironomus</i> sp.				X	
				<i>Paracladopelma</i> sp.	X		X		
				<i>Parakiefferiella</i> sp.	X	X	X		
				<i>Paralauterborniella</i> sp.	X	X			
				<i>Paramerina</i> sp.	X	X	X		
				<i>Parametriocnemus</i> sp.	X	X	X	X	
				<i>Paratanytarsus</i> sp.	X	X	X	X	X
				<i>Paratendipes</i> sp.	X	X	X	X	X
				<i>Phaenopsectra</i> sp.	X	X	X	X	X
				<i>Polypedilum</i> sp.	X	X	X		
				<i>Polypedilum convictum</i>	X	X	X	X	X
				<i>Polypedilum fallax</i>	X	X	X	X	
				<i>Polypedilum halterale</i>					
				<i>Polypedilum illinoense</i>	X	X	X	X	
				<i>Polypedilum scalaenum</i>	X	X	X	X	X
				<i>Pothastia</i> sp.				X	
				<i>Procladius</i> sp.	X	X	X	X	X
				<i>Pseudochironomus</i> sp.	X	X	X	X	
				<i>Rheocricotopus</i> sp.	X	X	X	X	
				<i>Rheotanytarsus</i> sp.	X	X	X	X	X
				<i>Smittia</i> sp.					
				<i>Stelechomyia</i> sp.					
				<i>Stempellina</i> sp.	X	X			
				<i>Stempellinella</i> sp.	X	X	X	X	X
				<i>Stenochironomus</i> sp.	X	X	X	X	
				<i>Stictochironomus</i> sp.	X		X		
				<i>Symposiocladius</i> sp.	X				
				<i>Sympotthastia</i> sp.				X	

				<i>Synorthocladius</i> sp.				
				<i>Tanypus</i> sp.				X
				<i>Tanytarsus</i> sp.	X	X	X	X
				<i>Thienemanniella</i> sp.	X	X	X	X
				<i>Thienemannimyia</i> grp.	X	X	X	X
				<i>Tribelos</i> sp.	X		X	
				<i>Tventenia</i> sp.			X	
				<i>Tventenia bavarica</i>	X	X		
				<i>Xylotopus</i> sp.	X	X	X	
				<i>Zavrelimyia</i> sp.				
		Culicidae		<i>Aedes</i> sp.	X			
				<i>Anopheles</i> sp.	X	X	X	X
				<i>Culex</i> sp.			X	
				<i>Culiseta</i> sp.				X
	Dixidae			<i>Dixa</i> sp.				
				<i>Dixella</i> sp.			X	X
	Dolichopodidae							
	Empididae						X	X
				<i>Chelifera</i> sp.			X	
				<i>Clinocera</i> sp.	X	X	X	
				<i>Hemerodromia</i> sp.	X	X	X	X
	Ephydriidae							X
	Orthocladiinae			<i>Axarus</i> sp.	X		X	X
				<i>Pagastiella</i> sp.	X			
	Simuliidae			<i>Prosimulium</i> sp.				X
				<i>Simulium</i> sp.	X	X	X	
	Stratiomyidae			<i>Alognosta</i> sp.				
				<i>Myxosargus</i> sp.			X	
				<i>Nemotelus</i> sp.				
	Tabanidae			<i>Chrysops</i> sp.	X		X	X
				<i>Tabanus</i> sp.	X		X	X
	Tipulidae			<i>Antocha</i> sp.			X	

				<i>Dicranota</i> sp.				
				<i>Hexatoma</i> sp.	X	X	X	X
				<i>Ormosia</i> sp.				
				<i>Pseudolimnophila</i> sp.				X
				<i>Tipula</i> sp.	X	X	X	X
	Crustacea	Amphipoda	Talitridae	<i>Hyallela azteca</i>	X	X	X	X
		Decapoda	Astacidae	<i>Orconectes</i> sp.				
				<i>Orconectes macrus</i>				
				<i>Orconectes neglectus</i>				
				<i>Orconectes luteus</i>	X	X	X	X
				<i>Orconectes virilis</i>	X	X	X	X
			Palaemonidae	<i>Palaemonetes kadiakensis</i>				X
	Malacostraca	Isopoda	Asellidae	<i>Caecidotea</i> sp.			X	X
				<i>Lirceus</i> sp.				X
				<i>Lirceus hoppinae</i>	X			
		Amphipoda	Crangonyctidae	<i>Crangonyx</i> sp.	X	X		
			Gammaridae	<i>Gammarus</i> sp.			X	X
				<i>Stygobromus</i> sp.			X	X
	Arachnida	Acari			X	X	X	X
Annelida	Oligochaeta							
		Lumbriculida	Lumbriculidae		X	X	X	X
		Tubificida	Enchytraeidae		X	X	X	X
			Lumbricidae					
			Sparganophilidae	<i>Sparganophilus/ Eiseniella</i>				
			Tubificidae		X	X	X	X
				<i>Aulodrilus</i> sp.	X	X		
				<i>Branchiura sowerbyi</i>	X		X	X
				<i>Ilyodrilus templetoni</i>	X		X	
				<i>Limnodrilus</i> sp.	X	X	X	
				<i>Limnodrilus augustipennis</i>				
				<i>Limnodrilus cervix</i>			X	X
				<i>Limnodrilus hoffmeisteri</i>	X	X	X	X

				<i>Quistadrilus multisetsosus</i>			
		Branchiobdellida			X	X	X
		Rhynchobdellida	Glossiphoniidae		X		X
		Pharyngobdellida	Erpobdellidae		X		X
				<i>Dina/Mooreobdella sp.</i>			X
			Piscicolidae				
Mollusca	Gastropoda	Basommatophora	Ancylidae	<i>Ferrissia sp.</i>	X	X	X
			Lymnaeidae		X		X
				<i>Fossaria sp.</i>			X
			Physidae	<i>Physa sp.</i>			
				<i>Physella sp.</i>	X	X	X
			Planorbidae	<i>Helisoma sp.</i>			
				<i>Menetus sp.</i>	X	X	X
		Mesogastropoda	Hydrobiidae				X
			Pleuroceridae	<i>Elimia sp.</i>	X	X	X
	Bivalvia	Pelecypoda	Corbiculidae	<i>Corbicula sp.</i>	X	X	X
		Veneroida	Pisidiidae	<i>Musculium sp.</i>	X		
				<i>Sphaerium sp.</i>	X	X	X
Platyhelminthes	Turbellaria	Tricladida	Planariidae		X	X	X
Nematomorpha	Gordioida	Gordea	Gordiidae				X

1 = Little Sac River samples collected from two sites on April 2-3, 1996 and September 19, 1996.

2 = Clear Creek samples collected from two sites on April 3, 1996 and September 18, 1996.

3 = Turnback Creek samples collected from two sites on April 4, 1996 and September 18, 1996.

4 = Brush Creek samples collected from four sites on March 30-31, 1995, and six sites on September 18-20, 1995.

5 = Bear Creek samples collected from three sites on September 20-21, 1995.

All sample data provided by Randy Sarver of the MDNR. For a more detailed site by site breakdown contact Randy Sarver at MDNR

Table 23. Mussels found in the Sac River basin.

Common Name	Scientific Name	Collection <sup>1</sup>
Paper pondshell	<i>Utterbackis imbecilis</i>	1965-1999
Giant floater	<i>Anodonta grandis</i>	1965-1999
Creeper	<i>Strophitus undulatus</i>	1999
Elk toe	<i>Alasmidonta marginata</i>	1965-1999
Slippershell	<i>Alasmidonta viridis</i>	1965-1999
White heel splitter	<i>Lasmigonia complanata</i>	1999
Fluted shell	<i>Lasmigonia costata</i>	1965-1999
Washboard	<i>Megalonaia nervosa</i>	1965-1999
Pistolgrip	<i>Tritogonia verrucosa</i>	1999
Mapleleaf	<i>Quadrula quadrula</i>	1999
Pimpleback	<i>Quadrula pustulosa</i>	1965-1999
Monkeyface	<i>Quadrula metanevra</i>	1999
Threeridge	<i>Amblema plicata</i>	1999
Wabash pigtoe	<i>Fusconaia flava</i>	1965-1999
Purple wartyback	<i>Cyclonaias tuberculata</i>	1999
Round pigtoe	<i>Pleurobema sintoxia</i>	1965-1999
Spike	<i>Elliptio dilatata</i>	1999
Ouachita kidney-shell	<i>Ptychobranchus occidentalis</i>	1965-1999
Threehorn wartyback	<i>Obliquaria reflexa</i>	1999
Mucket	<i>Actinonaias ligamentina carinata</i>	1965-1999
Ellipse	<i>Venustaconcha ellipsiformis ellipsiformis</i>	1965-1999
Butterfly	<i>Ellipsaria lineolata</i>	1999
Fawnsfoot	<i>Truncilla donaciformis</i>	1999
Deertoe	<i>Truncilla truncata</i>	1978 - 1999
Fragile papershell	<i>Leptodea fragilis</i>	1978 - 1999
Pink heelsplitter	<i>Potamilus alatus</i>	1999
Pink papershell	<i>Potamilus ohioensis</i>	1965-1999
Lilliput	<i>Toxolasma parvus</i>	1965-1999
Black sandshell	<i>Ligumia recta</i>	1965-1999
Pondmussel	<i>Ligumia subrostrata</i>	1965-1999
Yellow sandshell	<i>Lampsilis teres</i>	1965-1999
Fat mucket	<i>Lampsilis siliquodiea</i>	1965-1999
Pink mucket	<i>Lampsilis abrupta</i>	1965-1999

<b>Plain pocketbook</b>	<i>Lampsilis cardium</i>	1999
<b>Northern brokenray</b>	<i>Lampsilis reeviana brittsi</i>	1965-1999
<b>Asian clam</b>	<i>Corbicula fulminea</i>	1999

1 - Sources of collection information: MDC Naiad Database (1978), Cummings and Mayer (1982), Oesch (1984), and 1999 samples collected from the lower Sac River by Dr. Chris Barnhart (SMSU) and Horse Creek by Sue Bruenderman, Scott Faiman, Rick Horton, and Tim Banek of MDC.

Table 24. Mussels identified from shells collected in the Sac River basin.

Common Name	Species	Shell condition	Location
Asian clam	<i>Corbicula fluminea</i>	Weathered dead	Horse Creek, Highway CC
Fragile papershell	<i>Leptodea fragilis</i>	Weathered dead	Horse Creek, Highway CC
Pink heelsplitter	<i>Potamilus alatus</i>	Weathered dead	Horse Creek, Highway CC
Giant floater	<i>Pyganodon grandis</i>	Shell Fragments	Horse Creek, Highway CC
Mapleleaf	<i>Quadrula quadrula</i>	Shell Fragments	Horse Creek, Highway CC
Squawfoot	<i>Strophitus undulatus</i>	Weathered dead	Horse Creek, Highway CC
Pistolgrip	<i>Tritagonia verrucosa</i>	Weathered dead	Horse Creek, Highway CC
Deertoe	<i>Truncilla truncata</i>	Weathered dead	Horse Creek, Highway CC
Threeridge	<i>Amblema plicata</i>	Weathered dead	Horse Creek, Highway 32
Plain pocketbook	<i>Lampsilis cardium</i>	Weathered dead	Horse Creek, Highway 32
Fragile papershell	<i>Leptodea fragilis</i>	Weathered dead	Horse Creek, Highway 32
Giant floater	<i>Pyganodon grandis</i>	Shell Fragments	Horse Creek, Highway 32
Pimpleback	<i>Quadrula pustulosa</i>	Weathered dead	Horse Creek, Highway 32
Pistolgrip	<i>Tritagonia verrucosa</i>	Weathered dead	Horse Creek, Highway 32
Spike	<i>Elliptio dilatata</i>	Shell fragments	Cedar Creek, Highway 32
Wabash pigtoe	<i>Fusconaia flava</i>	Weathered dead	Cedar Creek, Highway 32
Fat mucket	<i>Lampsilis siliquoidea</i>	Shell fragments	Cedar Creek, Highway 32
Fat mucket	<i>Lampsilis siliquoidea</i>	Shell fragments	Bear Creek, Highway A
White heelsplitter	<i>Lasmigonia complanata</i>	Weathered dead	Cedar Creek, Highway 39

<b>Fragile papershell</b>	<i>Leptodea fragilis</i>	Weathered dead	Cedar Creek, Highway 39
<b>Three-horned wartyback</b>	<i>Obliquaria reflexa</i>	Weathered dead	Cedar Creek, Highway 39
<b>Squawfoot</b>	<i>Strophitus undulatus</i>	Weathered dead	Cedar Creek, Highway 39
<b>Deertoe</b>	<i>Truncilla truncata</i>	Weathered dead	Cedar Creek, Highway 39
<b>Spectaclecase</b>	<i>Cumberlandia monodonta</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Squawfoot</b>	<i>Strophitus undulatus</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Pistolgrip</b>	<i>Tritagonia verrucosa</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Monkeyface</b>	<i>Quadrula metanevra</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Pimpleback</b>	<i>Quadrula pustulosa</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Threeridge</b>	<i>Amblema plicata</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Wabash pigtoe</b>	<i>Fusconaia flava</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Purple wartyback</b>	<i>Cyclonaias tuberculata</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Round pigtoe</b>	<i>Pleurobema sintoxia</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Spike</b>	<i>Elliptio dilatata</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Threehorn wartyback</b>	<i>Obliquaria reflexa</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Mucket</b>	<i>Actinonaias ligamentina</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Ellipse</b>	<i>Ventusticoncha ellipsiformis</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Butterfly</b>	<i>Ellipsaria lineolata</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Deertoe</b>	<i>Truncilla truncata</i>	Weathered dead	Sac River, Stream Mile 30.1

<b>Fawnsfoot</b>	<i>Truncilla donaciformis</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Fragile papershell</b>	<i>Leptodea fragilis</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Pink heelsplitter</b>	<i>Potamilis alatus</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Black sanshell</b>	<i>Ligumia recta</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Yellow sandshell</b>	<i>Lampsilis teres</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Pocketbook</b>	<i>Lampsilis cardium</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Pink mucket</b>	<i>Lampsilis abrupta</i>	Weathered dead	Sac River, Stream Mile 30.1
<b>Squawfoot</b>	<i>Strophitus undulatus</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>Rock pocketbook</b>	<i>Arcidens confragosus</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>White heelsplitter</b>	<i>Lasmisgona c. complanata</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>Fluted shell</b>	<i>Lasmigona costata</i>	Shell fragments	Sac River, Stream Mile 34.3
<b>Washboard</b>	<i>Megalonaivas nervosa</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>Pistolgrip</b>	<i>Tritagonia verrucosa</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>Mapleleaf</b>	<i>Quadrula quadrula</i>	Shell fragments	Sac River, Stream Mile 34.3
<b>Monkeyface</b>	<i>Quadrula metanevra</i>	Shell fragments	Sac River, Stream Mile 34.3
<b>Pimpleback</b>	<i>Quadrula pustulosa</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>Threeridge</b>	<i>Amblema plicata</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>Wabash pigtoe</b>	<i>Fusconaia flava</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>Purple wartyback</b>	<i>Cyclonaias tuberculata</i>	Weathered dead	Sac River, Stream Mile 34.3

<b>Round Pigtoe</b>	<i>Pleurobema sintoxia</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>Spike</b>	<i>Elliptio dilatata</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>Threehorn wartyback</b>	<i>Obliquaria reflexa</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>Mucket</b>	<i>Actinonaias ligamentina</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>Ellipse</b>	<i>Ventusticoncha ellipsiformis</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>Butterfly</b>	<i>Ellipsaria lineolata</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>Fawnsfoot</b>	<i>Truncilla donaciformis</i>	Shell fragments	Sac River, Stream Mile 34.3
<b>Pink papershell</b>	<i>Potamilis ohiensis</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>Pink heelsplitter</b>	<i>Potamilus alatus</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>Black sandshell</b>	<i>Ligumia recta</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>Yellow sandshell</b>	<i>Lampsilis teres</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>Fatmucket</b>	<i>Lampsilis siliquoidia</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>Pocketbook</b>	<i>Lampsilis cardium</i>	Weathered dead	Sac River, Stream Mile 34.3
<b>Pink mucket</b>	<i>Lampsilis abrupta</i>	Shell fragments	Sac River, Stream Mile 34.3