BIOTIC COMMUNITIES

Stream Fish Distribution and Abundance

Historical records of fish collections within the North Fork Watershed date back to 1 July, 1931. The latest fish community surveys were performed in 1997 (Figure Bc01) (MDC 1998a). From 1931 to 1997, 76 fish species (not including hybrids) in 15 families have been collected (including observations) within the watershed (Table Bc01) (MDC Ozark Regional Fish Collection Files; MDC Sport Fish Collection Files; Pflieger 1997; MDC 1998a; MDC 1999c).

Table Bc02 shows fish species distribution by 11 digit hydrologic unit.

Prior to 1980, a total of 65 fish species (not including hybrids) in 12 families were collected (including observations) within the watershed (MDC Ozark Regional Fish Collection Files; MDC Sport Fish Collection Files; Pflieger 1997; MDC 1998a; MDC 1999c).

From 1980 to 1997, a total of 71 species in 15 families have been collected (MDC Ozark Regional Fish Collection Files; MDC Sport Fish Collection Files; Pflieger 1997; MDC 1998a; MDC 1999c). Three species of fish which were observed prior to 1980 were not observed from 1980 to 1997. These include the Gilt Darter (Percina evides), steelcolor shiner (Cyprinella whipplei), and the least brook lamprey (Lamptera aepyptera). The gilt darter and the steelcolor shiner were only collected in 1942 from a single site (MDC 1998a). This site became part of Norfork Lake whose dam was completed in 1944 (MDNR 1994a). Pflieger (1997) states that the gilt darter "has apparently disappeared from the White River Basin following the construction of the North Fork, Table Rock, and Bull Shoals Reservoirs." Pflieger (1997) gives a similar description of the disappearance of the steelcolor shiner within the basin.

Of some concern is the absence of the least brook lamprey in collections after 1979.

The least brook lamprey has only been collected in 5 samples within the watershed; all of which occurred between 1969 and 1979 (MDC 1998a). Larval lamprey have been collected in samples after 1979. These perhaps may be representatives of the least brook lamprey. Additional sampling will be necessary in order to adequately determine the status of this species within the North Fork Watershed.

Four species of fish have been collected in fish community samples since 1980 which were not previously recorded in MDC fish community collections prior to 1980 within the watershed (MDC Ozark Regional Fish Collection Files; MDC Sport Fish Collection Files; Pflieger 1997; MDC 1998a; MDC 1999c). These include the longnose gar, redspotted sunfish, warmouth, and western mosquitofish. All species, with the exception of the longnose gar, have been collected at single sites. The redspotted sunfish and warmouth were both collected at the same site on Bryant Creek. The western mosquitofish was collected at a single site on Bennett’s River. The longnose gar was collected at two relatively widely separated sites; one on Lick Creek and the other on the North Fork River. It is difficult to determine the exact cause of the sudden appearance of these species within the watershed. Possible explanations could include a change in sampling techniques, sampling effort, or undocumented introductions.

The longnose gar was collected at one site on Lick Creek which had not been previously sampled. Sampling methodology at the other site at which the longnose gar was collected was slightly different than for earlier samples (MDC 1998a).

The western mosquitofish was collected at a site which had not previously been sampled. In addition, this species has been collected from nearby streams within the neighboring Spring River Tributaries Watershed; Thus its new found presence in the North Fork Watershed should be of no surprise especially in light of how this species has spread so quickly throughout the state. A survey in the 1940s indicated that its distribution in Missouri included the "Lowland Faunal Region and northward along the Mississippi River to Ramsey Creek in Pike County"(Pflieger 1997). Today the mosquito fish can be found in all of the faunal regions of the state.

The appearance of the redspotted sunfish and the warmouth is more difficult to explain than the previously mentioned species. Sample methods between the sample in which these species were found and an earlier sample appear to be similar. Both the warmouth and the redspotted sunfish have been collected in the neighboring Bull Shoals Lake Watershed, Part of the White River Tributaries Watershed (Pflieger 1997). Neither are widespread in the southwestern portion of the Ozarks. The occurrence of these species within the North Fork Watershed are probably the result of undocumented introductions.

Percent of occurrence for individual species was determined by dividing the number of sample sites at which an individual species was collected by total number of sample sites within the North Fork Watershed for the entire period of record. Six species occurred at 75% or more of the sample sites: banded sculpin (Cottus carolinae), central stoneroller (Campostoma pullum), duskystripe shiner (Luxilis pilsbryi), hornyhead chub (Nocomis biguttatus), Ozark sculpin (Cottus hypselurus), and rainbow darter (Etheostoma caeruleum).

In addition to the previously mentioned species, 5 additional species of fish have been observed in sport fish samples within the North Fork Watershed. These include black crappie, white crappie, striped bass, white bass, and river redhorse. The occurrence of most of these species is probably due to the effect of the recreational fishery management and habitat of Norfork Lake on fish community species composition.

The fish fauna of the North Fork Watershed is dominated by Ozark species (Table Bc01). According to the faunal region classification of species as developed by Pflieger (1989), they could be described as 57% Ozark, 8% Ozark-Prairie, 8% Ozark-lowland, 3% Ozark-Big River, 1% Prairie, 3% Big River, Lowland 3% and 17% widely distributed.

Sport Fish

The tributaries and lakes of the North Fork Watershed offer a wide variety of angling opportunities. A total of 16 species of sport fish (as defined as game fish in MDC 1999c) are known to occur within the watershed (Pflieger 1997; MDC 1998a; MDC sport fish sample files; Pratt, personal communication). These include grass pickerel, chain pickerel, rainbow trout, brown trout, Ozark bass, smallmouth bass, largemouth bass, channel catfish, warmouth, walleye, spotted bass, flathead catfish, black crappie, white crappie, striped bass, and white bass. Walleye, spotted bass, flathead catfish, black crappie, white crappie, striped bass, and white bass have a distribution associated primarily with Norfork Lake as well as the lower North Fork River and lower Bryant Creek. White bass, striped bass, and walleye move up into the lower tributaries, primarily the North Fork River and Bryant Creek, during the spring as part of their spawning activity.

The North Fork River from Rainbow Spring to Dawt Mill has year round temperatures less than 70ºF and is managed as a cold-water fishery. This section of the North Fork River is home to an important and

nationally recognized trout fishery. Both rainbow and brown trout exist in this area. The North Fork of the White River in Ozark County is classified as a Wild Trout Management Area from the upper outlet of Rainbow Spring to Blair Bridge. The unimpounded portion of the North Fork River and its tributaries from Blair Bridge to Norfork Lake are managed as a Special Trout Management Area (MDC, 1999d). Special regulations apply in both areas (see current Missouri Wildlife Code Booklet).

In 1991 and 1992 an angler survey was carried out within the section of the North Fork River designated as a cold-water fishery (approximately 13.5 miles). Results indicated that angler visitation equaled an annual average 452 trips/mile per year and helped to generate more than half a million dollars for the local economy (Zurbrick 1997).

Several species of non-game fish also provide many alternative fishing opportunities. These species include northern hogsucker, black redhorse, golden redhorse, and shorthead redhorse. (MDC 1998a; MDC sport fish sample files)

Fish Stocking

Due to the existence of a significant cold water fishery within the North Fork Watershed, fish stocking efforts have been primarily focused on trout. The first recorded introduction of rainbow trout within the watershed was in 1925 (Zurbrick 1997). Stocking of rainbow trout was discontinued by Missouri Department of Conservation (MDC) in 1966 and the population became self-sustaining through natural reproduction. In 1967, MDC began stocking brown trout in the North Fork River. Since then 378,229 brown trout have been stocked in the North Fork (MDC 1974-1979,1986 and MDC 1985-1996). Rainbow trout are stocked by two private entities within the watershed. Spring Creek, a tributary of the North Fork River is stocked on a semi-weekly basis from Memorial Day to Labor Day (Pratt personal communication). The other private trout area is located on Spring Creek (tributary of Bryant Creek).

Less information is known regarding the stocking of warm water species within the North Fork watershed. Missouri Department of Conservation (MDC) annual stocking reports for the Ozark Region indicate that Noblett Lake, the only major impoundment, besides Norfork Reservoir, within the watershed, receives annual supplemental stockings of channel catfish. Norfork reservoir receives the bulk of warmwater fish stockings in the watershed. The Missouri Department of Conservation routinely stocks walleye in the reservoir in Missouri (Legler, personal communication). In addition, the Arkansas Game and Fish Commission has stocked redear, black crappie, white crappie, channel catfish, blue catfish, flathead catfish, striped bass, and hybrids (white bass X striped bass) within the reservoir in Arkansas (Legler, personal communication). Many farm ponds have also been stocked with largemouth bass, bluegill, and channel catfish by both MDC and privately obtained fish. It can be assumed that many pond owners have also probably stocked grass carp. The potential of these fish being washed into streams exists in all major precipitation events. A lack of historical records, plus the occurrence of undocumented introductions makes it difficult to determine, with any reliability, all species which may have been introduced into the watershed. Effects of introductions vary. While the introduction of species already present in the watershed may have minimal to no effect, the introduction of non-native species can often times have disastrous consequences.

Mussels

A total of 21 species of mussels are known to occur within the North Fork Watershed (Table Bc03)(Oesch 1995, Buchanan 1996, MDC 1998b, Turgeon et al. 1998). Of these, 3 species are former Federal

category-2 candidates. These are the elktoe (Alsmidonta marginata), Ouachita kidneyshell (Ptychobranchus occidentalis), and purple lilliput (Toxolasma lividus). Figure Bc02 displays Mussel sampling sites within the watershed.

Snails

Fifteen species of snails have been identified within the North Fork Watershed (Table Bc04) (Wu etal. 1997). These include two species of conservation concern: the Arkansas mudalia (Leptoxis arkansensis) and the Ozark pyrg (Pyrgulopsis ozarkensis) (MDC 1999e).

Crayfish

Five species of crayfish are known to occur within the North Fork Watershed. These include the longpincered crayfish (Orconectes longidigitus), northern crayfish (Orconectes virilis), Ozark crayfish (Orconectes ozarkae), ringed crayfish (Orconectes n. chaenodactylus), and spothanded crayfish (Orconectes punctimanus) (Pflieger 1996 and MDC 1998c). Three species have distributions in or closely associated with the Ozark Region (Pflieger 1996). The longpincered crayfish is found only in the White River Basin in Missouri and Arkansas. The Ozark crayfish is found only in the White and Black River Basins in Missouri and Arkansas. It is uncommon in the North Fork Watershed. The spothanded crayfish is found in the eastern half of the Ozarks in Missouri and adjacent counties in Arkansas. This species is also found in Callaway, Montgomery, and Warren Counties north of the Missouri River.

Benthic Invertebrates

A limited amount of information is currently available for the North Fork Watershed in regards to benthic invertebrates. Duchrow (1977) carried out benthic invertebrate sampling at eight locations on Bryant Creek, Hunter Creek, Watered Hollow, and Crystal Spring Branch within the North Fork Watershed from 1974-1976 (Table Bc05 and Figure Wq04) (MDC 1998d). A total of 24,418 organisms of 106 taxa were collected. Densities ranged from 653 organisms/ft^2 - 2538 organisms/ft^2. All of these invertebrate sample sites were located in the Bryant Creek Subwatershed. Little is known in regards to the aquatic invertebrate community of the remainder of the North Fork Watershed. In order to gain further understanding of species composition and distribution throughout the watershed, additional sampling will be necessary.

Species of Conservation Concern

Within the North Fork Watershed, 65 species of conservation concern have been identified (Table Bc06) (MDC 1999b and MDC 1999e). These include 41 species of plants; 2 species of insects; 6 species of mollusk; 3 species of fish; 1 species of amphibian, 2 species of reptiles, 5 species of birds; and 5 species of mammals. Three species have federal endangered and state endangered species status. These include the gray bat, Indiana bat, and running buffalo clover. An additional 4 species have state endangered species status. These are the mountain lion, black-tailed jackrabbit, Bachman’s sparrow, and Swainson’s warbler. The bald eagle is listed as a federal threatened species and a state endangered species. It is currently proposed for federal delisting (USFWS 2001).

The following is a brief description of aquatic oriented species of conservation concern within the North Fork Watershed:

-Fish-

Lake chubsucker - Only one record of this species exists within the Natural Heritage Database for the North Fork Watershed (MDC 1999b). The year of the observation is 1942. Historical data from the Missouri Department of Conservation Fish Collection Database indicate no collections of this species within the watershed. Pflieger (1997) describes this species as being primarily restricted to the Lowland Faunal Region with rare occurrences in the eastern Ozarks. For this reason, as well as a lack of historical observations within the watershed, the absence of this species from the North Fork Watershed should not be a concern.

Ozark Shiner -The first record of the occurrence of the Ozark shiner within the North Fork Watershed is from 1931 (MDC 1998a). Since this time the Ozark shiner has been collected at 8 sites in 11 collections with the latest collections in 1996. The Ozark shiner has only been found within the Ozark uplands in Missouri and Arkansas (Pflieger 1997). Periodic monitoring will be needed in order to track the status of this species within the watershed over time.

Checkered Madtom -The checkered madtom has been collected at 4 sites in 8 collections within the North Fork Watershed from 1940 to 1994 (MDC 1998a). Two of these sample sites no longer exist, having been inundated by the waters of Norfork Lake in the 1940s. Pflieger (1997) states that although the checkered madtom may have been eliminated from a portion of its former range by reservoir construction in the White River Basin it is still found in Norfork Lake. Pflieger also states, however, that this species appears to continue to decline. The checkered madtom is known only to occur in streams of the southern Ozarks from the upper White River to the Current River (Pflieger 1997). Periodic monitoring will be needed in order to track the status of this species within the watershed over time.

-Amphibians-

Ozark Hellbender -The Ozark Hellbender is restricted to the North Fork Watershed and to rivers and streams of the Black River System (Johnson 1992).

-Reptiles-

Alligator Snapping Turtle - The Natural Heritage Database currently lists one record (1992) for the alligator snapping turtle within the North Fork Watershed (1999b). Johnson (1992) states that the alligator snapping turtle is "presumed to occur in the large rivers, sloughs, and oxbow lakes of southern, southeastern and eastern Missouri."

-Invertebrates-

Elktoe (mussel)

The elktoe has only been found at a single site within the North Fork Watershed (Oesch 1984, Buchanan 1996, and MDC 1998b). Oesch 1984 states that the elktoe is usually not abundant where it is found. Host fishes for the elktoe include white sucker, northern hogsucker, shorthead redhorse, rock bass, and warmouth (Oesch 1984).

Arkansas Broken-ray (mussel)

The Arkansas broken-ray was found at 16 sites within the North Fork Watershed in 1982 (MDC 1998b).

Arkansas Mudalia (snail)

The Arkansas mudalia has been found at three sites within the North Fork Watershed. In Missouri, this species is only known to occur within the North Fork Watershed.

Ouachita Kidneyshell (mussel)

The Ouachita kidneyshell has been collected from 11 sites within the North Fork Watershed. The last collection occurred in 1985 (MDC 1998b). While the Ouachita kidneyshell is fairly widespread south of the Missouri River, it is seldom abundant locally (Oesch 1984).

Ozark Pyrg (snail)

The Ozark Pyrg has been collected from a single site within the North Fork Watershed. As is the case with the Arkansas mudalia, in Missouri, the Ozark pyrg is found only within the North Fork Watershed.

Purple Lilliput (mussel)

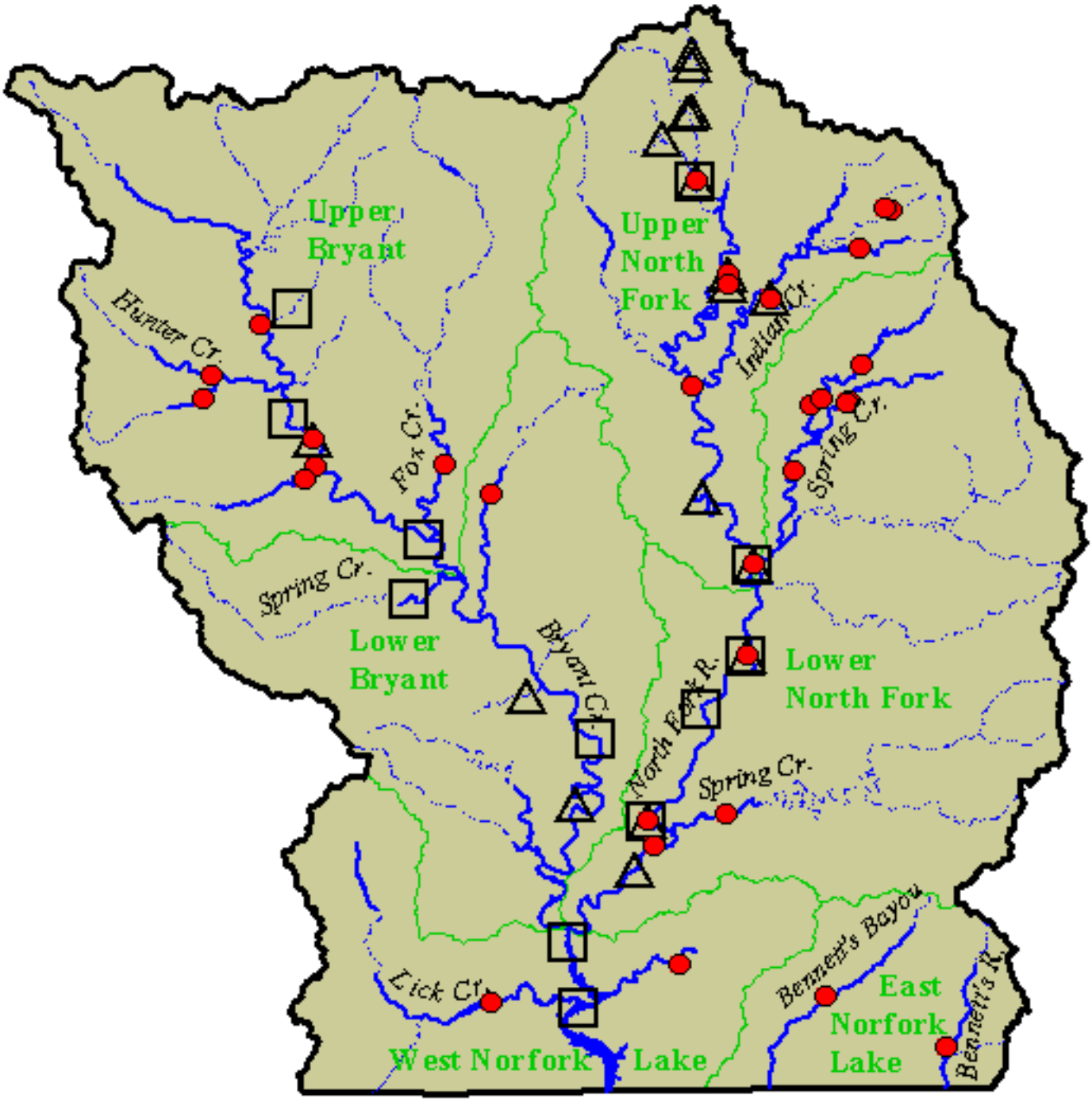
The Purple Lilliput was collected from 2 sites within the North Fork Watershed in 1982 (MDC 1998b).

Some of the pictures are courtesy of Native Fish Conservancy.

Figure Bc01.

North Fork Watershed

Fish Community Sample Sites



4 0 4 Miles

Legend

1981-1997

N

1961-1980

1931-1960

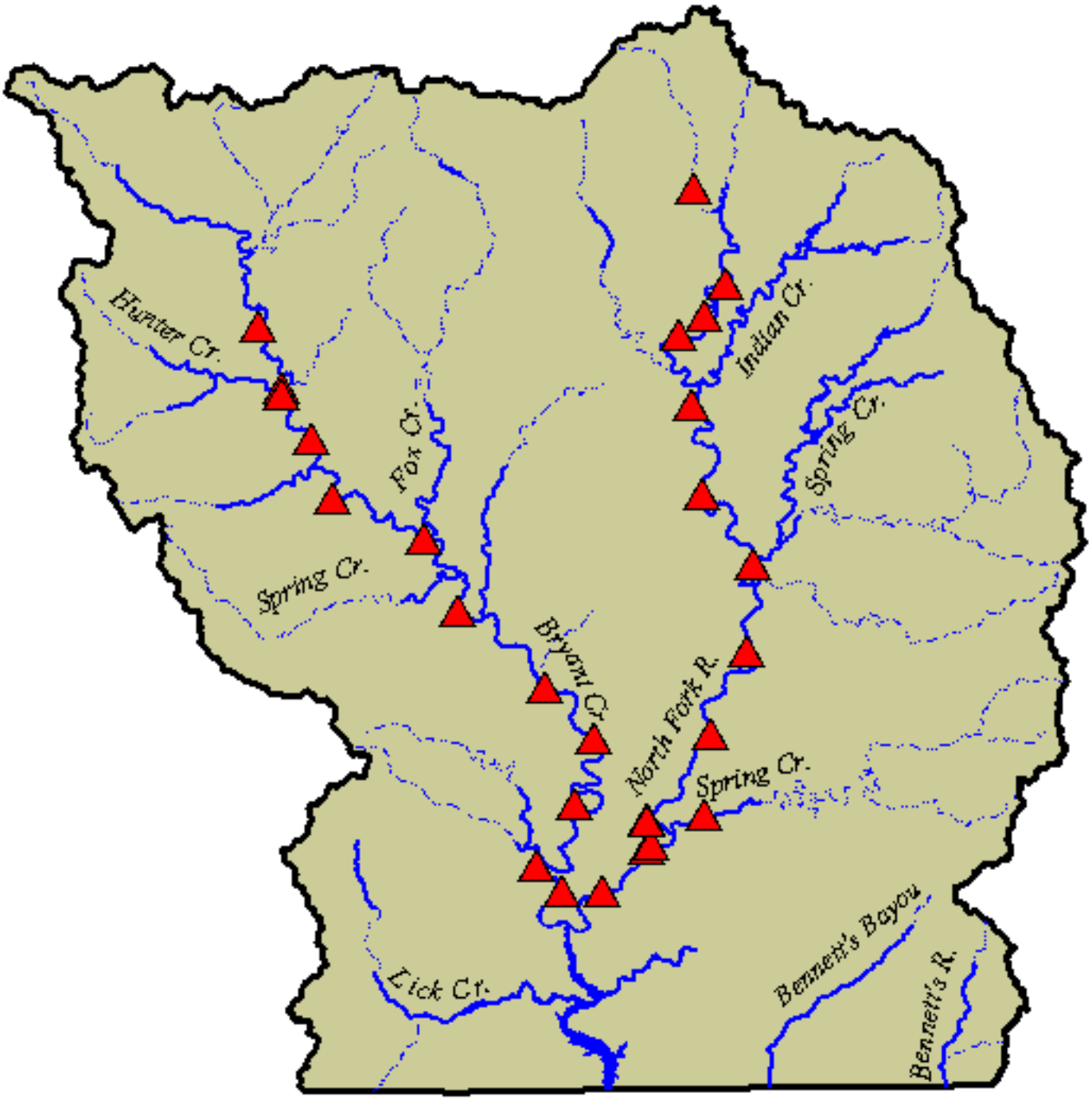
Eleven Digit Hydrologic Unit Boundary

Dates are for collections within MDC fish collection database as well as collections performed by MDC Ozark Region Fisheries personnel.

RETURN TO BIOTIC TEXT

Figure Bc02.

North Fork Watershed
Mussel Community Sample Sites



4 0 4 Miles

Legend

▲ Mussel Community Sample Site

N

(MDC 1998)

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Table Bc01. Fish species with a distribution range of the North Fork Watershed. Key to Status: (1 of 4) 1 = collected 1931 to 1960; 2 = collected 1961 to 1980; 3 = collected 1981 to 1997 (MDC Ozark Regional Fish Collection Files; MDC Sport Fish Collection Files; Pflieger 1989; Pflieger 1997; MDC 1998a; MDC 1999c).

Common Name	Geo Affinity[1]	Percent Occurrence2	*Scientific Name*	*Sam.3 Date*
Banded darter	*O*	*29*	*Etheostoma zonale*	1-2-3
Banded sculpin #	O	78	*Cottus carolinae*	1-2-3
Bigeye chub	O	31	*Notropis amblops*	1-2-3
Bigeye shiner #	O	14	*Notropis boops*	1-3
Black crappie	WIDE	-	*Pomoxis nigromaculatus*	3*
Black bullhead	P	4	*Ameirus melas*	1-3
Black redhorse #	O	25	*Moxostoma duquesnei*	1-2-3
Black spotted topminnow #	L,O	59	*Fundulus olivaceus*	1-2-3
Bluegill	WIDE	29	*Lepomis macrochirus*	1-2-3
Bluntnose minnow	WIDE	20	*Pimepales notatus*	1-2-3
Brook silverside #	O	4	*Labidesthes sicculus*	1-3*
Brown trout	O	8	*Salmo trutta*	2-3
Central stoneroller	O,P	84	*Campostoma pullum*	1-2-3
Chain pickerel	O	4	*Esox niger*	1-3
Channel catfish	WIDE	10	*Ictalurus punctatus*	1-2-3*
Checkered madtom	O,L	8	*Noturus flavater*	1-2-3
Chestnut Lamprey	O,R	4	*Ichthyomyzon castaneus*	1-3
Common carp	WIDE	4	*Cyprinus carpio*	2-3*
Creek chub	O,P	27	*Semotilus atromaculatus*	1-2-3
Creek chubsucker	O	18	*Erimyzon oblongus*	1-2-3

[1]Geographic Affinity-Faunal Regions of Missouri of which a species is characteristic: L=lowland; O=Ozark; P=Prairie; R=River; Wide=Widely Distributed.

[2]Percent of locations at which an individual species has been found (includes entire period of record).

[3] Sample Date.

Intolerant species.

* Observations not involving fish community samples.

Table Bc01. Fish species with a distribution range of the North Fork Watershed. Key to Status: (2 of 4) 1 = collected 1931 to 1960; 2 = collected 1961 to 1980; 3 = collected 1981 to 1997 (MDC Ozark Regional Fish Collection Files; MDC Sport Fish Collection Files; Pflieger 1989; Pflieger 1997; MDC 1998a; MDC 1999c).

Common Name	Geo Affinity	Percent Occurrence[1]	*Scientific Name*	*Sample Period*
Duskystripe Shiner	*O*	*84*	*Luxilus pilsbryi*	1-2-3
Flathead catfish	WIDE	2	*Pylodictis olivaris*	1-3*
Gilt darter	O	2	*Percina evides*	1
Gizzard shad	WIDE	2	*Dorosoma cepedianum*	2-3*
Golden redhorse #	O,P	18	*Moxostoma erythrurum*	1-2-3
Golden shiner	WIDE	-	*Notemigonus crysoleucas*	2
Grass Pickerel	L,O	27	*Esox americanus*	1-2-3
Green sunfish	WIDE	47	*Lepomis cyanellus*	1-2-3
Greenside darter	O	49	*Ehtheostoma blennioides*	1-2-3
Hornyhead chub #	O	84	*Nocomis biguttatus*	1-2-3
Lake chubsucker	L	-	*Erimyzon succetta*	1*-2*-3*
Largemouth bass	WIDE	29	*Micropterus salmoides*	1-2-3
Largescale stoneroller #	O	69	*Campostoma oligolepis*	1-2-3
Larval lamprey	O	8	*Ichthyomyzon ammocoete*	2-3
Least brook lamprey	O	14	*Lampetra aepyptera*	2
Longear sunfish	L,O	49	*Lepomis megalotis*	1-2-3
Longnose gar	WIDE	3	*Lepisosteus osseus*	3
Northern hogsucker #	O	55	*Hypentelium nigricans*	1-2-3
Orangethroat darter	O,P	71	*Etheostoma spectabile*	1-2-3
Northern studfish	O	63	*Fundulus catenatus*	1-2-3
Ohio logperch	O	16	*Percina c. caprodes*	1-2-3
Ozark bass	O	35	*Ambloplites constellatus*	1-2-3

Table Bc01. Fish species with a distribution range of the North Fork Watershed. Key to Status: (3 of 4) 1 = collected 1931 to 1960; 2 = collected 1961 to 1980; 3 = collected 1981 to 1997 (MDC Ozark Regional Fish Collection Files; MDC Sport Fish Collection Files; Pflieger 1989; Pflieger 1997; MDC 1998a; MDC 1999c).

Common Name	Geo Affinity	Percent Localities1	*Scientific Name*	*Sample Period*
Ozark chub	*O*	*6*	*Erimystax harryi*	2-3
Ozark madtom	O	29	*Noturus albater*	1-2-3
Ozark minnow	O	71	*Notropis nubilus*	1-2-3
Ozark sculpin	O	75	*Cottus hypselurus*	1-2-3
Ozark shiner	O	16	*Notropis ozarcanus*	1-2-3
Rainbow darter	O	80	*Etheostoma caeruleum*	1-2-3
Rainbow trout	O	10	*Oncorynchus mykiss*	2-3
Redear sunfish	O	4	*Lepomis microlophus*	2-3*
Redspotted sunfish	L,O	2	*Lepomis miniatus*	3
River Redhorse	O	-	*Moxostoma carinatum*	3
Rosyface shiner #	O	43	*Notropis rubellus*	1-2-3
Shorthead redhorse	O	8	*Moxostoma macrolepidotum*	2
Slender madtom #	O	41	*Noturus exilis*	1-2-3
Smallmouth bass #	O	43	*Micropterus dolomieui*	1-2-3
Southern redbelly dace #	O	61	*Phoxinus erythrogaster*	1-2-3
Spotted bass	O,L	4	*Micropterus punctulatus*	1-2-3*
Steelcolor shiner #	O	2	*Cyprinella whipplei*	1
Stippled darter	O	35	*Etheostoma punctulatum*	1-2-3
Striped bass	R	-	*Morone saxatilis*	3*
Striped fantail darter	O	25	*Etheostoma f. lineolatum*	1-3
Striped shiner #	O	59	*Luxilus chrysocephalus*	1-2-3
Telescope shiner	O	61	*Notropis telescopus*	1-2-3

Table Bc01. Fish species with a distribution range of the North Fork Watershed. Key to Status: (4 of 4) 1 = collected 1931 to 1960; 2 = collected 1961 to 1980; 3 = collected 1981 to 1997 (MDC Ozark Regional Fish Collection Files; MDC Sport Fish Collection Files; Pflieger 1989; Pflieger 1997; MDC 1998a; MDC 1999c).

Common Name	Geo Affinity	Percent Localities1	*Scientific Name*	*Sample Period*
Threadfin shad	*R*	-	*Dorosoma petenense*	2*-3*
Walleye #	O,R	2	*Stizostedion vitreum*	1-3*
Warmouth	L	2	*Lepomis gulosis*	3
White Bass	O,P	-	*Morone chrysops*	3*
Wedgespot shiner	O	25	*Notropis greenei*	1-3
Western mosquitofish	WIDE	2	*Gambusia affinis*	3
White crappie	WIDE	-	*Pomoxis annularis*	3*
White River Saddled Darter	O	8	*Etheostoma e. euzonum*	1-2-3
Whitetail shiner	O	20	*Cyprinella galactura*	1-2-3
Yellow bullhead	O,P	16	*Ameirus natalis*	1-2-3
Yoke darter	O	24	*Etheostoma juliae*	1-2-3
Duskystripe shiner X southern redbelly dace		2	*Luxilus pilsbryi* X *Phoxinus erythrogaster*	2
Green sunfish X bluegill		6	*Lepomis cyanellus* X *Lepomis macrochirus*	2-3
Hornyhead chub X Duskystripe shiner		2	*Nocomis biguttatus* X *Luxilus pilsbryi*	2
Ozark minnow X duskystripe shiner		8	*Notropis nubilus* X *Luxilus pilsbryi*	1-3
Ozark minnow X Striped shiner		2	*Notropis nubilus* X *Luxilus chrysocephalus*	3
White Bass X Striped Bass		-	*Morone chrysops* X *Morone saxatilis*	3
Striped shiner X duskystriped shiner		2	*Luxilus chrysocephalus* X *Luxilus pilsbryi*	3

RETURN TO BIOTIC TEXT

Table Bc02. Fish species distribution within the 11 digit hydrologic units of the North Fork (1 of 4) Watershed MDC Ozark Regional Fish Collection Files; MDC 1998a). Exclusive of data which is not in the previously cited sources. Note: List does not include "species of conservation concern".

Common Name	***Scientific Name***	***UB***	***LB***	***WNL***	***ENL***	***LNF***	***UNF***
Banded darter	*Etheostoma zonale*	X	X	X		X	X
Banded sculpin	*Cottus carolinae*	X	X	X	X	X	X
Bigeye chub	*Notropis amblops*	X	X	X		X	X
Bigeye shiner	*Notropis boops*	X	X	X		X	
Black crappie	*Pomoxis nigromaculatus*						
Black bullhead	*Ameirus melas*	X				X	X
Black redhorse	*Moxostoma duquesnei*	X		X		X	X
Black spotted topminnow	*Fundulus olivaceus*	X	X	X	X	X	X
Bluegill	*Lepomis macrochirus*	X		X	X	X	X
Bluntnose minnow	*Pimepales notatus*	X		X		X	X
Brook silverside	*Labidesthes sicculus*		X	X			
Brown trout	*Salmo trutta*					X	
Central stoneroller	*Campostoma pullum*	X	X	X	X	X	X
Chain pickerel	*Esox niger*					X	
Channel catfish	*Ictalurus punctatus*			X		X	
Chestnust Lamprey	*Ichthyomyzon castaneus*	X				X	
Common carp	*Cyprinus carpio*					X	
Creek chub	*Semotilus atromaculatus*	X	X			X	X
Creek chubsucker	*Erimyzon oblongus*	X	X			X	X

Duskystripe Shiner	*Luxilus pilsbryi*	X	X	X	X	X	X
Flathead catfish	*Pylodictis olivaris*			X			
Gilt darter	*Percina evides*			X			
Gizzard shad	*Dorosoma cepedianum*	X					
Golden redhorse	*Moxostoma erythrurum*			X		X	X

UB=Upper Bryant **LB**=Lower Bryant **WNL**=West Norfork Lake

ENL=East Norfork Lake **LNF**=Lower North Fork **UNF**=Upper North Fork

Table Bc02. Fish species distribution within the 11 digit hydrologic units of the North Fork (2 of 4) Watershed MDC Ozark Regional Fish Collection Files; MDC 1998a). Exclusive of data which is not in the previously cited sources. Note: List does not include "species of conservation concern".

Common Name	***Scientific Name***	***UB***	***LB***	***WNL***	***ENL***	***LNF***	***UNF***
Golden shiner	*Notemigonus crysoleucas*						
Grass Pickerel	*Esox americanus*	X				X	X
Green sunfish	*Lepomis cyanellus*	X	X	X	X	X	X
Greenside darter	*Ehtheostoma blennioides*	X	X	X	X	X	X
Hornyhead chub	*Nocomis biguttatus*	X	X	X	X	X	X
Largemouth bass	*Micropterus salmoides*	X		X	X	X	X
Largescale stoneroller	*Campostoma oligolepis*	X	X	X	X	X	X
Larval lamprey	*Ichthyomyzon ammocoete*	X	X				
Least brook lamprey	*Lampetra aepyptera*	X				X	X
Longear sunfish	*Lepomis megalotis*	X	X	X	X	X	X

Longnose gar	*Lepisosteus osseus*			X		X	
Northern hogsucker	*Hypentelium nigricans*	X	X	X	X	X	X
Orangethroat darter	*Etheostoma spectabile*	X	X		X	X	X
Northern studfish	*Fundulus catenatus*	X	X	X	X	X	
Ohio logperch	*Percina c. caprodes*			X		X	X
Ozark bass	*Ambloplites constellatus*	X		X		X	X
Ozark chub	*Erimystax harryi*			X			X
Ozark madtom	*Noturus albater*	X	X	X		X	X
Ozark minnow	*Notropis nubilus*	X	X	X	X	X	X
Ozark sculpin	*Cottus hypselurus*	X	X	X		X	X

UB=Upper Bryant **LB**=Lower Bryant **WNL**=West Norfork Lake

ENL=East Norfork Lake **LNF**=Lower North Fork **UNF**=Upper North Fork

Table Bc02. Fish species distribution within the 11 digit hydrologic units of the North Fork (3 of 4) Watershed MDC Ozark Regional Fish Collection Files; MDC 1998a). Exclusive of data which is not in the previously cited sources. Note: List does not include "species of conservation concern".

Common Name	***Scientific Name***	***UB***	***LB***	***WNL***	***ENL***	***LNF***	***UNF***
Rainbow darter	*Etheostoma caeruleum*	X	X	X	X	X	X
Rainbow trout	*Oncorynchus mykiss*	X	X			X	
Redear sunfish	*Lepomis microlophus*					X	
Redspotted sunfish	*Lepomis miniatus*	X					
Rosyface shiner	*Notropis rubellus*	X	X	X		X	X
Shorthead redhorse	*Moxostoma macrolepidotum*					X	
Slender madtom	*Noturus exilis*	X		X	X	X	X

Smallmouth bass	*Micropterus dolomieui*	X	X	X	X	X	X
Southern redbelly dace	*Phoxinus erythrogaster*	X	X	X		X	X
Spotted bass	*Micropterus punctulatus*			X		X	
Steelcolor shiner	*Cyprinella whipplei*			X			
Stippled darter	*Etheostoma punctulatum*	X		X		X	X
Striped bass	*Morone saxatilis*						
Striped fantail darter	*Etheostoma f. lineolatum*	X		X		X	X
Striped shiner	*Luxilus chrysocephalus*	X		X	X	X	X
Telescope shiner	*Notropis telescopus*	X	X	X	X	X	X
Walleye	*Stizostedion vitreum*			X			
Warmouth	*Lepomis gulosis*	X					
White Bass	*Morone chrysops*						
Wedgespot shiner	*Notropis greenei*	X	X	X		X	X

UB=Upper Bryant **LB**=Lower Bryant **WNL**=West Norfork Lake

ENL=East Norfork Lake **LNF**=Lower North Fork **UNF**=Upper North Fork

Table Bc02. Fish species distribution within the 11 digit hydrologic units of the North Fork (4 of 4) Watershed MDC Ozark Regional Fish Collection Files; MDC 1998a). Exclusive of data which is not in the previously cited sources. Note: List does not include "species of conservation concern".

Common Name	***Scientific Name***	***UB***	***LB***	***WNL***	***ENL***	***LNF***	***UNF***
Western mosquitofish	*Gambusia affinis*				X		
White crappie	*Pomoxis annularis*						

White River Saddled Darter	*Etheostoma e. euzonum*	X		X		X	X
Whitetail shiner	*Cyprinella galactura*	X	X	X		X	X
Yellow bullhead	*Ameirus natalis*	X		X		X	X
Yoke darter	*Etheostoma juliae*	X	X	X	X	X	X

UB=Upper Bryant **LB**=Lower Bryant **WNL**=West Norfork Lake

ENL=East Norfork Lake **LNF**=Lower North Fork **UNF**=Upper North Fork

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Table Bc03. Freshwater mussel species found within the North Fork Watershed in Missouri (1=Oesch 1995, 2=Buchanan 1996, 3=MDC 1998b, Turgeon 1998).

Common Name	Scientific Name	Source
Arkansas Broken-ray	*Lampsilis r. reeviana*	1,2,3
Asian Clam	*Corbicula fluminea*	1,3
Bleedingtooth Mussel	*Venustaconcha pleasi*	1,2,3
Creeper	*Strophitus undulatus*	1,3
Elktoe	*Alasmidonta marginata*	1,3
Fatmucket	*Lampsilis siliquoidea*	3
Fluted Shell	*Lasmigona costata*	1,3
Lilliput	*Toxolasma parvus*	1
Little Spectaclecase	*Villosa lienosa*	3
Northern Broken-ray	*Lampsilis r. brittsi*	3
Ouachita Kidneyshell	*Ptychobranchus occidentalis*	1,2,3
Ozark Pigtoe	*Fusconaia ozarkensis*	1,2,3
Ozark Broken-ray	*Lampsilis r. brevicula*	1,2,3
Plain Pocketbook	*Lampsilis cardium*	1,3
Purple Lilliput	*Toxolasma lividus*	1,2,3
Purple Wartyback	*Cyclonaias tuberculata*	1,3
Rainbow	*Villosa iris*	1,2,3

Round Pigtoe	*Pleurobema sintoxia*	3
Slippershell Mussel	*Alasmidonta viridis*	1,2,3
Spike	*Elliptio dilatata*	1,3
Wabash Pigtoe	*Fusconaia flava*	3

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Table Bc04. Freshwater snail species found within the North Fork Watershed in Missouri (Wu etal. 1997).

Scientific Name	**Common Name**
Campeloma subsolidum	highland campeloma
Elimia potosiensis	pyramid elimia
Ferrissia rivularis	creeping ancylid
Helisoma ancepes	two-ridge rams-horn
Helisoma triroluis	marsh ramshorn
Leptoxis arkansensis	Arkansas mudalia
Menetus dilatatus	bugle sprite
Physa acuta	lateritic physa
Physa (physella) goodrichi	Goodrich's physa
Physa gyrina	tadpole physa
Physa (Physodon) halei	Hales physa
Physa (Physodon) pomilia	glossy physa
Pleurocera acuta	sharp hornsnail
Pomatiopsis lapidaria	slender walker
Pyrgulopsis ozarkensis	Ozark pyrg

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Table Bc05. List of aquatic invertebrates collected by Duchrow 1974-1976 within the North

(1 of 5) Fork Watershed (MDC 1998d). Stream abbreviations are as follows: **B**=Bryant Creek, **CS**=Crystal Spring, **H**=Hunter Creek, **WH**=Watered Hollow.

Order	**Family**	***Species***	**Stream**			
			B	**CS**	**H**	**WH**
Amphipoda	Gammaridae	*Gammarus pseudolimnaeus (Bousfield)*	X	X	X	
Amphipoda	Talitridae	*Hyalella azteca (Saussure)*		X		
Coleoptera	Dryopidae	*Dryops sp.*				X
Coleoptera	Dytiscidae	*Dytiscus sp.*			X	X
Coleoptera	Elmidae	*Dubiraphia bivittata (LeConte)*	X			
Coleoptera	Elmidae	*Optioservus sandersoni (Collier)*	X		X	X
Coleoptera	Elmidae	*Stenelmis sp.*	X		X	X
Coleoptera	Psephinidae	*Ectopria nervosa (Melsheimer)*	X		X	X
Coleoptera	Psephinidae	*Psephenus herricki (DeKay)*	X	X	X	X
Coleoptera			X			
Decapoda	Cambaridae	*Cambarus hubbsi (Creaser)*			X	X
Decapoda	Cambaridae	*Orconectes marchandi (Hobbs)*	X	X	X	X
Decapoda	Cambaridae	*Orconectes macrus (Williams)*			X	
Diptera	Athericidae	*Atherix lantha (Webb)*			X	
Diptera	Ceratopogonidae	*Bezzia/Probezzia...*	X		X	X
Diptera	Ceratopogonidae		X		X	X
Diptera	Chironomidae		X	X	X	X
Diptera	Empididae		X	X	X	X
Diptera	Muscidae		X			

Diptera	Simuliidae		X	X	X	X
Diptera	Stratiomyidae		X	X	X	
Diptera	Tabanidae		X		X	
Diptera	Tanyderidae	*Protoplasa fitchii (Osten-Sacken)*	X			
Diptera	Tipulidae	*Hexatoma sp.*	X		X	X

[1] Subclass, [2] Class, [3] Phylum

Table Bc05. List of aquatic invertebrates collected by Duchrow 1974-1976 within the North

(2 of 5) Fork Watershed (MDC 1998d). Stream abbreviations are as follows: **B**=Bryant Creek, **CS**=Crystal Spring, **H**=Hunter Creek, **WH**=Watered Hollow.

Order	**Family**	***Species***	**Stream**			
			B	**CS**	**H**	**WH**
Diptera	Tipulidae	*Antocha sp.*	X			
Diptera	Tipulidae	*Erioptera sp.*			X	X
Diptera	Tipulidae	*Tipula sp.*	X		X	X
Diptera	Tipulidae	*Tipulidae*			X	
Ephemeroptera	Baetidae	*Acentrella sp.*	X	X	X	X
Ephemeroptera	Baetidae	*Baetis tricaudatus (Dodds)*	X	X	X	X
Ephemeroptera	Caenidae	*Caenis sp.*	X		X	X
Ephemeroptera	Ephemerellidae	*Ephemerella (invaria grp.)*	X		X	
Ephemeroptera	Ephemerellidae	*Eurylophella (bicolor grp.)*	X		X	X
Ephemeroptera	Heptageniidae	*Heptagenia sp.*	X		X	X
Ephemeroptera	Heptageniidae	*Rhithrogena pellucida (Daggy)*	X		X	
Ephemeroptera	Ephemerellidae	*Serratella sp.*	X		X	

Ephemeroptera	Heptageniidae	*Stenacron gildersleevei (Traver)*	X		X	X
Ephemeroptera	Heptageniidae	*Stenacron (interpunctatum grp.)*	X		X	
Ephemeroptera	Heptageniidae	*Stenonema pulchellum (Walsh)*	X		X	X
Ephemeroptera	Heptageniidae	*Stenonema mediopunctatum (McDunnough)*	X		X	
Ephemeroptera	Heptageniidae	*Stenonema femoratum (Say)*			X	X
Ephemeroptera	Isonychiidae	*Isonychia sp.*	X		X	X
Ephemeroptera	Leptophlebiidae	*Paraleptophlebia moerens (McDunnough)*	X		X	X
Ephemeroptera	Leptophlebiidae		X		X	X

[1] Subclass, [2] Class, [3] Phylum

Table Bc05. List of aquatic invertebrates collected by Duchrow 1974-1976 within the North

(3 of 5) Fork Watershed (MDC 1998d). Stream abbreviations are as follows: **B**=Bryant Creek, **CS**=Crystal Spring, **H**=Hunter Creek, **WH**=Watered Hollow.

Order	**Family**	***Species***	**Stream**			
			B	**CS**	**H**	**WH**
Ephemeroptera	Tricorythidae	*Tricorythodes sp.*	X		X	X
Gordiida					X	X
Hemiptera	Gerridae	*Gerris sp.*				X
Hemiptera	Saldidae					X
Hemiptera	Veliidae				X	X
Hirudinea[2]			X			
Hirudinea[2]	Branchiobdellidae[1]		X		X	

Hydracarina	Acari		X	X	X	X
Isopoda	Asellidae	*Caecidotea sp.*	X		X	X
Isopoda	Asellidae	*Lirceus sp.*	X	X	X	X
Lepidoptera	Pyralidae	*Petrophila sp.*			X	
Lepidoptera	Pyralidae	*Schoenobius sp.*			X	
Lymnophila	Physidae		X		X	X
Lymnophila	Planorbidae					X
Megagastropoda	Pleuroceridae	*Elimia potosiensis plebeius (Gould)*	X		X	
Megaloptera	Corydalidae	*Corydalus cornutus (Linnaeus)*	X		X	
Megaloptera	Corydalidae	*Nigronia serricornis (Say)*	X		X	X
Megaloptera	Sialidae	*Sialis sp.*			X	
Nemata[3]			X	X		X
Odonata	Calopterygidae	*Hetaerina americana (Fabricius)*	X			
Odonata	Calopterygidae	*Hetaerina sp.*				X

[1] Subclass, [2] Class, [3] Phylum

Table Bc05. List of aquatic invertebrates collected by Duchrow 1974-1976 within the North

(4 of 5) Fork Watershed (MDC 1998d). Stream abbreviations are as follows: **B**=Bryant Creek, **CS**=Crystal Spring, **H**=Hunter Creek, **WH**=Watered Hollow.

Order	**Family**	***Species***	**Stream**			
			B	**CS**	**H**	**WH**
Odonata	Coenagrionidae				X	X
Odonata	Coenagrionidae	*Argia moesta (Hagen)*			X	

Odonata	Gomphidae				X	X
Oligochaeta			X	X	X	X
Plecoptera	Capniidae	*Allocapnia sp.*				X
Plecoptera	Capniidae	*Paracapnia sp.*	X		X	X
Plecoptera	Chloroperlidae				X	X
Plecoptera	Chloroperlidae	*Alloperla sp.*			X	
Plecoptera	Chloroperlidae	*Alloperla caudata (Frison)*			X	
Plecoptera	Nemouridae		X		X	X
Plecoptera	Perlidae	*Acroneuria sp.*	X		X	X
Plecoptera	Perlidae	*Paragnetina sp.*	X		X	
Plecoptera	Perlidae	*Paragnetina media (Walker)*	X		X	
Plecoptera	Perlidae	*Perlesta placida (Hagen)*	X		X	X
Plecoptera	Perlidae	*Perlinella drymo (Newman)*				X
Plecoptera	Perlidae	*Perlinella sp.*			X	
Plecoptera	Perlodidae	*Hydroperla sp.*	X		X	X
Plecoptera	Perlodidae	*Isoperla mohri (Frison)*	X		X	X
Plecoptera	Perlodidae	*Isoperla bilineata (Say)*	X		X	X
Plecoptera	Perlodidae	*Isoperla marlynia (Needham & Claassen)*				X

[1] Subclass, [2] Class, [3] Phylum

Table Bc05. List of aquatic invertebrates collected by Duchrow 1974-1976 within the North

(5 of 5) Fork Watershed (MDC 1998d). Stream abbreviations are as follows: **B**=Bryant Creek, **CS**=Crystal Spring, **H**=Hunter Creek, **WH**=Watered Hollow.

Order	**Family**	***Species***	**Stream**

			B	CS	H	WH
Plecoptera	Perlodidae	*Isoperla sp.*				X
Plecoptera	Pteronarcyidae	*Pteronarcys sp.*			X	
Plecoptera	Pteronarcyidae	*Pteronarcys pictetii (Hagen)*	X		X	
Plecoptera	Taeniopterygidae	*Strophopteryx fasciata (Burmeister)*	X		X	
Trichoptera	Brachycentridae	*Brachycentrus americanus (Banks)*	X			X
Trichoptera	Glossosomatidae	*Agapetus sp.*	X		X	X
Trichoptera	Helicopsychidae	*Helicopsyche borealis (Hagen)*	X		X	X
Trichoptera	Hydropsychidae	*Ceratopsyche (morosa grp.)*	X		X	X
Trichoptera	Hydropsychidae	*Ceratopsyche piatrix (Ross)*	X		X	X
Trichoptera	Hydropsychidae	*Cheumatopsyche sp.*	X	X	X	X
Trichoptera	Hydropsychidae	*Hydropsyche cuanis (Ross)*				X
Trichoptera	Hydropsychidae	*Hydropsyche betteni (Ross)*				X
Trichoptera	Hydroptilidae	*Agraylea multipunctata Curtis*	X	X	X	X
Trichoptera	Hydroptilidae	*Ochrotrichia sp.*			X	
Trichoptera	Hydroptilidae	*Orthotrichia sp.*				X
Trichoptera	Philopotamidae	*Chimarra aterrima (Hagen)*	X		X	X
Trichoptera	Philopotamidae	*Chimarra obscura (Walker)*	X		X	
Trichoptera	Polycentropodidae	*Polycentropus sp.*	X		X	X
Trichoptera	Rhyacophilidae		X		X	X
Tricladida	Planariidae		X	X	X	X
Veneroida	Sphaeriidae				X	

[1] Subclass, [2] Class, [3] Phylum

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Table Bc06. Species of conservation concern within the North Fork Watershed (Oesch 1995; (1 of 4) Buchanan 1996; MDC 1998b; MDC 1999b; MDC 1999e; and Bruenderman, personal communication).

Scientific Name	Common Name	Federal Status	State Status	G rank	S rank
Mammals					
Felis concolor	Mountain Lion		E	G5	SU
Lepus californicus	Black-tailed Jackrabbit		E	G5	S1
Myotis grisescens	Gray Bat	E	E	G3	S3
Myotis septentrionalis	Northern Myotis			G4	S3
Myotis sodalis	Indiana Bat	E	E	G2	S1
Birds					
Accipiter cooperii	Cooper's Hawk			G5	S3
Aimophila aestivalis	Bachman's Sparrow	*	E	G3	S1
Ardea herodias	Great Blue Heron			G5	S5
Haliaeetus leucocephalus	Bald Eagle	T	E	G4	S2
Limnothlypis swainsonii	Swainson's Warbler		E	G4	S1
Reptiles					
Crotaphytus c. Collaris	Eastern Collared Lizard			G5	S4
Macroclemys temminckii	Alligator Snapping Turtle	*		G3G4	S2
Amphibians					

Cryptobranchus alleganiensis bishopi	Ozark Hellbender	*		G4T3	S2
Fish					
Erimyzon sucetta	Lake Chubsucker			G5	S2
Notropis ozarcanus	Ozark Shiner	*		G3	S2
Noturus flavater	Checkered Madtom			G4	S3S4

Table Bc06. Species of conservation concern within the North Fork Watershed (Oesch 1995; (2 of 4) Buchanan 1996; MDC 1998b; MDC 1999b; MDC 1999e; and Bruenderman, personal communication).

Scientific Name	Common Name	Federal Status	State Status	G rank	S rank
Invertebrates					
Amblytropidia mysteca	A Glade Grasshopper			G?	SU
Pardalophora saussurei	A Glade Grasshopper			G?	S3
Alasmidonta marginata	Elktoe (mussel)	*		G4	S2?
Lampsilis r. reeviana	Arkansas Broken-ray (mussel)			G3T1 T2	S2?
Leptoxis arkansensis	Arkansas Mudalia (snail)			G?	SU
Ptychobranchus occidentalis	Ouachita Kidneyshell (mussel)	*		G3G4	S2S3
Pyrgulopsis ozarkensis	Ozark Pyrg (snail)			G1?	SU
Toxolasma lividus	Purple Lilliput (mussel)	*		G2	S2?
Plants					
Agalinis skinneriana	Pale Gerardia	*		G3	S3

Agrimonia gryposepala	Tall Agrimony			G5	SU
Amsonia ciliata var. filifolia	Ciliate Blue Star			G5?T4?	S2S3
Aster furcatus	Forked Aster	*		G3	S2
Aster macrophyllus	Big-leaved Aster			G5	S2
Calamagrostis porteri ssp insperata	Reed Bent Grass	*		G4T3	S3
Carex alata	Broadwing Sedge			G5	S2S3
Carex decomposita	Epiphytic Sedge			G3	S3
Carex stricta	Tussock Sedge			G5	S2?
Carex fissa var. fissa	A Sedge	*		G3G4 QT3?	S1

Table Bc06. Species of conservation concern within the North Fork Watershed (Oesch 1995; (3 of 4) Buchanan 1996; MDC 1998b; MDC 1999b; MDC 1999e; and Bruenderman, personal communication).

Scientific Name	Common Name	Federal Status	State Status	G rank	S rank
Cheilanthes alabamensis	Alabama Lip-fern			G4G5	S1
Cissus incisa	Marine Vine			G3G5	S2
Clematis fremontii	Fremont's Leather Flower			G5	S3
Crataegus spathulata	A Hawthorn			G5	SH
Cypripedium reginae	Showy Lady-slipper			G4	S2S3

Diarrhena americana var. americana	American Beakgrain			G4?	S1
Dryopteris celsa	Log Fern			G4	S1
Encalypta procera	Extinguisher Moss			G4G5	S1
Eriogonum longifolium var. longifolium	Umbrella Plant			G4T4	S2
Filipendula rubra	Queen of the Prairie			G4G5	S2
Hydrocotyle verticillata var. verticillata	Water Pennywort			G5T5	S1
Kurzia setacea	A Liverwort			G4G5	S1
Liatris scariosa var. nieuwlandii	A Blazing Star			G5?TU	S2
Malaxis unifolia	Green Adder's Mouth			G5	S3
Marshallia caespitosa var. signata	Barbara's Buttons			G4T4	S1
Metzgeria conjugata	A Liverwort			G5	S1S2
Mnium thomsonii	A Moss			G5	S?
Nowellia curvifolia	A Liverwort			G5	S?
Phlox bifida ssp. stellaria	Bifid Phlox	*		G5?T3	S1

Table Bc06. Species of conservation concern within the North Fork Watershed (Oesch 1995; (4 of 4) Buchanan 1996; MDC 1998b; MDC 1999b; MDC 1999e; and Bruenderman, personal communication).

Scientific Name	Common Name	Federal Status	State Status	G rank	S rank

Potamogeton pusillus var. pusillus	Slender Pondweed			G5T5	S1
Preissia quadrata	A Liverwort			G5	S?
Ptychomitrium sinense	A Moss			G3?Q	S1
Rhynchospora harveyi	Harvey's Beak-rush			G4	S1
Rhytidiadelphus triquetrus	Shaggy Moss			G5	S?
Sullivantia sullivantii	Sullivantia			G4	S2
Tradescantia ozarkana	Ozark Spiderwort	*		G3	S2
Trifolium stoloniferum	Running Buffalo Clover	E	E	G3	S1
Waldsteinia fragarioides ssp. fragarioides	Barren Strawberry			G5T5	S2
Wolffia punctata	Dotted Water-meal			G5	SU
Yucca arkansana	Arkansas Yucca			G5	S2
Zigadenus elegans	White Camas			G5	S2

Federal Status

E=Endangered

T=Threatened

* =Former category-2 candidate (In December of 1996, the USFWS discontinued the practice of maintaining a list of species regarded as "category-2 candidates". MDC continues to distinguish these species for information and planning purposes.

State Status

E=Endangered

Srank

S1=Critically imperiled in the state because of extreme rarity or because of some factor(s) making it especially

vulnerable to extirpation from the state. (typically 5 or fewer occurrences or very few remaining individuals)

S2=Imperiled in the state because of rarity or because of some factor(s) making it very vulnerable to extirpation from the state. (6 to 20 occurrences or few remaining individuals or acres)

S3=Rare and uncommon in the state. (21 to 100 occurrences)

S4=Widespread, abundant, and apparently secure in state, with many occurrences, but the species is of long-term concern. (usually more than 100 occurrences)

S5=Demonstrably widespread, abundant, and secure in the state, and essentially ineradicable under present conditions.

SU=Unrankable: Possibly in peril in the state, but status uncertain; need more information.

SE=Exotic: An exotic established in the state; may be native in nearby regions.

SH=Historical: Element occurred historically in the state (with expectation that it may be rediscovered). Perhaps having not been verified in the past 20 years, and suspected to be still extant.

S?=Unranked: Species is not yet ranked in the state.

Qualifier:

? =Inexact or uncertain: for numeric ranks, denotes inexactness. (The ? qualifies the character immediately preceding it in Srank)

Q=Questionable taxonomy: taxonomic status is questionable; numeric rank may change with taxonomy.

GRank

G2=Imperiled globally because of rarity or because of some factor(s) making it very vulnerable to extinction throughout its range. (6 to 20 occurrences or few remaining individuals or acres)

G3=Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single western state, a physiographic region in the East) or because of other factors making it vulnerable to extinction throughout its range. (21 to 100 occurrences)

G4=Widespread, abundant, and apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery. Thus, the element is of long-term concern. (usually more than 100 occurrences)

G5=Demonstrably Widespread, abundant, and secure globally, though it may be quite rare in parts of its range, especially at the periphery.

Subrank:

T=Taxonomic subdivision: rank applies to subspecies or variety.

Note: Data in table subject to revision. This table is not a final authority.

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