



ILLINOIS

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

PRODUCTION NOTE

University of Illinois at
Urbana-Champaign Library
Large-scale Digitization Project, 2007.

INHS
B100
1991(4)

BIOLOGICALLY SIGNIFICANT ILLINOIS STREAMS

An Evaluation of the Streams of Illinois
Based on Aquatic Biodiversity

(Part 2: Atlas)

Lawrence M. Page, Kevin S. Cummings, Christine A. Mayer, and Susan L. Post

Center for Biodiversity
Technical Report 1991(4)

Illinois Natural History Survey
607 East Peabody Drive
Champaign, Illinois 61820

Prepared for
Illinois Department of Conservation
524 South Second Street
Springfield, Illinois 62701-1787

and

Illinois Department of Energy and Natural Resources
325 West Adams
Springfield, Illinois 62704-1892

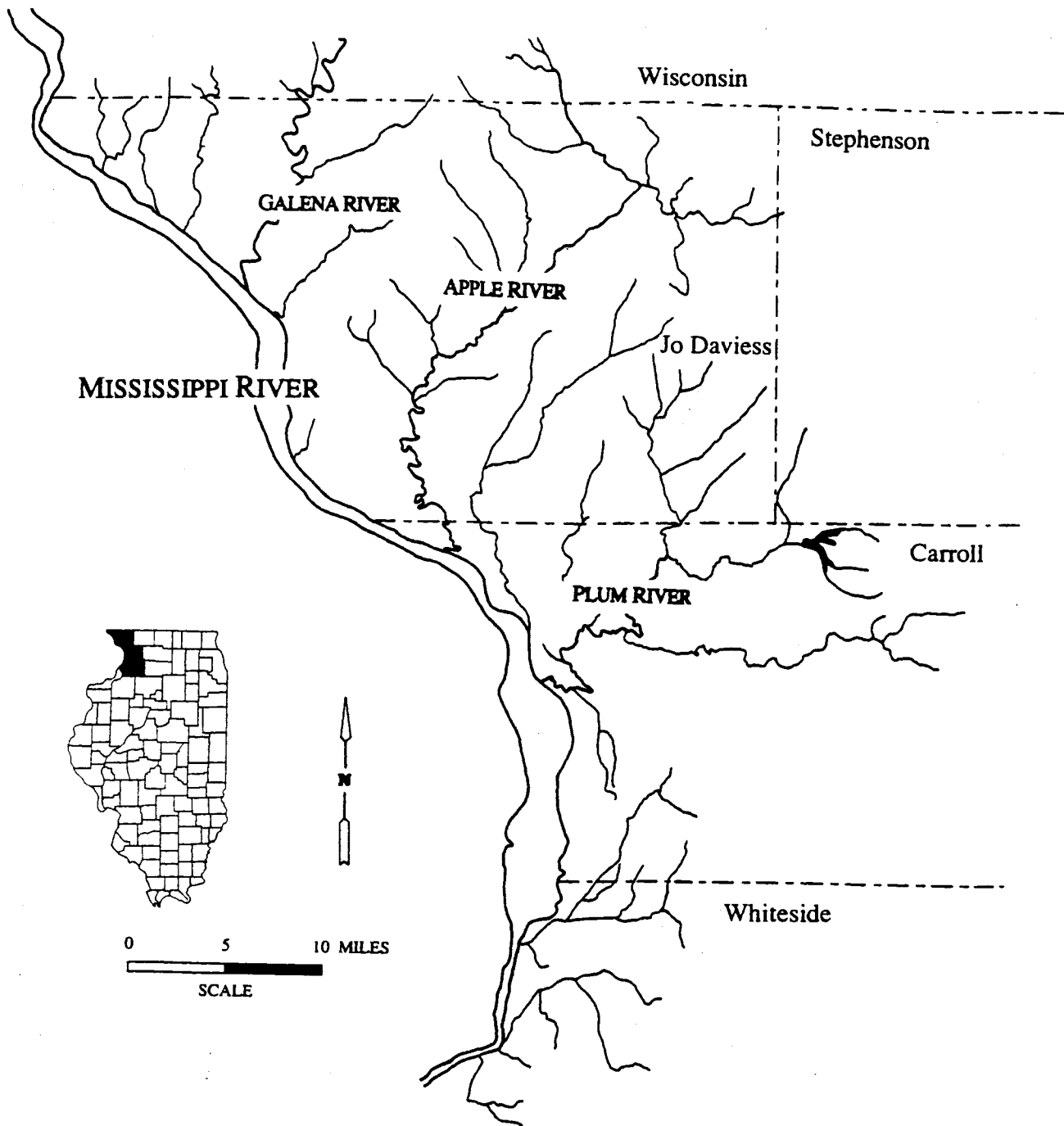
DRAFT

31 December 1991

INTRODUCTION

This atlas is the companion volume to Part 1 - *Biologically Significant Illinois Streams: An Evaluation of the Streams of Illinois Based on Aquatic Biodiversity*. For each of the 25 stream systems the organization and order of the maps and tables are as follows.

1. General map of the system with major streams labeled for identification.
2. Map of fish collection sites represented in the Illinois Natural History Survey Fish Collection.
3. Table of fishes recorded in the system based on specimens in the Illinois Natural History Survey Fish Collection.
4. Map of mussel collection sites represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.
5. Table of mussels recorded in the system based on specimens in the Illinois Natural History Survey Mollusk Collection and other museum collections.
6. Map of crustacean collection sites represented in the Illinois Natural History Survey Crustacean Collection.
7. Table of freshwater crustaceans recorded in the system based on specimens in the Illinois Natural History Survey Crustacean Collection.
8. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of endangered lotic plants (circles) if present.
9. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered fishes (squares), mussels (circles), and crustaceans (triangles).
10. Map of Biological Stream Characterization (BSC) (Hite and Bertrand, 1989) "A" and "B" streams.
11. Topographic map(s) highlighting the Biologically Significant Stream segments based on threatened or endangered species or high mussel diversity as identified in the text (Part 1).



1. Galena, Apple, and Plum River Systems

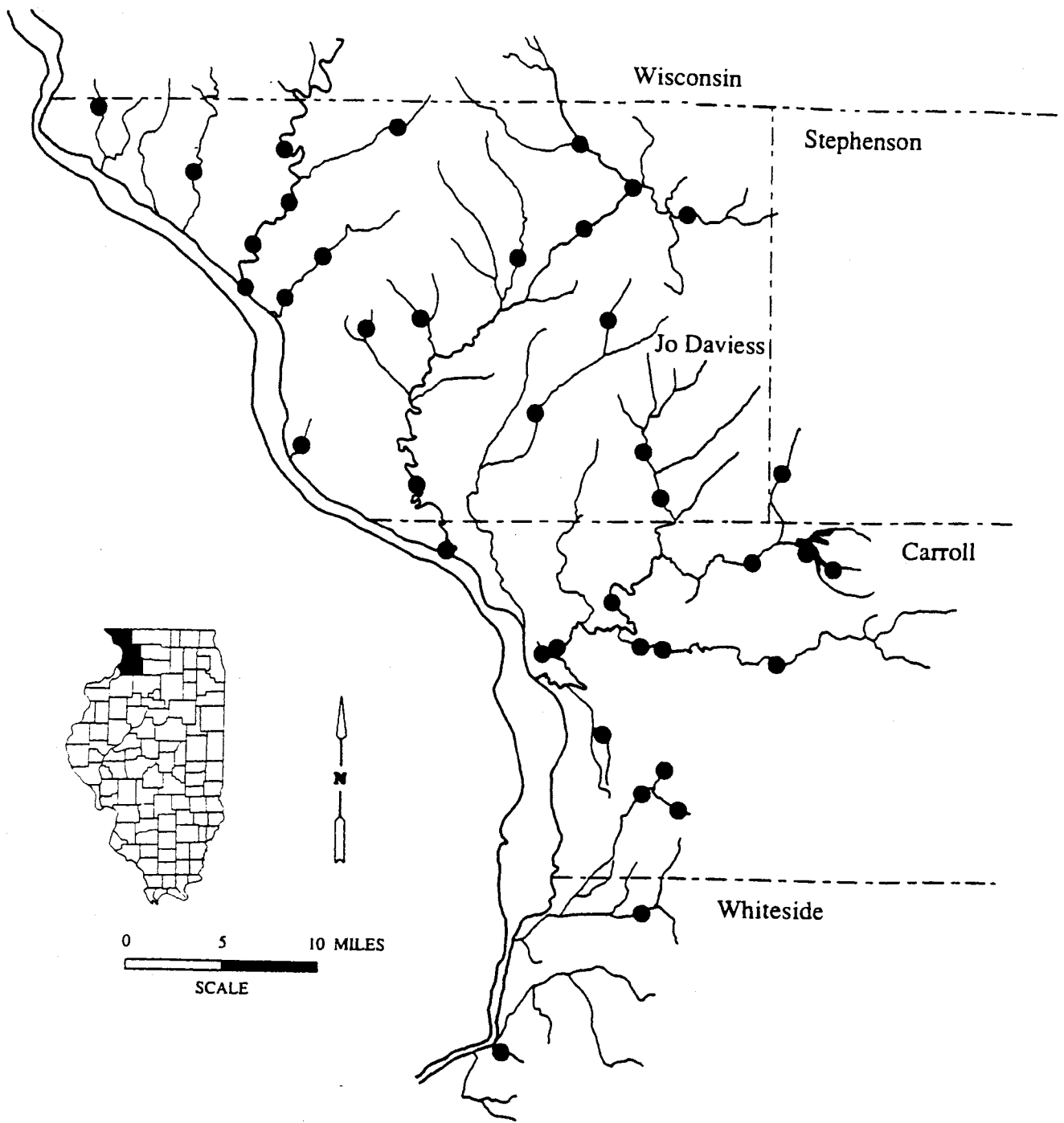


Figure 1-1. Map of fish collection sites in the Galena, Apple, and Plum River Systems represented in the Illinois Natural History Survey Fish Collection.

Table 1-1. Freshwater fishes recorded from the Galena, Apple, and Plum River Systems. Data from the Illinois Natural History Survey Fish Collection. ST = State Threatened; I = Introduced.

LEPISOSTEIDAE	<i>Notropis rubellus</i>	ATHERINIDAE
<i>Lepisosteus platostomus</i>	<i>Opsopoeodus emiliae</i>	<i>Labidesthes sicculus</i>
CLUPEIDAE	<i>Phenacobius mirabilis</i>	GASTEROSTEIDAE
<i>Dorosoma cepedianum</i>	<i>Phoxinus erythrogaster</i>	<i>Culaea inconstans</i>
UMBRIDAE	<i>Pimephales notatus</i>	MORONIDAE
<i>Umbra limi</i>	<i>Pimephales promelas</i>	<i>Morone chrysops</i>
CYPRINIDAE	<i>Pimephales vigilax</i>	CENTRARCHIDAE
<i>Campostoma anomalum</i>	<i>Rhinichthys atratulus</i>	<i>Ambloplites rupestris</i>
<i>Campostoma oligolepis</i>	<i>Rhinichthys cataractae</i>	<i>Chaenobryttus gulosus</i>
<i>Cyprinella lutrensis</i>	<i>Semotilus atromaculatus</i>	<i>Lepomis cyanellus</i>
<i>Cyprinella spiloptera</i>	CATOSTOMIDAE	<i>Lepomis gibbosus</i>
<i>Cyprinella whipplei</i>	<i>Carpiodes carpio</i>	<i>Lepomis humilis</i>
<i>Cyprinus carpio</i> I	<i>Carpiodes cyprinus</i>	<i>Lepomis macrochirus</i>
<i>Ericymba buccata</i>	<i>Carpiodes velifer</i>	<i>Micropterus dolomieu</i>
<i>Hybognathus hankinsoni</i>	<i>Catostomus commersoni</i>	<i>Micropterus salmoides</i>
<i>Hybognathus nuchalis</i>	<i>Hypentelium nigricans</i>	<i>Pomoxis annularis</i>
<i>Luxilus cornutus</i>	<i>Ictiobus bubalus</i>	<i>Pomoxis nigromaculatus</i>
<i>Macrhybopsis storeriana</i>	<i>Ictiobus cyprinellus</i>	PERCIDAE
<i>Nocomis biguttatus</i>	<i>Minytrema melanops</i>	<i>Etheostoma asprigene</i>
<i>Notemigonus crysoleucas</i>	<i>Moxostoma duquesnei</i>	<i>Etheostoma flabellare</i>
<i>Notropis atherinoides</i>	<i>Moxostoma erythrurum</i>	<i>Etheostoma nigrum</i>
<i>Notropis blennioides</i>	<i>Moxostoma macrolepidotum</i>	<i>Perca flavescens</i>
<i>Notropis burchanani</i>	ICTALURIDAE	<i>Percina caprodes</i>
<i>Notropis dorsalis</i>	<i>Ameiurus melas</i>	<i>Stizostedion vitreum</i>
<i>Notropis heterolepis</i> ST	<i>Ameiurus natalis</i>	SCIAENIDAE
<i>Notropis hudsonius</i>	<i>Ictalurus punctatus</i>	<i>Aplodinotus grunniens</i>
<i>Notropis ludibundus</i>	<i>Noturus flavus</i>	
<i>Notropis nubilus</i>	<i>Noturus gyrinus</i>	

Total number of species = 70 (69 native, 1 introduced)

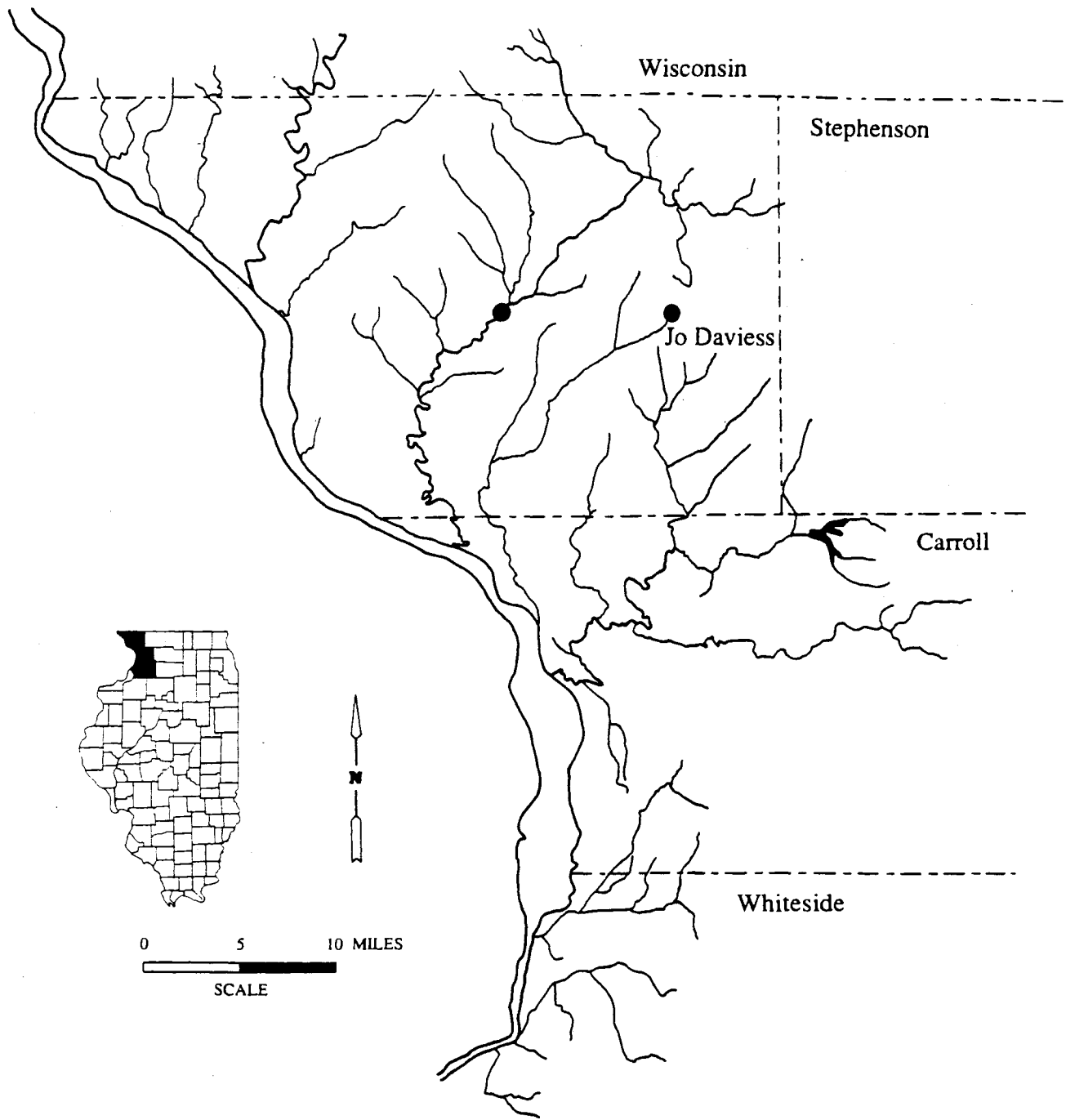


Figure 1-2. Map of mussel collection sites in the Galena, Apple, and Plum River Systems represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 1-2. Freshwater mussels recorded from the Galena, Apple and Plum River Systems. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. SE = Illinois State Endangered.

<i>Alasmidonta viridis</i>	SE
<i>Anodonta imbecillis</i>	
<i>Potamilus alatus</i>	

Total number of species = 3.

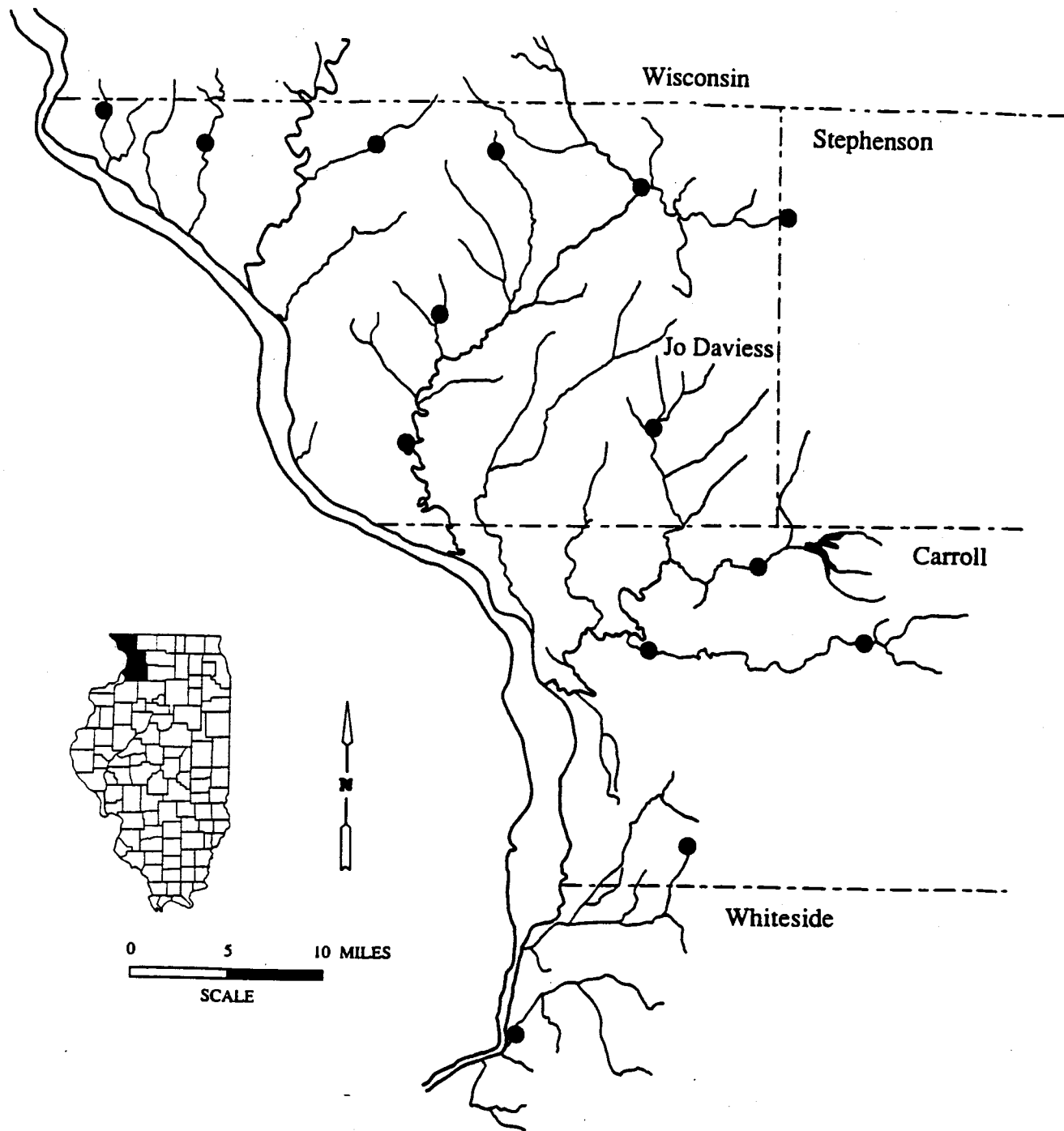


Figure 1-3. Map of crustacean collection sites in the Galena, Apple, and Plum River Systems represented in the Illinois Natural History Survey Crustacean Collection.

Table 1-3. Freshwater crustaceans recorded from the Galena, Apple, and Plum River Systems.
Data from the Illinois Natural History Survey Crustacean Collection.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea intermedia

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Gammarus pseudolimnaeus

HYALELLIDAE

Hyaella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

CAMBARIDAE

Cambarus diogenes

Orconectes propinquus

Orconectes virilis

Procambarus acutus

Total number of species = 7.

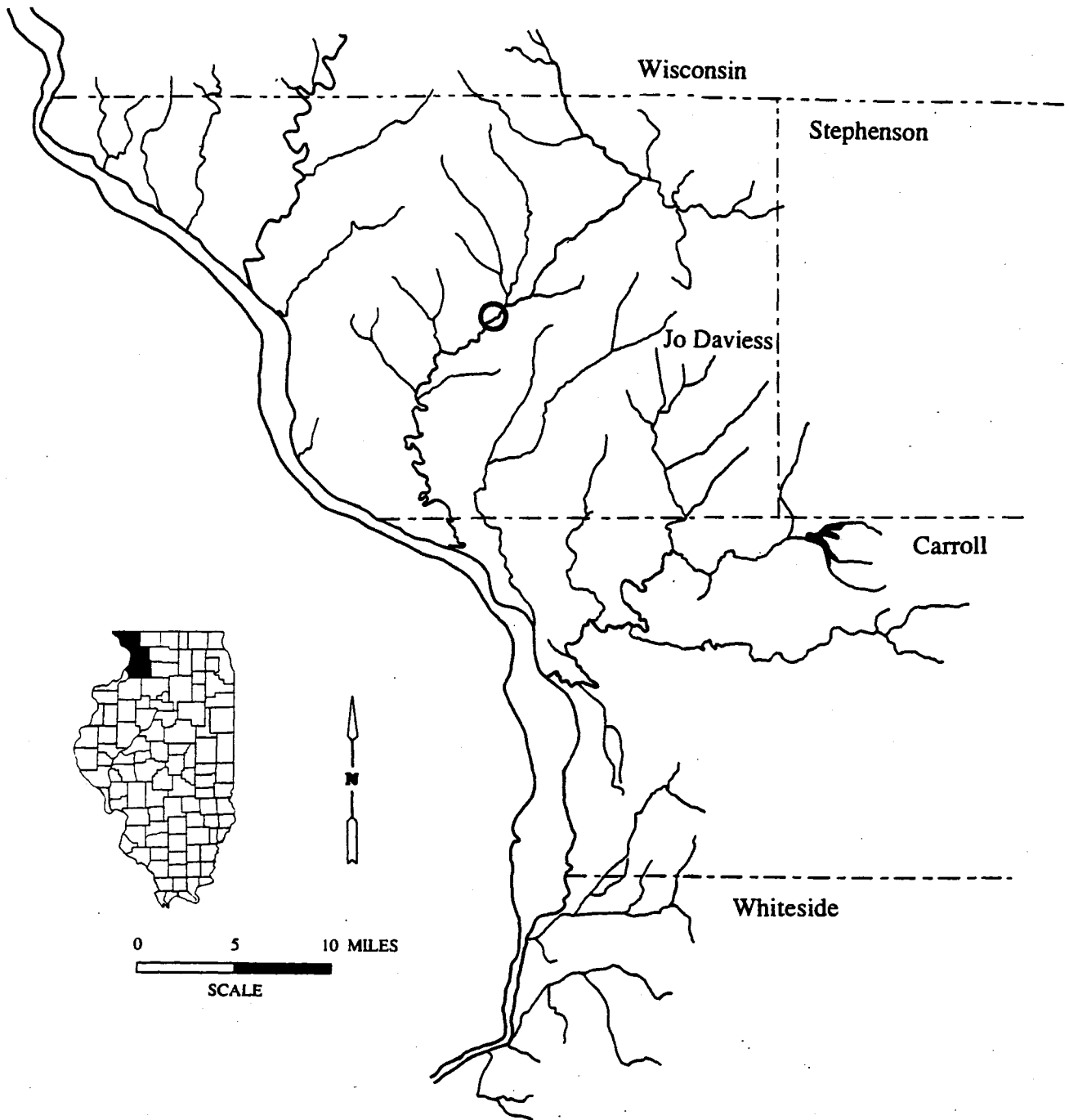
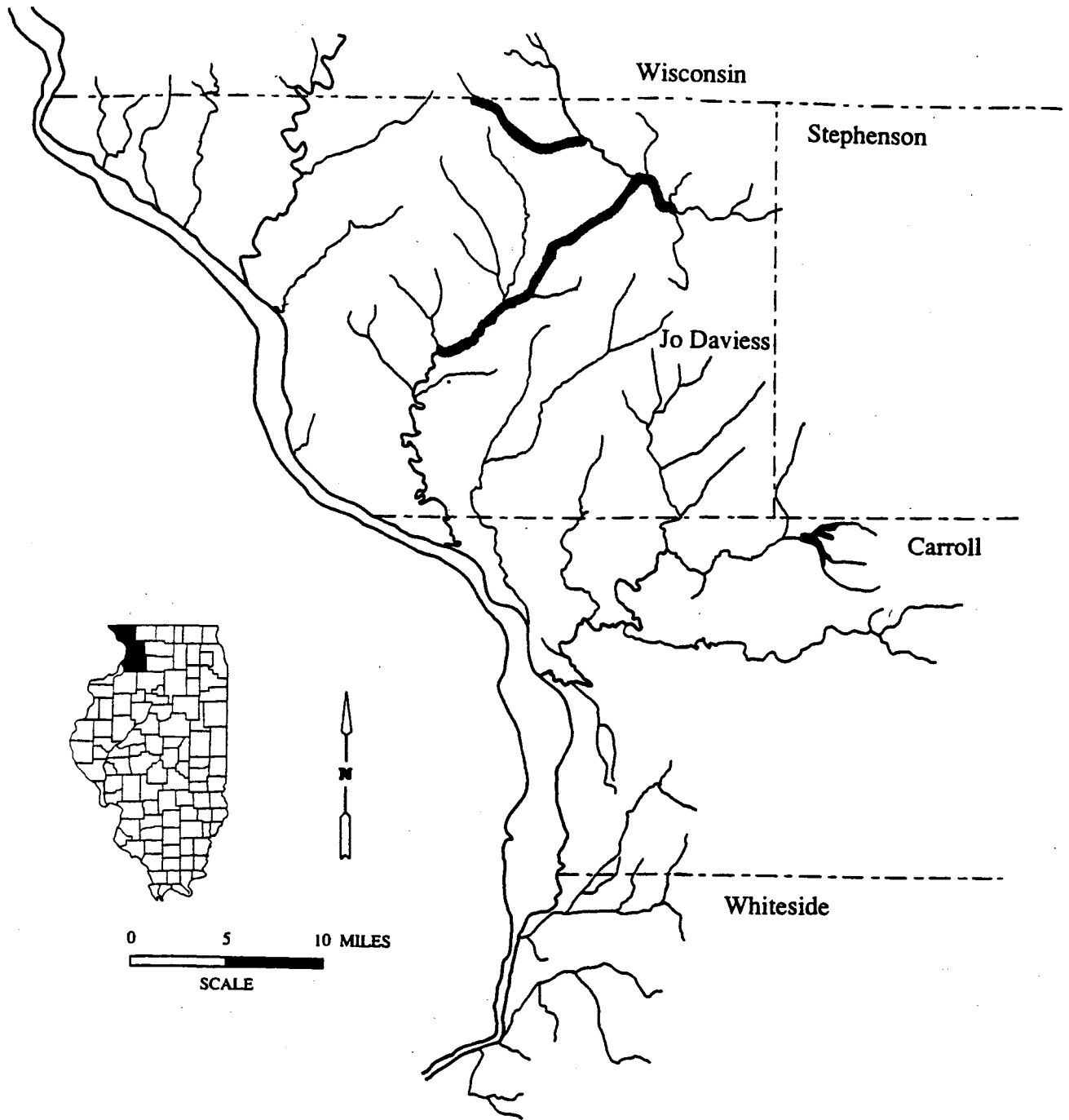
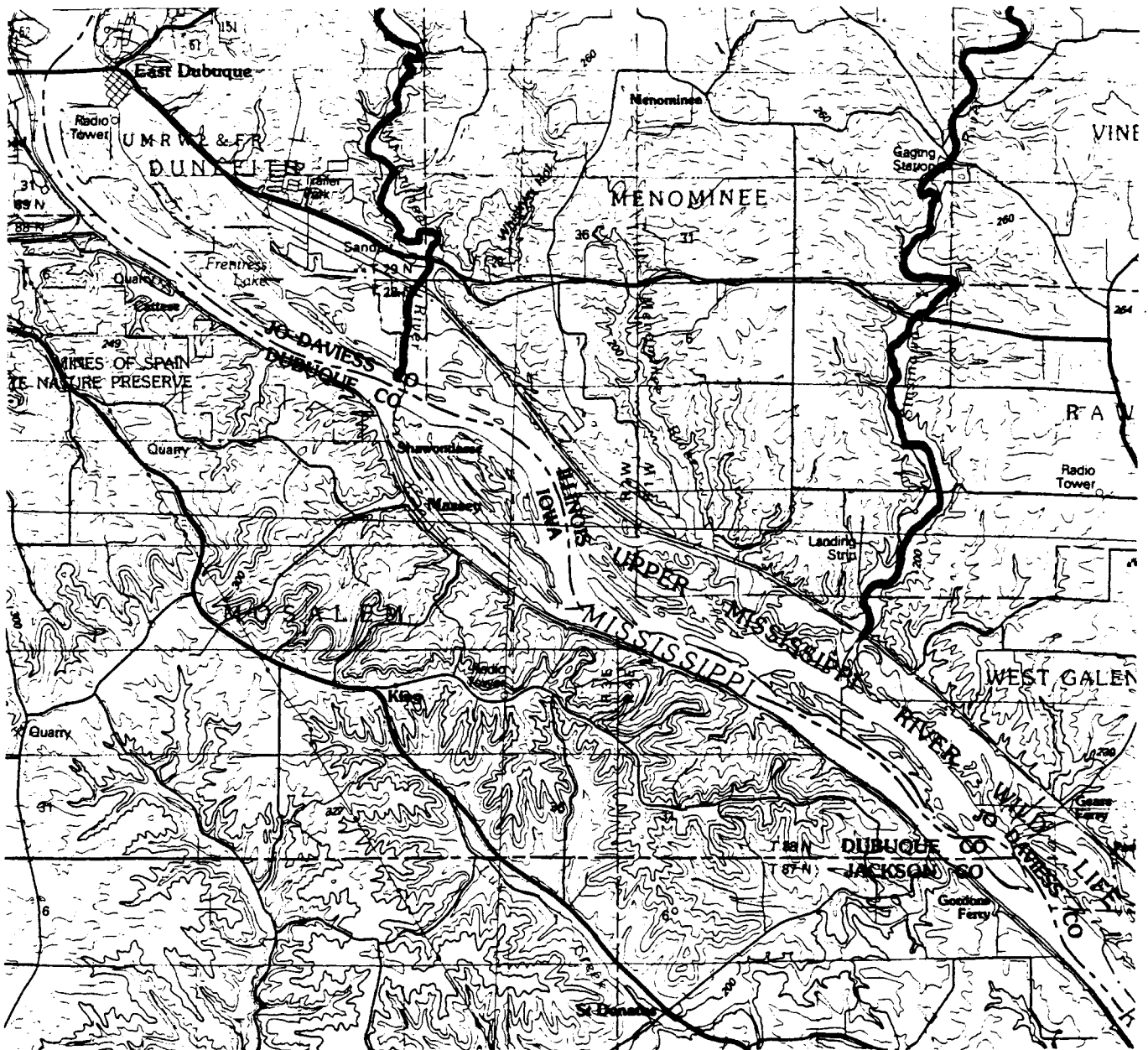


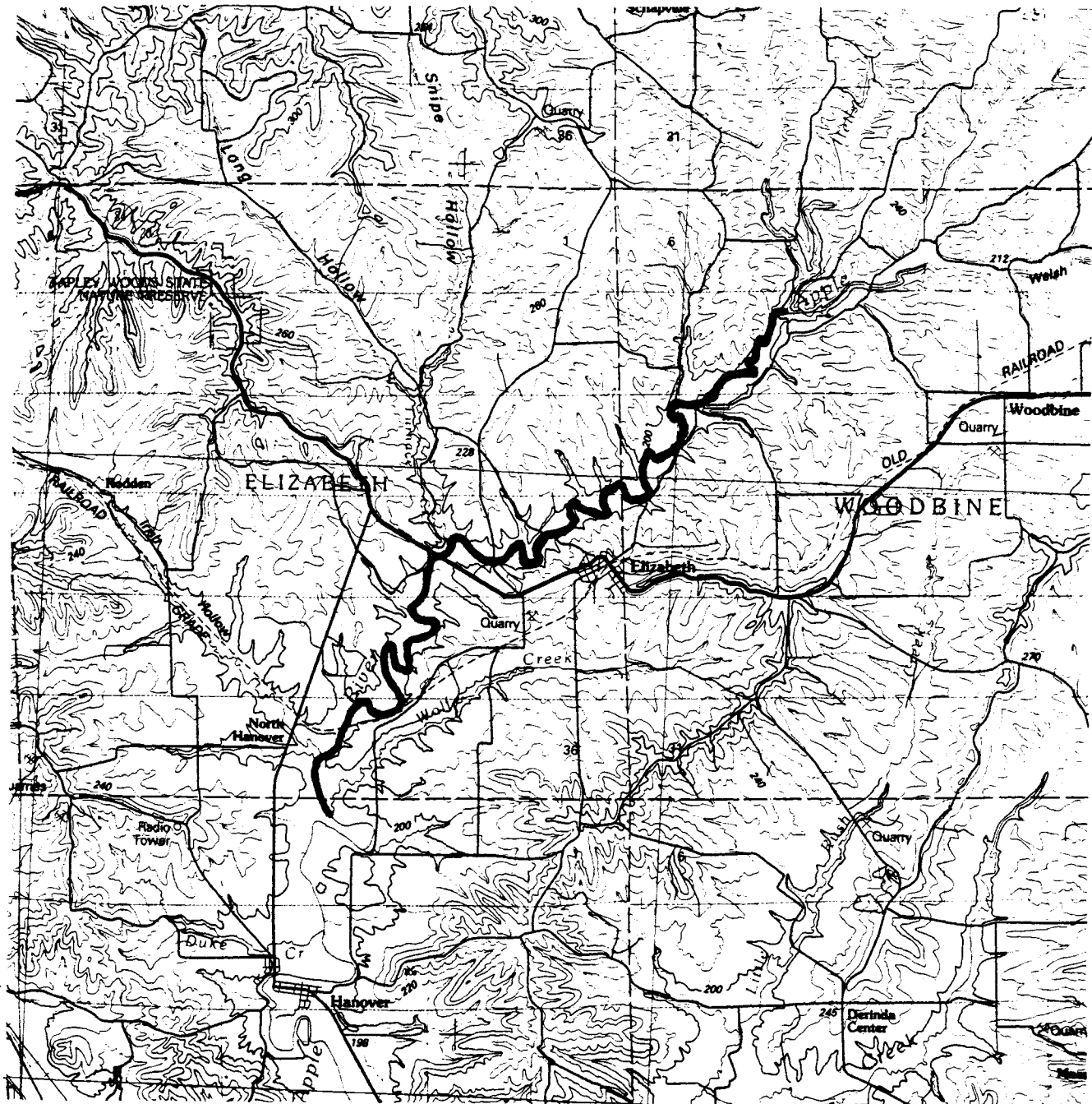
Figure 1-4. Map of historic (open symbols = pre-1980) populations of endangered mussels (circles) in the Galena, Apple, and Plum River Systems.



1. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Galena, Apple, and Plum River Systems.

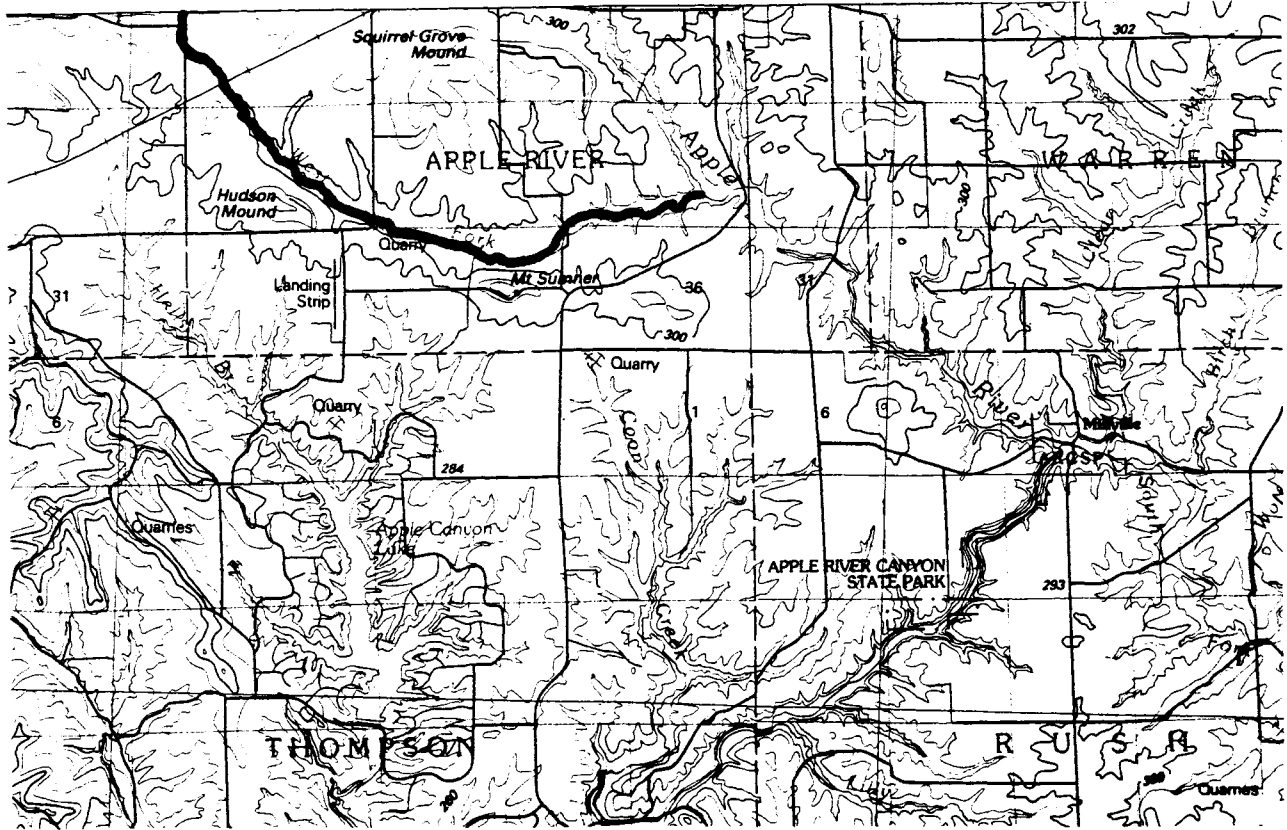


1. Galena, Apple, and Plum River Systems (Dubuque South 1:100,000)
 - Menominee River, Jo Daviess Co.
(longnose dace)
 - Sinsinawa River, Jo Daviess Co.
(longnose dace)

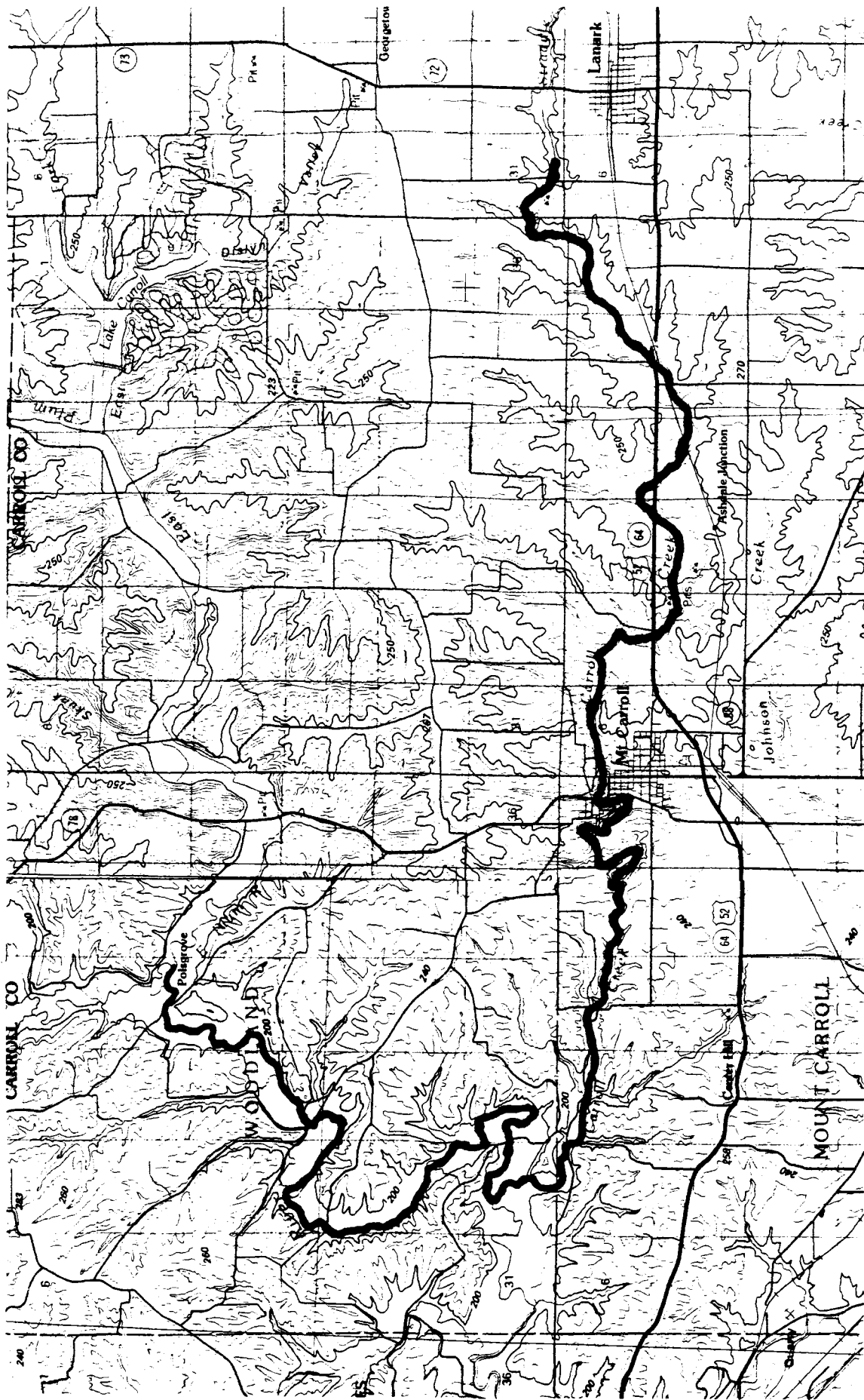


1. Galena, Apple, and Plum River Systems (Dubuque South 1:100,000)

- Apple River, Wolf Creek to Mill Creek, Jo Daviess Co.
(Ozark minnow, largescale stoneroller)



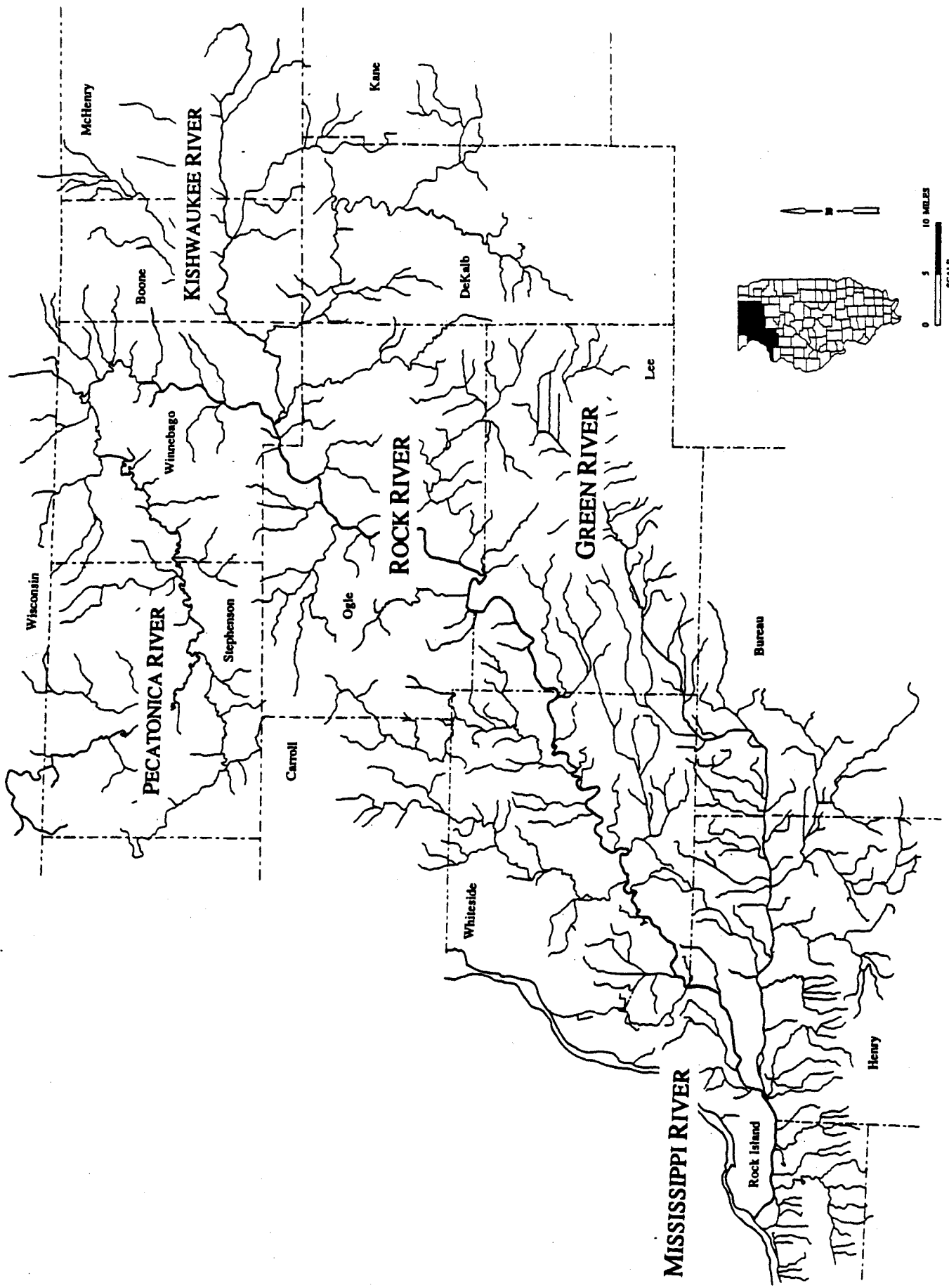
1. Galena, Apple, and Plum River Systems (Dubuque South 1:100,000)
- West Fork Apple River, Jo Daviess Co.
(Ozark minnow, largescale stoneroller)



1. Galena, Apple, and Plum River Systems (Dubuque South & Rockford 1:100,000)

- Plum River, East Plum River to Carroll Creek, Carroll Co. (longnose dace)

- Carroll Creek, Carroll Co. (longnose dace)



2. Rock River Basin

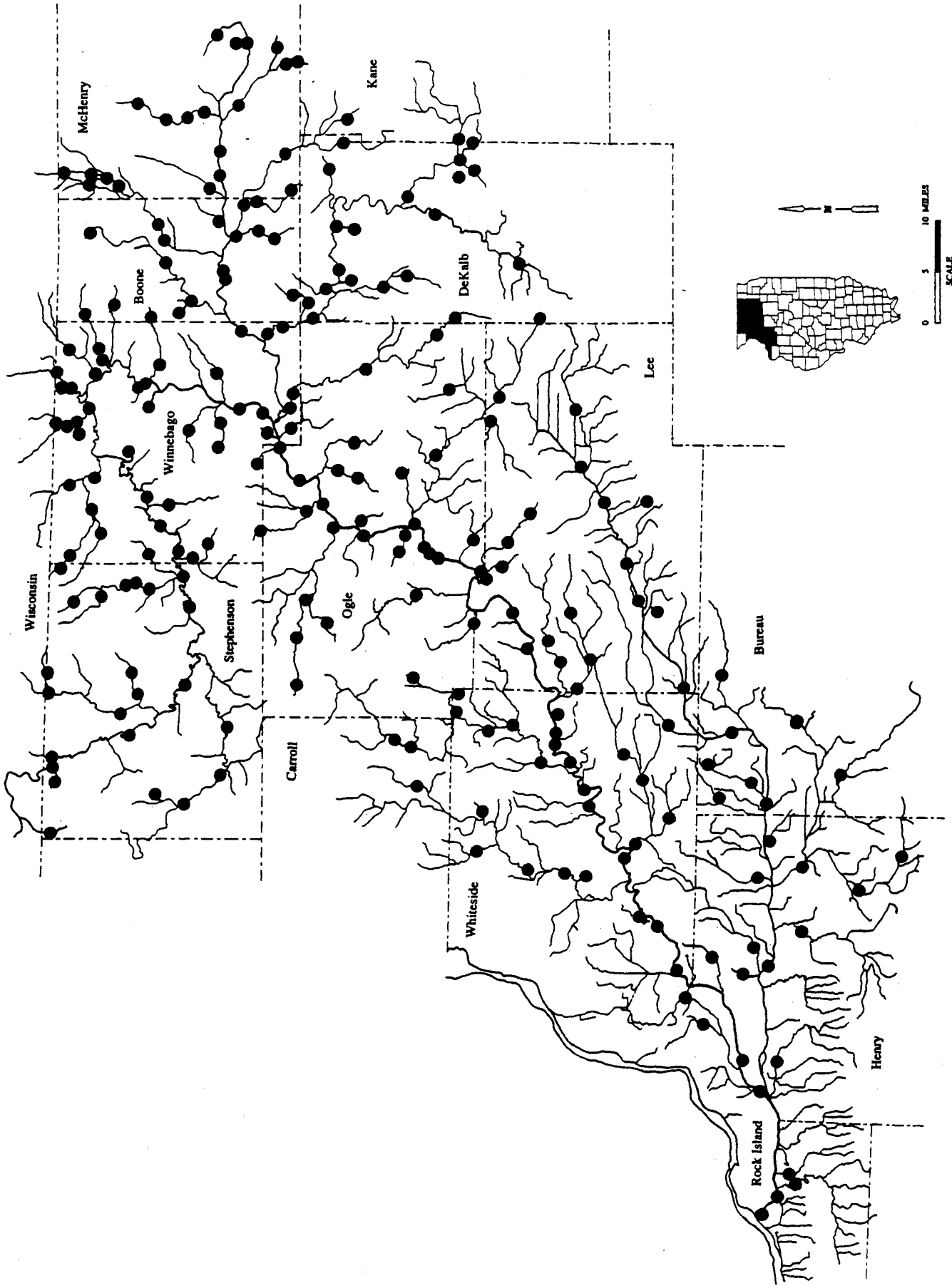


Figure 2-1. Map of fish collection sites in the Rock River System represented in the Illinois Natural History Survey Fish Collection.

Table 2-1. Freshwater fishes recorded from the Rock River System. Data from the Illinois Natural History Survey Fish Collection. FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened; WL = Watch List; I = Introduced.

PETROMYZONTIDAE	<i>Notropis atherinoides</i>	<i>Noturus gyrinus</i>
<i>Lampetra appendix</i>	<i>Notropis blennioides</i>	<i>Pylodictis olivaris</i>
POLYODONTIDAE	<i>Notropis boops</i> ST	CYPRINODONTIDAE
<i>Polyodon spathula</i>	<i>Notropis buechanani</i>	<i>Fundulus dispar</i>
ACIPENSERIDAE	<i>Notropis chalybaeus</i> ST	<i>Fundulus notatus</i>
<i>Acipenser fulvescens</i> ST FC	<i>Notropis dorsalis</i>	POECILIIDAE
LEPISOSTEIDAE	<i>Notropis heterodon</i> ST	<i>Gambusia affinis</i>
<i>Lepisosteus oculatus</i>	<i>Notropis heterolepis</i> ST	ATHERINIDAE
<i>Lepisosteus osseus</i>	<i>Notropis hudsonius</i>	<i>Labidesthes sicculus</i>
ANGUILLIDAE	<i>Notropis ludibundus</i>	GASTEROSTEIDAE
<i>Anguilla rostrata</i>	<i>Notropis nubilis</i>	<i>Culaea inconstans</i>
HIODONTIDAE	<i>Notropis rubellus</i>	MORONIDAE
<i>Hiodon alosoides</i>	<i>Notropis shumardi</i>	<i>Morone chrysops</i>
<i>Hiodon tergisus</i>	<i>Notropis texanus</i> SE	<i>Morone mississippiensis</i>
CLUPEIDAE	<i>Notropis volucellus</i>	CENTRARCHIDAE
<i>Dorosoma cepedianum</i>	<i>Phenacobius mirabilis</i>	<i>Ambloplites rupestris</i>
SALMONIDAE	<i>Phoxinus erythrogaster</i>	<i>Chaenobryttus gulosus</i>
<i>Oncorhynchus mykiss</i>	<i>Pimephales notatus</i>	<i>Lepomis cyanellus</i>
<i>Salmo trutta</i>	<i>Pimephales promelas</i>	<i>Lepomis gibbosus</i>
<i>Salvelinus fontinalis</i>	<i>Pimephales vigilax</i>	<i>Lepomis humilis</i>
UMBRIDAE	<i>Rhinichthys atratulus</i>	<i>Lepomis macrochirus</i>
<i>Umbra limi</i>	<i>Semotilus atromaculatus</i>	<i>Micropterus dolomieu</i>
ESOCIDAE	CATOSTOMIDAE	<i>Micropterus salmoides</i>
<i>Esox americanus</i>	<i>Carpionoxys carpio</i>	<i>Pomoxis annularis</i>
<i>Esox lucius</i>	<i>Carpionoxys cyprinus</i>	<i>Pomoxis nigromaculatus</i>
CYPRINIDAE	<i>Carpionoxys velifer</i>	PERCIDAE
<i>Campostoma anomalum</i>	<i>Catostomus commersoni</i>	<i>Crystallaria asprella</i>
<i>Campostoma oligolepis</i>	<i>Cycleptus elongatus</i> FC	<i>Etheostoma caeruleum</i>
<i>Carassius auratus</i> I	<i>Erimyzon sucetta</i>	<i>Etheostoma clarum</i> SE
<i>Cyprinella lutrensis</i>	<i>Hypentelium nigricans</i>	<i>Etheostoma exile</i> ST
<i>Cyprinella spiloptera</i>	<i>Ictiobus bubalus</i>	<i>Etheostoma flabellare</i>
<i>Cyprinella whipplei</i>	<i>Ictiobus cyprinellus</i>	<i>Etheostoma microperca</i>
<i>Cyprinus carpio</i> I	<i>Minytrema melanops</i>	<i>Etheostoma nigrum</i>
<i>Erimystax x-punctatus</i> WL	<i>Moxostoma anisurum</i>	<i>Etheostoma zonale</i>
<i>Extrarius aestivalis</i>	<i>Moxostoma carinatum</i> ST	<i>Perca flavescens</i>
<i>Hybognathus hankinsoni</i>	<i>Moxostoma duquesnei</i>	<i>Percina caprodes</i>
<i>Hybognathus nuchalis</i>	<i>Moxostoma erythrurum</i>	<i>Percina maculata</i>
<i>Hybopsis amnis</i> SE	<i>Moxostoma macrolepidotum</i>	<i>Percina phoxocephala</i>
<i>Luxilus chrysocephalus</i>	ICTALURIDAE	<i>Stizostedion canadense</i>
<i>Luxilus cornutus</i>	<i>Ameiurus melas</i>	<i>Stizostedion vitreum</i>
<i>Lythrurus umbratilis</i>	<i>Ameiurus natalis</i>	SCIAENIDAE
<i>Macrhybopsis storeriana</i>	<i>Ameiurus nebulosus</i>	<i>Aplodinotus grunniens</i>
<i>Nocomis biguttatus</i>	<i>Ictalurus punctatus</i>	COTTIDAE
<i>Notemigonus crysoleucas</i>	<i>Noturus exilis</i>	<i>Cottus bairdi</i>
<i>Notropis anogenus</i> SE	<i>Noturus flavus</i>	

Total number of species = 112 (110 native, 2 introduced)

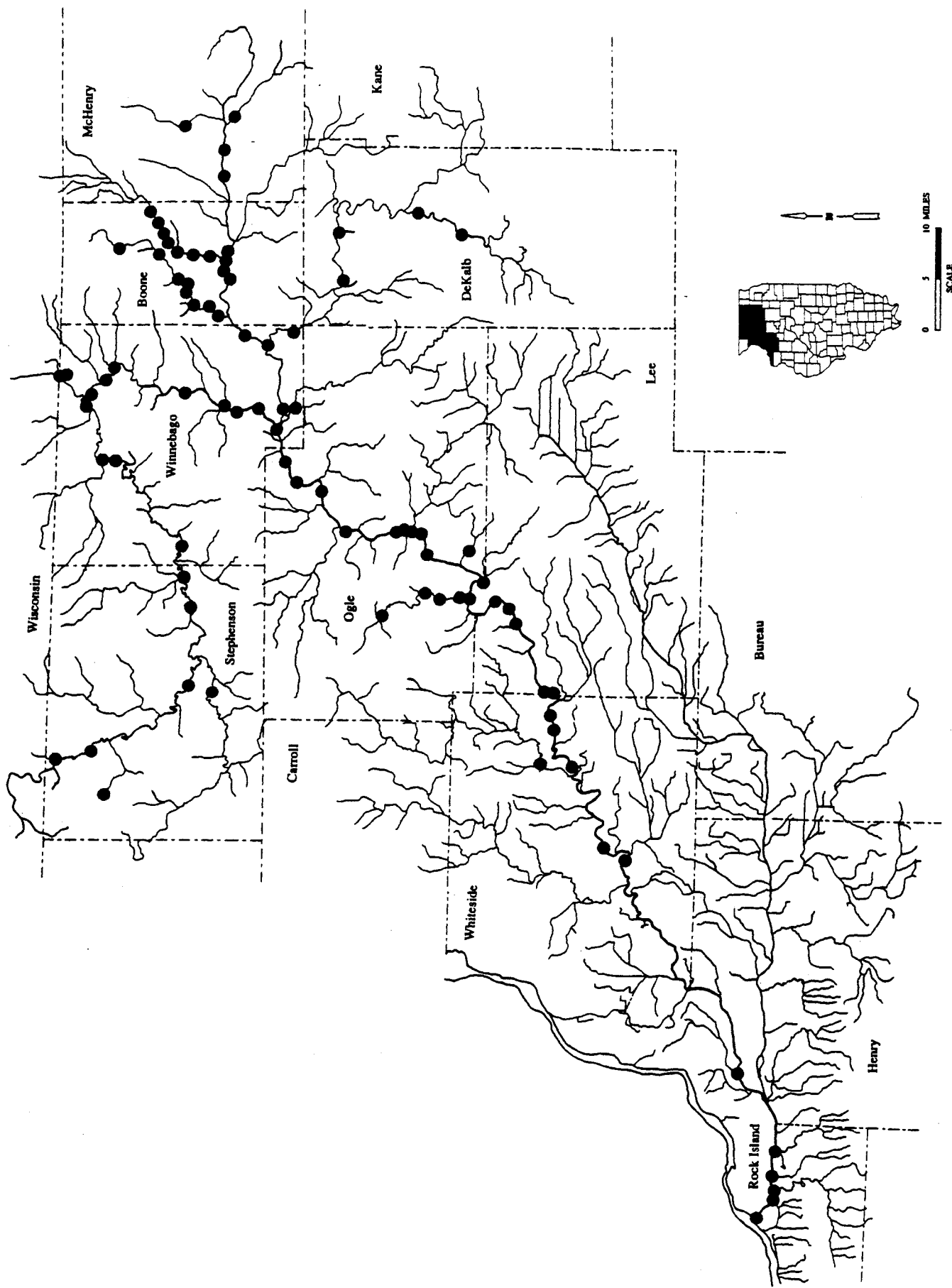


Figure 2-2. Map of mussel collection sites in the Rock River System represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 2-2. Freshwater mussels recorded from the Rock River System. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. FE = Federally Endangered; FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened; SC = State Candidate; X = Extirpated from Illinois.

<i>Actinonaias ligamentina</i>	
<i>Alasmidonta marginata</i>	
<i>Alasmidonta viridis</i>	SE
<i>Amblema plicata</i>	
<i>Anodonta grandis</i>	
<i>Anodonta imbecillis</i>	
<i>Anodonta suborbiculata</i>	
<i>Anodontoides ferussacianus</i>	
<i>Arcidens confragosus</i>	
<i>Cumberlandia monodonta</i>	SE, FC
<i>Cyclonaias tuberculata</i>	
<i>Ellipsaria lineolata</i>	SC
<i>Elliptio crassidens</i>	ST
<i>Elliptio dilatata</i>	SC
<i>Fusconaia ebena</i>	SC
<i>Fusconaia flava</i>	
<i>Lampsilis cardium</i>	
<i>Lampsilis higginsii</i>	SE, FE
<i>Lampsilis siliquoidea</i>	
<i>Lampsilis teres</i>	
<i>Lasmigona complanata</i>	
<i>Lasmigona compressa</i>	ST
<i>Lasmigona costata</i>	
<i>Leptodea fragilis</i>	
<i>Leptodea leptodon</i>	SE, FC, X
<i>Ligumia recta</i>	
<i>Ligumia subrostrata</i>	
<i>Obliquaria reflexa</i>	
<i>Obovaria olivaria</i>	
<i>Plethobasus cyphus</i>	ST
<i>Pleurobema sintoxia</i>	
<i>Potamilus alatus</i>	
<i>Potamilus ohioensis</i>	
<i>Quadrula metanevra</i>	
<i>Quadrula nodulata</i>	
<i>Quadrula pustulosa</i>	
<i>Quadrula quadrula</i>	
<i>Strophitus undulatus</i>	
<i>Toxolasma parvus</i>	
<i>Tritogonia verrucosa</i>	
<i>Truncilla donaciformis</i>	
<i>Truncilla truncata</i>	
<i>Venustaconcha ellipsiformis</i>	SC

Total number of species = 43.

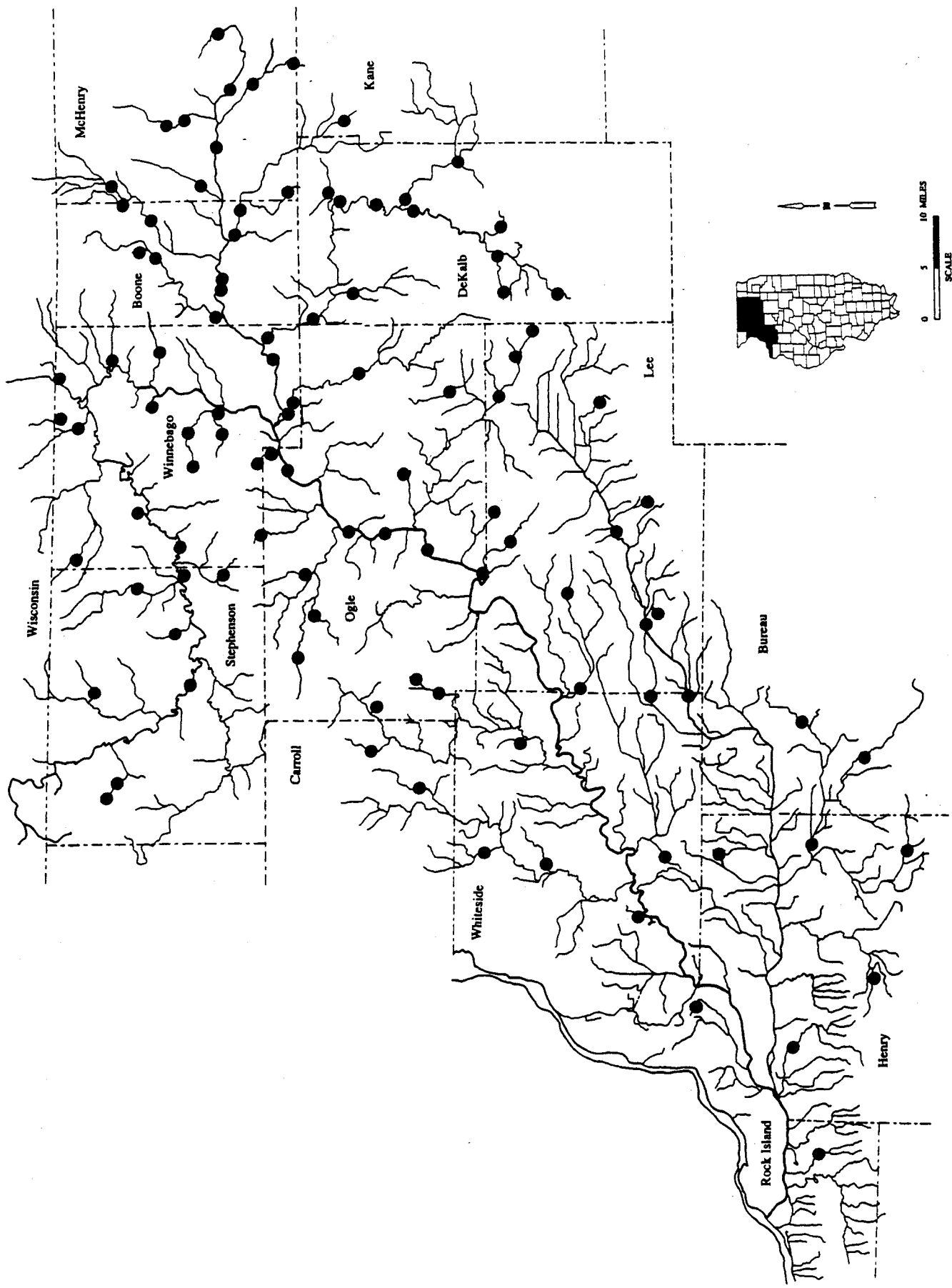


Figure 2-3. Map of crustacean collection sites in the Rock River System represented in the Illinois Natural History Survey Crustacean Collection.

Table 2-3. Freshwater crustaceans recorded from the Rock River System. Data from the Illinois Natural History Survey Crustacean Collection. I = Introduced species.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea forbesi
Caecidotea intermedia
Caecidotea kendeighi

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Batrurus mucronatus
Crangonyx gracilis
Crangonyx minor
Crangonyx pseudogracilis
Gammarus pseudolimnaeus

HYALELLIDAE

Hyalella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

CAMBARIDAE

Cambarus diogenes
Orconectes immunis
Orconectes propinquus
Orconectes rusticus I
Orconectes virilis
Procambarus acutus
Procambarus gracilis

Total number of species = 16 (15 native, 1 introduced)

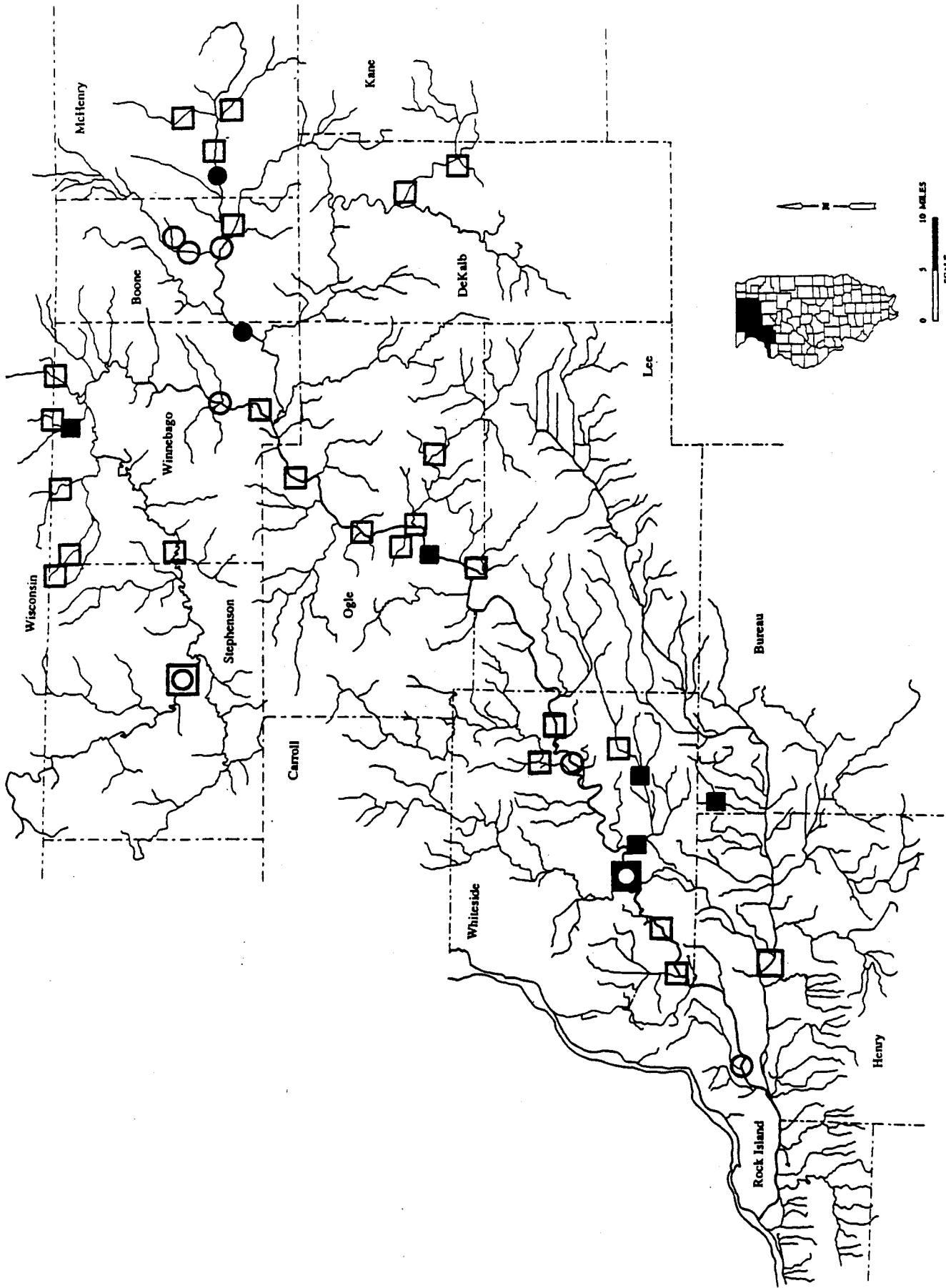
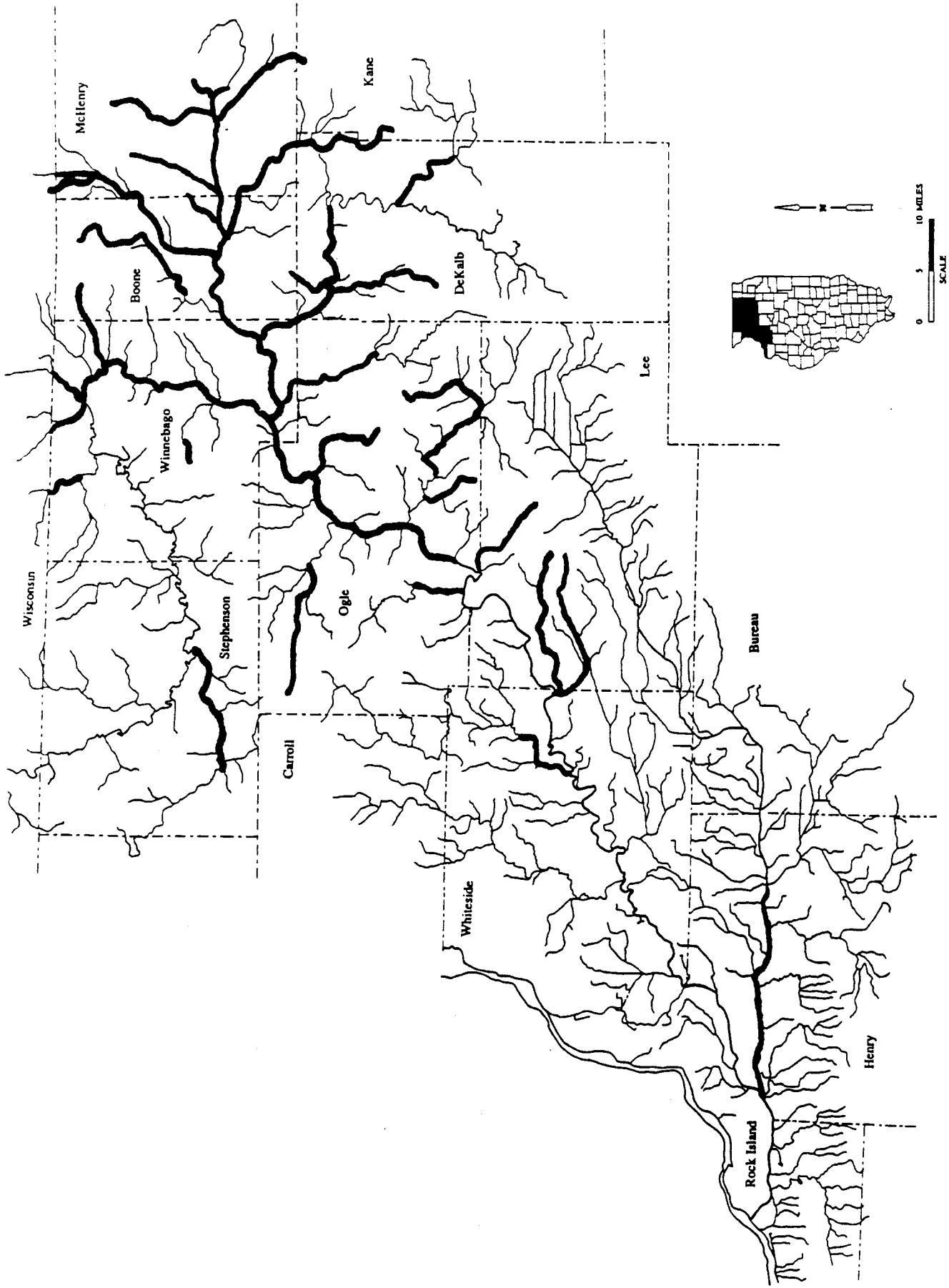
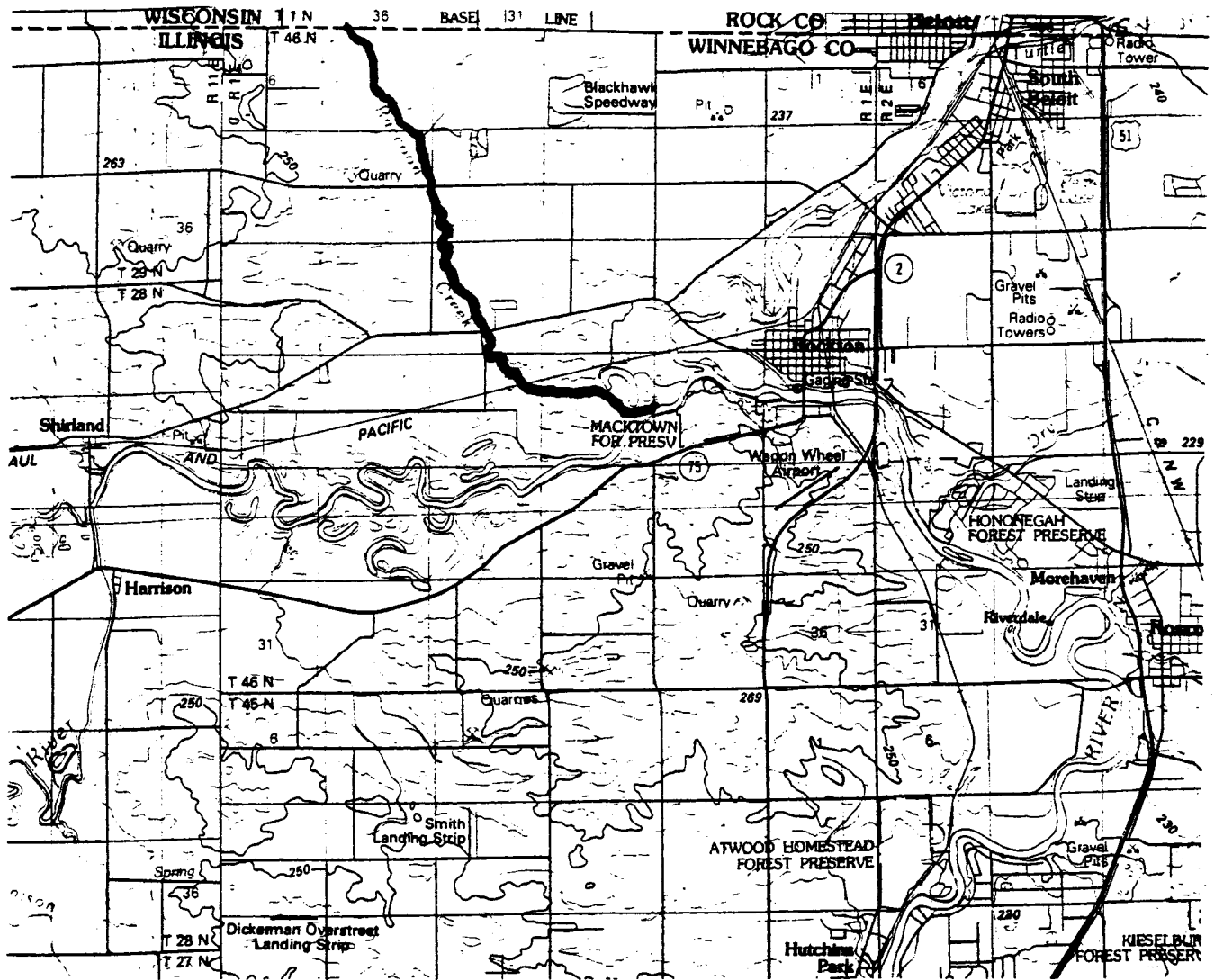


Figure 2-4. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered fishes (squares) and mussels (circles) in the Rock River System.

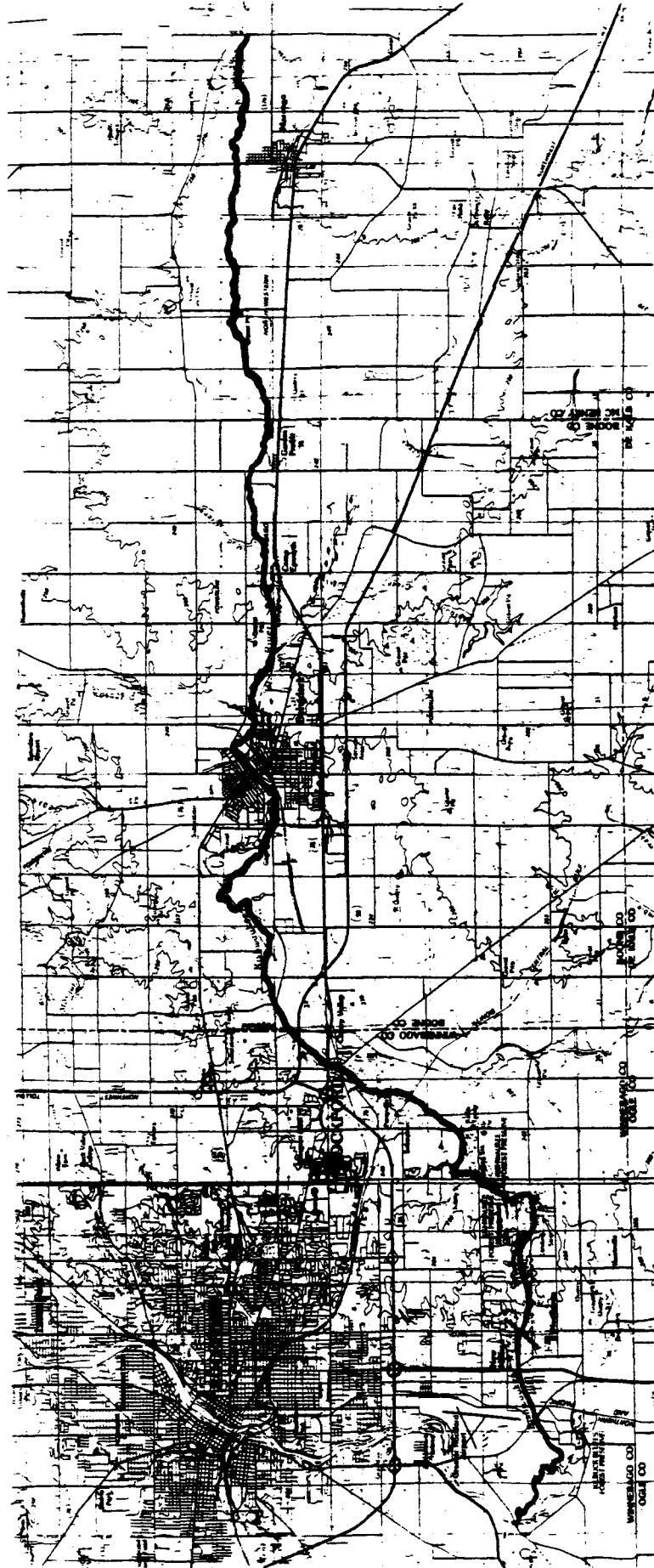


2. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Rock River System.



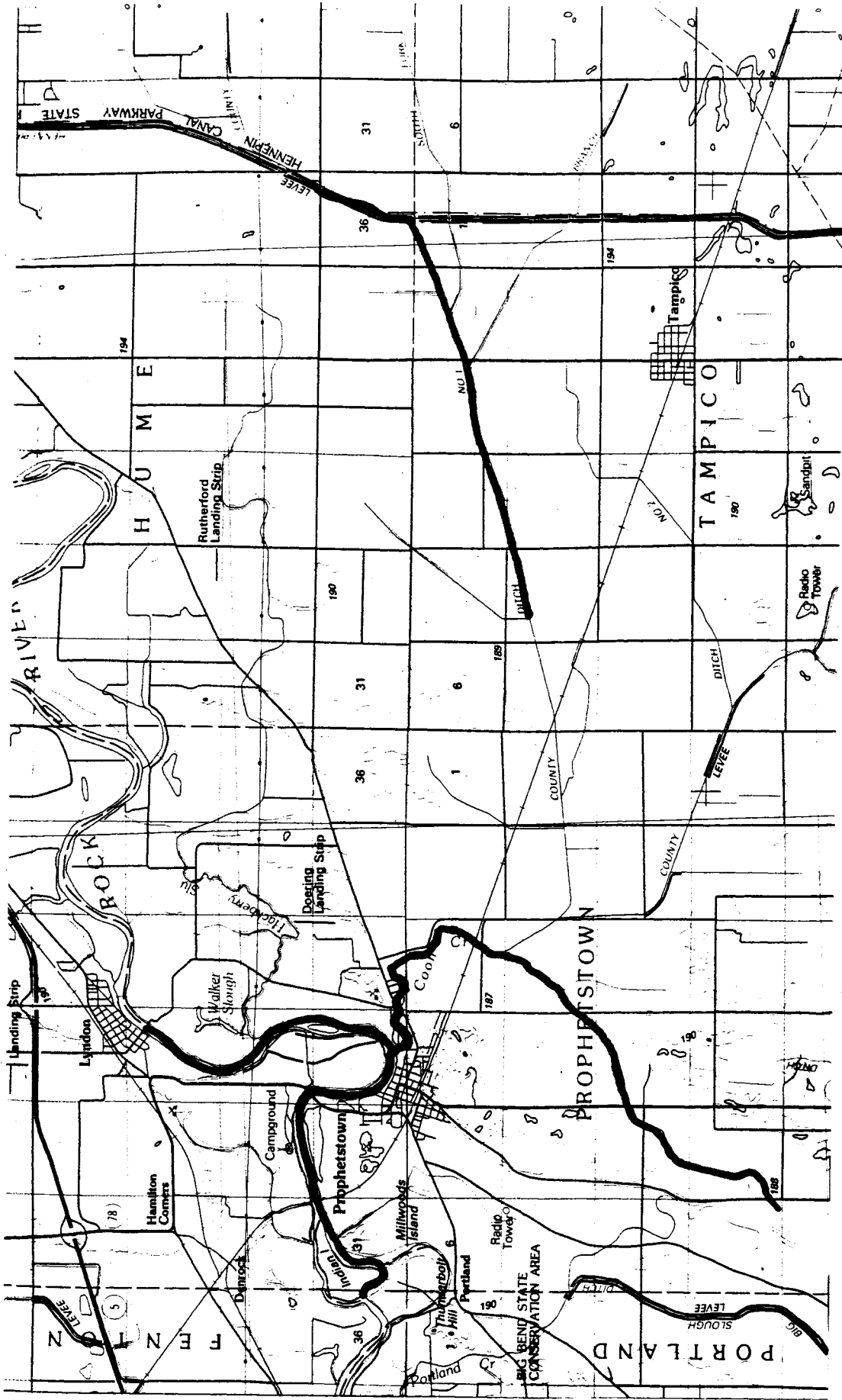
2. The Rock River System (Rockford 1:100,000)

- Raccoon Creek, Winnebago Co.
 (Iowa darter)



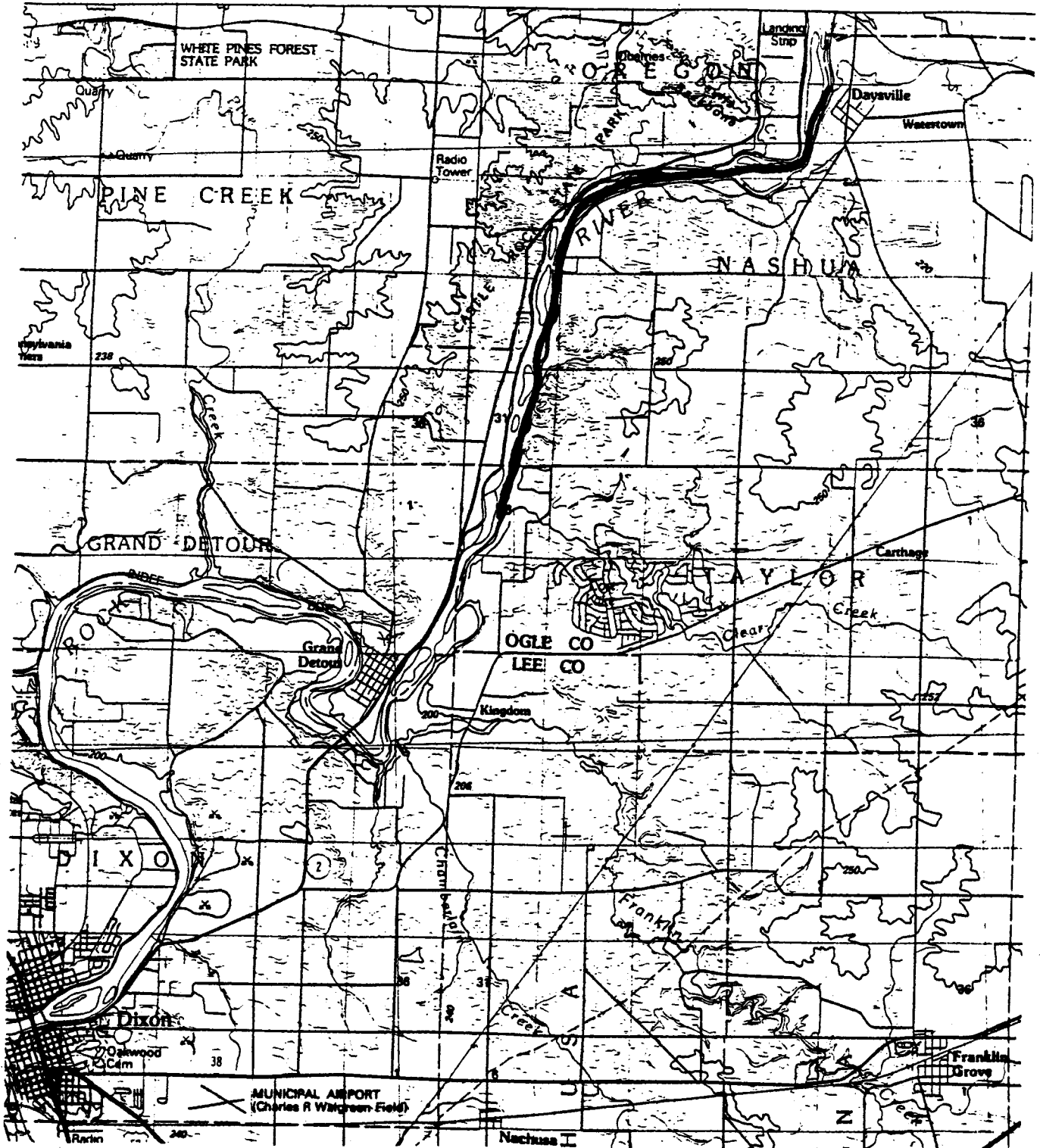
2. The Rock River System (Rockford & Elgin 1:100,000)

- Kishwaukee River, Boone/McHenry/Winnebago Co.
(creek heelsplitter, high mussel diversity, BSC Class "A" upstream from South Branch)



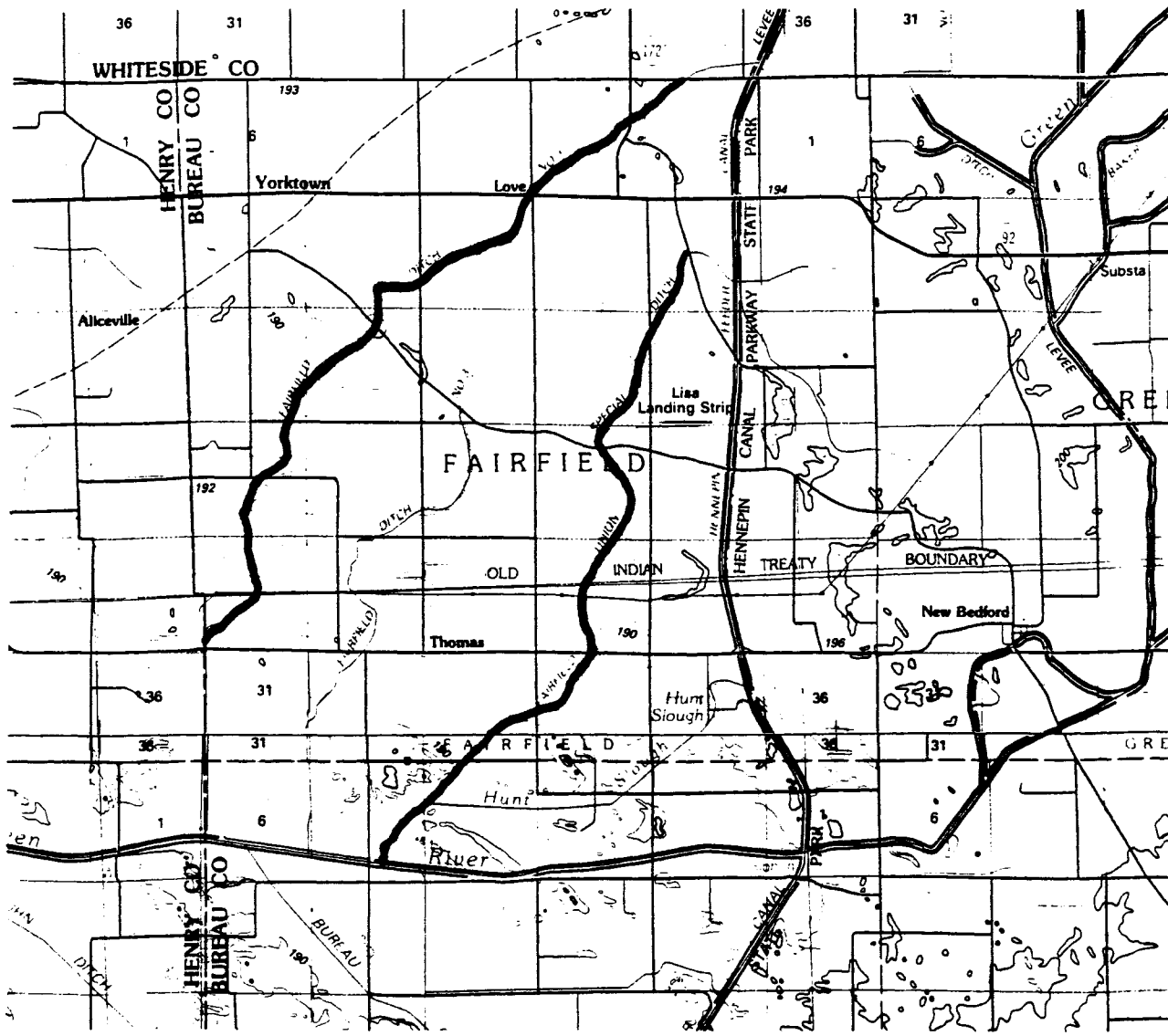
2. The Rock River System (Dixon 1:100,000)

- Rock River, Lyndon to Indian Island, Whiteside Co. (gravel chub)
- Coon Creek, Whiteside Co. (weed shiner)
- County Ditch #1, 2.5 mi. above & below Rt. 72, Whiteside Co. (weed shiner)



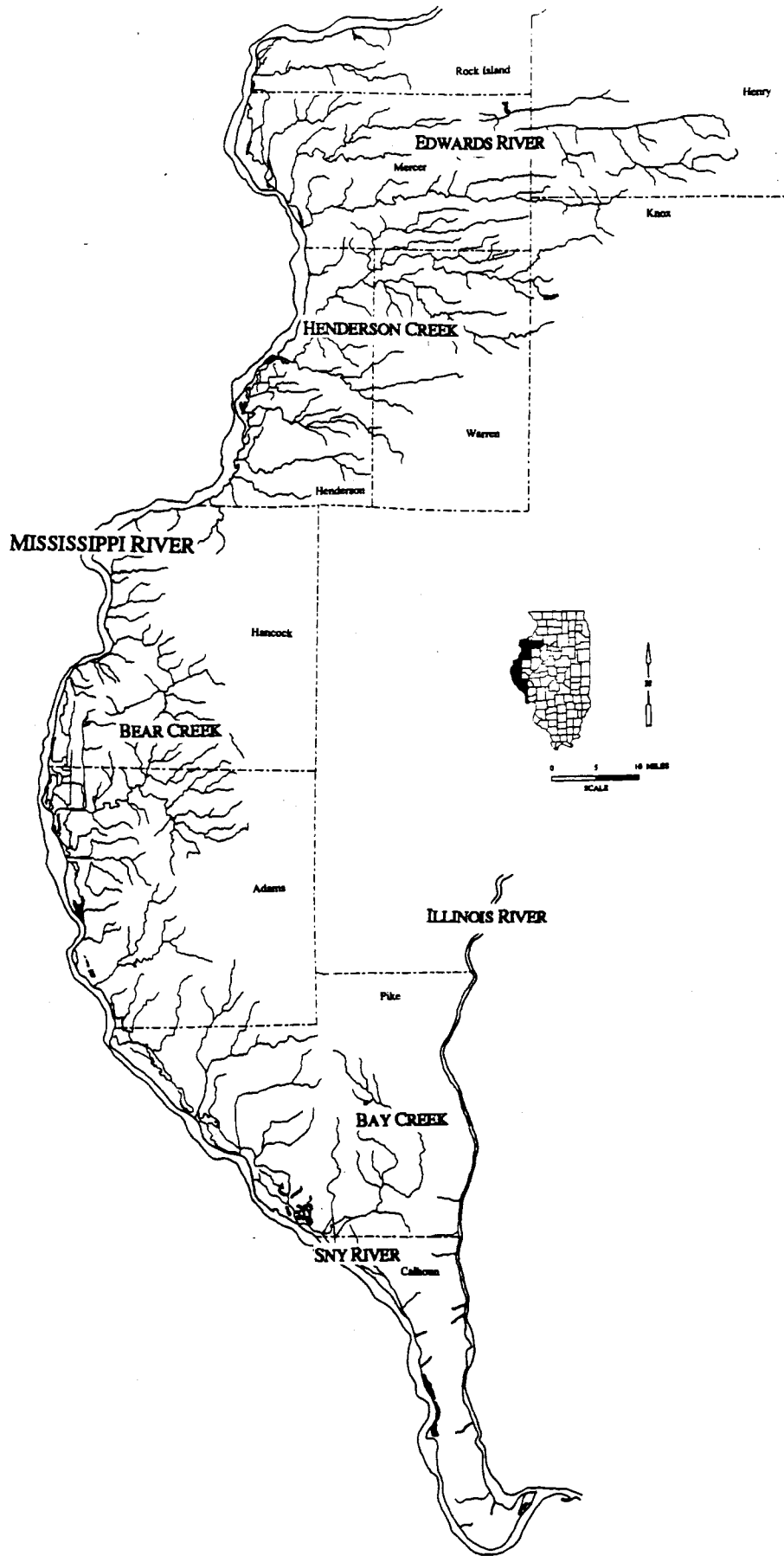
2. The Rock River System (Dixon 1:100,000)

- Rock River, Honey Creek to Clear Creek, Ogle Co.
 (gravel chub)



2. The Rock River System (Dixon & Kewanee 1:100,000)

- Fairfield Ditch #1, Bureau Co.
(weed shiner, blacknose shiner)
- Fairfield Union Special Ditch, Bureau Co.
(weed shiner)



3. Middle Mississippi River Tributaries

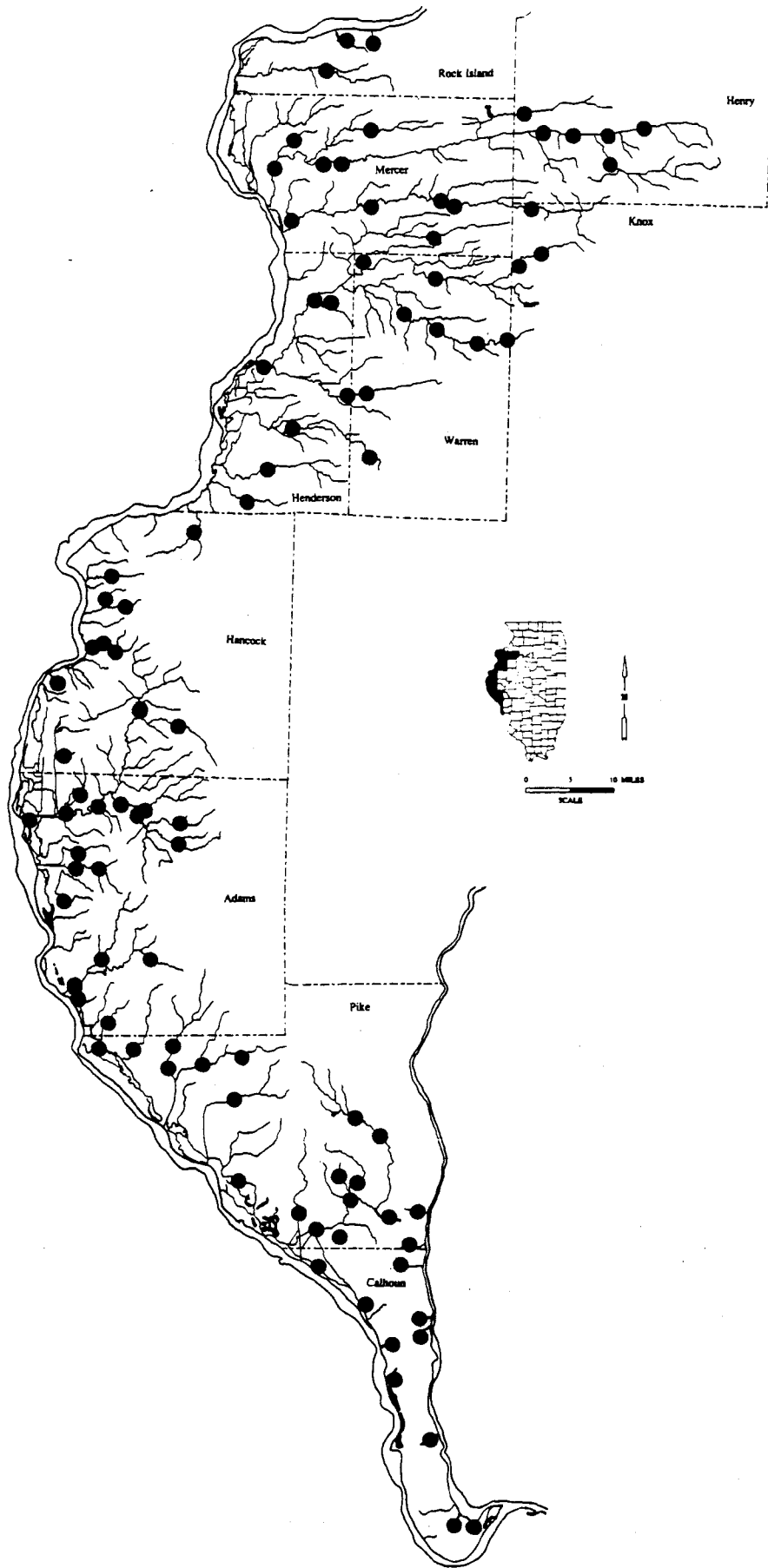


Figure 3-1. Map of fish collection sites in the Middle Mississippi River Tributaries represented in the Illinois Natural History Survey Fish Collection.

Table 3-1. Freshwater fishes recorded from the Middle Mississippi River Tributaries (including Edwards River, Henderson, Bear, Sny, and Bay Creeks). Data from the Illinois Natural History Survey Fish Collection. ST = Illinois State Threatened; I = Introduced.

LEPISOSTEIDAE -	<i>Phenacobius mirabilis</i>	POECILIIDAE
<i>Lepisosteus oculatus</i>	<i>Phoxinus erythrogaster</i>	<i>Gambusia affinis</i>
<i>Lepisosteus osseus</i>	<i>Pimephales notatus</i>	ATHERINIDAE
<i>Lepisosteus platostomus</i>	<i>Pimephales promelas</i>	<i>Labidesthes sicculus</i>
AMIIDAE	<i>Pimephales vigilax</i>	MORONIDAE
<i>Amia calva</i>	<i>Rhinichthys atratulus</i>	<i>Morone chrysops</i>
HIODONTIDAE	<i>Semotilus atromaculatus</i>	CENTRARCHIDAE
<i>Hiodon alosoides</i>	CATOSTOMIDAE	<i>Ambloplites rupestris</i>
CLUPEIDAE	<i>Carpionodes carpio</i>	<i>Lepomis cyanellus</i>
<i>Dorosoma cepedianum</i>	<i>Carpionodes cyprinus</i>	<i>Lepomis humilis</i>
CYPRINIDAE	<i>Carpionodes velifer</i>	<i>Lepomis macrochirus</i>
<i>Campostoma anomalum</i>	<i>Catostomus commersoni</i>	<i>Lepomis microlophus</i>
<i>Cyprinella lutrensis</i>	<i>Hypentelium nigricans</i>	<i>Micropterus dolomieu</i>
<i>Cyprinella spiloptera</i>	<i>Ictiobus bubalus</i>	<i>Micropterus salmoides</i>
<i>Cyprinus carpio</i> I	<i>Ictiobus cyprinellus</i>	<i>Pomoxis annularis</i>
<i>Extrarius aestivalis</i>	<i>Ictiobus niger</i>	<i>Pomoxis nigromaculatus</i>
<i>Hybognathus hankinsoni</i>	<i>Moxostoma duquesnei</i>	PERCIDAE
<i>Hybognathus nuchalis</i>	<i>Moxostoma erythrurum</i>	<i>Crystallaria asprella</i>
<i>Luxilus chrysocephalus</i>	<i>Moxostoma macrolepidotum</i>	<i>Etheostoma asprigene</i>
<i>Luxilus cornutus</i>	ICTALURIDAE	<i>Etheostoma chlorosomum</i>
<i>Lythrurus umbratilis</i>	<i>Ameiurus melas</i>	<i>Etheostoma flabellare</i>
<i>Macrhybopsis storeriana</i>	<i>Ameiurus natalis</i>	<i>Etheostoma nigrum</i>
<i>Nocomis biguttatus</i>	<i>Ictalurus punctatus</i>	<i>Etheostoma spectabile</i>
<i>Notemigonus crysoleucas</i>	<i>Noturus exilis</i>	<i>Percina phoxocephala</i>
<i>Notropis atherinoides</i>	<i>Noturus flavus</i>	<i>Percina shumardi</i>
<i>Notropis blennioides</i>	<i>Noturus gyrinus</i>	<i>Stizostedion canadense</i>
<i>Notropis boops</i> ST	<i>Noturus nocturnus</i>	<i>Stizostedion vitreum</i>
<i>Notropis dorsalis</i>	<i>Pylodictis olivaris</i>	SCIAENIDAE
<i>Notropis ludibundus</i>	CYPRINODONTIDAE	<i>Aplodinotus grunniens</i>
<i>Notropis nubilus</i>	<i>Fundulus olivaceus</i>	COTTIDAE
<i>Notropis volucellus</i>		<i>Cottus carolinae</i>

Total number of species = 77 (76 native, 1 introduced)

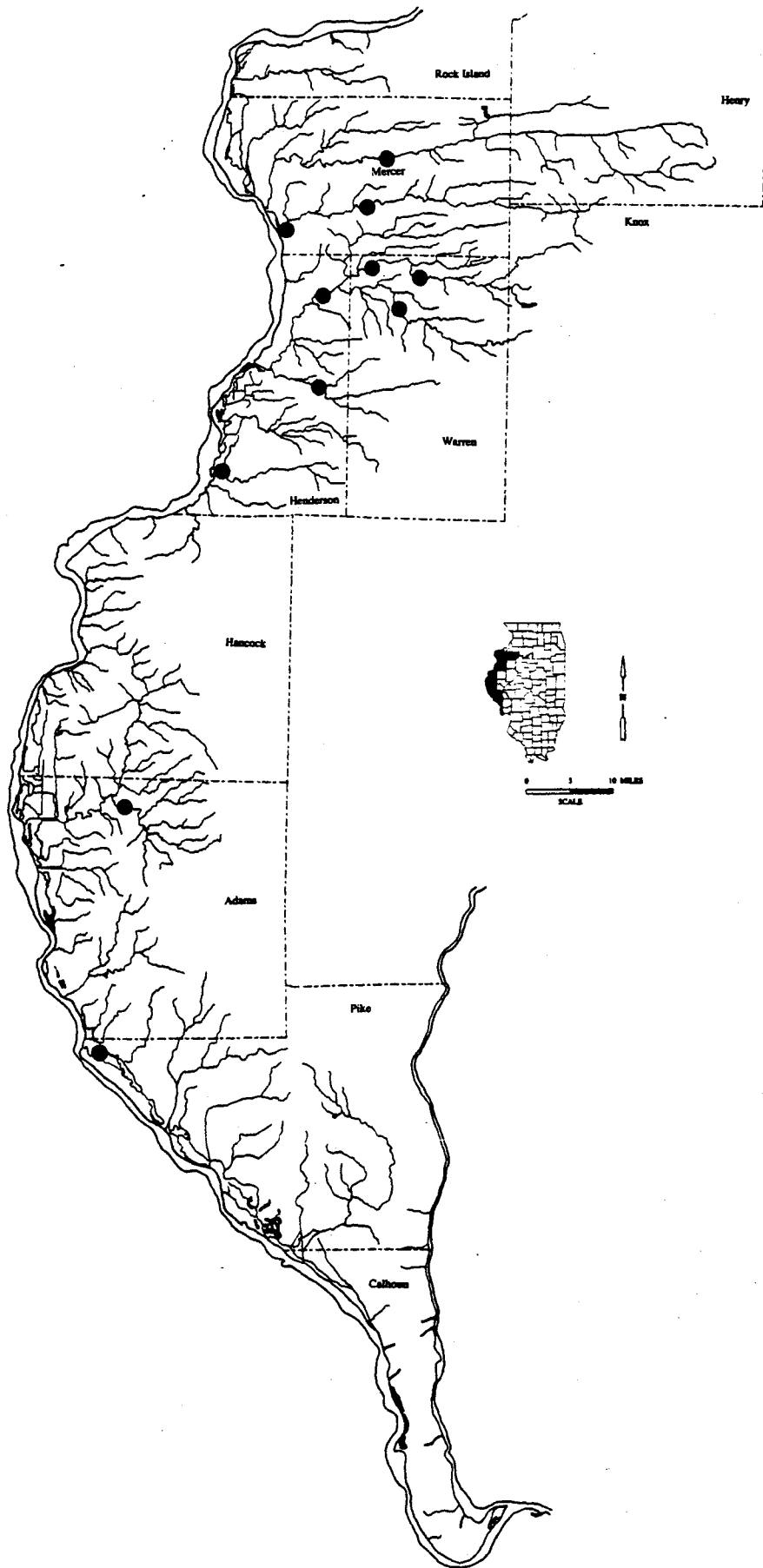


Figure 3-2. Map of mussel collection sites in the Middle Mississippi River Tributaries represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 3-2. Freshwater mussels recorded from Middle Mississippi River Tributaries. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. SE = Illinois State Endangered; ST = Illinois State Threatened; SC = State Candidate.

<i>Alasmidonta marginata</i>	
<i>Alasmidonta viridis</i>	SE
<i>Amblema plicata</i>	
<i>Anodonta grandis</i>	
<i>Anodonta imbecillis</i>	
<i>Anodonta suborbiculata</i>	
<i>Elliptio dilatata</i>	SC
<i>Fusconaia flava</i>	
<i>Lampsilis cardium</i>	
<i>Lampsilis siliquoidea</i>	
<i>Lasmigona complanata</i>	
<i>Lasmigona compressa</i>	ST
<i>Lasmigona costata</i>	
<i>Leptodea fragilis</i>	
<i>Ligumia subrostrata</i>	
<i>Obovaria olivaria</i>	
<i>Pleurobema sintoxia</i>	
<i>Quadrula pustulosa</i>	
<i>Quadrula quadrula</i>	
<i>Strophitus undulatus</i>	
<i>Toxolasma parvus</i>	
<i>Uniomerus tetralasmus</i>	ST
<i>Venustaconcha ellipsiformis</i>	SC

Total number of species = 23.

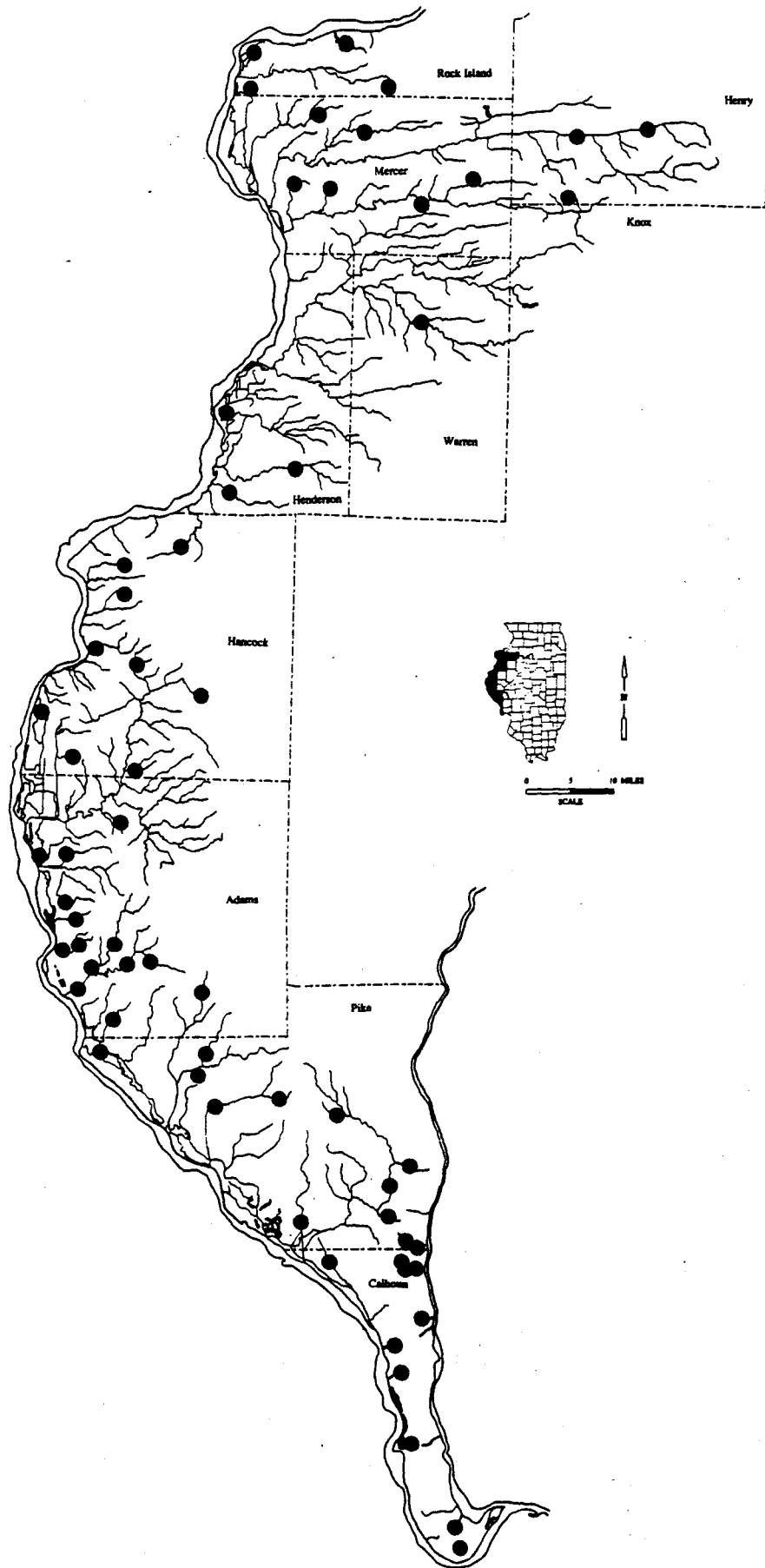


Figure 3-3. Map of crustacean collection sites in the Middle Mississippi River Tributaries represented in the Illinois Natural History Survey Crustacean Collection.

Table 3-3. Freshwater crustaceans recorded from middle Mississippi River tributaries of Illinois.
Data from the Illinois Natural History Survey Crustacean Collection.

ISOPODA (ISOPODS)

ASELLIDAE

- Caecidotea brevicauda*
- Caecidotea forbesi*
- Caecidotea intermedia*
- Caecidotea kendeighi*
- Caecidotea packardii*

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

- Batrachus brachycaudus*
- Batrachus mucronatus*
- Crangonyx forbesi*
- Crangonyx gracilis*
- Crangonyx minor*
- Gammarus minus*
- Gammarus pseudolimnaeus*

DECAPODA (CRAYFISHES & SHRIMPS)

PALAEEMONIDAE

- Palaemonetes kadiakensis*

CAMBARIDAE

- Cambarus diogenes*
- Orconectes immunis*
- Orconectes propinquus*
- Orconectes virilis*
- Procambarus acutus*
- Procambarus gracilis*

Total number of species = 19.

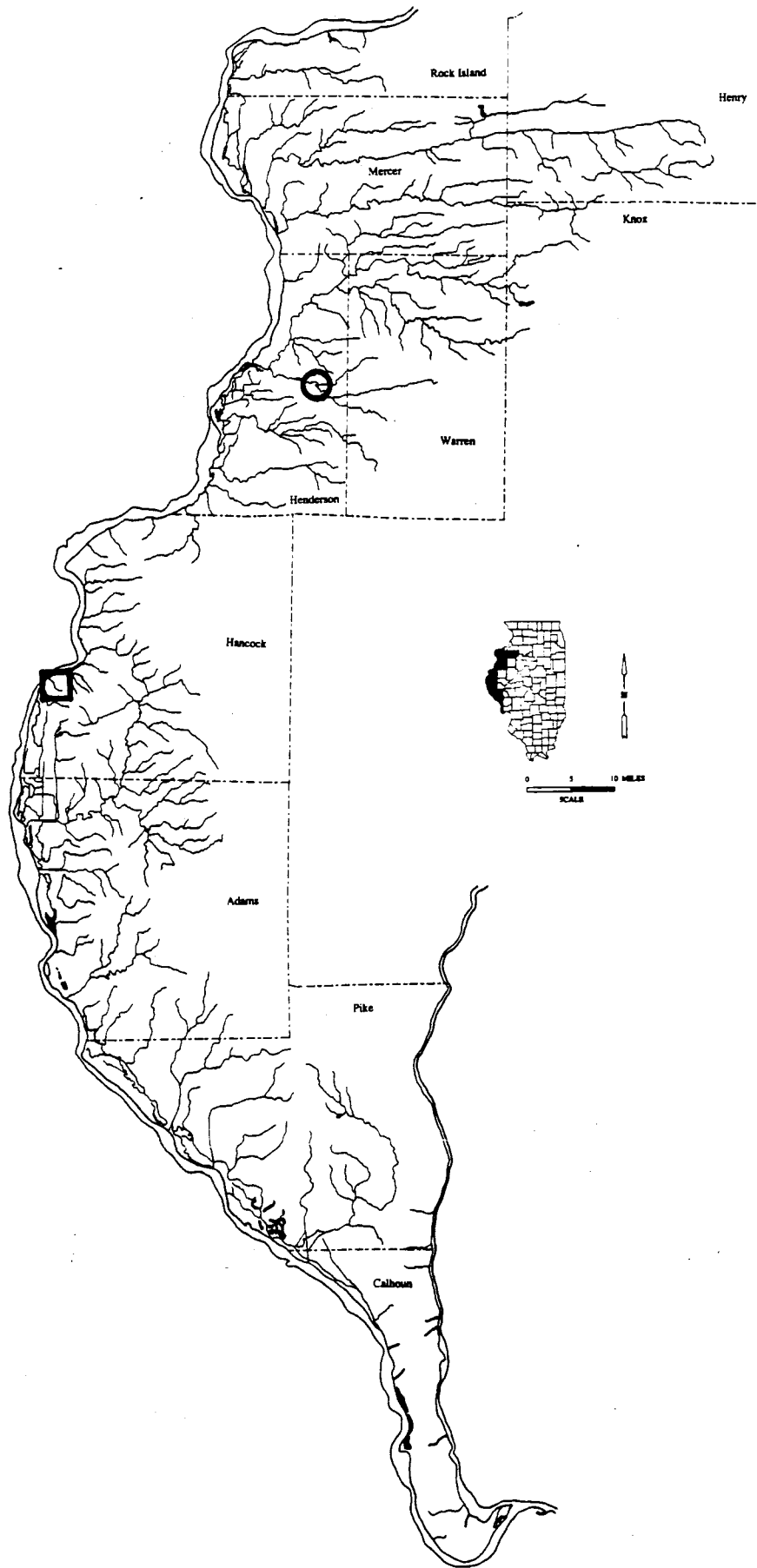
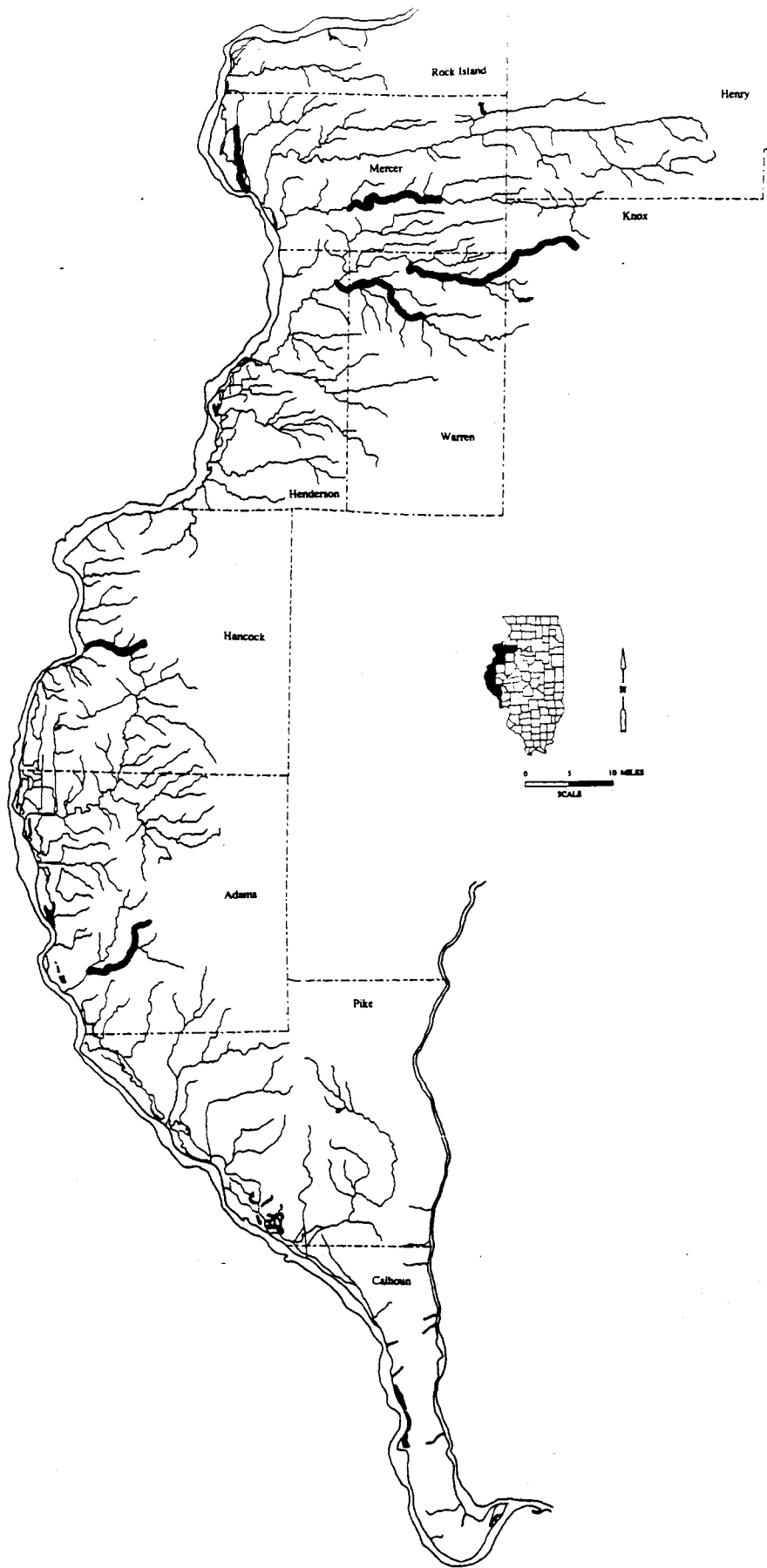
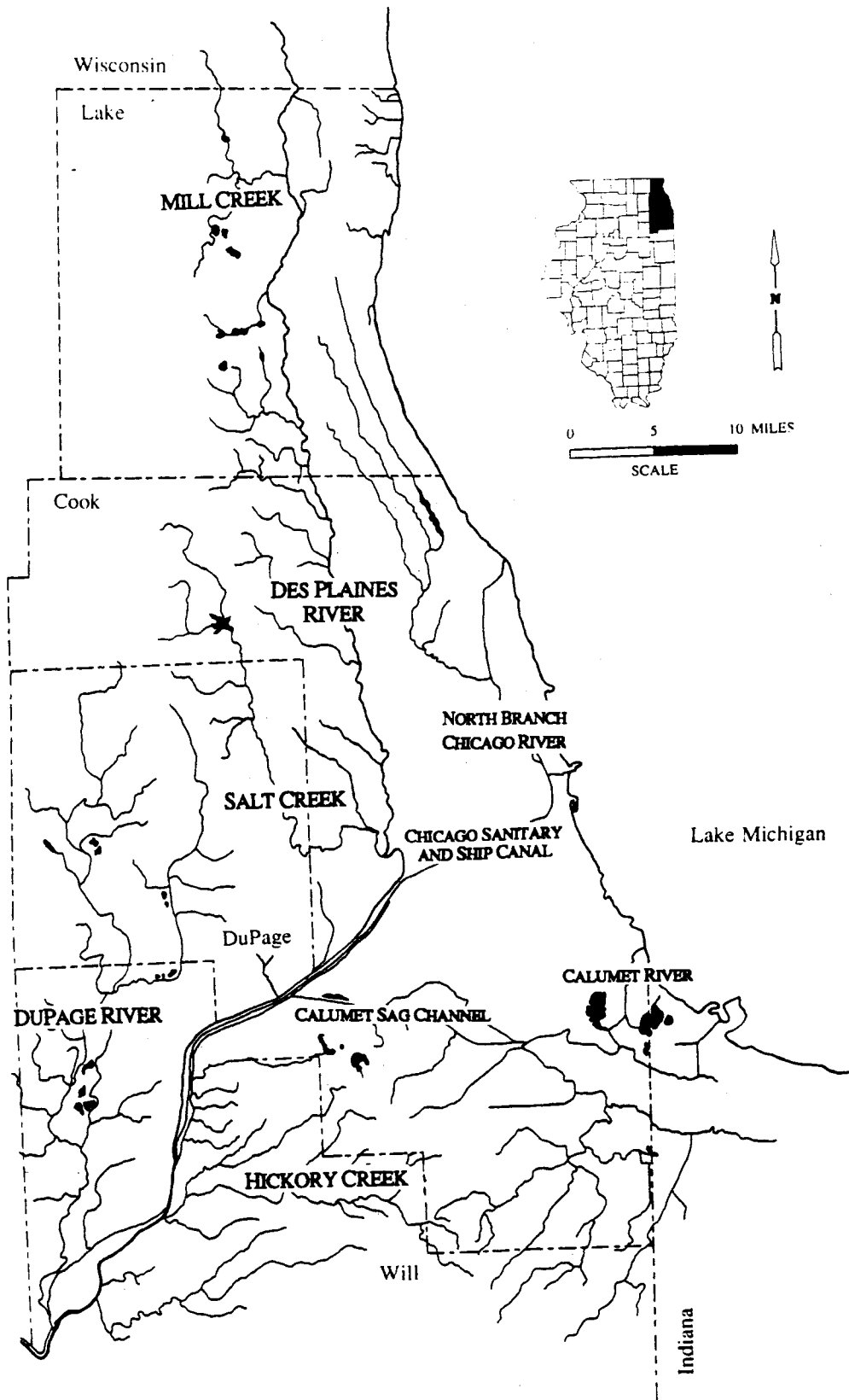


Figure 3-4. Map of historic (open symbols = pre-1980) populations of threatened or endangered fishes (squares) and mussels (circles) in the Middle Mississippi River Tributaries.



3. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Middle Mississippi River Tributaries.



4. Des Plaines River and Lake Michigan Tributaries

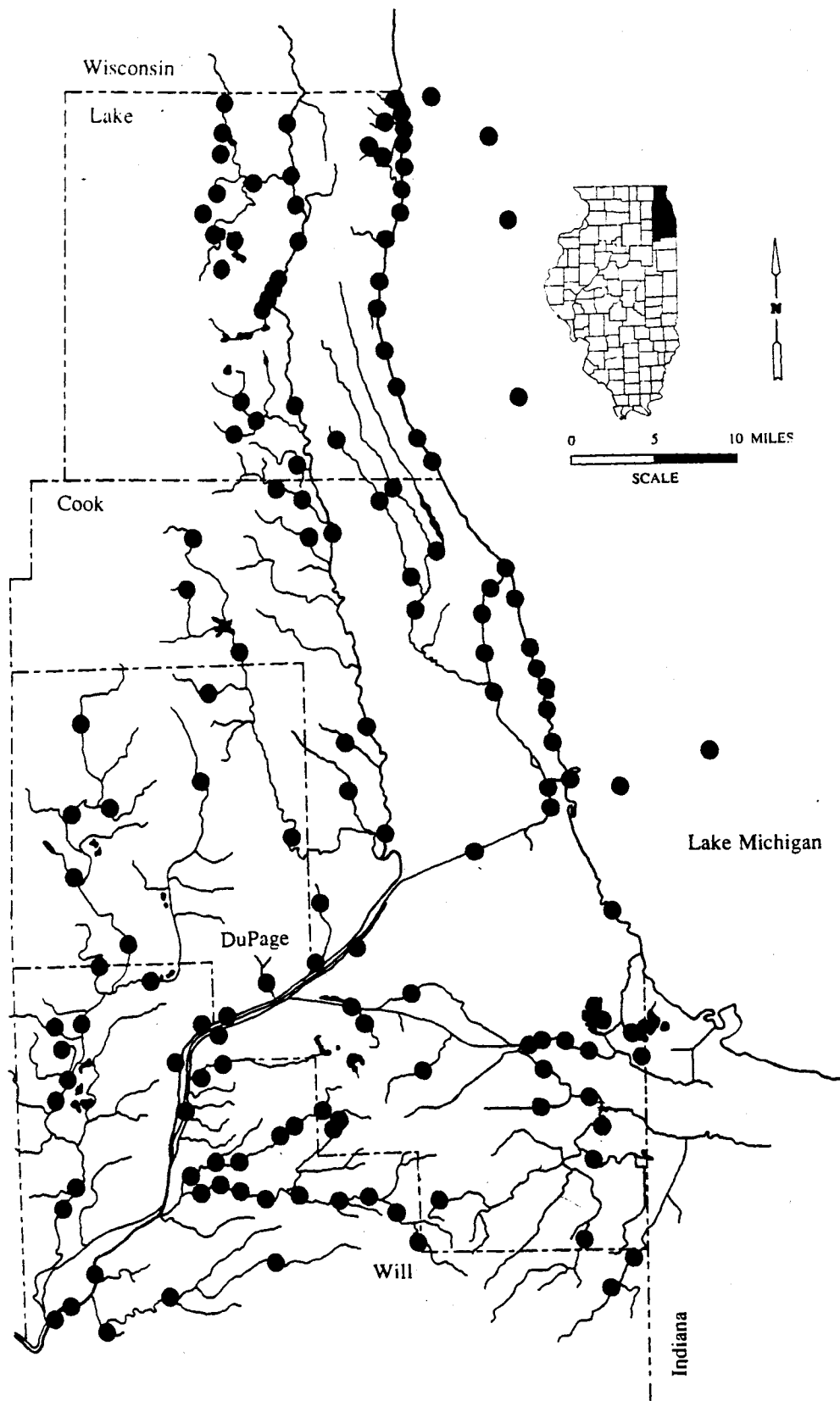


Figure 4-1. Map of fish collection sites in the Des Plaines River and Lake Michigan Tributaries represented in the Illinois Natural History Survey Fish Collection.

Table 4-1. Freshwater fishes recorded from the Des Plaines River System and Lake Michigan tributaries. Data from the Illinois Natural History Survey Fish Collection. SE = Illinois State Endangered; ST = Illinois State Threatened; I = Introduced.

PETROMYZONTIDAE	<i>Notropis chalybaeus</i> ST	<i>Aphredoderus sayanus</i>
<i>Petromyzon marinus</i>	<i>Notropis dorsalis</i>	ATHERINIDAE
CLUPEIDAE	<i>Notropis heterodon</i> ST	<i>Labidesthes sicculus</i>
<i>Alosa chrysochloris</i>	<i>Notropis heterolepis</i> ST	LOTIDAE
<i>Alosa pseudoharengus</i>	<i>Notropis hudsonius</i>	<i>Lota lota</i>
<i>Dorosoma cepedianum</i>	<i>Notropis ludibundus</i>	PERCOPSIDAE
SALMONIDAE	<i>Notropis rubellus</i>	<i>Percopsis omiscomaycus</i>
<i>Coregonus artedii</i> ST	<i>Notropis volucellus</i>	GASTEROSTEIDAE
<i>Coregonus clupeaformis</i> ST	<i>Phenacobius mirabilis</i>	<i>Culaea inconstans</i>
<i>Coregonus hoyi</i>	<i>Phoxinus erythrogaster</i>	<i>Gasterosteus aculeatus</i>
<i>Coregonus nigripinnis</i>	<i>Pimephales notatus</i>	<i>Pungitius pungitius</i>
<i>Oncorhynchus kisutch</i> I	<i>Pimephales promelas</i>	MORONIDAE
<i>Oncorhynchus mykiss</i>	<i>Rhinichthys cataractae</i>	<i>Morone americana</i> I
<i>Oncorhynchus tshawytscha</i> I	<i>Scardinius erythrophthalmus</i> I	<i>Morone chrysops</i>
<i>Salmo trutta</i>	<i>Semotilus atromaculatus</i>	<i>Morone mississippiensis</i>
<i>Salvelinus fontinalis</i>	CATOSTOMIDAE	CENTRARCHIDAE
<i>Salvelinus namaycush</i>	<i>Carpodes cyrinus</i>	<i>Ambloplites rupestris</i>
OSMERIDAE	<i>Catostomus catostomus</i> ST	<i>Chaenobryttus gulosus</i>
<i>Osmerus mordax</i>	<i>Catostomus commersoni</i>	<i>Lepomis cyanellus</i>
UMBRIDAE	<i>Erimyzon oblongus</i>	<i>Lepomis gibbosus</i>
<i>Umbra limi</i>	<i>Erimyzon sucetta</i>	<i>Lepomis humilis</i>
ESOCIDAE	<i>Hypentelium nigricans</i>	<i>Lepomis macrochirus</i>
<i>Esox americanus</i>	<i>Ictiobus bubalus</i>	<i>Lepomis megalotis</i>
<i>Esox lucius</i>	<i>Ictiobus niger</i>	<i>Micropterus dolomieu</i>
CYPRINIDAE	<i>Moxostoma erythrurum</i>	<i>Micropterus salmoides</i>
<i>Campostoma anomalum</i>	<i>Moxostoma valenciennesi</i> SE	<i>Pomoxis annularis</i>
<i>Campostoma oligolepis</i>	ICTALURIDAE	<i>Pomoxis nigromaculatus</i>
<i>Carassius auratus</i> I	<i>Ameiurus melas</i>	PERCIDAE
<i>Couesius plumbeus</i>	<i>Ameiurus natalis</i>	<i>Etheostoma caeruleum</i>
<i>Ctenopharyngodon idella</i> I	<i>Ameiurus nebulosus</i>	<i>Etheostoma exile</i> ST
<i>Cyprinella lutrensis</i>	<i>Ictalurus punctatus</i>	<i>Etheostoma flabellare</i>
<i>Cyprinella spiloptera</i>	<i>Noturus exilis</i>	<i>Etheostoma microperca</i>
<i>Cyprinus carpio</i> I	<i>Noturus flavus</i>	<i>Etheostoma nigrum</i>
<i>Hybognathus nuchalis</i>	<i>Noturus gyrinus</i>	<i>Etheostoma spectabile</i>
<i>Luxilus chrysocephalus</i>	CYPRINODONTIDAE	<i>Perca flavescens</i>
<i>Luxilus cornutus</i>	<i>Fundulus diaphanus</i> ST	<i>Percina caprodes</i>
<i>Lythrurus umbratilis</i>	<i>Fundulus dispar</i>	<i>Percina maculata</i>
<i>Nocomis biguttatus</i>	<i>Fundulus notatus</i>	COTTIDAE
<i>Notemigonus crysoleucas</i>	POECILIIDAE	<i>Cottus bairdi</i>
<i>Notropis atherinoides</i>	<i>Gambusia affinis</i>	<i>Cottus cognatus</i>
<i>Notropis blennioides</i>	APHREDODERIDAE	<i>Myoxocephalus thompsoni</i>

Total number of species = 103 (96 native, 7 introduced)

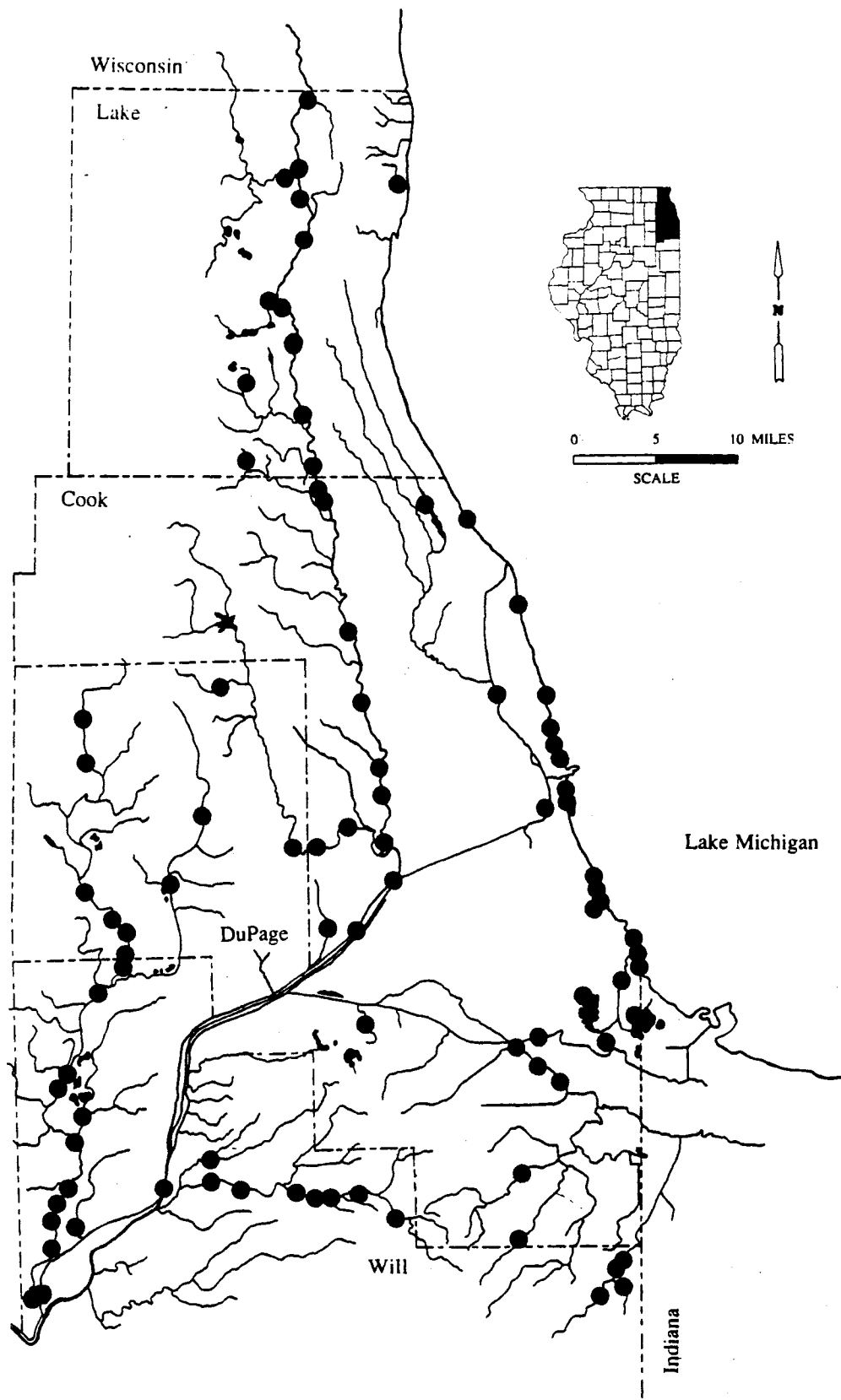


Figure 4-2. Map of mussel collection sites in the Des Plaines River and Lake Michigan Tributaries represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 4-2. Freshwater mussels recorded from the Des Plaines River System and Lake Michigan tributaries. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened; SC = State Candidate.

<i>Actinonaias ligamentina</i>	
<i>Alasmidonta marginata</i>	
<i>Alasmidonta viridis</i>	SE
<i>Amblema plicata</i>	
<i>Anodonta grandis</i>	
<i>Anodonta imbecillis</i>	
<i>Anodontooides ferussacianus</i>	
<i>Cumberlandia monodonta</i>	SE, FC
<i>Cyclonaias tuberculata</i>	
<i>Elliptio crassidens</i>	ST
<i>Elliptio dilatata</i>	SC
<i>Fusconaia flava</i>	
<i>Lampsilis cardium</i>	
<i>Lampsilis siliquoidea</i>	
<i>Lasmigona complanata</i>	
<i>Lasmigona compressa</i>	ST
<i>Lasmigona costata</i>	
<i>Leptodea fragilis</i>	
<i>Ligumia recta</i>	
<i>Obliquaria reflexa</i>	
<i>Plethobasus cyphus</i>	ST
<i>Pleurobema sintoxia</i>	
<i>Potamilus alatus</i>	
<i>Quadrula metanevra</i>	
<i>Quadrula pustulosa</i>	
<i>Quadrula quadrula</i>	
<i>Simpsonaias ambigua</i>	SE, FC
<i>Strophitus undulatus</i>	
<i>Toxolasma parvus</i>	
<i>Tritogonia verrucosa</i>	
<i>Truncilla donaciformis</i>	
<i>Truncilla truncata</i>	
<i>Venustaconcha ellipsiformis</i>	SC
<i>Villosa iris</i>	SE

Total number of species = 34.

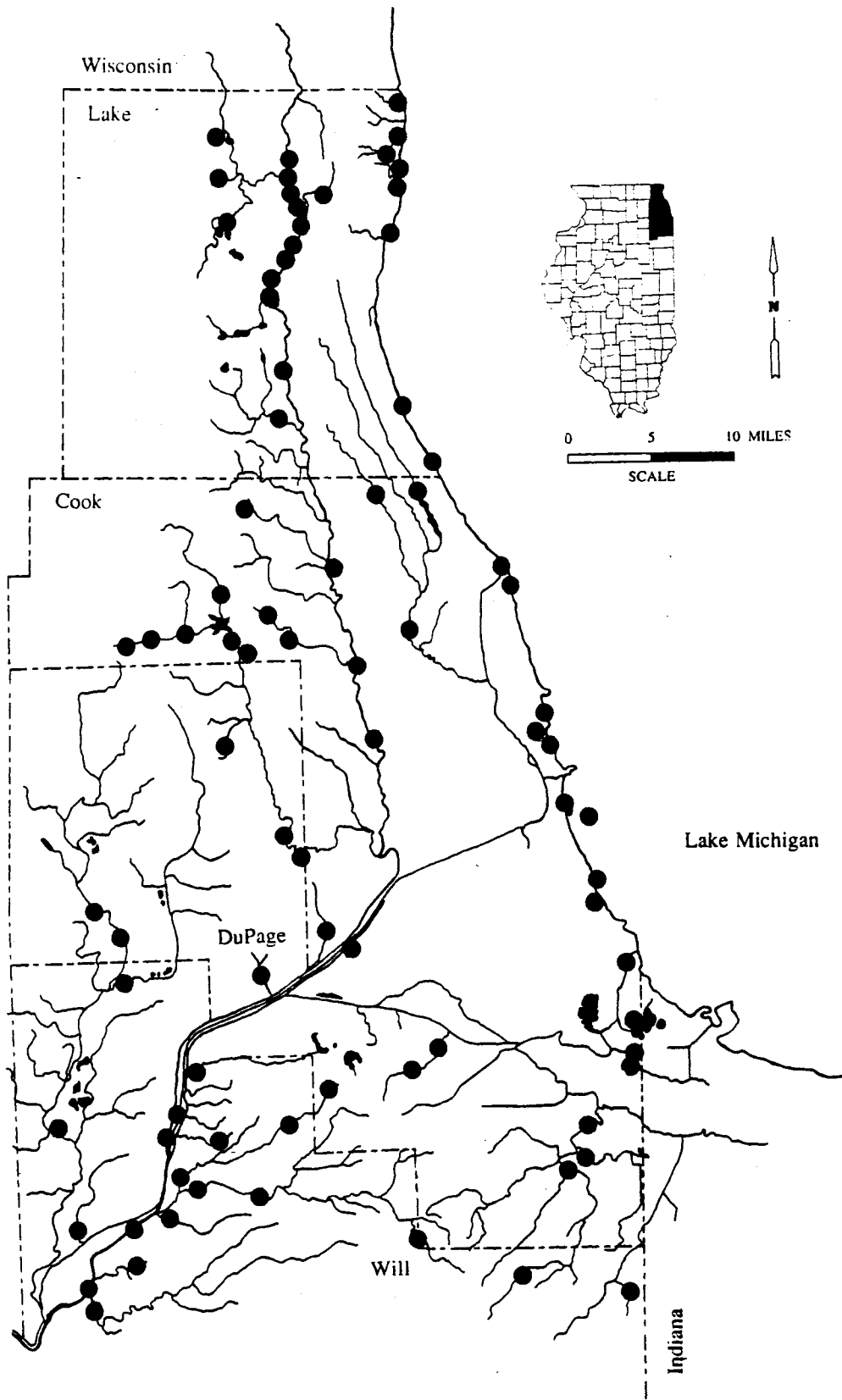


Figure 4-3. Map of crustacean collection sites in the Des Plaines River and Lake Michigan Tributaries represented in the Illinois Natural History Survey Crustacean Collection.

Table 4-3. Freshwater crustaceans recorded from the Des Plaines River System and Lake Michigan tributaries. Data from the Illinois Natural History Survey Crustacean Collection. I = Introduced species.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea forbesi
Caecidotea intermedia
Lirceus sp.

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Crangonyx gracilis
Crangonyx pseudogracilis
Gammarus fasciatus
Gammarus pseudolimnaeus

HAUSTORIIDAE

Pontoporeia affinis

HYALELLIDAE

Hyaella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

PALAEEMONIDAE

Palaemonetes kadiakensis

CAMBARIDAE

Cambarus diogenes
Orconectes immunis
Orconectes propinquus
Orconectes rusticus I
Orconectes virilis
Procambarus acutus
Procambarus gracilis

Total number of species = 17 (16 native, 1 introduced).

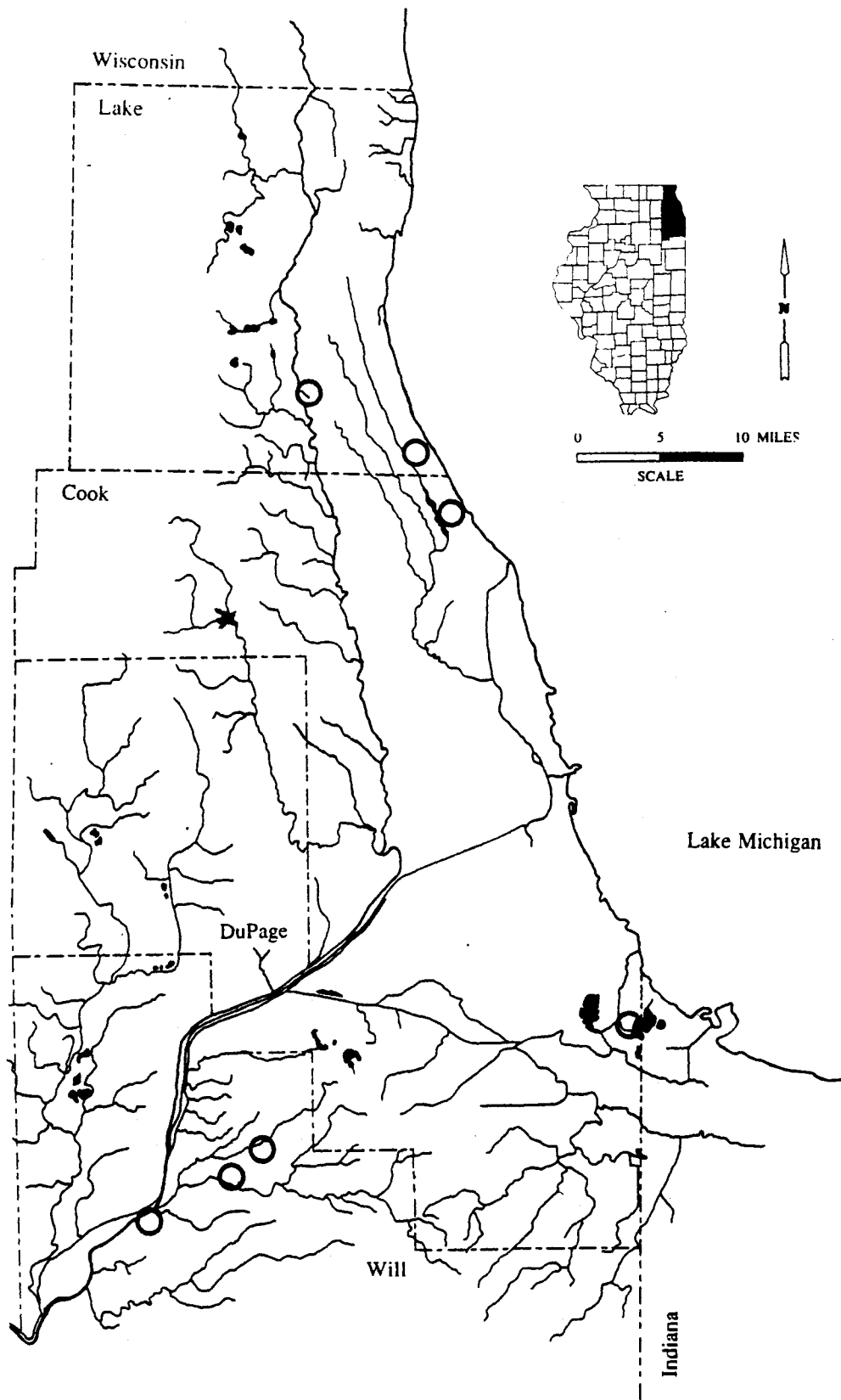


Figure 4-4. Map of historic (open symbols = pre-1980) populations of endangered lotic plants (circles) in the Des Plaines River and Lake Michigan Tributaries.

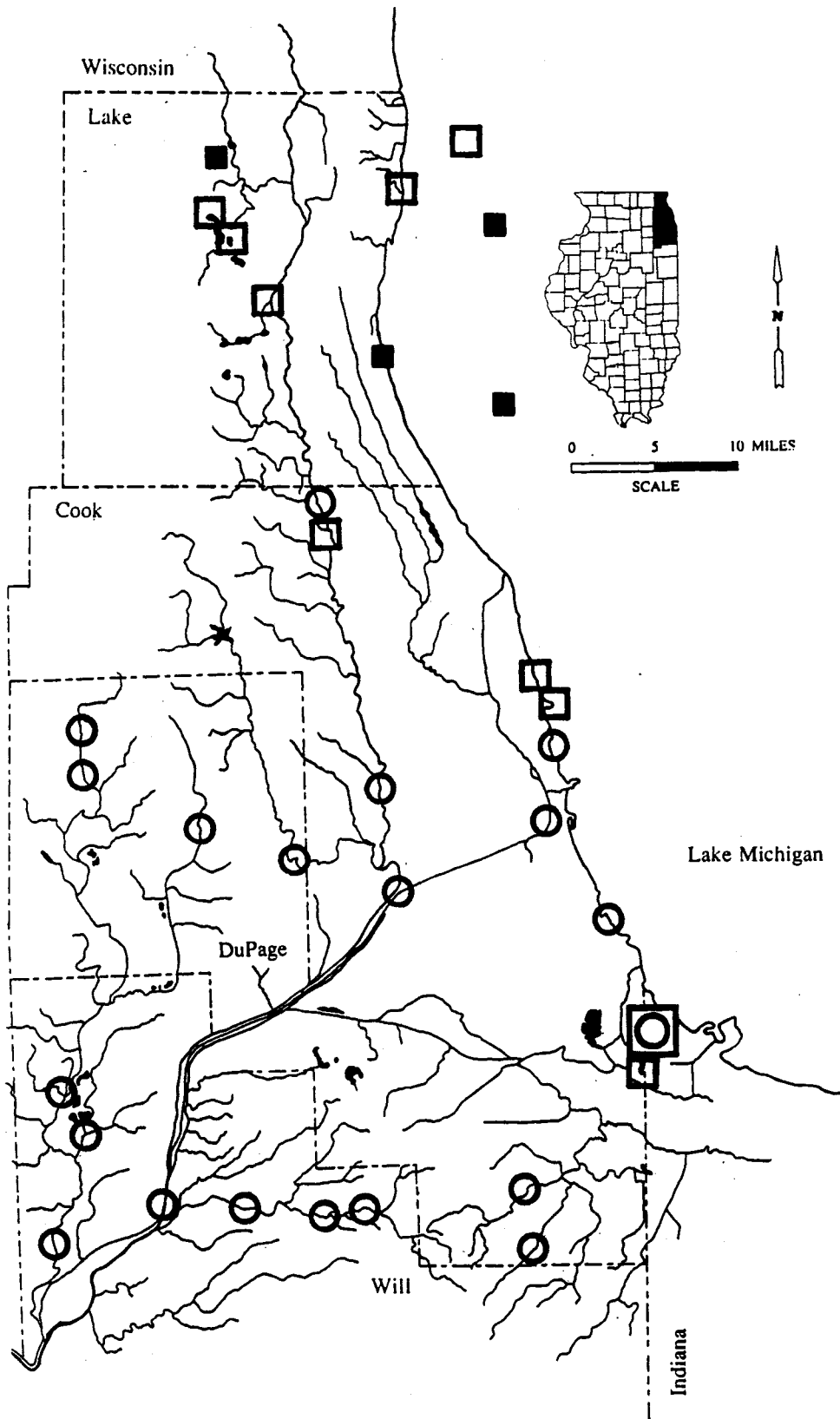
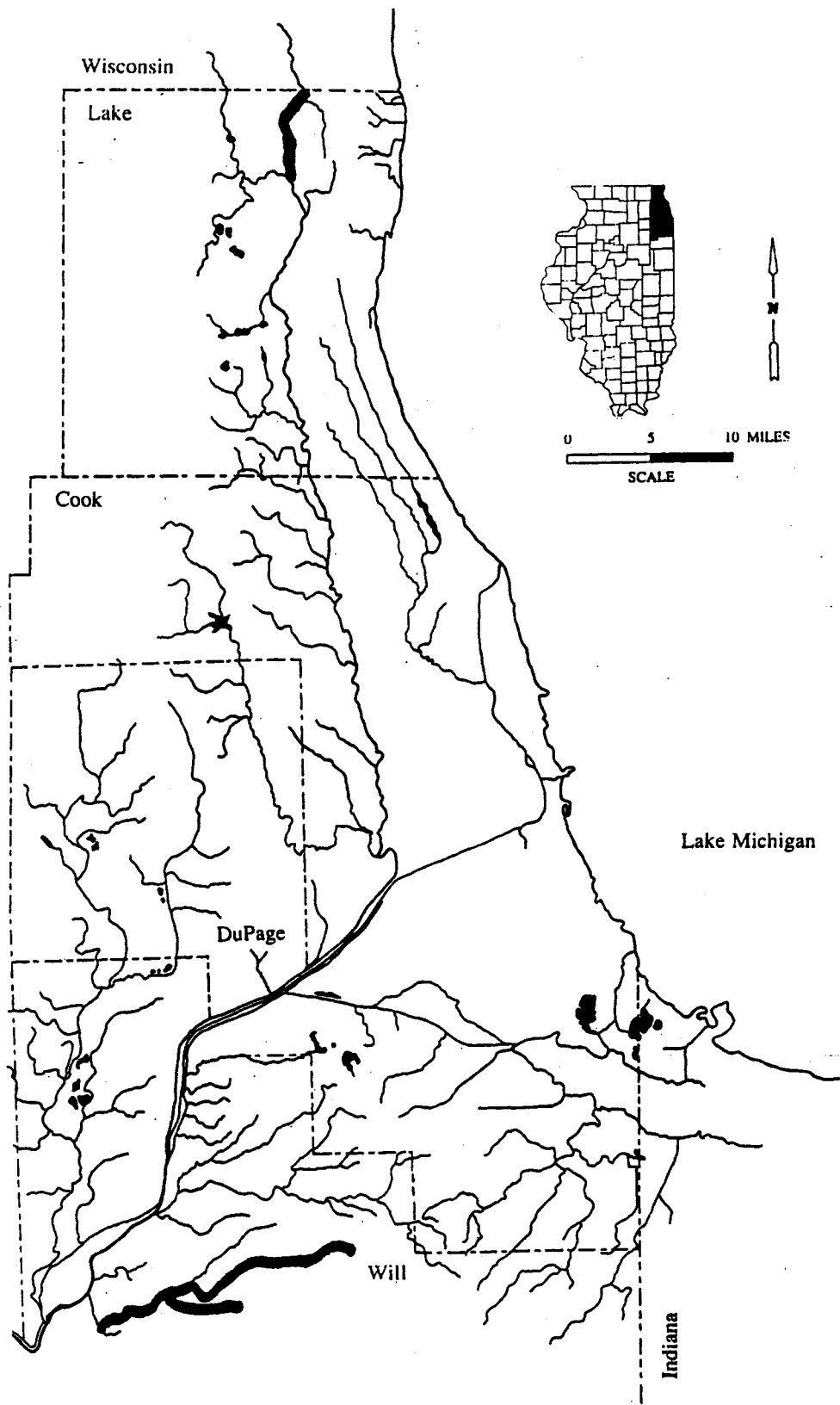
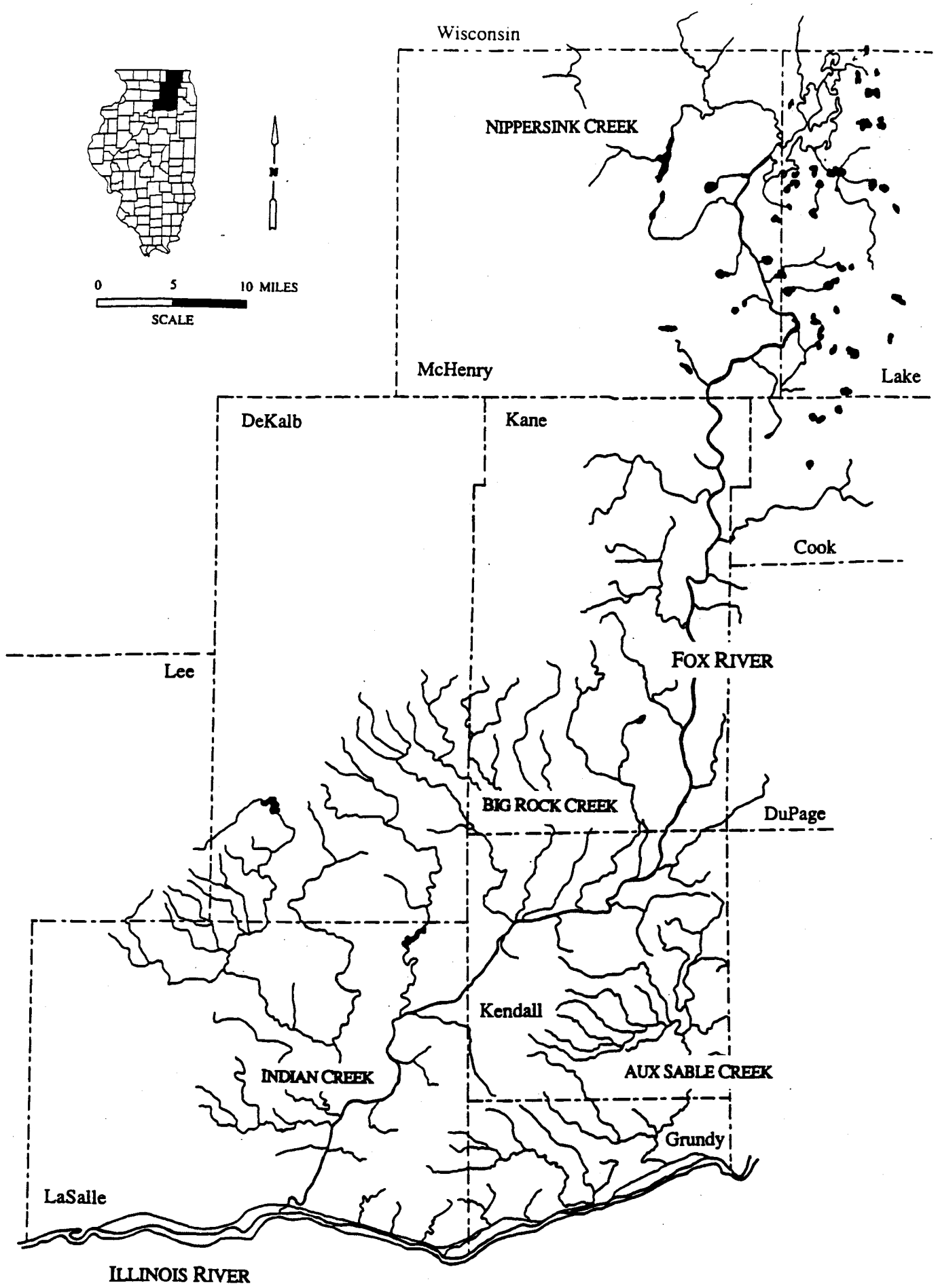


Figure 4-5. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered fishes (squares) and mussels (circles) in the Des Plaines River and Lake Michigan Tributaries.



4. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Des Plaines River and Lake Michigan Tributaries.



5. Fox River System

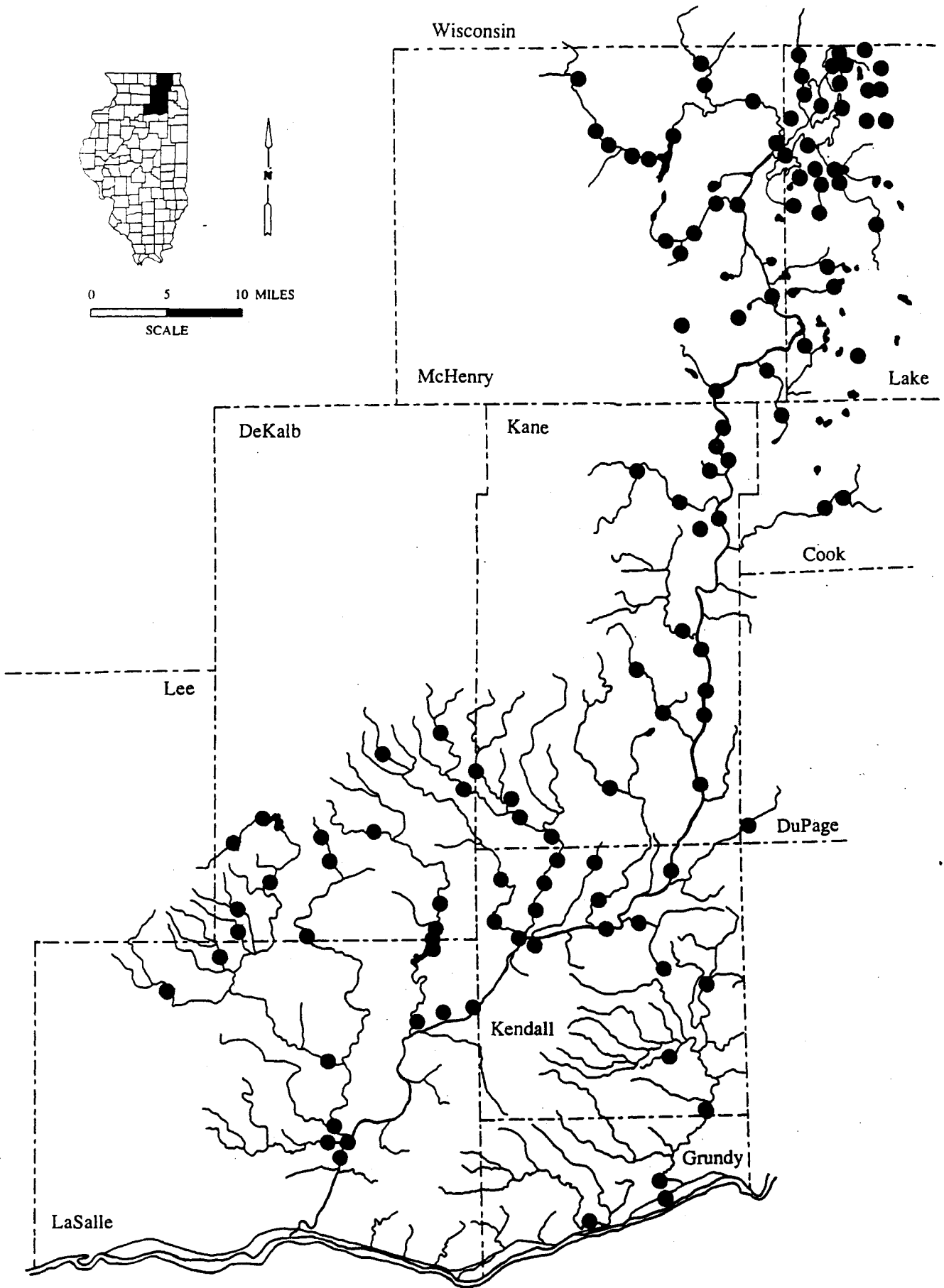


Figure 5-1. Map of fish collection sites in the Fox River System represented in the Illinois Natural History Survey Fish Collection.

Table 5-1. Freshwater fishes recorded from the Fox River System. Data from the Illinois Natural History Survey Fish Collection. SE = Illinois State Endangered; ST = Illinois State Threatened; I = Introduced.

PETROMYZONTIDAE	<i>Notropis rubellus</i>	<i>Fundulus dispar</i>
<i>Lampetra appendix</i>	<i>Notropis texanus</i> SE	<i>Fundulus notatus</i>
LEPISOSTEIDAE	<i>Notropis volucellus</i>	ATHERINIDAE
<i>Lepisosteus osseus</i>	<i>Opsopoeodus emiliae</i>	<i>Labidesthes sicculus</i>
AMIIDAE	<i>Phenacobius mirabilis</i>	GASTEROSTEIDAE
<i>Amia calva</i>	<i>Phoxinus erythrogaster</i>	<i>Culaea inconstans</i>
CLUPEIDAE	<i>Pimephales notatus</i>	MORONIDAE
<i>Dorosoma cepedianum</i>	<i>Pimephales promelas</i>	<i>Morone chrysops</i>
SALMONIDAE	<i>Pimephales vigilax</i>	<i>Morone mississippiensis</i>
<i>Oncorhynchus mykiss</i>	<i>Rhinichthys atratulus</i>	CENTRARCHIDAE
UMBRIDAE	<i>Scardinius erythrophthalmus</i> I	<i>Ambloplites rupestris</i>
<i>Umbra limi</i>	<i>Semotilus atromaculatus</i>	<i>Chaenobrytus gulosus</i>
ESOCIDAE	CATOSTOMIDAE	<i>Lepomis cyanellus</i>
<i>Esox americanus</i>	<i>Carpionodes carpio</i>	<i>Lepomis gibbosus</i>
<i>Esox lucius</i>	<i>Carpionodes cyprinus</i>	<i>Lepomis humilis</i>
CYPRINIDAE	<i>Carpionodes velifer</i>	<i>Lepomis macrochirus</i>
<i>Campostoma anomalum</i>	<i>Catostomus commersoni</i>	<i>Lepomis megalotis</i>
<i>Campostoma oligolepis</i>	<i>Erimyzon oblongus</i>	<i>Lepomis microlophus</i>
<i>Cyprinella lutrensis</i>	<i>Erimyzon succetta</i>	<i>Micropterus dolomieu</i>
<i>Cyprinella spiloptera</i>	<i>Hypentelium nigricans</i>	<i>Micropterus salmoides</i>
<i>Cyprinella whipplei</i>	<i>Ictiobus cyprinellus</i>	<i>Pomoxis annularis</i>
<i>Cyprinus carpio</i> I	<i>Minytrema melanops</i>	<i>Pomoxis nigromaculatus</i>
<i>Ericymba buccata</i>	<i>Moxostoma carinatum</i> ST	PERCIDAE
<i>Hybognathus hankinsoni</i>	<i>Moxostoma duquesnei</i>	<i>Etheostoma caeruleum</i>
<i>Hybognathus nuchalis</i>	<i>Moxostoma erythrurum</i>	<i>Etheostoma exile</i> ST
<i>Luxilus chrysocephalus</i>	<i>Moxostoma macrolepidotum</i>	<i>Etheostoma flabellare</i>
<i>Luxilus cornutus</i>	<i>Moxostoma valenciennesi</i> SE	<i>Etheostoma microperca</i>
<i>Lythrurus umbratilis</i>	ICTALURIDAE	<i>Etheostoma nigrum</i>
<i>Nocomis biguttatus</i>	<i>Ameiurus melas</i>	<i>Etheostoma spectabile</i>
<i>Notemigonus crysoleucas</i>	<i>Ameiurus natalis</i>	<i>Etheostoma zonale</i>
<i>Notropis anogenus</i> SE	<i>Ameiurus nebulosus</i>	<i>Perca flavescens</i>
<i>Notropis atherinoides</i>	<i>Ictalurus punctatus</i>	<i>Percina caprodes</i>
<i>Notropis dorsalis</i>	<i>Noturus exilis</i>	<i>Percina maculata</i>
<i>Notropis heterodon</i> ST	<i>Noturus flavus</i>	<i>Percina phoxocephala</i>
<i>Notropis heterolepis</i> ST	<i>Noturus gyrinus</i>	COTTIDAE
<i>Notropis hudsonius</i>	CYPRINODONTIDAE	<i>Cottus bairdi</i>
<i>Notropis ludibundus</i>	<i>Fundulus diaphanus</i> ST	

Total number of species = 93 (91 native, 2 introduced)

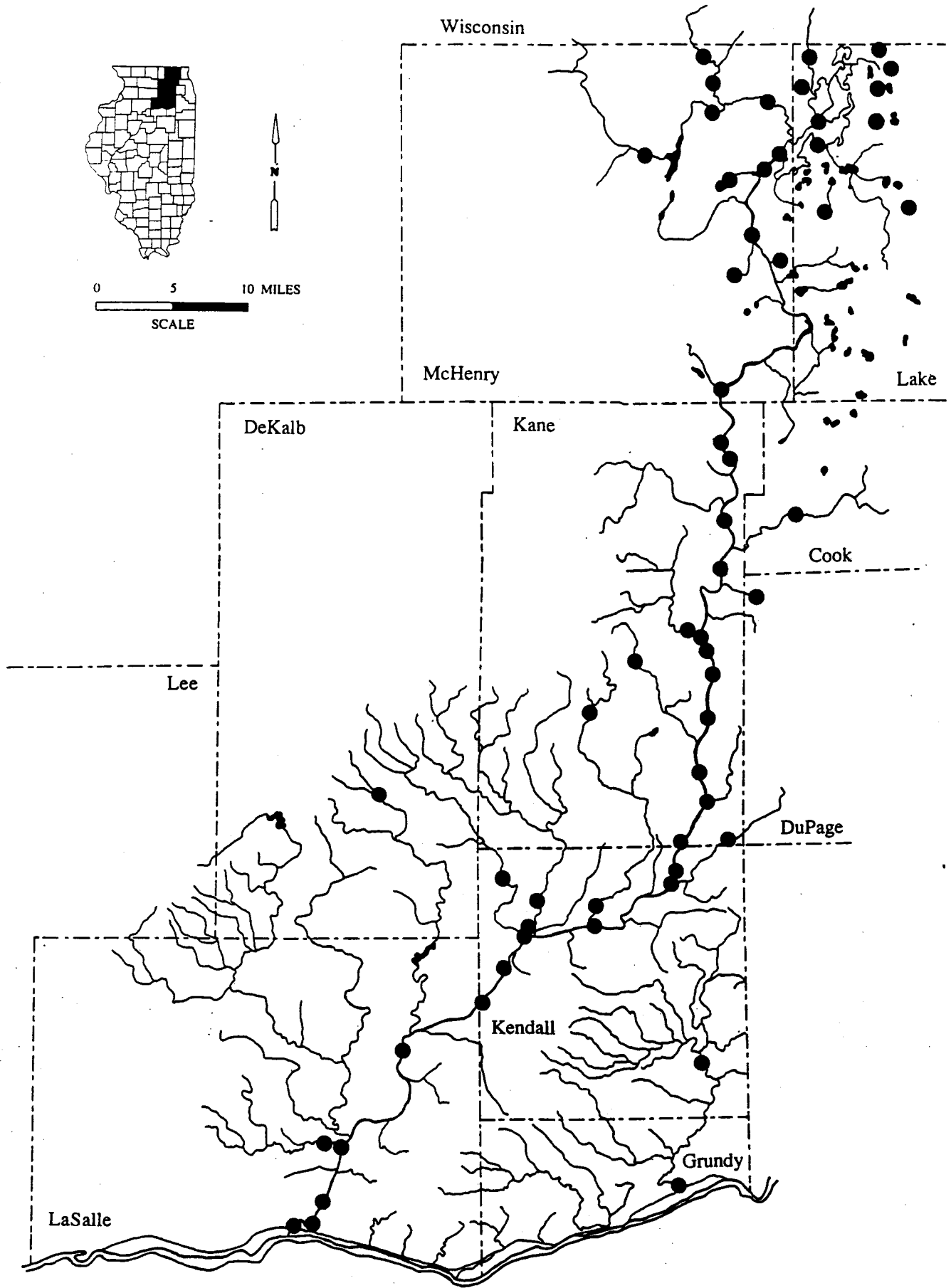


Figure 5-2. Map of mussel collection sites in the Fox River System represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 5-2. Freshwater mussels recorded from the Fox River System. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened; SC = State Candidate.

<i>Actinonaias ligamentina</i>	
<i>Alasmidonta marginata</i>	
<i>Alasmidonta viridis</i>	SE
<i>Amblema plicata</i>	
<i>Anodonta grandis</i>	
<i>Anodonta imbecillis</i>	
<i>Anodontooides ferussacianus</i>	
<i>Cyclonaias tuberculata</i>	
<i>Elliptio dilatata</i>	SC
<i>Fusconaia flava</i>	
<i>Lampsilis cardium</i>	
<i>Lampsilis fasciola</i>	SE
<i>Lampsilis siliquoidea</i>	
<i>Lasmigona complanata</i>	
<i>Lasmigona compressa</i>	ST
<i>Lasmigona costata</i>	
<i>Leptodea fragilis</i>	
<i>Ligumia recta</i>	
<i>Obovaria olivaria</i>	
<i>Plethobasus cyphus</i>	ST
<i>Pleurobema sintoxia</i>	
<i>Potamilus alatus</i>	
<i>Potamilus ohioensis</i>	
<i>Quadrula metanevra</i>	
<i>Quadrula pustulosa</i>	
<i>Quadrula quadrula</i>	
<i>Strophitus undulatus</i>	
<i>Toxolasma parvus</i>	
<i>Tritogonia verrucosa</i>	
<i>Venustaconcha ellipsiformis</i>	SC
<i>Villosa iris</i>	SE

Total number of species = 31.

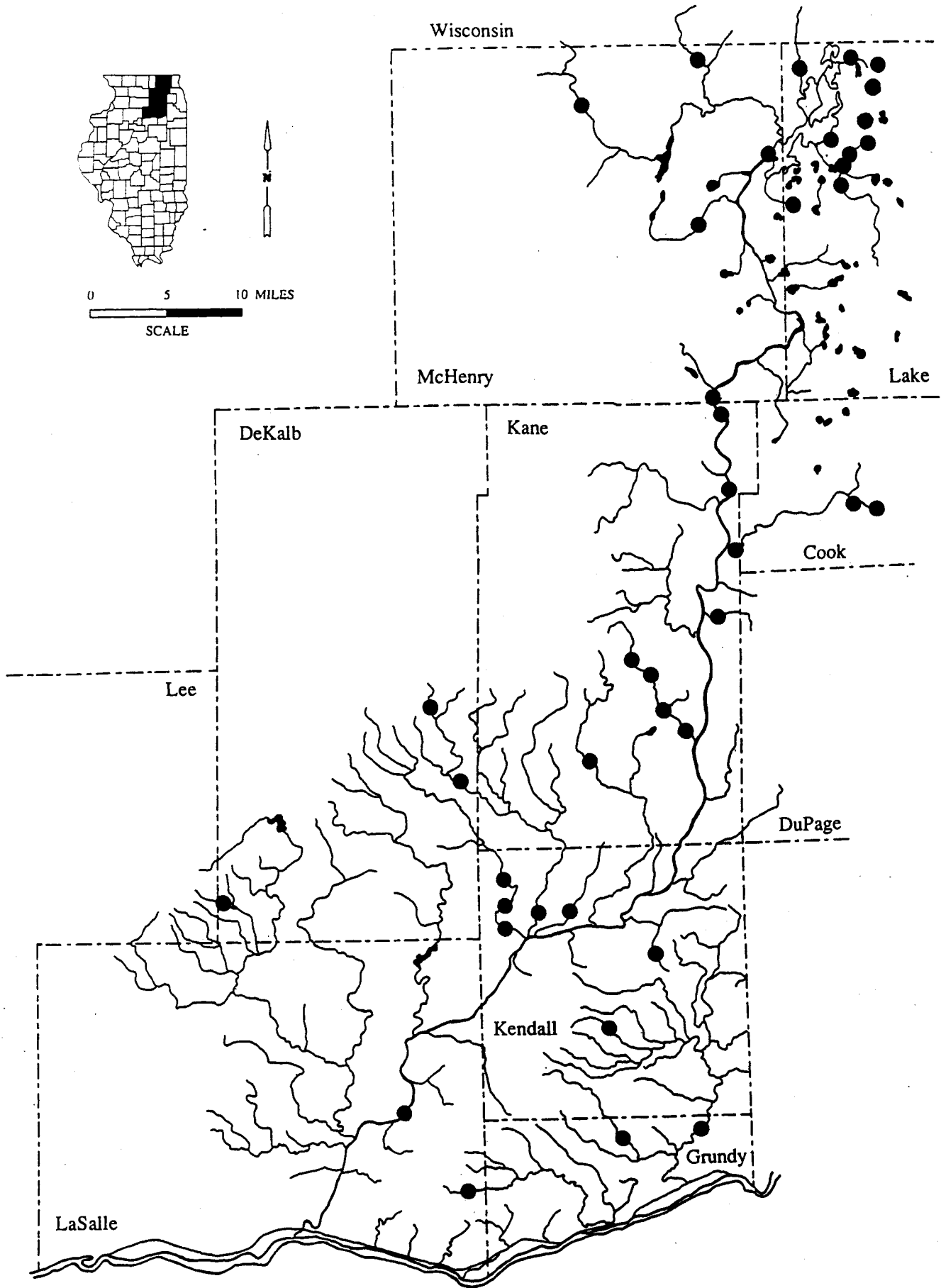


Figure 5-3. Map of crustacean collection sites in the Fox River System represented in the Illinois Natural History Survey Crustacean Collection.

Table 5-3. Freshwater crustaceans recorded from the Fox River System. Data from the Illinois Natural History Survey Crustacean Collection. I = Introduced Species.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea brevicauda

Caecidotea forbesi

Caecidotea intermedia

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Crangonyx gracilis

Crangonyx pseudogracilis

Gammarus pseudolimnaeus

HYALELLIDAE

Hyalella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

CAMBARIDAE

Cambarus diogenes

Orconectes immunis

Orconectes propinquus

Orconectes rusticus

I

Orconectes virilis

Procambarus acutus

Total number of species = 13 (12 native, 1 introduced)

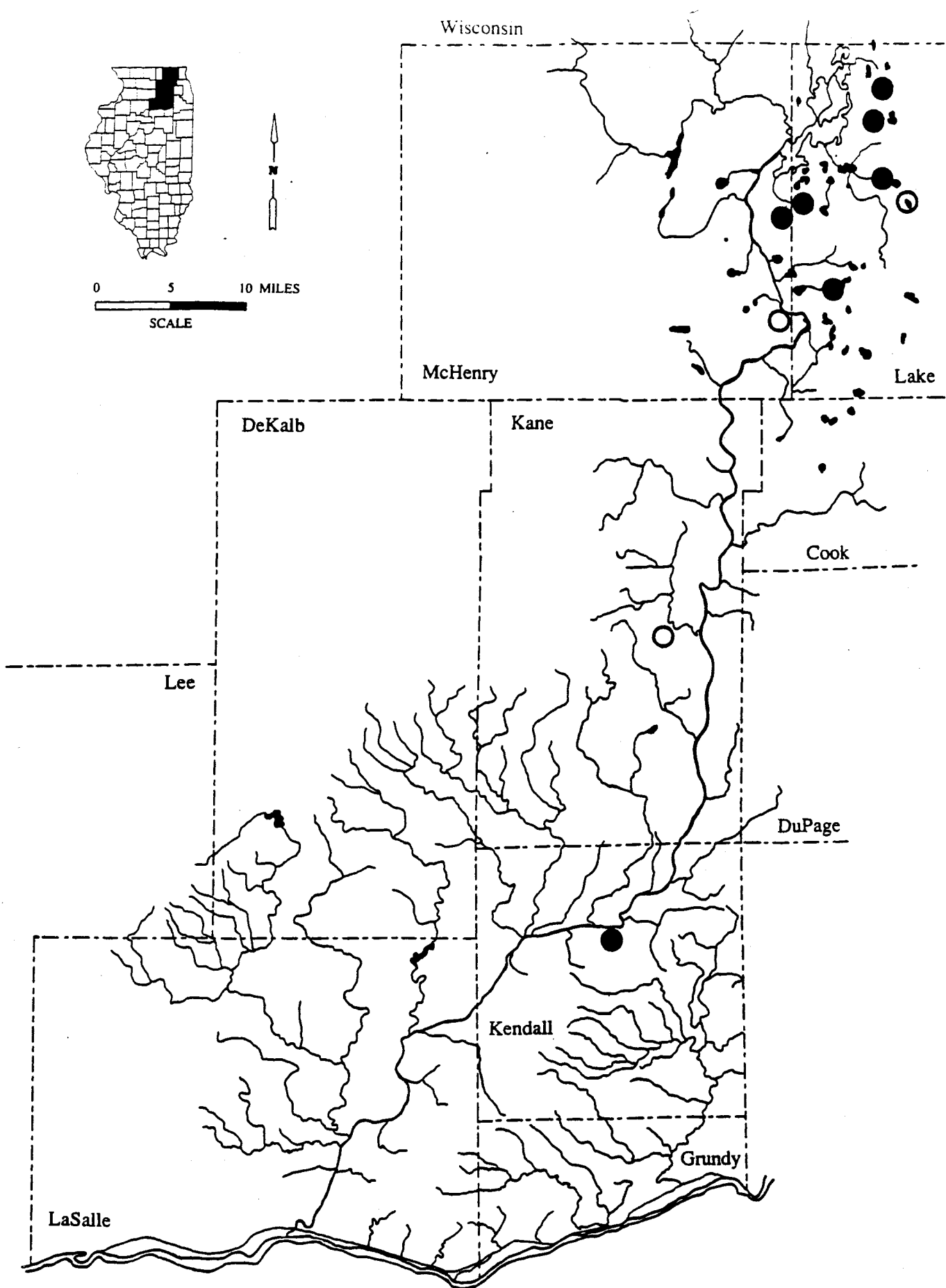


Figure 5-4. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of endangered lotic plants (circles) in the Fox River System.

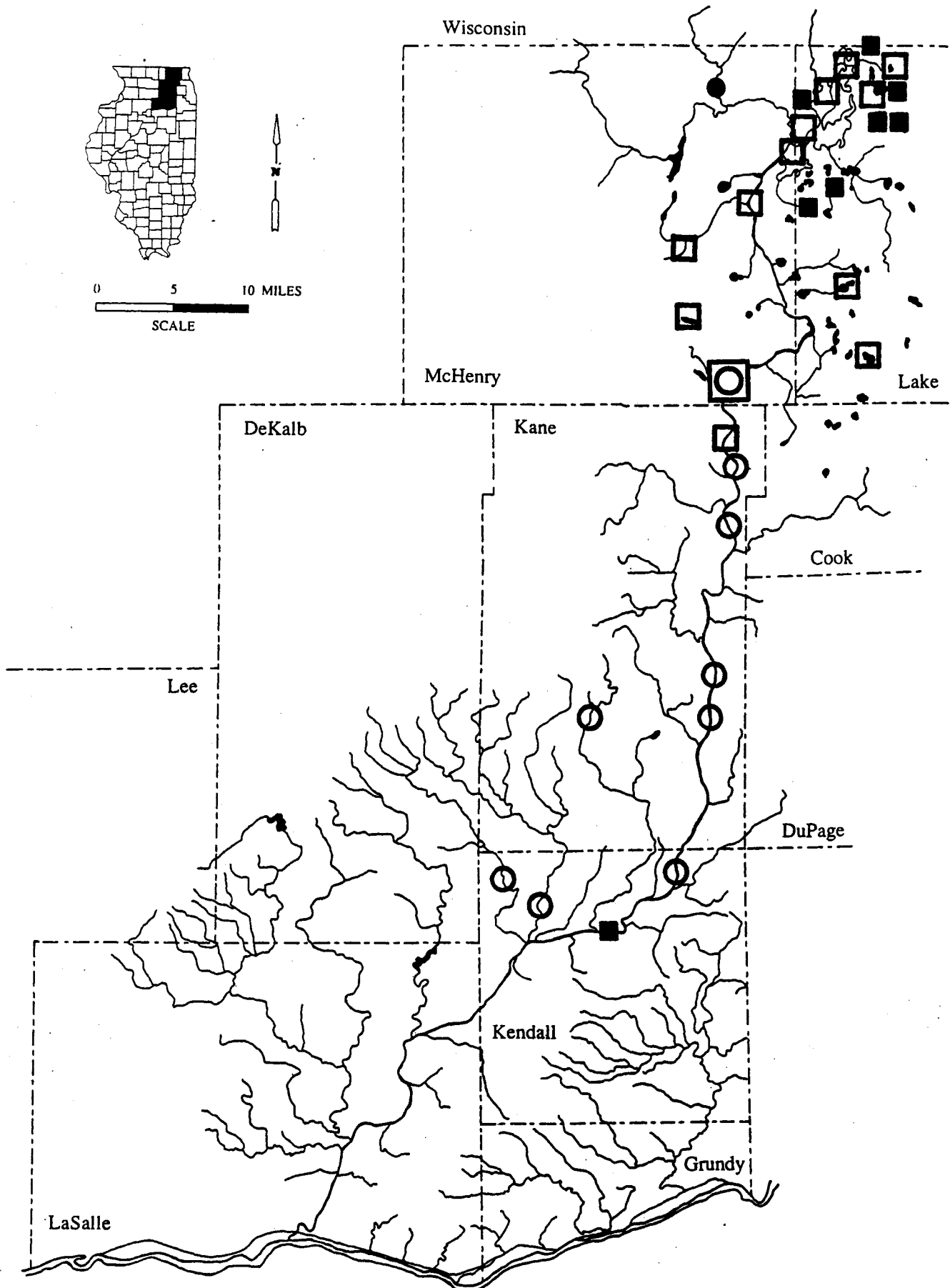
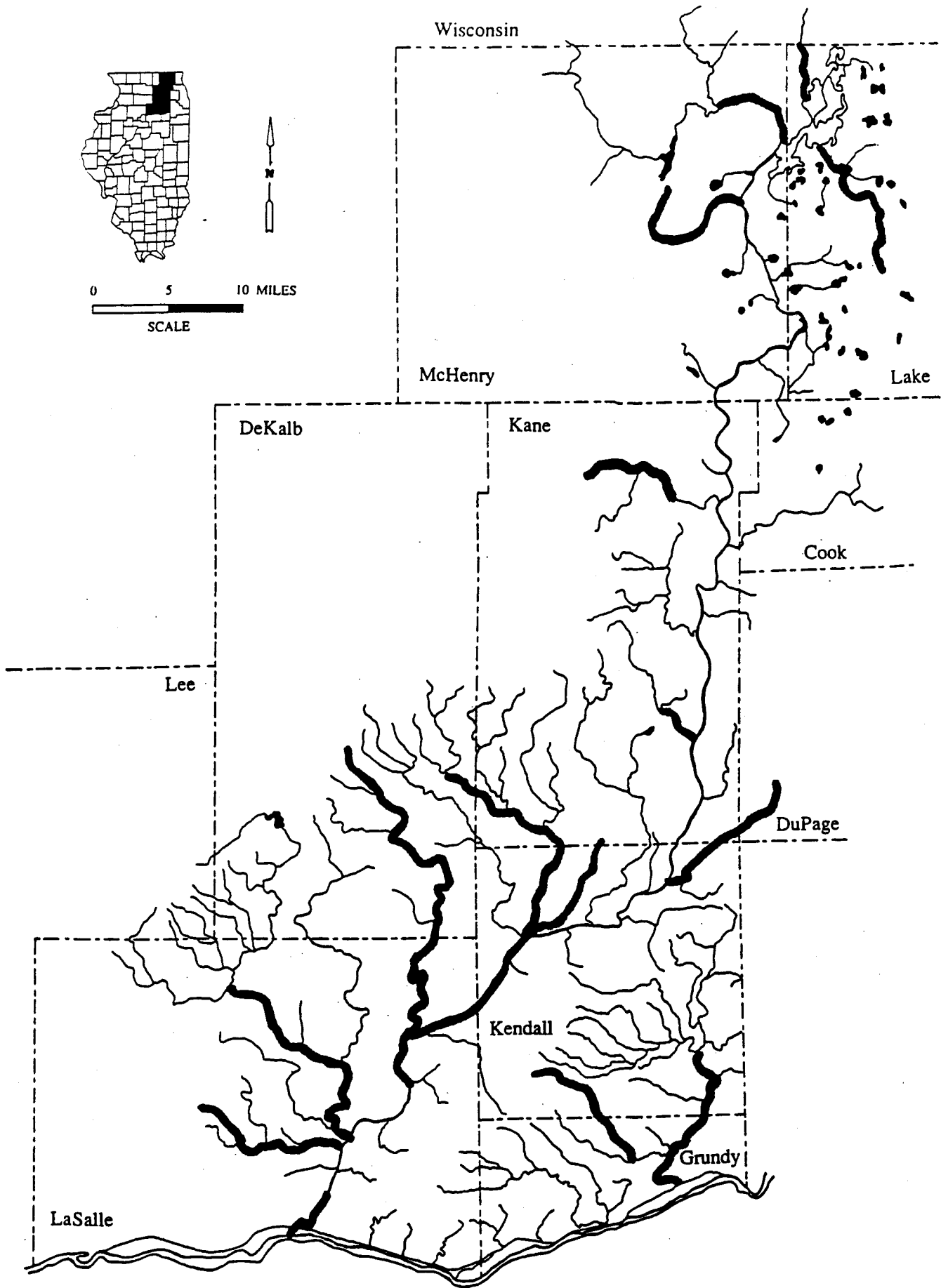
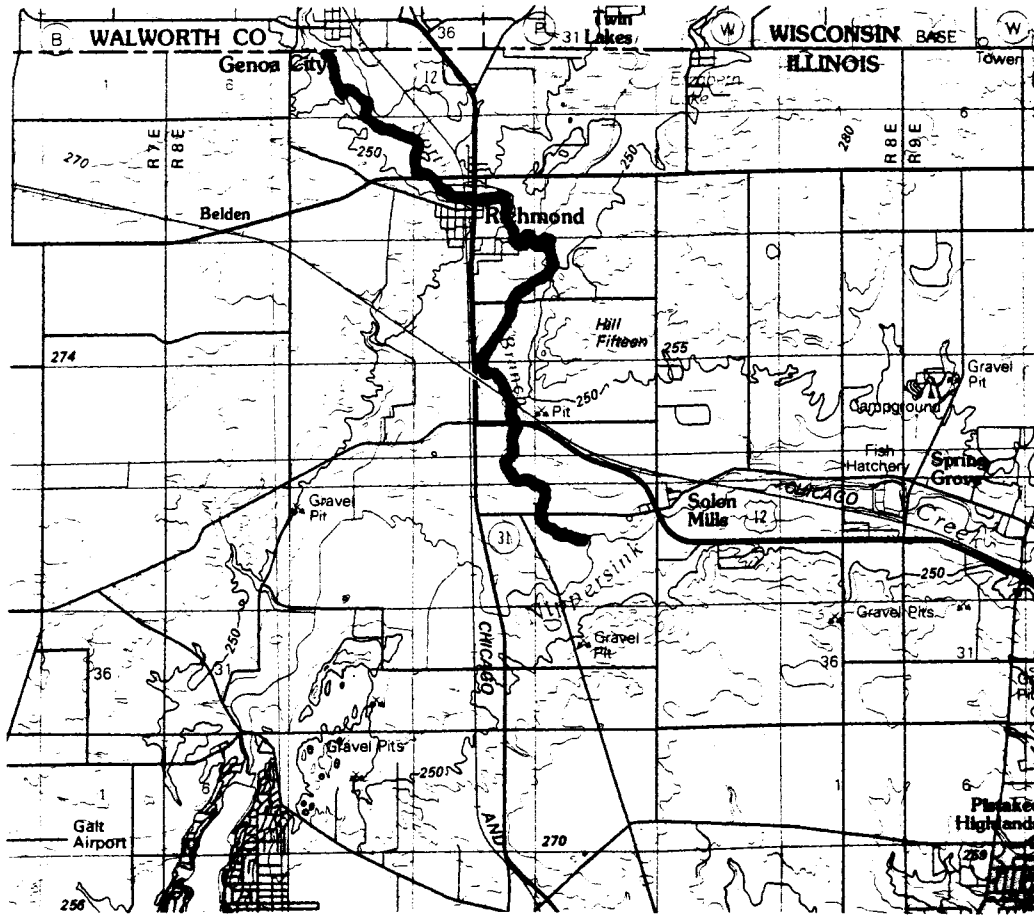


Figure 5-5. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered fishes (squares) and mussels (circles) in the Fox River System.

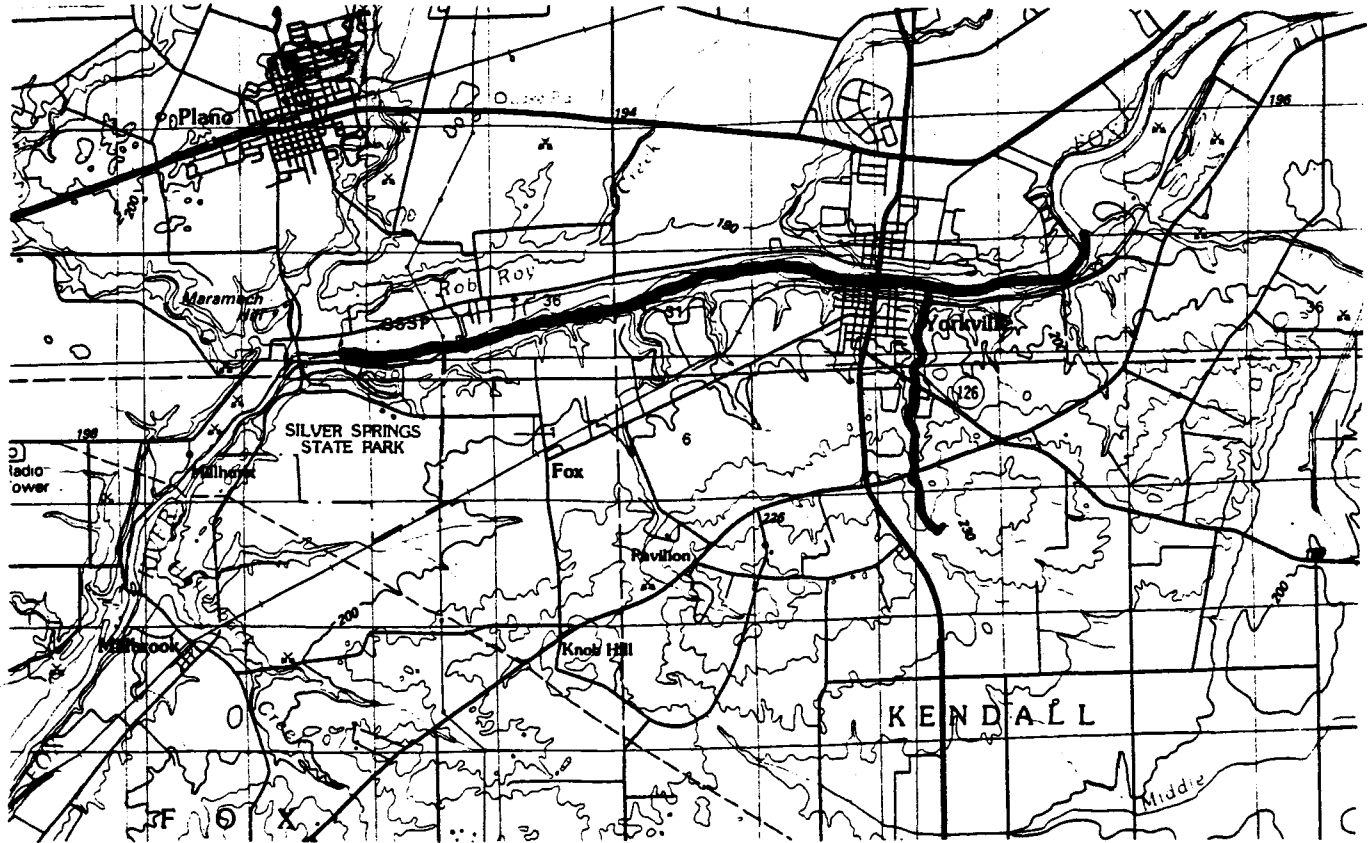


5. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Fox River System.



5. Fox River System (Elgin 1:100,000)

- North Branch Nippersink Creek, from Wisc. border to Nippersink Creek, McHenry Co.
 (creek heelsplitter)

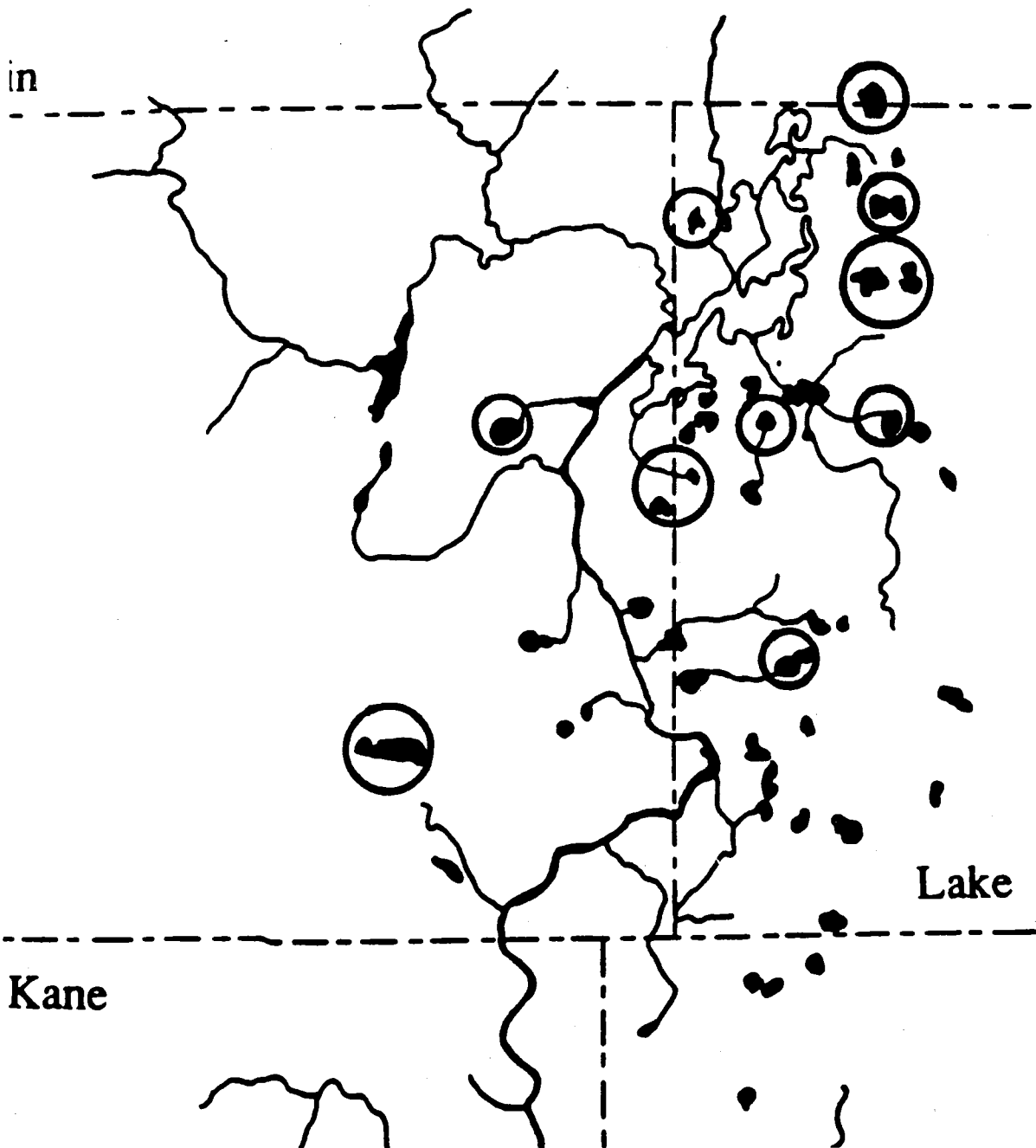


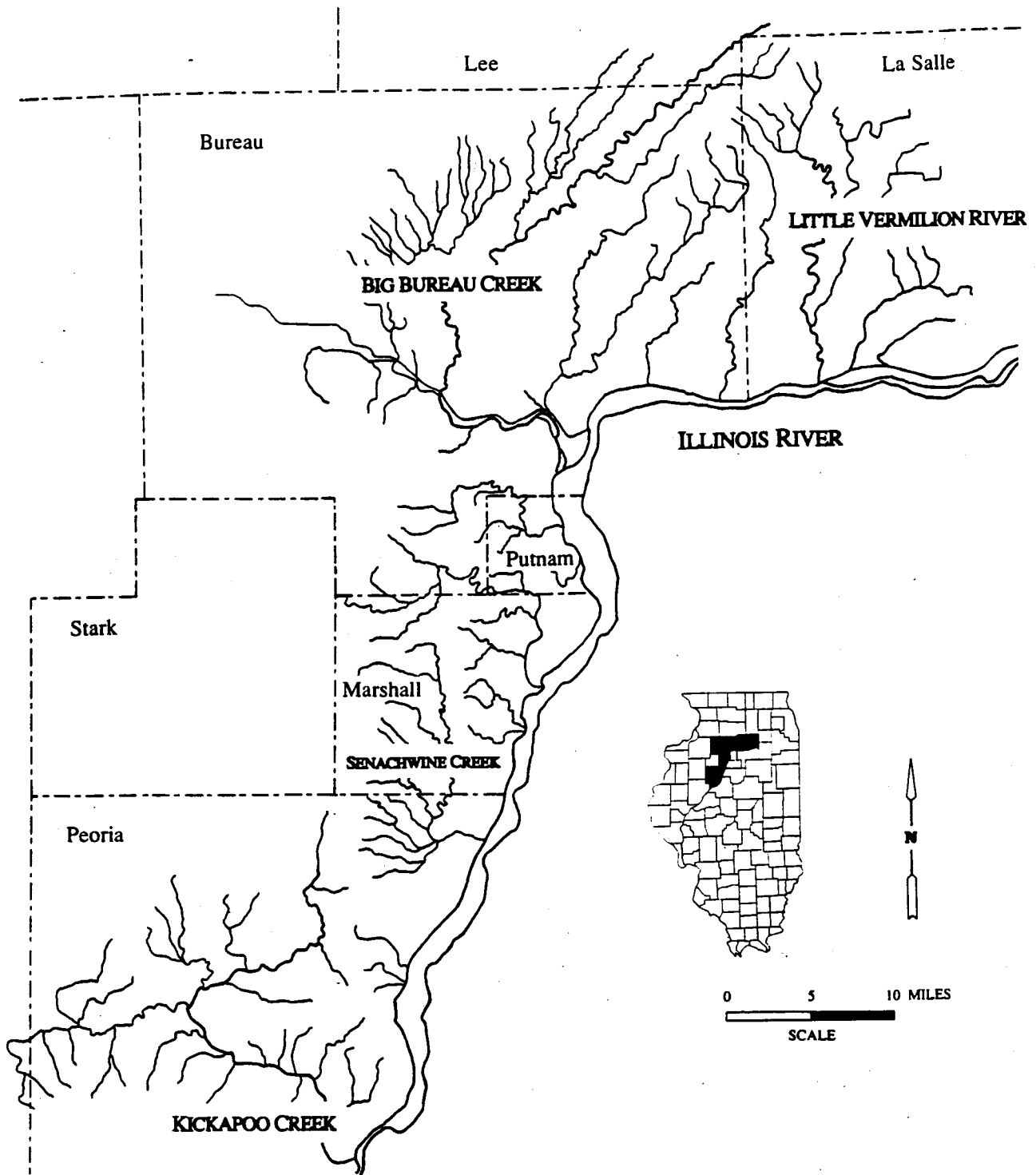
5. Fox River System (Aurora 1:100,000)

- Fox River, Morgan Creek to Rob Roy Creek, Kendall Co.
(greater redhorse, river redhorse)
- unnamed trib. to Fox River, at Yorkville, Kendall Co.
(heart-leaved plantain)

5. Fox River System

- Cedar Lake, Lake Co.
(blackchin shiner, blacknose shiner, banded killifish, Iowa darter, water marigold, grass-leaved pondweed, white-stemmed pondweed, fern pondweed)
- Cross Lake, Lake Co.
(pugnose shiner, blackchin shiner, blacknose shiner, banded killifish, Iowa darter).
- Deep Lake, Lake Co.
(pugnose shiner, blackchin shiner, banded killifish, white-stemmed pondweed)
- East Loon Lake, Lake Co.
(pugnose shiner, blackchin shiner, blacknose shiner, banded killifish)
- Loon Lake, Lake Co.
(grass-leaved pondweed, white-stemmed pondweed)
- Bangs Lake, Lake Co.
(grass-leaved pondweed, white stemmed pondweed)
- Sullivan Lake, Lake Co.
(blackchin shiner, grass-leaved pondweed)
- Wooster Lake, Lake Co.
(blackchin shiner, blacknose shiner)
- Lily Lake, McHenry Co.
(grass-leaved pondweed, fern pondweed)
- Turner Lake, Lake Co.
(Iowa darter)
- Round Lake, Lake Co.
(grass-leaved pondweed)
- Crystal Lake, McHenry Co.
(grass-leaved pondweed)
- McCullom Lake, McHenry Co.
(grass-leaved pondweed)





6. Little Vermilion River, Big Bureau and Kickapoo Creek Systems

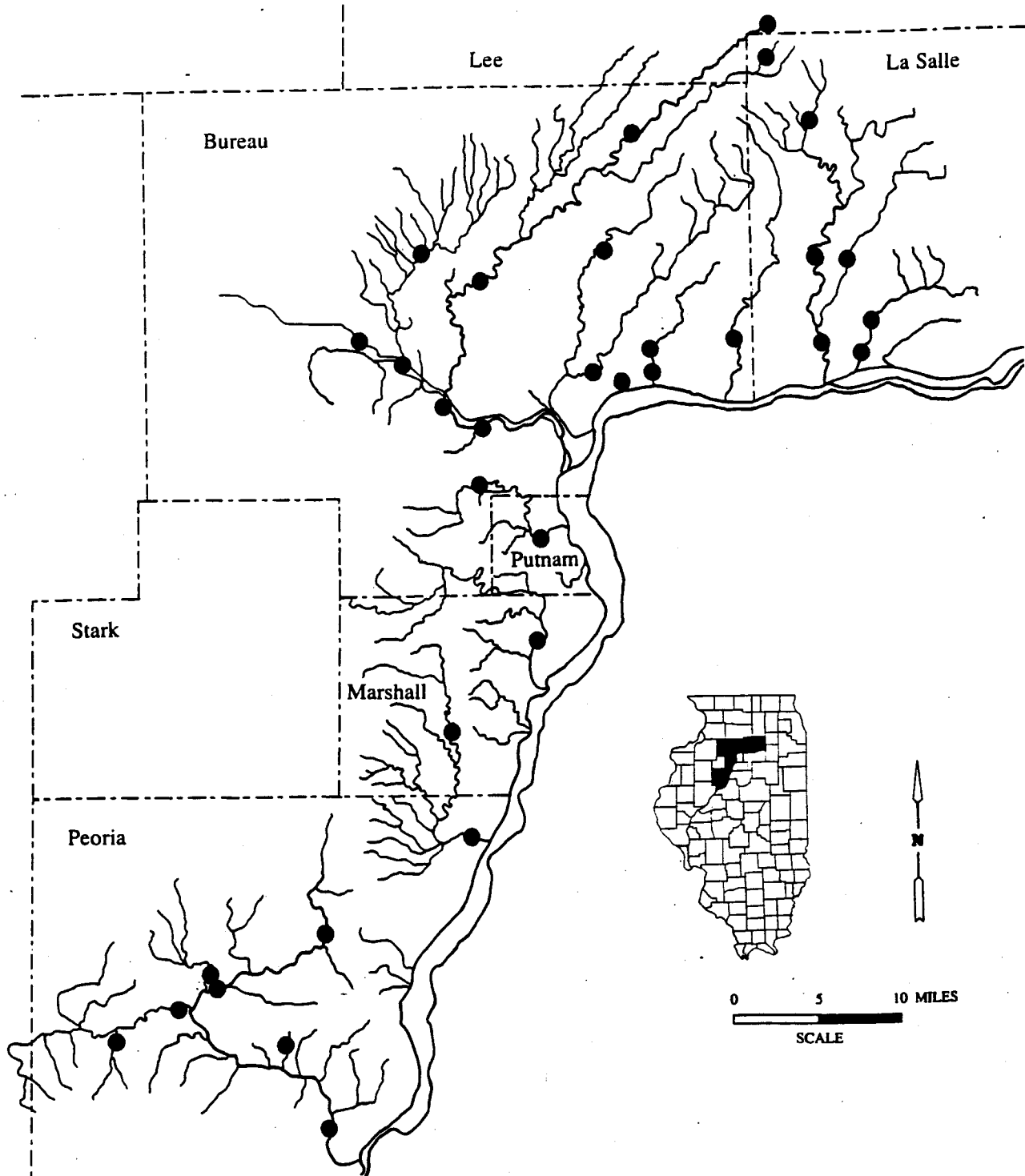


Figure 6-1. Map of fish collection sites in the Little Vermilion, Big Bureau and Kickapoo Creek Systems represented in the Illinois Natural History Survey Fish Collection.

Table 6-1. Freshwater fishes recorded from the Little Vermilion River, Kickapoo and Big Bureau Creek Systems. Data from the Illinois Natural History Survey Fish Collection. ST = Illinois State Threatened; I = Introduced.

POLYODONTIDAE	<i>Pimephales notatus</i>	CENTRARCHIDAE
<i>Polyodon spathula</i>	<i>Pimephales promelas</i>	<i>Ambloplites rupestris</i>
LEPISOSTEIDAE	<i>Pimephales vigilax</i>	<i>Chaenobryttus gulosus</i>
<i>Lepisosteus osseus</i>	<i>Rhinichthys atratulus</i>	<i>Lepomis cyanellus</i>
CLUPEIDAE	<i>Semotilus atromaculatus</i>	<i>Lepomis gibbosus</i>
<i>Dorosoma cepedianum</i>	CATOSTOMIDAE	<i>Lepomis humilis</i>
CYPRINIDAE	<i>Carpionodes carpio</i>	<i>Lepomis macrochirus</i>
<i>Campostoma anomalum</i>	<i>Carpionodes cyprinus</i>	<i>Lepomis megalotis</i>
<i>Campostoma oligolepis</i>	<i>Carpionodes velifer</i>	<i>Micropterus dolomieu</i>
<i>Carassius auratus</i> I	<i>Catostomus commersoni</i>	<i>Micropterus salmoides</i>
<i>Cyprinella lutrensis</i>	<i>Erimyzon sucetta</i>	<i>Pomoxis annularis</i>
<i>Cyprinella spiloptera</i>	<i>Hypentelium nigricans</i>	<i>Pomoxis nigromaculatus</i>
<i>Cyprinus carpio</i> I	<i>Minytrema melanops</i>	PERCIDAE
<i>Hybognathus nuchalis</i>	<i>Moxostoma duquesnei</i>	<i>Etheostoma asprigene</i>
<i>Luxilus chrysocephalus</i>	<i>Moxostoma erythrurum</i>	<i>Etheostoma caeruleum</i>
<i>Luxilus cornutus</i>	ICTALURIDAE	<i>Etheostoma exile</i> ST
<i>Lythrurus umbratilis</i>	<i>Ameiurus melas</i>	<i>Etheostoma flabellare</i>
<i>Nocomis biguttatus</i>	<i>Ameiurus natalis</i>	<i>Etheostoma nigrum</i>
<i>Notemigonus crysoleucas</i>	<i>Ameiurus nebulosus</i>	<i>Etheostoma spectabile</i>
<i>Notropis atherinoides</i>	<i>Ictalurus punctatus</i>	<i>Etheostoma squamiceps</i>
<i>Notropis blennioides</i>	<i>Noturus exilis</i>	<i>Etheostoma zonale</i>
<i>Notropis buechanani</i>	<i>Noturus flavus</i>	<i>Percina caprodes</i>
<i>Notropis dorsalis</i>	<i>Noturus gyrinus</i>	<i>Percina maculata</i>
<i>Notropis heterolepis</i> ST	CYPRINODONTIDAE	<i>Percina phoxocephala</i>
<i>Notropis hudsonius</i>	<i>Fundulus notatus</i>	SCIAENIDAE
<i>Notropis ludibundus</i>	ATHERINIDAE	<i>Aplodinotus grunniens</i>
<i>Notropis rubellus</i>	<i>Labidesthes sicculus</i>	COTTIDAE
<i>Phenacobius mirabilis</i>	PERCOPSIDAE	<i>Cottus bairdi</i>
<i>Phoxinus erythrogaster</i>	<i>Percopsis omiscomaycus</i>	

Total number of species = 73 (71 native, 2 introduced)

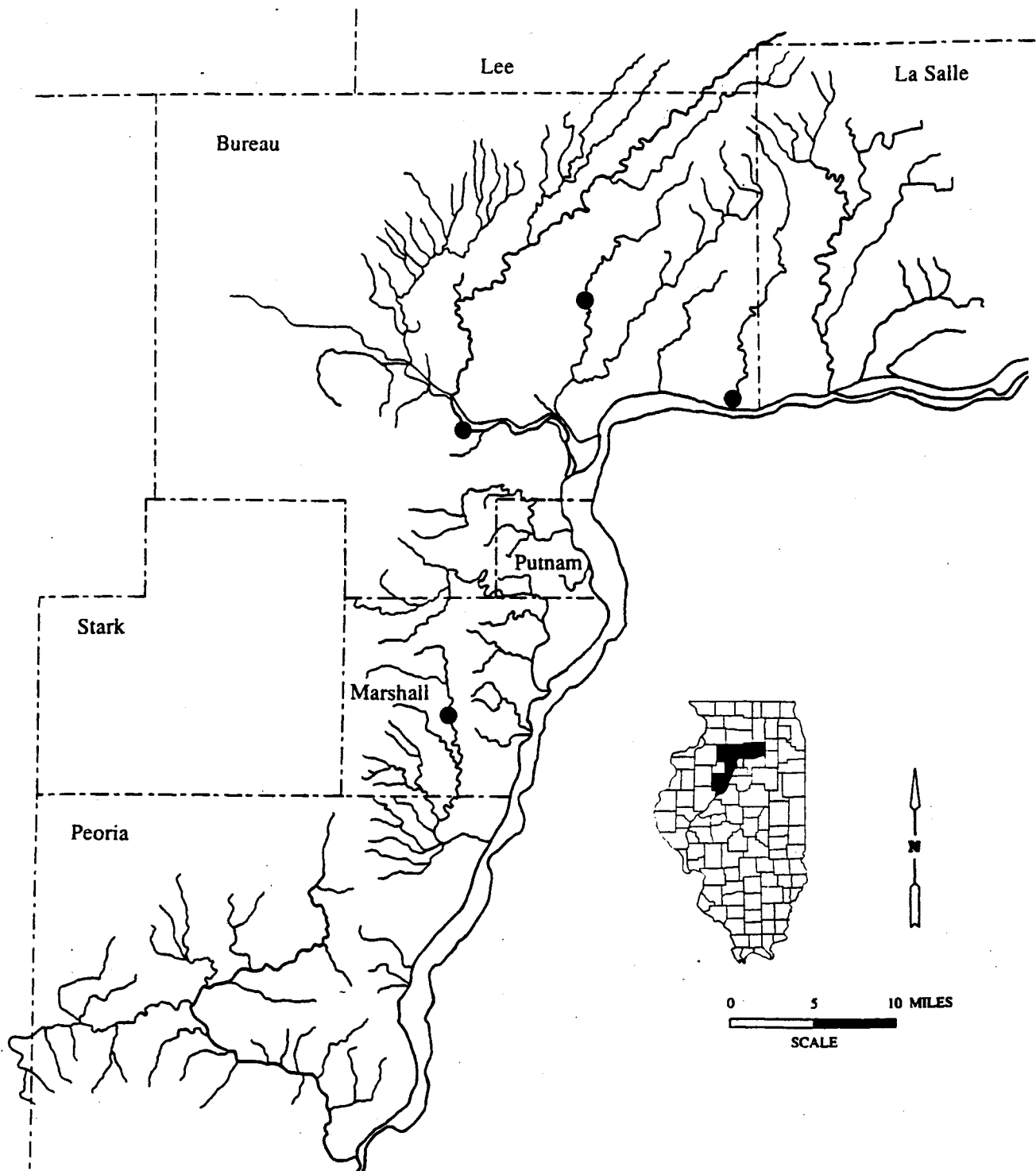


Figure 6-2. Map of mussel collection sites in the Little Vermilion, Big Bureau and Kickapoo Creek Systems represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 6-2. Freshwater mussels recorded from the Little Vermilion River, Kickapoo and Big Bureau Creek Systems. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. ST = Illinois State Threatened; SC = State Candidate.

<i>Anodonta grandis</i>	
<i>Anodontoides ferussacianus</i>	
<i>Lampsilis siliquoidea</i>	
<i>Leptodea fragilis</i>	
<i>Toxolasma parvus</i>	
<i>Unio merus tetralasmus</i>	ST
<i>Venustaconcha ellipsiformis</i>	SC

Total number of species = 7.

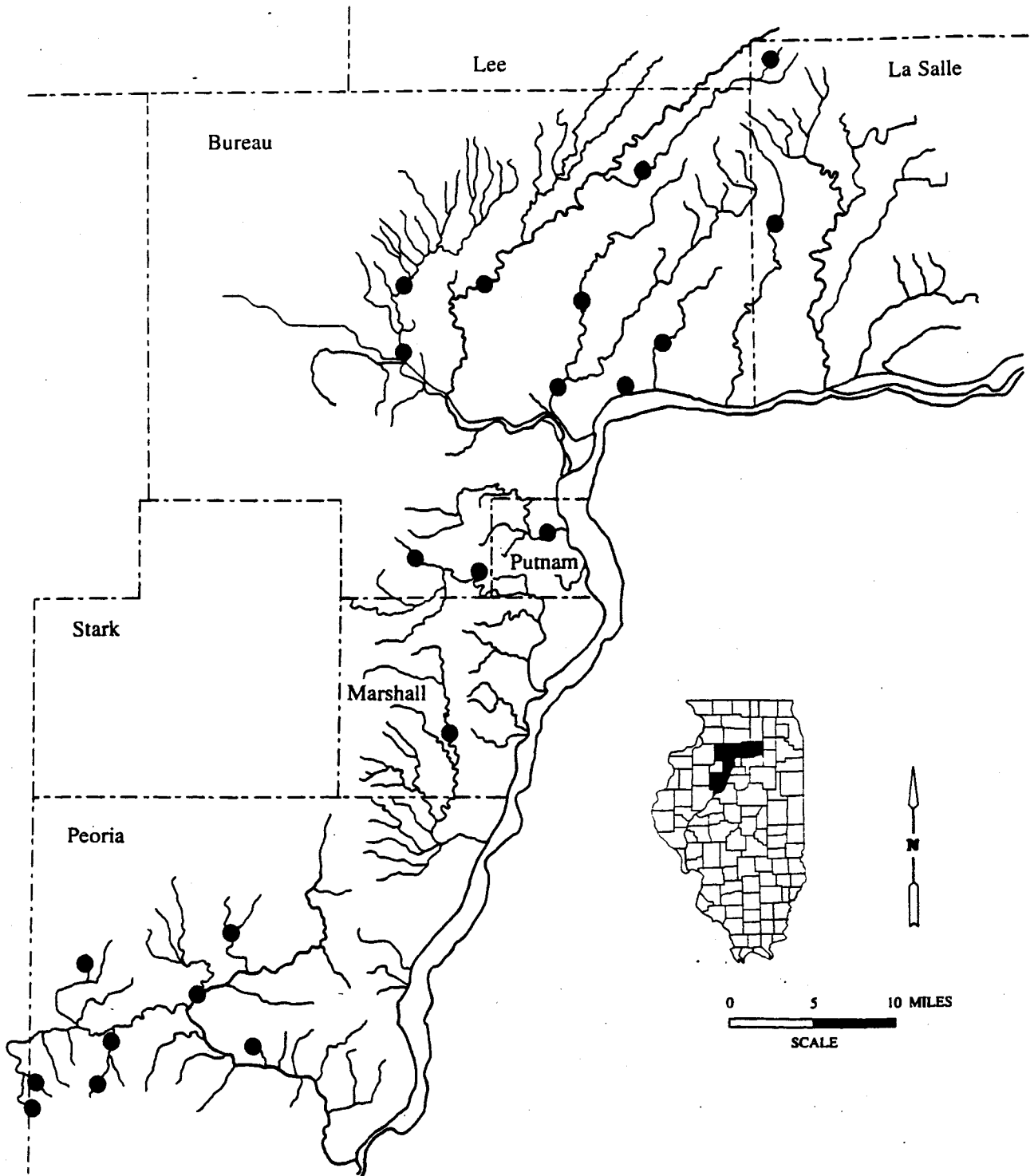


Figure 6-3. Map of crustacean collection sites in the Little Vermilion, Big Bureau and Kickapoo Creek Systems represented in the Illinois Natural History Survey Crustacean Collection.

Table 6-3. Freshwater crustaceans recorded from the Little Vermilion River, Kickapoo and Big Bureau Creek Systems. Data from the Illinois Natural History Survey Crustacean Collection.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea intermedia
Caecidotea kendeighi

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Bactrurus mucronatus
Gammarus pseudolimnaeus

HYALELLIDAE

Hyaella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

PALAEMONIDAE

Palaemonetes kadiakensis

CAMBARIDAE

Cambarus diogenes
Orconectes propinquus
Orconectes virilis
Procambarus gracilis

Total number of species = 10.

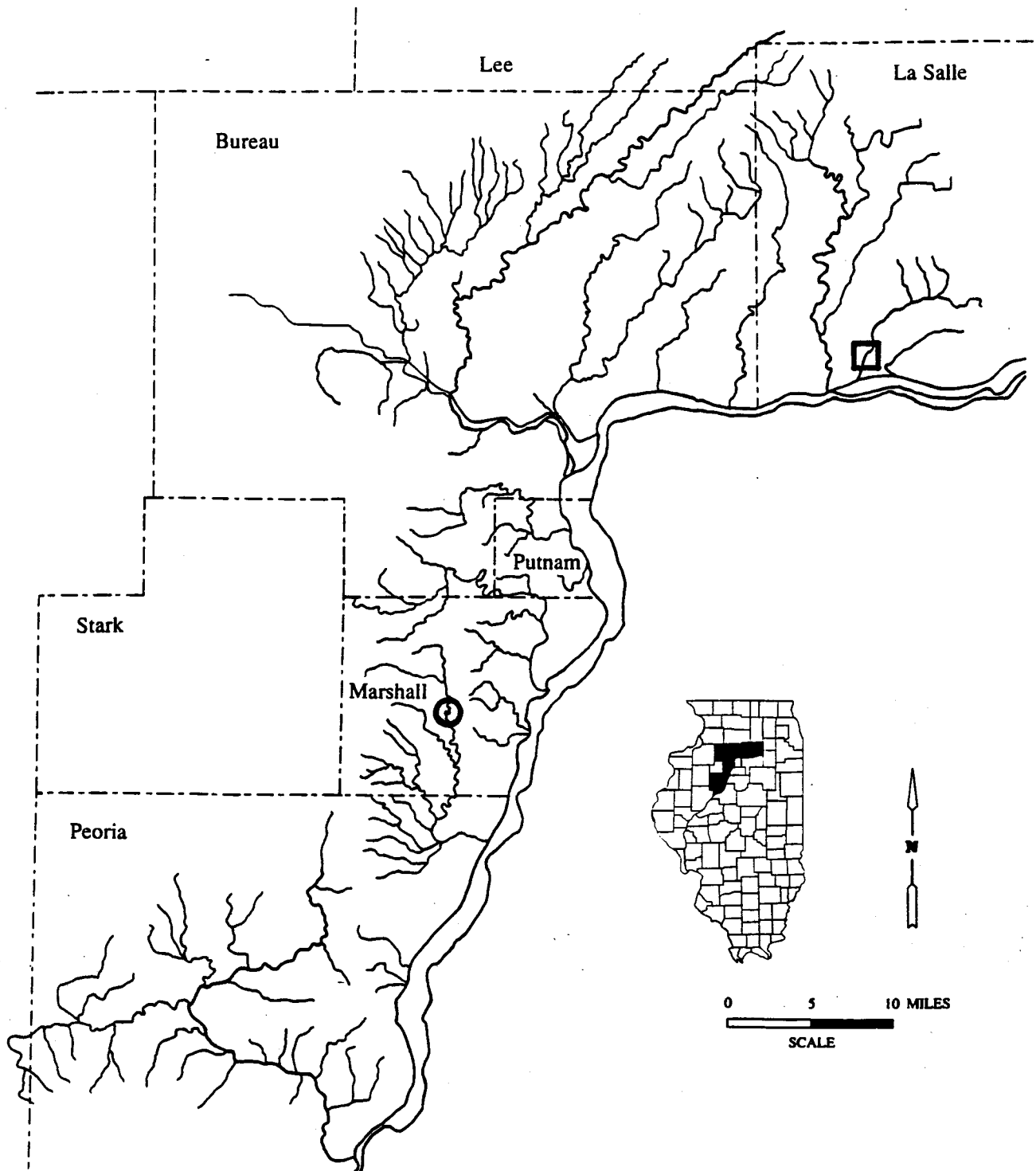
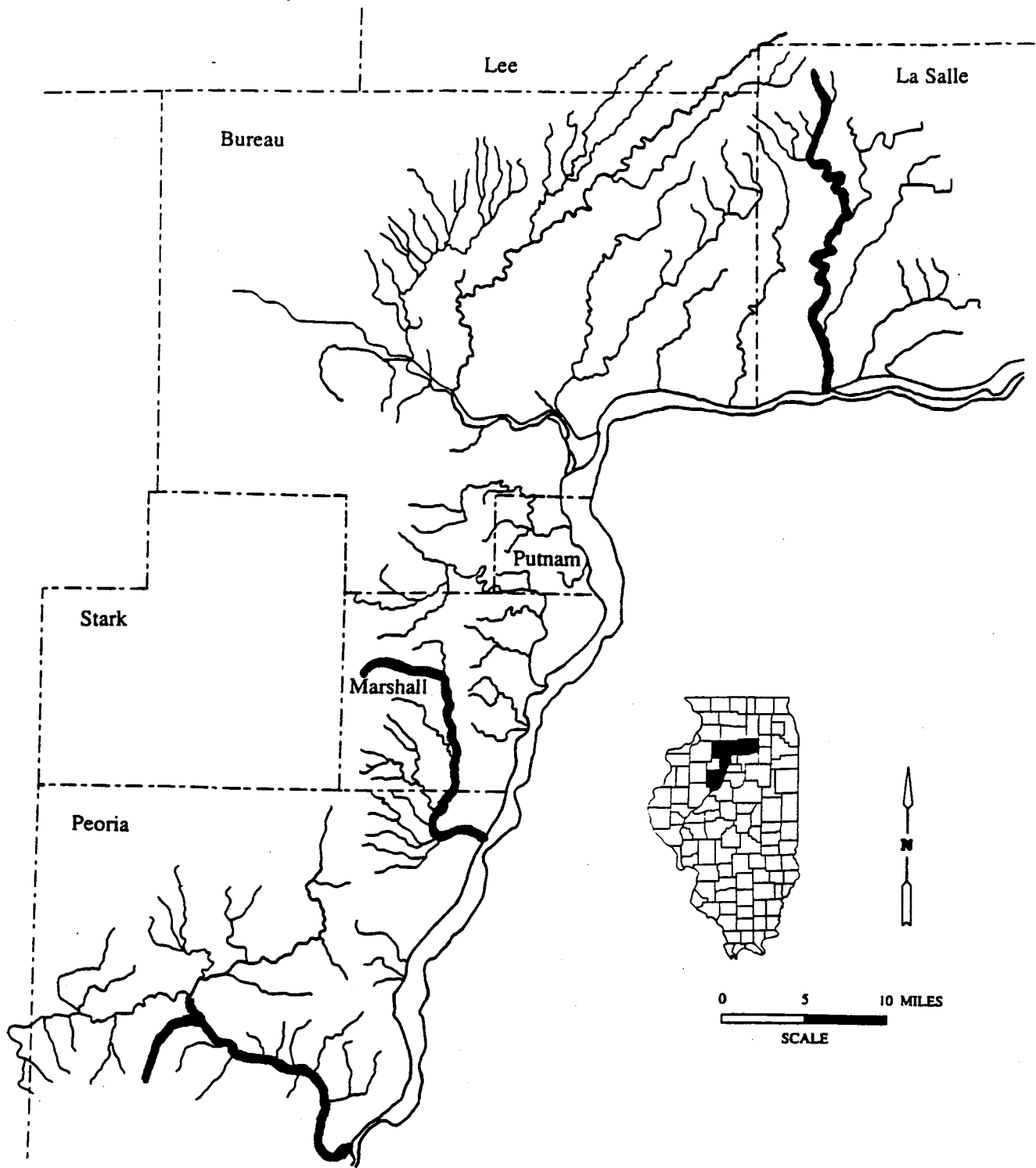
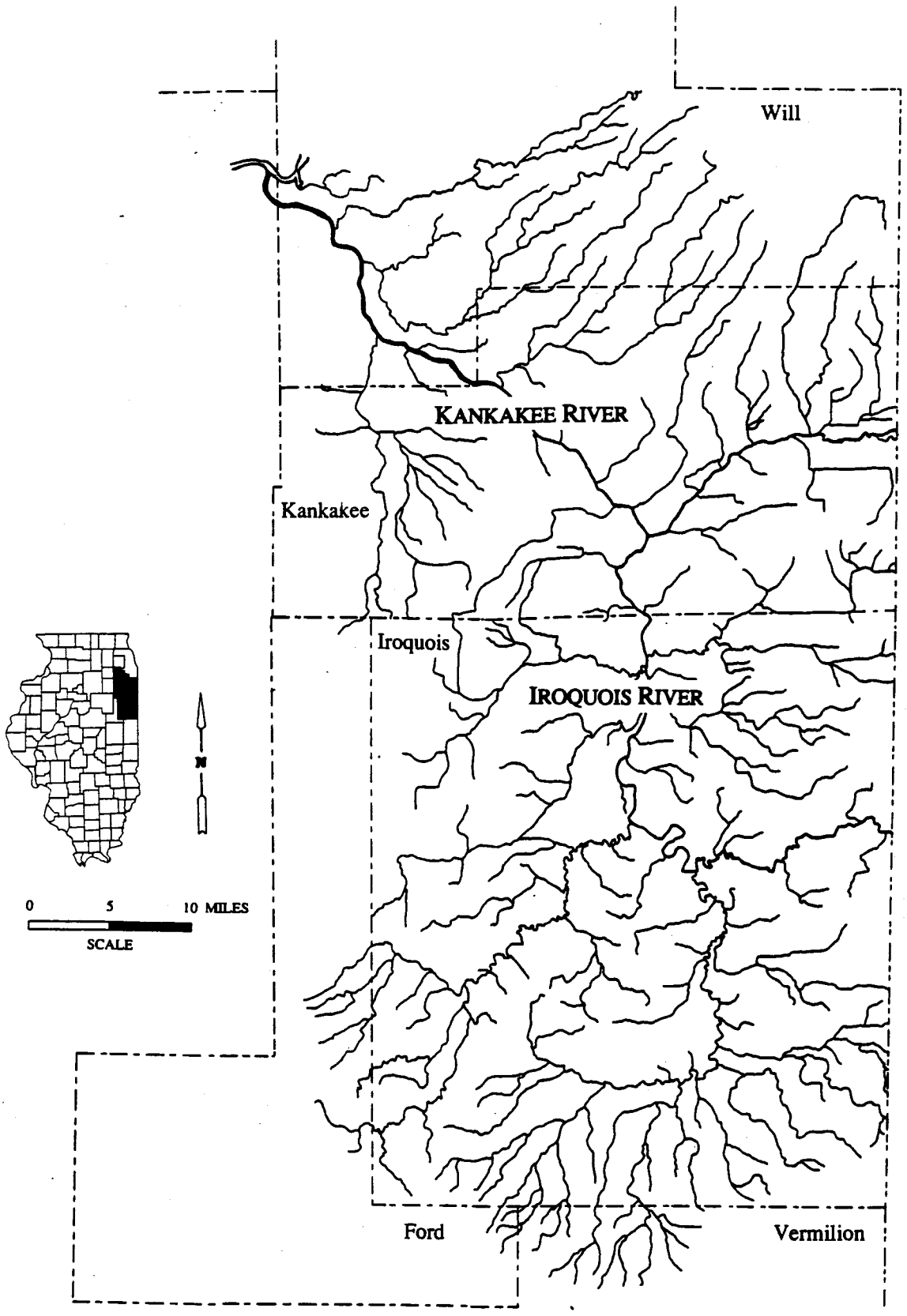


Figure 6-4. Map of historic (open symbols = pre-1980) populations of threatened or endangered fishes (squares) and mussels (circles) in the Little Vermilion River, Big Bureau and Kickapoo Creek Systems.



6. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Little Vermilion River, Big Bureau and Kickapoo Creek Systems.



7. Kankakee - Iroquois River System

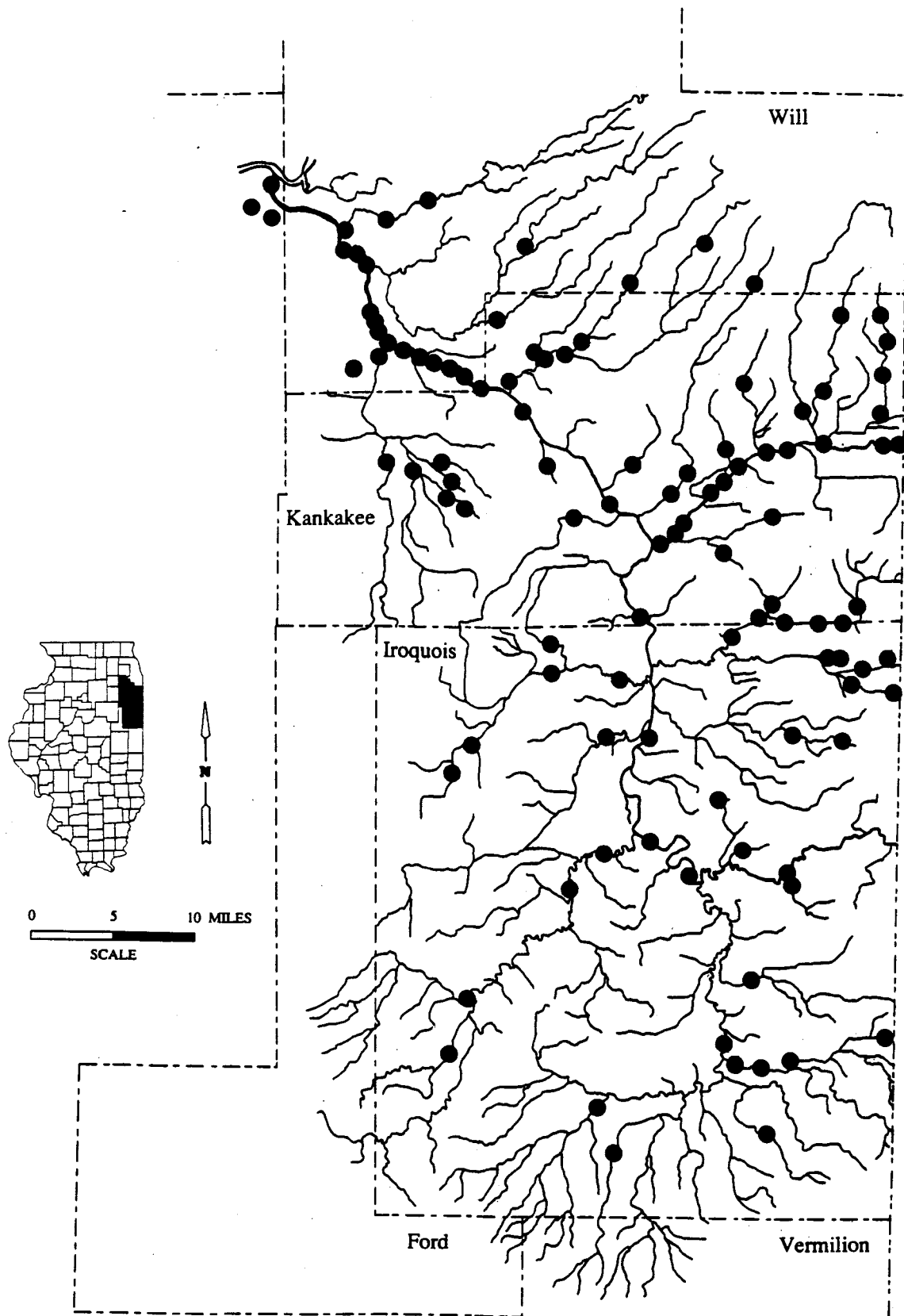


Figure 7-1. Map of fish collection sites in the Kankakee-Iroquois River System represented in the Illinois Natural History Survey Fish Collection.

Table 7-1. Freshwater fishes recorded from the Kankakee - Iroquois River System. Data from the Illinois Natural History Survey Fish Collection. SE = Illinois State Endangered; ST = Illinois State Threatened; I = Introduced,

PETROMYZONTIDAE	<i>Notropis rubellus</i>	<i>Fundulus notatus</i>
<i>Ichthyomyzon fossor</i> SE	<i>Notropis texanus</i> SE	APHREDODERIDAE
<i>Ichthyomyzon unicuspis</i>	<i>Notropis volucellus</i>	<i>Aphredoderus sayanus</i>
<i>Lampetra appendix</i>	<i>Opsopoeodus emiliae</i>	ATHERINIDAE
AMIIDAE	<i>Phenacobius mirabilis</i>	<i>Labidesthes sicculus</i>
<i>Amia calva</i>	<i>Phoxinus erythrogaster</i>	<i>Menidia beryllina</i>
CLUPEIDAE	<i>Pimephales notatus</i>	GASTEROSTEIDAE
<i>Dorosoma cepedianum</i>	<i>Pimephales promelas</i>	<i>Pungitius pungitius</i>
UMBRIDAE	<i>Pimephales vigilax</i>	CENTRARCHIDAE
<i>Umbra limi</i>	<i>Rhinichthys atratulus</i>	<i>Ambloplites rupestris</i>
ESOCIDAE	<i>Scardinius erythrophthalmus</i> I	<i>Chaenobryttus gulosus</i>
<i>Esox americanus</i>	<i>Semotilus atromaculatus</i>	<i>Lepomis cyanellus</i>
<i>Esox lucius</i>	CATOSTOMIDAE	<i>Lepomis gibbosus</i>
CYPRINIDAE	<i>Carpionodes cyprinus</i>	<i>Lepomis humilis</i>
<i>Campostoma anomalum</i>	<i>Catostomus commersoni</i>	<i>Lepomis macrochirus</i>
<i>Campostoma oligolepis</i>	<i>Erimyzon oblongus</i>	<i>Lepomis megalotis</i>
<i>Carassius auratus</i> I	<i>Erimyzon sucetta</i>	<i>Micropterus dolomieu</i>
<i>Cyprinella lutrensis</i>	<i>Hypentelium nigricans</i>	<i>Micropterus salmoides</i>
<i>Cyprinella spiloptera</i>	<i>Ictiobus bubalus</i>	<i>Pomoxis annularis</i>
<i>Cyprinella whipplei</i>	<i>Ictiobus cyprinellus</i>	<i>Pomoxis nigromaculatus</i>
<i>Cyprinus carpio</i> I	<i>Ictiobus niger</i>	PERCIDAE
<i>Ericymba buccata</i>	<i>Minytrema melanops</i>	<i>Etheostoma caeruleum</i>
<i>Hybopsis amnis</i> SE	<i>Moxostoma anisurum</i>	<i>Etheostoma chlorosomum</i>
<i>Luxilus chrysocephalus</i>	<i>Moxostoma carinatum</i> ST	<i>Etheostoma clarum</i> SE
<i>Luxilus cornutus</i>	<i>Moxostoma duquesnei</i>	<i>Etheostoma flabellare</i>
<i>Lythrurus fumeus</i>	<i>Moxostoma erythrurum</i>	<i>Etheostoma microperca</i>
<i>Lythrurus umbratilis</i>	<i>Moxostoma macrolepidotum</i>	<i>Etheostoma nigrum</i>
<i>Nocomis biguttatus</i>	ICTALURIDAE	<i>Etheostoma spectabile</i>
<i>Notemigonus crysoleucas</i>	<i>Ameiurus melas</i>	<i>Etheostoma zonale</i>
<i>Notropis atherinoides</i>	<i>Ameiurus natalis</i>	<i>Perca flavescens</i>
<i>Notropis buchanani</i>	<i>Ictalurus punctatus</i>	<i>Percina caprodes</i>
<i>Notropis chalybaeus</i> ST	<i>Noturus flavus</i>	<i>Percina maculata</i>
<i>Notropis dorsalis</i>	<i>Noturus gyrinus</i>	<i>Percina phoxocephala</i>
<i>Notropis heterolepis</i> ST	CYPRINODONTIDAE	
<i>Notropis ludibundus</i>	<i>Fundulus dispar</i>	

Total number of species = 89 (86 native, 3 introduced)

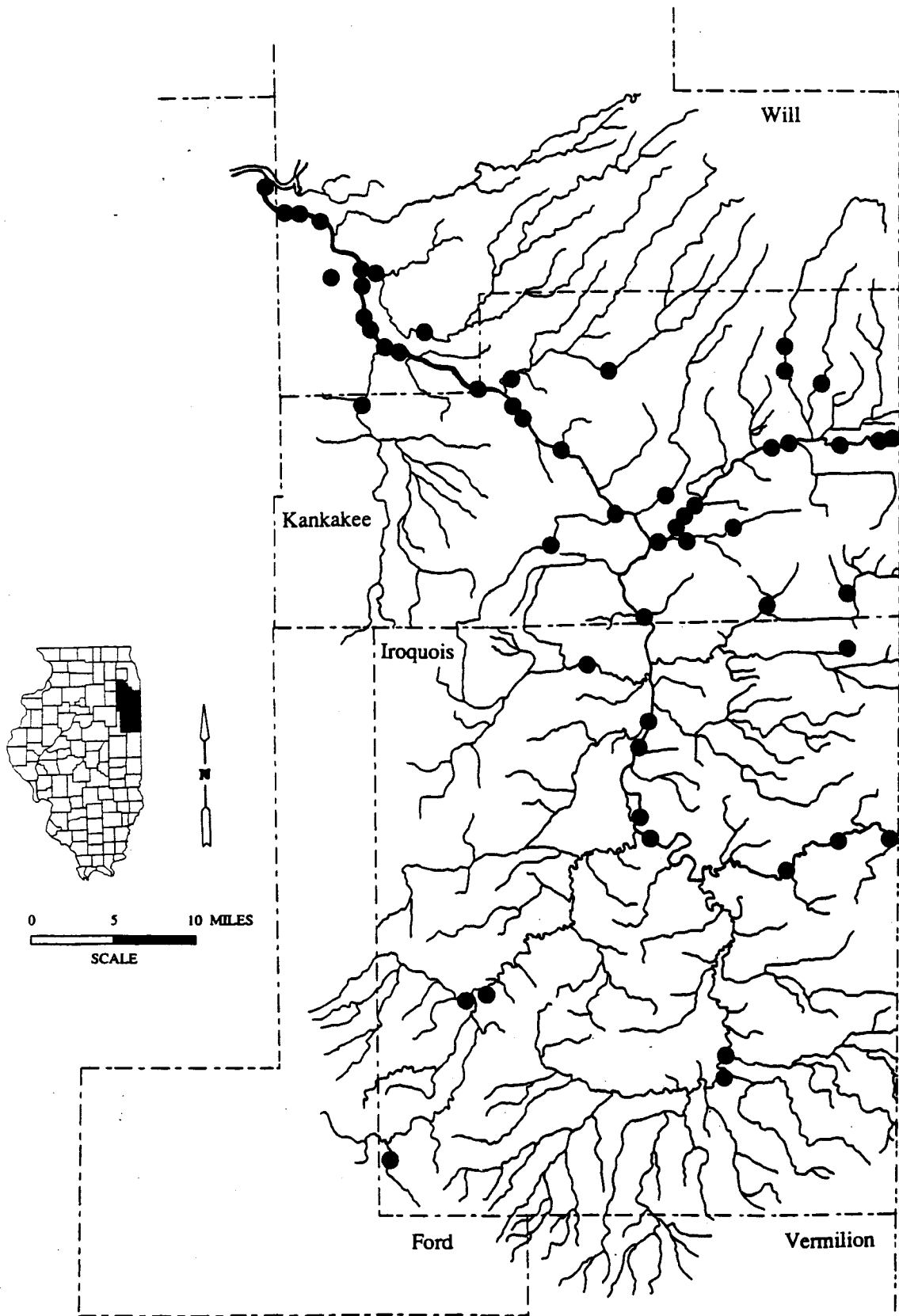


Figure 7-2. Map of mussel collection sites in the Kankakee-Iroquois River System represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 7-2. Freshwater mussels recorded from the Kankakee - Iroquois River System. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. FE = Federally Endangered; FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened; SC = State Candidate.

<i>Actinonaias ligamentina</i>	
<i>Alasmidonta marginata</i>	
<i>Alasmidonta viridis</i>	SE
<i>Amblyma plicata</i>	
<i>Anodonta grandis</i>	
<i>Anodonta imbecillis</i>	
<i>Anodontooides ferussacianus</i>	
<i>Cumberlandia monodonta</i>	SE, FC
<i>Cyclonaias tuberculata</i>	
<i>Elliptio dilatata</i>	SC
<i>Epioblasma triquetra</i>	SE
<i>Fusconaia ebena</i>	SC
<i>Fusconaia flava</i>	
<i>Lampsilis cardium</i>	
<i>Lampsilis higginsii</i>	SE, FE
<i>Lampsilis siliquoidea</i>	
<i>Lasmigona complanata</i>	
<i>Lasmigona compressa</i>	ST
<i>Lasmigona costata</i>	
<i>Leptodea fragilis</i>	
<i>Ligumia recta</i>	
<i>Megalonaias nervosa</i>	
<i>Plethobasus cyphus</i>	ST
<i>Pleurobema sintoxia</i>	
<i>Potamilus ohioensis</i>	
<i>Quadrula metanevra</i>	
<i>Quadrula pustulosa</i>	
<i>Quadrula quadrula</i>	
<i>Simpsonaias ambigua</i>	SE, FC
<i>Strophitus undulatus</i>	
<i>Toxolasma parvus</i>	
<i>Tritogonia verrucosa</i>	
<i>Unio merus tetralasmus</i>	ST
<i>Venustaconcha ellipsiformis</i>	SC
<i>Villosa iris</i>	SE

Total number of species = 35.

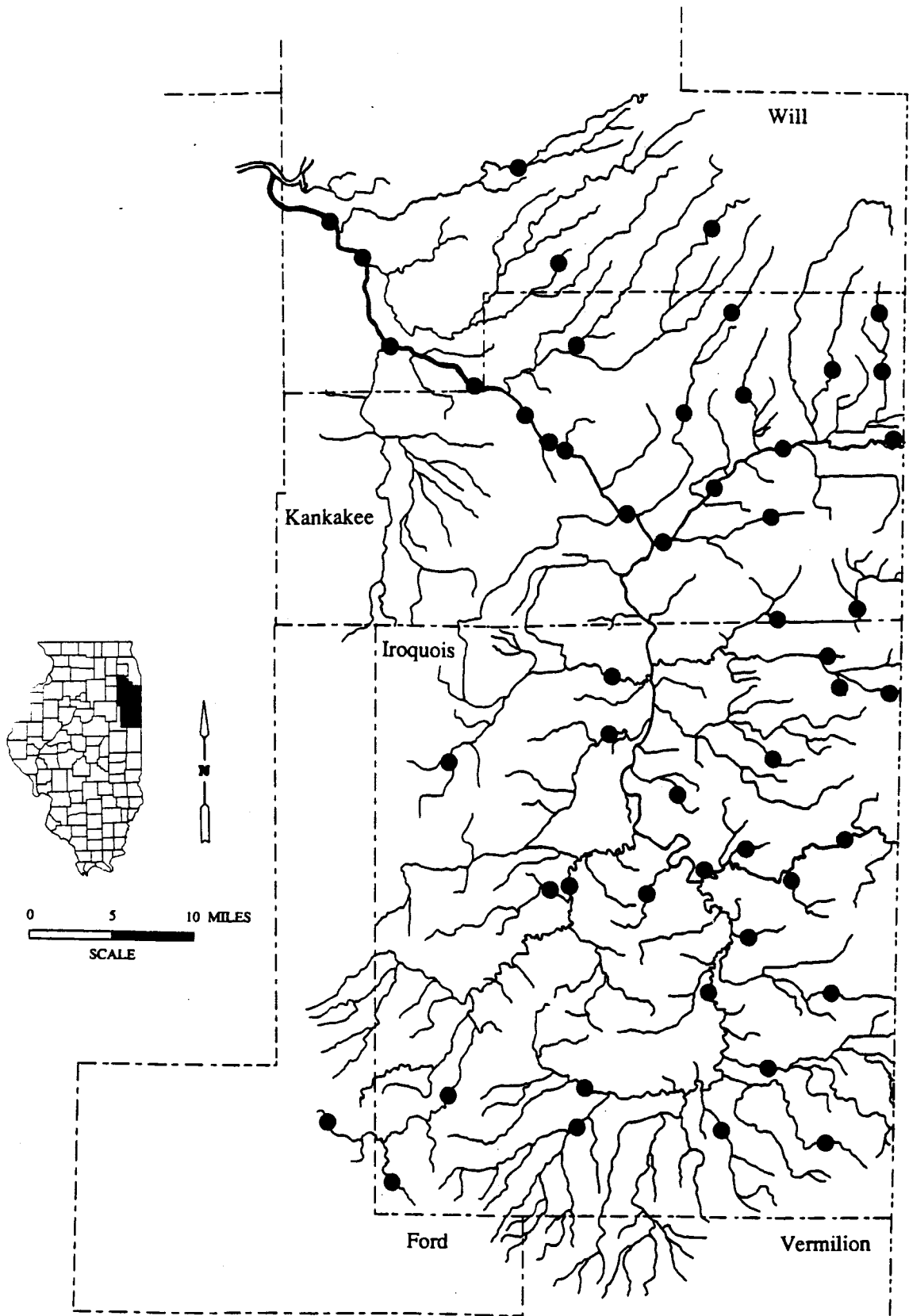


Figure 7-3. Map of crustacean collection sites in the Kankakee-Iroquois River System represented in the Illinois Natural History Survey Crustacean Collection.

Table 7-3. Freshwater crustaceans recorded from the Kankakee - Iroquois River System
Data from the Illinois Natural History Survey Crustacean Collection.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea beattyi
Caecidotea forbesi
Caecidotea intermedia
Caecidotea kendeighi

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Crangonyx gracilis
Crangonyx minor
Gammarus pseudolimnaeus

HYALELLIDAE

Hyalella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

CAMBARIDAE

Cambarus diogenes
Orconectes immunis
Orconectes propinquus
Orconectes virilis
Procambarus acutus

Total number of species = 13.

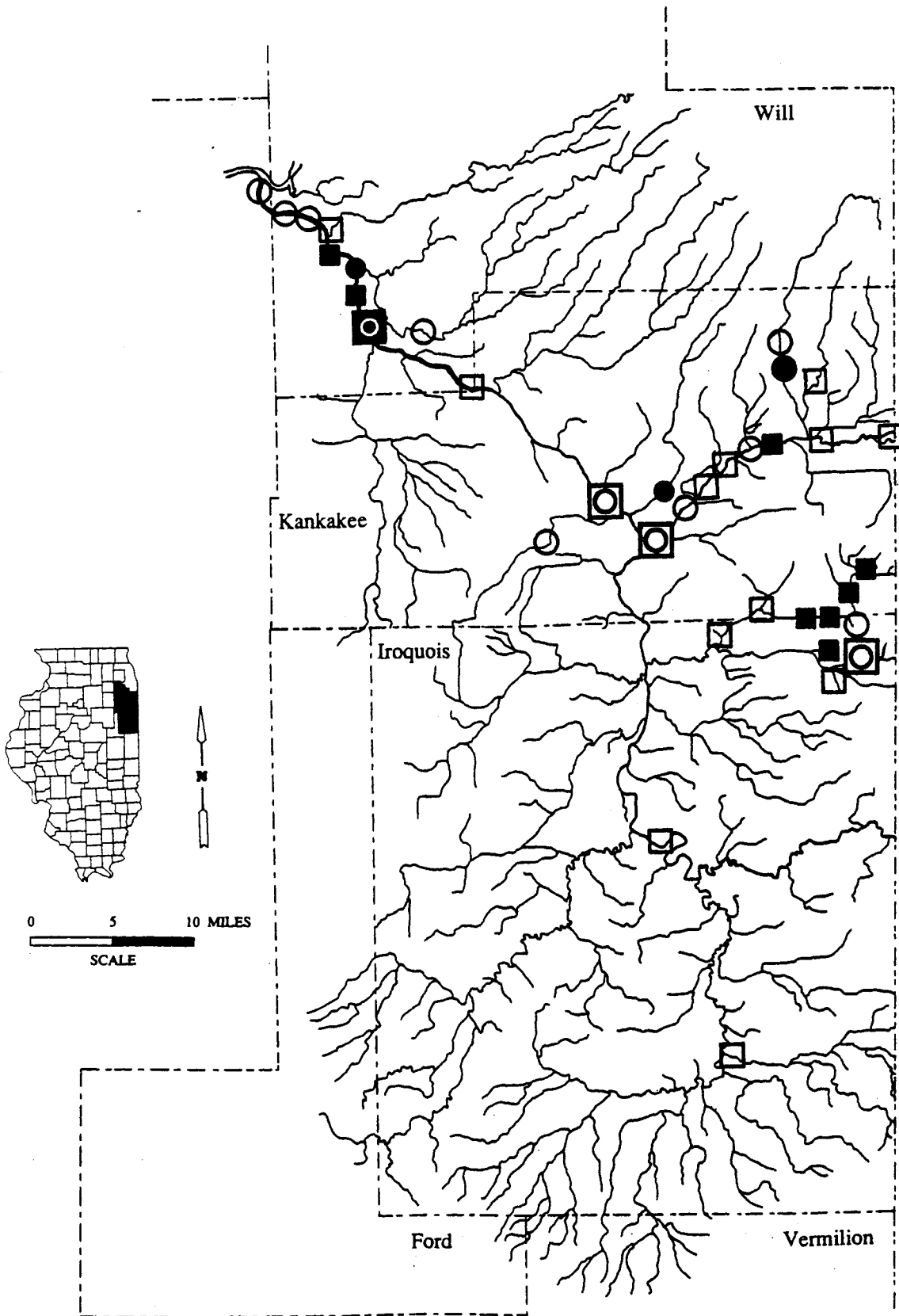
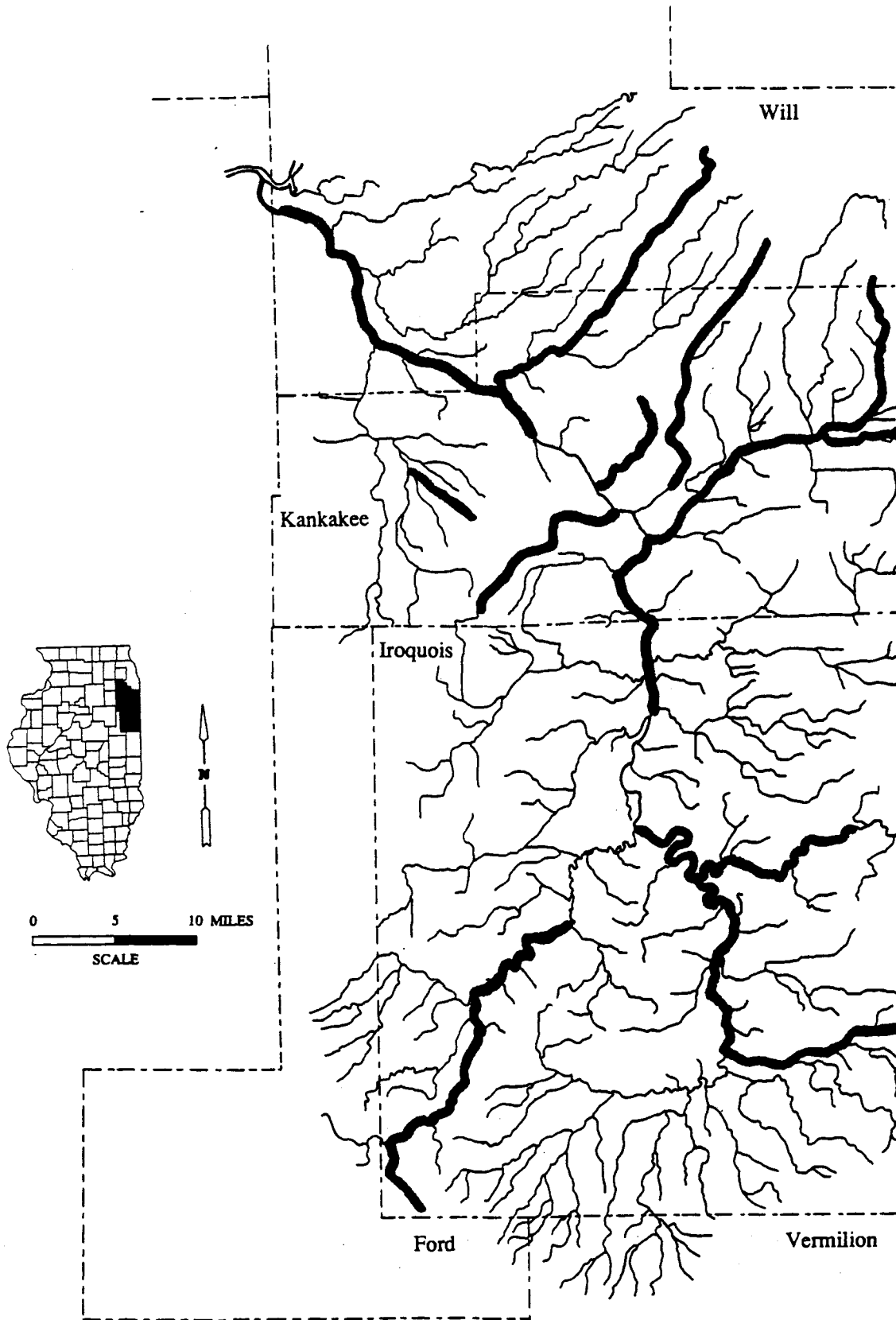
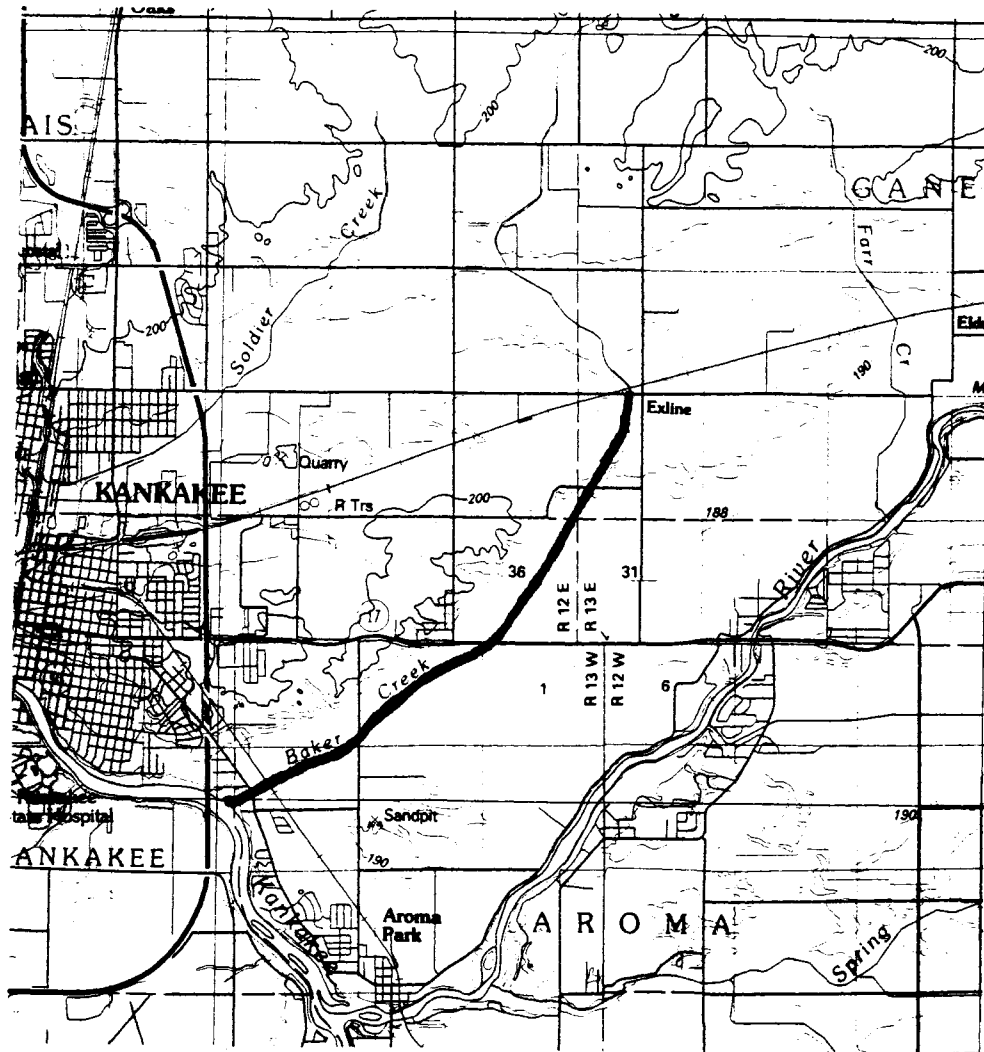


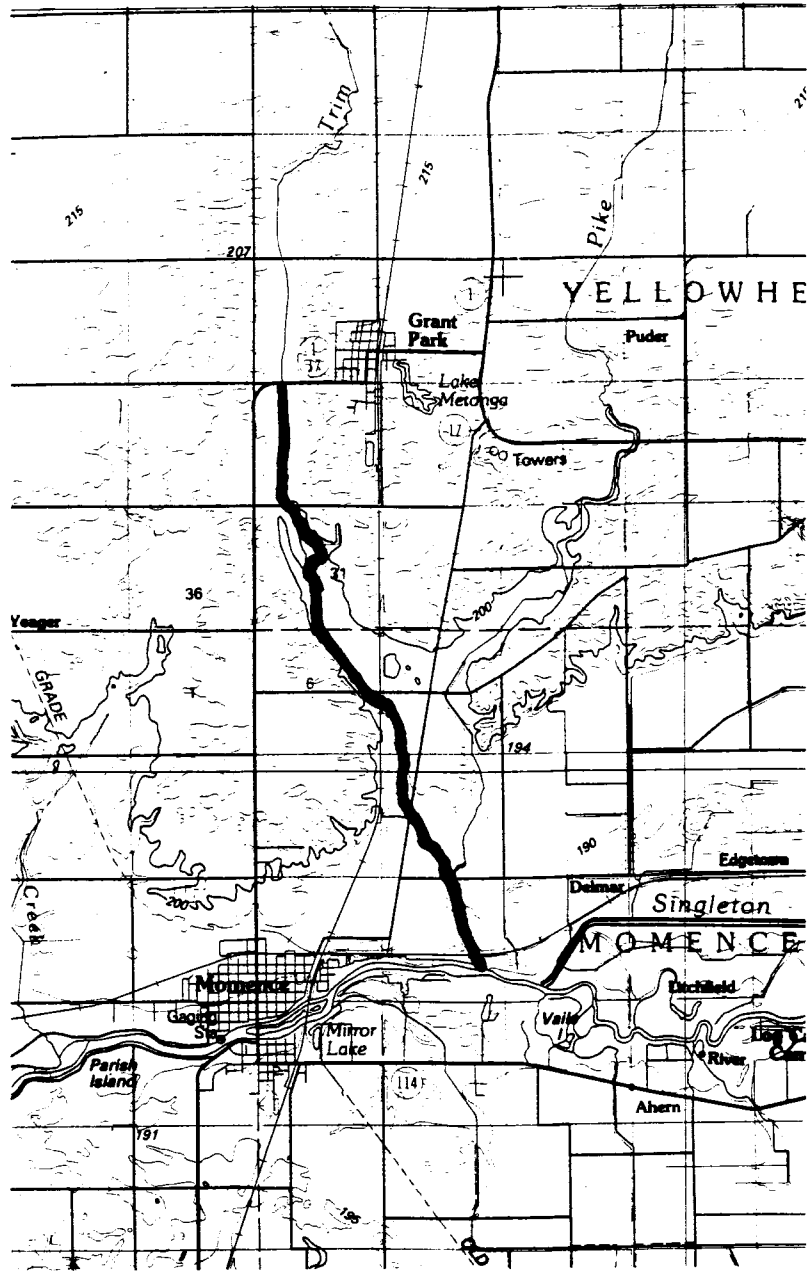
Figure 7-4. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered fishes (squares) and mussels (circles) in the Kankakee - Iroquois River System.



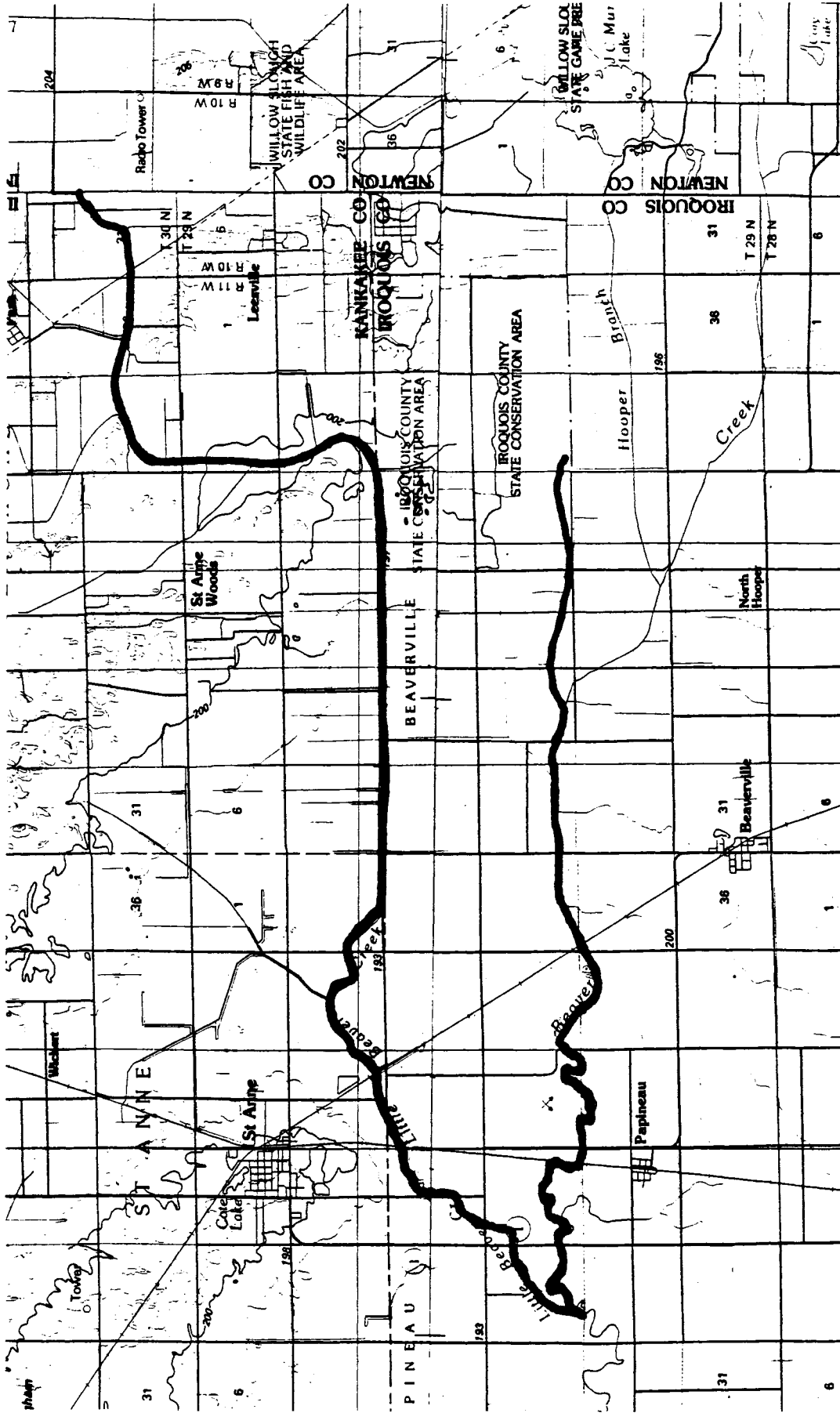
7. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Kankakee - Iroquois River System.



7. Kankakee - Iroquois River System (Kankakee 1:100,000)
- Baker Creek, Exline to Kankakee River, Kankakee Co.
(slippershell)

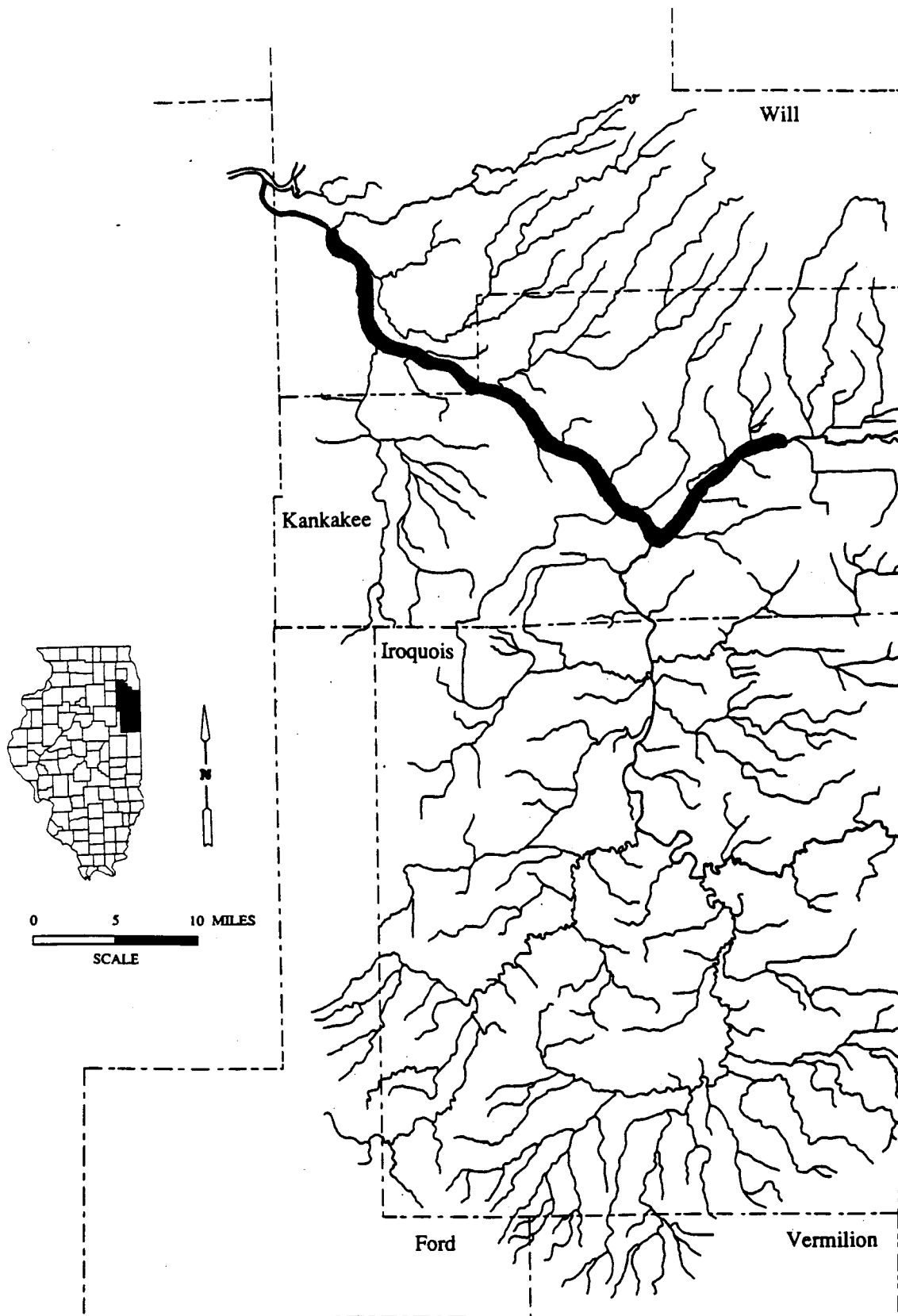


7. Kankakee - Iroquois River System (Kankakee 1:100,000)
 - Trim Creek, Grant Park to Kankakee River, Kankakee Co.
 (creek heelsplitter, ellipse)



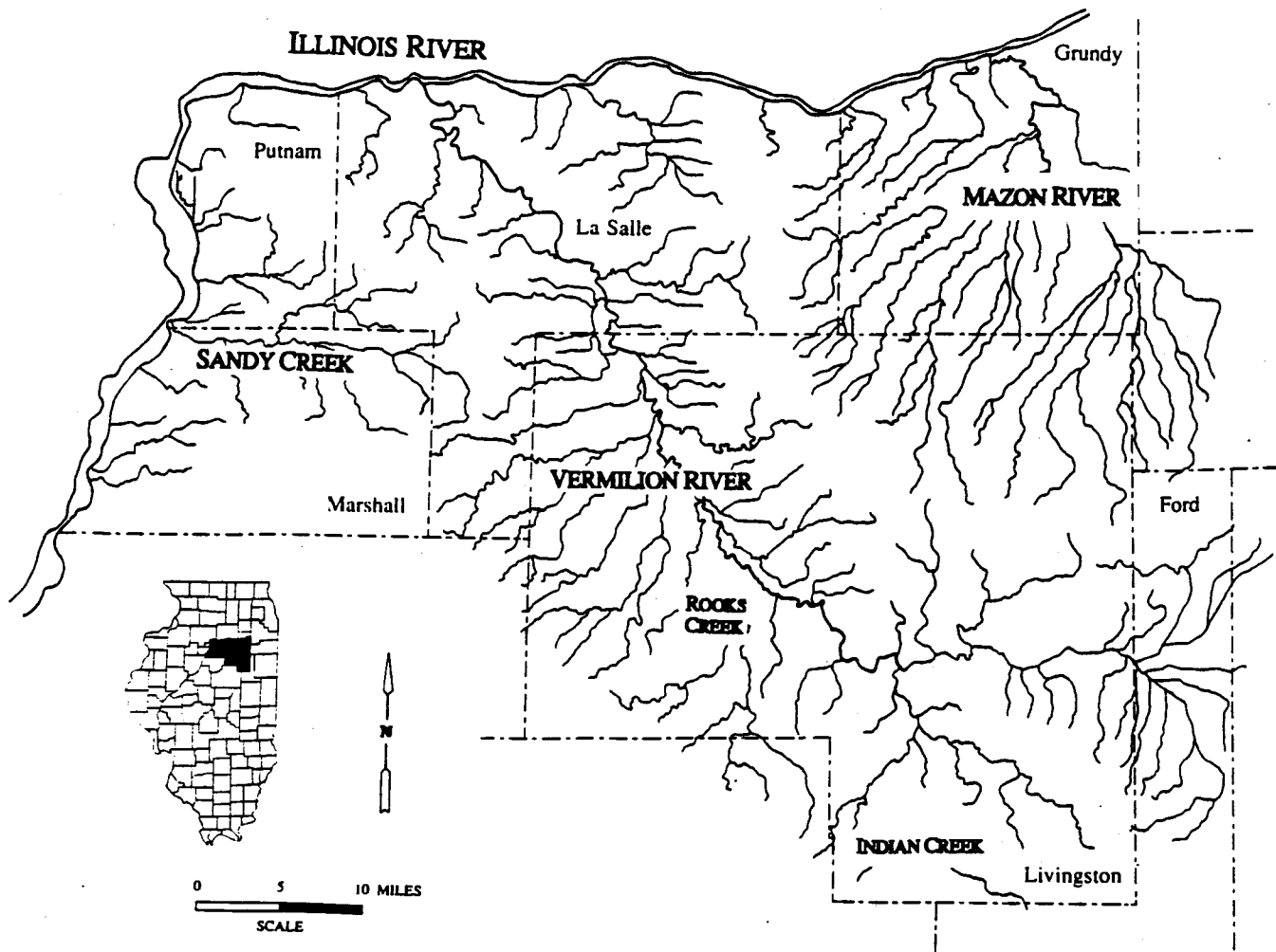
7. Kankakee - Iroquois River System (Kankakee & Watska 1:100,000)

- Little Beaver Creek, state line to 2 miles SE St. Anne, Kankakee Co. (weed shiner, ironcolor shiner)
- trib. and Beaver Creek, from Iroquois Co. Conservation Area to confluence with Little Beaver Creek (ironcolor shiner)



7. Kankakee - Iroquois River System

- Kankakee River from Momence to Des Plaines Wildlife Conservation Area, Will Co.
 (pallid shiner, river redhorse, western sand darter, weed shiner, sheepsnose,
 high diversity mussels)



8. Vermilion and Mazon River Systems

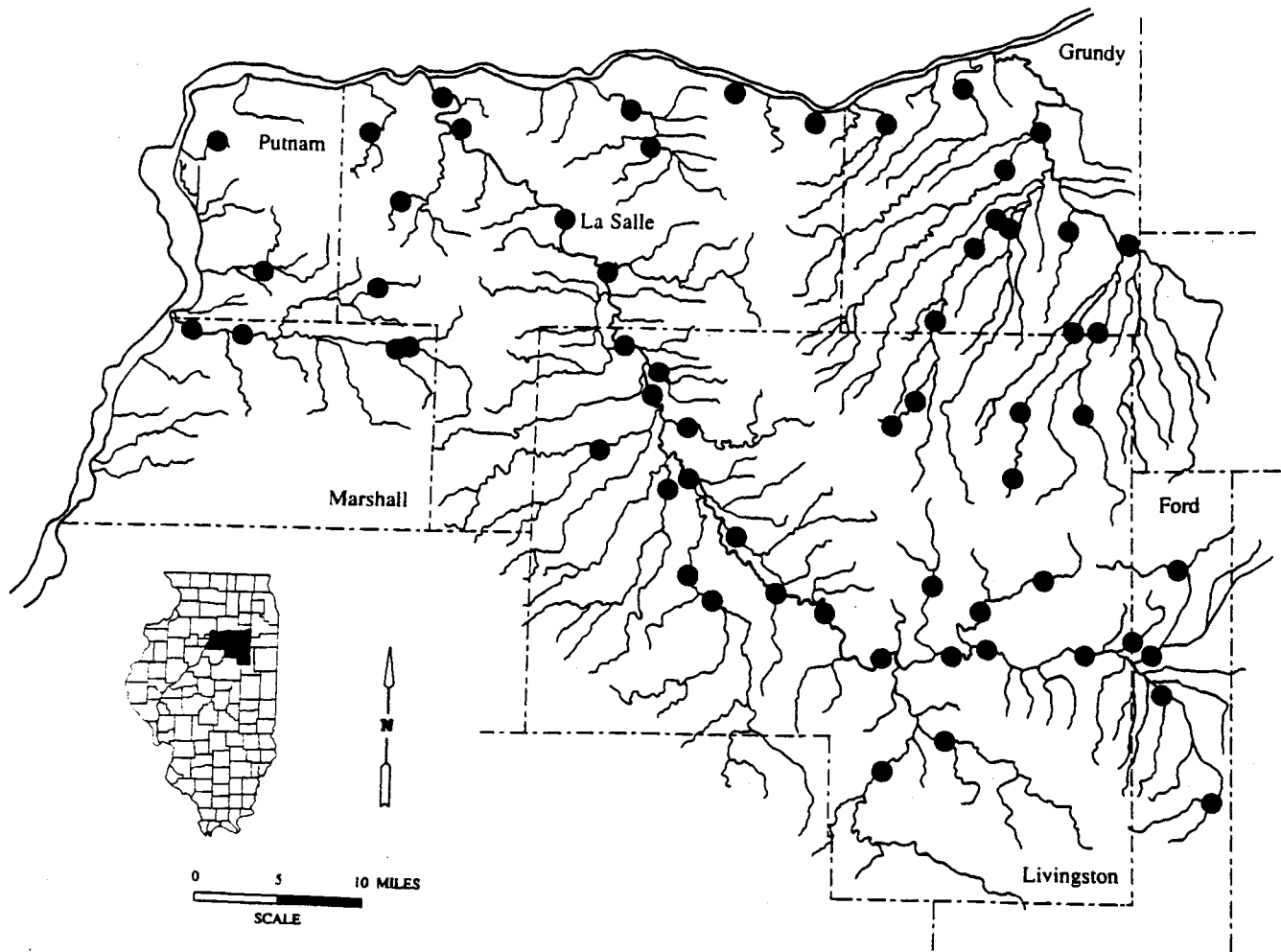


Figure 8-1. Map of fish collection sites in the Vermilion and Mazon River Systems represented in the Illinois Natural History Survey Fish Collection.

Table 8-1. Freshwater fishes recorded from the Vermilion River and Mazon Creek Systems. Data from the Illinois Natural History Survey Fish Collection. SE = Illinois State Endangered; ST = Illinois State Threatened; I = Introduced.

LEPISOSTEIDAE - <i>Lepisosteus osseus</i>	<i>Phenacobius mirabilis</i>	POECILIIDAE <i>Gambusia affinis</i>
CLUPEIDAE <i>Dorosoma cepedianum</i>	<i>Phoxinus erythrogaster</i>	ATHERINIDAE <i>Labidesthes sicculus</i>
ESOCIDAE <i>Esox americanus</i>	<i>Pimephales notatus</i>	PERCOPSIDAE <i>Percopsis omiscomaycus</i>
CYPRINIDAE <i>Campostoma anomalum</i>	<i>Pimephales promelas</i>	CENTRARCHIDAE <i>Ambloplites rupestris</i>
<i>Campostoma oligolepis</i>	<i>Rhinichthys atratulus</i>	<i>Lepomis cyanellus</i>
<i>Carassius auratus</i> I	<i>Semotilus atromaculatus</i>	<i>Lepomis humilis</i>
<i>Cyprinella lutrensis</i>	CATOSTOMIDAE <i>Carpionodes carpio</i>	<i>Lepomis macrochirus</i>
<i>Cyprinella spiloptera</i>	<i>Carpionodes cyprinus</i>	<i>Lepomis megalotis</i>
<i>Cyprinus carpio</i> I	<i>Carpionodes velifer</i>	<i>Micropterus dolomieu</i>
<i>Ericymba buccata</i>	<i>Catostomus commersoni</i>	<i>Micropterus salmoides</i>
<i>Extrarius aestivalis</i>	<i>Erimyzon oblongus</i>	<i>Pomoxis annularis</i>
<i>Hybognathus nuchalis</i>	<i>Erimyzon sucetta</i>	<i>Pomoxis nigromaculatus</i>
<i>Luxilus chrysocephalus</i>	<i>Hypentelium nigricans</i>	PERCIDAE <i>Etheostoma caeruleum</i>
<i>Luxilus cornutus</i>	<i>Moxostoma anisurum</i>	<i>Etheostoma chlorosomum</i>
<i>Lythrurus umbratilis</i>	<i>Moxostoma duquesnei</i>	<i>Etheostoma flabellare</i>
<i>Nocomis biguttatus</i>	<i>Moxostoma erythrurum</i>	<i>Etheostoma nigrum</i>
<i>Notemigonus crysoleucas</i>	<i>Moxostoma macrolepidotum</i>	<i>Etheostoma spectabile</i>
<i>Notropis atherinoides</i>	<i>Moxostoma valenciennesi</i> SE	<i>Etheostoma squamiceps</i>
<i>Notropis boops</i> ST	ICTALURIDAE <i>Ameiurus melas</i>	<i>Etheostoma zonale</i>
<i>Notropis buchanani</i>	<i>Ameiurus natalis</i>	<i>Percina caprodes</i>
<i>Notropis dorsalis</i>	<i>Ameiurus nebulosus</i>	<i>Percina maculata</i>
<i>Notropis hudsonius</i>	<i>Ictalurus punctatus</i>	<i>Percina phoxocephala</i>
<i>Notropis ludibundus</i>	<i>Noturus exilis</i>	<i>Stizostedion vitreum</i>
<i>Notropis rubellus</i>	<i>Noturus flavus</i>	
<i>Opsopoeodus emiliae</i>	<i>Noturus gyrinus</i>	
	CYPRINODONTIDAE <i>Fundulus notatus</i>	

Total number of species = 74 (72 native, 2 introduced)

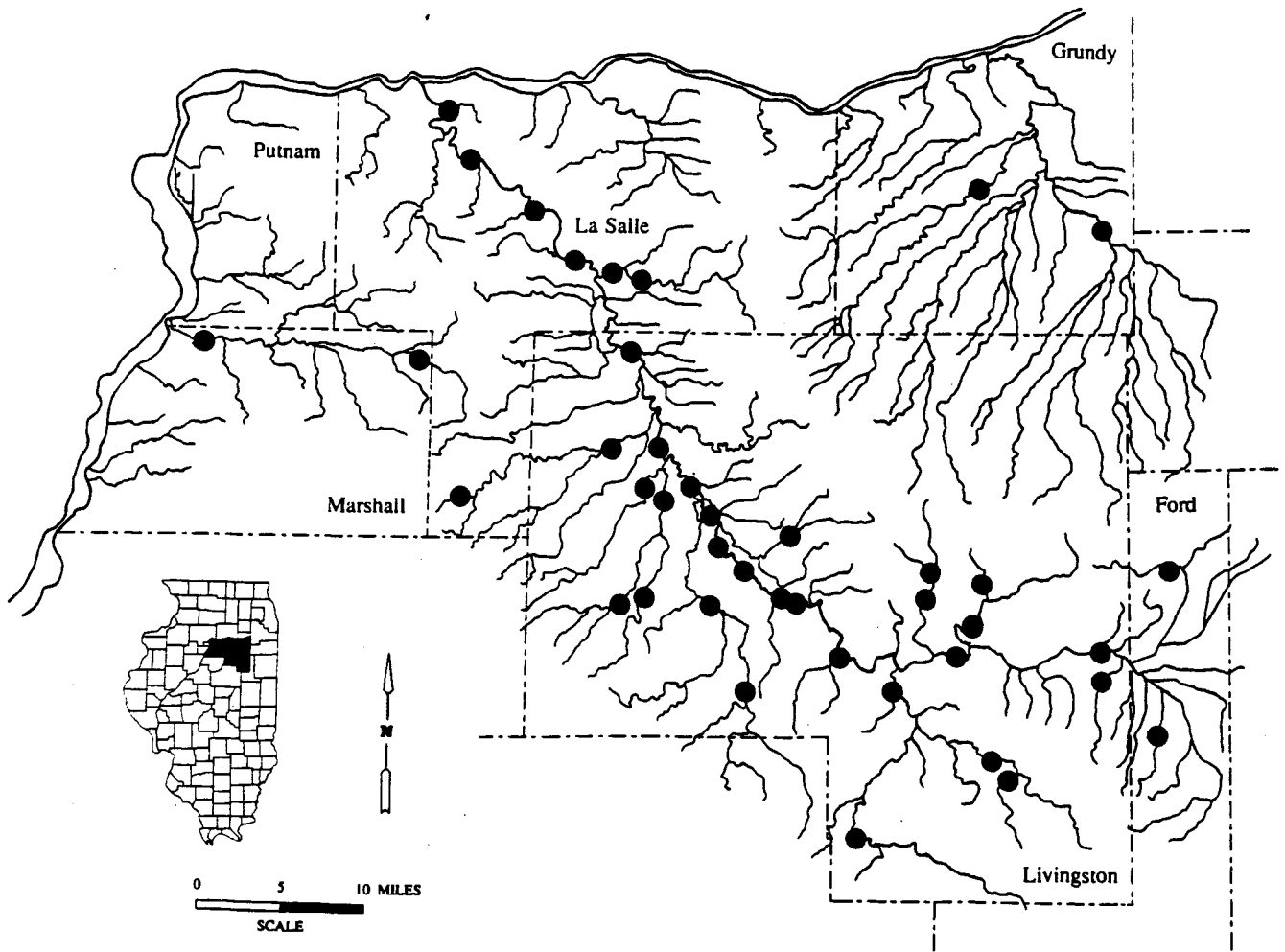


Figure 8-2. Map of mussel collection sites in the Vermilion and Mazon River Systems represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 8-2. Freshwater mussels recorded from the Vermilion River and Mazon Creek Systems. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. SE = Illinois State Endangered; ST = Illinois State Threatened; SC = State Candidate.

<i>Actinonaias ligamentina</i>	
<i>Alasmidonta marginata</i>	
<i>Alasmidonta viridis</i>	SE
<i>Amblema plicata</i>	
<i>Anodonta grandis</i>	
<i>Anodonta imbecillis</i>	
<i>Anodontoides ferussacianus</i>	
<i>Elliptio dilatata</i>	SC
<i>Fusconaia flava</i>	
<i>Lampsilis cardium</i>	
<i>Lampsilis siliquoidea</i>	
<i>Lampsilis teres</i>	
<i>Lasmigona complanata</i>	
<i>Lasmigona compressa</i>	ST
<i>Lasmigona costata</i>	
<i>Leptodea fragilis</i>	
<i>Pleurobema sintoxia</i>	
<i>Potamilus alatus</i>	
<i>Potamilus ohioensis</i>	
<i>Quadrula nodulata</i>	
<i>Quadrula pustulosa</i>	
<i>Quadrula quadrula</i>	
<i>Strophitus undulatus</i>	
<i>Toxolasma parvus</i>	
<i>Tritogonia verrucosa</i>	
<i>Truncilla donaciformis</i>	
<i>Unio merus tetralasmus</i>	ST
<i>Venustaconcha ellipsiformis</i>	SC
<i>Villosa iris</i>	SE

Total number of species = 29.

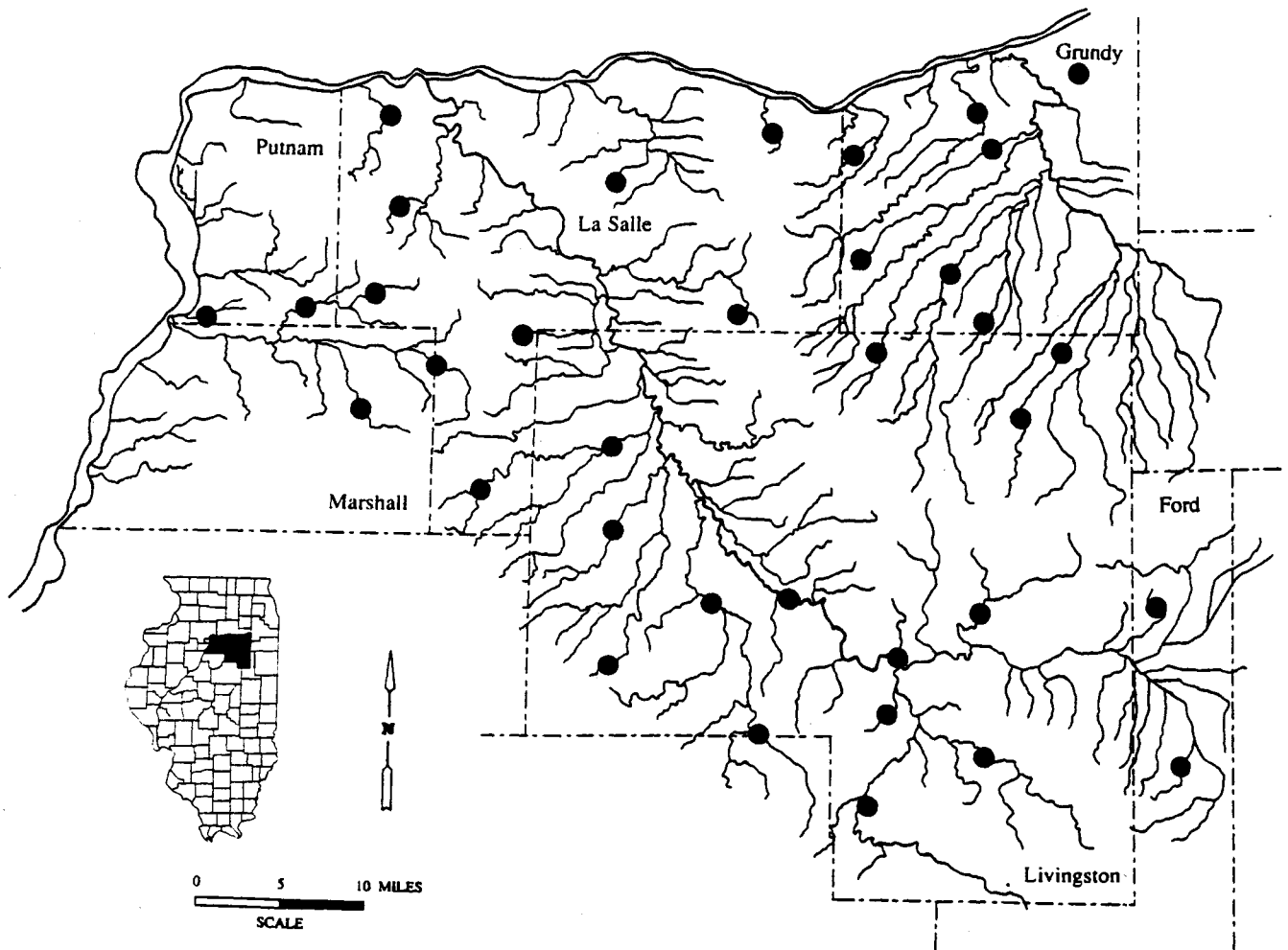


Figure 8-3. Map of crustacean collection sites in the Vermilion and Mazon River Systems represented in the Illinois Natural History Survey Crustacean Collection.

Table 8-3. Freshwater crustaceans recorded from the Vermilion River and Mazon Creek Systems.
Data from the Illinois Natural History Survey Crustacean Collection.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea forbesi
Caecidotea intermedia
Caecidotea kendeighi

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Batrurus mucronatus
Crangonyx gracilis

HYALELLIDAE

Hyalella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

PALAEEMONIDAE

Palaemonetes kadiakensis

CAMBARIDAE

Cambarus diogenes
Orconectes immunis
Orconectes propinquus
Orconectes virilis
Procambarus acutus
Procambarus gracilis

Total number of species = 13.

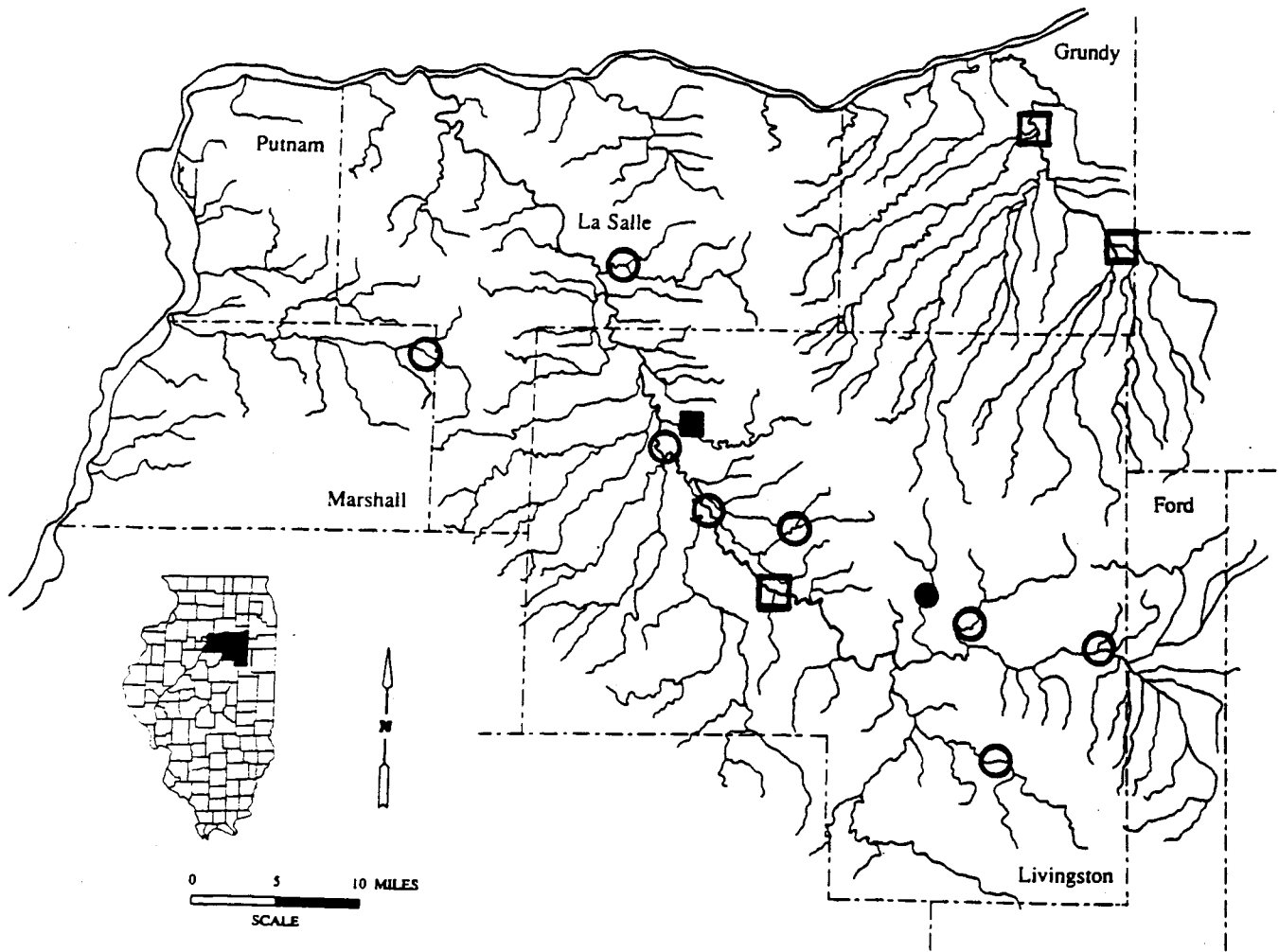
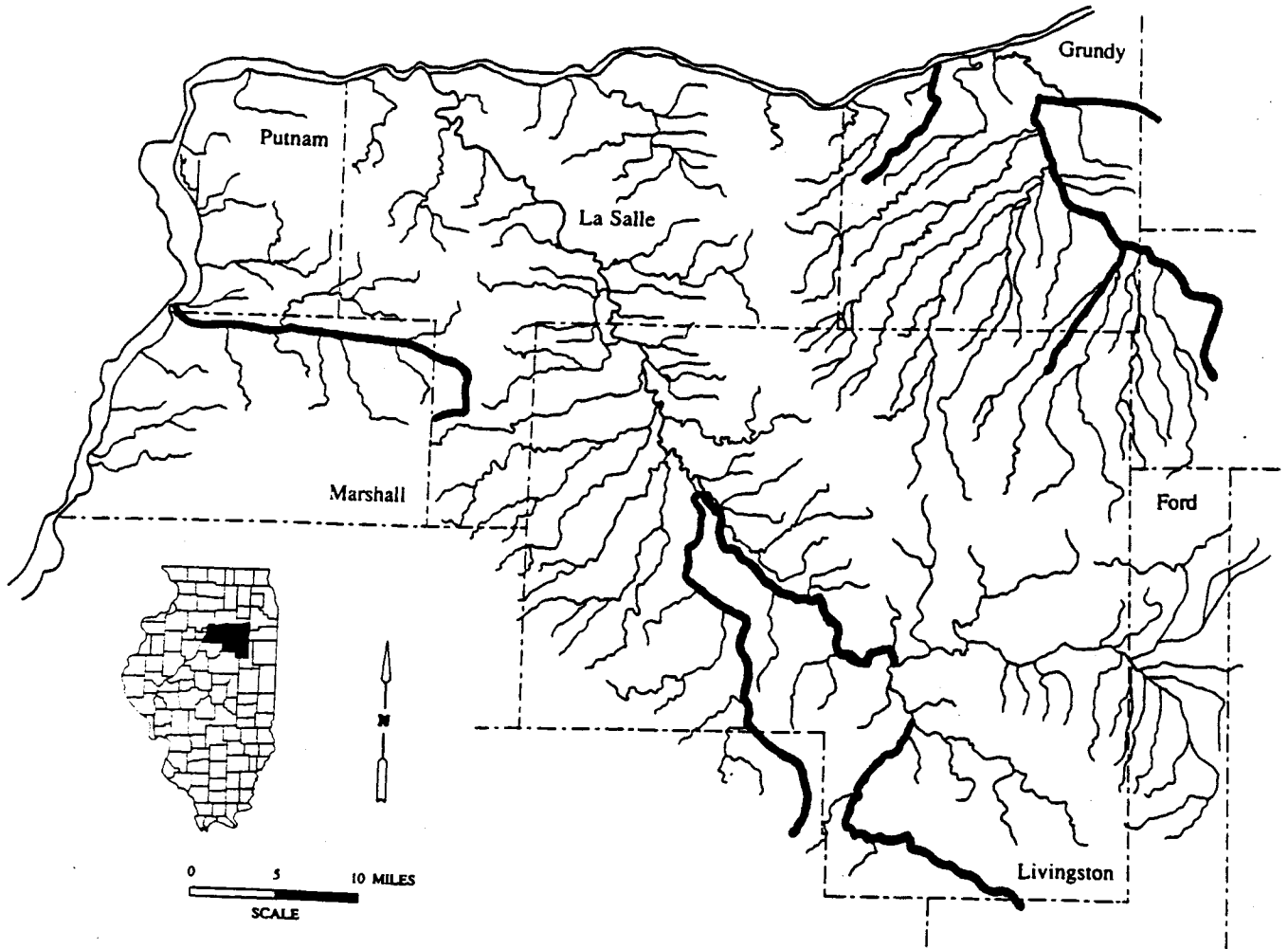
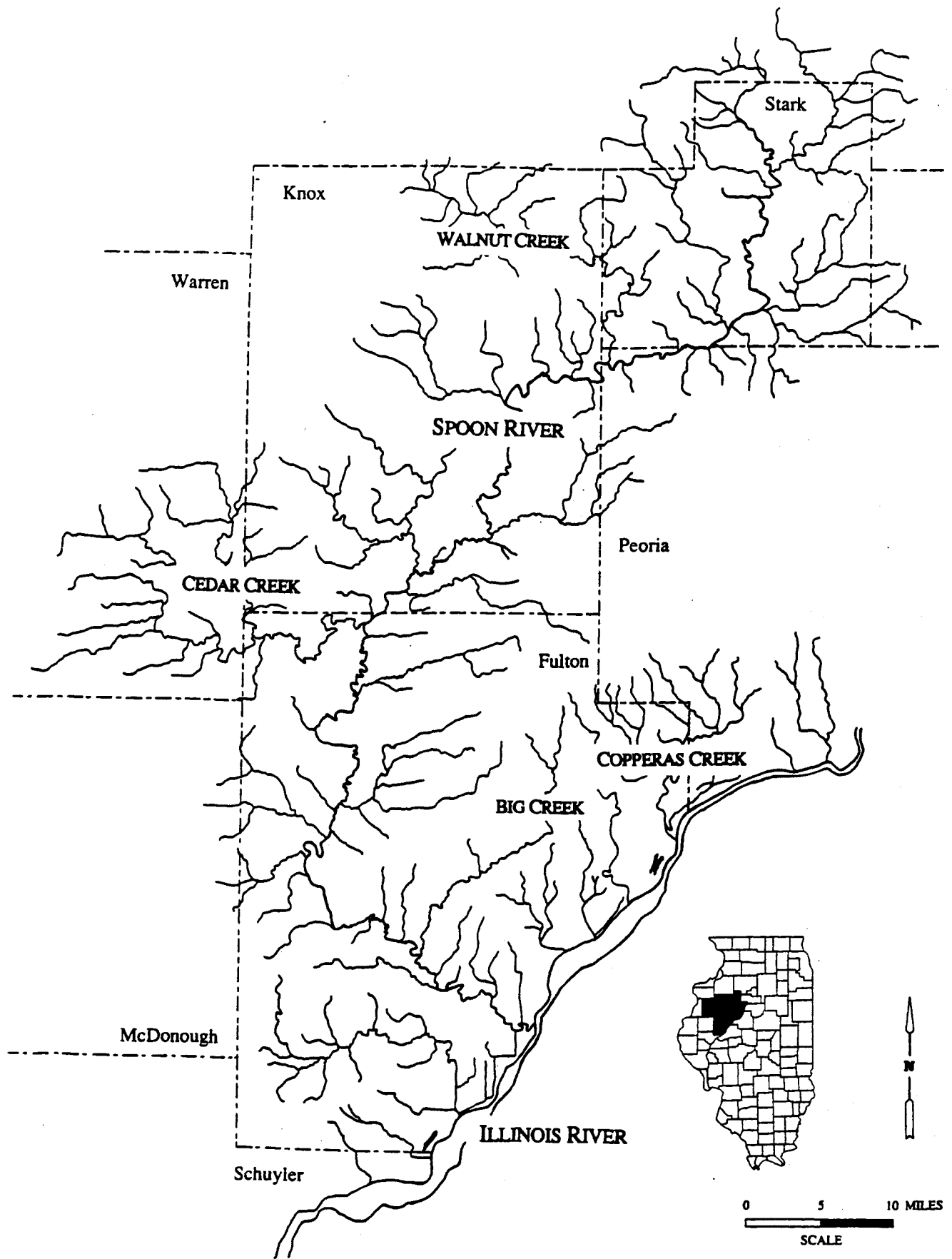


Figure 8-5. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered fishes (squares) and mussels (circles) in the Vermilion and Mazon River Systems.



8. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Vermilion and Mazon River Systems.



9. Spoon River System

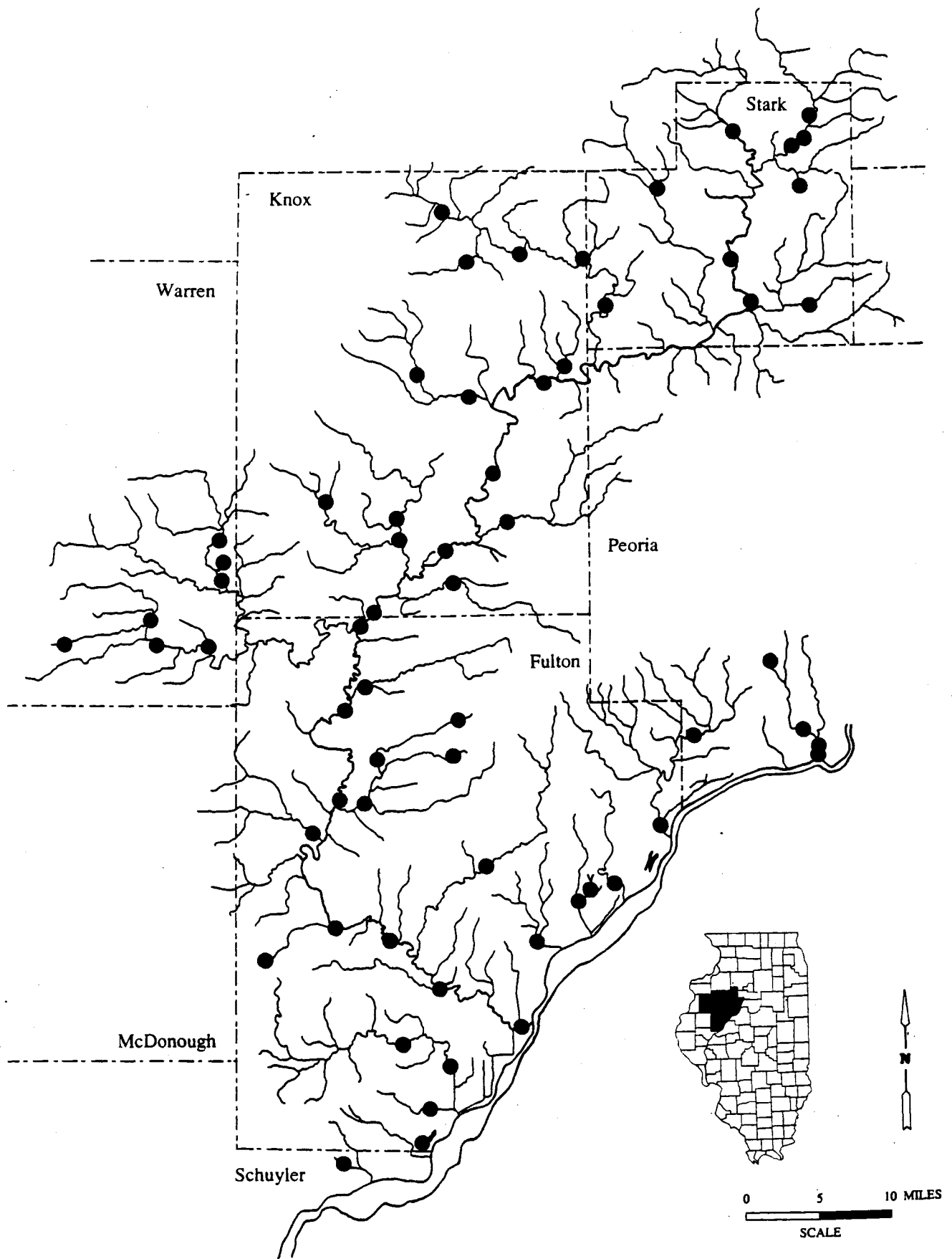


Figure 9-1. Map of fish collection sites in the Spoon River System represented in the Illinois Natural History Survey Fish Collection.

Table 9-1. Freshwater fishes recorded from the Spoon River System. Data from the Illinois Natural History Survey Fish Collection. I = Introduced.

LEPISOSTEIDAE	<i>Rhinichthys atratulus</i>	POECILIIDAE
<i>Lepisosteus oculatus</i>	<i>Semotilus atromaculatus</i>	<i>Gambusia affinis</i>
<i>Lepisosteus platostomus</i>	CATOSTOMIDAE	ATHERINIDAE
AMIIDAE	<i>Carpiodes carpio</i>	<i>Labidesthes sicculus</i>
<i>Amia calva</i>	<i>Carpiodes cyprinus</i>	MORONIDAE
CLUPEIDAE	<i>Carpiodes velifer</i>	<i>Morone mississippiensis</i>
<i>Dorosoma cepedianum</i>	<i>Catostomus commersoni</i>	CENTRARCHIDAE
CYPRINIDAE	<i>Erimyzon sucetta</i>	<i>Lepomis cyanellus</i>
<i>Campostoma anomalum</i>	<i>Hypentelium nigricans</i>	<i>Lepomis gibbosus</i>
<i>Cyprinella lutrensis</i>	<i>Ictiobus cyprinellus</i>	<i>Lepomis humilis</i>
<i>Cyprinella spiloptera</i>	<i>Minytrema melanops</i>	<i>Lepomis macrochirus</i>
<i>Cyprinella whipplei</i>	<i>Moxostoma anisurum</i>	<i>Micropterus dolomieu</i>
<i>Cyprinus carpio</i> I	<i>Moxostoma erythrurum</i>	<i>Micropterus salmoides</i>
<i>Hybognathus nuchalis</i>	<i>Moxostoma macrolepidotum</i>	<i>Pomoxis annularis</i>
<i>Luxilus chrysocephalus</i>	ICTALURIDAE	<i>Pomoxis nigromaculatus</i>
<i>Lythrurus umbratilis</i>	<i>Ameiurus melas</i>	PERCIDAE
<i>Nocomis biguttatus</i>	<i>Ameiurus natalis</i>	<i>Etheostoma flabellare</i>
<i>Notemigonus crysoleucas</i>	<i>Ameiurus nebulosus</i>	<i>Etheostoma nigrum</i>
<i>Notropis atherinoides</i>	<i>Ictalurus punctatus</i>	<i>Etheostoma spectabile</i>
<i>Notropis dorsalis</i>	<i>Noturus flavus</i>	<i>Perca flavescens</i>
<i>Notropis hudsonius</i>	<i>Noturus gyrinus</i>	<i>Percina caprodes</i>
<i>Notropis ludibundus</i>	<i>Noturus nocturnus</i>	<i>Percina maculata</i>
<i>Phenacobius mirabilis</i>	<i>Pylodictis olivaris</i>	<i>Percina phoxocephala</i>
<i>Phoxinus erythrogaster</i>	CYPRINODONTIDAE	<i>Stizostedion canadense</i>
<i>Pimephales notatus</i>	<i>Fundulus dispar</i>	SCIAENIDAE
<i>Pimephales promelas</i>	<i>Fundulus notatus</i>	<i>Aplodinotus grunniens</i>
<i>Pimephales vigilax</i>		

Total number of species = 66 (65 native, 1 introduced)

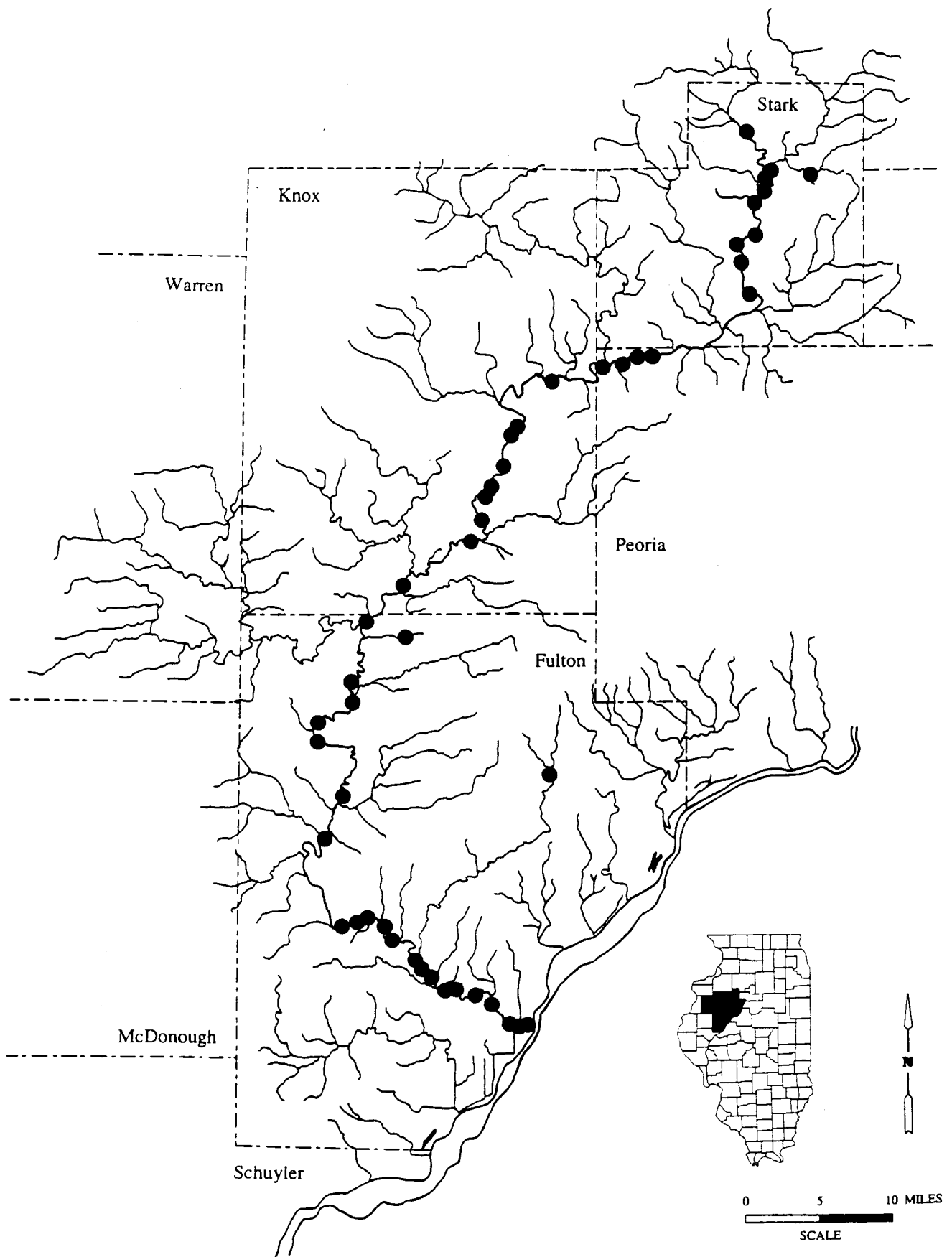


Figure 9-2. Map of mussel collection sites in the Spoon River System represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 9-2. Freshwater mussels recorded from the Spoon River System. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. FE = Federally Endangered; SE = Illinois State Endangered; ST = Illinois State Threatened; SC = State Candidate; X = extirpated.

<i>Actinonaias ligamentina</i>	
<i>Alasmidonta marginata</i>	
<i>Alasmidonta viridis</i>	SE
<i>Amblema plicata</i>	
<i>Anodonta grandis</i>	
<i>Anodonta imbecillis</i>	
<i>Anodonta suborbiculata</i>	
<i>Anodontoides ferussacianus</i>	
<i>Arcidens confragosus</i>	
<i>Cyclonaias tuberculata</i>	
<i>Elliptio crassidens</i>	ST
<i>Elliptio dilatata</i>	SC
<i>Fusconaia flava</i>	
<i>Lampsilis cardium</i>	
<i>Lampsilis higginsii</i>	SE, FE
<i>Lampsilis siliquoidea</i>	
<i>Lampsilis teres</i>	
<i>Lasmigona complanata</i>	
<i>Lasmigona compressa</i>	ST
<i>Lasmigona costata</i>	
<i>Leptodea fragilis</i>	
<i>Ligumia recta</i>	
<i>Megalonaias nervosa</i>	
<i>Obliquaria reflexa</i>	
<i>Obovaria olivaria</i>	
<i>Plethobasus cyphus</i>	ST
<i>Pleurobema sintoxia</i>	
<i>Potamilus alatus</i>	
<i>Potamilus capax</i>	SE, FE
<i>Potamilus ohioensis</i>	
<i>Quadrula fragosa</i>	SE, FE, X
<i>Quadrula metanevra</i>	
<i>Quadrula nodulata</i>	
<i>Quadrula pustulosa</i>	
<i>Quadrula quadrula</i>	
<i>Strophitus undulatus</i>	
<i>Toxolasma parvus</i>	
<i>Tritogonia verrucosa</i>	
<i>Truncilla donaciformis</i>	
<i>Truncilla truncata</i>	
<i>Venustaconcha ellipsiformis</i>	SC

Total number of species = 41.

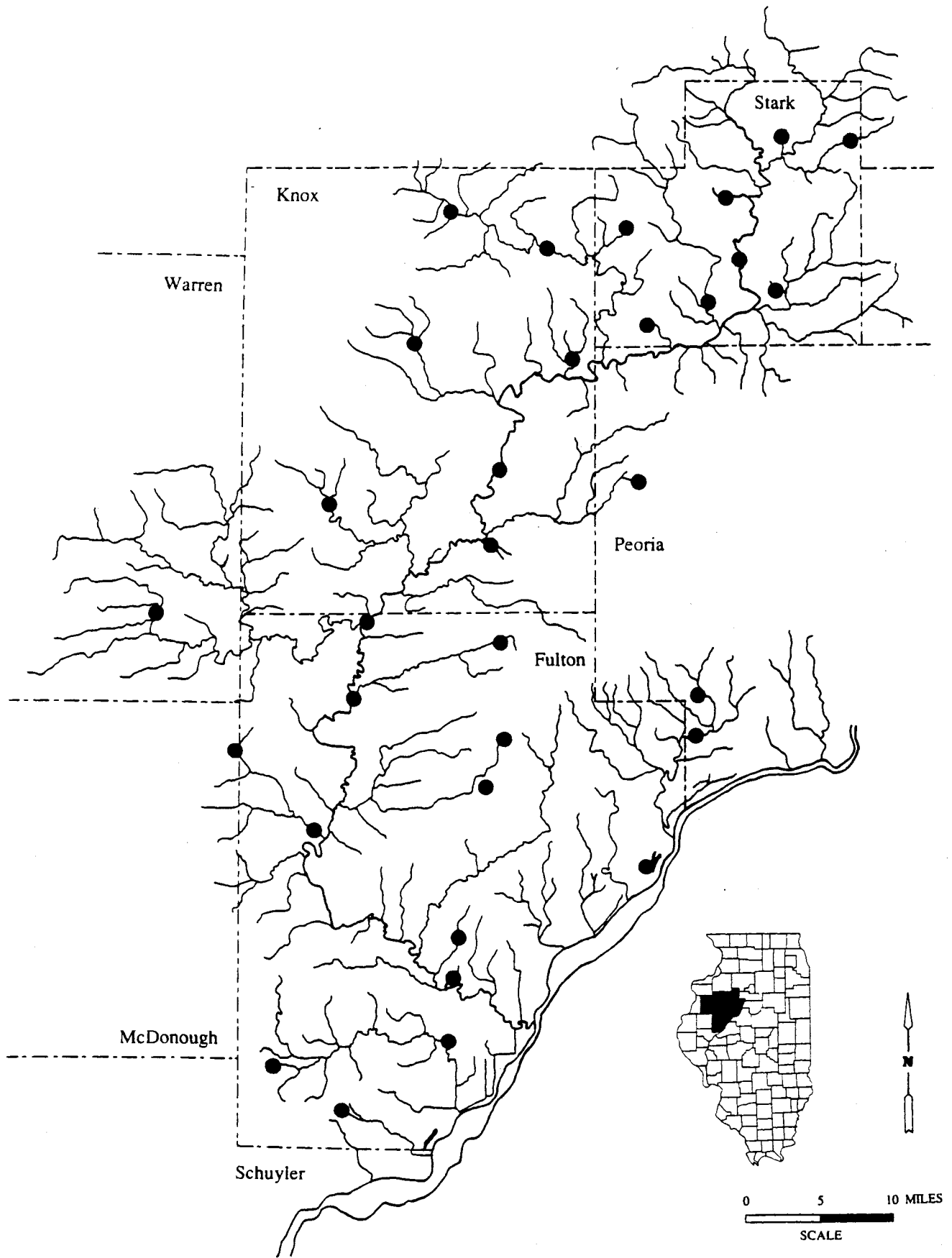


Figure 9-3. Map of crustacean collection sites in the Spoon River System represented in the Illinois Natural History Survey Crustacean Collection.

Table 9-3. Freshwater crustaceans recorded from the Spoon River System Data from the Illinois Natural History Survey Crustacean Collection.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea forbesi
Caecidotea intermedia
Caecidotea kendeighi

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Batrurus mucronatus
Gammarus pseudolimnaeus

HYALELLIDAE

Hyaella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

CAMBARIDAE

Cambarus diogenes
Orconectes immunis
Orconectes virilis
Procambarus acutus
Procambarus gracilis

Total number of species = 11.

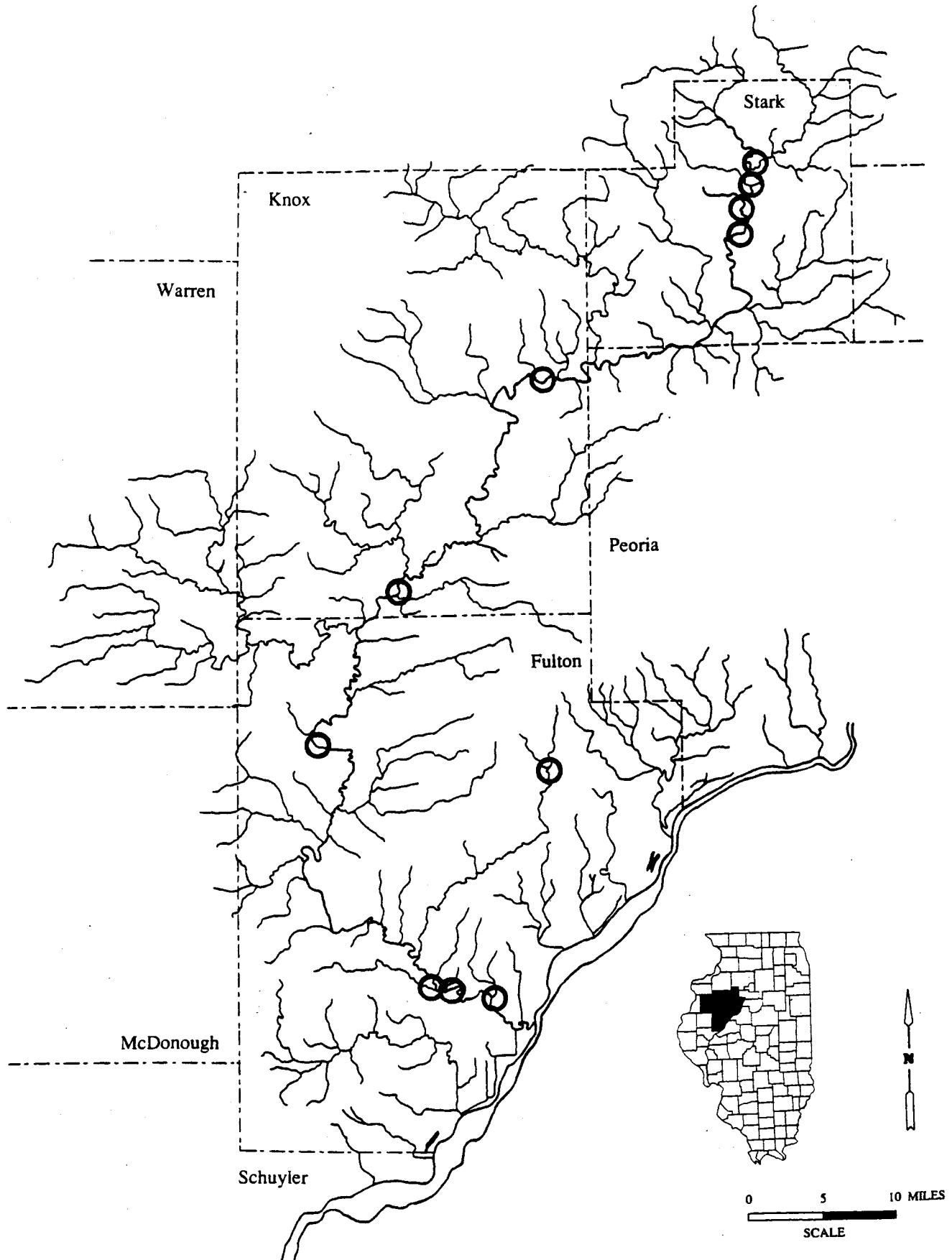
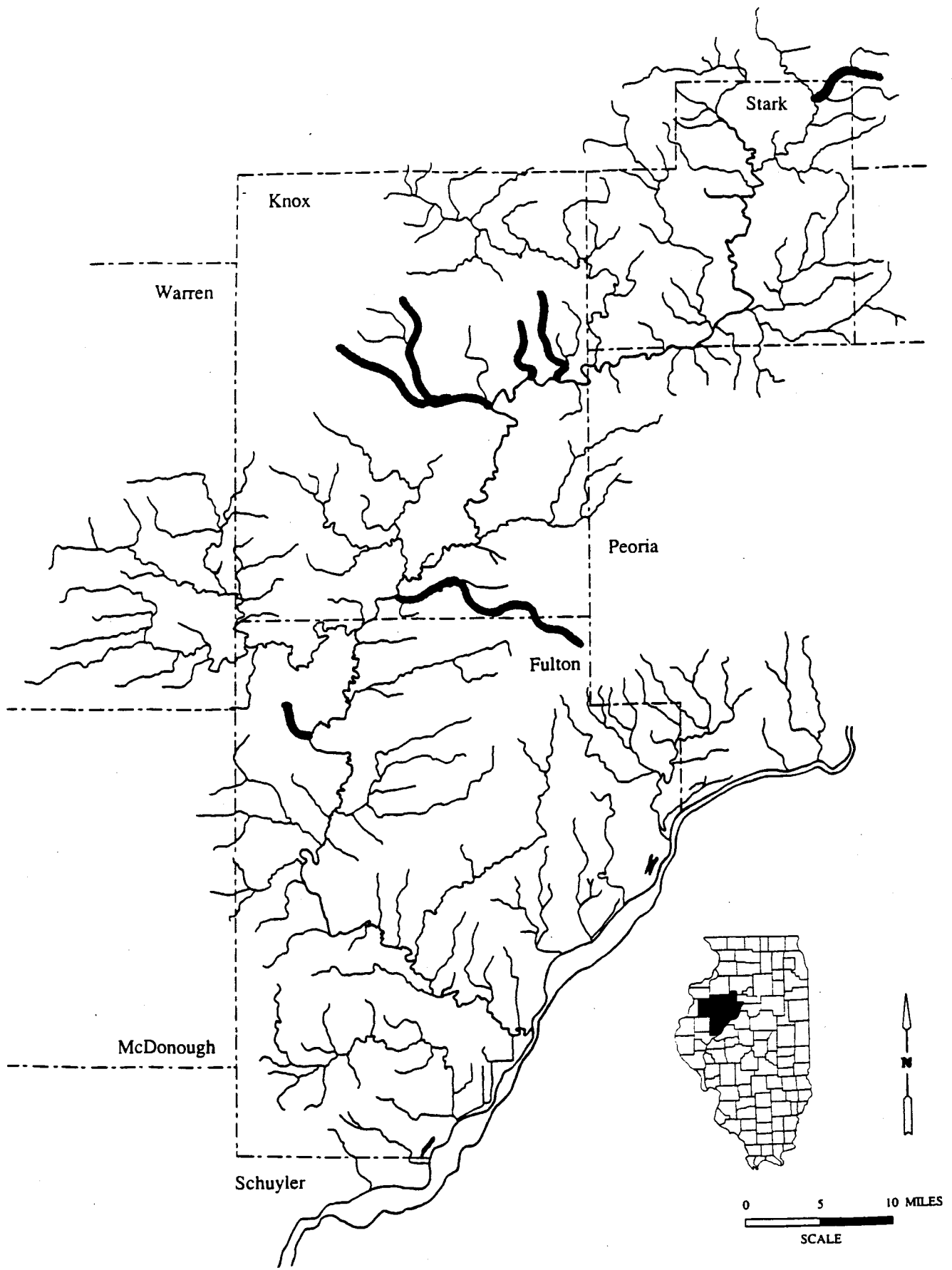
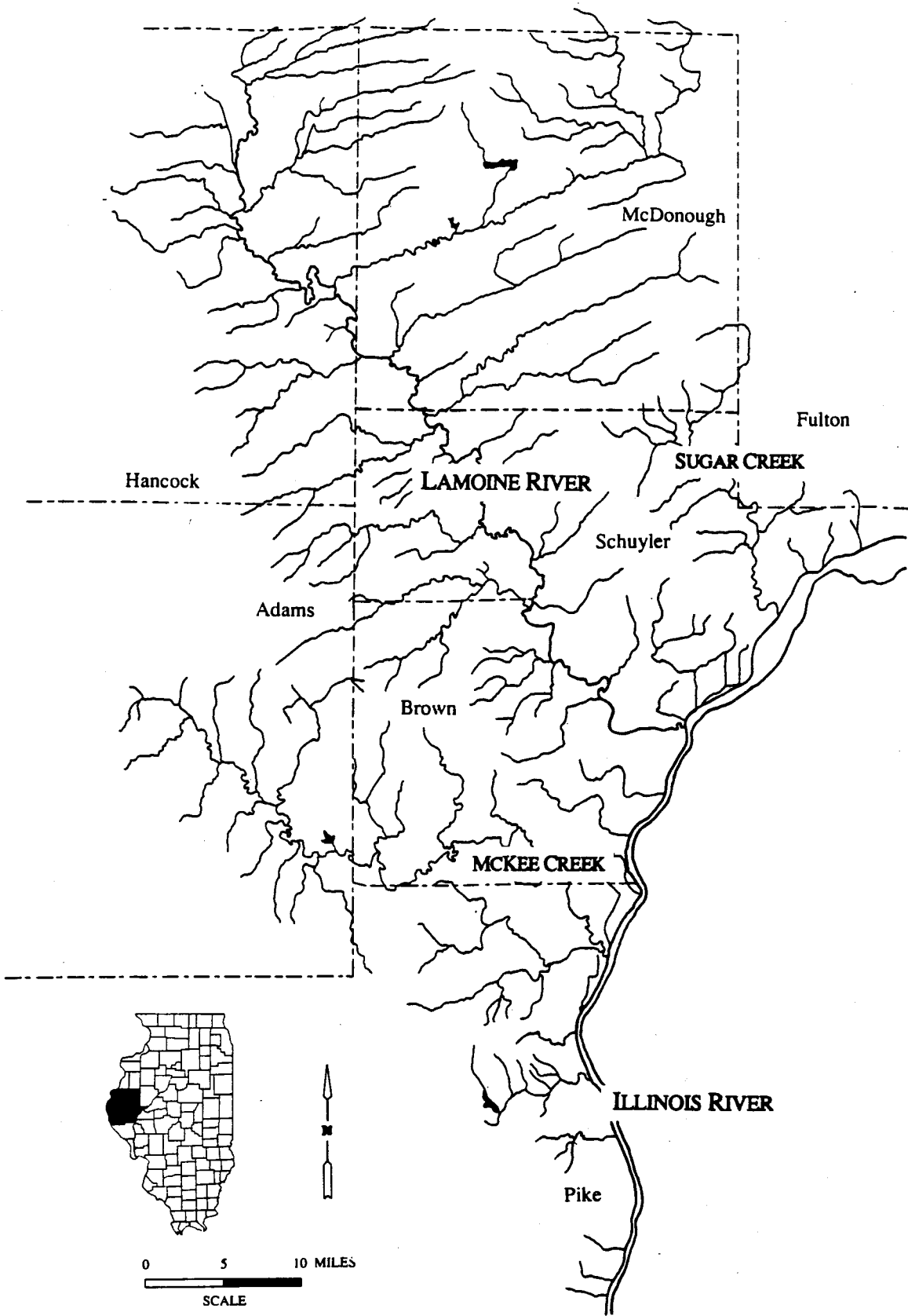


Figure 9-4. Map of historic (open symbols = pre-1980) populations of threatened or endangered mussels (circles) in the Spoon River System.



9. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Spoon River System.



10. La Moine River System

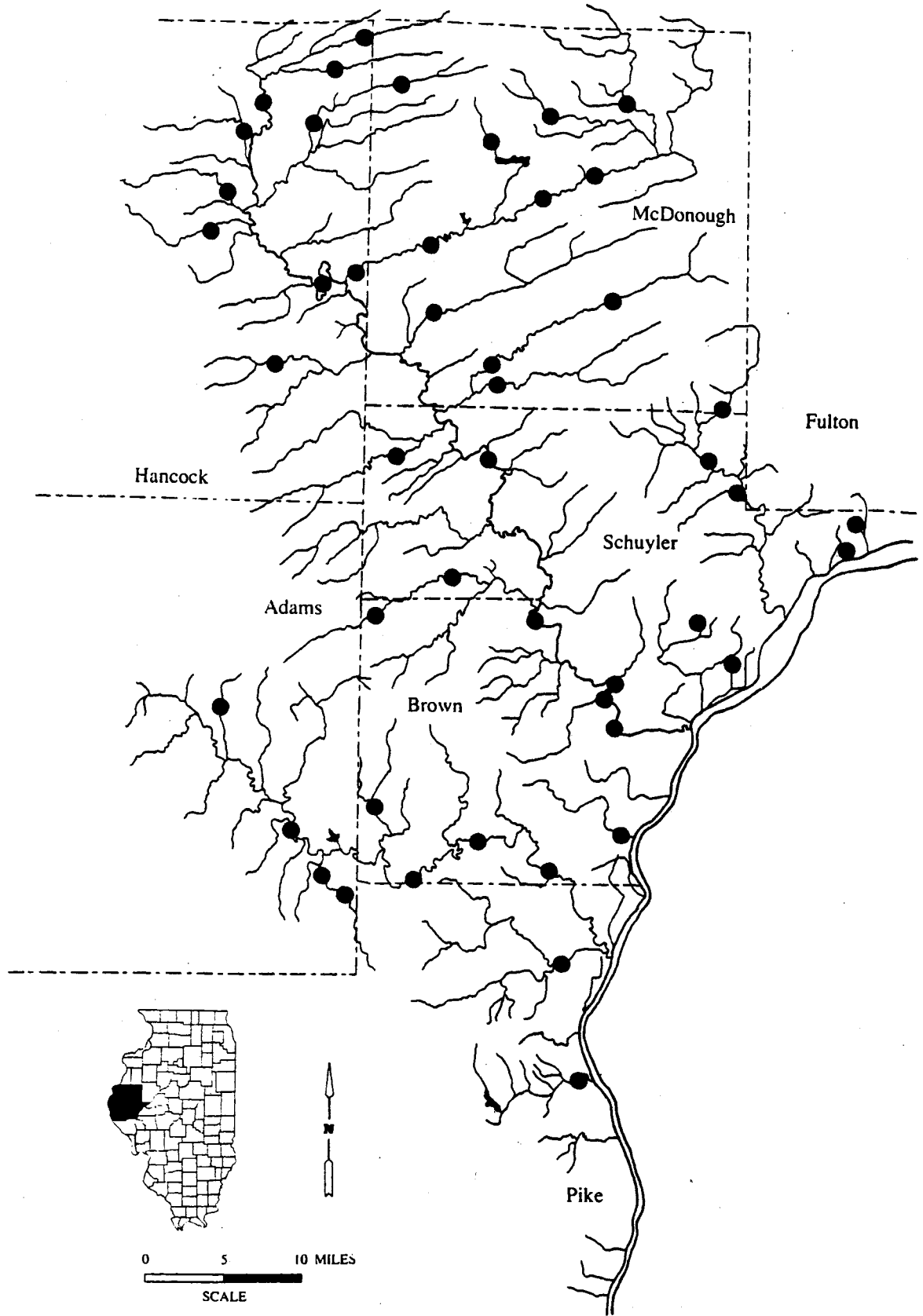


Figure 10-1. Map of fish collection sites in the La Moine River System represented in the Illinois Natural History Survey Fish Collection.

Table 10-1. Freshwater fishes recorded from the La Moine River System. Data from the Illinois Natural History Survey Fish Collection. I = Introduced.

LEPISOSTEIDAE	<i>Pimephales promelas</i>	POECILIIDAE
<i>Lepisosteus osseus</i>	<i>Rhinichthys atratulus</i>	<i>Gambusia affinis</i>
AMIIDAE	<i>Semotilus atromaculatus</i>	APHREDODERIDAE
<i>Amia calva</i>	CATOSTOMIDAE	<i>Aphredoderus sayanus</i>
CLUPEIDAE	<i>Carpionodes carpio</i>	MORONIDAE
<i>Dorosoma cepedianum</i>	<i>Carpionodes cyprinus</i>	<i>Morone chrysops</i>
CYPRINIDAE	<i>Carpionodes velifer</i>	CENTRARCHIDAE
<i>Campostoma anomalum</i>	<i>Catostomus commersoni</i>	<i>Lepomis cyanellus</i>
<i>Cyprinella lutrensis</i>	<i>Ictiobus bubalus</i>	<i>Lepomis humilis</i>
<i>Cyprinella whipplei</i>	<i>Ictiobus cyprinellus</i>	<i>Lepomis macrochirus</i>
<i>Cyprinus carpio</i> I	<i>Moxostoma erythrurum</i>	<i>Micropterus dolomieu</i>
<i>Hybognathus nuchalis</i>	<i>Moxostoma macrolepidotum</i>	<i>Micropterus salmoides</i>
<i>Hypophthalmichthys molitrix</i> I	ICTALURIDAE	<i>Pomoxis annularis</i>
<i>Luxilus chrysocephalus</i>	<i>Ameiurus melas</i>	PERCIDAE
<i>Lythrurus umbratilis</i>	<i>Ameiurus natalis</i>	<i>Etheostoma flabellare</i>
<i>Nocomis biguttatus</i>	<i>Ictalurus punctatus</i>	<i>Etheostoma nigrum</i>
<i>Notemigonus crysoleucas</i>	<i>Noturus exilis</i>	<i>Etheostoma spectabile</i>
<i>Notropis atherinoides</i>	<i>Noturus flavus</i>	<i>Percina caprodes</i>
<i>Notropis dorsalis</i>	<i>Noturus nocturnus</i>	<i>Percina maculata</i>
<i>Notropis ludibundus</i>	<i>Pylodictis olivaris</i>	<i>Percina phoxocephala</i>
<i>Phenacobius mirabilis</i>	CYPRINODONTIDAE	SCIAENIDAE
<i>Phoxinus erythrogaster</i>	<i>Fundulus notatus</i>	<i>Aplodinotus grunniens</i>
<i>Pimephales notatus</i>		

Total number of species = 54 (52 native, 2 introduced)

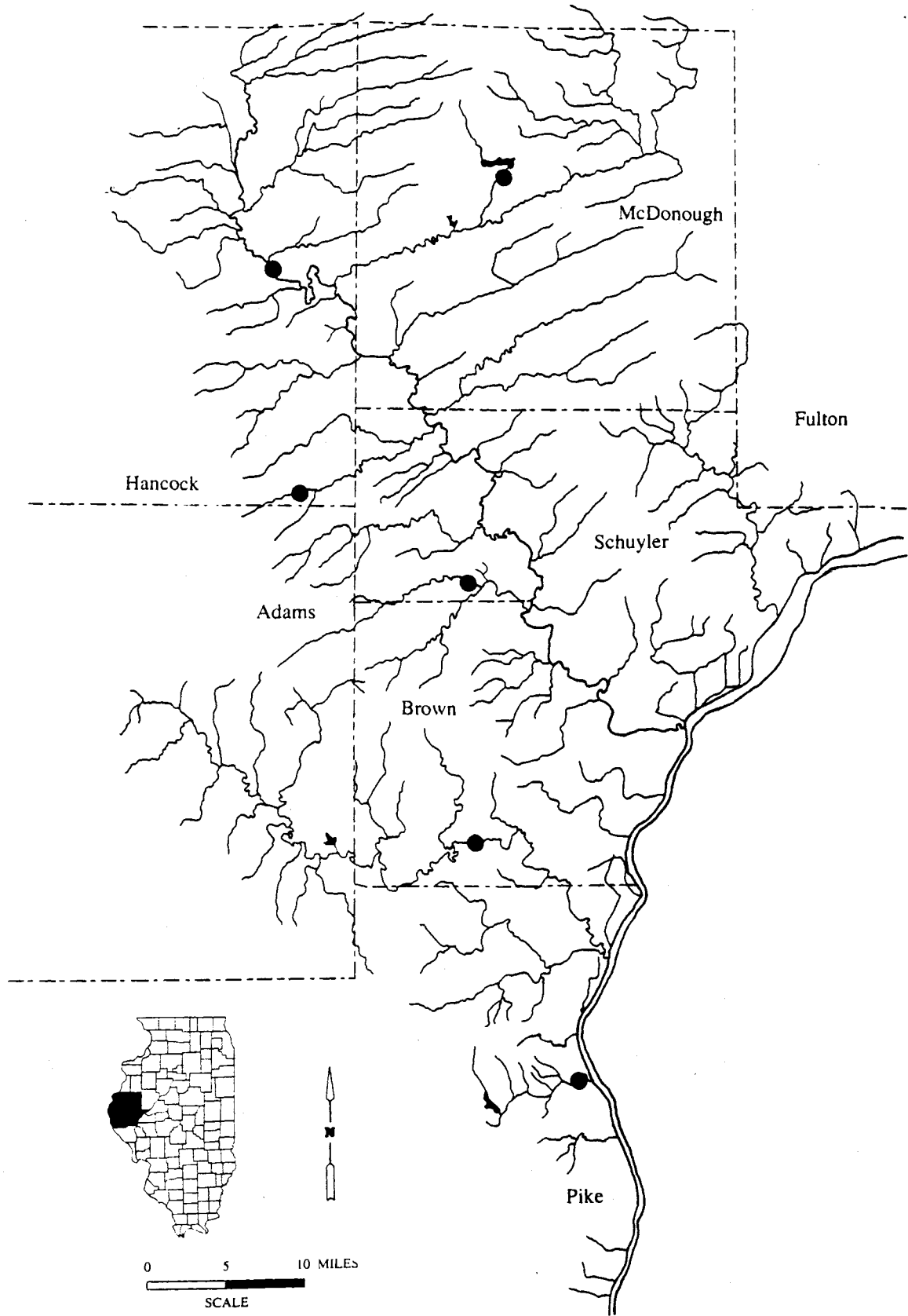


Figure 10-2. Map of mussel collection sites in the La Moine River System represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 10-2. Freshwater mussels recorded from the La Moine River System and other small tributaries of the Illinois River. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. ST = Illinois State Threatened.

<i>Actinonaias ligamentina</i>	
<i>Amblema plicata</i>	
<i>Lampsilis cardium</i>	
<i>Lampsilis siliquoidea</i>	
<i>Lampsilis teres</i>	
<i>Lasmigona complanata</i>	
<i>Leptodea fragilis</i>	
<i>Potamilus ohioensis</i>	
<i>Quadrula quadrula</i>	
<i>Strophitus undulatus</i>	
<i>Toxolasma parvum</i>	
<i>Tritogonia verrucosa</i>	
<i>Unio merus tetralasmus</i>	ST

Total number of species = 13.

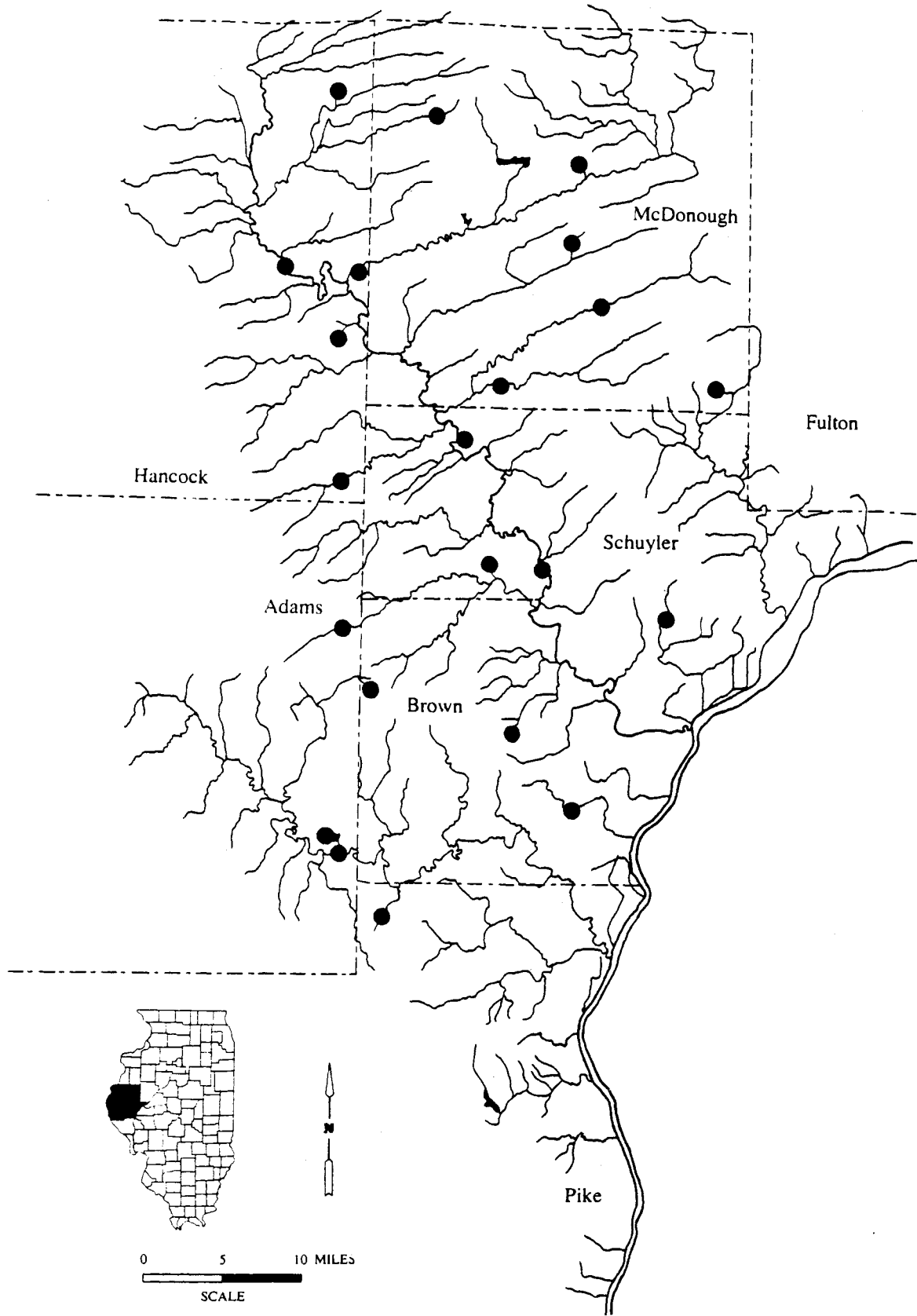


Figure 10-3. Map of crustacean collection sites in the La Moine River System represented in the Illinois Natural History Survey Crustacean Collection.

Table 10-3. Freshwater crustaceans recorded from the La Moine River System Data from the Illinois Natural History Survey Crustacean Collection.

ISOPODA (ISOPODS)

ASELLIDAE

- Caecidotea forbesi*
- Caecidotea intermedia*

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

- Crangonyx minor*
- Gammarus pseudolimnaeus*

HYALELLIDAE

- Hyalella azteca*

DECAPODA (CRAYFISHES & SHRIMPS)

CAMBARIDAE

- Cambarus diogenes*
- Orconectes immunis*
- Orconectes virilis*
- Procambarus acutus*
- Procambarus gracilis*

Total number of species = 10.

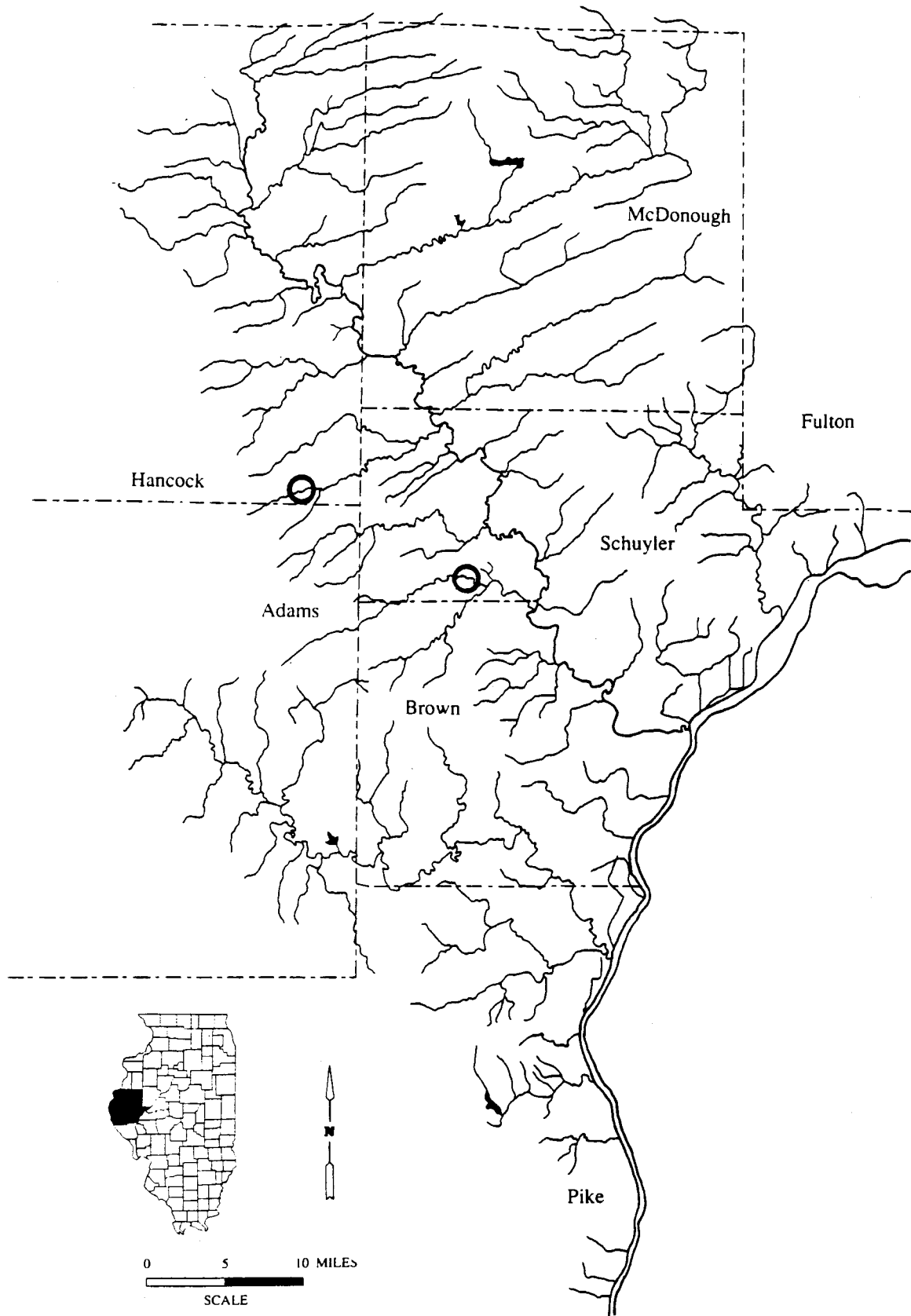
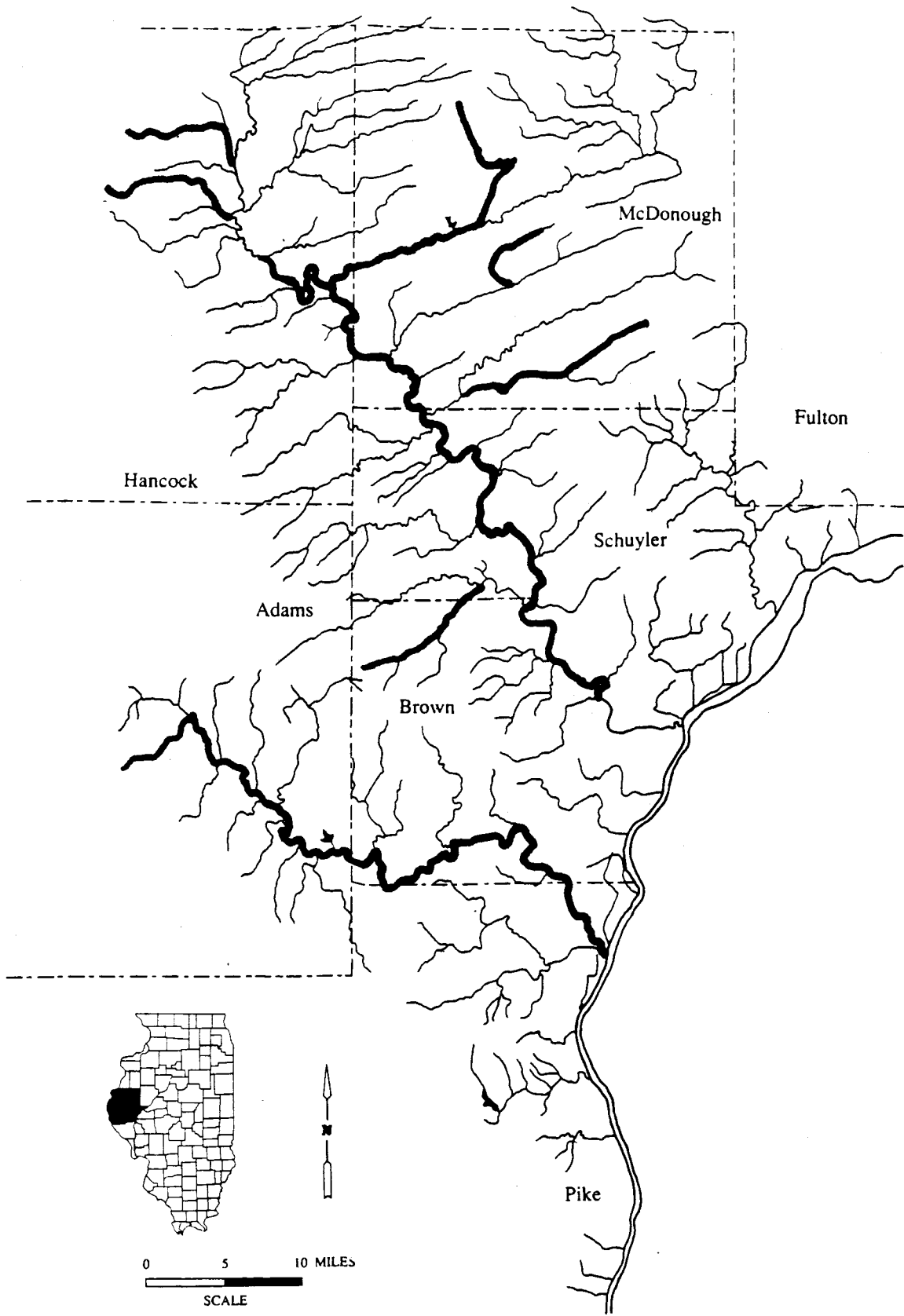
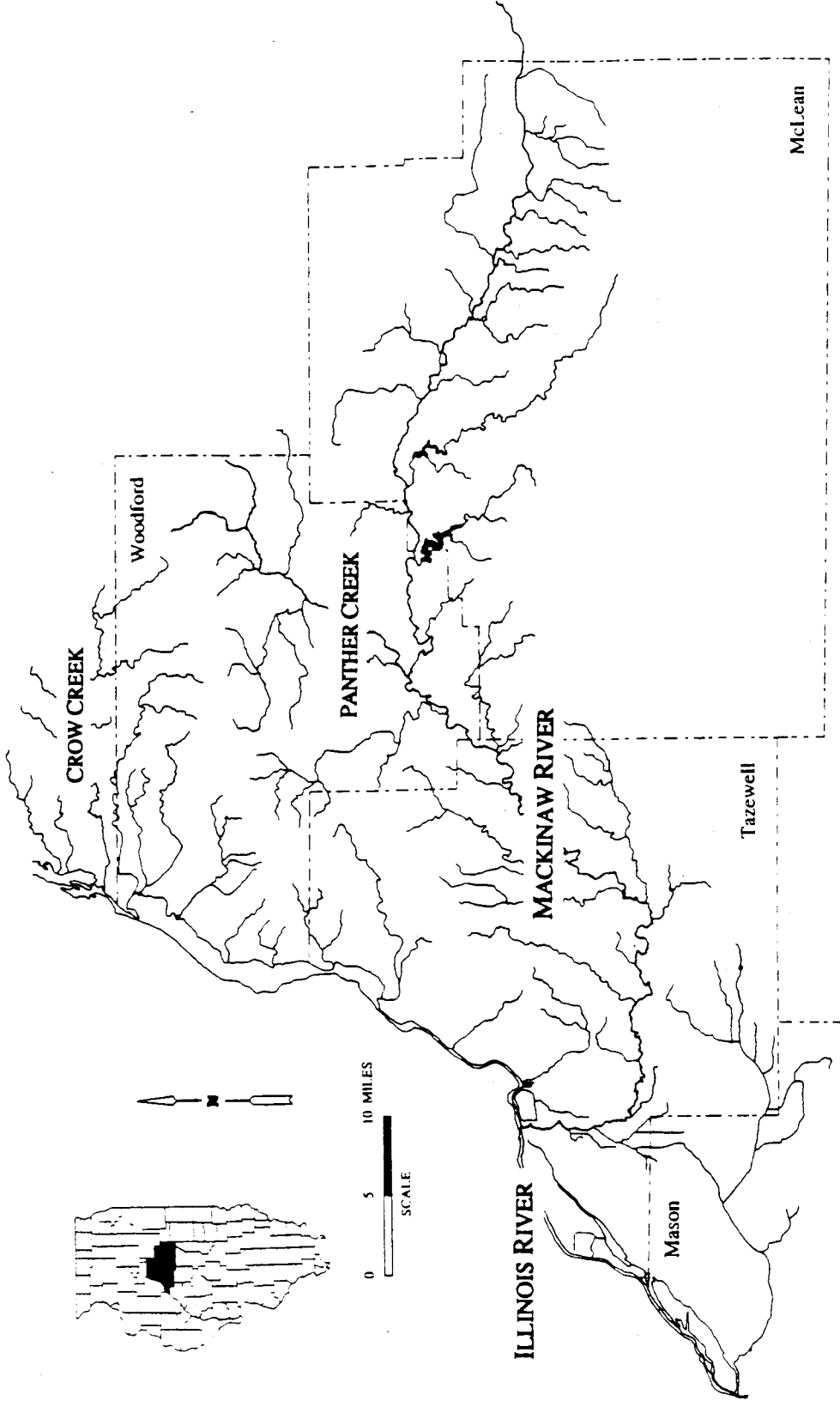


Figure 10-4. Map of historic (open symbols = pre-1980) populations of threatened or endangered mussels (circles) in the La Moine River System.



10. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the La Moine River System.



11. Mackinaw River System

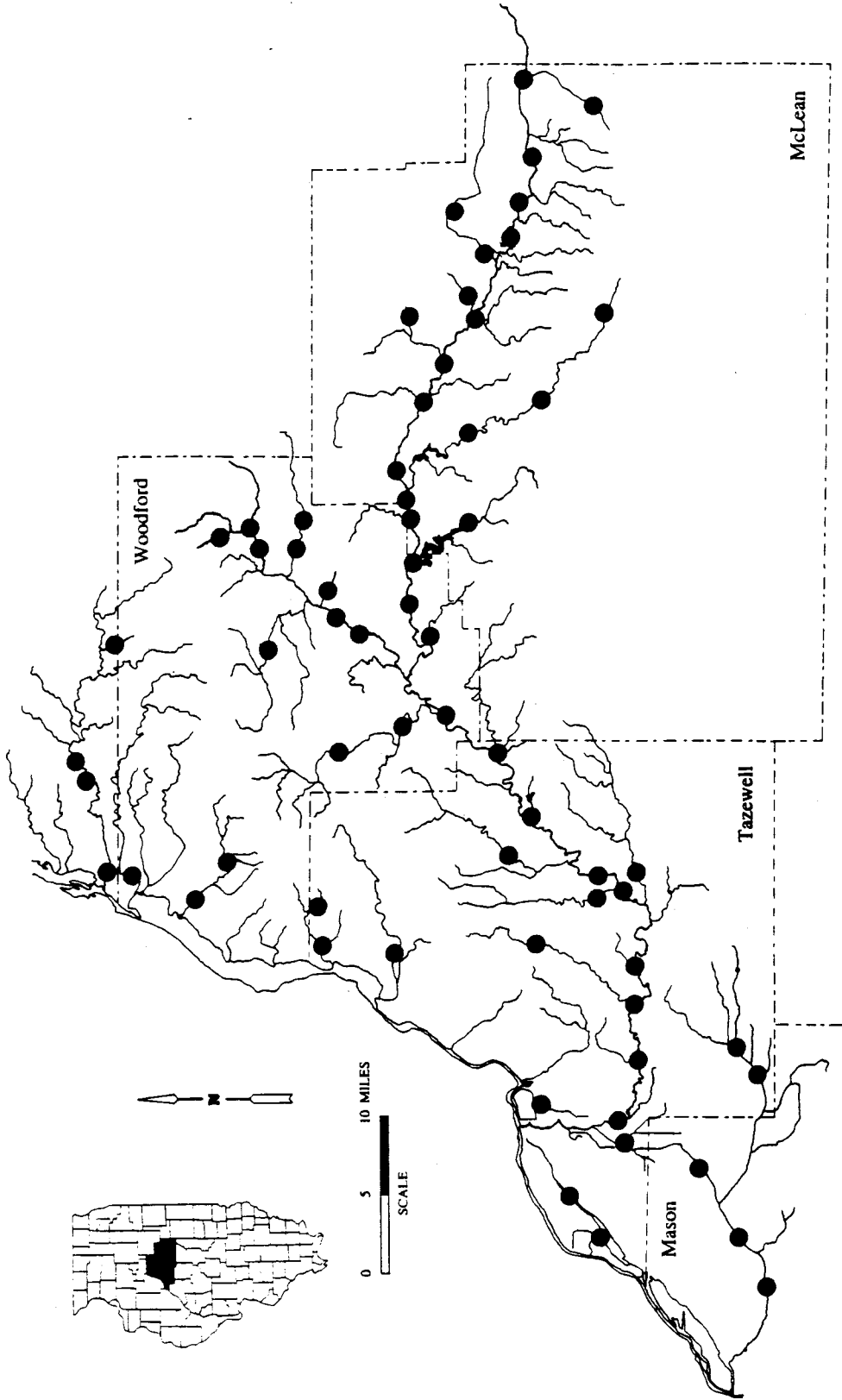


Figure 11-1. Map of fish collection sites in the Mackinaw River System represented in the Illinois Natural History Survey Fish Collection.

Table 11-1. Freshwater fishes recorded from the Mackinaw River System. Data from the Illinois Natural History Survey Fish Collection. SE = Illinois State Endangered; ST = Illinois State Threatened; I = Introduced.

CLUPEIDAE	<i>Pimephales promelas</i>	POECILIIDAE
<i>Dorosoma cepedianum</i>	<i>Pimephales vigilax</i>	<i>Gambusia affinis</i>
UMBRIDAE	<i>Rhinichthys atratulus</i>	APHREDODERIDAE
<i>Umbra limi</i>	<i>Semotilus atromaculatus</i>	<i>Aphredoderus sayanus</i>
ESOCIDAE	CATOSTOMIDAE	ATHERINIDAE
<i>Esox americanus</i>	<i>Carpionides carpio</i>	<i>Labidesthes sicculus</i>
CYPRINIDAE	<i>Carpionides cyprinus</i>	PERCOPSIDAE
<i>Campostoma anomalum</i>	<i>Carpionides velifer</i>	<i>Percopsis omiscomaycus</i>
<i>Campostoma oligolepis</i>	<i>Catostomus commersoni</i>	CENTRARCHIDAE
<i>Cyprinella lutrensis</i>	<i>Erimyzon oblongus</i>	<i>Ambloplites rupestris</i>
<i>Cyprinella spiloptera</i>	<i>Erimyzon sucetta</i>	<i>Chaenobryttus gulosus</i>
<i>Cyprinella whipplei</i>	<i>Hypentelium nigricans</i>	<i>Lepomis cyanellus</i>
<i>Cyprinus carpio</i> I	<i>Ictiobus bubalus</i>	<i>Lepomis gibbosus</i>
<i>Extrarius aestivalis</i>	<i>Ictiobus cyprinellus</i>	<i>Lepomis humilis</i>
<i>Hybognathus nuchalis</i>	<i>Moxostoma anisurum</i>	<i>Lepomis macrochirus</i>
<i>Luxilus chrysocephalus</i>	<i>Moxostoma duquesnei</i>	<i>Lepomis megalotis</i>
<i>Lythrurus umbratilis</i>	<i>Moxostoma erythrurum</i>	<i>Lepomis microlophus</i>
<i>Macrhybopsis storeriana</i>	<i>Moxostoma macrolepidotum</i>	<i>Lepomis miniatus</i> ST
<i>Nocomis biguttatus</i>	ICTALURIDAE	<i>Micropterus dolomieu</i>
<i>Notemigonus crysoleucas</i>	<i>Ameiurus melas</i>	<i>Micropterus punctulatus</i>
<i>Notropis atherinoides</i>	<i>Ameiurus natalis</i>	<i>Micropterus salmoides</i>
<i>Notropis chalybaeus</i> ST	<i>Ameiurus nebulosus</i>	<i>Pomoxis annularis</i>
<i>Notropis dorsalis</i>	<i>Ictalurus punctatus</i>	<i>Pomoxis nigromaculatus</i>
<i>Notropis heterolepis</i> ST	<i>Noturus exilis</i>	PERCIDAE
<i>Notropis ludibundus</i>	<i>Noturus flavus</i>	<i>Etheostoma flabellare</i>
<i>Notropis rubellus</i>	<i>Noturus gyrinus</i>	<i>Etheostoma nigrum</i>
<i>Notropis texanus</i> SE	<i>Noturus nocturnus</i>	<i>Etheostoma spectabile</i>
<i>Opsopoeodus emiliae</i>	<i>Pylodictis olivaris</i>	<i>Etheostoma zonale</i>
<i>Phenacobius mirabilis</i>	CYPRINODONTIDAE	<i>Percina caprodes</i>
<i>Phoxinus erythrogaster</i>	<i>Fundulus dispar</i>	<i>Percina maculata</i>
<i>Pimephales notatus</i>	<i>Fundulus notatus</i>	<i>Percina phoxocephala</i>

Total number of species = 80 (79 native, I introduced)

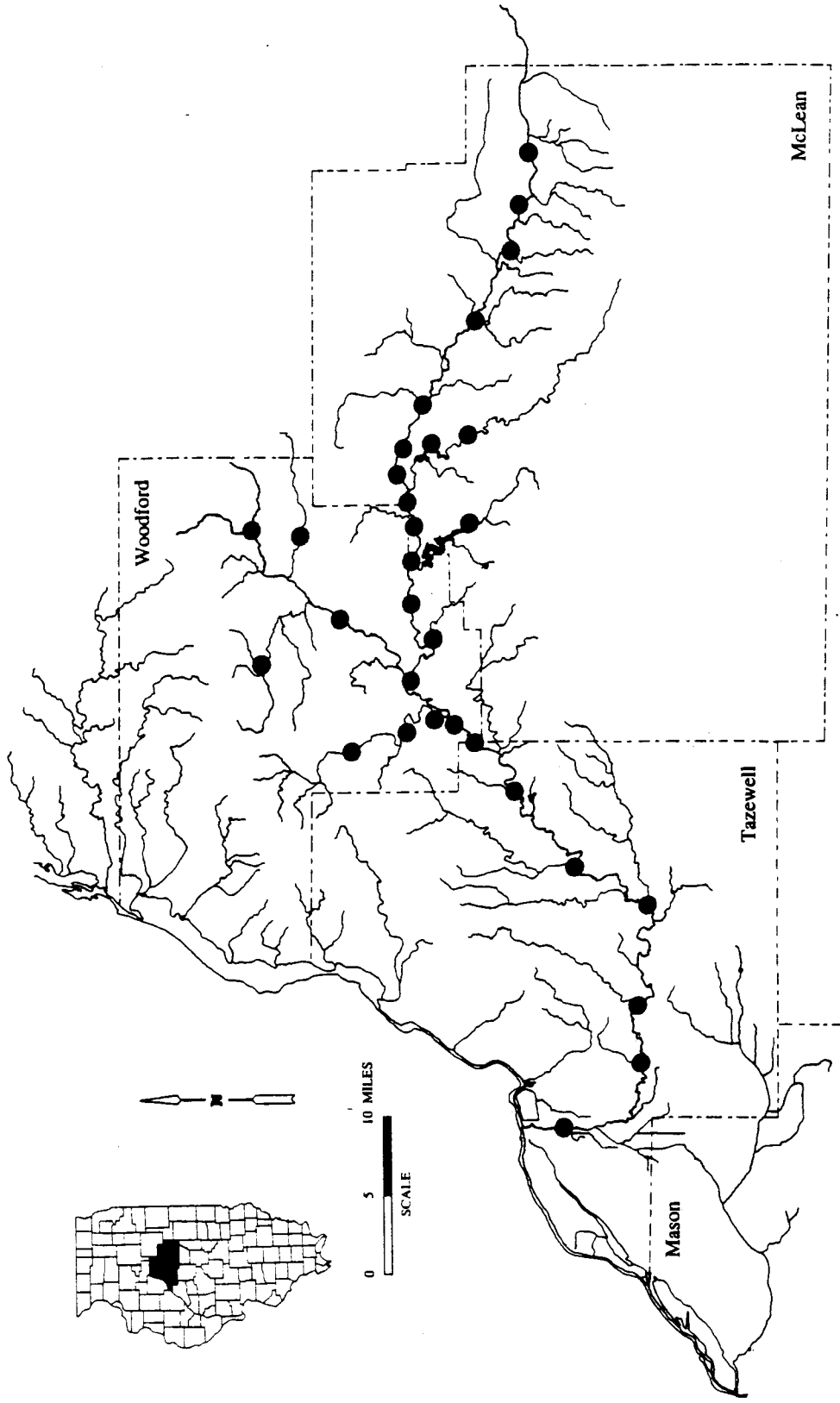


Figure 11-2. Map of mussel collection sites in the Mackinaw River System represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 11-2. Freshwater mussels recorded from the Mackinaw River System. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. SE = Illinois State Endangered; ST = Illinois State Threatened.

<i>Actinonaias ligamentina</i>	
<i>Alasmidonta marginata</i>	
<i>Alasmidonta viridis</i>	SE
<i>Amblyma plicata</i>	
<i>Anodonta grandis</i>	
<i>Anodonta imbecillis</i>	
<i>Anodontoides ferussacianus</i>	
<i>Elliptio dilatata</i>	
<i>Fusconaia flava</i>	
<i>Lampsilis cardium</i>	
<i>Lampsilis siliquoidea</i>	
<i>Lampsilis teres</i>	
<i>Lasmigona complanata</i>	
<i>Lasmigona compressa</i>	ST
<i>Lasmigona costata</i>	
<i>Leptodea fragilis</i>	
<i>Pleurobema sintoxia</i>	
<i>Potamilus alatus</i>	
<i>Potamilus ohioensis</i>	
<i>Quadrula pustulosa</i>	
<i>Quadrula quadrula</i>	
<i>Strophitus undulatus</i>	
<i>Toxolasma parvus</i>	
<i>Tritogonia verrucosa</i>	
<i>Truncilla donaciformis</i>	
<i>Unio merus tetralasmus</i>	ST
<i>Venustaconcha ellipsiformis</i>	
<i>Villosa iris</i>	SE

Total number of species = 28.

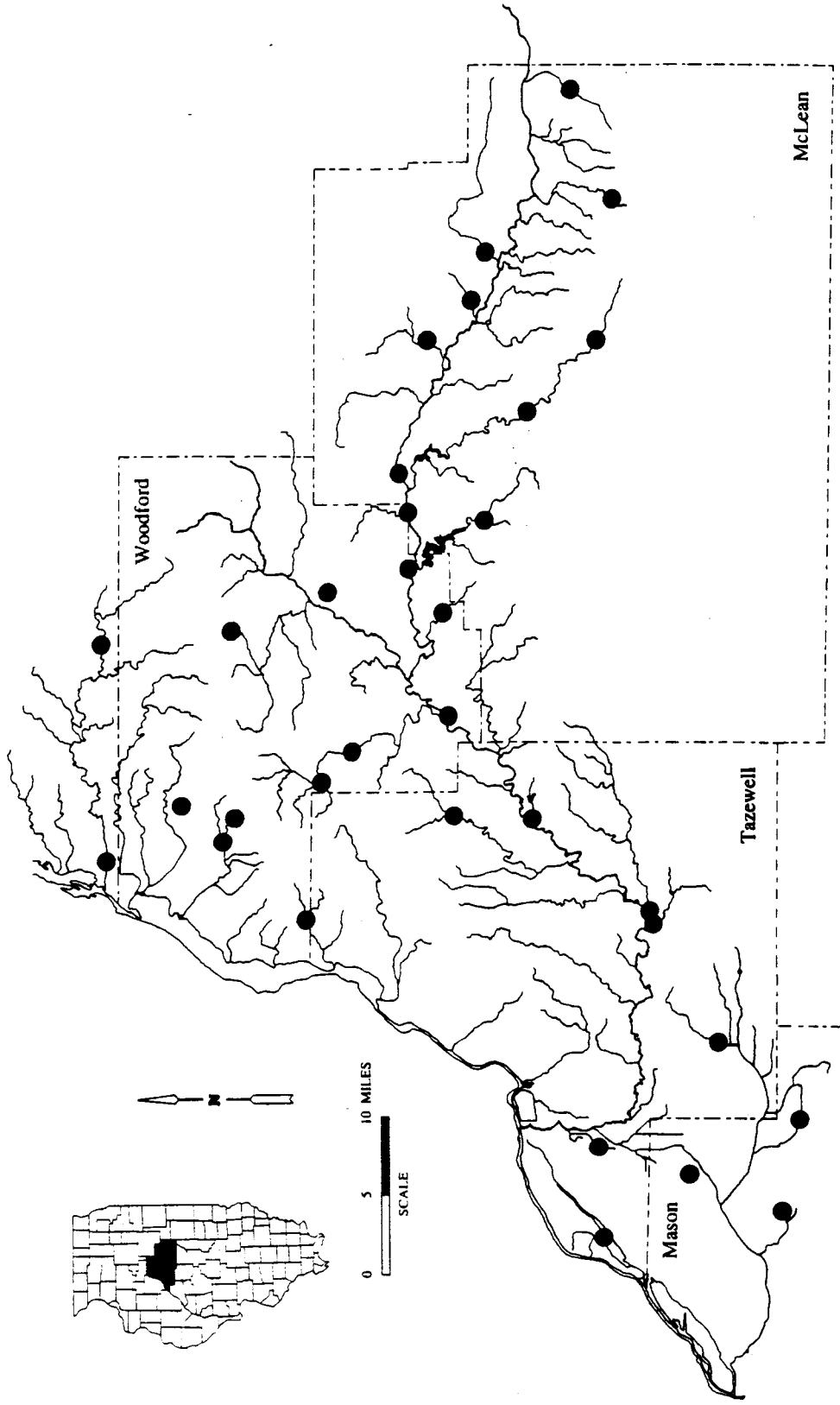


Figure 11-3. Map of crustacean collection sites in the Mackinaw River System represented in the Illinois Natural History Survey Crustacean Collection.

Table 11-3. Freshwater crustaceans recorded from the Mackinaw River System. Data from the Illinois Natural History Survey Crustacean Collection.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea intermedia

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Crangonyx gracilis

HYALELLIDAE

Hyaella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

CAMBARIDAE

Cambarus diogenes

Orconectes immunis

Orconectes propinquus

Orconectes virilis

Procambarus acutus

Procambarus gracilis

Total number of species = 9

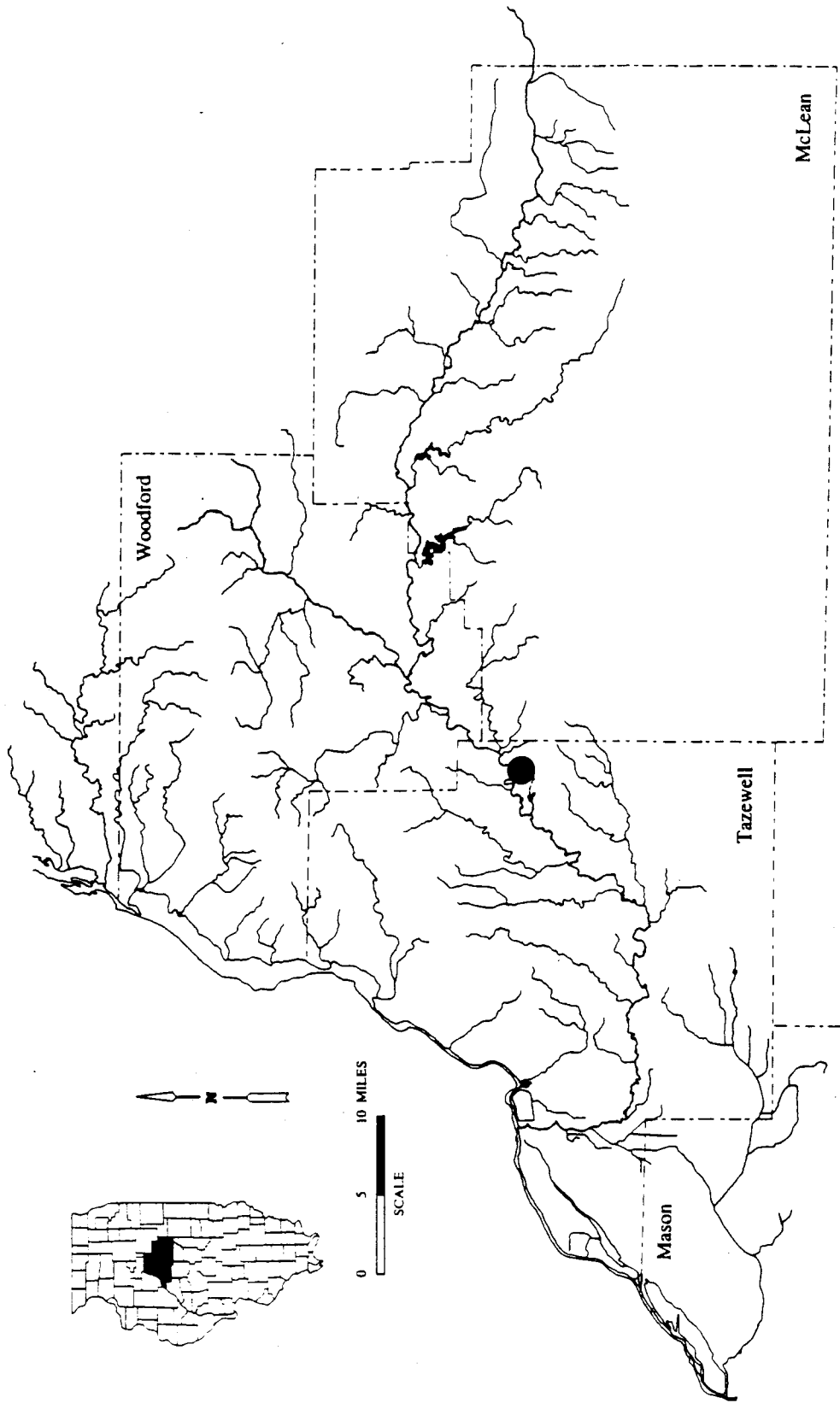


Figure 11-4. Map of extant (solid symbols = 1980 to present) populations of endangered lotic plants (circles) in the Mackinaw River System.

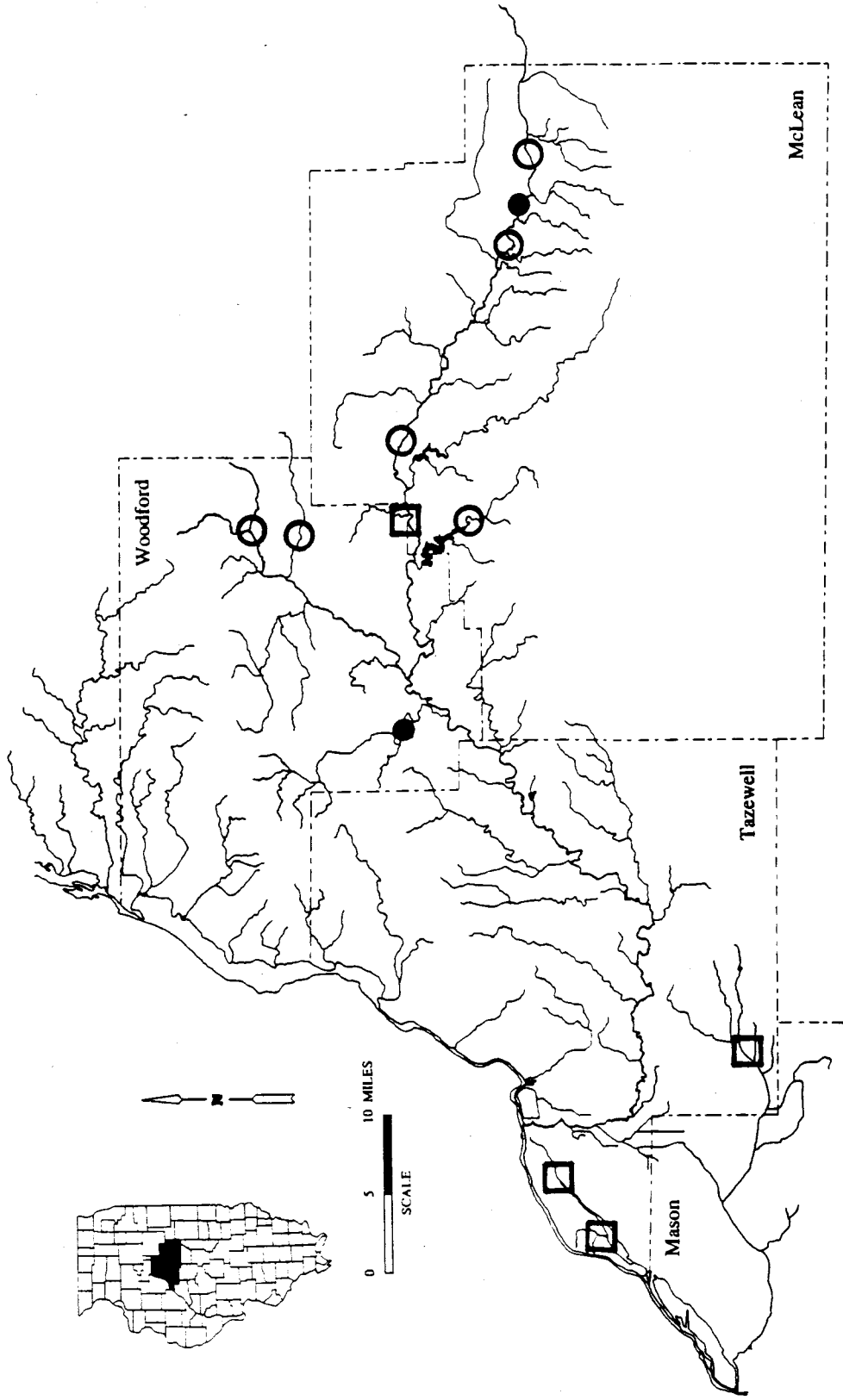
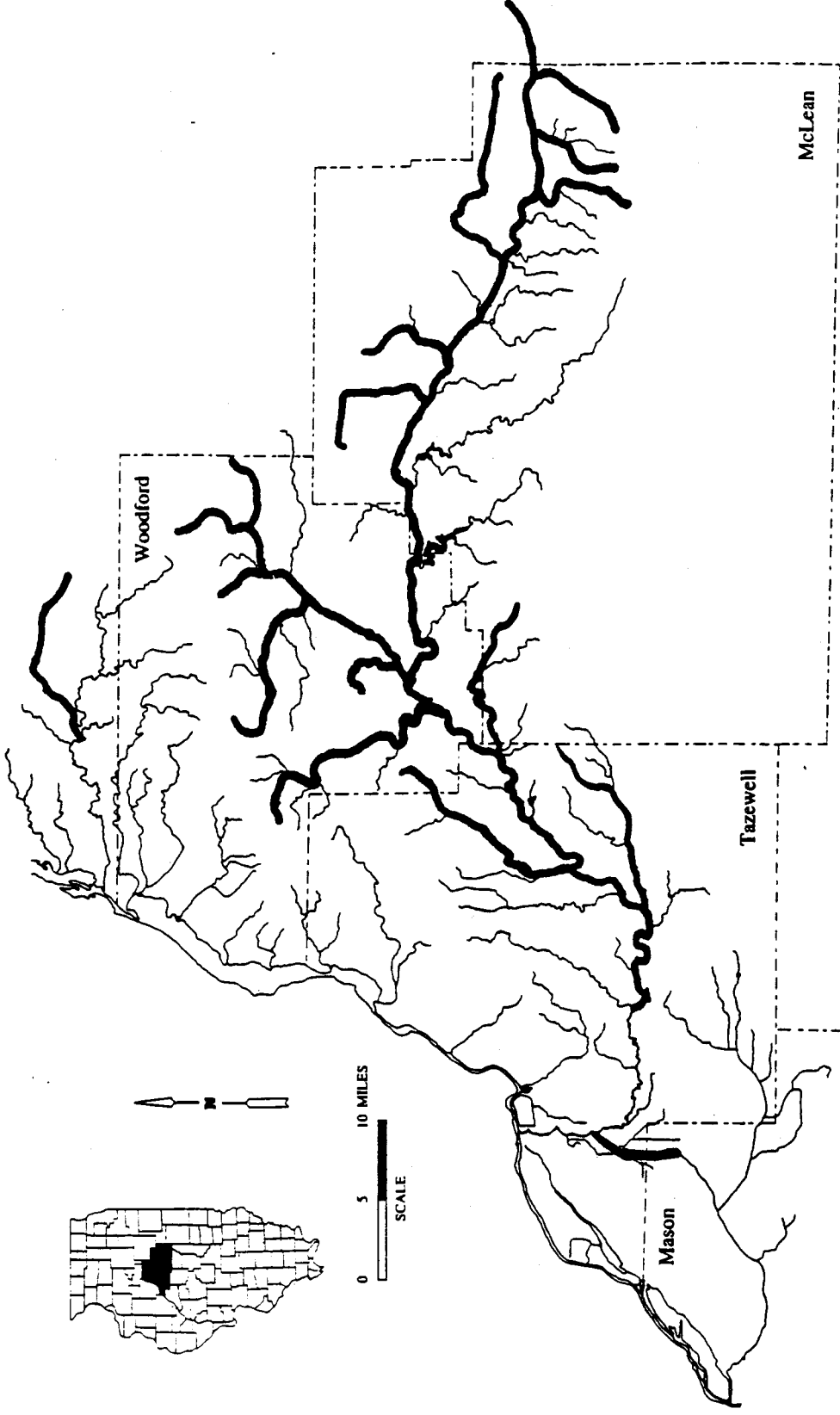
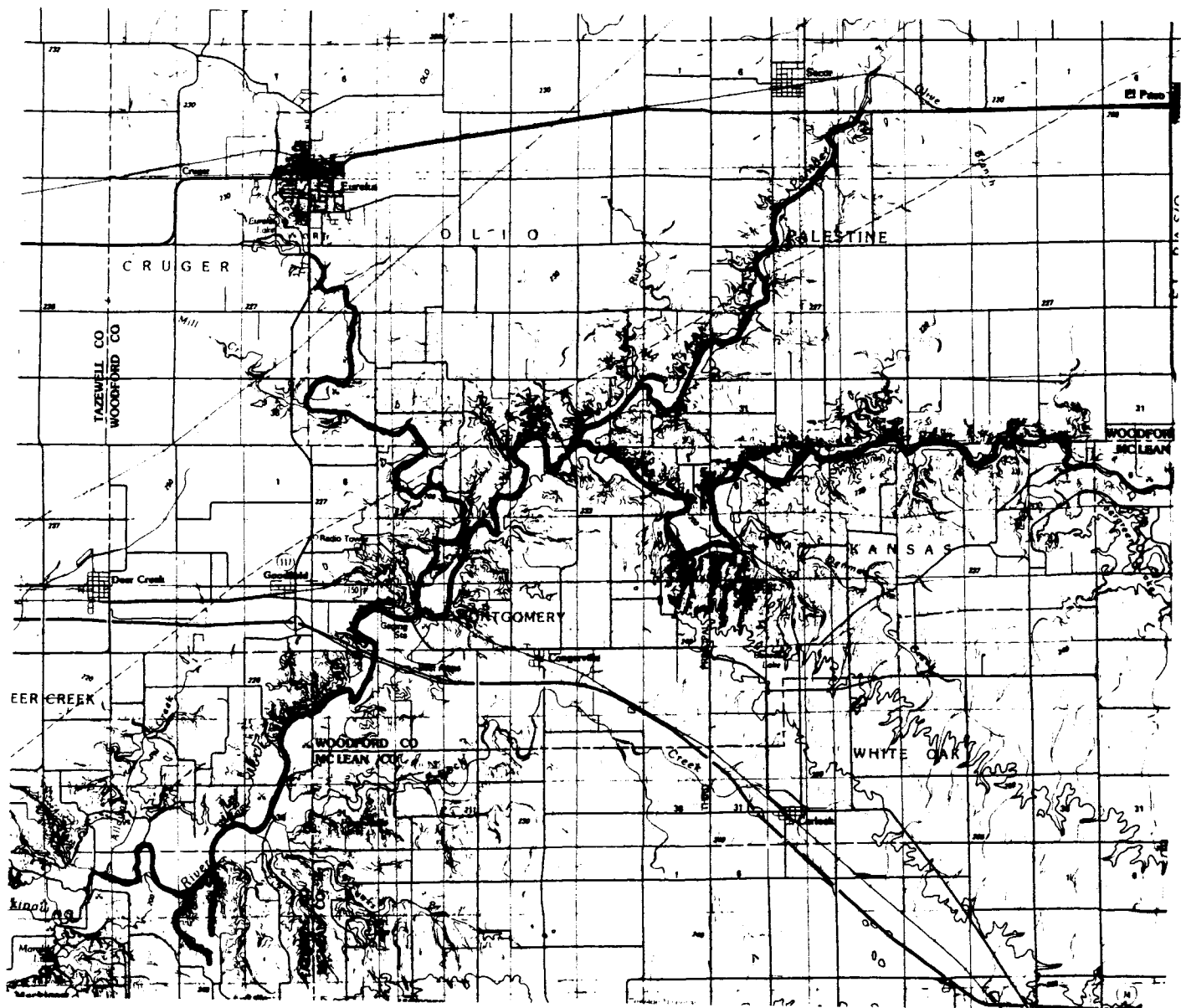


Figure 11-5. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered fishes (squares) and mussels (circles) in the Mackinaw River System.

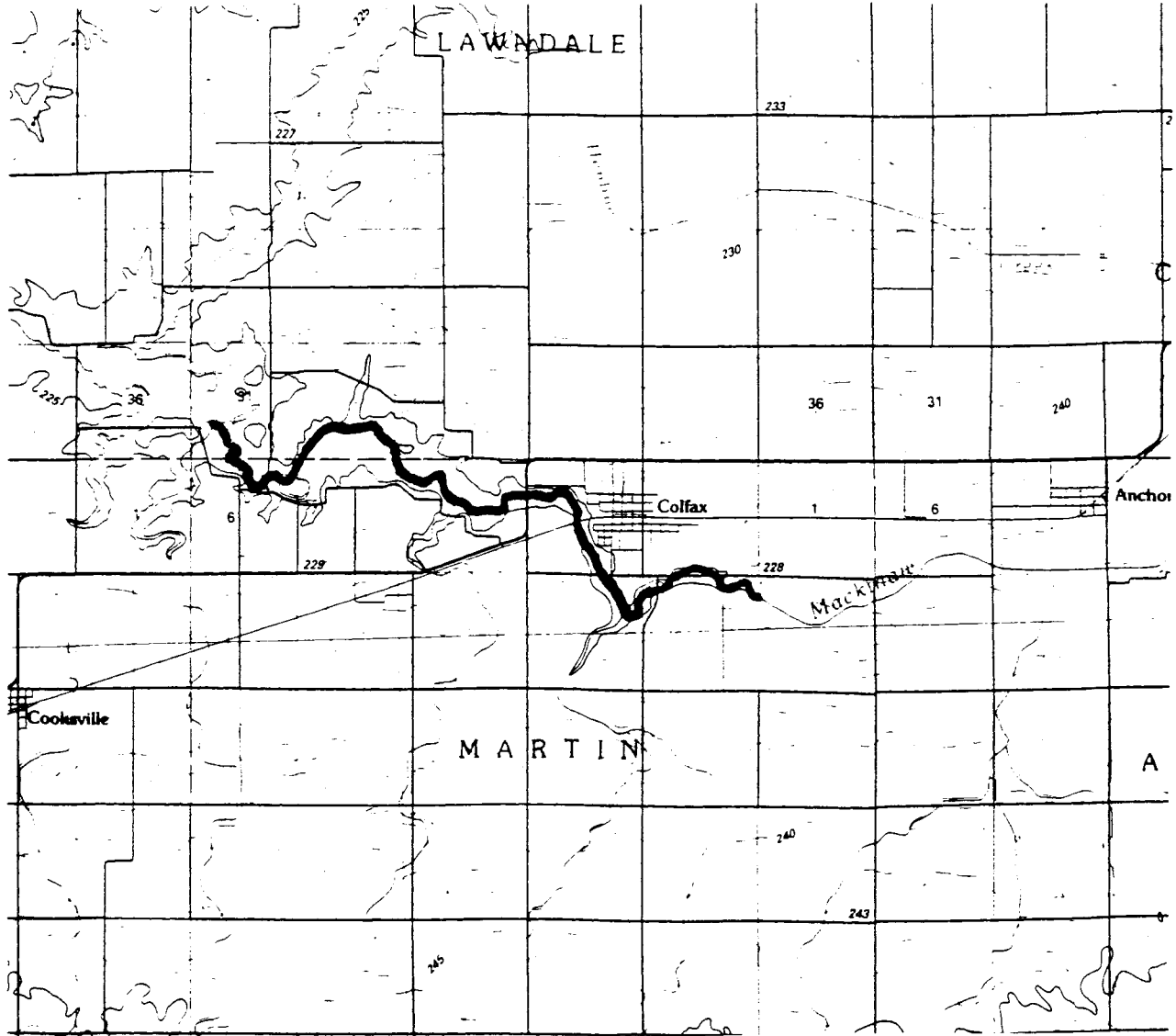


11. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Mackinaw River System.

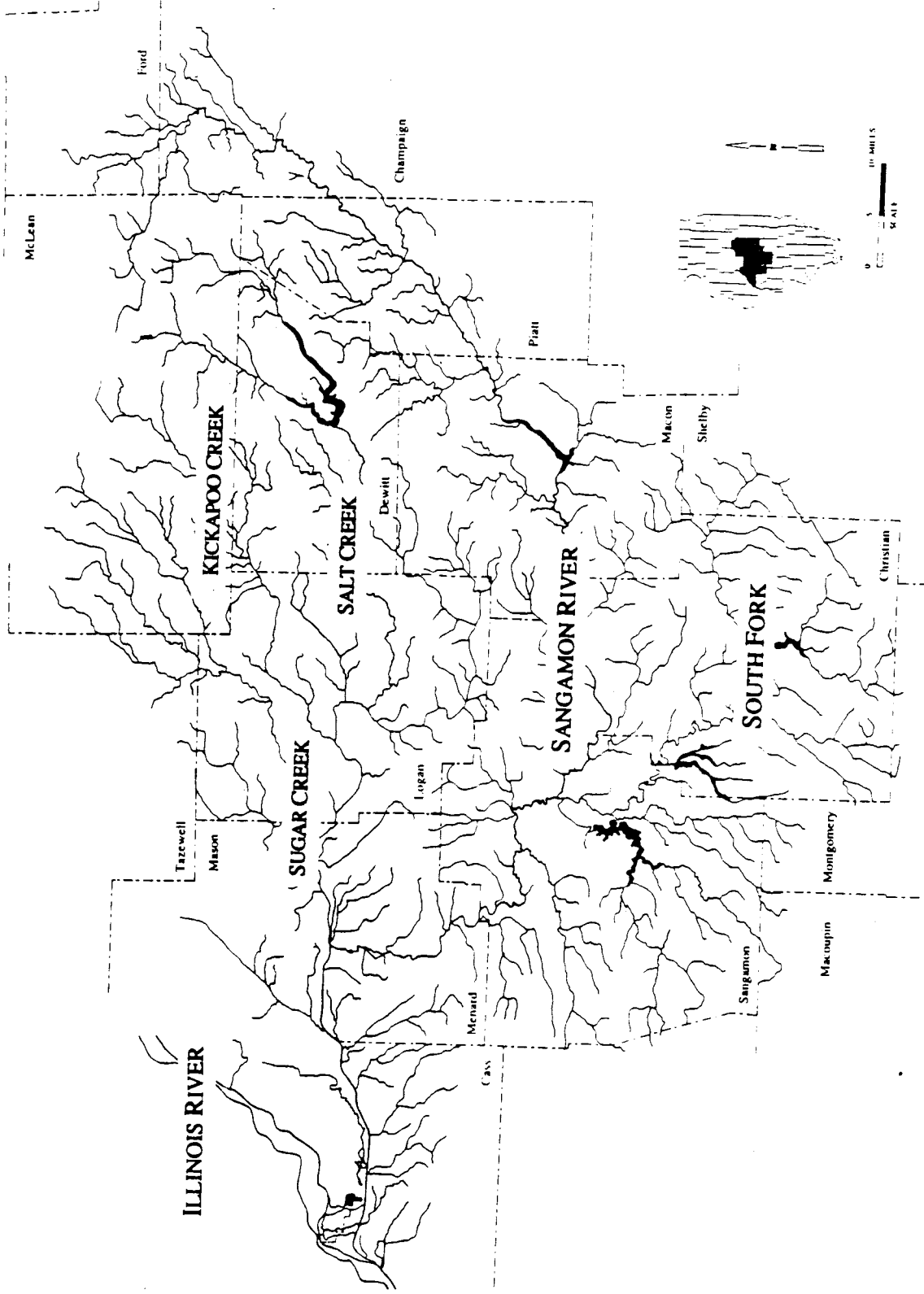


11. Mackinaw River System (Peoria 1:100,000)

- Mackinaw River, Alloway Creek to McLean County line, Woodford Co. (high mussel diversity)
- unnamed streams in ravines in southern Mackinaw Township, Tazewell Co. (heart-leaved plantain)
- Walnut Creek, Eureka to Mackinaw River, Woodford Co. (creek heelsplitter)
- Panther Creek, Rt. 24 to city of Mackinaw, Tazewell Co. (high mussel diversity)



11. Mackinaw River System (Fairbury 1:100,000)
 - Mackinaw River, 5 mile stretch at Colfax, McLean Co.
 (creek heelsplitter)



12. Sangamon River System

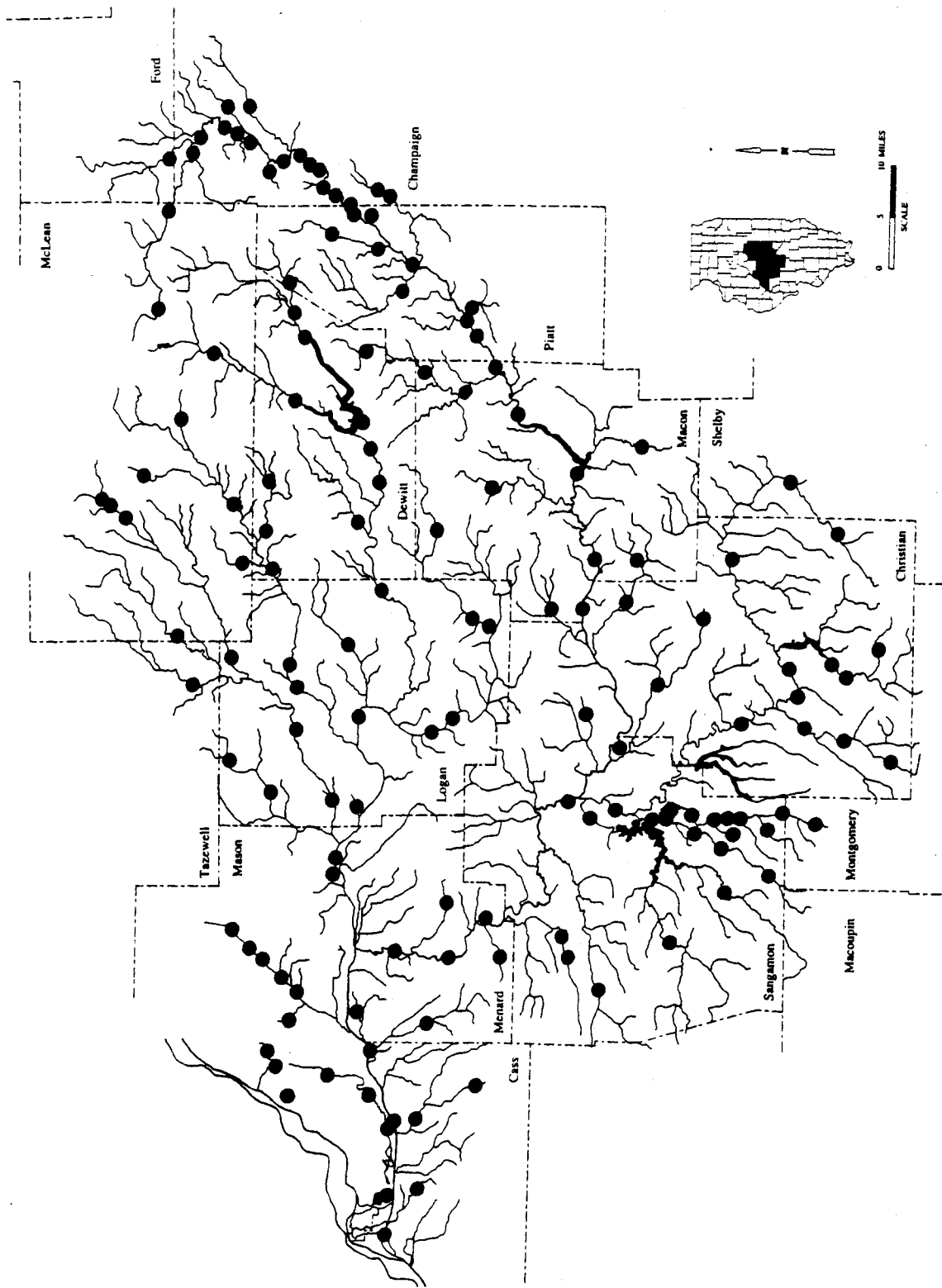


Figure 12-1. Map of fish collection sites in the Sangamon River System represented in the Illinois Natural History Survey Fish Collection.

Table 12-1. Freshwater fishes recorded from the Sangamon River System. Data from the Illinois Natural History Survey Fish Collection. SE = Illinois State Endangered; ST = Illinois State Threatened; I = Introduced.

PETROMYZONTIDAE	<i>Phenacobius mirabilis</i>	APHREDODERIDAE
<i>Lampetra appendix</i>	<i>Phoxinus erythrogaster</i>	<i>Aphredoderus sayanus</i>
LEPISOSTEIDAE	<i>Pimephales notatus</i>	ATHERINIDAE
<i>Lepisosteus osseus</i>	<i>Pimephales promelas</i>	<i>Labidesthes sicculus</i>
<i>Lepisosteus platostomus</i>	<i>Pimephales vigilax</i>	MORONIDAE
AMIDAE	<i>Rhinichthys atratulus</i>	<i>Morone chrysops</i>
<i>Amia calva</i>	<i>Semotilus atromaculatus</i>	<i>Morone mississippiensis</i>
HIODONTIDAE	CATOSTOMIDAE	CENTRARCHIDAE
<i>Hiodon alosoides</i>	<i>Carpionodes carpio</i>	<i>Ambloplites rupestris</i>
<i>Hiodon tergisus</i>	<i>Carpionodes cyprinus</i>	<i>Chaenobryttus gulosus</i>
CLUPEIDAE	<i>Carpionodes velifer</i>	<i>Lepomis cyanellus</i>
<i>Dorosoma cepedianum</i>	<i>Catostomus commersoni</i>	<i>Lepomis humilis</i>
UMBRIDAE	<i>Erimyzon oblongus</i>	<i>Lepomis macrochirus</i>
<i>Umbra limi</i>	<i>Erimyzon sucetta</i>	<i>Lepomis megalotis</i>
ESOCIDAE	<i>Hypentelium nigricans</i>	<i>Lepomis microlophus</i>
<i>Esox americanus</i>	<i>Ictiobus bubalus</i>	<i>Lepomis miniatus</i> ST
CYPRINIDAE	<i>Ictiobus cyprinellus</i>	<i>Micropterus dolomieu</i>
<i>Campostoma anomalum</i>	<i>Ictiobus niger</i>	<i>Micropterus salmoides</i>
<i>Campostoma oligolepis</i>	<i>Minytrema melanops</i>	<i>Pomoxis annularis</i>
<i>Cyprinella lutrensis</i>	<i>Moxostoma anisurum</i>	<i>Pomoxis nigromaculatus</i>
<i>Cyprinella spiloptera</i>	<i>Moxostoma erythrurum</i>	PERCIDAE
<i>Cyprinella whipplei</i>	<i>Moxostoma macrolepidotum</i>	<i>Etheostoma asprigene</i>
<i>Cyprinus carpio</i> I	ICTALURIDAE	<i>Etheostoma chlorosomum</i>
<i>Ericymba buccata</i>	<i>Ameiurus melas</i>	<i>Etheostoma clarum</i> SE
<i>Hybognathus nuchalis</i>	<i>Ameiurus natalis</i>	<i>Etheostoma flabellare</i>
<i>Hybopsis amnis</i> SE	<i>Ameiurus nebulosus</i>	<i>Etheostoma nigrum</i>
<i>Luxilus chrysocephalus</i>	<i>Ictalurus punctatus</i>	<i>Etheostoma spectabile</i>
<i>Lythrurus umbratilis</i>	<i>Noturus flavus</i>	<i>Etheostoma zonale</i>
<i>Macrhybopsis storeriana</i>	<i>Noturus gyrinus</i>	<i>Percina caprodes</i>
<i>Nocomis biguttatus</i>	<i>Noturus nocturnus</i>	<i>Percina maculata</i>
<i>Notemigonus crysoleucas</i>	<i>Pylodictis olivaris</i>	<i>Percina phoxocephala</i>
<i>Notropis atherinoides</i>	CYPRINODONTIDAE	<i>Stizostedion canadense</i>
<i>Notropis chalybaeus</i> ST	<i>Fundulus dispar</i>	<i>Stizostedion vitreum</i>
<i>Notropis dorsalis</i>	<i>Fundulus notatus</i>	SCIAENIDAE
<i>Notropis heterolepis</i> ST	POECILIDAE	<i>Aplodinotus grunniens</i>
<i>Notropis ludibundus</i>	<i>Gambusia affinis</i>	

Total number of species = 89 (88 native, 1 introduced)

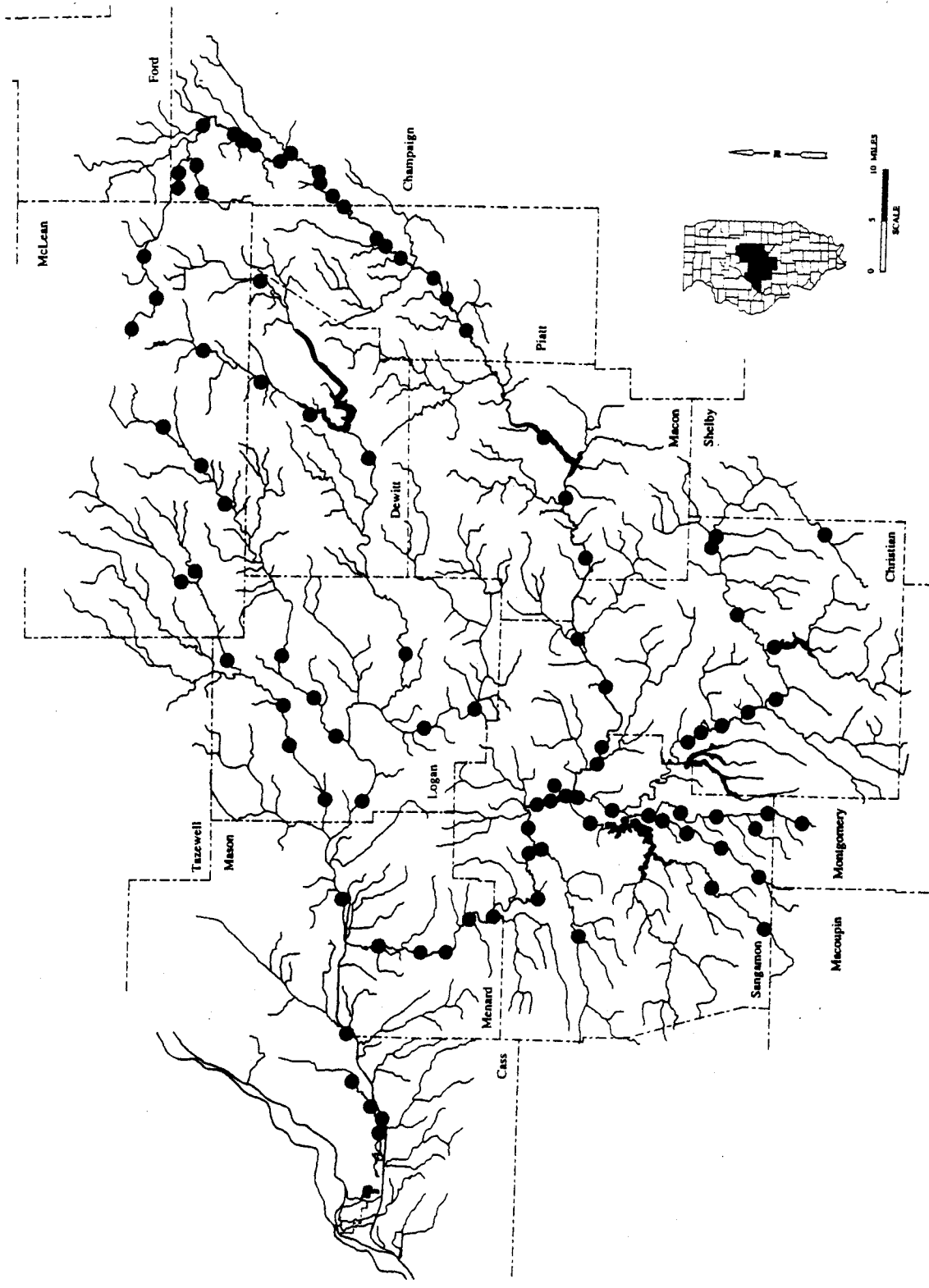


Figure 12-2. Map of mussel collection sites in the Sangamon River System represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 12-2. Freshwater mussels recorded from the Sangamon River System. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. FE = Federally Endangered; FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened; SC = State Candidate; X = Extirpated from Illinois.

<i>Actinonaias ligamentina</i>	
<i>Alasmidonta marginata</i>	
<i>Alasmidonta viridis</i>	SE
<i>Amblema plicata</i>	
<i>Anodonta grandis</i>	
<i>Anodonta imbecillis</i>	
<i>Anodonta suborbiculata</i>	
<i>Anodontoides ferussacianus</i>	
<i>Arcidens confragosus</i>	
<i>Cyclonaias tuberculata</i>	
<i>Ellipsaria lineolata</i>	SC
<i>Elliptio dilatata</i>	SC
<i>Epioblasma triquetra</i>	SE
<i>Fusconaia flava</i>	
<i>Lampsilis cardium</i>	
<i>Lampsilis higginsii</i>	SE, FE
<i>Lampsilis siliquoidea</i>	
<i>Lampsilis teres</i>	
<i>Lasmigona complanata</i>	
<i>Lasmigona compressa</i>	ST
<i>Lasmigona costata</i>	
<i>Leptodea fragilis</i>	
<i>Leptodea leptodon</i>	SE, FC, X
<i>Ligumia recta</i>	
<i>Ligumia subrostrata</i>	
<i>Megalonaias nervosa</i>	
<i>Obliquaria reflexa</i>	
<i>Obovaria olivaria</i>	
<i>Plethobasus cyphus</i>	ST
<i>Pleurobema sintoxia</i>	
<i>Potamilus alatus</i>	
<i>Potamilus ohioensis</i>	
<i>Quadrula fragosa</i>	SE, FC, X
<i>Quadrula metanevra</i>	
<i>Quadrula nodulata</i>	
<i>Quadrula pustulosa</i>	
<i>Quadrula quadrula</i>	
<i>Simpsonaias ambigua</i>	SE, FC
<i>Strophitus undulatus</i>	
<i>Toxolasma parvus</i>	
<i>Tritogonia verrucosa</i>	
<i>Truncilla donaciformis</i>	
<i>Truncilla truncata</i>	
<i>Uniomerus tetralasmus</i>	ST
<i>Venustaconcha ellipsiformis</i>	SC
<i>Villosa iris</i>	SE
<i>Villosa lienosa</i>	SE

Total number of species = 47.

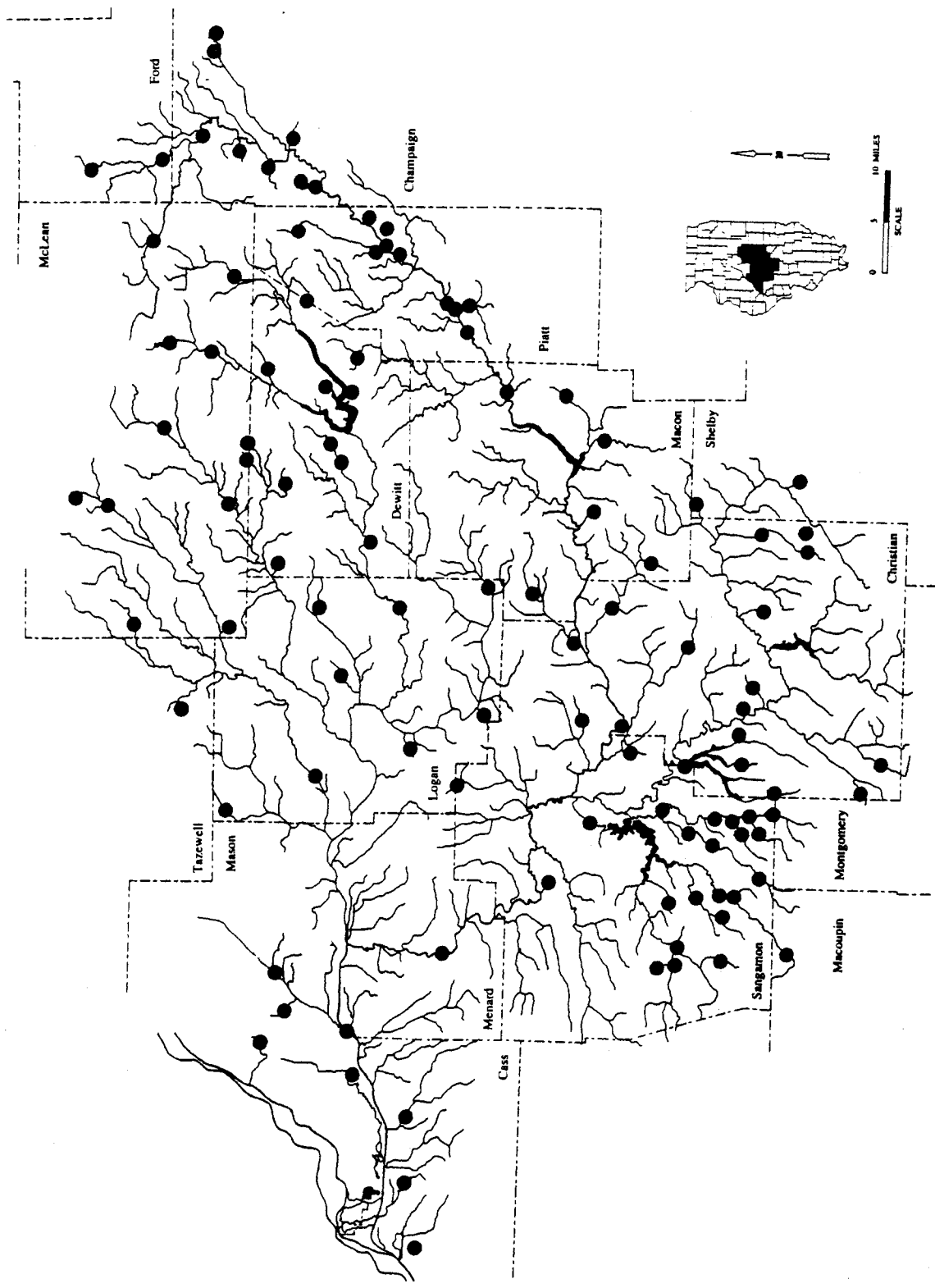


Figure 12-3. Map of crustacean collection sites in the Sangamon River System represented in the Illinois Natural History Survey Crustacean Collection.

Table 12-3. Freshwater crustaceans recorded from the Sangamon River System. Data from the Illinois Natural History Survey Crustacean Collection.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea brevicauda
Caecidotea forbesi
Caecidotea intermedia
Caecidotea kendeighi
Lirceus sp.

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Bactrurus mucronatus
Crangonyx gracilis
Crangonyx minor
Crangonyx pseudogracilis
Gammarus pseudolimnaeus

HYALELLIDAE

Hyaella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

CAMBARIDAE

Cambarus diogenes
Fallicambarus fodiens
Orconectes immunis
Orconectes propinquus
Orconectes virilis
Procambarus acutus
Procambarus gracilis

Total number of species = 18.

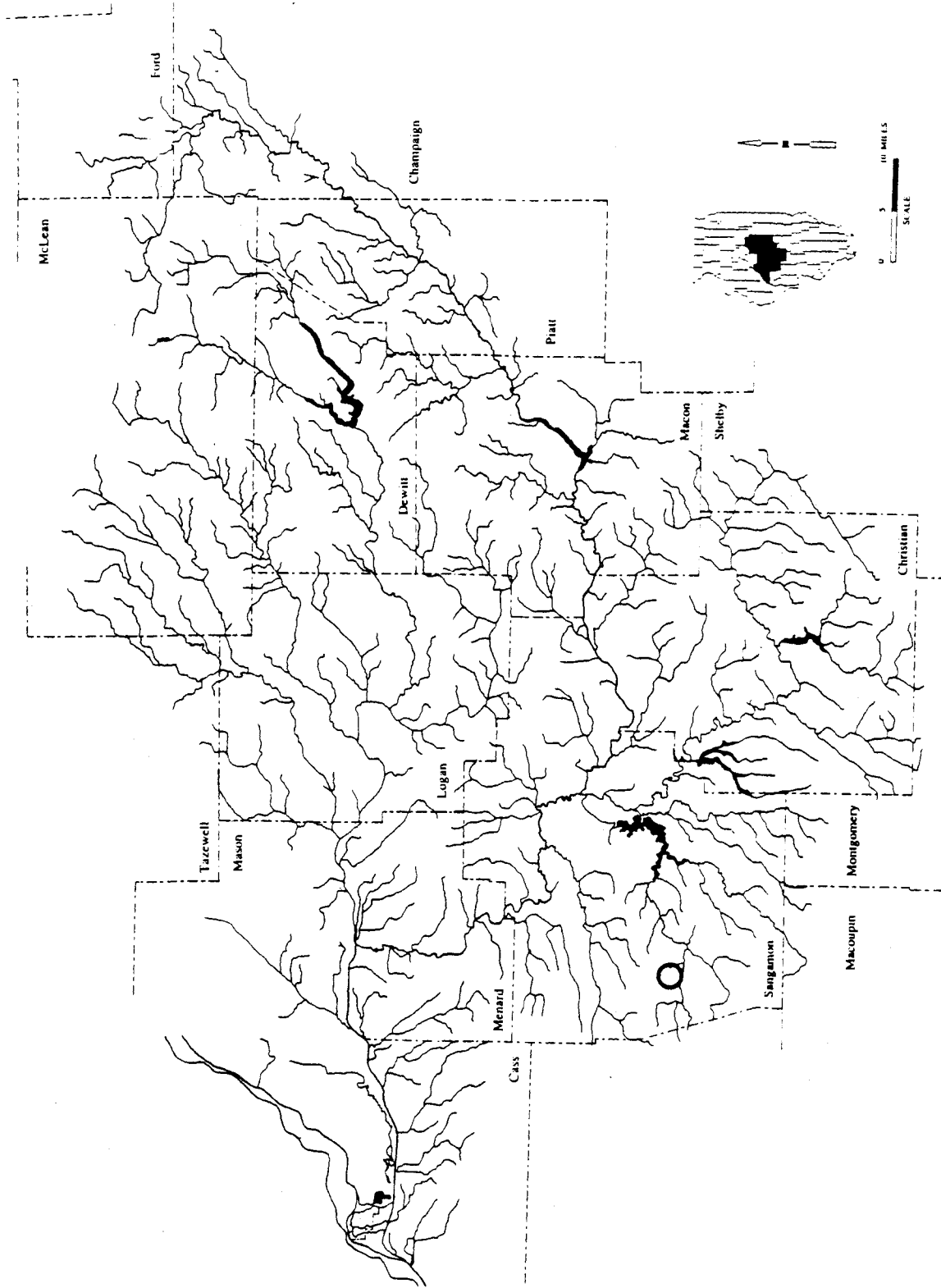


Figure 12-4. Map of historic (open symbols = pre-1980) populations of endangered lotic plants (circles) in the Sangamon River System.

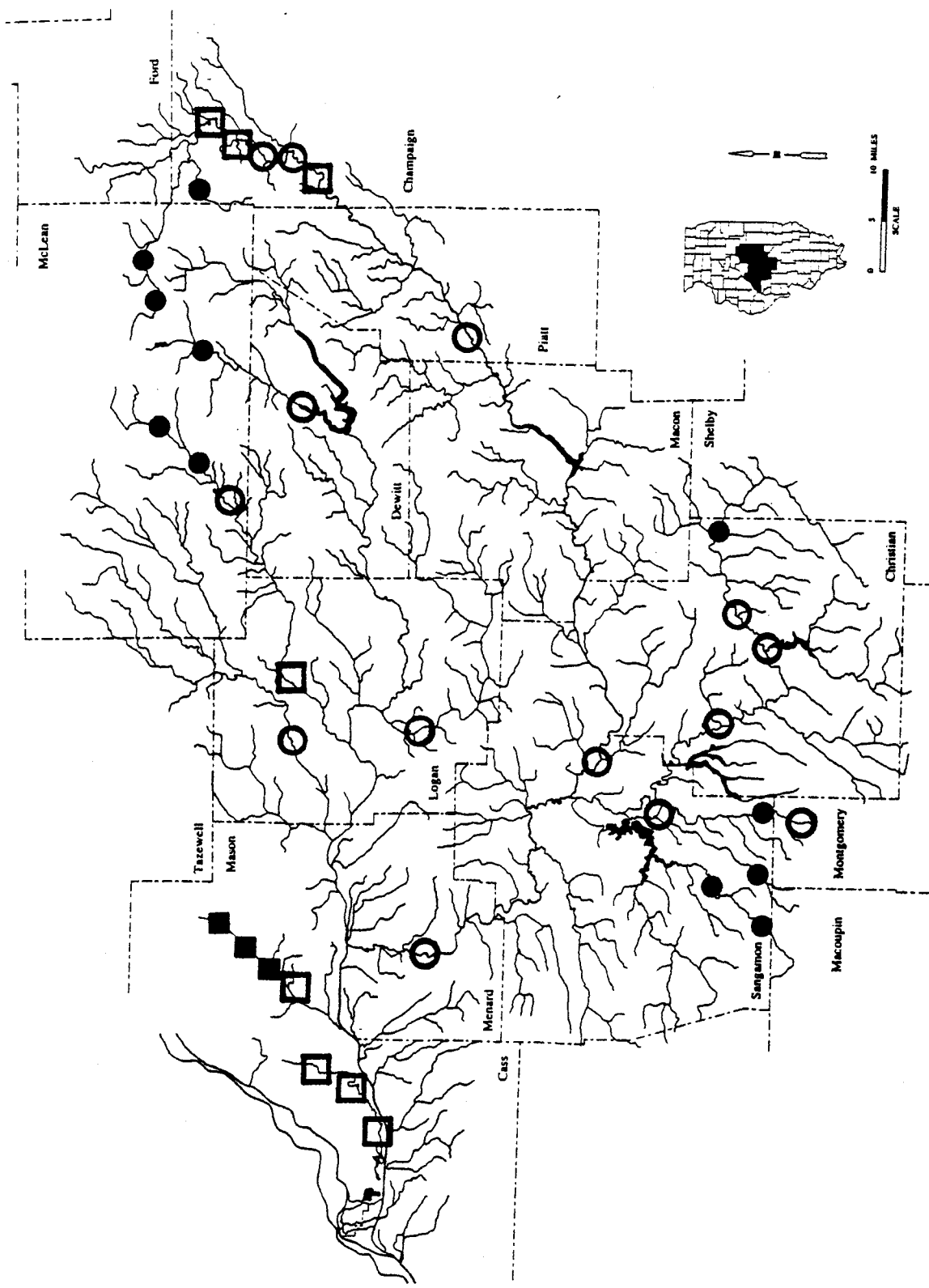
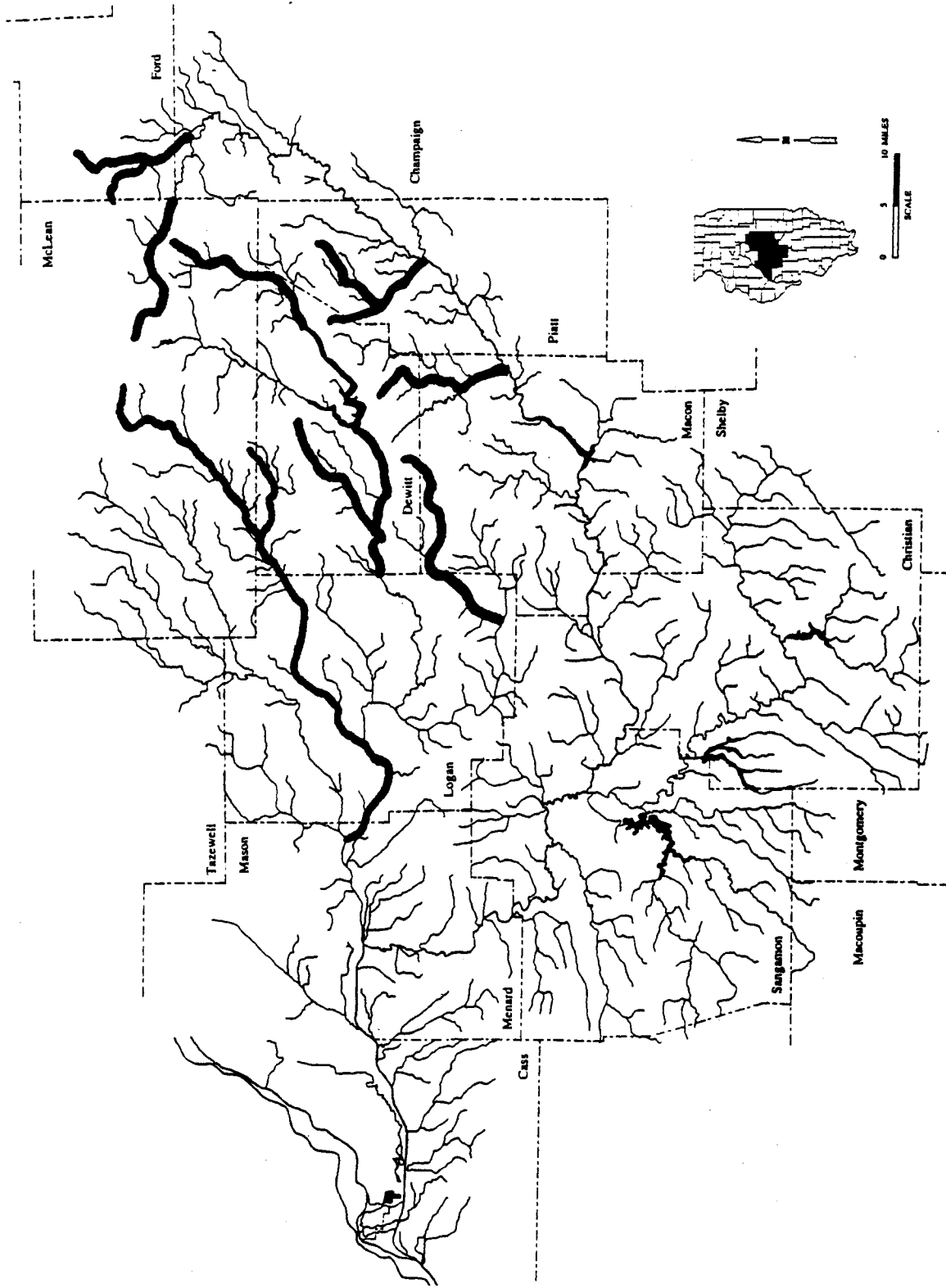


Figure 12-5. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered fishes (squares) and mussels (circles) in the Sangamon River System.



12. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Sangamon River System.

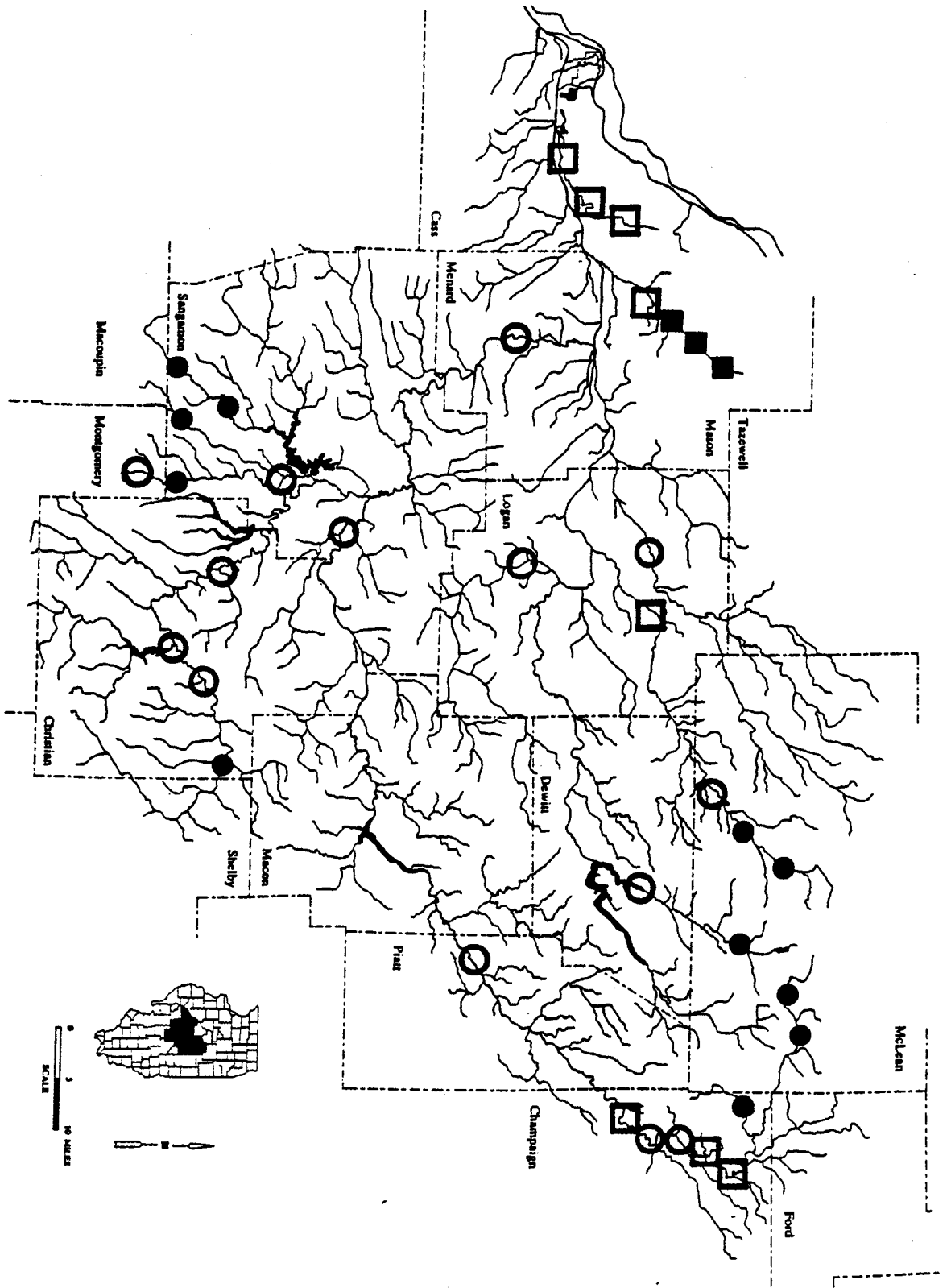
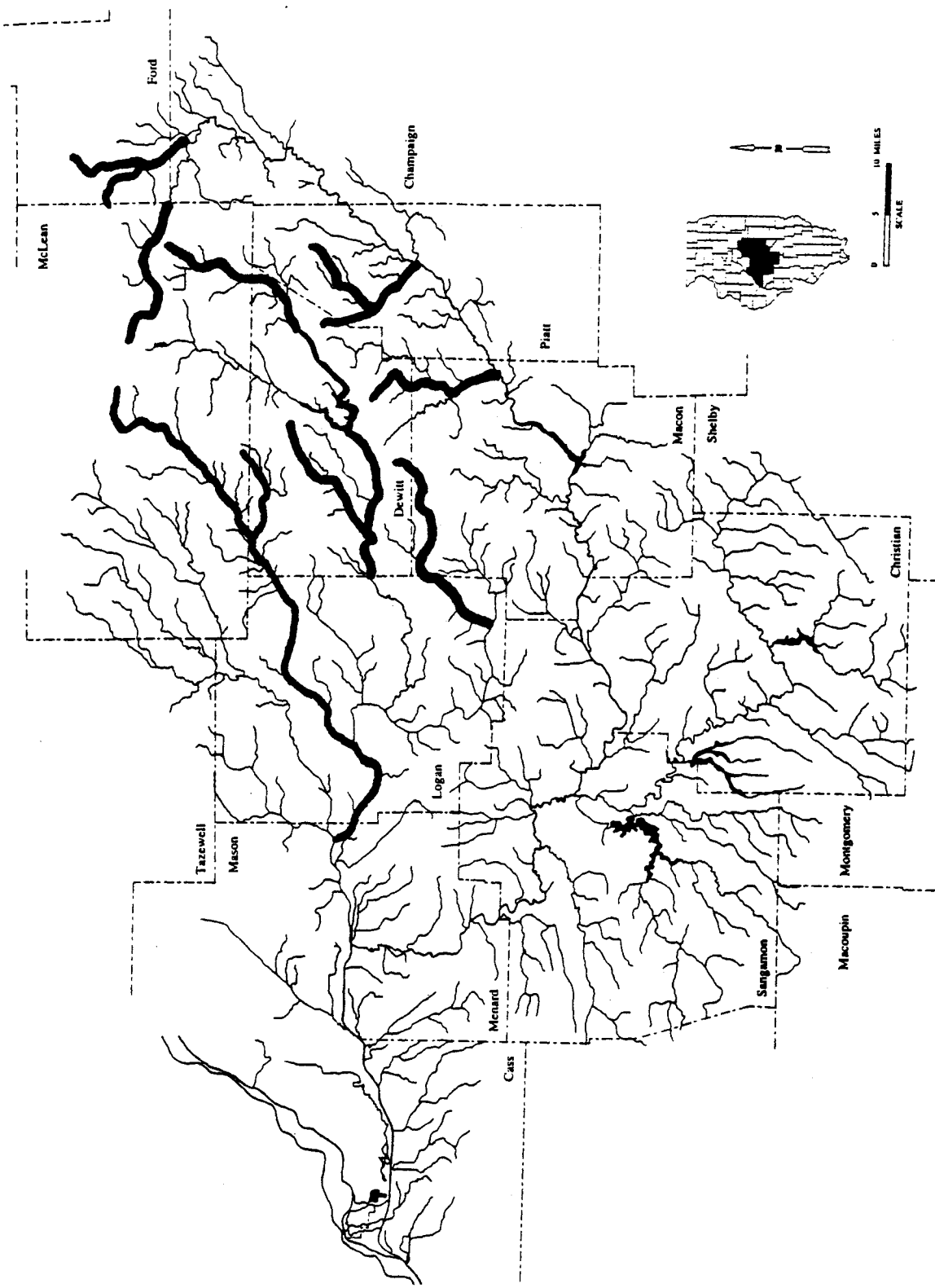
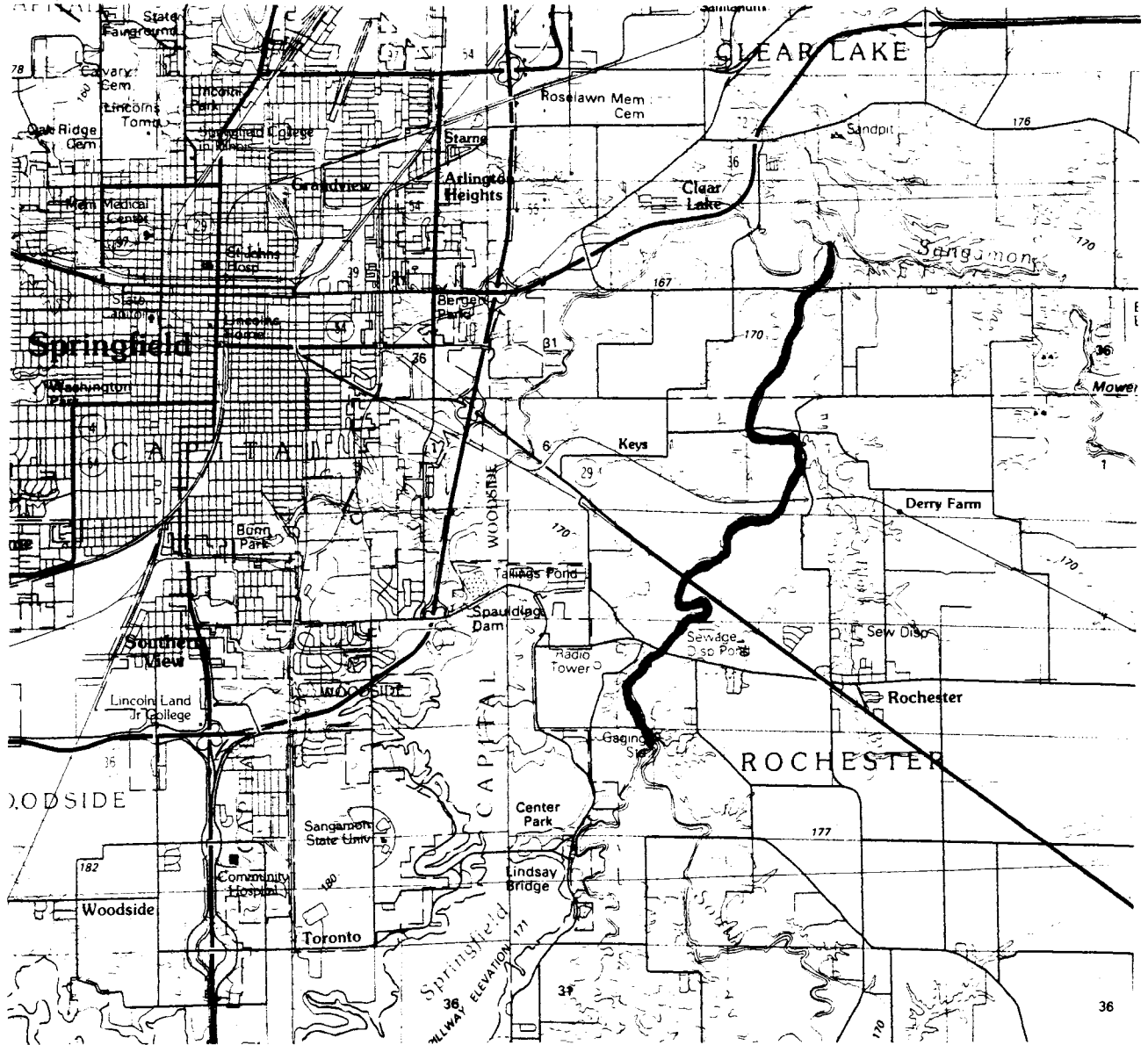


Figure 12-5. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980) to present) populations of threatened or endangered fishes (squares) and mussels (circles) in the Sangamon River System



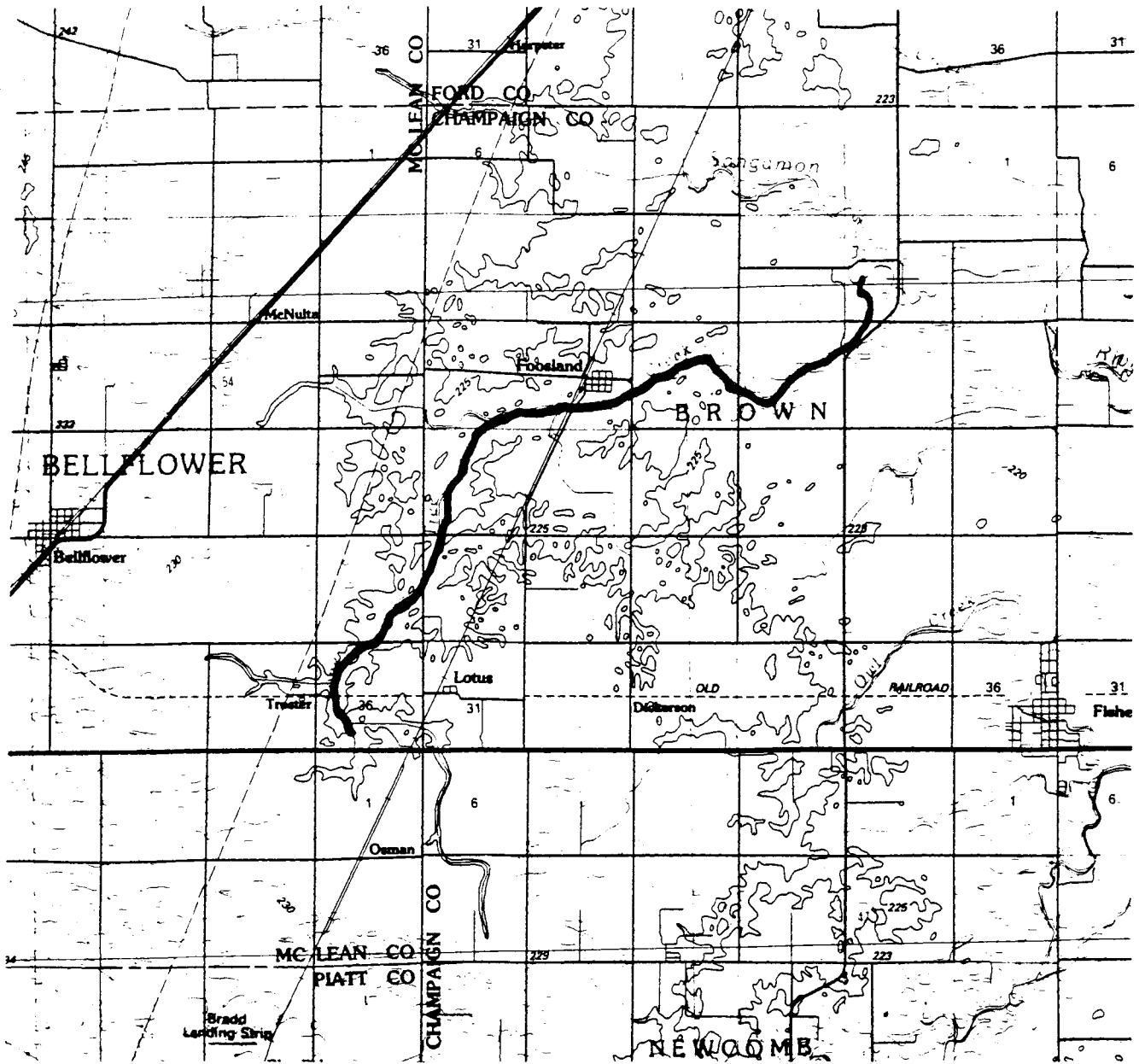
12. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Sangamon River System.

INHS
 BIOD
 1991(4) cont.



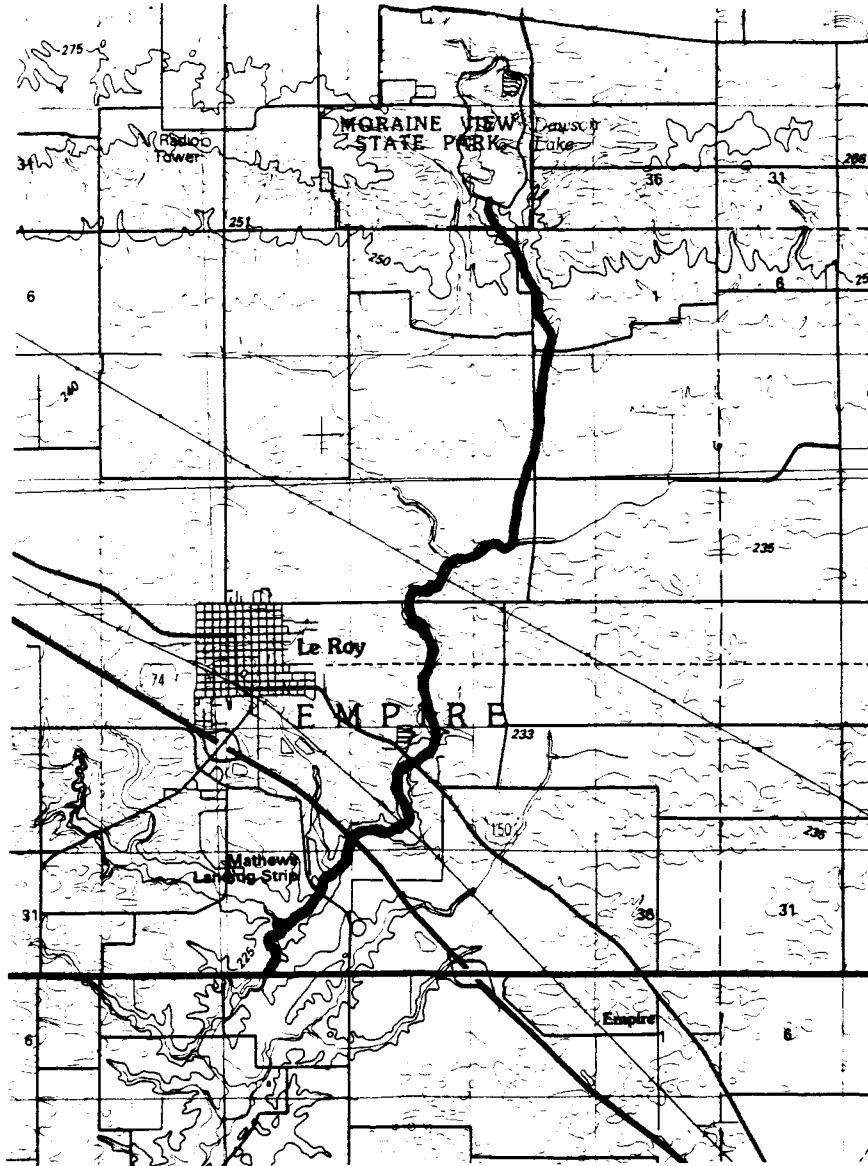
12. Sangamon River System (Springfield 1:100,000)

- South Fork Sangamon River, Horse Creek to Sangamon River, Sangamon Co.
 (high mussel diversity)



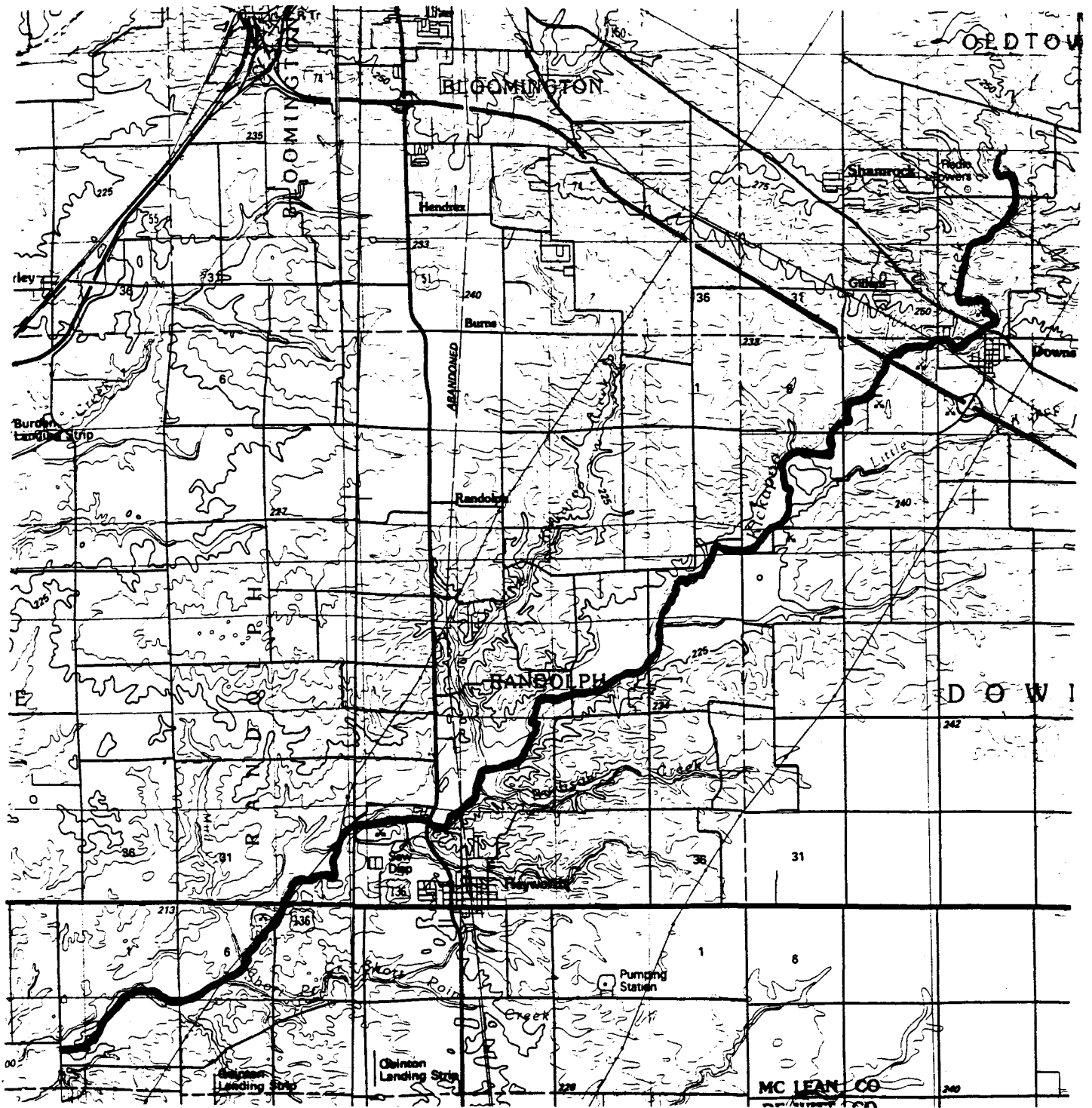
12. Sangamon River System (Champaign 1:100,000)

- Lone Tree Creek, Champaign Co.
 (creek heelsplitter, high mussel diversity)



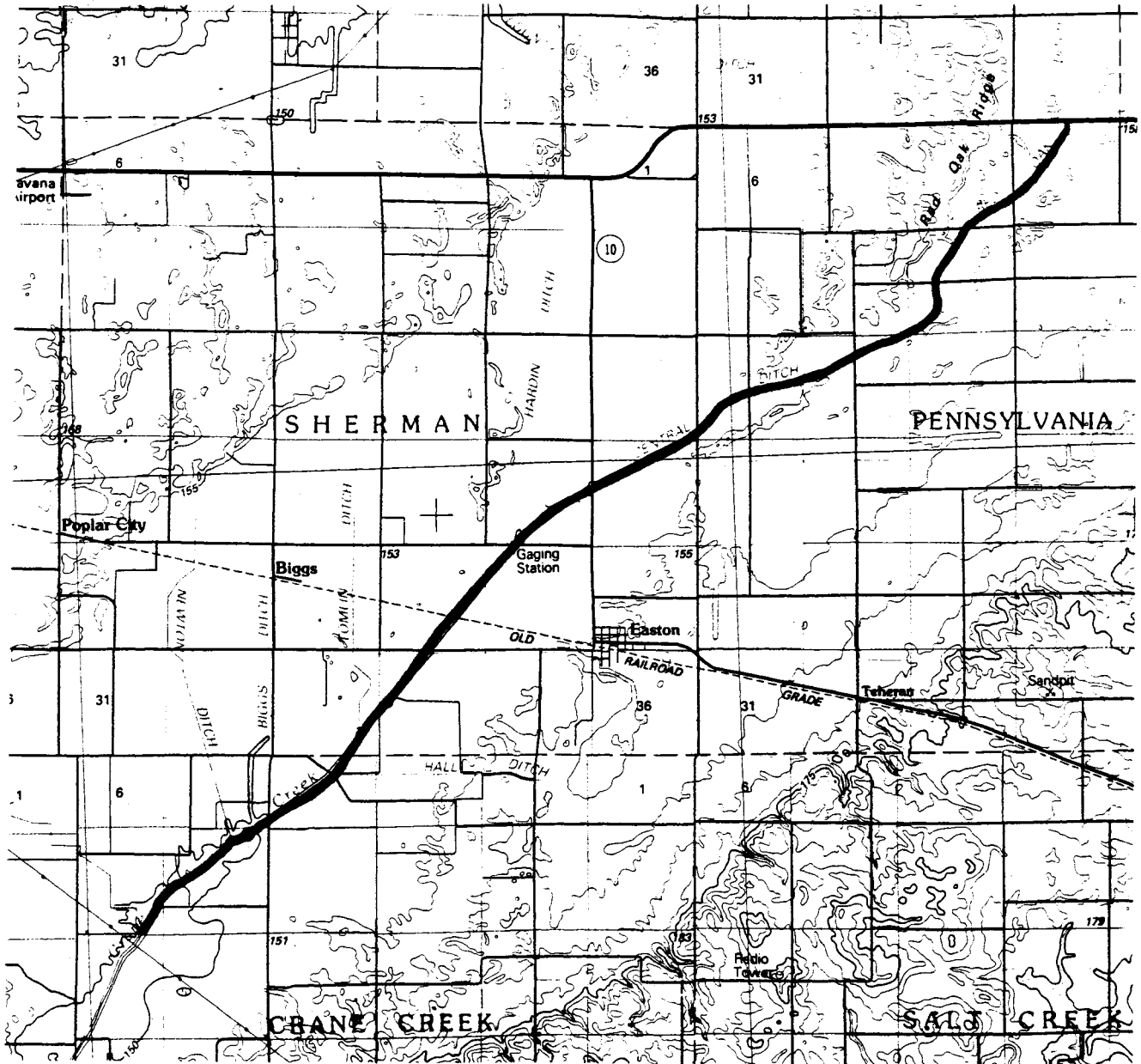
12. Sangamon River System (Champaign 1:100,000)

- North Fork Salt Creek, Moraine View State Park to Rt. 136, McLean Co.
(creek heelsplitter)



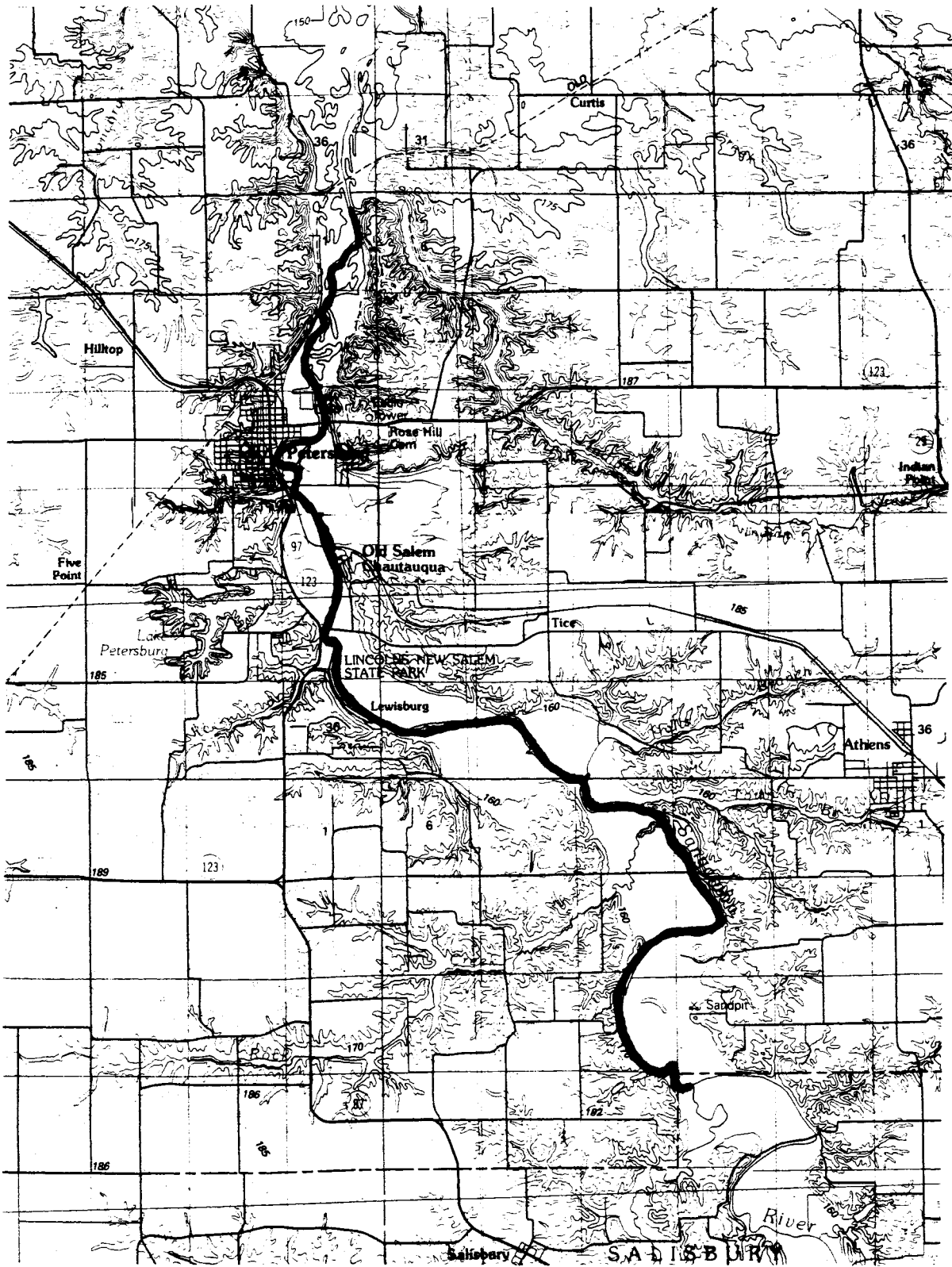
12. Sangamon River System (Lincoln & Champaign 1:100,000)

- Kickapoo Creek, 2 miles upstream Rt. 150 to 2 miles downstream Rt. 136, McLean Co.
 (creek heelsplitter)



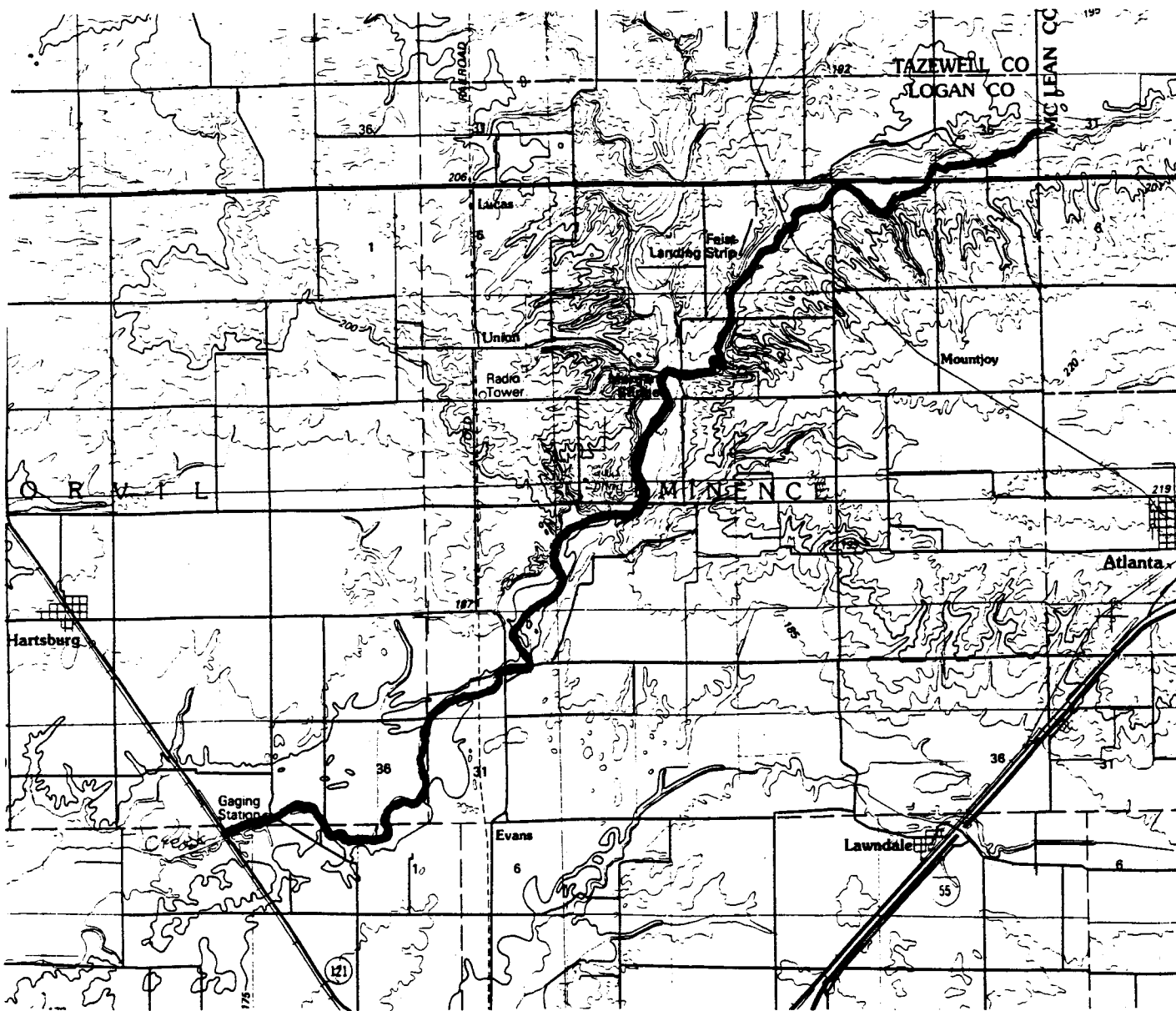
12. Sangamon River System (Lincoln 1:100,000)

- Crane Creek & Red Oak Ditch, Rt. 136 to Hurd Lake Ditch, Mason Co.
 (ironcolor shiner)



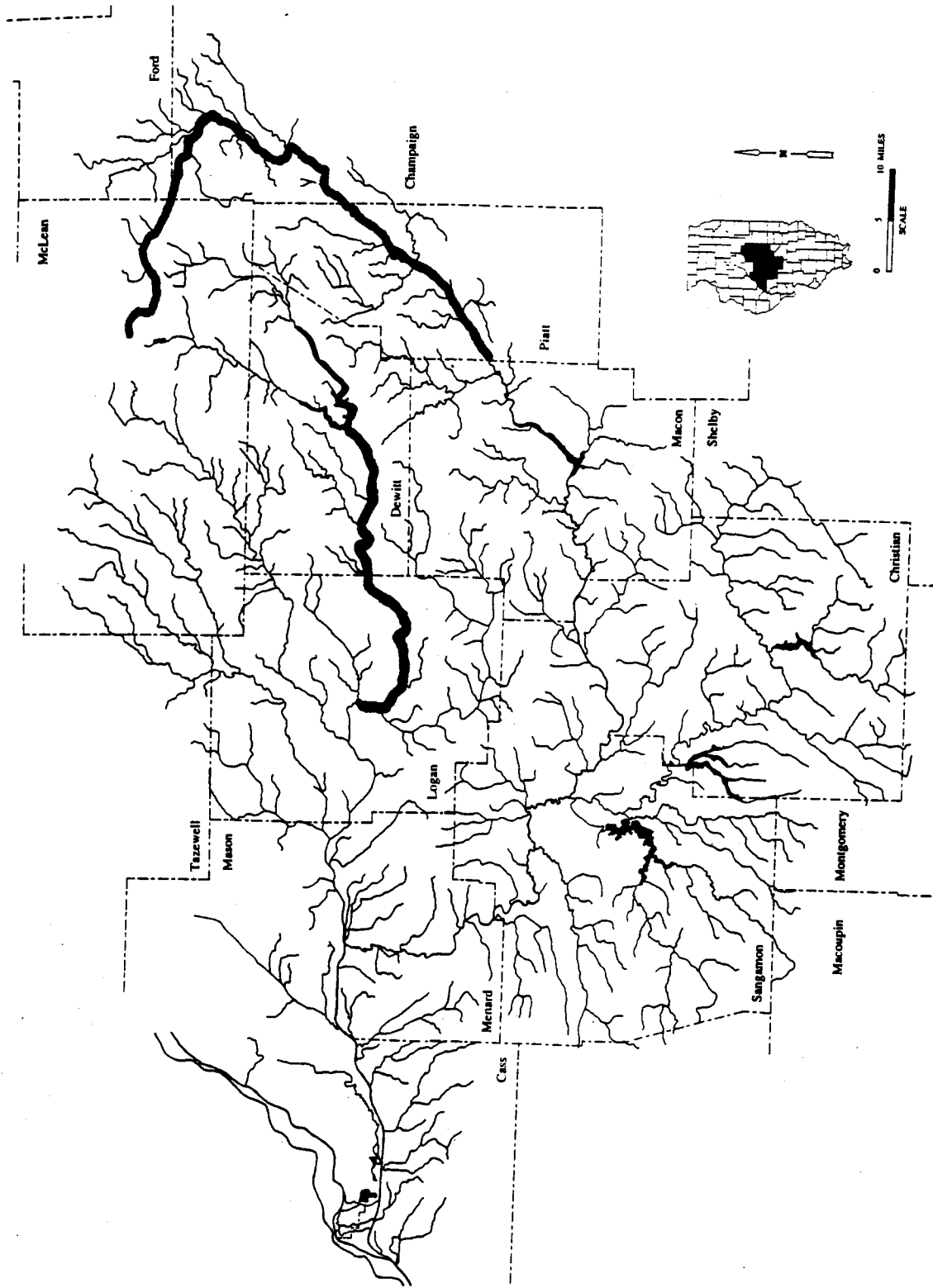
12. Sangamon River System (Springfield & Lincoln 1:100,000)

- Sangamon River, Richland Creek to 2 miles below Petersburg, Menard Co.
 (high mussel diversity)



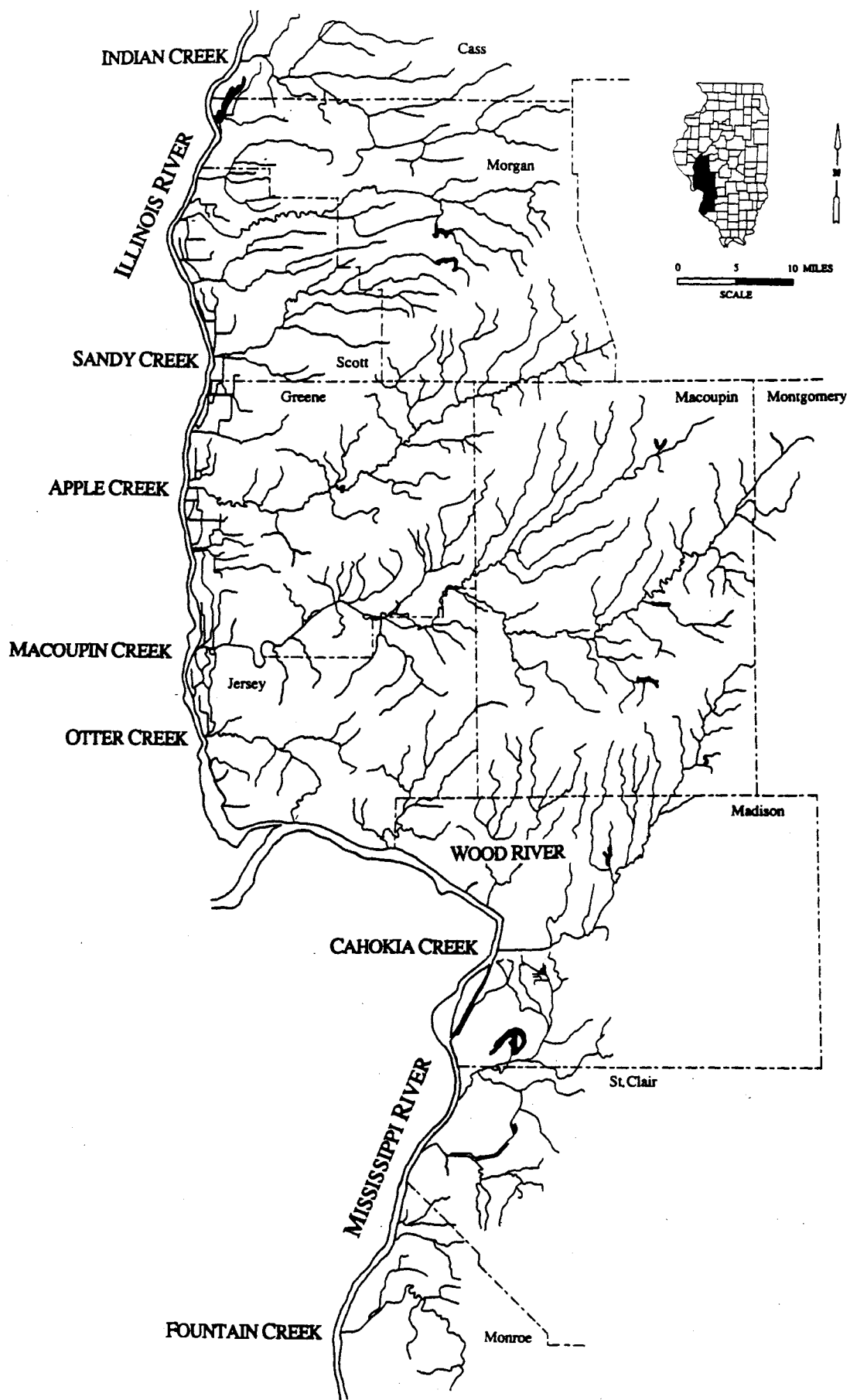
12. Sangamon River System (Lincoln 1:100,000)

- Sugar Creek, McLean/Logan county line to Rt. 121, Logan Co.
 (high mussel diversity)



12. Sangamon River System

- Sangamon River, from its source (McLean Co.) to Piatt/Macon county line (slippershell mussel, creek heelsplitter, high mussel diversity)
- Salt Creek, Clinton Lake to Kickapoo Creek De Witt/Logan Co. (high mussel diversity)



13. Lower Illinois River Tributaries and American Bottoms

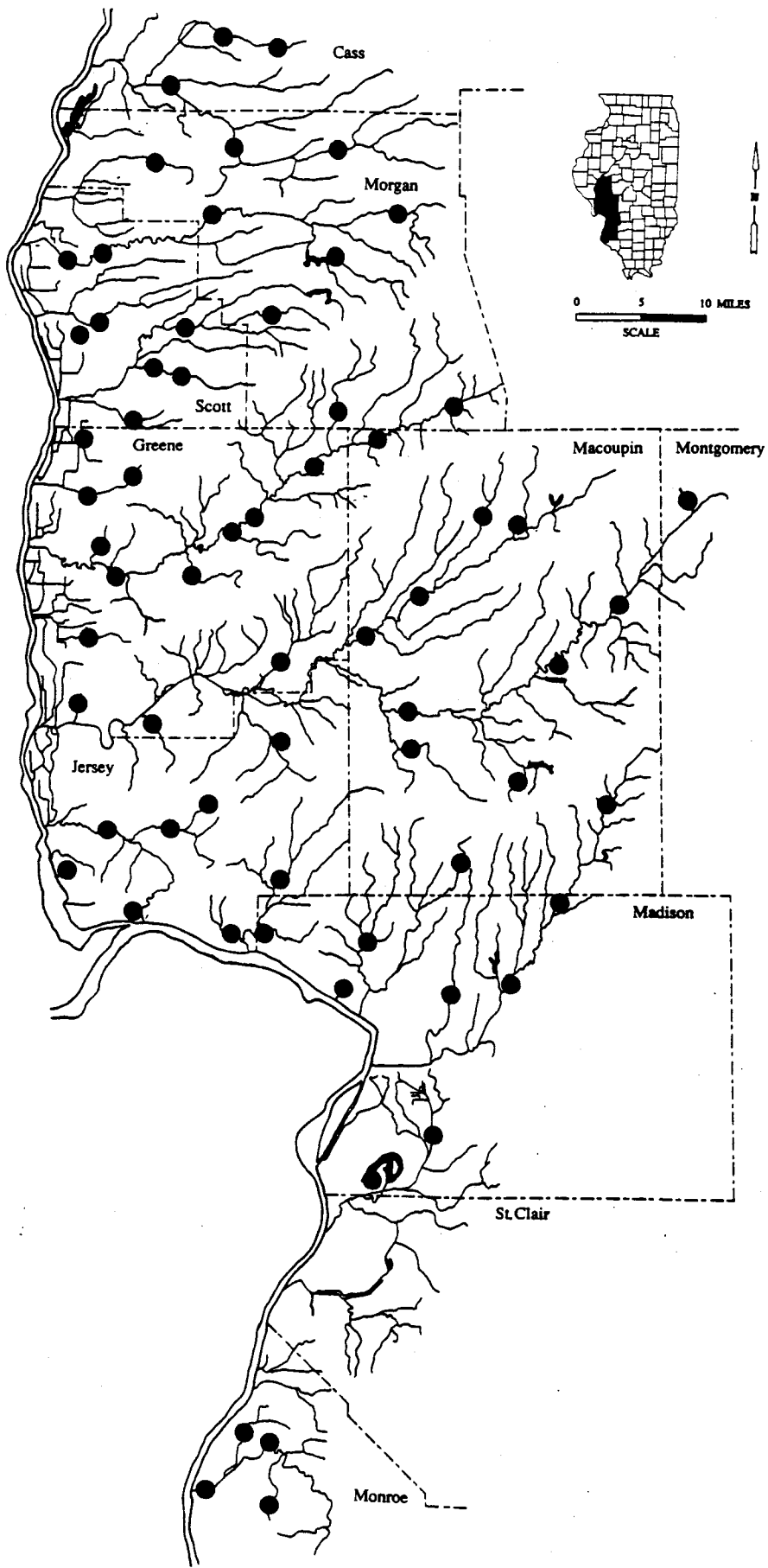


Figure 13-1. Map of fish collection sites in the Lower Illinois River Tributaries and American Bottoms represented in the Illinois Natural History Survey Fish Collection.

Table 13-1. Freshwater fishes recorded from the Lower Illinois River Tributaries and American Bottoms Systems. Data from the Illinois Natural History Survey Fish Collection. ST = Illinois State Threatened; I = Introduced.

PETROMYZONTIDAE	<i>Notropis ludibundus</i>	POECILIIDAE
<i>Ichthyomyzon castaneus</i>	<i>Notropis shumardi</i>	<i>Gambusia affinis</i>
<i>Ichthyomyzon unicuspis</i>	<i>Phenacobius mirabilis</i>	APHREDODERIDAE
LEPISOSTEIDAE	<i>Phoxinus erythrogaster</i>	<i>Aphredoderus sayanus</i>
<i>Lepisosteus oculatus</i>	<i>Pimephales notatus</i>	MORONIDAE
<i>Lepisosteus osseus</i>	<i>Pimephales promelas</i>	<i>Morone chrysops</i>
<i>Lepisosteus platostomus</i>	<i>Pimephales vigilax</i>	<i>Morone mississippiensis</i>
AMIIDAE	<i>Platygobio gracilis</i>	CENTRARCHIDAE
<i>Amia calva</i>	<i>Semotilus atromaculatus</i>	<i>Lepomis cyanellus</i>
CLUPEIDAE	CATOSTOMIDAE	<i>Lepomis humilis</i>
<i>Dorosoma cepedianum</i>	<i>Carpiodes carpio</i>	<i>Lepomis macrochirus</i>
ESOCIDAE	<i>Carpiodes cyprinus</i>	<i>Micropterus dolomieu</i>
<i>Esox americanus</i>	<i>Catostomus commersoni</i>	<i>Micropterus salmoides</i>
CYPRINIDAE	<i>Ictiobus bubalus</i>	<i>Pomoxis annularis</i>
<i>Campostoma anomalum</i>	<i>Moxostoma erythrurum</i>	<i>Pomoxis nigromaculatus</i>
<i>Cyprinella lutrensis</i>	ICTALURIDAE	PERCIDAE
<i>Cyprinus carpio</i> I	<i>Ameiurus melas</i>	<i>Etheostoma nigrum</i>
<i>Hybognathus nuchalis</i>	<i>Ameiurus natalis</i>	<i>Etheostoma spectabile</i>
<i>Lythrurus umbratilis</i>	<i>Ameiurus nebulosus</i>	<i>Percina caprodes</i>
<i>Macrhybopsis storeriana</i>	<i>Ictalurus furcatus</i>	<i>Percina maculata</i>
<i>Nocomis biguttatus</i>	<i>Ictalurus punctatus</i>	<i>Percina phoxocephala</i>
<i>Notemigonus crysoleucas</i>	<i>Noturus exilis</i>	<i>Stizostedion vitreum</i>
<i>Notropis atherinoides</i>	<i>Noturus flavus</i>	SCIAENIDAE
<i>Notropis blennioides</i>	<i>Noturus gyrinus</i>	<i>Aplodinotus grunniens</i>
<i>Notropis boops</i> ST	<i>Noturus nocturnus</i>	COTTIDAE
<i>Notropis burchanani</i>	<i>Pylodictis olivaris</i>	<i>Cottus caroliniae</i>
<i>Notropis dorsalis</i>	CYPRINODONTIDAE	
<i>Notropis hudsonius</i>	<i>Fundulus notatus</i>	

Total number of species = 66 (65 native, 1 introduced)

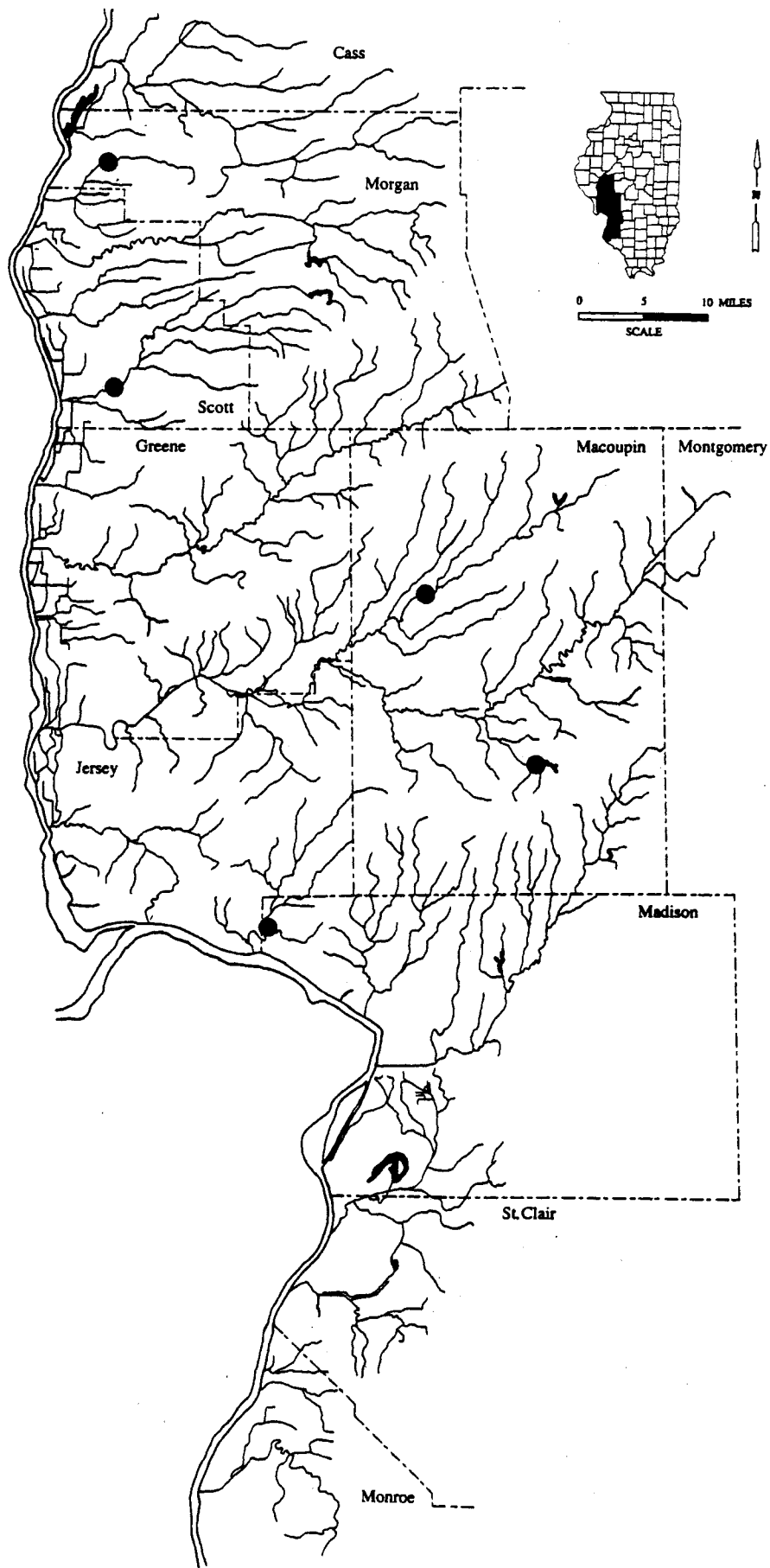


Figure 13-2. Map of mussel collection sites in the Lower Illinois River Tributaries and American Bottoms represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 13-2. Freshwater mussels recorded from the Lower Illinois River Tributaries and American Bottoms Systems. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. ST = Illinois State Threatened; SC = State Candidate.

<i>Amblema plicata</i>	
<i>Anodonta grandis</i>	
<i>Anodonta imbecillis</i>	
<i>Anodonta suborbiculata</i>	
<i>Fusconaia ebena</i>	SC
<i>Lampsilis teres</i>	
<i>Leptodea fragilis</i>	
<i>Ligumia subrostrata</i>	
<i>Toxolasma parvus</i>	
<i>Unio merus tetralasmus</i>	ST

Total number of species = 10.

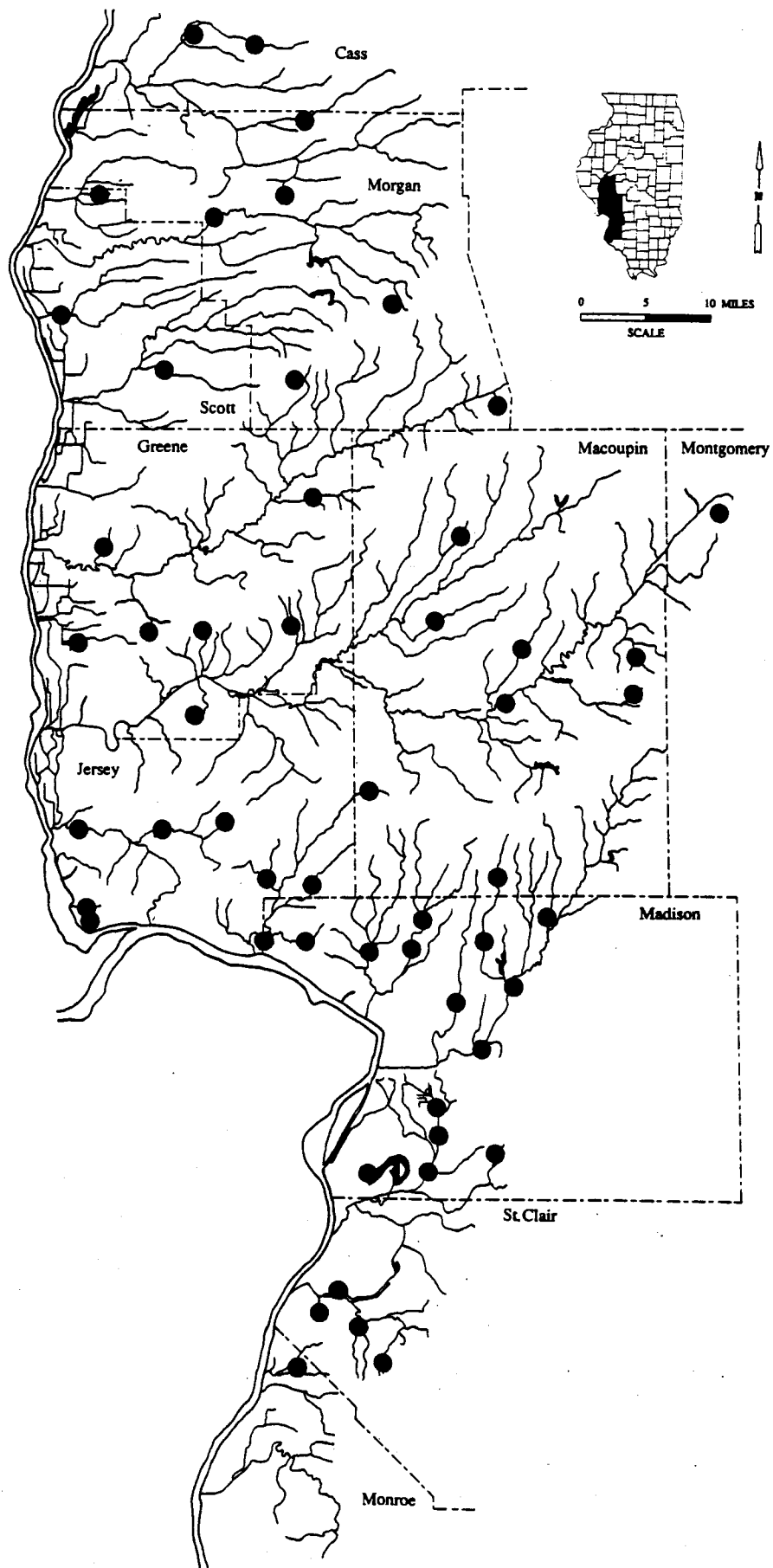


Figure 13-3. Map of crustacean collection sites in the Lower Illinois River Tributaries and American Bottoms represented in the Illinois Natural History Survey Crustacean Collection.

Table 13-3. Freshwater crustaceans recorded from the Lower Illinois River Tributaries and American Bottoms Systems. Data from the Illinois Natural History Survey Crustacean Collection.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea brevicauda
Caecidotea intermedia
Caecidotea kendeighi

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Bactrurus mucronatus
Crangonyx minor
Gammarus minus
Gammarus pseudolimnaeus

HYALELLIDAE

Hyaella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

CAMBARIDAE

Cambarus diogenes
Orconectes immunis
Orconectes virilis
Procambarus acutus
Procambarus gracilis

Total number of species = 13.

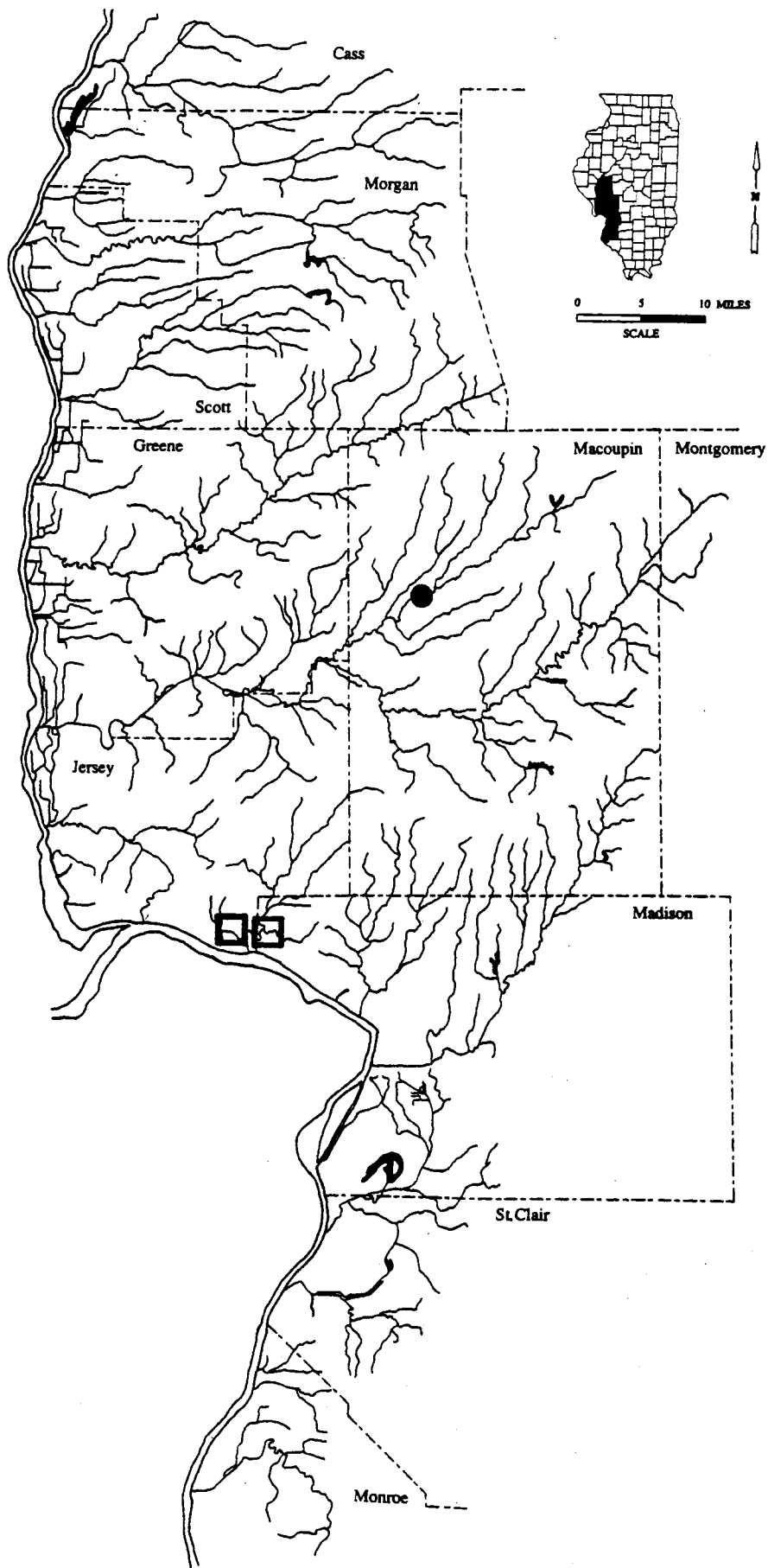
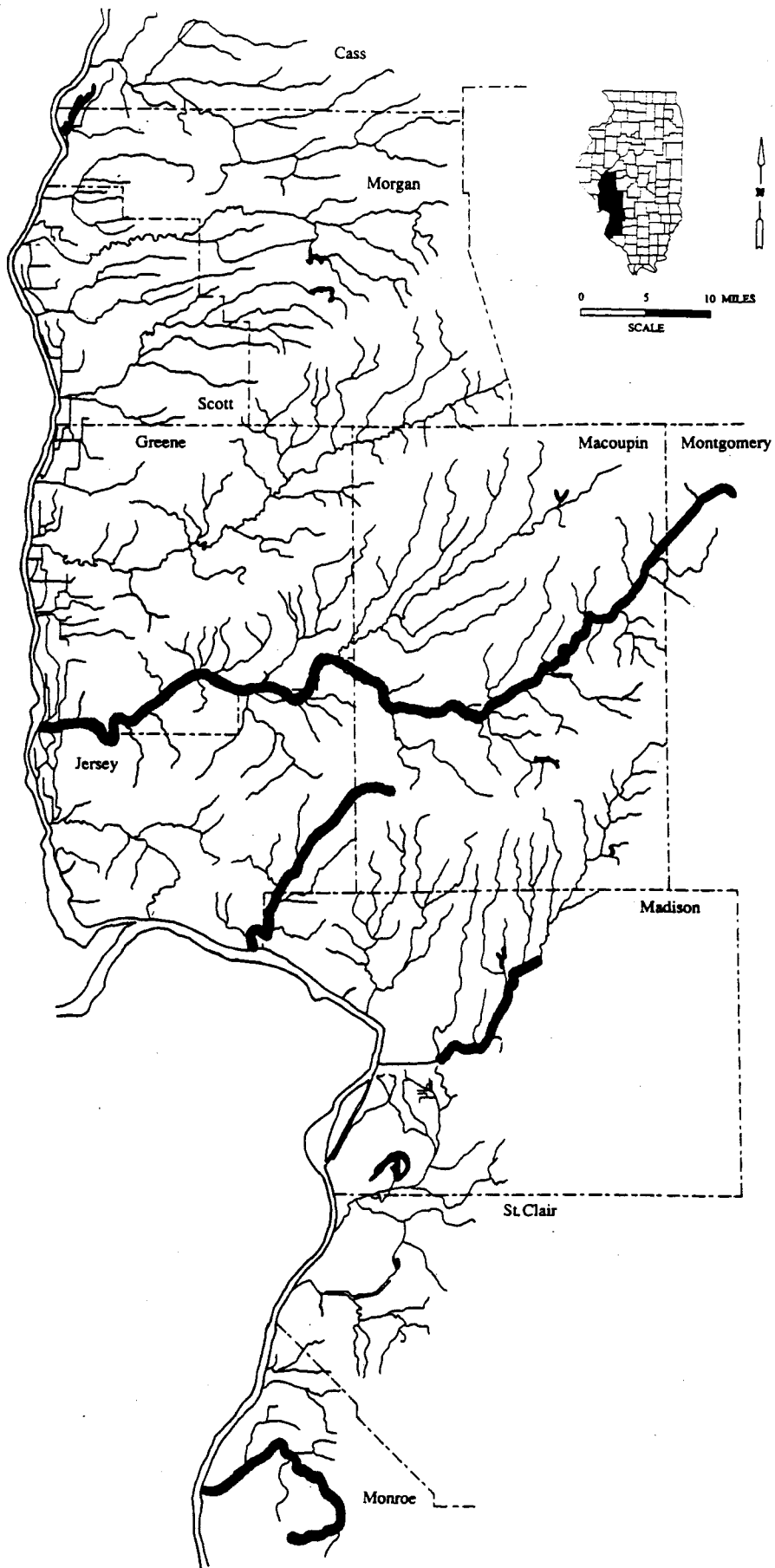
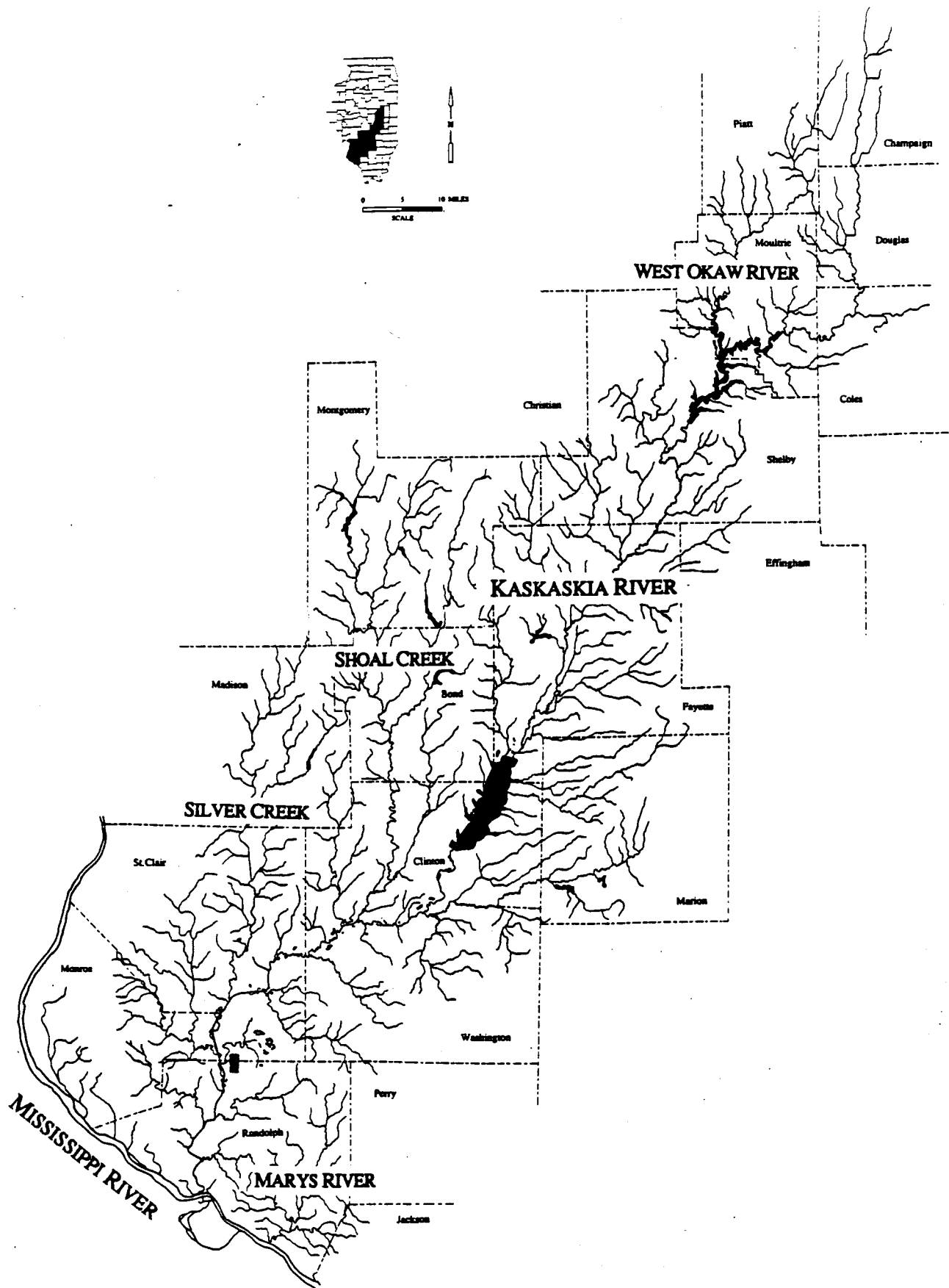


Figure 13-4. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered fishes (squares) and mussels (circles) in the Lower Illinois River Tributaries and American Bottoms.



13. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Lower Illinois River Tributaries and American Bottoms.



14. Kaskaskia River System

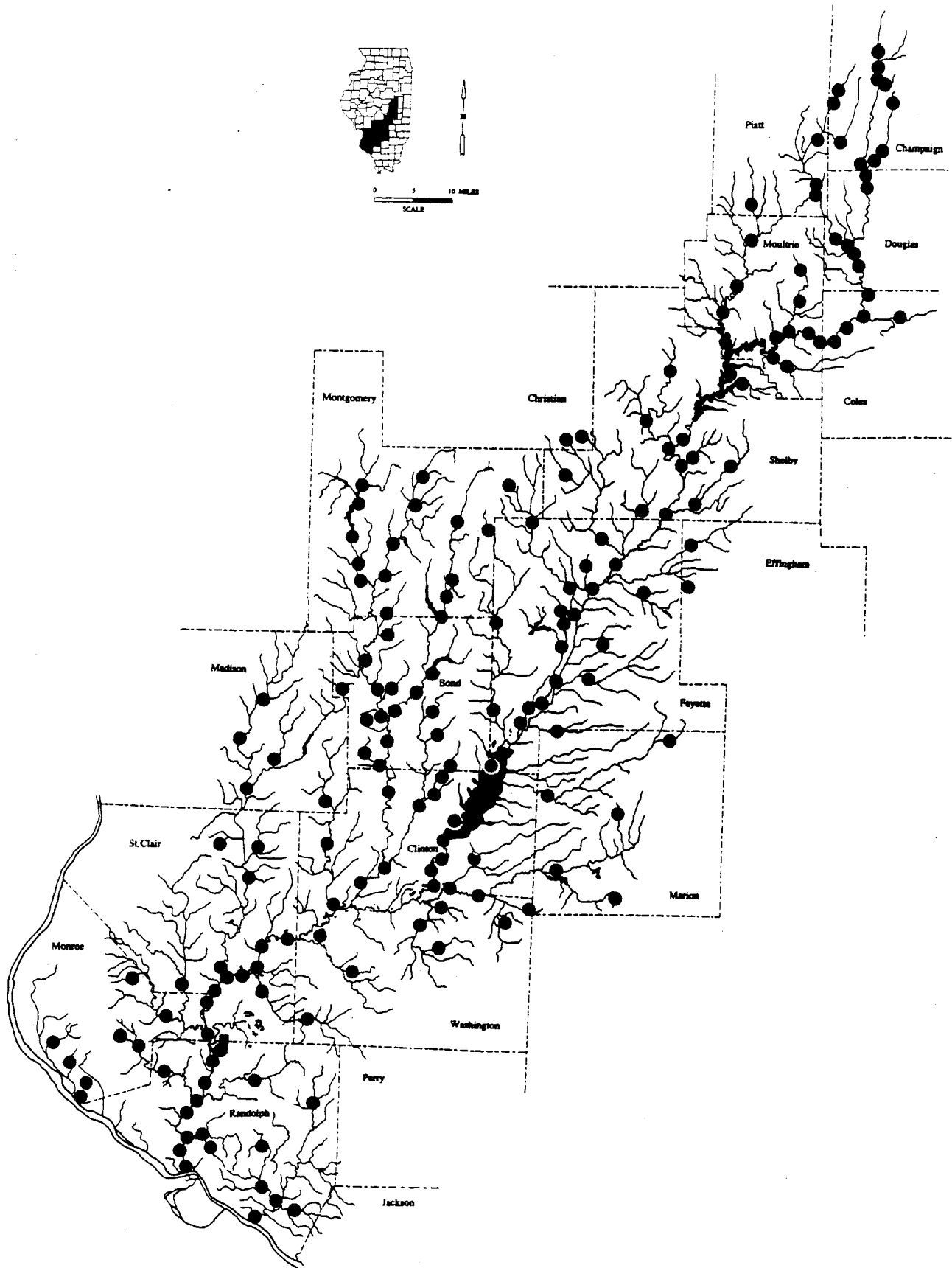


Figure 14-1. Map of fish collection sites in the Kaskaskia River System represented in the Illinois Natural History Survey Fish Collection.

Table 14-1. Freshwater fishes recorded from the Kaskaskia River System. Data from the Illinois Natural History Survey Fish Collection. FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened; I = Introduced.

PETROMYZONTIDAE	<i>Notropis boops</i> ST	CYPRINODONTIDAE
<i>Ichthyomyzon castaneus</i>	<i>Notropis buchanani</i>	<i>Fundulus notatus</i>
<i>Ichthyomyzon unicuspis</i>	<i>Notropis dorsalis</i>	POECILIIDAE
POLYDONTIDAE	<i>Notropis hudsonius</i>	<i>Gambusia affinis</i>
<i>Polyodon spathula</i>	<i>Notropis ludibundus</i>	APHREDODERIDAE
ACIPENSERIDAE	<i>Notropis nubilus</i>	<i>Aphredoderus sayanus</i>
<i>Scaphirhynchus platyrhynchus</i>	<i>Notropis shumardi</i>	ATHERINIDAE
LEPISOSTEIDAE	<i>Notropis volucellus</i>	<i>Labidesthes sicculus</i>
<i>Lepisosteus oculatus</i>	<i>Phenacobius mirabilis</i>	GASTEROSTEIDAE
<i>Lepisosteus osseus</i>	<i>Phoxinus erythrogaster</i>	<i>Culaea inconstans</i>
<i>Lepisosteus platostomus</i>	<i>Pimephales notatus</i>	MORONIDAE
AMIIDAE	<i>Pimephales promelas</i>	<i>Morone chrysops</i>
<i>Amia calva</i>	<i>Pimephales vigilax</i>	<i>Morone mississippiensis</i>
ANGUILLIDAE	<i>Platygobio gracilis</i>	CENTRARCHIDAE
<i>Anguilla rostrata</i>	<i>Semotilus atromaculatus</i>	<i>Ambloplites rupestris</i>
HIODONTIDAE	CATOSTOMIDAE	<i>Centrarchus macropterus</i>
<i>Hiodon alosoides</i>	<i>Carpodes carpio</i>	<i>Chaenobryttus gulosus</i>
<i>Hiodon tergisus</i>	<i>Carpodes cyprinus</i>	<i>Lepomis cyanellus</i>
CLUPEIDAE	<i>Carpodes velifer</i>	<i>Lepomis gibbosus</i>
<i>Alosa chrysochloris</i>	<i>Catostomus commersoni</i>	<i>Lepomis humilis</i>
<i>Dorosoma cepedianum</i>	<i>Cycleptus elongatus</i> FC	<i>Lepomis macrochirus</i>
<i>Dorosoma petenense</i>	<i>Erimyzon oblongus</i>	<i>Lepomis megalotis</i>
ESOCIDAE	<i>Erimyzon sucetta</i>	<i>Lepomis microlophus</i>
<i>Esox americanus</i>	<i>Hypentelium nigricans</i>	<i>Micropterus dolomieu</i>
CYPRINIDAE	<i>Ictiobus bubalus</i>	<i>Micropterus salmoides</i>
<i>Campostoma anomalum</i>	<i>Ictiobus cyprinellus</i>	<i>Pomoxis annularis</i>
<i>Campostoma oligolepis</i>	<i>Ictiobus niger</i>	<i>Pomoxis nigromaculatus</i>
<i>Cyprinella lutrensis</i>	<i>Minytrema melanops</i>	PERCIDAE
<i>Cyprinella spiloptera</i>	<i>Moxostoma anisurum</i>	<i>Etheostoma asprigene</i>
<i>Cyprinella whipplei</i>	<i>Moxostoma carinatum</i> ST	<i>Etheostoma chlorosomum</i>
<i>Cyprinus carpio</i> I	<i>Moxostoma erythrurum</i>	<i>Etheostoma clarum</i> SE
<i>Ericymba buccata</i>	<i>Moxostoma macrolepidotum</i>	<i>Etheostoma gracile</i>
<i>Extrarius aestivalis</i>	ICTALURIDAE	<i>Etheostoma nigrum</i>
<i>Hybognathus argyritis</i>	<i>Ameiurus melas</i>	<i>Etheostoma spectabile</i>
<i>Hybognathus nuchalis</i>	<i>Ameiurus natalis</i>	<i>Percina caprodes</i>
<i>Hybognathus placitus</i>	<i>Ameiurus nebulosus</i>	<i>Percina maculata</i>
<i>Hybopsis amblops</i> SE	<i>Ictalurus catus</i>	<i>Percina phoxocephala</i>
<i>Hybopsis amnis</i> SE	<i>Ictalurus furcatus</i>	<i>Percina shumardi</i>
<i>Luxilus chrysocephalus</i>	<i>Ictalurus punctatus</i>	<i>Stizostedion canadense</i>
<i>Lythrurus fumeus</i>	<i>Noturus exilis</i>	<i>Stizostedion vitreum</i>
<i>Lythrurus umbratilis</i>	<i>Noturus flavus</i>	SCIAENIDAE
<i>Macrhybopsis storeriana</i>	<i>Noturus gyrinus</i>	<i>Aplodinotus grunniens</i>
<i>Nocomis biguttatus</i>	<i>Noturus miurus</i>	COTTIDAE
<i>Notemigonus crysoleucas</i>	<i>Noturus nocturnus</i>	<i>Cottus caroliniae</i>
<i>Notropis atherinoides</i>	<i>Pylodictis olivaris</i>	
<i>Notropis blennioides</i>		

Total number of species = 113 (112 native, 1 introduced)

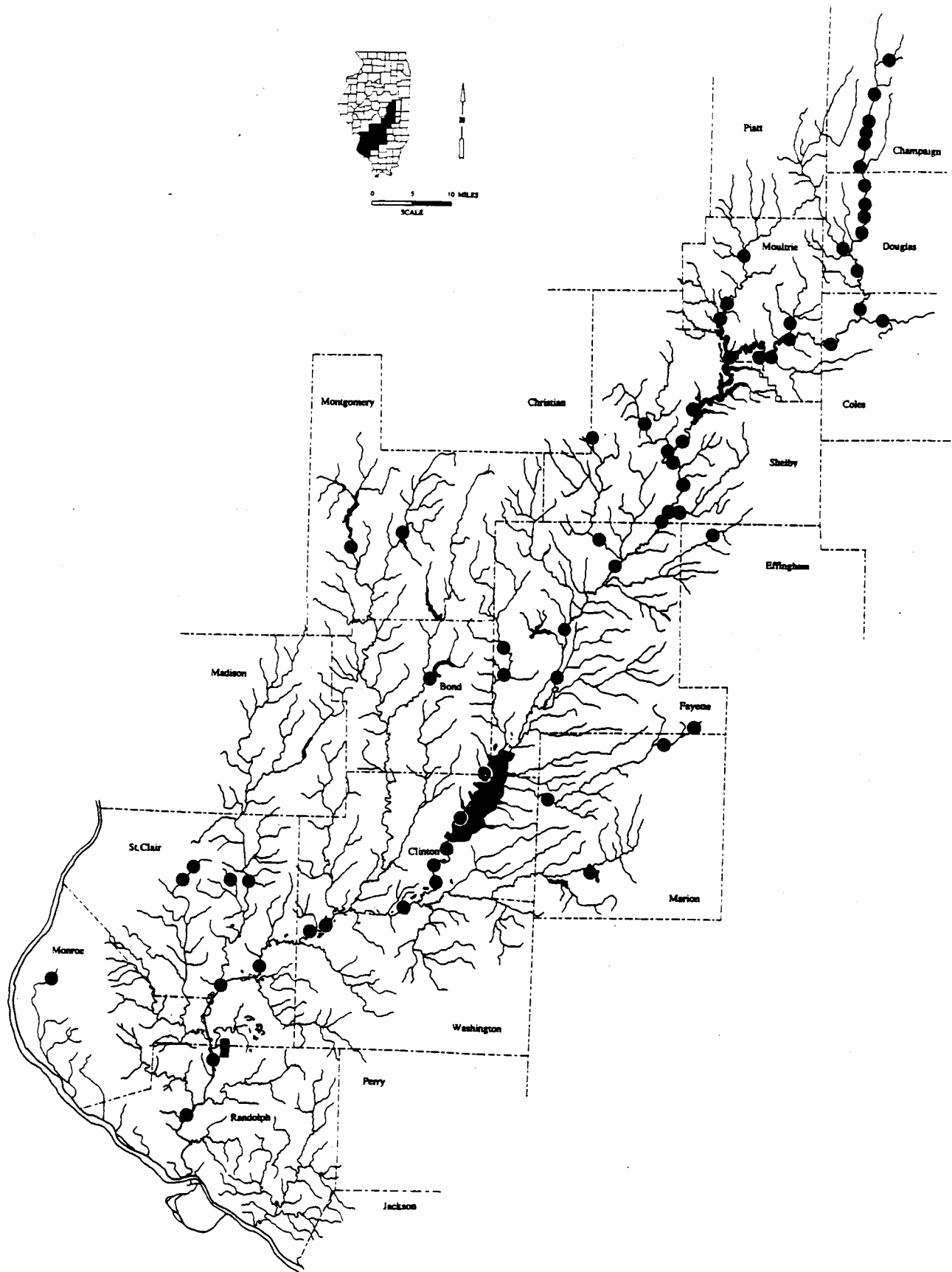


Figure 14-2. Map of mussel collection sites in the Kaskaskia River System represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 14-2. Freshwater mussels recorded from the Kaskaskia River System. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. FC = Federal Candidate, SE = Illinois State Endangered; ST = Illinois State Threatened; SC = State Candidate; X = Extirpated from Illinois.

<i>Actinonaias ligamentina</i>	
<i>Alasmidonta marginata</i>	
<i>Alasmidonta viridis</i>	SE
<i>Amblema plicata</i>	
<i>Anodonta grandis</i>	
<i>Anodonta imbecillis</i>	
<i>Anodonta suborbiculata</i>	
<i>Anodontoides ferussacianus</i>	
<i>Arcidens confragosus</i>	
<i>Cumberlandia monodonta</i>	SE, FC
<i>Ellipsaria lineolata</i>	SC
<i>Elliptio crassidens</i>	ST
<i>Elliptio dilatata</i>	SC
<i>Epioblasma triquetra</i>	SE
<i>Fusconaia ebena</i>	SC
<i>Fusconaia flava</i>	
<i>Lampsilis cardium</i>	
<i>Lampsilis siliquoidea</i>	
<i>Lampsilis teres</i>	
<i>Lasmigona complanata</i>	
<i>Lasmigona costata</i>	
<i>Leptodea fragilis</i>	
<i>Leptodea leptodon</i>	SE, FC, X
<i>Ligumia recta</i>	
<i>Ligumia subrostrata</i>	
<i>Megalonaias nervosa</i>	
<i>Obliquaria reflexa</i>	
<i>Plethobasus cyphus</i>	ST
<i>Pleurobema sintoxia</i>	
<i>Potamilus alatus</i>	
<i>Potamilus ohioensis</i>	
<i>Quadrula fragosa</i>	SC, FE, X
<i>Quadrula metanevra</i>	
<i>Quadrula nodulata</i>	
<i>Quadrula pustulosa</i>	
<i>Quadrula quadrula</i>	
<i>Strophitus undulatus</i>	
<i>Toxolasma parvus</i>	
<i>Tritogonia verrucosa</i>	
<i>Truncilla donaciformis</i>	
<i>Truncilla truncata</i>	
<i>Unio merus tetralasmus</i>	ST

Total number of species = 42.

Table 14-3. Freshwater crustaceans recorded from the Kaskaskia River System. Data from the Illinois Natural History Survey Crustacean Collection. SE = State Endangered.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea beattyi
Caecidotea brevicauda
Caecidotea forbesi
Caecidotea intermedia
Caecidotea kendeighi
Caecidotea packardii
Lirceus sp.

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Bactrurus brachycaudus
Bactrurus mucronatus
Crangonyx forbesi
Crangonyx gracilis
Crangonyx minor
Crangonyx pseudogracilis
Gammarus acherondytes SE
Gammarus minus
Gammarus pseudolimnaeus
Gammarus troglophilus

HYALELLIDAE

Hyaella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

PALAEEMONIDAE

Palaemonetes kadiakensis

CAMBARIDAE

Cambarus diogenes
Orconectes immunis
Orconectes propinquus
Orconectes virilis
Procambarus acutus
Procambarus gracilis

Total number of species = 25.

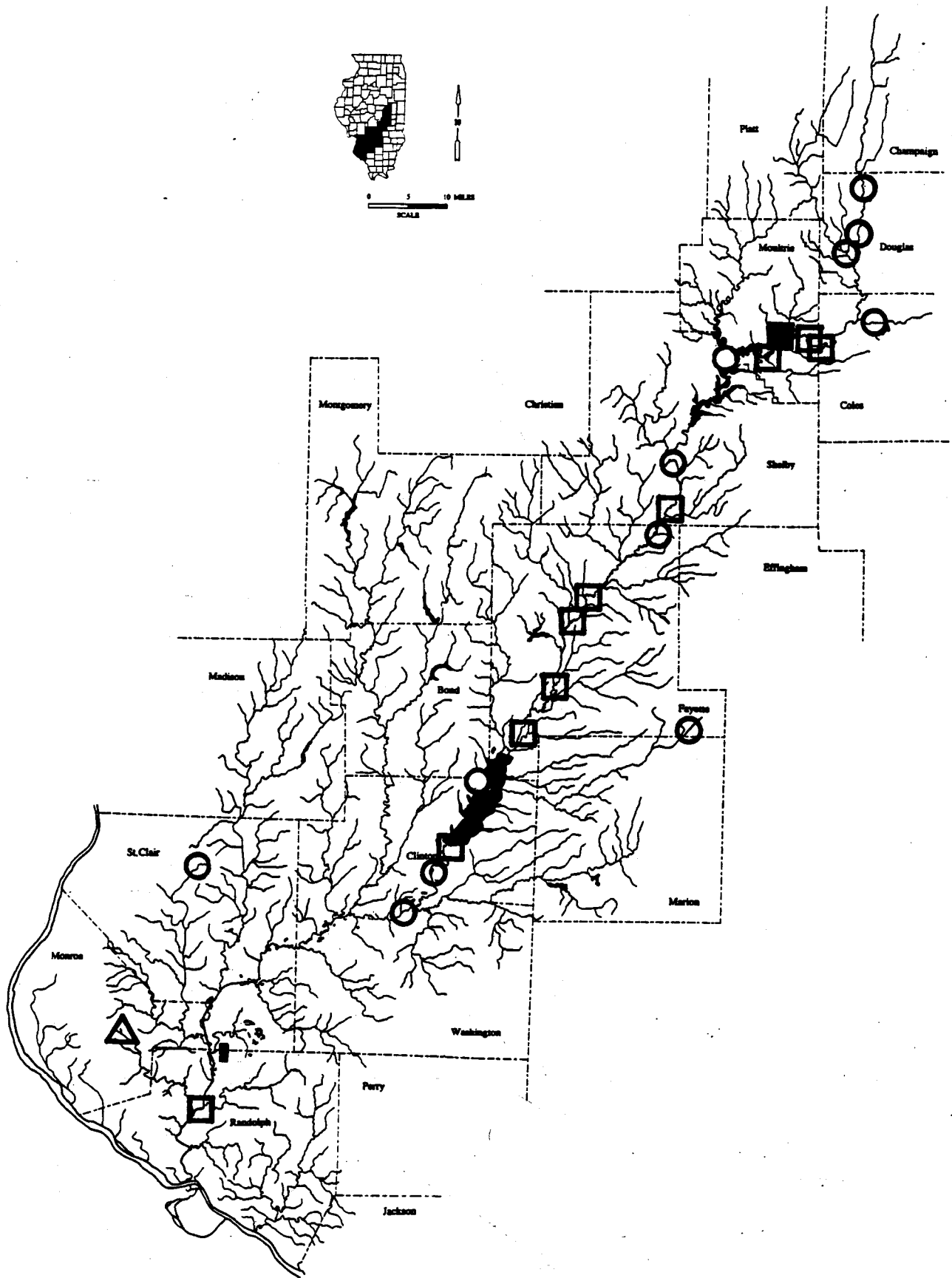
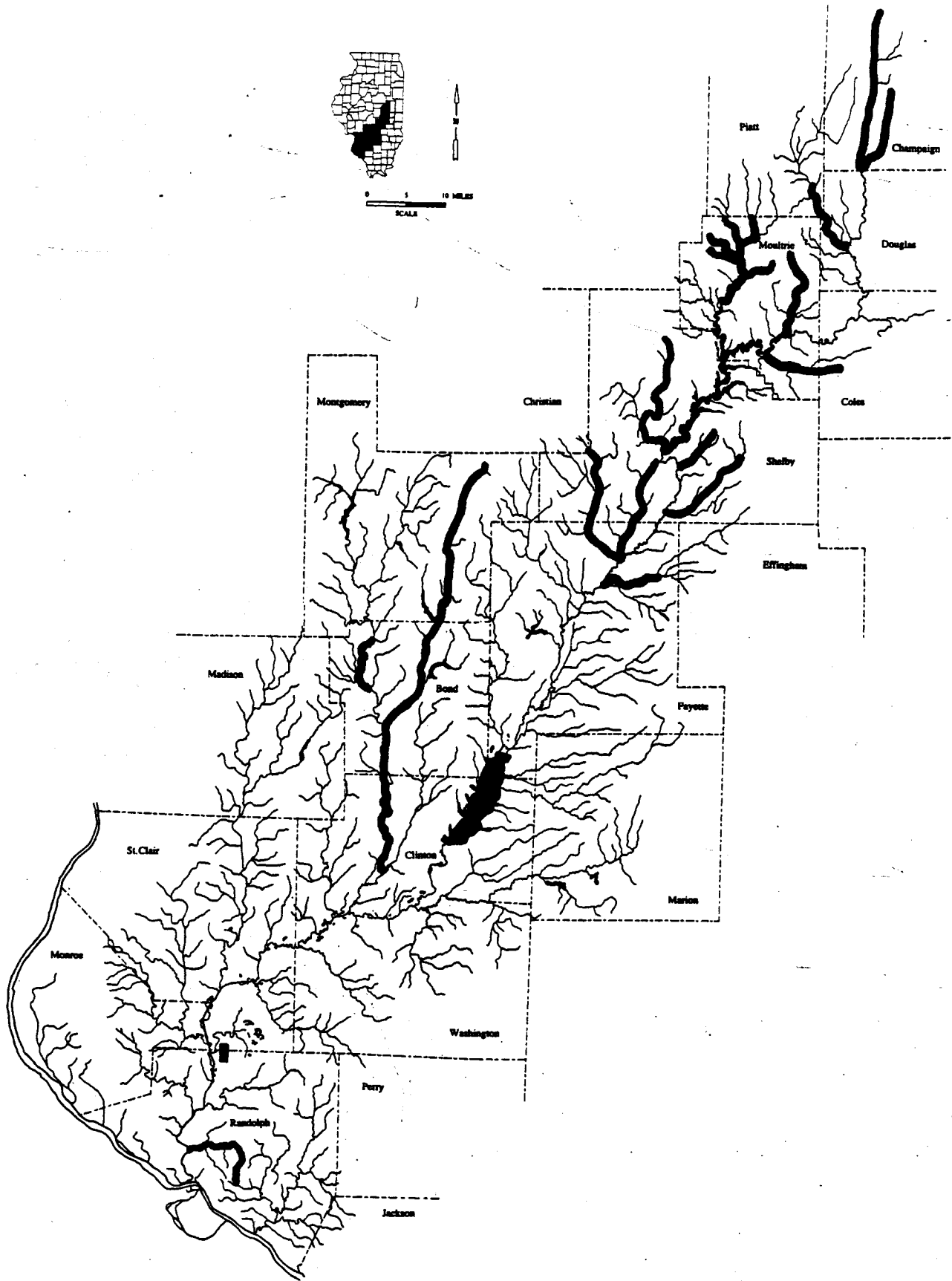
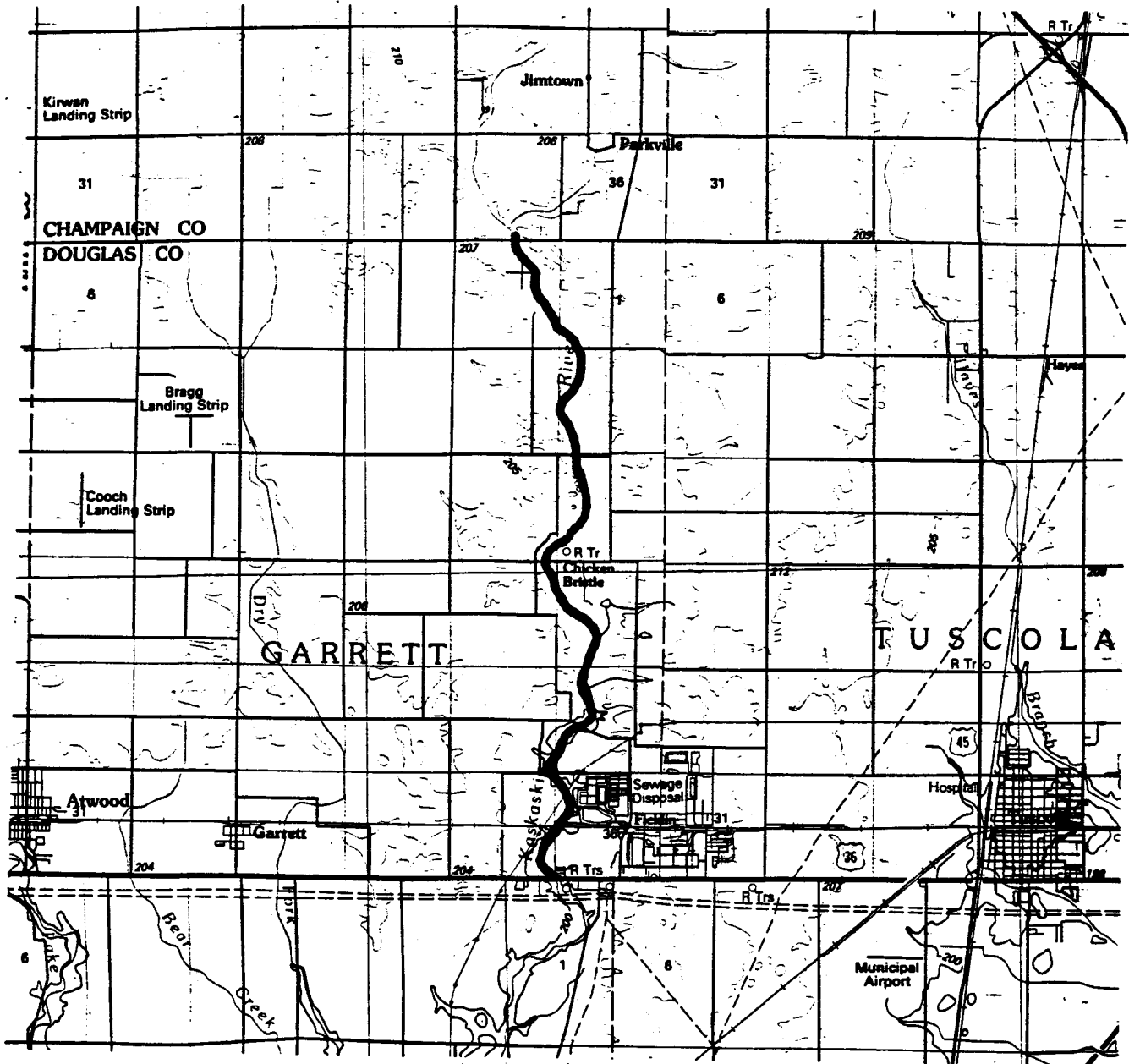


Figure 14-4. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered fishes (squares), mussels (circles), and crustaceans (triangles) in the Kaskaskia River System.

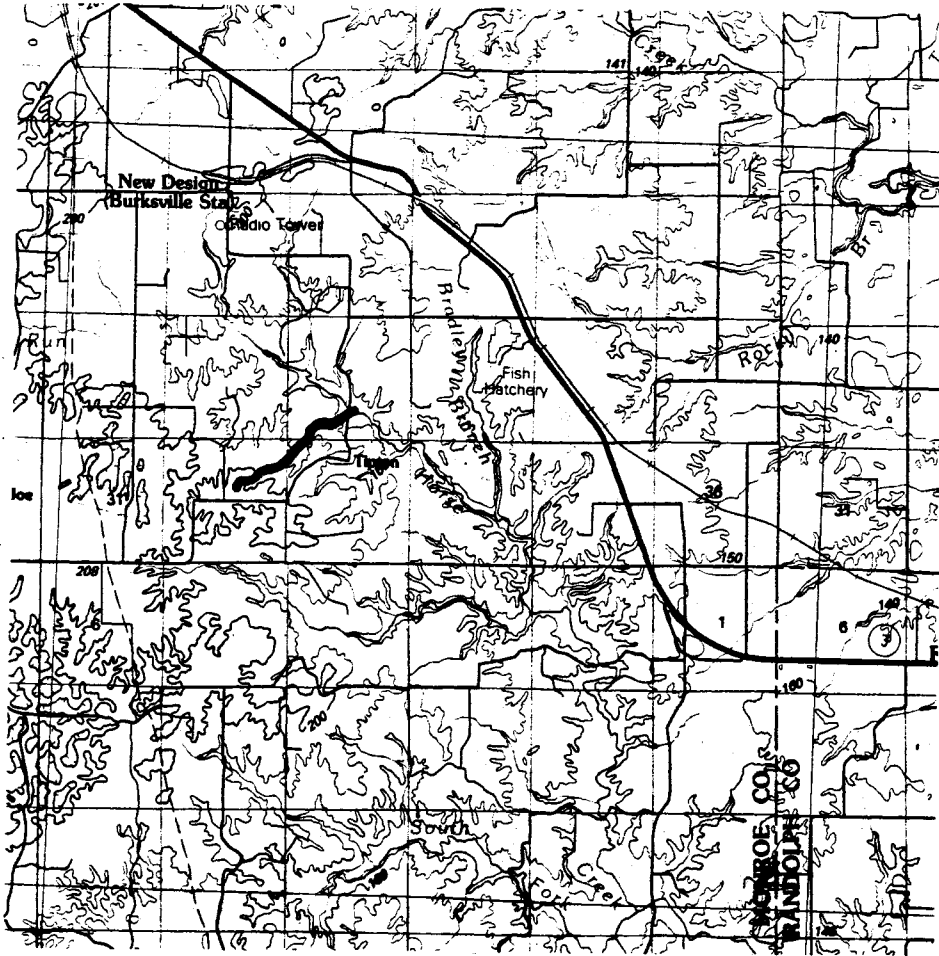


14. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Kaskaskia River System.



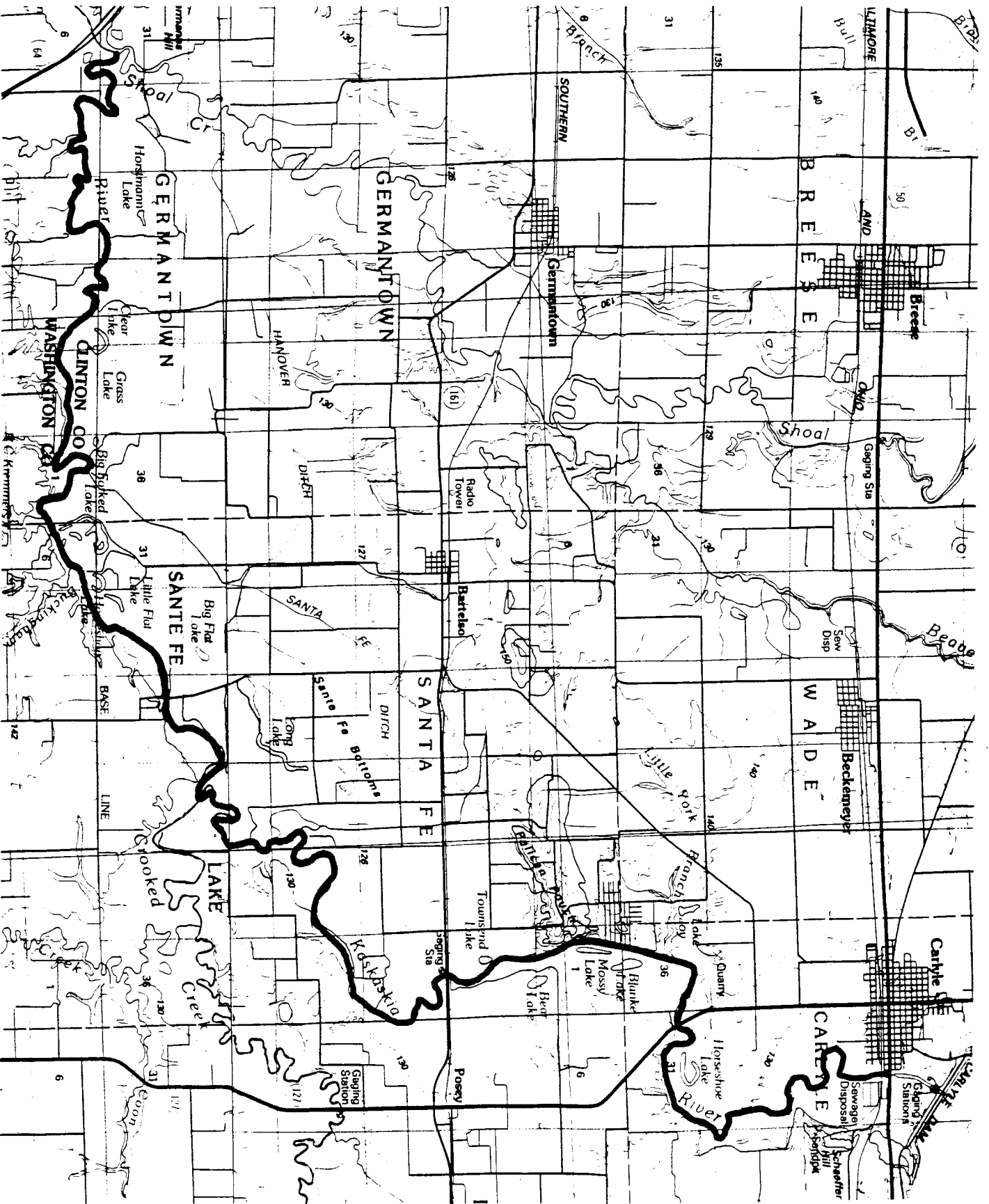
14. Kaskaskia River System (Decatur 1:100,000)

- Kaskaskia River, Champaign/Douglas county line to Ill. Rt. 36, Douglas Co.
 (high mussel diversity)



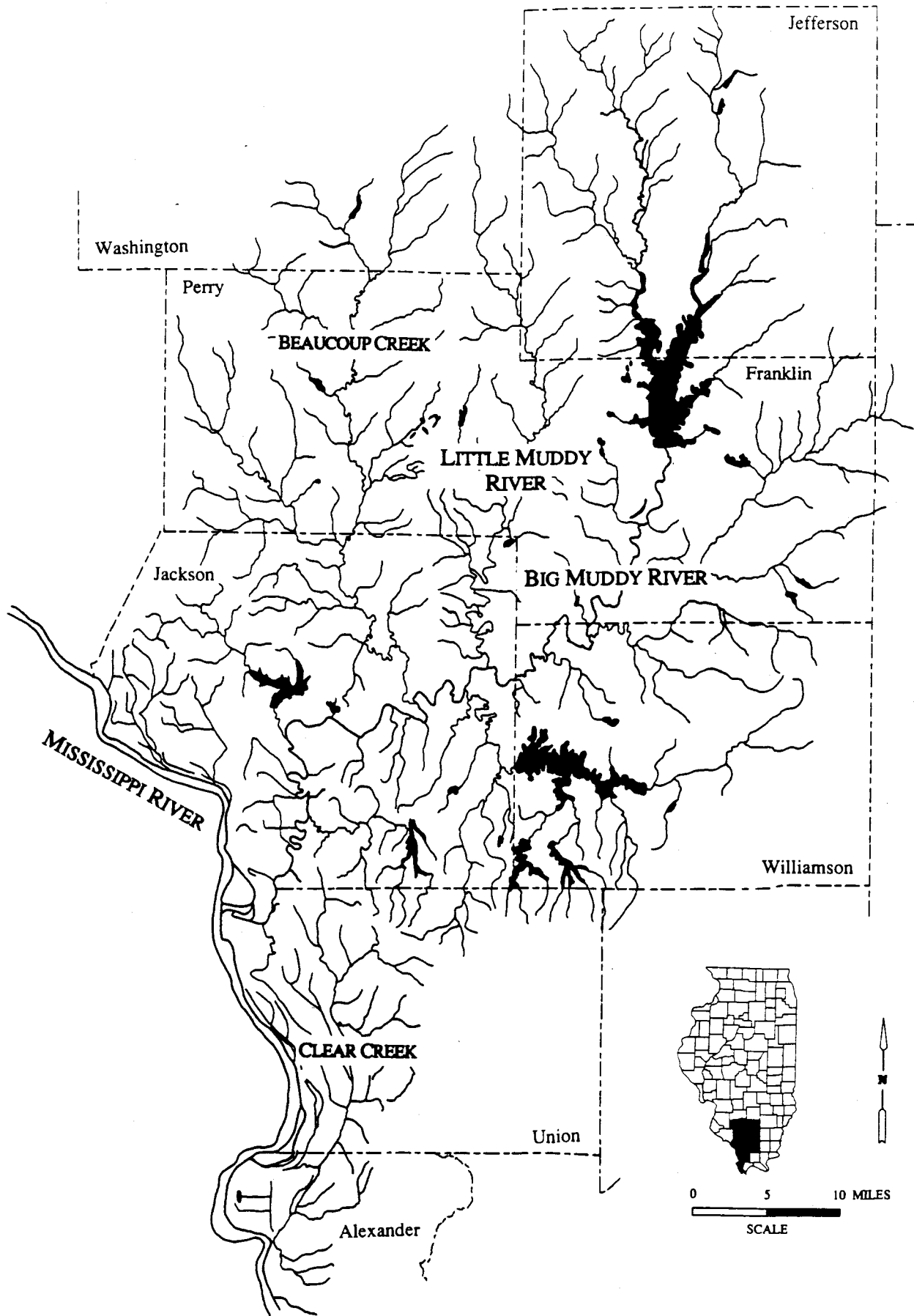
14. Kaskaskia River System (Festus 1:100,000)

- tributary to Horse Creek, Mammoth Cave, Monroe Co.
(*Gammarus acherondytes*)



14. Kaskaskia River System (Carlyle & Pinkneyville 1:100,000)

- Kaskaskia River, U.S. Rt. 50 to Shoal Creek, Clinton Co.
 (high mussel diversity)



15. Big Muddy River System

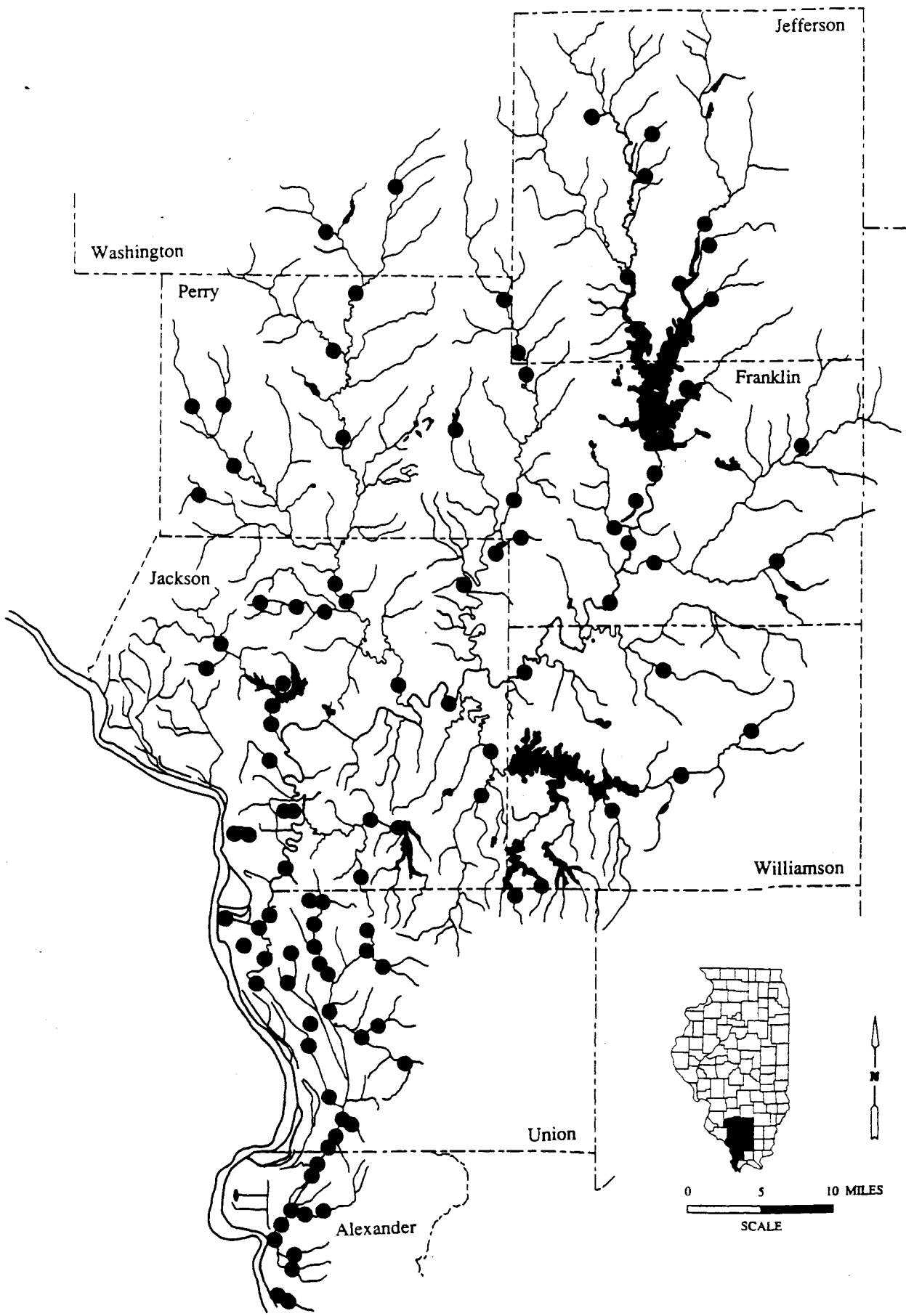


Figure 15-1. Map of fish collection sites in the Big Muddy River System represented in the Illinois Natural History Survey Fish Collection.

Table 15-1. Freshwater fishes recorded from the Big Muddy River and Clear Creek System. Data from the Illinois Natural History Survey Fish Collection. SE = Illinois State Endangered; ST = Illinois State Threatened; I = Introduced.

PETROMYZONTIDAE	<i>Notropis volucellus</i>	ATHERINIDAE
<i>Ichthyomyzon castaneus</i>	<i>Opsopoeodus emiliae</i>	<i>Labidesthes sicculus</i>
POLYODONTIDAE	<i>Phenacobius mirabilis</i>	MORONIDAE
<i>Polyodon spathula</i>	<i>Phoxinus erythrogaster</i>	<i>Morone chrysops</i>
ACIPENSERIDAE	<i>Pimephales notatus</i>	<i>Morone mississippiensis</i>
<i>Scaphirhynchus platyrhynchus</i>	<i>Pimephales vigilax</i>	<i>Morone saxatilis</i>
LEPISOSTEIDAE	<i>Platygobio gracilis</i>	ELASSOMATIDAE
<i>Lepisosteus oculatus</i>	<i>Pteronotropis hubbsi</i> SE	<i>Elassoma zonatum</i>
<i>Lepisosteus osseus</i>	<i>Semotilus atromaculatus</i>	CENTRARCHIDAE
<i>Lepisosteus platostomus</i>	CATOSTOMIDAE	<i>Centrarchus macropterus</i>
AMIIDAE	<i>Carpiodes carpio</i>	<i>Chaenobryttus gulosus</i>
<i>Amia calva</i>	<i>Carpiodes cyprinus</i>	<i>Lepomis cyanellus</i>
HIODONTIDAE	<i>Carpiodes velifer</i>	<i>Lepomis humilis</i>
<i>Hiodon alosoides</i>	<i>Catostomus commersoni</i>	<i>Lepomis macrochirus</i>
CLUPEIDAE	<i>Erimyzon oblongus</i>	<i>Lepomis megalotis</i>
<i>Alosa chrysochloris</i>	<i>Erimyzon succetta</i>	<i>Lepomis microlophus</i>
<i>Dorosoma cepedianum</i>	<i>Hypentelium nigricans</i>	<i>Lepomis miniatus</i> ST
<i>Dorosoma petenense</i>	<i>Ictiobus bubalus</i>	<i>Lepomis symmetricus</i> ST
UMBRIDAE	<i>Ictiobus cyprinellus</i>	<i>Micropterus dolomieu</i>
<i>Umbra limi</i>	<i>Ictiobus niger</i>	<i>Micropterus punctulatus</i>
ESOCIDAE	<i>Minytrema melanops</i>	<i>Micropterus salmoides</i>
<i>Esox americanus</i>	<i>Moxostoma duquesnei</i>	<i>Pomoxis annularis</i>
CYPRINIDAE	<i>Moxostoma erythrurum</i>	<i>Pomoxis nigromaculatus</i>
<i>Campostoma anomalum</i>	<i>Moxostoma macrolepidotum</i>	PERCIDAE
<i>Cyprinella lutrensis</i>	ICTALURIDAE	<i>Etheostoma asprigene</i>
<i>Cyprinella venusta</i>	<i>Ameiurus melas</i>	<i>Etheostoma caeruleum</i>
<i>Cyprinella whipplei</i>	<i>Ameiurus natalis</i>	<i>Etheostoma chlorosomum</i>
<i>Cyprinus carpio</i> I	<i>Ameiurus nebulosus</i>	<i>Etheostoma flabellare</i>
<i>Ericymba buccata</i>	<i>Ictalurus punctatus</i>	<i>Etheostoma gracile</i>
<i>Hybognathus nuchalis</i>	<i>Noturus exilis</i>	<i>Etheostoma nigrum</i>
<i>Hybopsis amnis</i> SE	<i>Noturus gyrinus</i>	<i>Etheostoma proeliare</i>
<i>Luxilus chrysocephalus</i>	<i>Pylodictis olivaris</i>	<i>Etheostoma spectabile</i>
<i>Lythrurus fumeus</i>	CYPRINODONTIDAE	<i>Percina caprodes</i>
<i>Lythrurus umbratilis</i>	<i>Fundulus dispar</i>	<i>Percina maculata</i>
<i>Macrhybopsis storeriana</i>	<i>Fundulus notatus</i>	<i>Percina shumardi</i>
<i>Notemigonus crysoleucas</i>	<i>Fundulus olivaceus</i>	<i>Stizostedion canadense</i>
<i>Notropis atherinoides</i>	POECILIIDAE	<i>Stizostedion vitreum</i>
<i>Notropis blennioides</i>	<i>Gambusia affinis</i>	SCIAENIDAE
<i>Notropis boops</i> ST	APHREDODERIDAE	<i>Aplodinotus grunniens</i>
<i>Notropis burchanani</i>	<i>Aphredoderus sayanus</i>	COTTIDAE
<i>Notropis ludibundus</i>	AMBLYOPSIDAE	<i>Cottus carolinae</i>
<i>Notropis shumardi</i>	<i>Forbesichthys agassizi</i>	

Total number of species = 102 (101 native, 1 introduced)

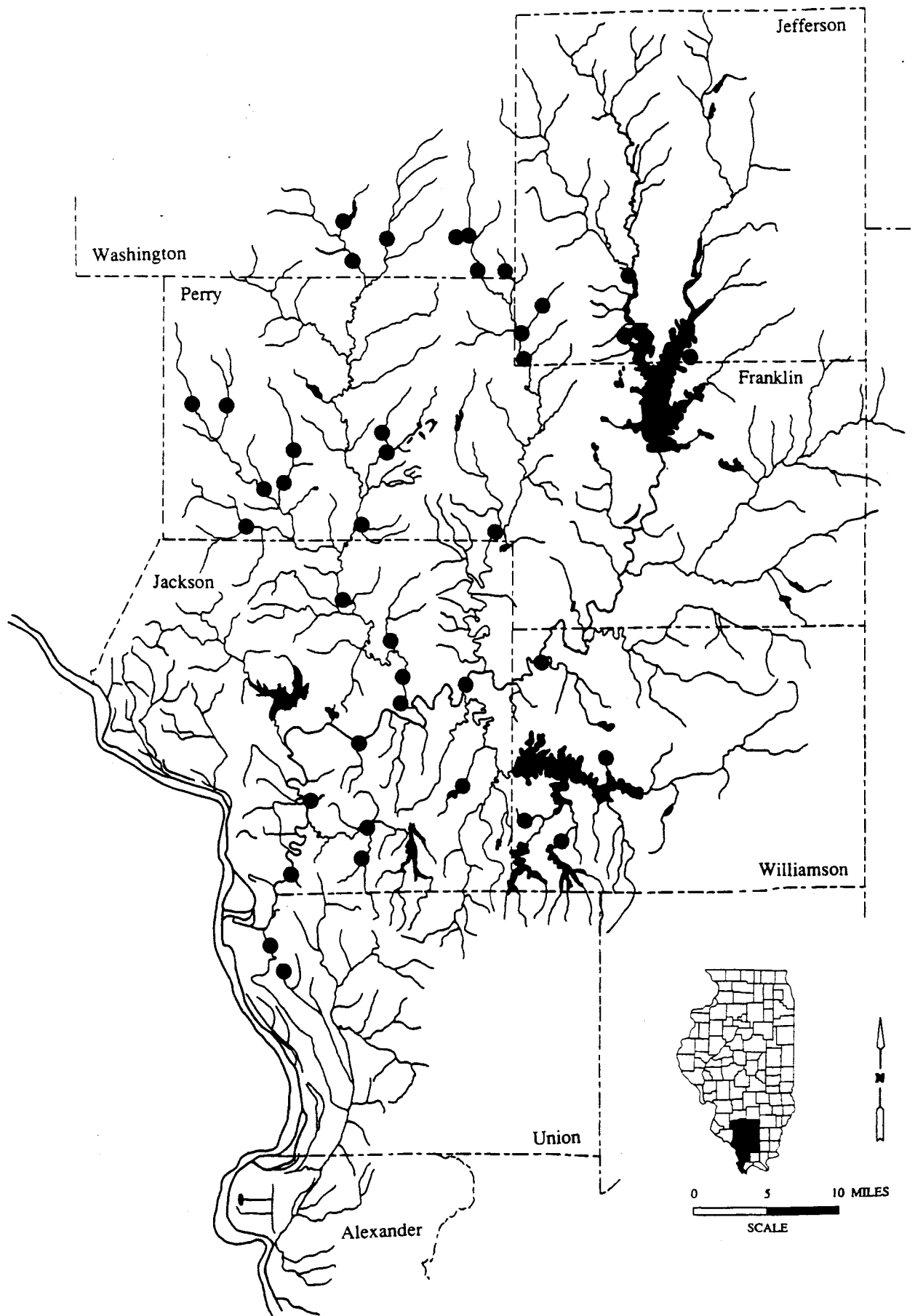


Figure 15-2. Map of mussel collection sites in the Big Muddy River System represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 15-2. Freshwater mussels recorded from the Big Muddy River System. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. ST = Illinois State Threatened; SC = State Candidate.

<i>Amblema plicata</i>	
<i>Anodonta grandis</i>	
<i>Anodonta imbecillis</i>	
<i>Anodonta suborbiculata</i>	
<i>Arcidens confragosus</i>	
<i>Elliptio dilatata</i>	SC
<i>Fusconaia flava</i>	
<i>Lampsilis cardium</i>	
<i>Lampsilis siliquoidea</i>	
<i>Lampsilis teres</i>	
<i>Lasmigona complanata</i>	
<i>Leptodea fragilis</i>	
<i>Ligumia subrostrata</i>	
<i>Megaloniais nervosa</i>	
<i>Potamilus alatus</i>	
<i>Potamilus ohiensis</i>	
<i>Quadrula pustulosa</i>	
<i>Quadrula quadrula</i>	
<i>Strophitus undulatus</i>	
<i>Toxolasma parvus</i>	
<i>Toxolasma texasensis</i>	
<i>Tritogonia verrucosa</i>	
<i>Truncilla truncata</i>	
<i>Uniomerus tetralasmus</i>	ST

Total number of species = 24.

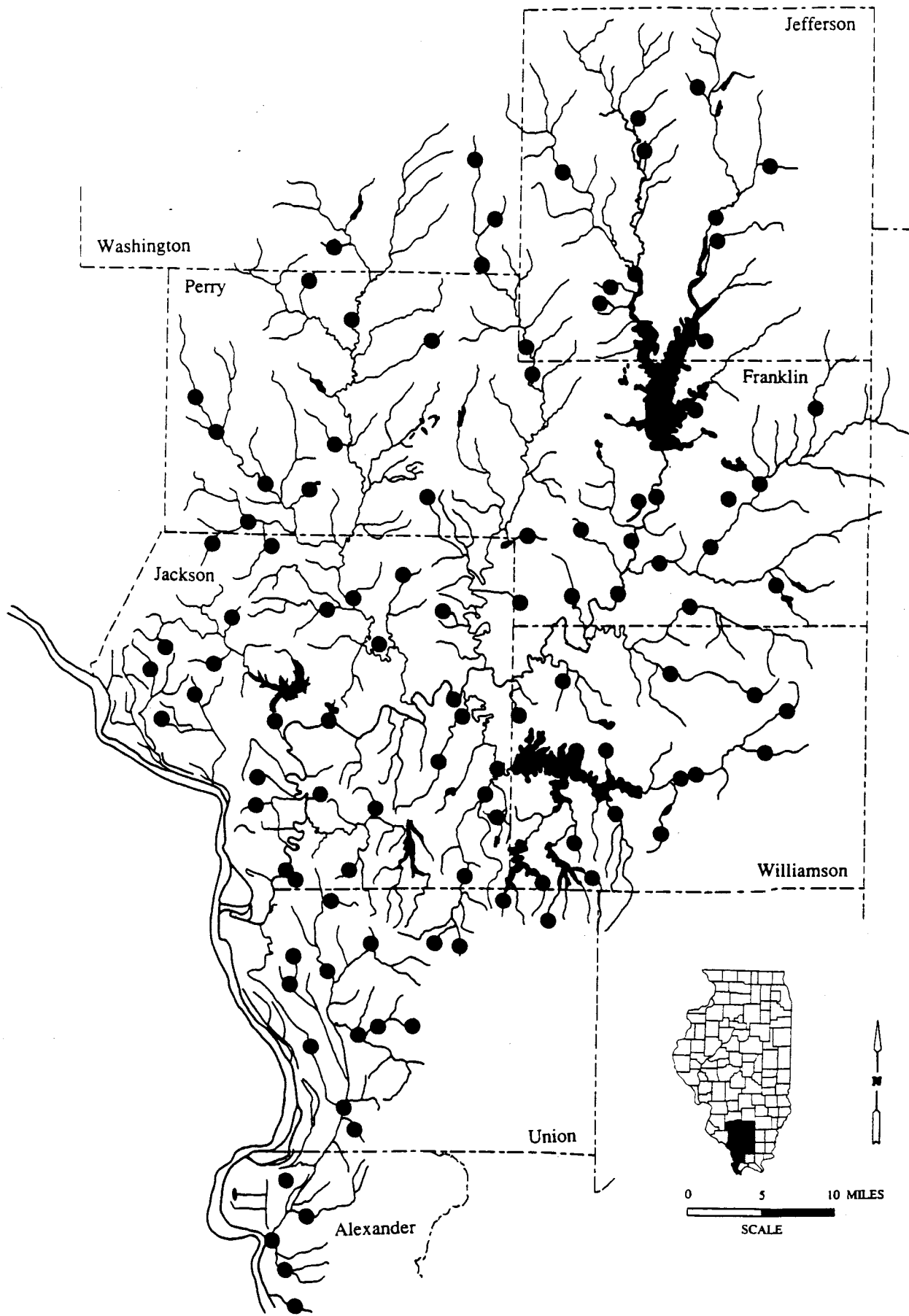


Figure 15-3. Map of crustacean collection sites in the Big Muddy River System represented in the Illinois Natural History Survey Crustacean Collection.

Table 15-3 Freshwater crustaceans recorded from the Big Muddy River and Clear Creek Systems. Data from the Illinois Natural History Survey Crustacean Collection.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea bicrenata
Caecidotea brevicauda
Caecidotea forbesi
Caecidotea intermedia
Caecidotea spatulata
Lirceus sp.

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Crangonyx forbesi
Crangonyx gracilis
Crangonyx minor
Crangonyx pseudogracilis
Crangonyx richmondensis
Gammarus minus
Gammarus pseudolimnaeus
Gammarus troglophilus

HYALELLIDAE

Hyaella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

PALAEEMONIDAE

Palaemonetes kadiakensis

CAMBARIDAE

Cambarellu shufeldtii
Cambarus diogenes
Cambarus tenebrosus
Fallicambarus fodiens
Orconectes illinoiensis
Orconectes immunis
Orconectes virilis
Procambarus acutus
Procambarus clarkii

Total number of species = 25.

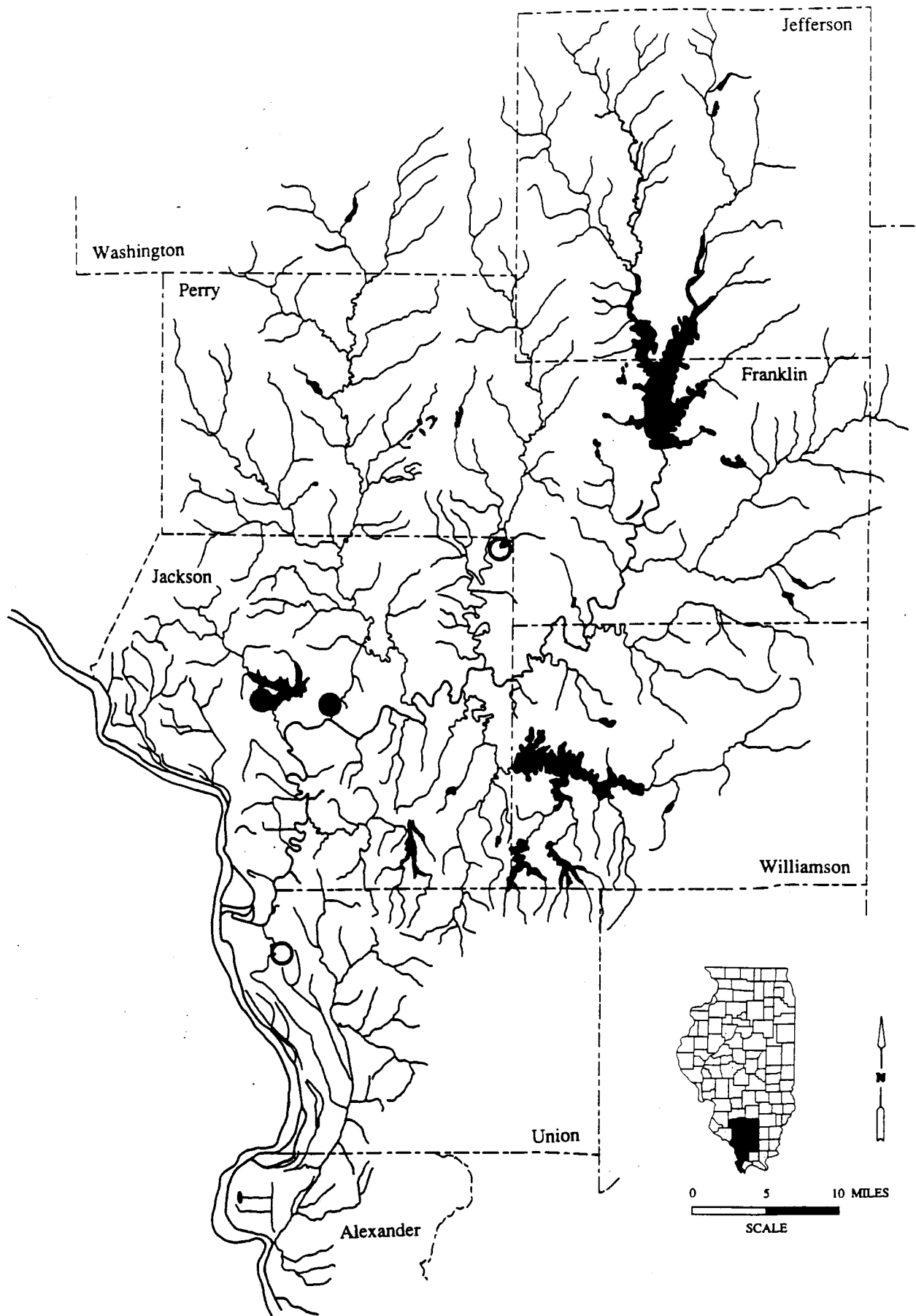


Figure 15-4. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of endangered lotic plants (circles) in the Big Muddy River System.

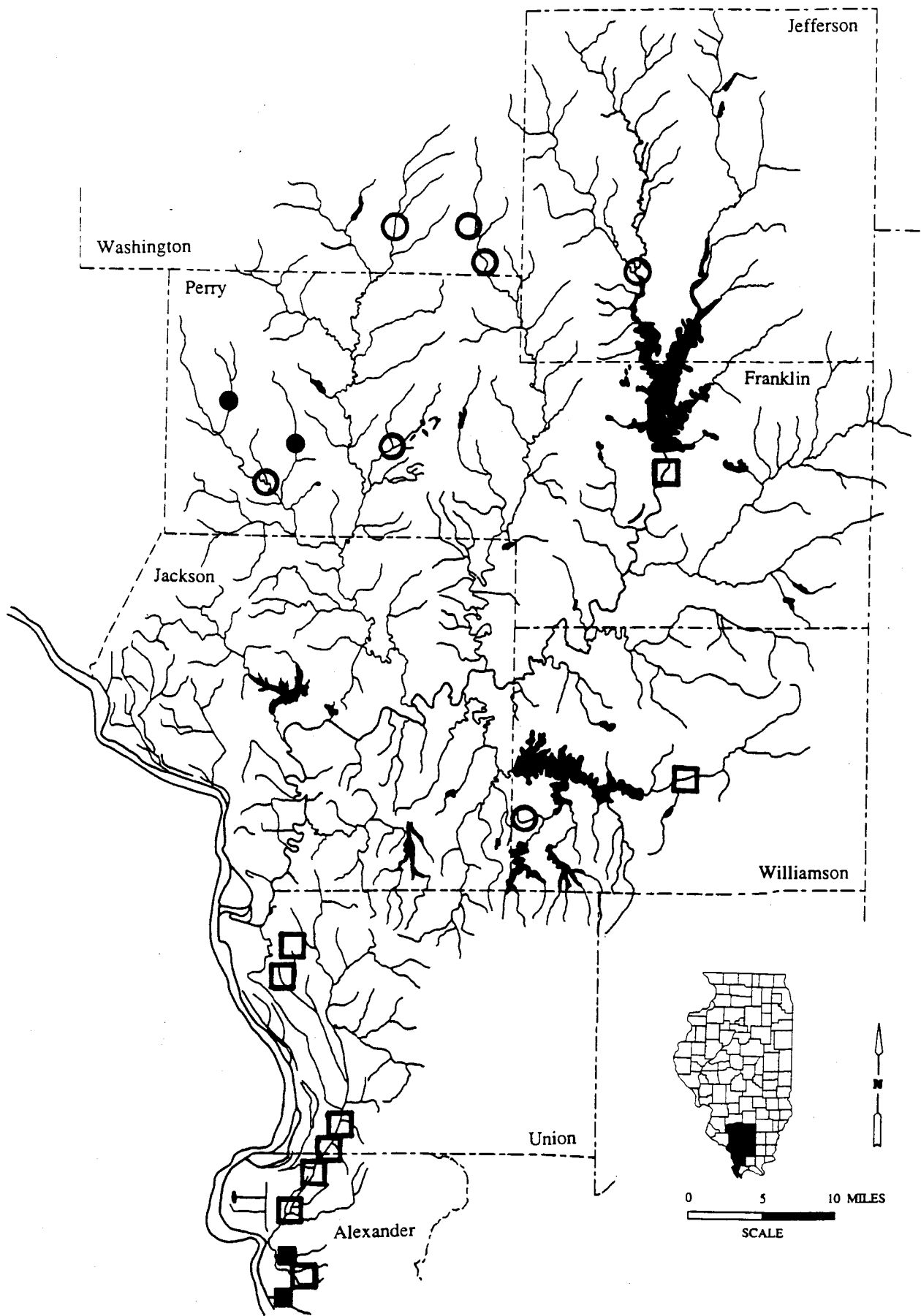
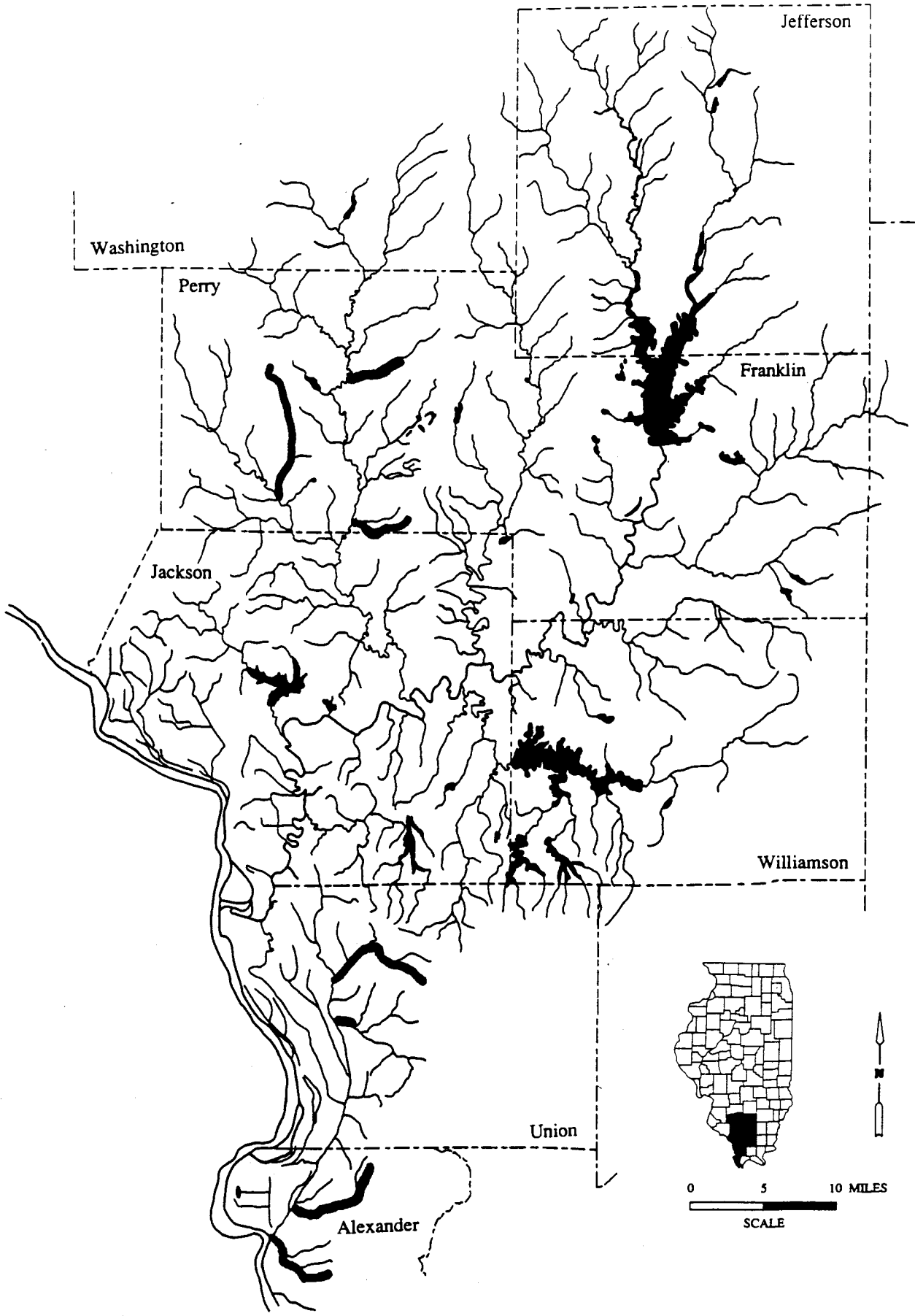
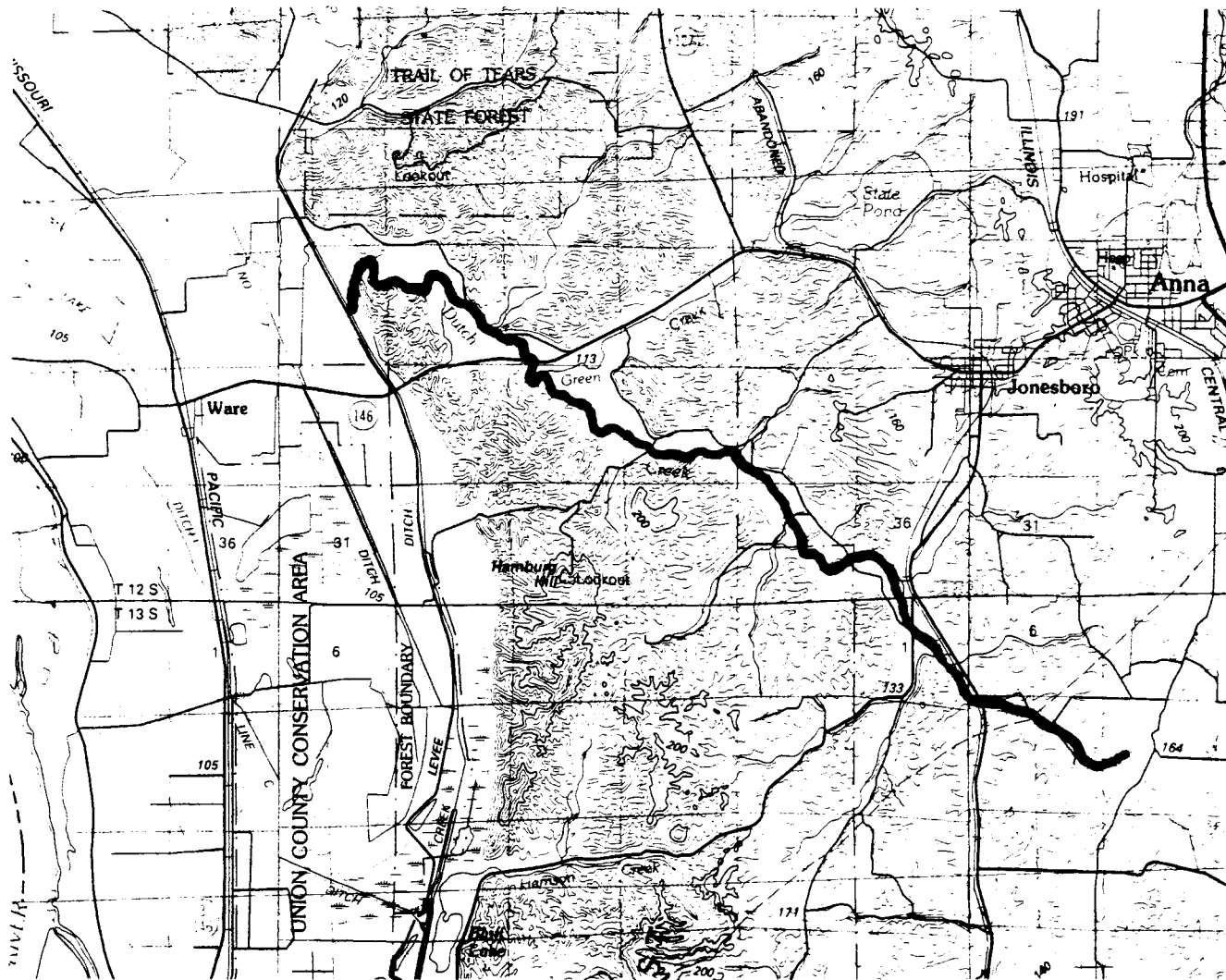


Figure 15-5. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered fishes (squares) and mussels (circles) in the Big Muddy River System.

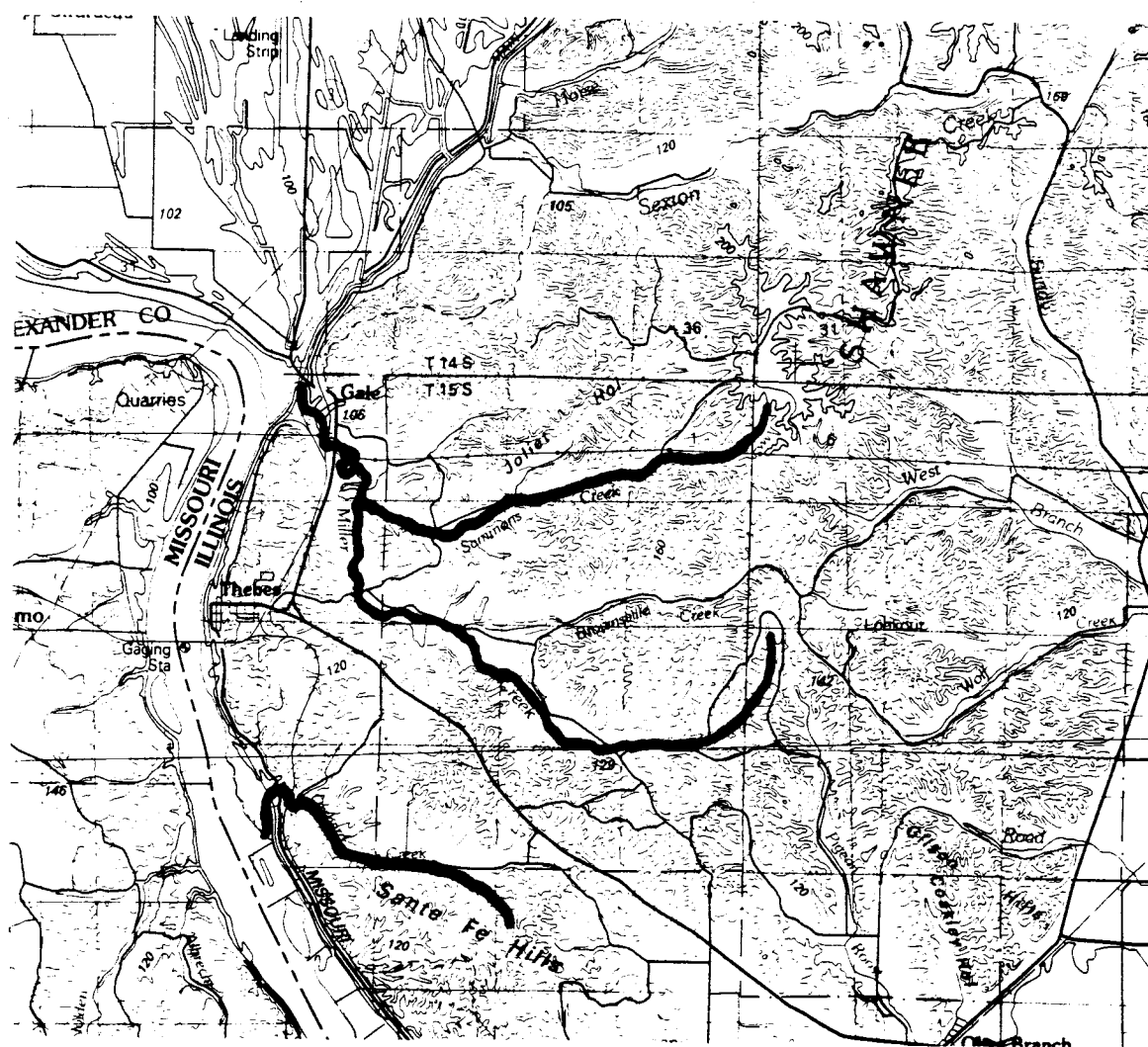


15. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Big Muddy River System.



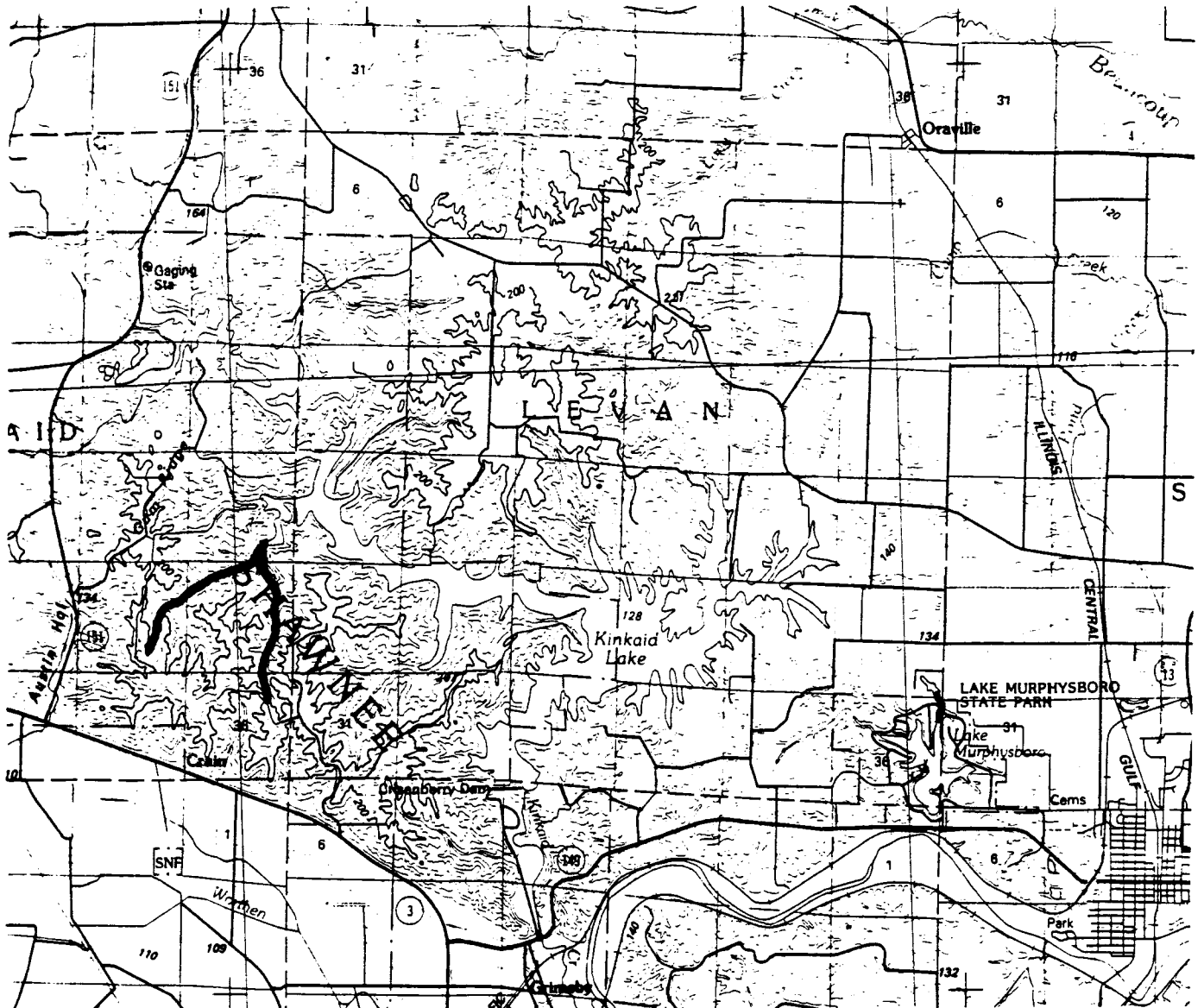
15. Big Muddy River System (Cape Girardeau 1:100,000)

- Dutch Creek, Union County
(bigeye shiner)



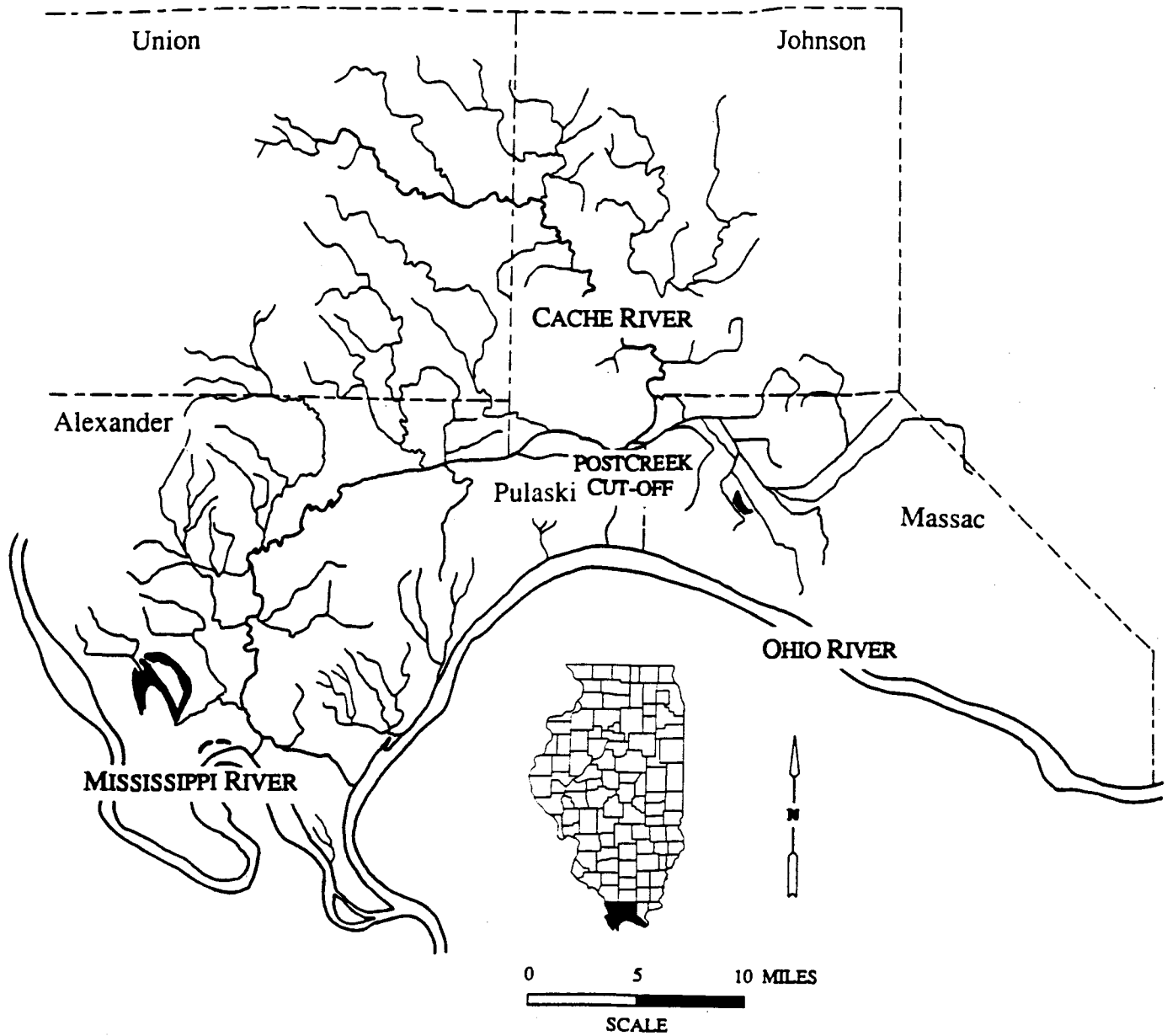
15. Big Muddy River System (Cape Girardeau 1:100,000)

- Miller Creek, Alexander Co.
(bigeye shiner, BSC Class "A")
- Sammons Creek, Alexander Co.
(bigeye shiner)
- Orchard Creek, Alexander Co.
(bigeye shiner)



15. Big Muddy River System (Carbondale 1:100,000)

- stream between unnamed lake and Lake Murphysboro, J
(heart-leaved plantain)
- trib. to Upper Lake Kinkaia, Jackson Co.
(heart-leaved plantain)



16. Cache River System

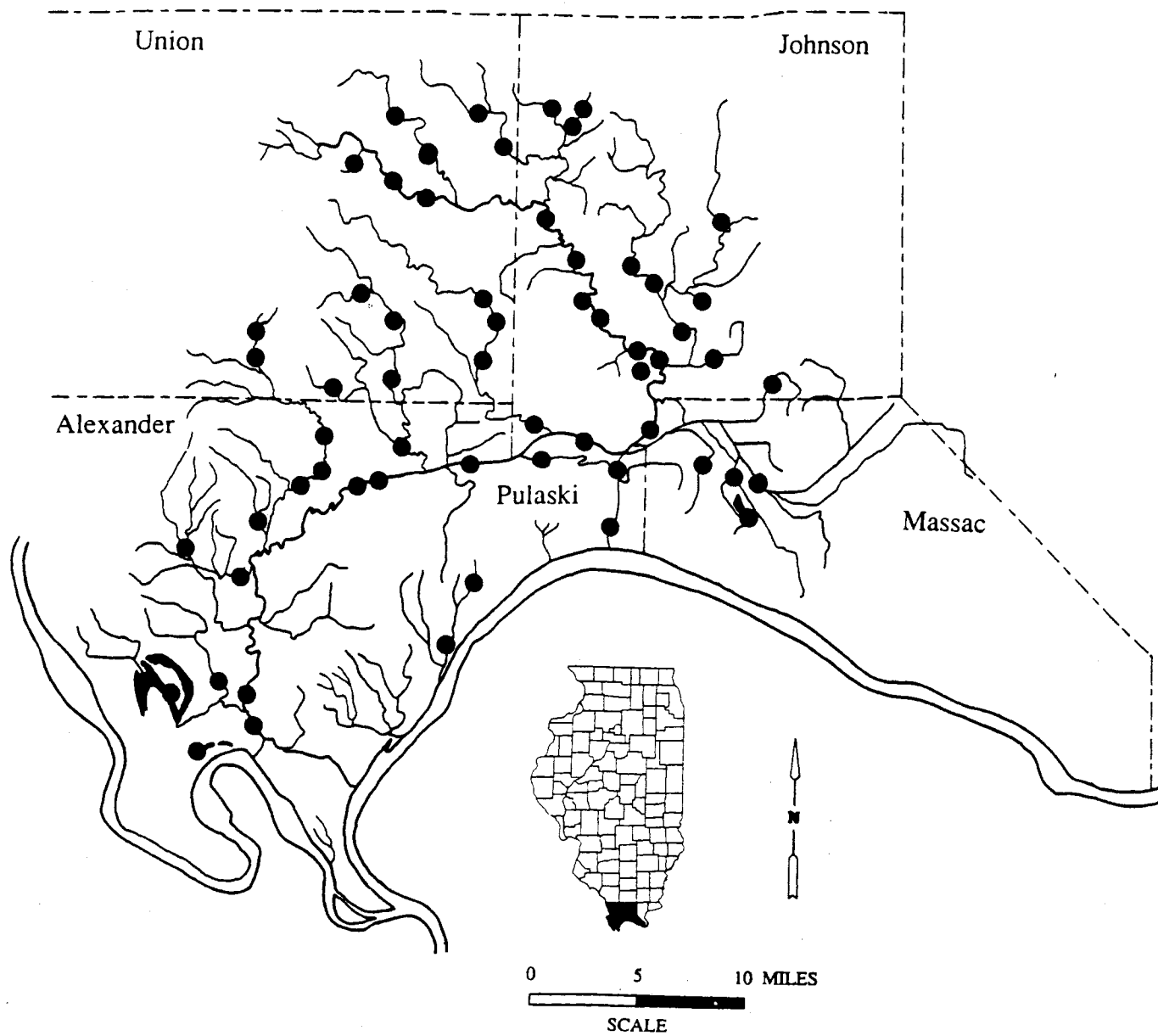


Figure 16-1. Map of fish collection sites in the Cache River System represented in the Illinois Natural History Survey Fish Collection.

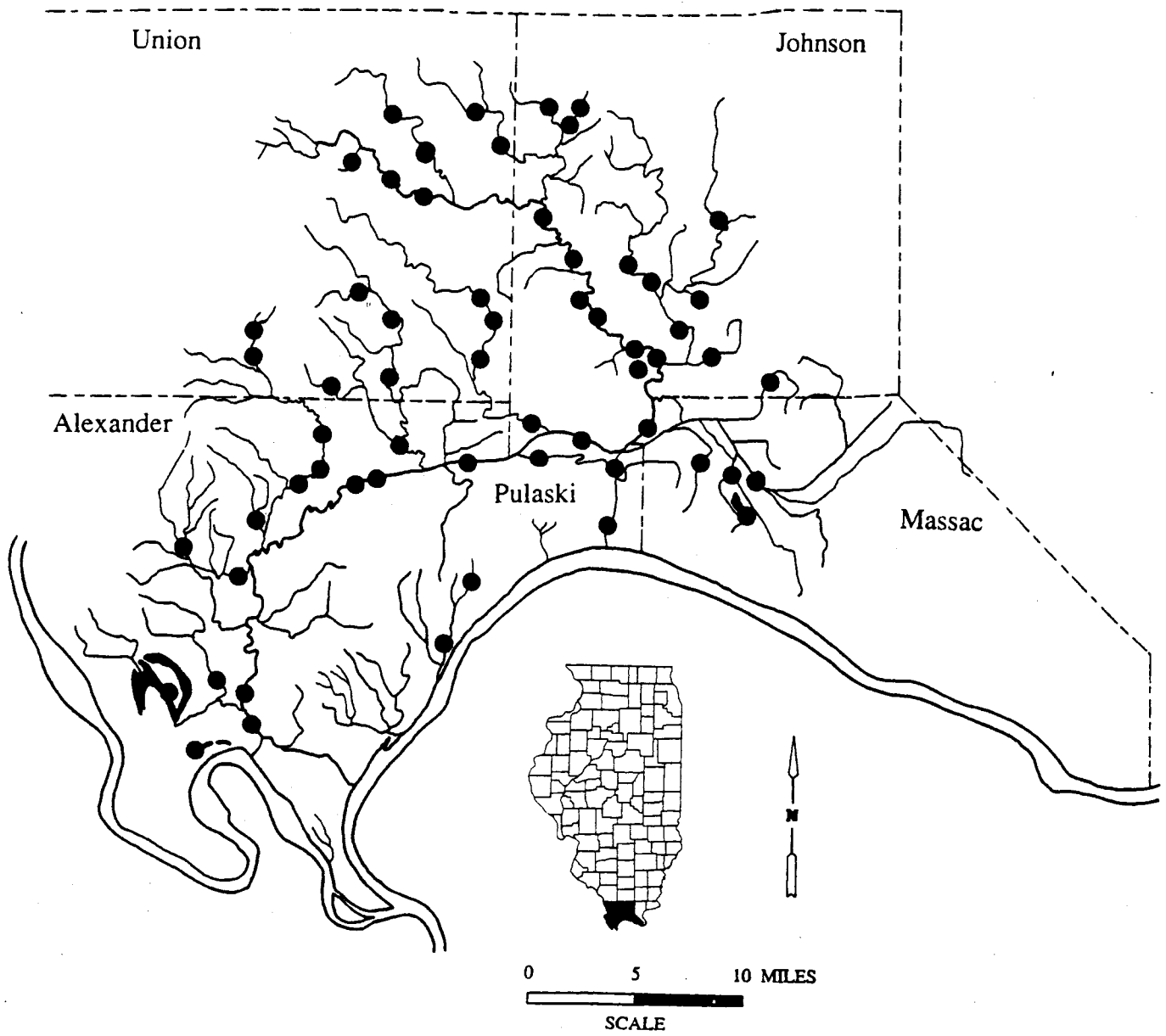


Figure 16-1. Map of fish collection sites in the Cache River System represented in the Illinois Natural History Survey Fish Collection.

Table 16-1. Freshwater fishes recorded from the Cache River System. Data from the Illinois Natural History Survey Fish Collection. SE = Illinois State Endangered; ST = Illinois State Threatened; I = Introduced.

PETROMYZONTIDAE	<i>Notropis shumardi</i>	MORONIDAE
<i>Ichthyomyzon castaneus</i>	<i>Notropis volucellus</i>	<i>Morone chrysops</i>
LEPISOSTEIDAE	<i>Opsopoeodus emiliae</i>	ELASSOMATIDAE
<i>Lepisosteus oculatus</i>	<i>Phenacobius mirabilis</i>	<i>Elassoma zonatum</i>
<i>Lepisosteus platostomus</i>	<i>Pimephales notatus</i>	CENTRARCHIDAE
AMIIDAE	<i>Pimephales vigilax</i>	<i>Centrarchus macropterus</i>
<i>Amia calva</i>	<i>Semotilus atromaculatus</i>	<i>Chaenobryttus gulosus</i>
HIODONTIDAE	CATOSTOMIDAE	<i>Lepomis cyanellus</i>
<i>Hiodon tergisus</i>	<i>Carpiodes carpio</i>	<i>Lepomis gibbosus</i>
CLUPEIDAE	<i>Catostomus commersoni</i>	<i>Lepomis humilis</i>
<i>Dorosoma cepedianum</i>	<i>Erimyzon oblongus</i>	<i>Lepomis macrochirus</i>
<i>Dorosoma petenense</i>	<i>Ictiobus bubalus</i>	<i>Lepomis megalotis</i>
UMBRIDAE	<i>Ictiobus cyprinellus</i>	<i>Lepomis microlophus</i>
<i>Umbra limi</i>	<i>Ictiobus niger</i>	<i>Micropterus punctulatus</i>
ESOCIDAE	<i>Moxostoma erythrurum</i>	<i>Micropterus salmoides</i>
<i>Esox americanus</i>	ICTALURIDAE	<i>Pomoxis annularis</i>
CYPRINIDAE	<i>Ameiurus melas</i>	<i>Pomoxis nigromaculatus</i>
<i>Campostoma anomalum</i>	<i>Ameiurus natalis</i>	PERCIDAE
<i>Cyprinella lutrensis</i>	<i>Ameiurus nebulosus</i>	<i>Etheostoma asprigene</i>
<i>Cyprinella venusta</i>	<i>Ictalurus punctatus</i>	<i>Etheostoma chlorosomum</i>
<i>Cyprinus carpio</i> I	<i>Noturus gyrinus</i>	<i>Etheostoma flabellare</i>
<i>Hybognathus hankinsoni</i>	<i>Noturus miurus</i>	<i>Etheostoma gracile</i>
<i>Hybognathus hayi</i> SE	<i>Noturus nocturnus</i>	<i>Etheostoma kennicotti</i>
<i>Hybognathus nuchalis</i>	CYPRINODONTIDAE	<i>Etheostoma proeliare</i>
<i>Luxilus chrysocephalus</i>	<i>Fundulus notatus</i>	<i>Etheostoma spectabile</i>
<i>Lythrurus fumeus</i>	<i>Fundulus olivaceus</i>	<i>Etheostoma squamiceps</i>
<i>Lythrurus umbratilis</i>	POECILIIDAE	<i>Percina caprodes</i>
<i>Macrhybopsis storeriana</i>	<i>Gambusia affinis</i>	<i>Percina maculata</i>
<i>Notemigonus crysoleucas</i>	APHREDODERIDAE	<i>Percina phoxocephala</i>
<i>Notropis atherinoides</i>	<i>Aphredoderus sayanus</i>	SCIAENIDAE
<i>Notropis blennioides</i>	ATHERINIDAE	<i>Aplodinotus grunniens</i>
<i>Notropis boops</i> ST	<i>Labidesthes sicculus</i>	COTTIDAE
<i>Notropis buchanani</i>		<i>Cottus caroliniae</i>

Total number of species = 78 (77 native, 1 introduced)

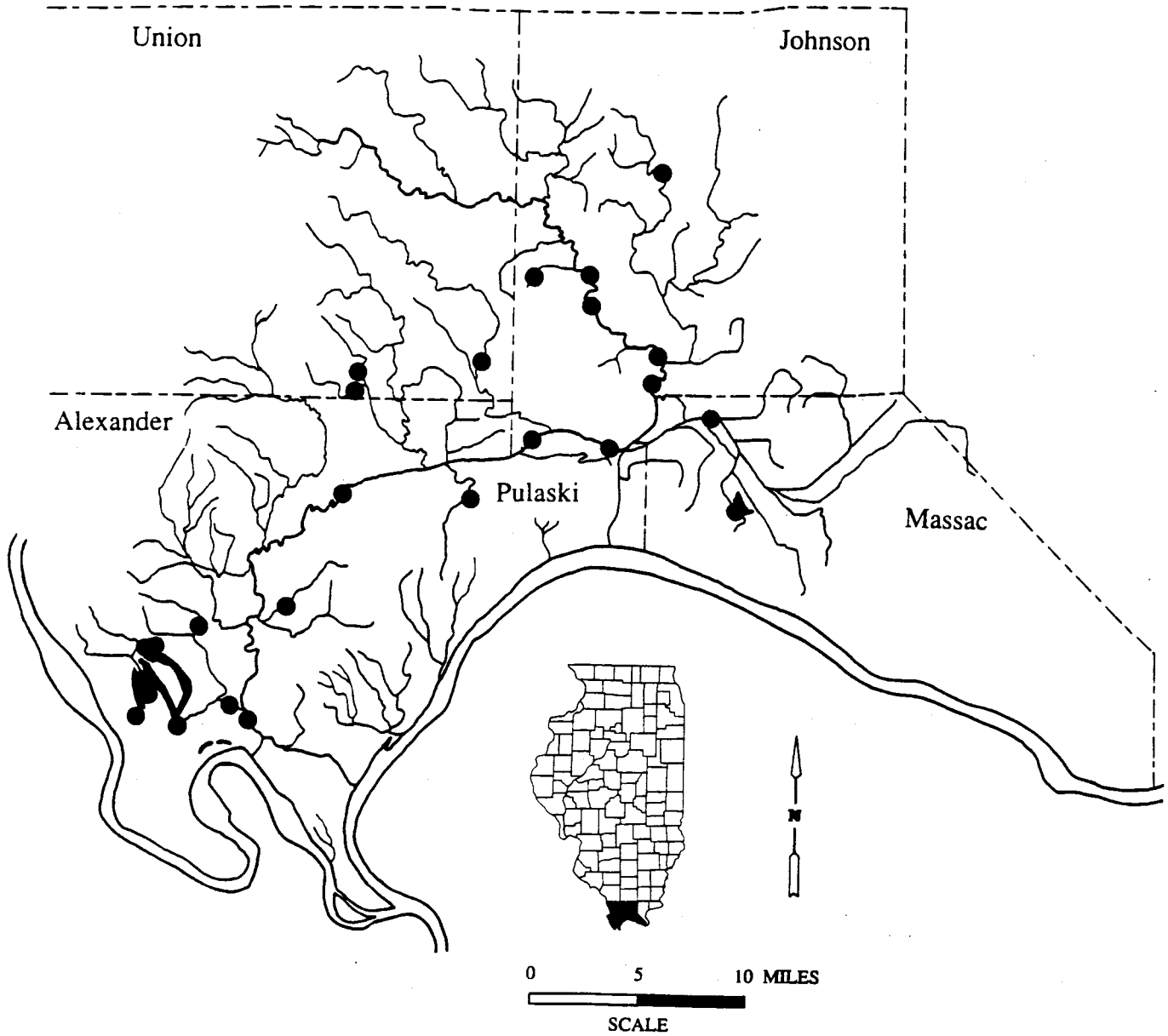


Figure 16-2. Map of mussel collection sites in the Cache River System represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 16-2. Freshwater mussels recorded from the Cache River System. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. ST = Illinois State Threatened.

<i>Amblema plicata</i>	
<i>Anodonta grandis</i>	
<i>Anodonta imbecillis</i>	
<i>Anodonta suborbiculata</i>	
<i>Arcidens confragosus</i>	
<i>Lampsilis teres</i>	
<i>Lasmigona complanata</i>	
<i>Leptodea fragilis</i>	
<i>Ligumia subrostrata</i>	
<i>Megaloniaias nervosa</i>	
<i>Potamilus alatus</i>	
<i>Quadrula quadrula</i>	
<i>Toxolasma parvum</i>	
<i>Toxolasma texasensis</i>	
<i>Tritogonia verrucosa</i>	
<i>Truncilla truncata</i>	
<i>Unio merus tetralasmus</i>	ST

Total number of species = 17.

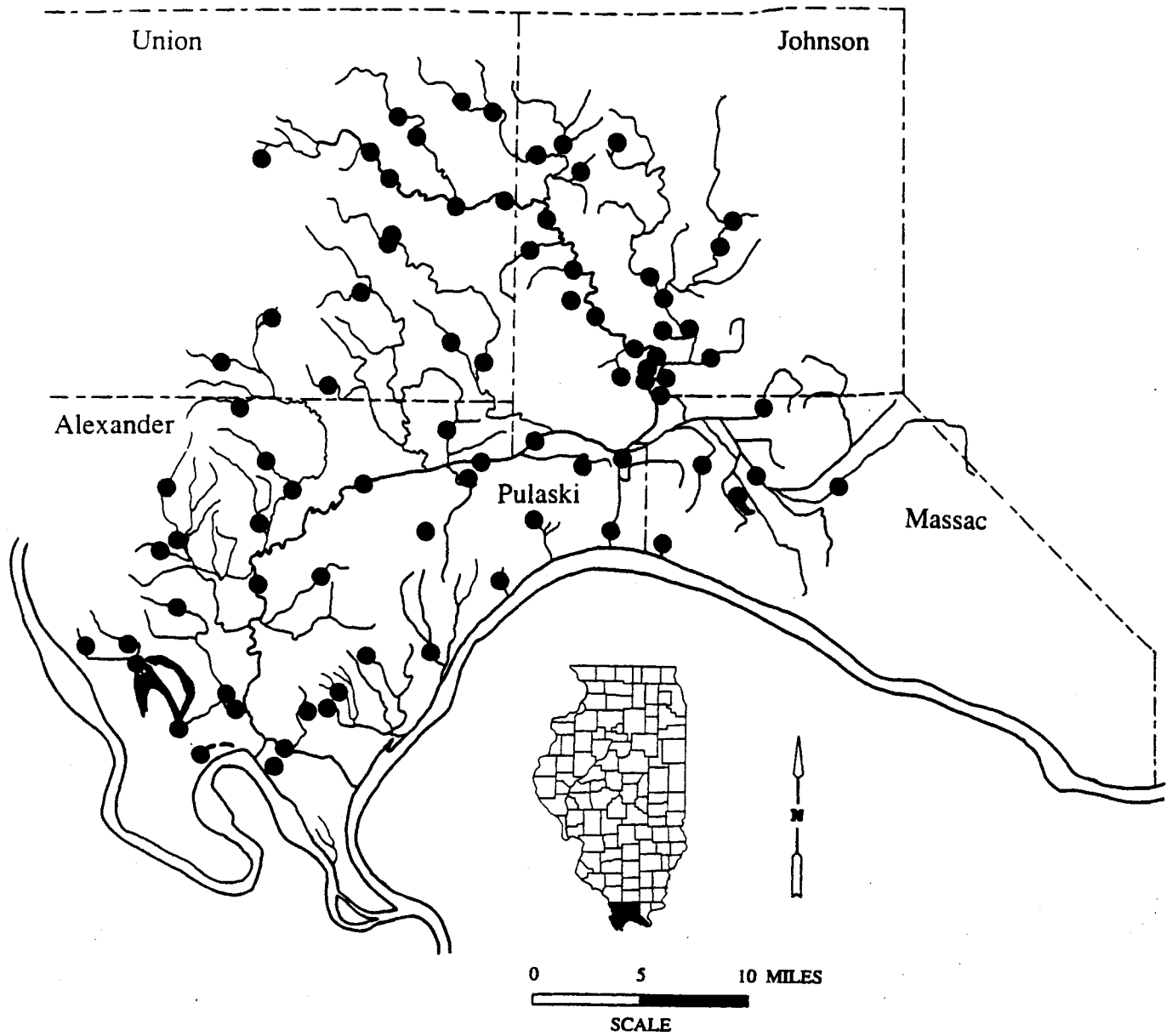


Figure 16-3. Map of crustacean collection sites in the Cache River System represented in the Illinois Natural History Survey Crustacean Collection.

Table 16-3. Freshwater crustaceans recorded from the Cache River System. Data from the Illinois Natural History Survey Crustacean Collection. SE = State Endangered.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea beattyi
Caecidotea bicrenata
Caecidotea brevicauda
Caecidotea forbesi
Caecidotea intermedia
Caecidotea stygia
Lirceus sp.

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Baetrus mucronatus
Crangonyx forbesi
Crangonyx gracilis
Crangonyx minor
Crangonyx pseudogracilis
Crangonyx richmondensis
Gammarus minus
Gammarus pseudolimnaeus
Synurella bifurca
Synurella dentata

HYALELLIDAE

Hyaella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

PALAEEMONIDAE

Palaemonetes kadiakensis

CAMBARIDAE

Cambarellus puer
Cambarellus shufeldtii
Cambarus diogenes
Cambarus tenebrosus
Fallicambarus fodiens
Orconectes illinoiensis
Orconectes immunis
Orconectes lancifer SE
Orconectes virilis
Procambarus acutus
Procambarus clarkii
Procambarus viaeviridis

Total number of species = 31.

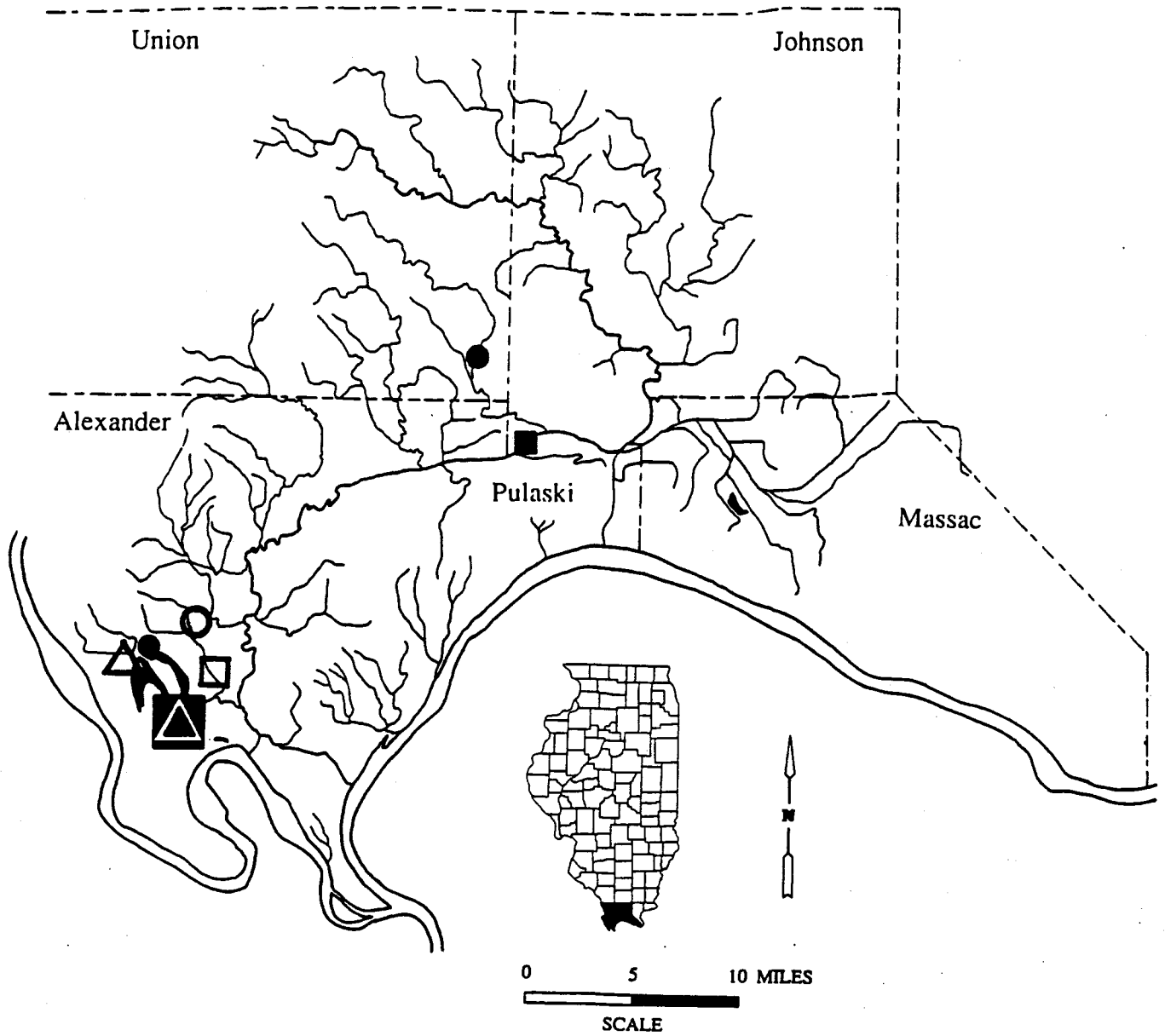
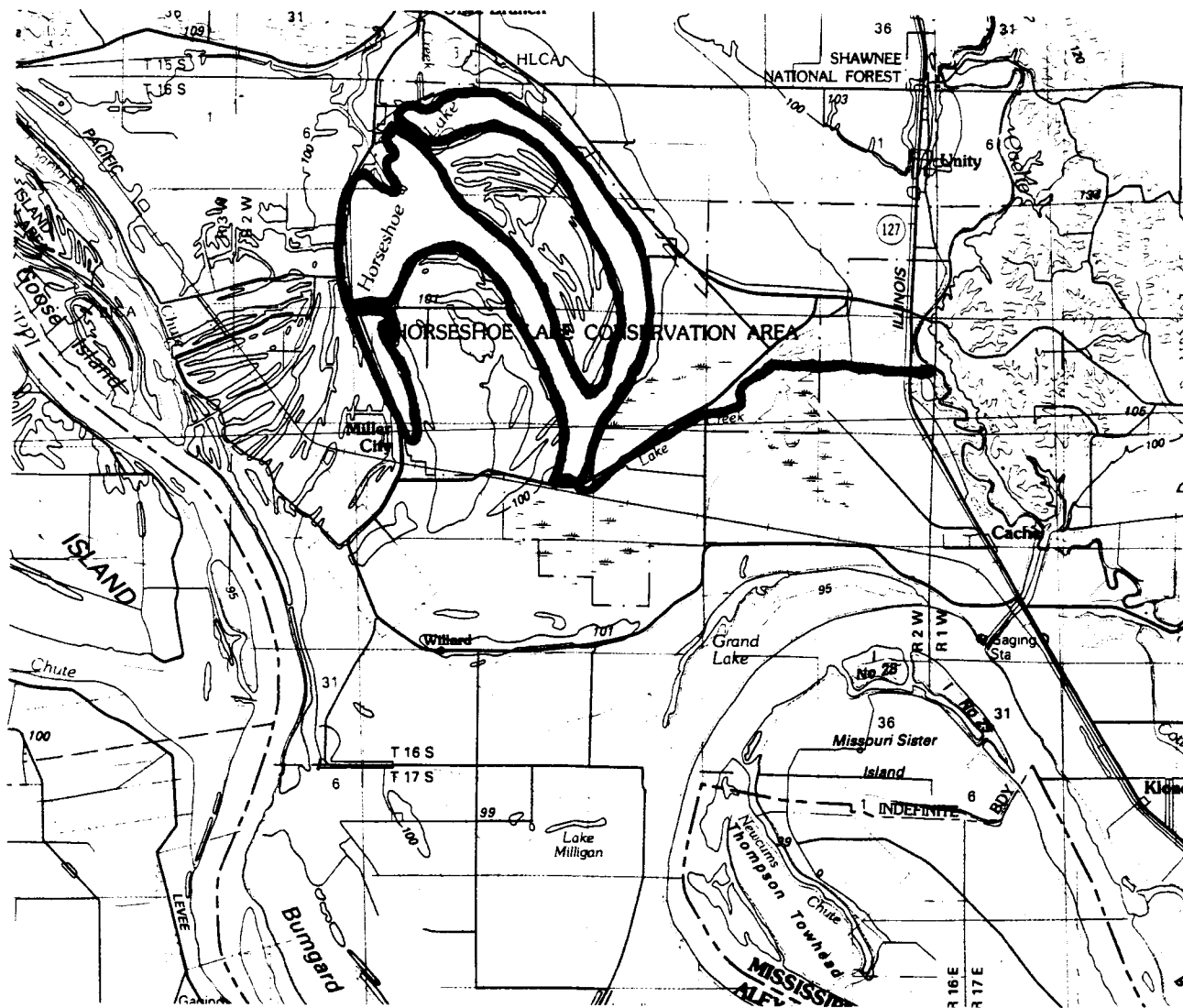
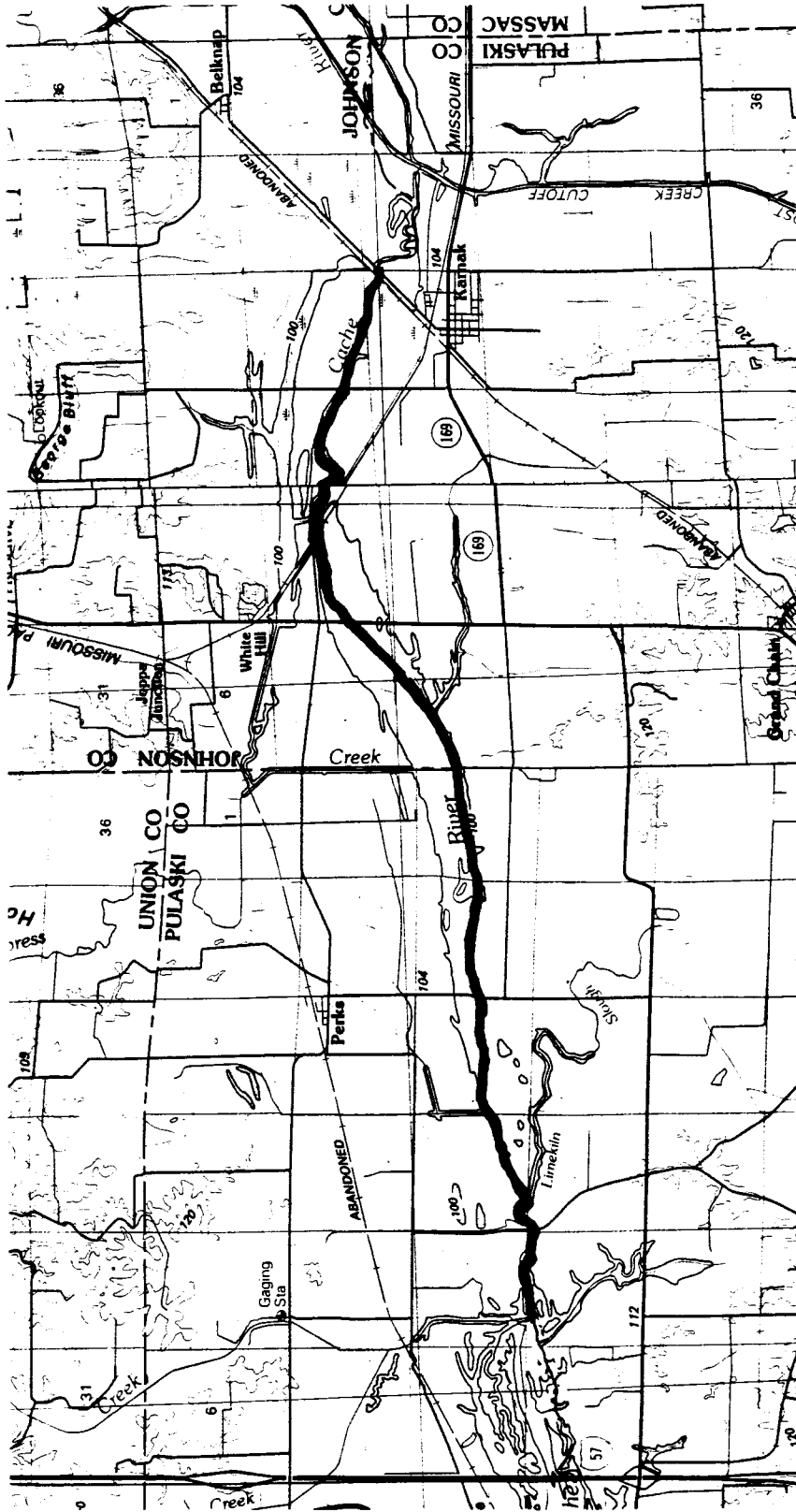


Figure 16-4. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered fishes (squares), mussels (circles), and crustaceans (triangles) in the Cache River System.

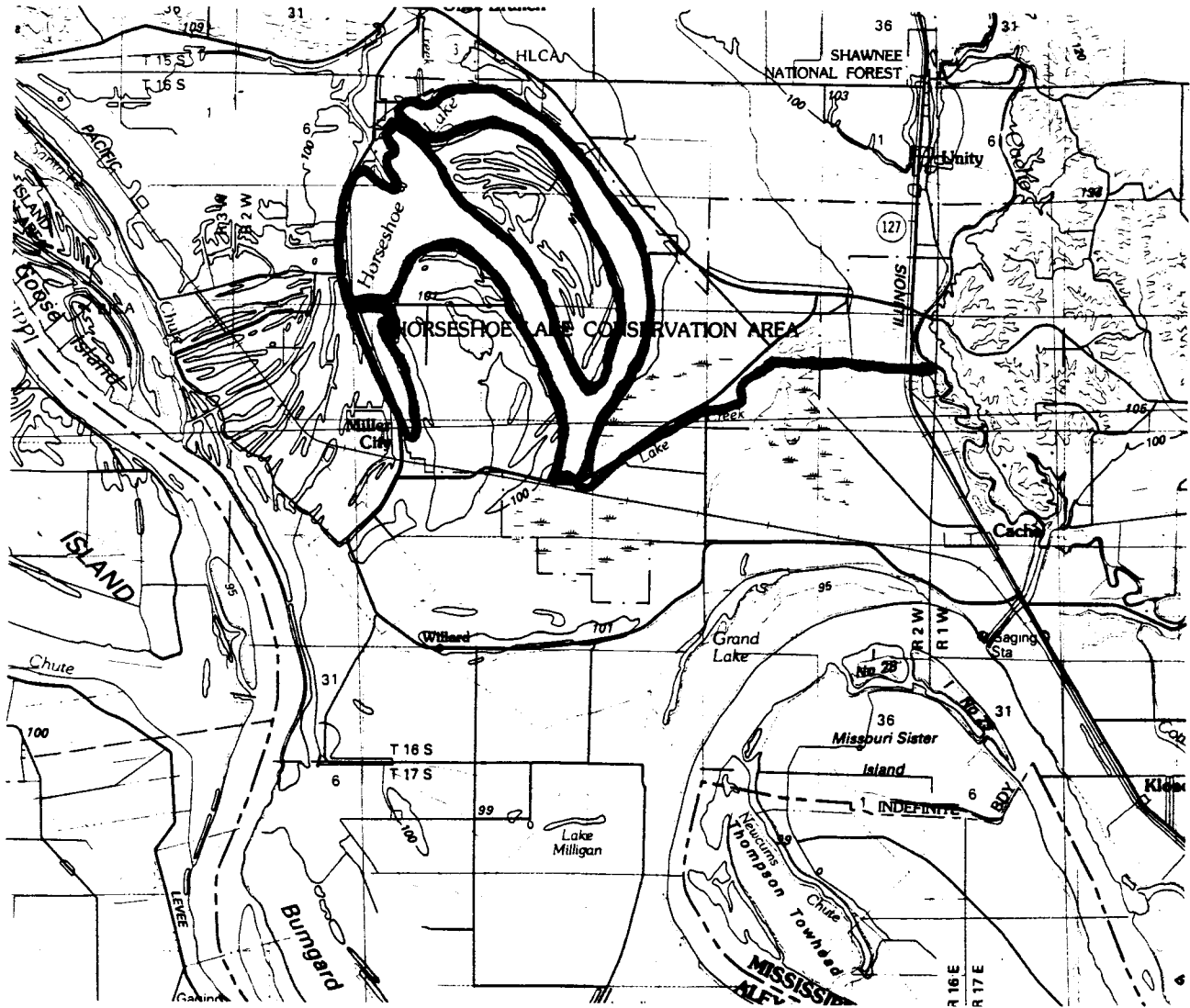


16. Cache River System (Cape Girardeau 1:100,000)
 - Horseshoe Lake and Lake Creek, Alexander Co.
 (*Orconectes lancifer*, cyprine minnow, bantam sunfish)



16. Cache River System (Cape Girardeau & Paducah 1:100,000)

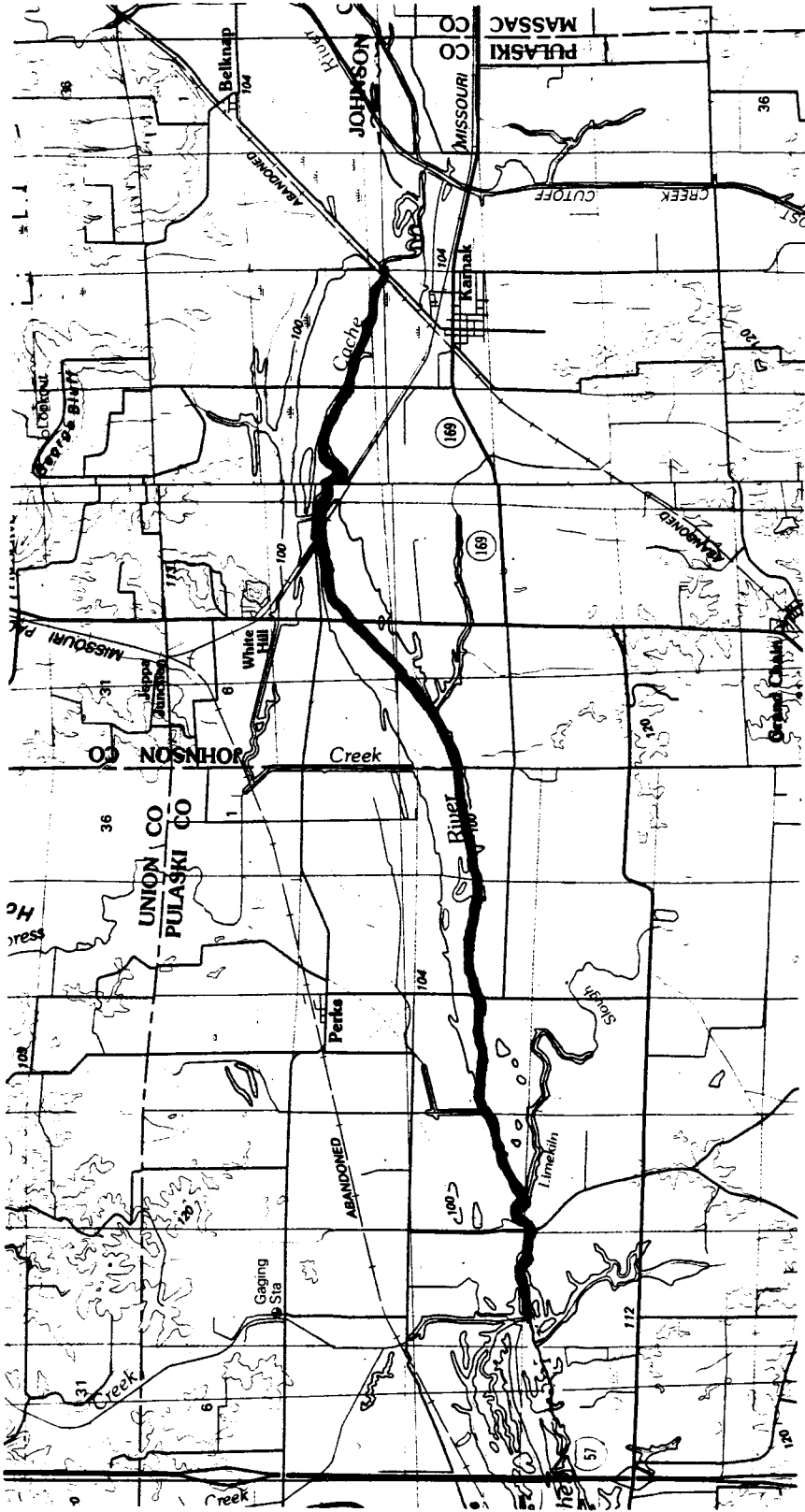
**- Cache River, from Big Creek to Karnak, Johnson Co.
(cypress minnow)**



16. Cache River System (Cape Girardeau 1:100,000)

- Horseshoe Lake and Lake Creek, Alexander Co.

(*Orconectes lancifer*, cypress minnow, bantam sunfish)



16. Cache River System (Cape Girardeau & Paducah 1:100,000)

- Cache River, from Big Creek to Karnak, Johnson Co.
(cypress minnow)

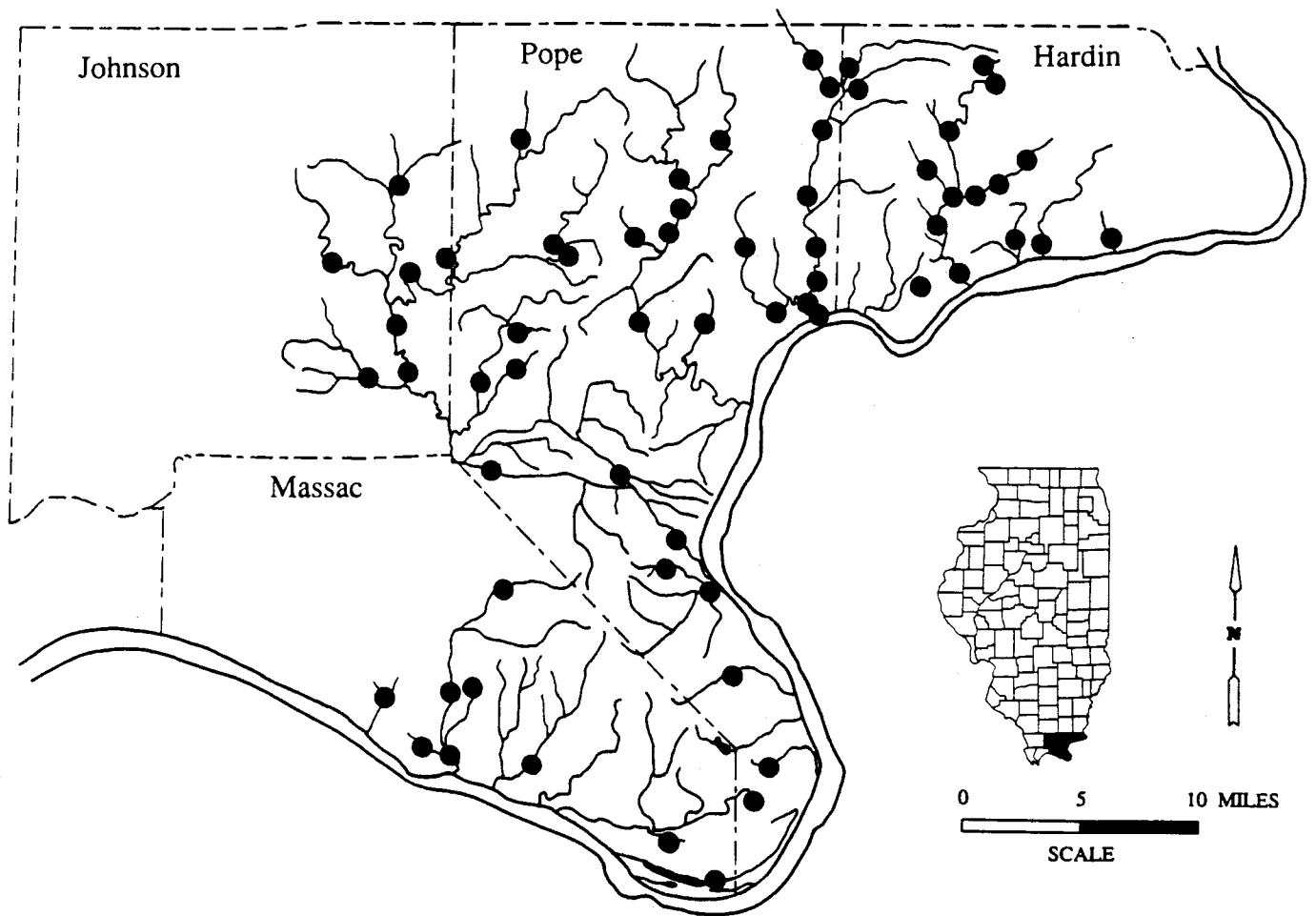


Figure 17-1. Map of fish collection sites in the Massac, Bay, Lusk, Big Grand Pierre and Big Creek Systems represented in the Illinois Natural History Survey Fish Collection.

Table 17-1. Freshwater fishes recorded from the Massac, Bay, Lusk, Big Grand Pierre and Big Creek Systems. Data from the Illinois Natural History Survey Fish Collection. ST = Illinois State Threatened.

PETROMYZONTIDAE	<i>Pimephales vigilax</i>	ELASSOMATIDAE
<i>Ichthyomyzon castaneus</i>	<i>Rhinichthys cataractae</i>	<i>Elassoma zonatum</i>
<i>Lampetra aepyptera</i> ST	<i>Semotilus atromaculatus</i>	CENTRARCHIDAE
AMIIDAE	CATOSTOMIDAE	<i>Ambloplites rupestris</i>
<i>Amia calva</i>	<i>Carpiodes cyprinus</i>	<i>Centrarchus macropterus</i>
CLUPEIDAE	<i>Carpiodes velifer</i>	<i>Chaenobryttus gulosus</i>
<i>Alosa chrysochloris</i>	<i>Catostomus commersoni</i>	<i>Lepomis cyanellus</i>
<i>Dorosoma cepedianum</i>	<i>Erimyzon oblongus</i>	<i>Lepomis humilis</i>
ESOCIDAE	<i>Hypentelium nigricans</i>	<i>Lepomis macrochirus</i>
<i>Esox americanus</i>	<i>Ictiobus bubalus</i>	<i>Lepomis megalotis</i>
CYPRINIDAE	<i>Ictiobus cyprinellus</i>	<i>Micropterus dolomieu</i>
<i>Campostoma anomalum</i>	<i>Mintyrema melanops</i>	<i>Micropterus punctulatus</i>
<i>Cyprinella lutrensis</i>	<i>Moxostoma duquesnei</i>	<i>Micropterus salmoides</i>
<i>Cyprinella spiloptera</i>	<i>Moxostoma erythrurum</i>	<i>Pomoxis annularis</i>
<i>Cyprinella whipplei</i>	ICTALURIDAE	<i>Pomoxis nigromaculatus</i>
<i>Hybognathus nuchalis</i>	<i>Ictalurus punctatus</i>	PERCIDAE
<i>Luxilus chrysocephalus</i>	<i>Noturus gyrinus</i>	<i>Etheostoma caeruleum</i>
<i>Lythrurus ardens</i>	<i>Noturus miurus</i>	<i>Etheostoma chlorosomum</i>
<i>Lythrurus fumeus</i>	<i>Noturus nocturnus</i>	<i>Etheostoma gracile</i>
<i>Lythrurus umbratilis</i>	CYPRINODONTIDAE	<i>Etheostoma kennicotti</i>
<i>Macrhybopsis storeriana</i>	<i>Fundulus notatus</i>	<i>Etheostoma nigrum</i>
<i>Notemigonus crysoleucas</i>	<i>Fundulus olivaceus</i>	<i>Etheostoma proeliare</i>
<i>Notropis atherinoides</i>	POECILIIDAE	<i>Etheostoma spectabile</i>
<i>Notropis blennius</i>	<i>Gambusia affinis</i>	<i>Etheostoma squamiceps</i>
<i>Notropis boops</i> ST	APHREDODERIDAE	<i>Percina caprodes</i>
<i>Notropis buchanani</i>	<i>Aphredoderus sayanus</i>	<i>Percina maculata</i>
<i>Notropis maculatus</i>	AMBLYOPSIDAE	SCIAENIDAE
<i>Notropis volucellus</i>	<i>Forbesichthys agassizi</i>	<i>Aplodinotus grunniens</i>
<i>Opsopoeodus emiliae</i>	ATHERINIDAE	COTTIDAE
<i>Phenacobius mirabilis</i>	<i>Labidesthes sicculus</i>	<i>Cottus carolinae</i>
<i>Phoxinus erythrogaster</i>	MORONIDAE	
<i>Pimephales notatus</i>	<i>Morone chrysops</i>	

Total number of species = 76 (76 native, 0 introduced)

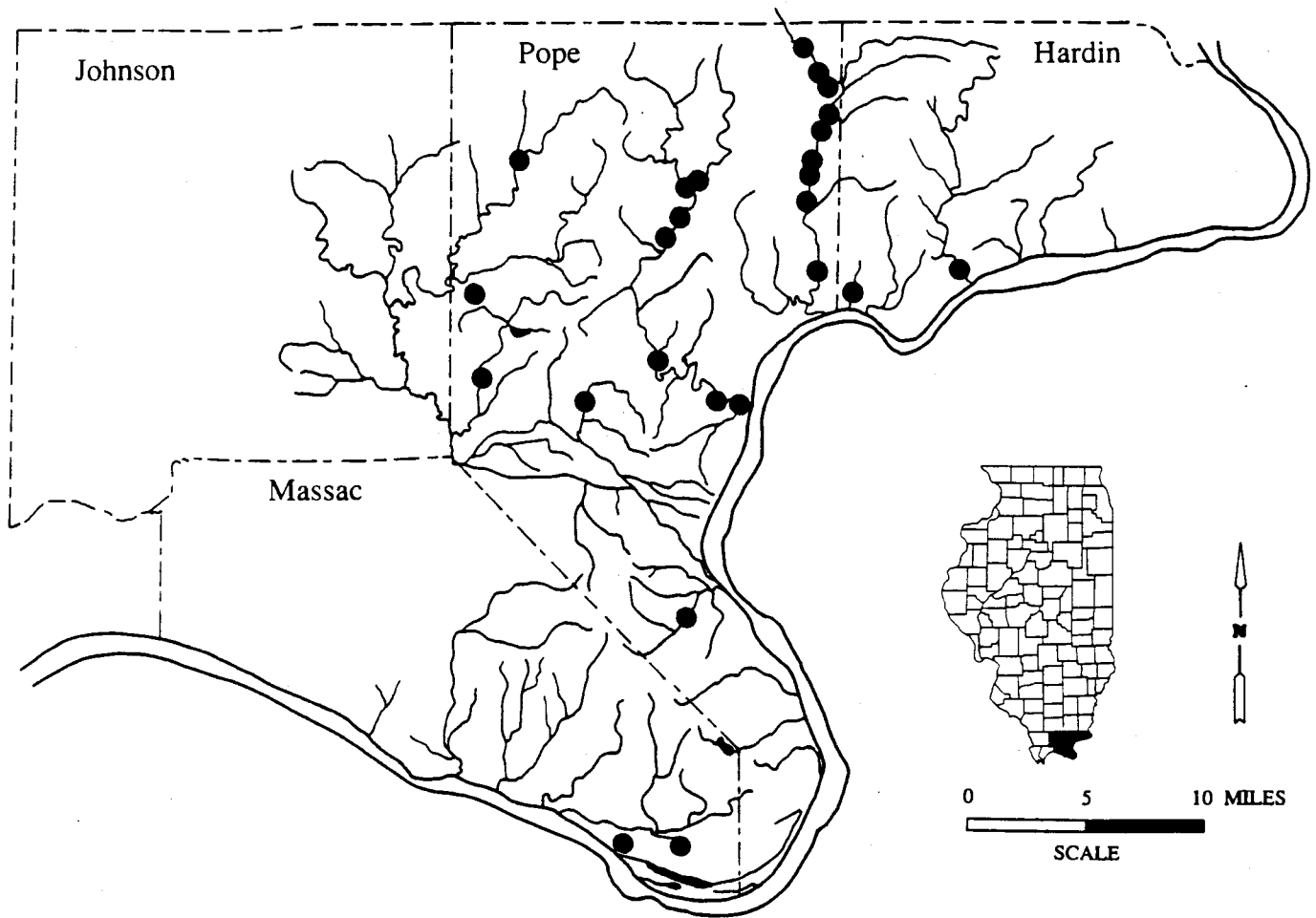


Figure 17-2. Map of mussel collection sites in the Massac, Bay, Lusk, Big Grand Pierre and Big Creek Systems represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 17-2. Freshwater mussels recorded from the Massac, Bay, Lusk, Big Grand Pierre and Big Creek Systems. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. ST = Illinois State Threatened.

Amblema plicata
Anodonta grandis
Anodonta imbecillis
Anodonta suborbiculata
Anodontoides ferussacianus
Lampsilis cardium
Lampsilis siliquoidea
Leptodea fragilis
Ligumia subrostrata
Megalonaias nervosa
Potamilus alatus
Quadrula quadrula
Strophitus undulatus
Toxolasma parvus
Uniomerus tetralasmus ST

Total number of species = 15.

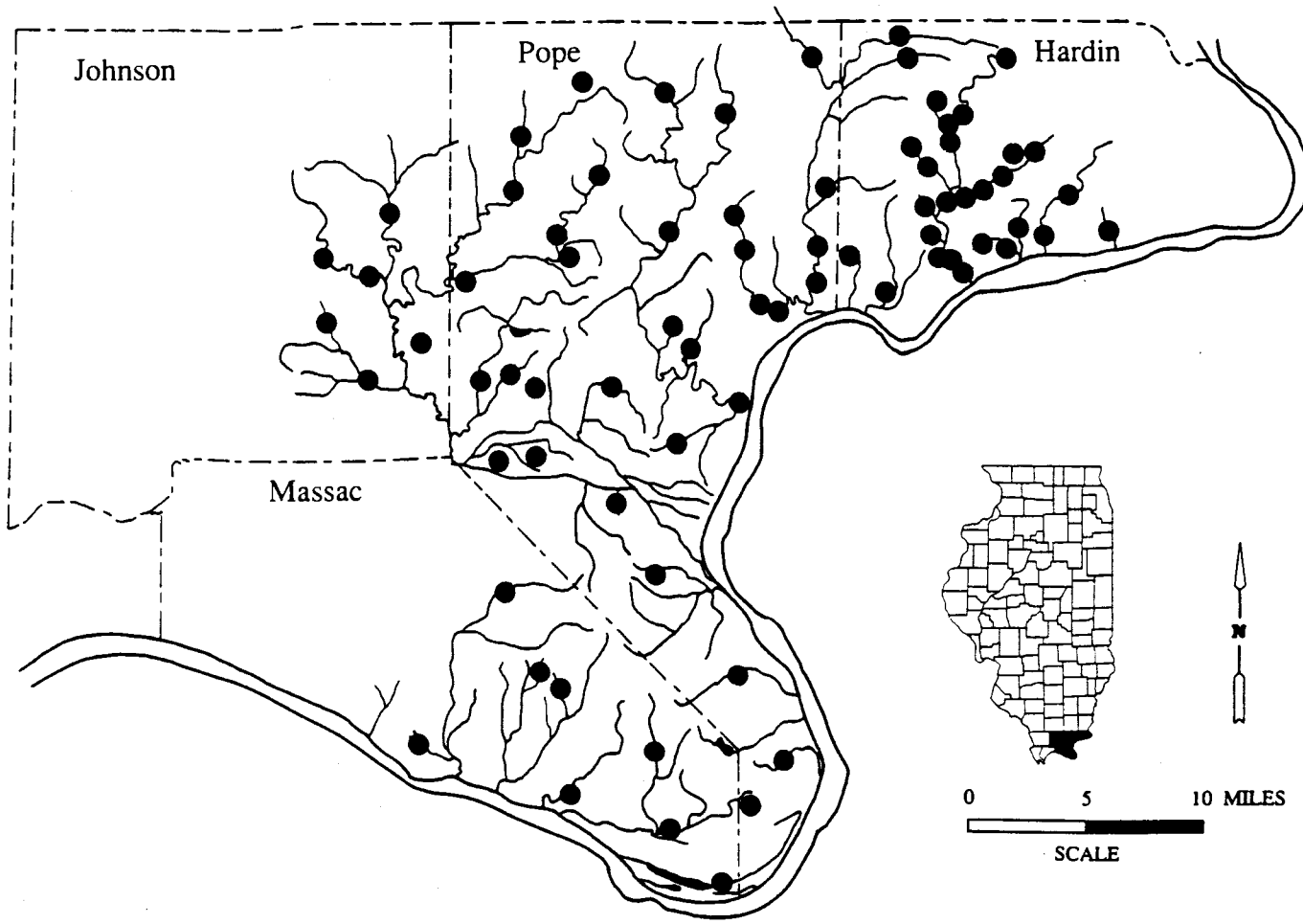


Figure 17-3. Map of crustacean collection sites in the Massac, Bay, Lusk, Big Grand Pierre and Big Creek Systems represented in the Illinois Natural History Survey Crustacean Collection.

Table 17-3. Freshwater crustaceans recorded from the Massac, Bay, Lusk, Big Grand Pierre, and Big Creek Systems. Data from the Illinois Natural History Survey Crustacean Collection. SE = State Endangered, I = Introduced species.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea brevicauda
Caecidotea forbesi
Caecidotea intermedia
Caecidotea stygia
Lirceus sp.

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Crangonyx anomalus SE
Crangonyx antennatus SE
Crangonyx forbesi
Crangonyx minor
Crangonyx pseudogracilis
Crangonyx richmondensis
Gammarus minus
Gammarus pseudolimnaeus
Synurella bifurca
Synurella dentata

HYALELLIDAE

Hyaella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

PALAEEMONIDAE

Palaemonetes kadiakensis

CAMBARIDAE

Cambarellus puer
Cambarellus shufeldtii
Cambarus diogenes
Cambarus tenebrosus
Fallicambarus fodiens
Orconectes illinoiensis
Orconectes immunis
Orconectes kentuckiensis SE
Orconectes placidus SE
Orconectes rusticus I
Procambarus acutus
Procambarus clarkii
Procambarus viaeviridis

Total number of species = 30 (29 native, 1 introduced)

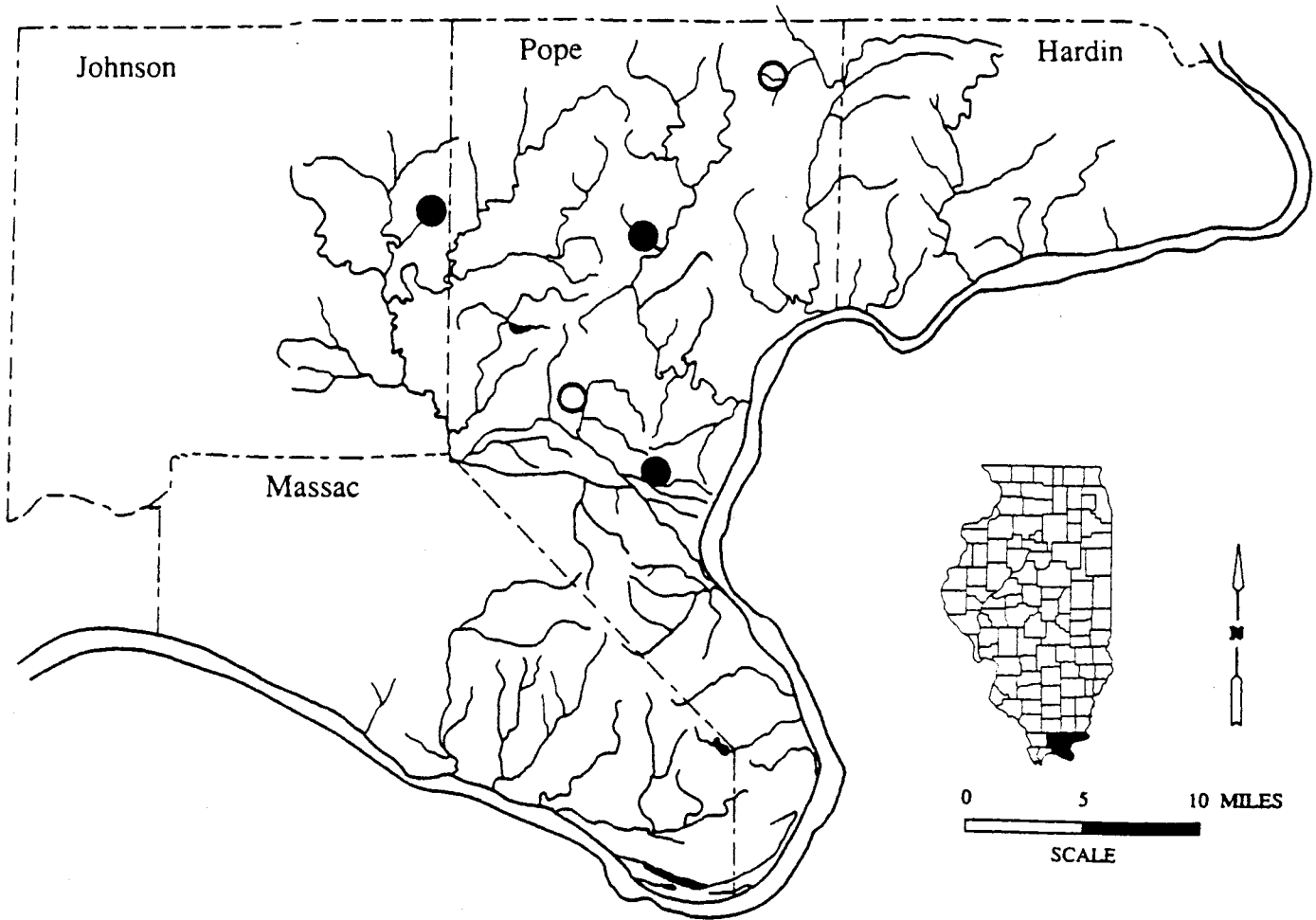


Figure 17-4. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of endangered lotic plants (circles) in the Massac, Bay, Lusk, Big Grand Pierre and Big Creek Systems.

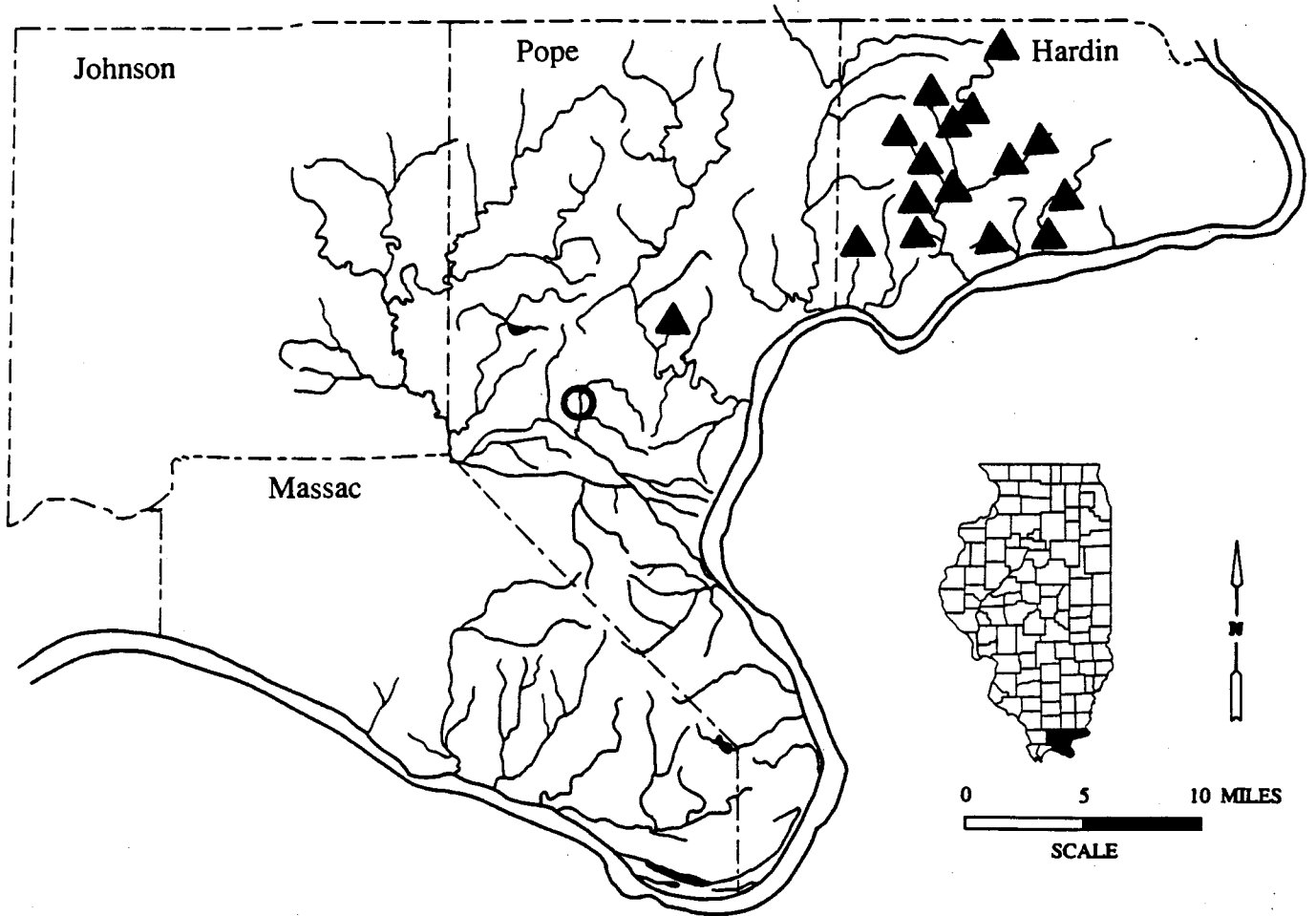
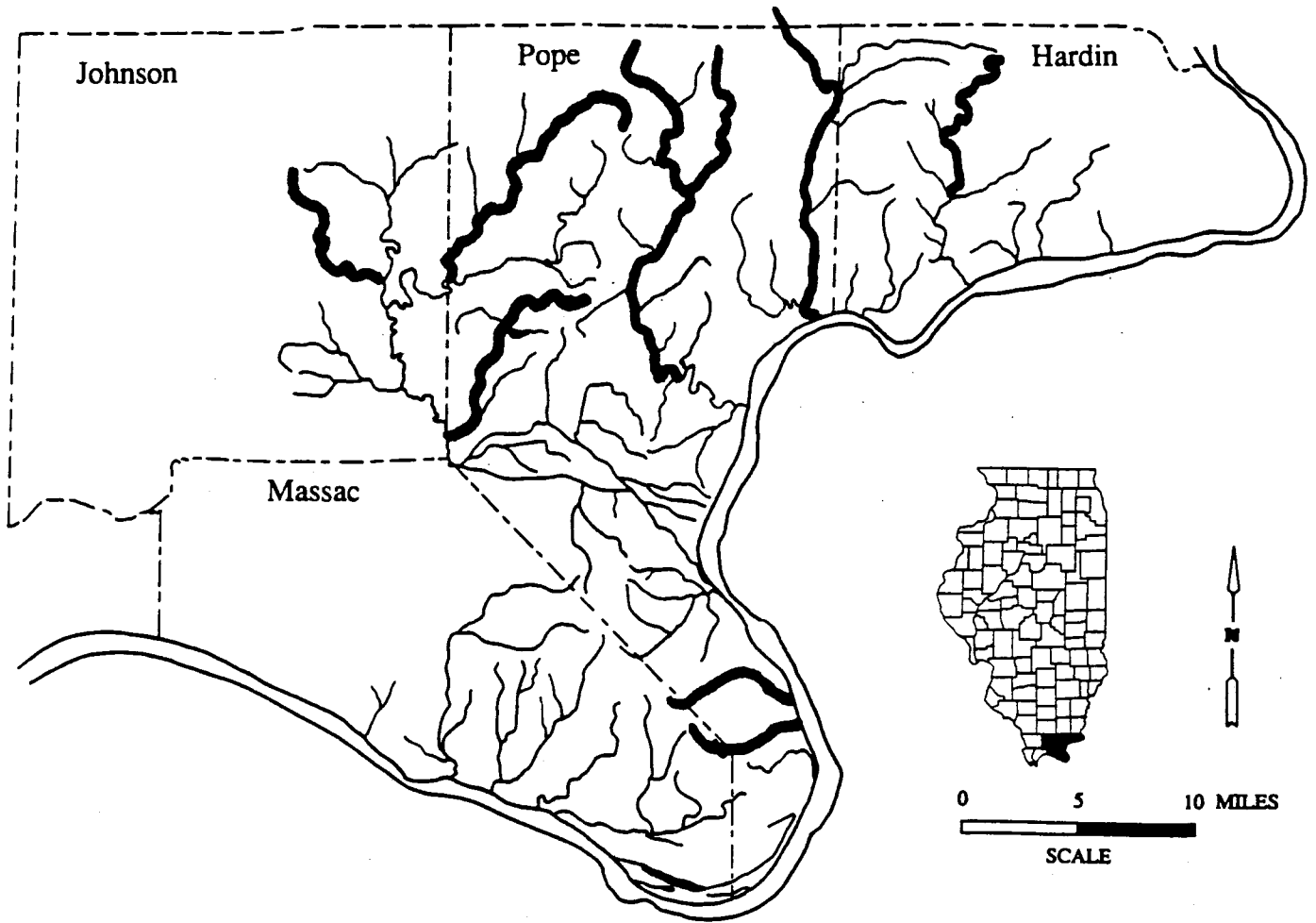
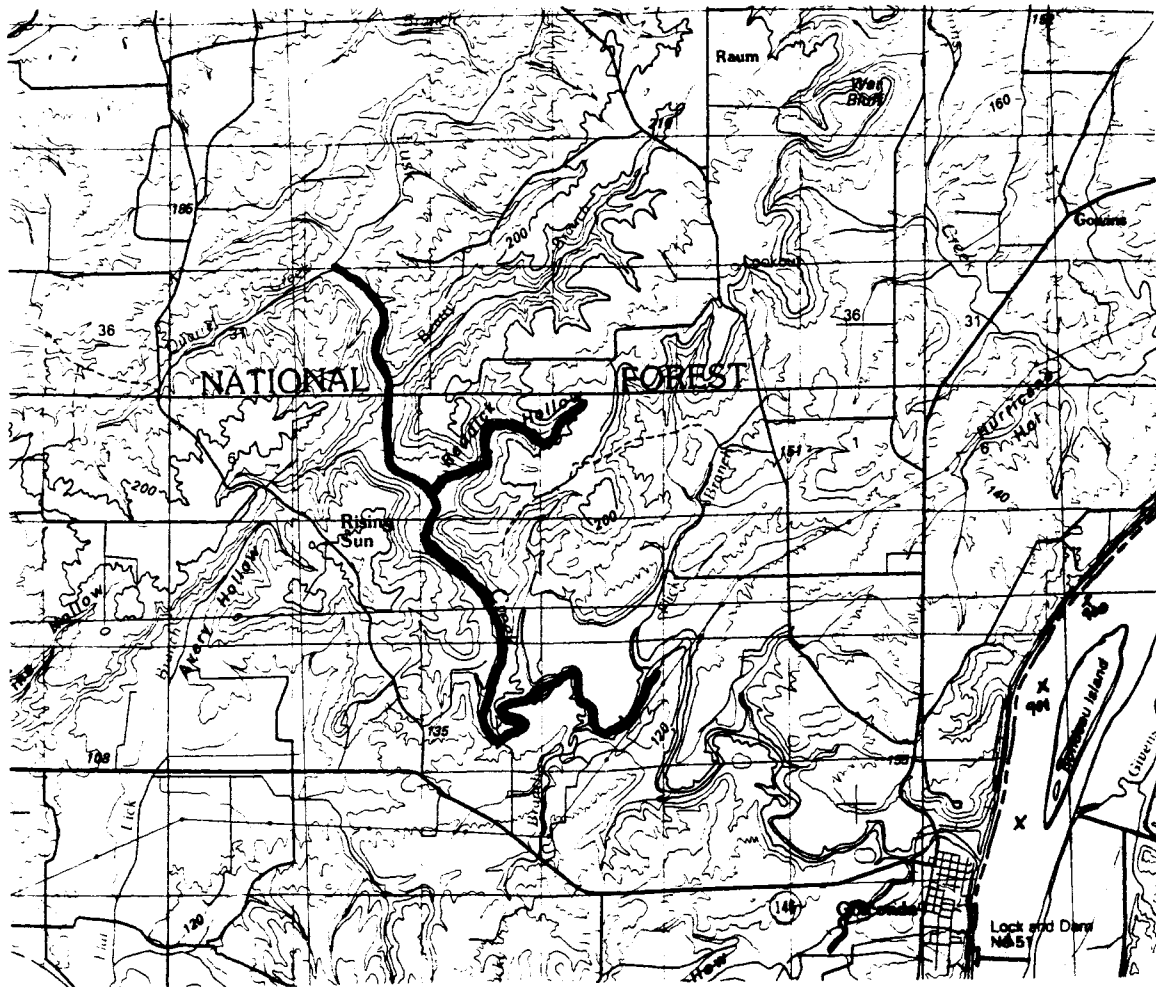


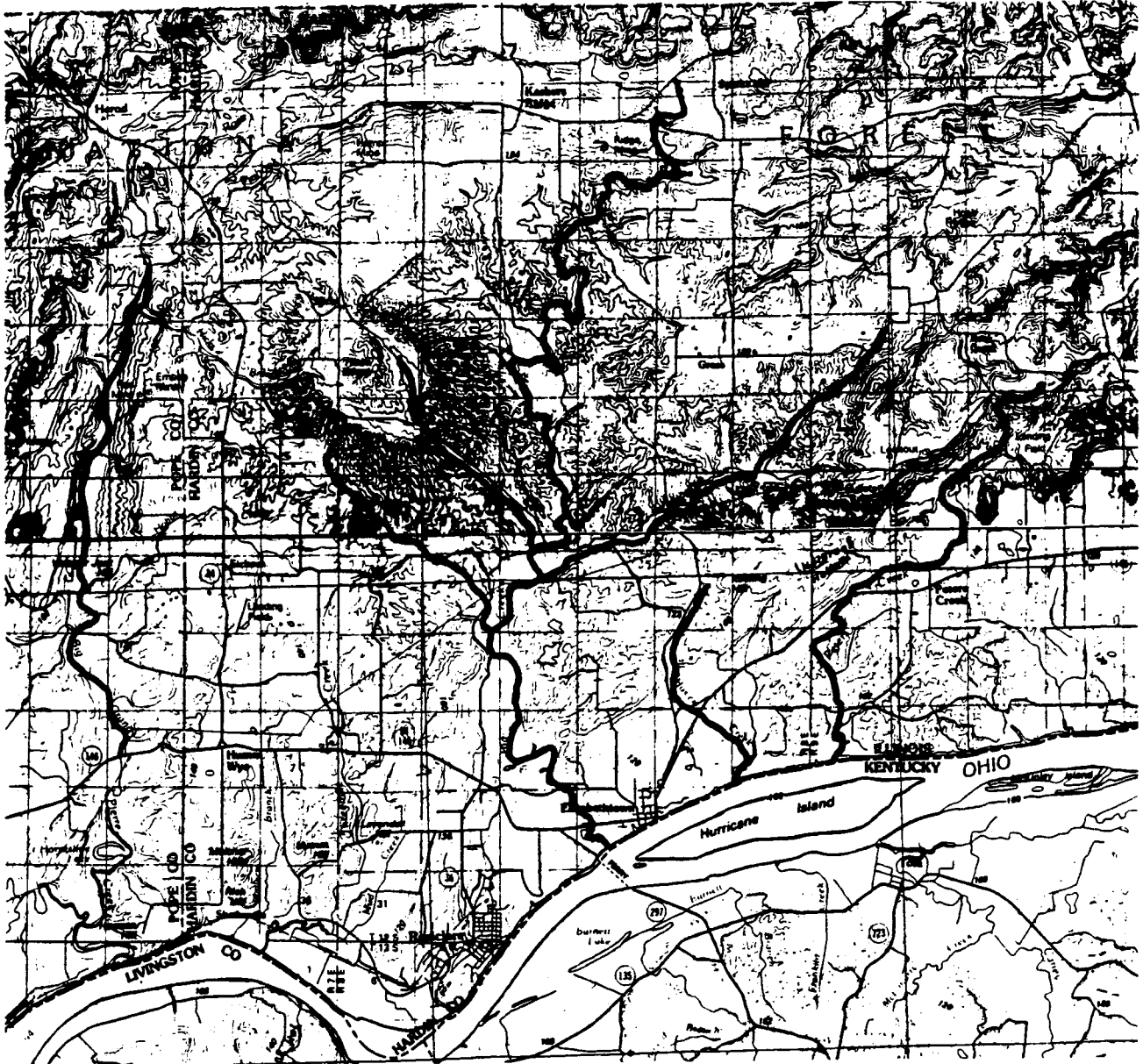
Figure 17-5. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered mussels (circles), and crustaceans (triangles) in the Massac, Bay, Lusk, Big Grand Pierre and Big Creek Systems.



17. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Massac, Bay, Lusk, Big Grand Pierre and Big Creek Systems.

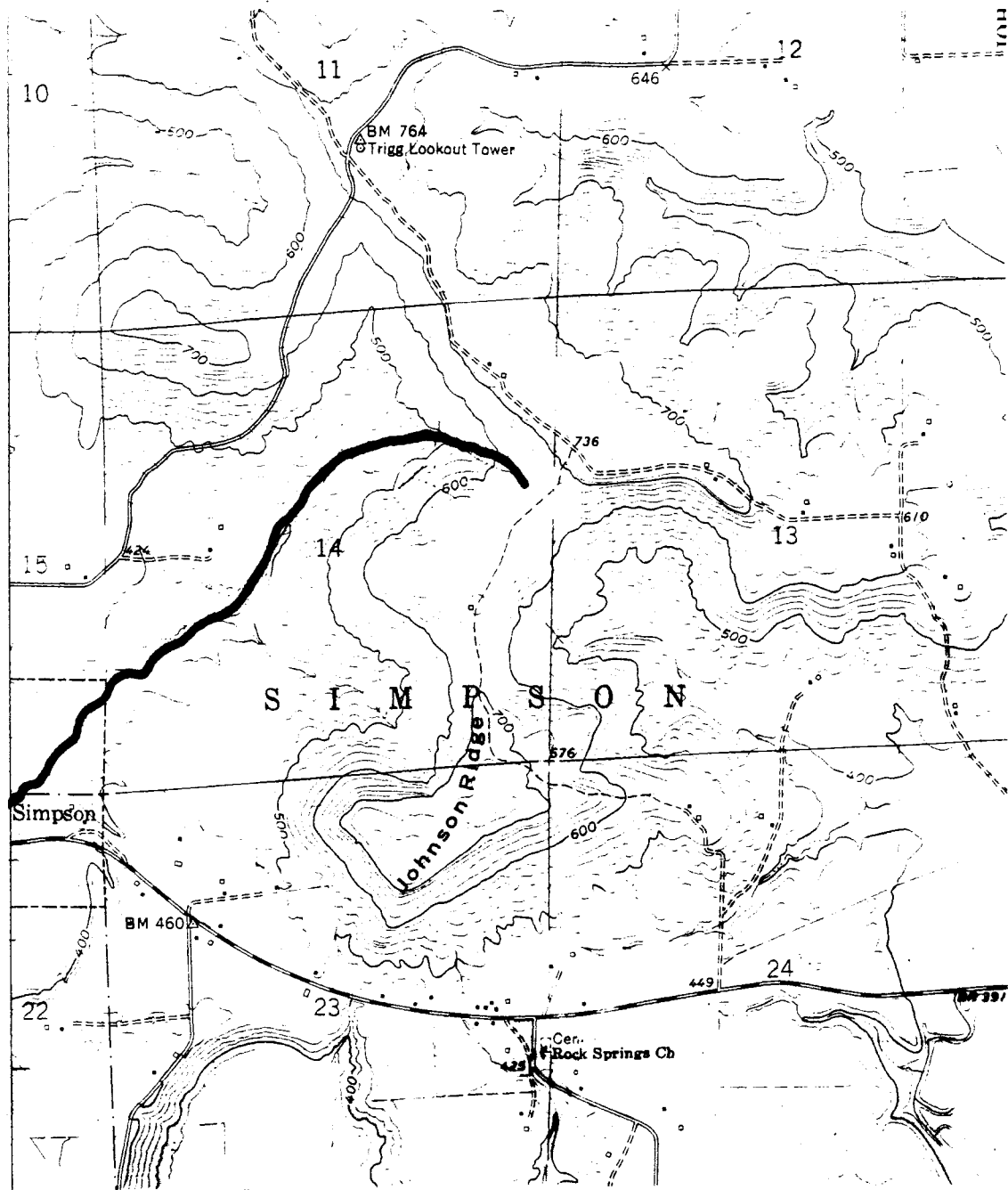


17. The Massac, Bay, Lusk, Big Grand Pierre, and Big Creek Systems (Paducah 1:100,000)
 - spring in Lusk Creek system, Flick Branch to Quarrel Creek, Pope Co.
 (*Crangonyx anomalus*, *Crangonyx antennatus*)

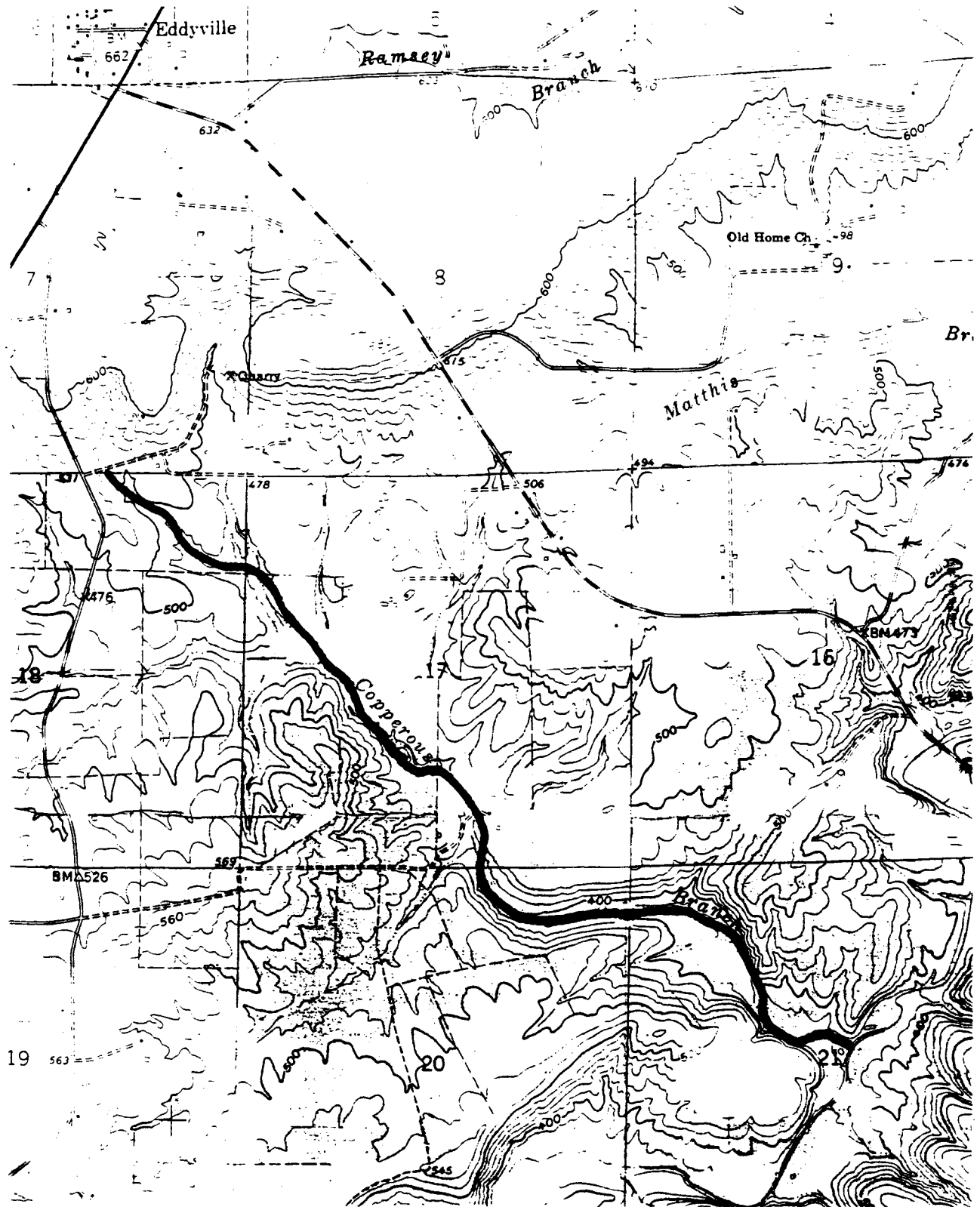


**17. The Massac, Bay, Lusk, Big Grand Pierre, and Big Creek Systems
(West Frankfort & Paducah 1:100,000)**

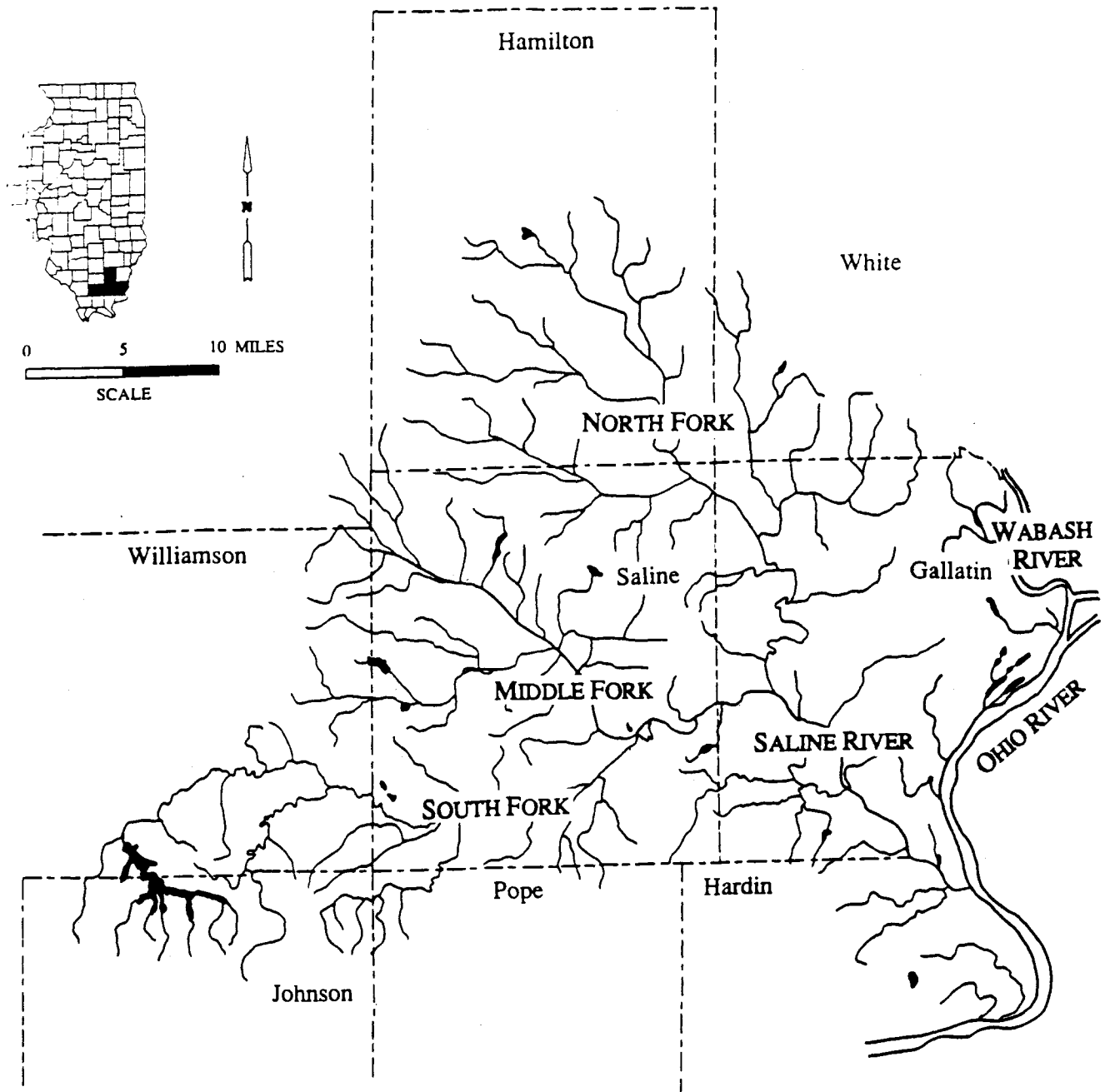
- Big Grand Pierre Creek, Rt. 146 to Pinhook Creek, Pope Co.
(high mussel diversity)
- Big Creek drainage, Hardin Co.
(*Orconectes kentuckiensis*, *Orconectes placidus*)
- Hosick Creek, Hardin Co.
(*Orconectes kentuckiensis*)
- Peters Creek, Hardin Co.
(*Orconectes kentuckiensis*)



17. The Massac, Bay, Lusk, Big Grand Pierre, and Big Creek Systems (Glendale 7.5 Quad)
 - unnamed tributary to Cedar Creek, Johnson Co.
 (heart-leaved plantain)



17. The Massac, Bay, Lusk, Big Grand Pierre, and Big Creek Systems (Waltersburg 7.5 Quad)
 - Copperous Branch, Pope Co.
 (heart-leaved plantain)



18. Saline River System

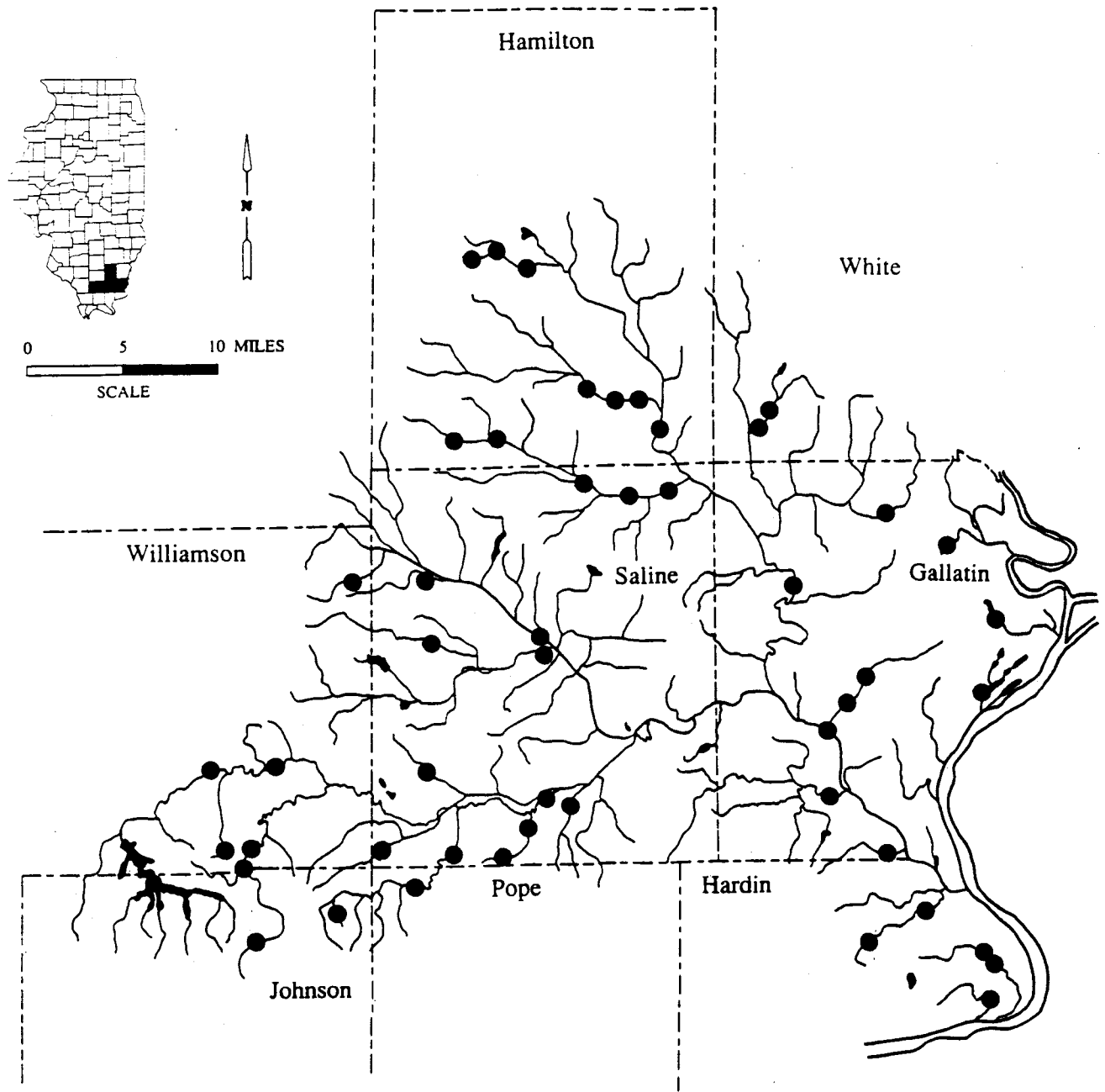


Figure 18-1. Map of fish collection sites in the Saline River System represented in the Illinois Natural History Survey Fish Collection.

Table 18-1. Freshwater fishes recorded from the Saline River System. Data from the Illinois Natural History Survey Fish Collection. SE = Illinois State Endangered; ST = Illinois State Threatened; I = Introduced.

PETROMYZONTIDAE	<i>Opsopoeodus emiliae</i>	APHREDODERIDAE
<i>Lampetra aepyptera</i> ST	<i>Phenacobius mirabilis</i>	<i>Aphredoderus sayanus</i>
AMIIDAE	<i>Phoxinus erythrogaster</i>	CENTRARCHIDAE
<i>Amia calva</i>	<i>Pimephales notatus</i>	<i>Centrarchus macropterus</i>
CLUPEIDAE	<i>Pimephales vigilax</i>	<i>Chaenobryttus gulosus</i>
<i>Dorosoma cepedianum</i>	<i>Rhinichthys cataractae</i>	<i>Lepomis cyanellus</i>
<i>Dorosoma petenense</i>	<i>Semotilus atromaculatus</i>	<i>Lepomis humilis</i>
UMBRIDAE	CATOSTOMIDAE	<i>Lepomis macrochirus</i>
<i>Umbra limi</i>	<i>Carpionodes carpio</i>	<i>Lepomis megalotis</i>
ESOCIDAE	<i>Carpionodes cyprinus</i>	<i>Lepomis microlophus</i>
<i>Esox americanus</i>	<i>Carpionodes velifer</i>	<i>Lepomis miniatus</i> ST
CYPRINIDAE	<i>Catostomus commersoni</i>	<i>Micropterus dolomieu</i>
<i>Campostoma anomalum</i>	<i>Erimyzon oblongus</i>	<i>Micropterus salmoides</i>
<i>Cyprinella spiloptera</i>	<i>Ictiobus bubalus</i>	<i>Pomoxis annularis</i>
<i>Cyprinella venusta</i>	<i>Ictiobus cyprinellus</i>	<i>Pomoxis nigromaculatus</i>
<i>Cyprinella whipplei</i>	<i>Minytrema melanops</i>	PERCIDAE
<i>Cyprinus carpio</i> I	<i>Moxostoma erythrurum</i>	<i>Etheostoma chlorosomum</i>
<i>Hybognathus nuchalis</i>	ICTALURIDAE	<i>Etheostoma gracile</i>
<i>Hybopsis amnis</i> SE	<i>Ameiurus melas</i>	<i>Etheostoma kennicotti</i>
<i>Luxilus chrysocephalus</i>	<i>Ameiurus natalis</i>	<i>Etheostoma nigrum</i>
<i>Lythrurus ardens</i>	<i>Noturus gyrinus</i>	<i>Etheostoma spectabile</i>
<i>Lythrurus fumeus</i>	<i>Noturus miurus</i>	<i>Etheostoma squamiceps</i>
<i>Lythrurus umbratilis</i>	<i>Noturus nocturnus</i>	<i>Percina maculata</i>
<i>Macrhybopsis storeriana</i>	CYPRINODONTIDAE	<i>Percina phoxocephala</i>
<i>Nocomis biguttatus</i>	<i>Fundulus notatus</i>	SCIAENIDAE
<i>Notemigonus crysoleucas</i>	<i>Fundulus olivaceus</i>	<i>Aplodinotus grunniens</i>
<i>Notropis atherinoides</i>	POECILIIDAE	
<i>Notropis buchanaani</i>	<i>Gambusia affinis</i>	

Total number of species = 68 (67 native, 1 introduced)

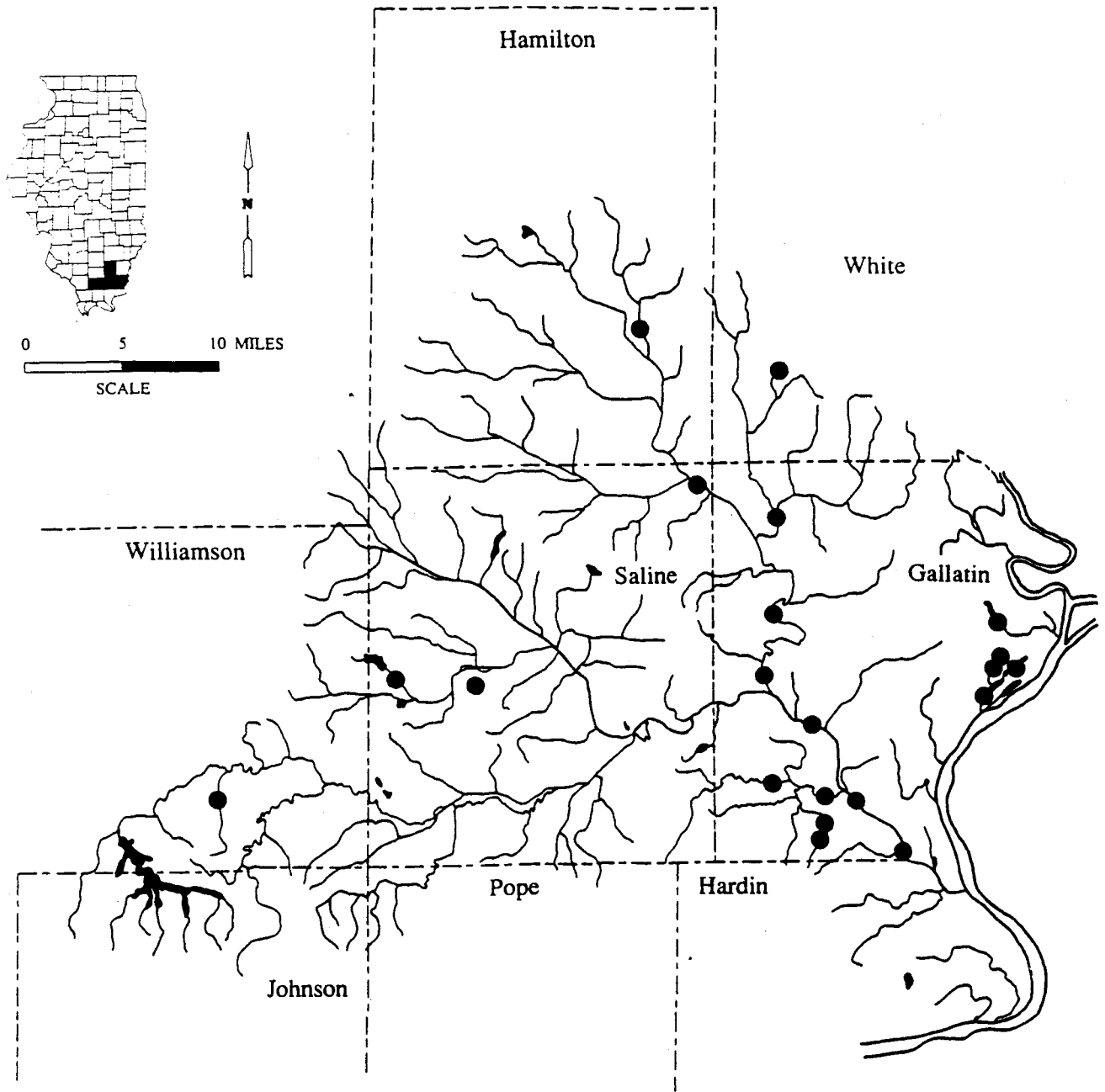


Figure 18-2. Map of mussel collection sites in the Saline River System represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 18-2. Freshwater mussels recorded from the Saline River System. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. ST = Illinois State Threatened.

<i>Amblema plicata</i>	
<i>Anodonta grandis</i>	
<i>Anodonta imbecillis</i>	
<i>Anodonta suborbiculata</i>	
<i>Arcidens confragosus</i>	
<i>Fusconaia flava</i>	
<i>Lampsilis teres</i>	
<i>Lasmigona complanata</i>	
<i>Leptodea fragilis</i>	
<i>Ligumia subrostrata</i>	
<i>Megalonaias nervosa</i>	
<i>Potamilus ohioensis</i>	
<i>Quadrula nodulata</i>	
<i>Quadrula pustulosa</i>	
<i>Quadrula quadrula</i>	
<i>Toxolasma parvus</i>	
<i>Toxolasma texasensis</i>	
<i>Tritogonia verrucosa</i>	
<i>Truncilla truncata</i>	
<i>Unio merus tetralasmus</i>	ST

Total number of species = 20.

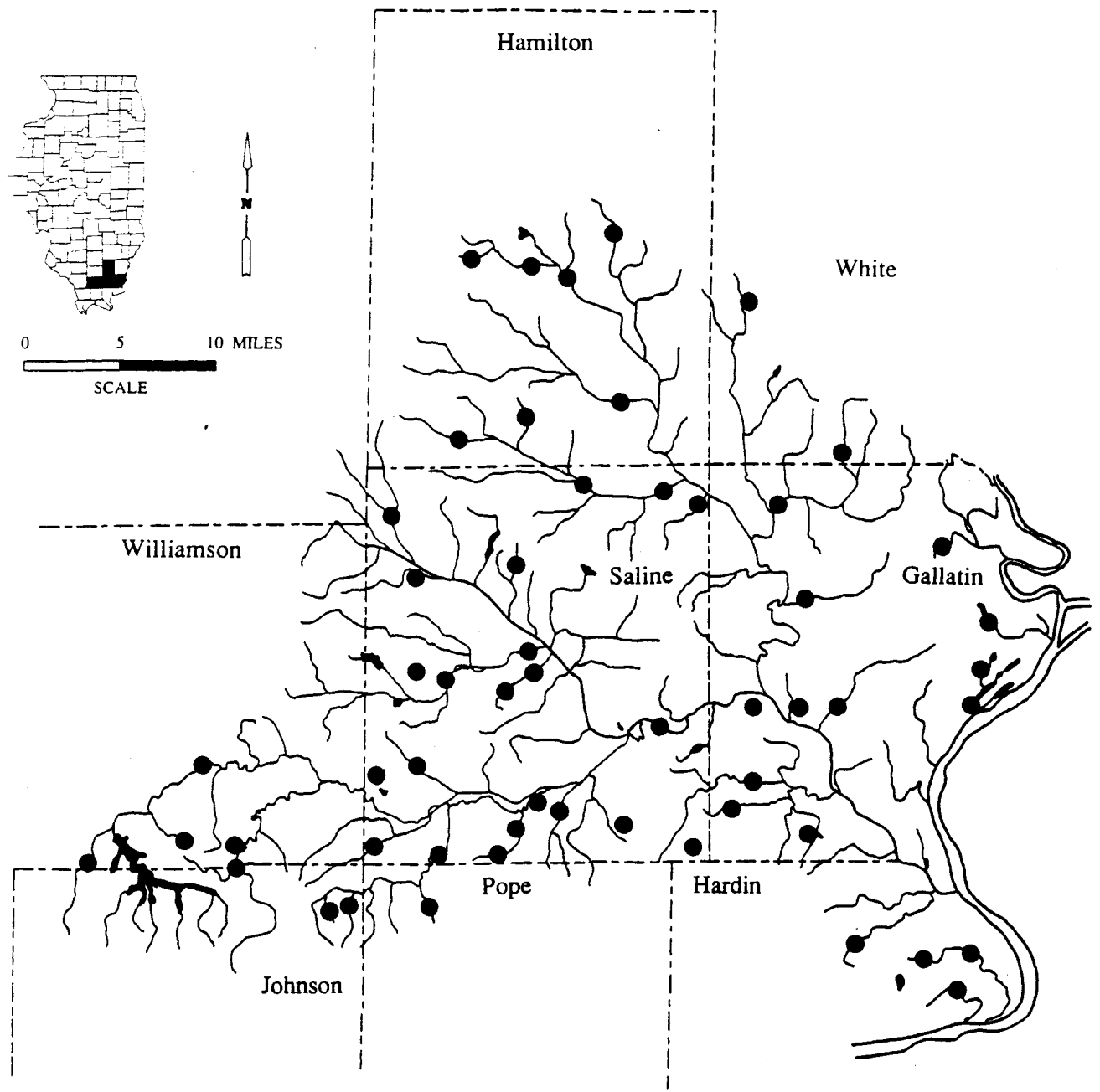


Figure 18-3. Map of crustacean collection sites in the Saline River System represented in the Illinois Natural History Survey Crustacean Collection.

Table 18-3. Freshwater crustaceans recorded from the Saline River System. Data from the Illinois Natural History Survey Crustacean Collection. SE = State Endangered.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea forbesi
Caecidotea intermedia
Caecidotea kendeighi
Lirceus fontinalis

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Crangonyx forbesi
Crangonyx minor
Gammarus pseudolimnaeus
Synurella bifurca
Synurella dentata

HYALELLIDAE

Hyaella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

PALAEEMONIDAE

Palaemonetes kadiakensis

CAMBARIDAE

Cambarus diogenes
Fallicambarus fodiens
Orconectes immunis
Orconectes indianensis SE
Orconectes virilis
Procambarus acutus
Procambarus gracilis

Total number of species = 18.

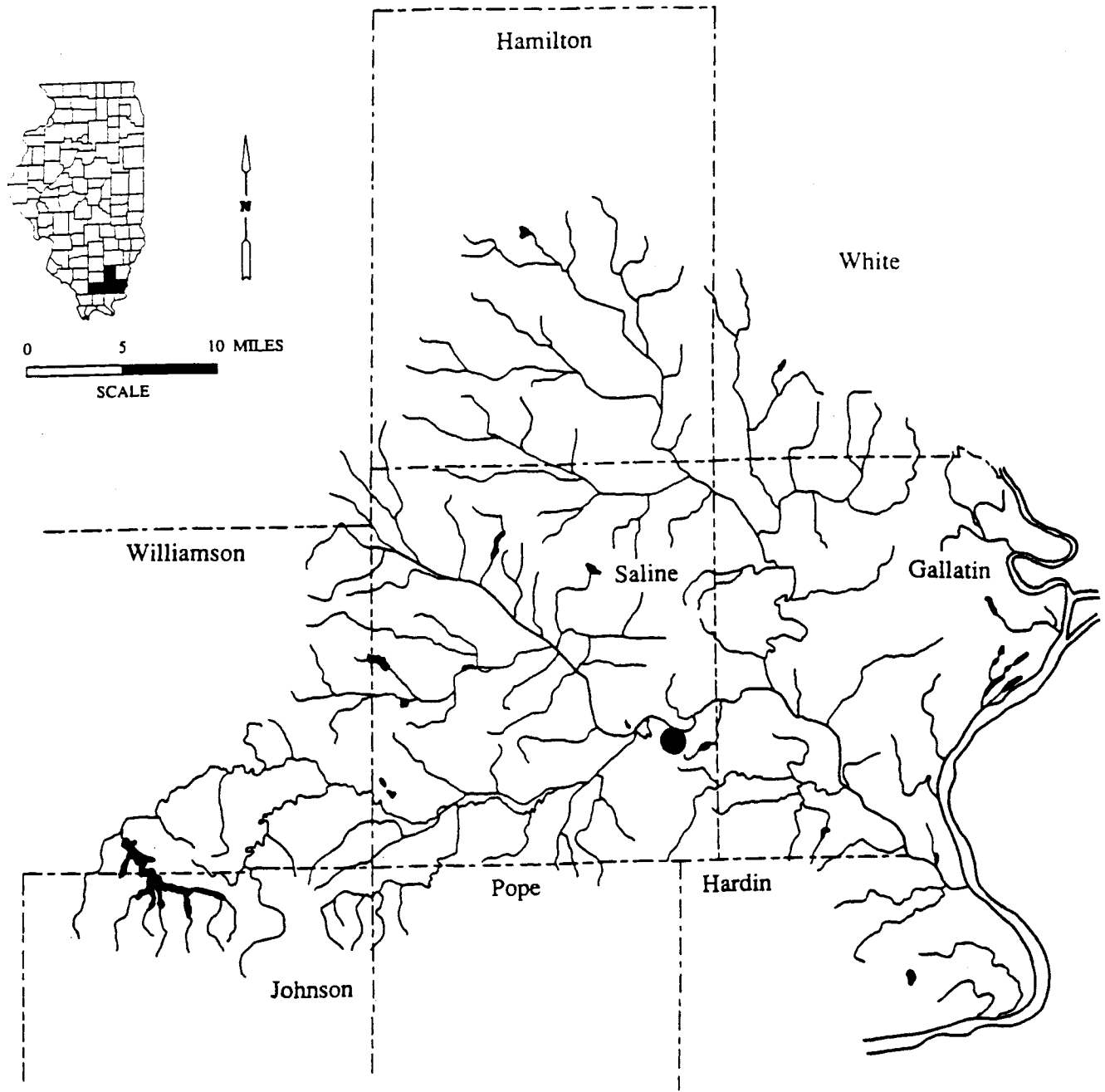


Figure 18-4. Map of extant (solid symbols = 1980 to present) populations of endangered lotic plants (circles) in the Saline River System.

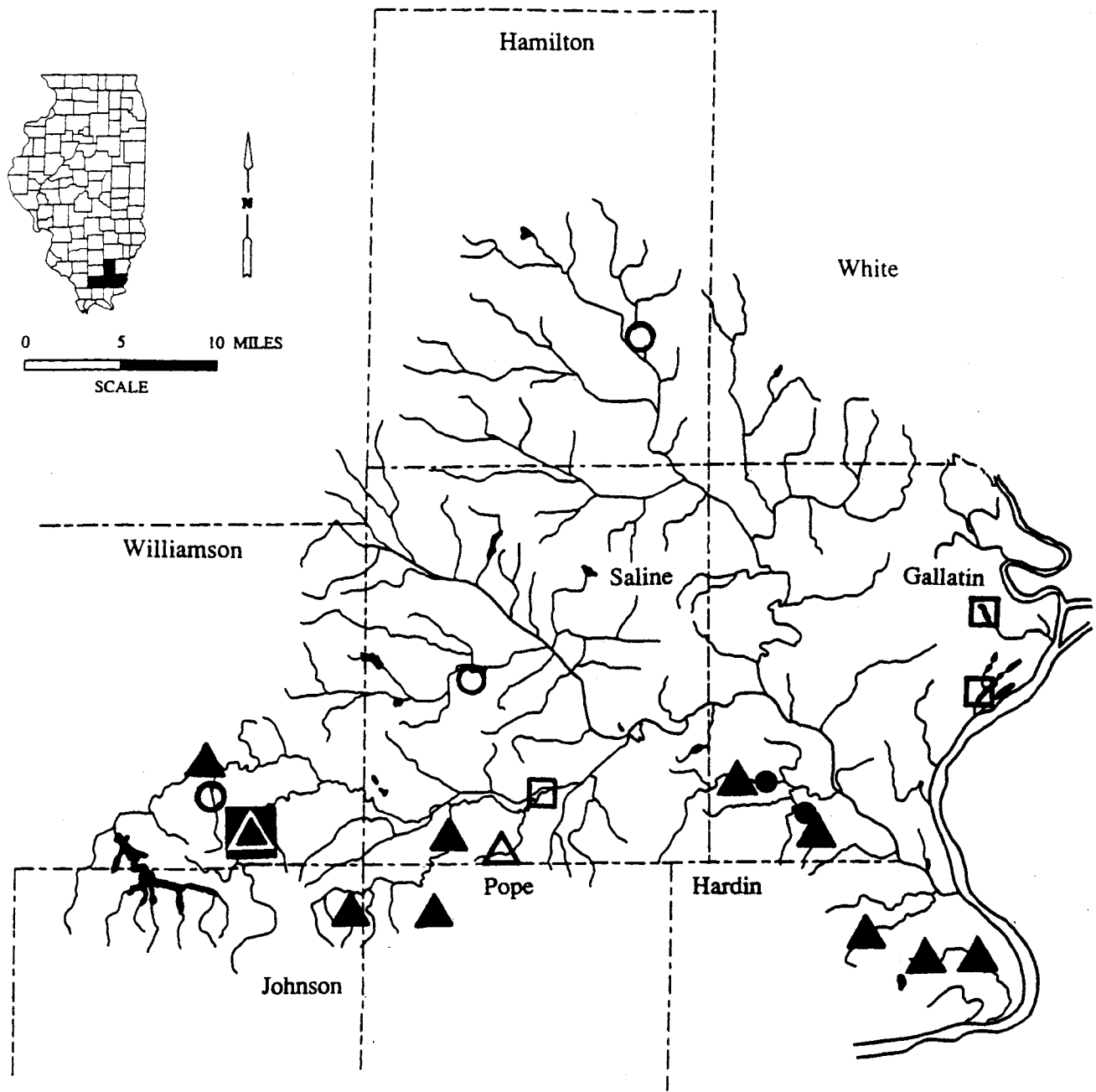
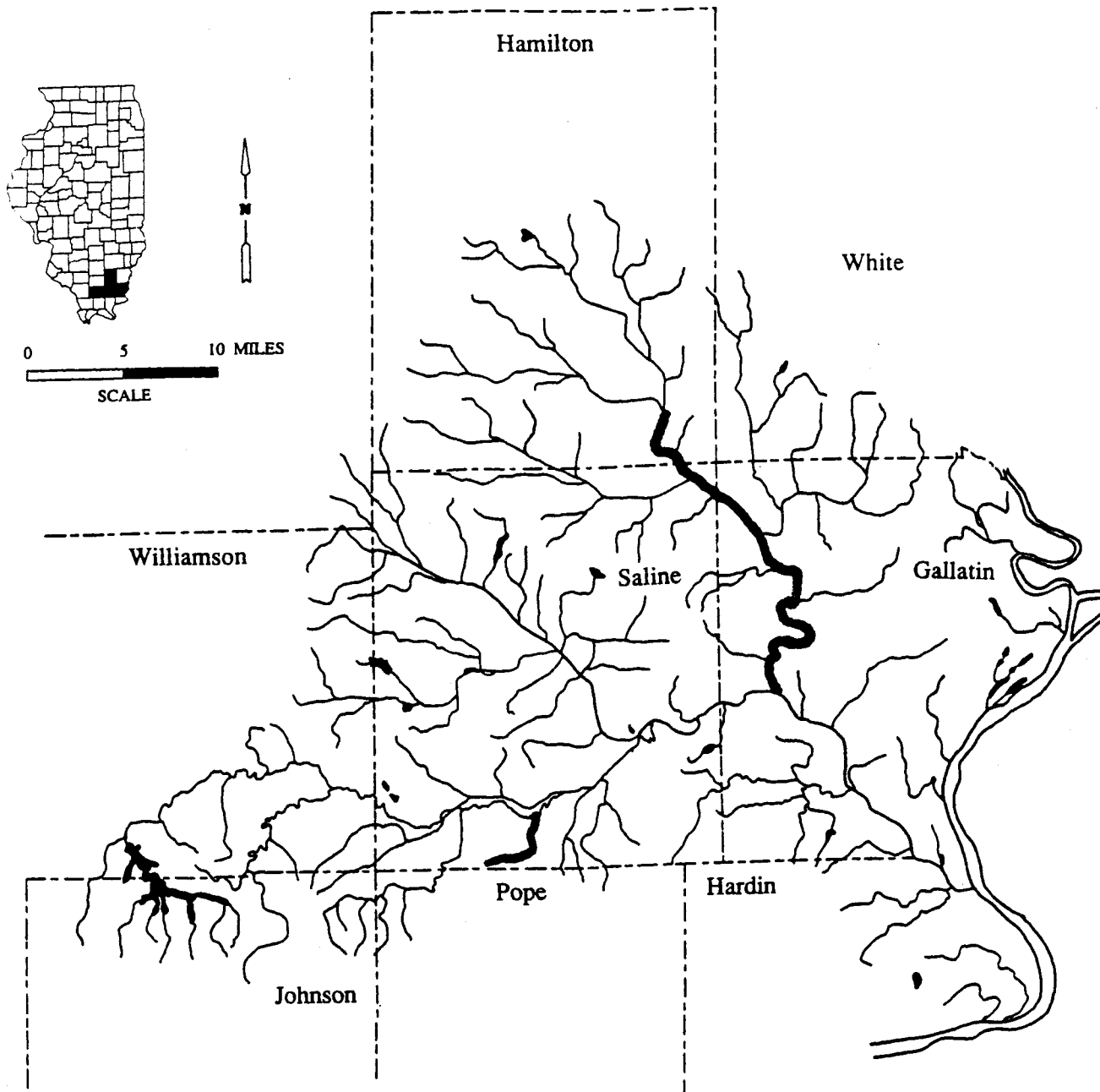
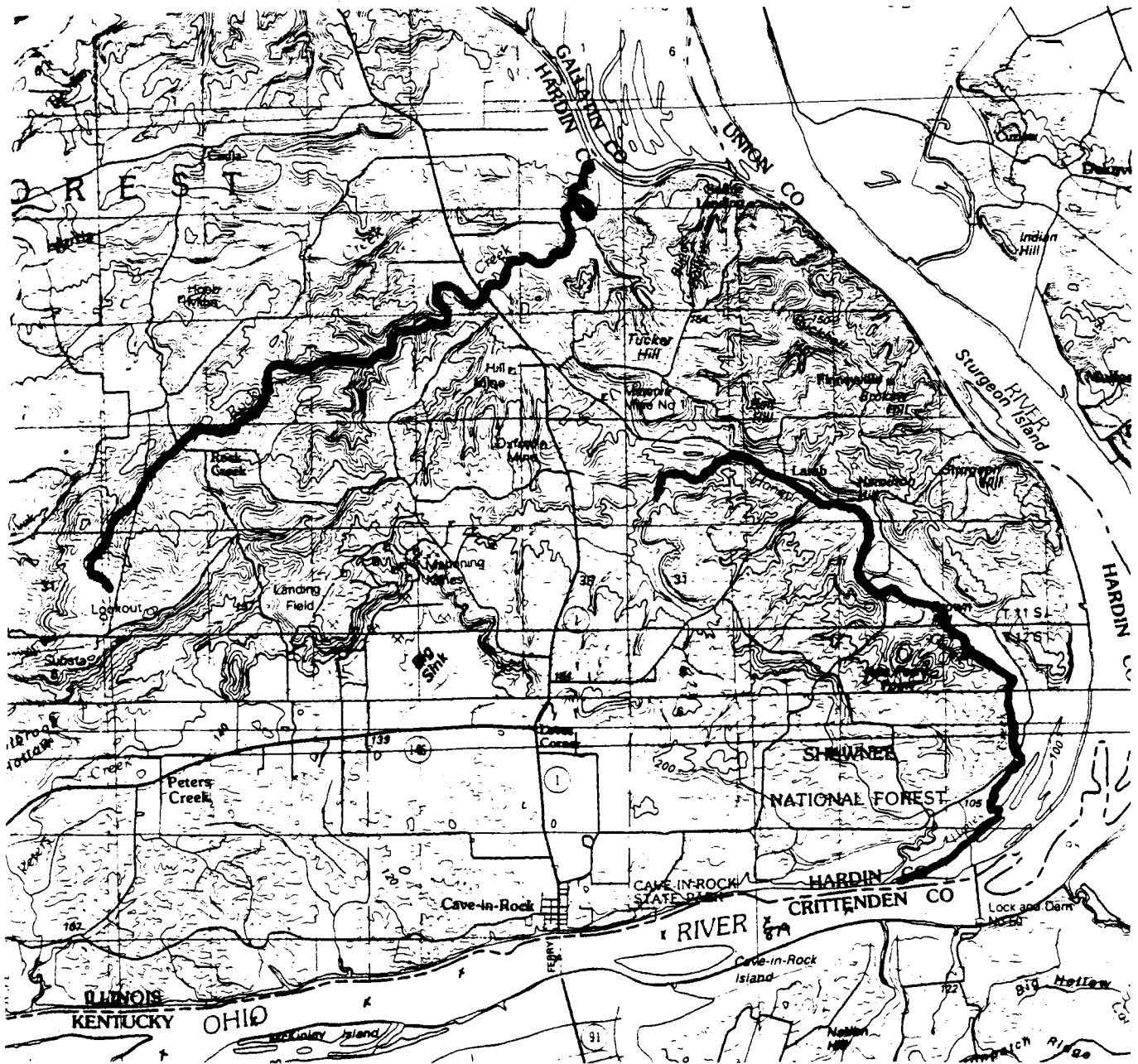


Figure 18-5. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered fishes (squares), mussels (circles), and crustaceans (triangles) in the Saline River System.

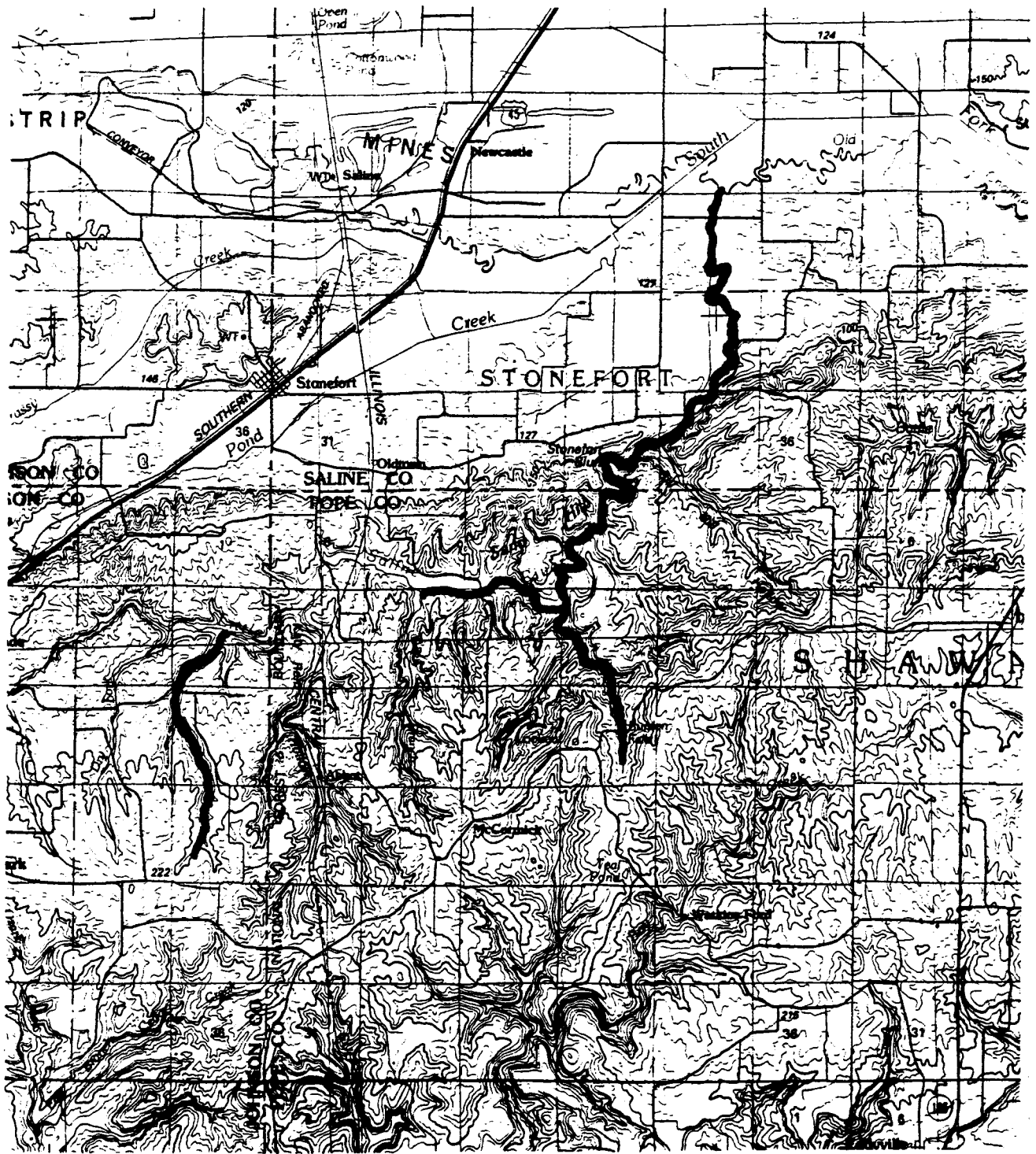


18. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Saline River System.



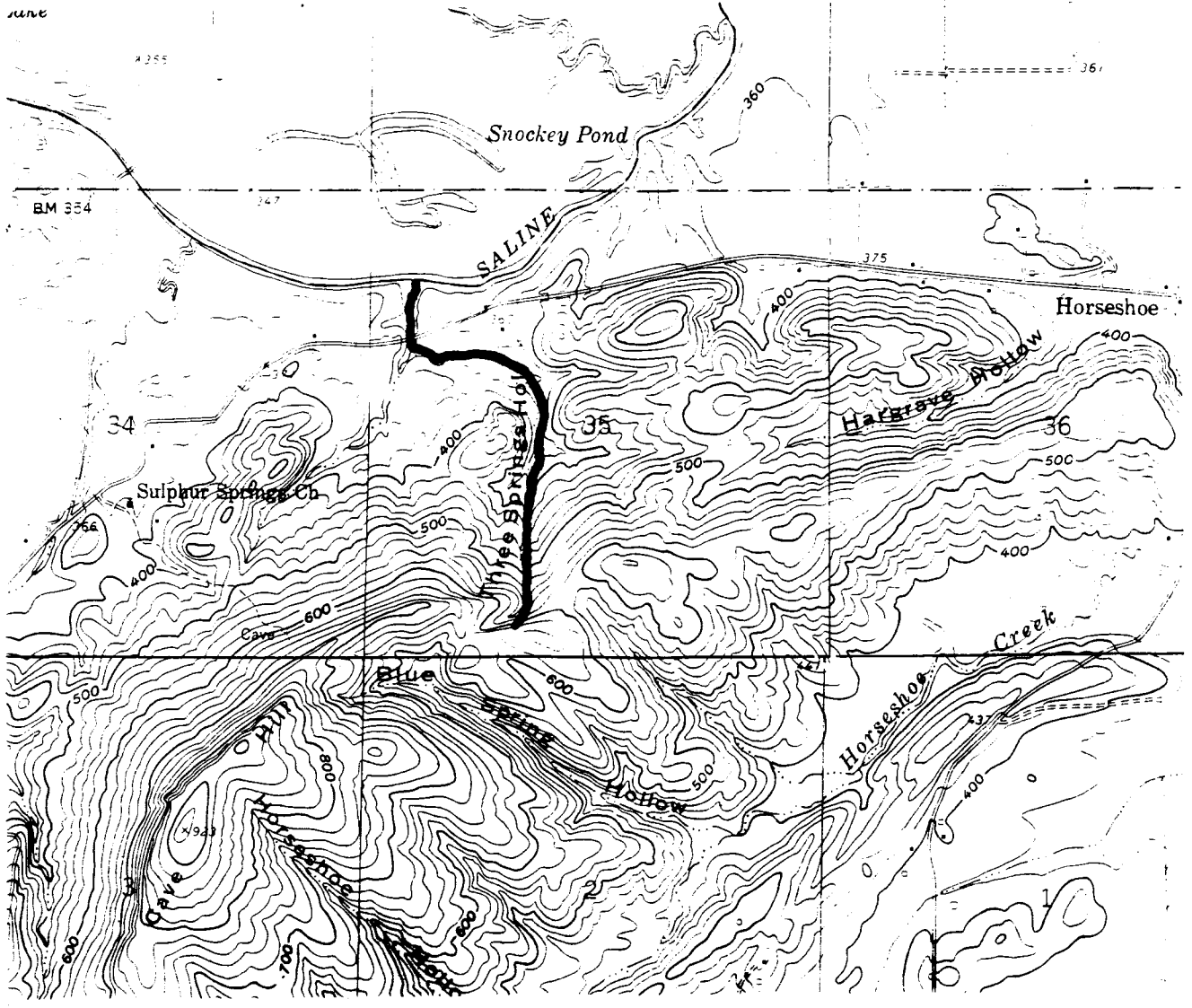
18. The Saline River System (West Frankfort & Paducah 1:100,000)

- Honey Creek, Hardin Co.
(*Orconectes indianensis*)
- Rock Creek, Hardin Co.
(*Orconectes indianensis*)

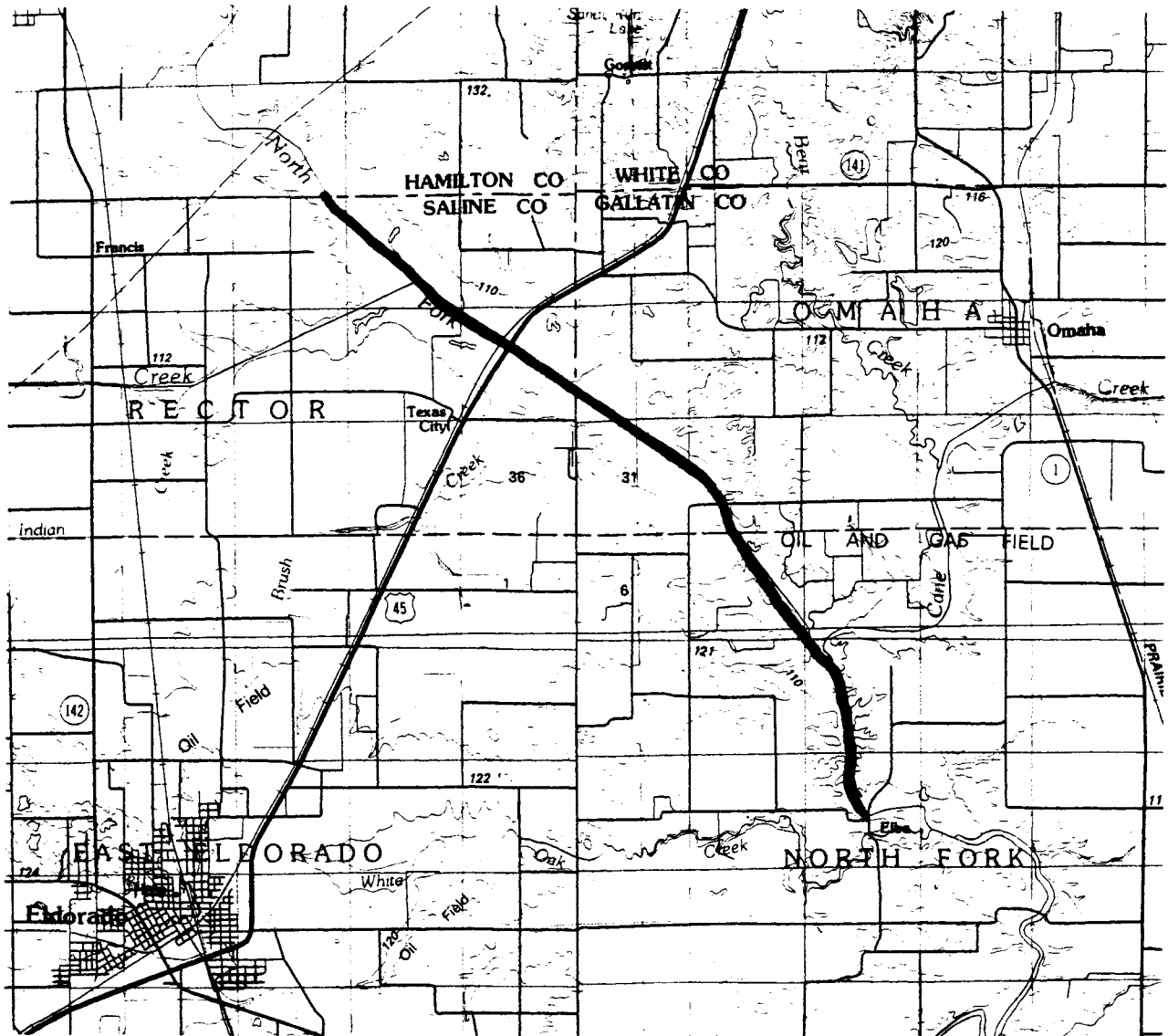


18. The Saline River System (West Frankfort 1:100,000)

- Little Saline River, Allen Branch to South Fork, Saline Co.
(*Orconectes indianensis*)
- Clifty Creek, Johnson Co.
(*Orconectes indianensis*)
- Burden Creek, Pope Co.
(*Orconectes indianensis*)

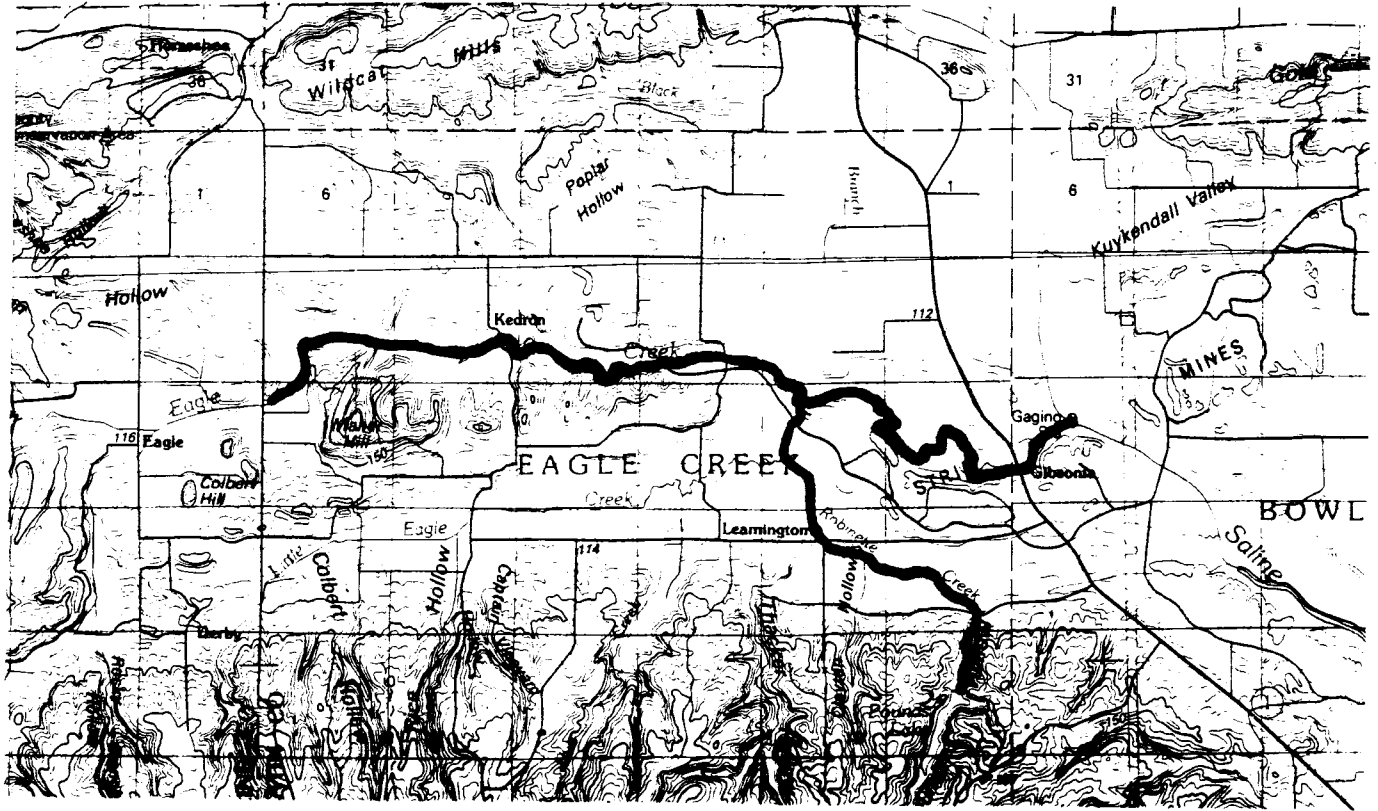


18. The Saline River System (Rudement 7.5 Quad)
- Three Springs Hollow, Saline Co.
(heart-leaved plantain)



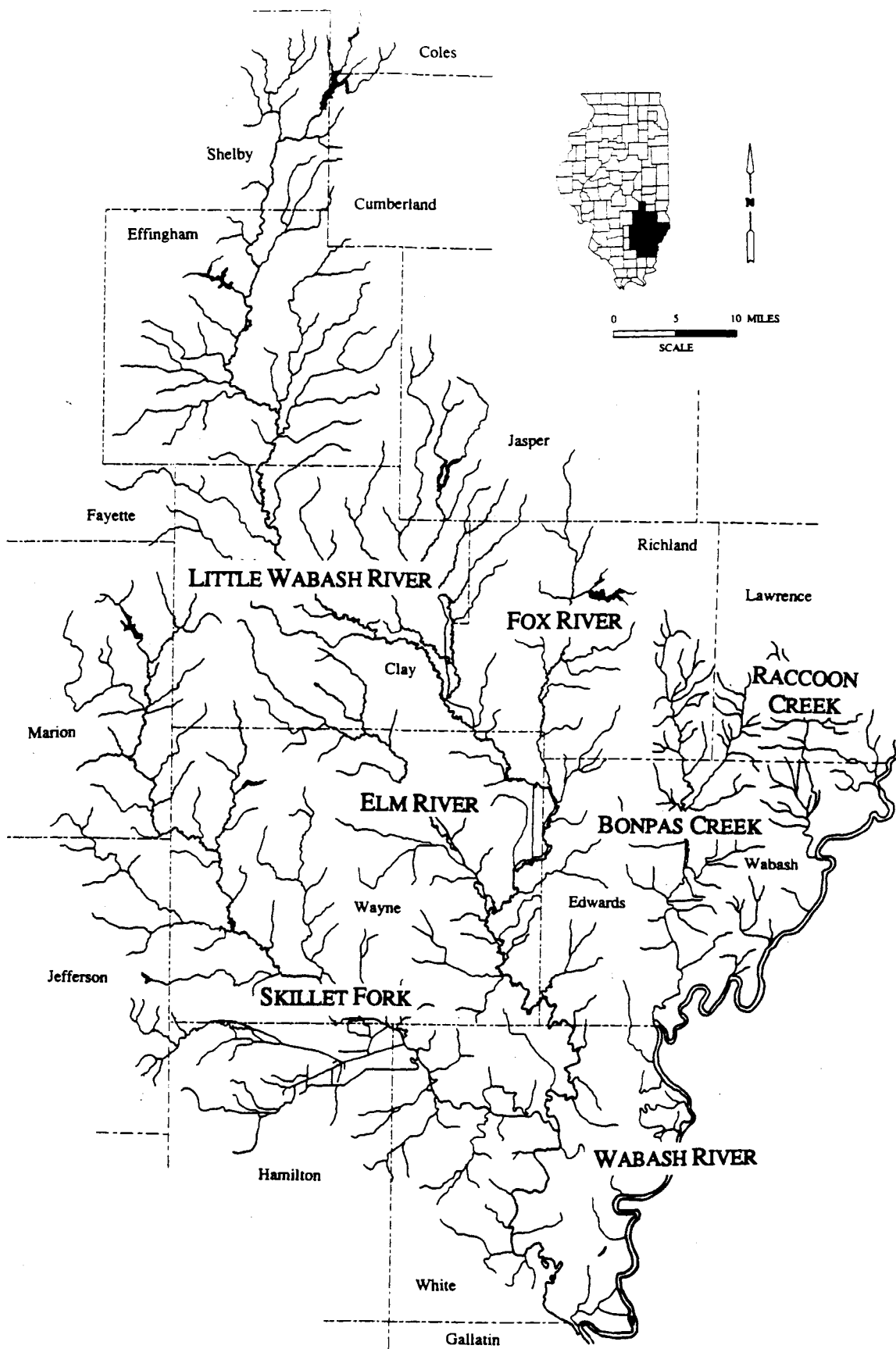
18. The Saline River System (West Frankfort 1:100,000)

- North Fork Saline River, Hamilton/Saline Co. line to Elba, Gallatin Co.
 (high mussel diversity)



18. The Saline River System (West Frankfort 1:100,000)

- Eagle Creek, Gallatin Co.
(*Orconectes indianensis*)
- Robinette Creek, Pounds Lake to Eagle Creek, Gallatin Co.
(*Orconectes indianensis*)



19. Little Wabash River and Bonpas Creek Systems

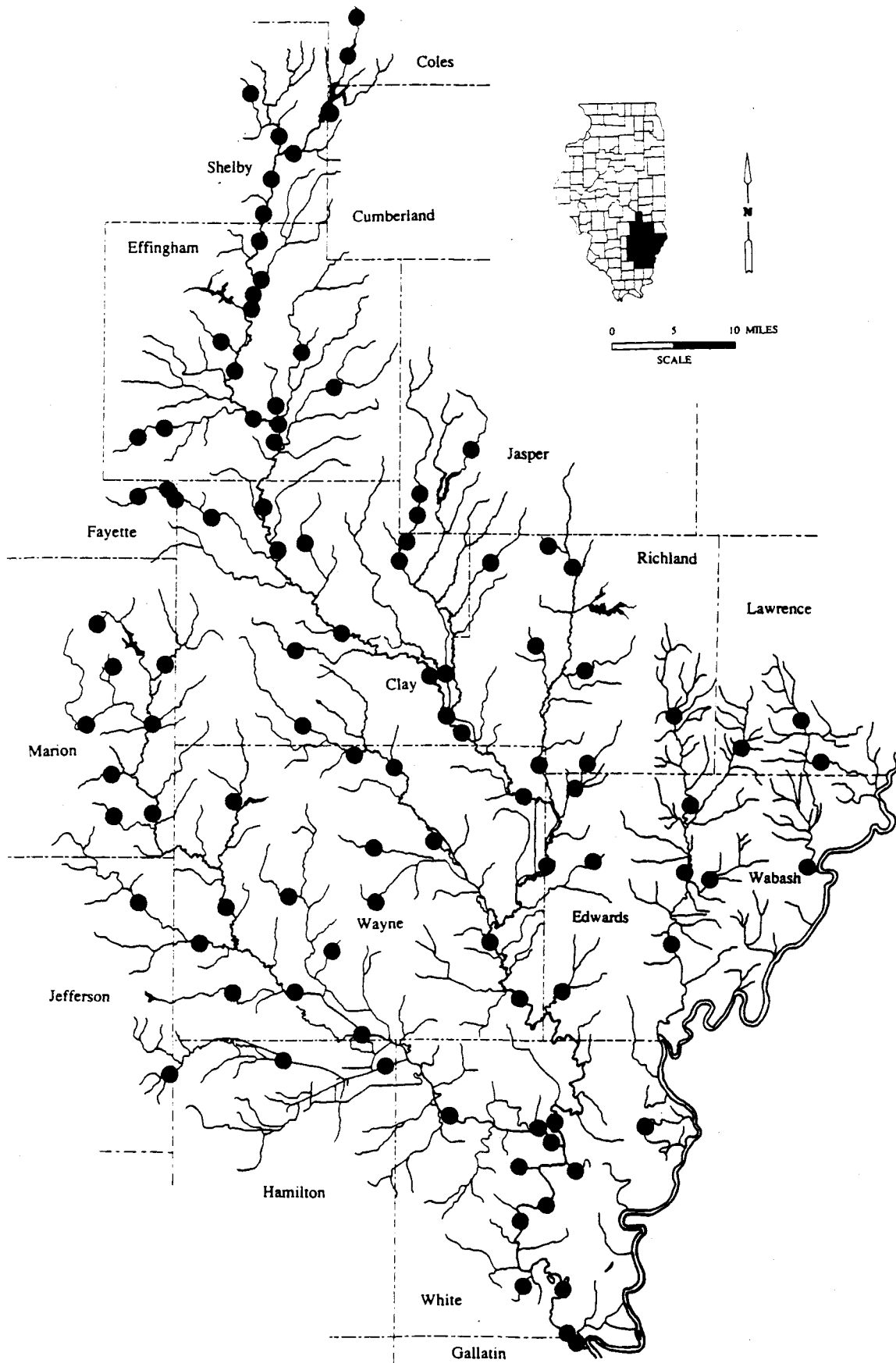


Figure 19-1. Map of fish collection sites in the Little Wabash River and Bonpas Creek Systems represented in the Illinois Natural History Survey Fish Collection.

Table 19-1. Freshwater fishes recorded from the Little Wabash River and Bonpas Creek Systems. Data from the Illinois Natural History Survey Fish Collection. FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened; I = Introduced.

PETROMYZONTIDAE	<i>Notropis boops</i> ST	APHREDODERIDAE
<i>Ichthyomyzon unicuspis</i>	<i>Notropis burchanani</i>	<i>Aphredoderus sayanus</i>
LEPISOSTEIDAE	<i>Notropis dorsalis</i>	ATHERINIDAE
<i>Lepisosteus osseus</i>	<i>Notropis ludibundus</i>	<i>Labidesthes sicculus</i>
<i>Lepisosteus platostomus</i>	<i>Notropis texanus</i> SE	CENTRARCHIDAE
AMIIDAE	<i>Opsopoeodus emiliae</i>	<i>Centrarchus macropterus</i>
<i>Amia calva</i>	<i>Phenacobius mirabilis</i>	<i>Chaenobryttus gulosus</i>
CLUPEIDAE	<i>Pimephales notatus</i>	<i>Lepomis cyanellus</i>
<i>Dorosoma cepedianum</i>	<i>Pimephales promelas</i>	<i>Lepomis humilis</i>
UMBRIDAE	<i>Pimephales vigilax</i>	<i>Lepomis macrochirus</i>
<i>Umbra limi</i>	<i>Semotilus atromaculatus</i>	<i>Lepomis megalotis</i>
ESOCIDAE	CATOSTOMIDAE	<i>Lepomis microlophus</i>
<i>Esox americanus</i>	<i>Carpionotus carpio</i>	<i>Lepomis miniatus</i> ST
CYPRINIDAE	<i>Carpionotus cyprinus</i>	<i>Lepomis symmetricus</i> ST
<i>Aristichthys nobilis</i> I	<i>Catostomus commersoni</i>	<i>Micropterus dolomieu</i>
<i>Campostoma anomalum</i>	<i>Erimyzon oblongus</i>	<i>Micropterus punctulatus</i>
<i>Ctenopharyngodon idella</i> I	<i>Hypentelium nigricans</i>	<i>Micropterus salmoides</i>
<i>Cyprinella spiloptera</i>	<i>Ictiobus bubalus</i>	<i>Pomoxis annularis</i>
<i>Cyprinella whipplei</i>	<i>Minytrema melanops</i>	<i>Pomoxis nigromaculatus</i>
<i>Cyprinus carpio</i> I	<i>Moxostoma erythrurum</i>	PERCIDAE
<i>Ericymba buccata</i>	<i>Moxostoma macrolepidotum</i>	<i>Etheostoma asprigene</i>
<i>Hybognathus nuchalis</i>	ICTALURIDAE	<i>Etheostoma blennioides</i>
<i>Hybopsis amblops</i> SE	<i>Ameiurus melas</i>	<i>Etheostoma chlorosomum</i>
<i>Hybopsis amnis</i> SE	<i>Ameiurus natalis</i>	<i>Etheostoma gracile</i>
<i>Hypophthalmichthys molotrix</i> I	<i>Ictalurus punctatus</i>	<i>Etheostoma nigrum</i>
<i>Luxilus chrysocephalus</i>	<i>Noturus gyrinus</i>	<i>Etheostoma pellucidum</i> SE, FC
<i>Lythrurus fumeus</i>	<i>Noturus miurus</i>	<i>Etheostoma spectabile</i>
<i>Lythrurus umbratilis</i>	<i>Pylodictis olivaris</i>	<i>Percina caprodes</i>
<i>Macrhybopsis storeriana</i>	CYPRINODONTIDAE	<i>Percina maculata</i>
<i>Nocomis biguttatus</i>	<i>Fundulus dispar</i>	<i>Percina phoxocephala</i>
<i>Notemigonus crysoleucas</i>	<i>Fundulus notatus</i>	<i>Percina sciera</i>
<i>Notropis atherinoides</i>	POECILIIDAE	SCIAENIDAE
<i>Notropis blennioides</i>	<i>Gambusia affinis</i>	<i>Aplodinotus grunniens</i>

Total number of species = 83 (79 native, 4 introduced)

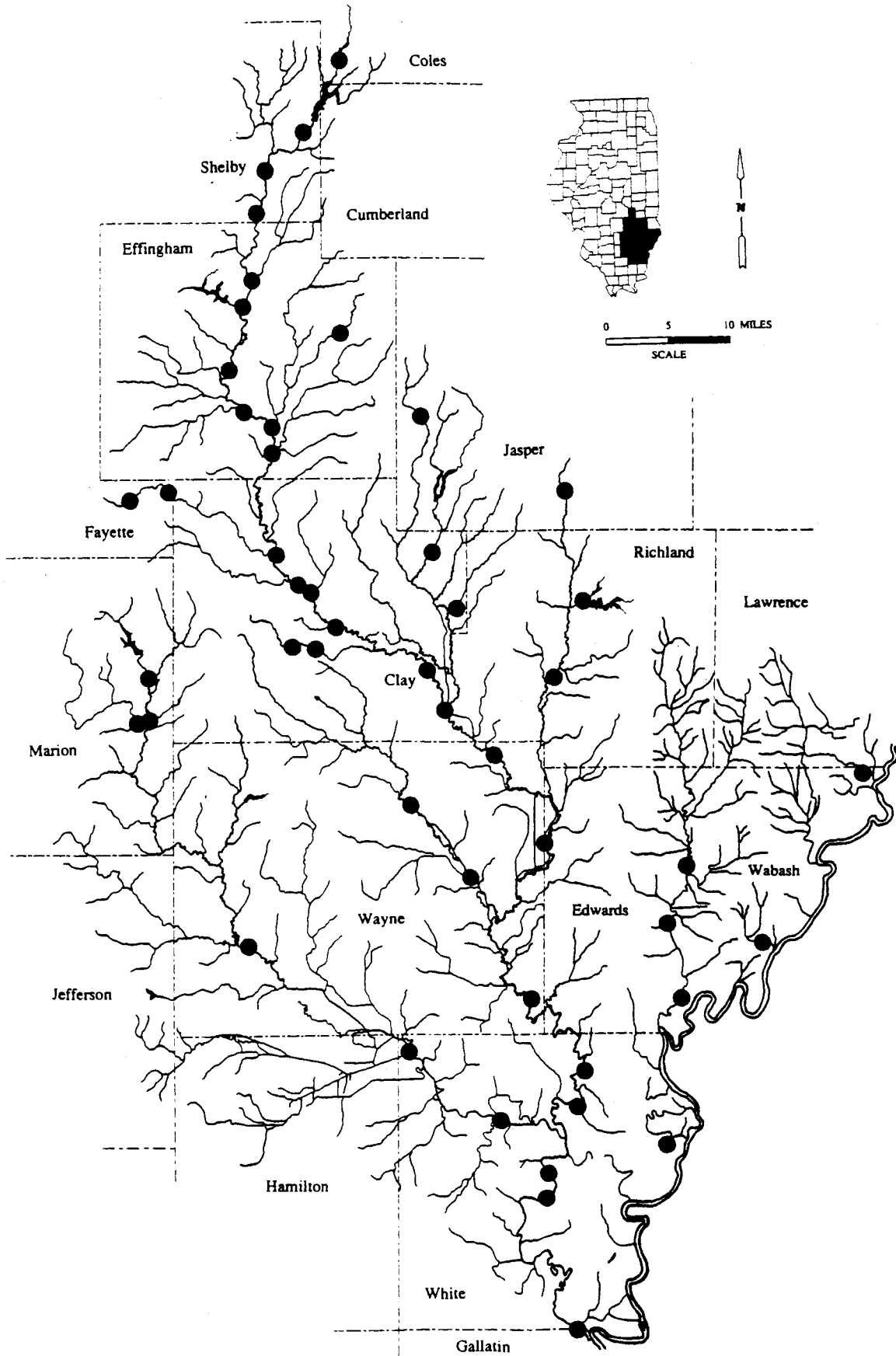


Figure 19-2. Map of mussel collection sites in the Little Wabash River and Bonpas Creek Systems represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 19-2. Freshwater mussels recorded from the Little Wabash and Bonpas Creek Systems. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. FE = Federally Endangered; FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened; SC = State Candidate; X = Extirpated from Illinois; † = Extinct.

<i>Actinonaias ligamentina</i>	
<i>Amblema plicata</i>	
<i>Anodonta grandis</i>	
<i>Anodonta imbecillis</i>	
<i>Anodonta suborbiculata</i>	
<i>Anodontoides ferussacianus</i>	
<i>Arcidens confragosus</i>	
<i>Cyclonaias tuberculata</i>	
<i>Cyprogenia stegaria</i>	SE, FE
<i>Ellipsaria lineolata</i>	SC
<i>Elliptio crassidens</i>	ST
<i>Elliptio dilatata</i>	SC
<i>Epioblasma sampsonii</i>	SE, †
<i>Epioblasma triquetra</i>	SE
<i>Fusconaia ebena</i>	SC
<i>Fusconaia flava</i>	
<i>Lampsilis cardium</i>	
<i>Lampsilis siliquoidea</i>	
<i>Lampsilis teres</i>	
<i>Lasmigona complanata</i>	
<i>Lasmigona compressa</i>	ST
<i>Lasmigona costata</i>	
<i>Leptodea fragilis</i>	
<i>Ligumia subrostrata</i>	
<i>Megalonaias nervosa</i>	
<i>Obliquaria reflexa</i>	
<i>Obovaria subrotunda</i>	SE
<i>Pleurobema plenum</i>	SE, FE, X
<i>Pleurobema rubrum</i>	SC
<i>Pleurobema sintoxia</i>	
<i>Potamilus alatus</i>	
<i>Potamilus capax</i>	SE, FE
<i>Potamilus ohioensis</i>	
<i>Ptychobranhus fasciolaris</i>	SE
<i>Quadrula metanevra</i>	
<i>Quadrula nodulata</i>	
<i>Quadrula pustulosa</i>	
<i>Quadrula quadrula</i>	
<i>Strophitus undulatus</i>	
<i>Toxolasma lividus</i>	SE, FC
<i>Toxolasma parvus</i>	
<i>Toxolasma texasensis</i>	
<i>Tritogonia verrucosa</i>	
<i>Truncilla donaciformis</i>	
<i>Truncilla truncata</i>	
<i>Uniomerus tetralasmus</i>	ST
<i>Villosa lienosa</i>	SE

Total number of species = 47.

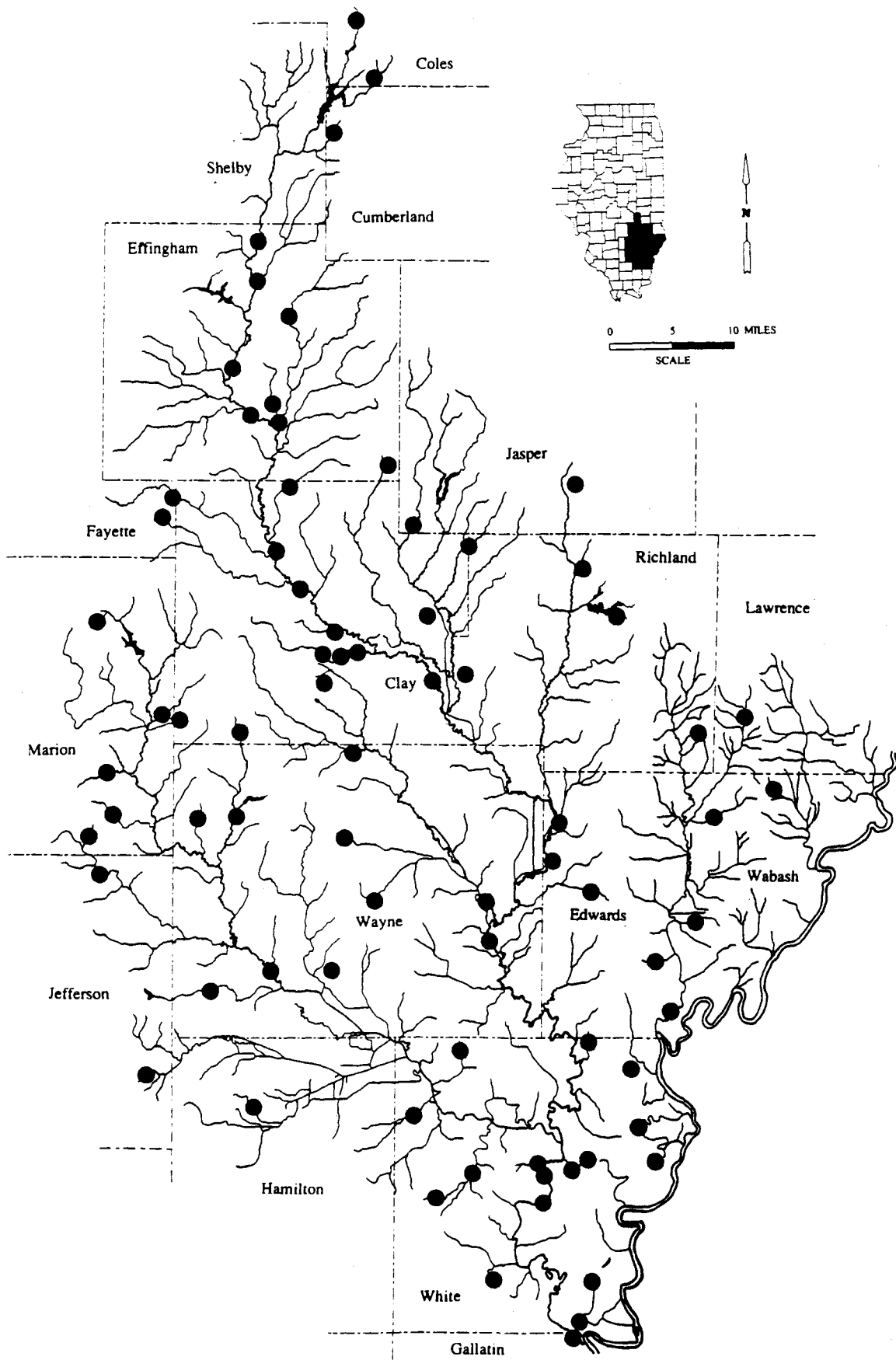


Figure 19-3. Map of crustacean collection sites in the Little Wabash River and Bonpas Creek Systems represented in the Illinois Natural History Survey Crustacean Collection.

Table 19-3. Freshwater crustaceans recorded from the Little Wabash River and Bonpas Creek Systems.
Data from the Illinois Natural History Survey Crustacean Collection. SE = Illinois State Endangered.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea brevicauda
Caecidotea forbesi
Caecidotea intermedia
Lirceus sp.

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Crangonyx forbesi
Crangonyx gracilis
Crangonyx minor
Crangonyx pseudogracilis
Gammarus pseudolimnaeus

HYALELLIDAE

Hyaella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

PALAEEMONIDAE

Palaemonetes kadiakensis

CAMBARIDAE

Cambarus diogenes
Fallicambarus fodiens
Orconectes immunis
Orconectes indianensis SE
Orconectes stannardi
Orconectes virilis
Procambarus acutus
Procambarus gracilis

Total number of species = 19.

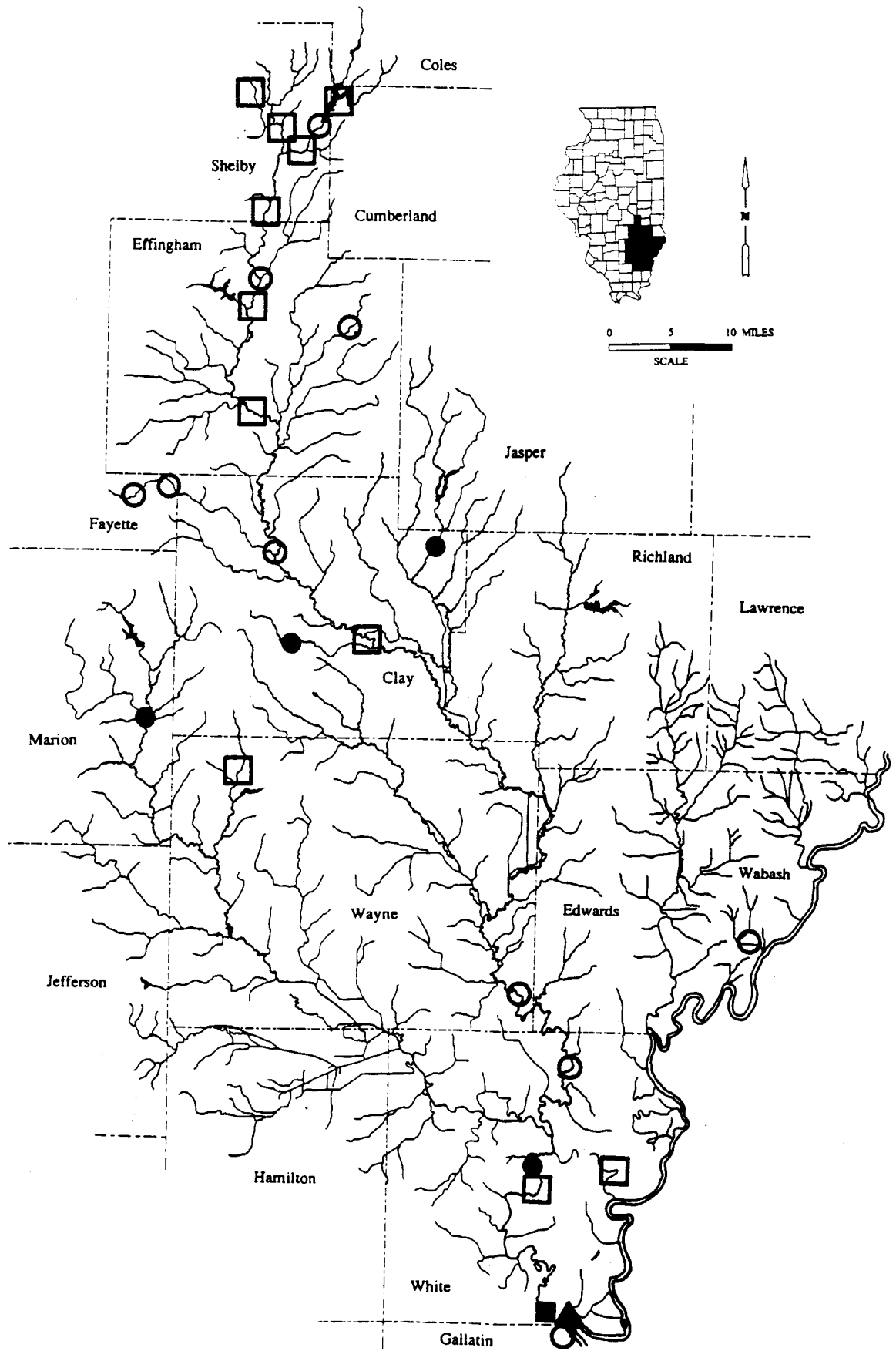
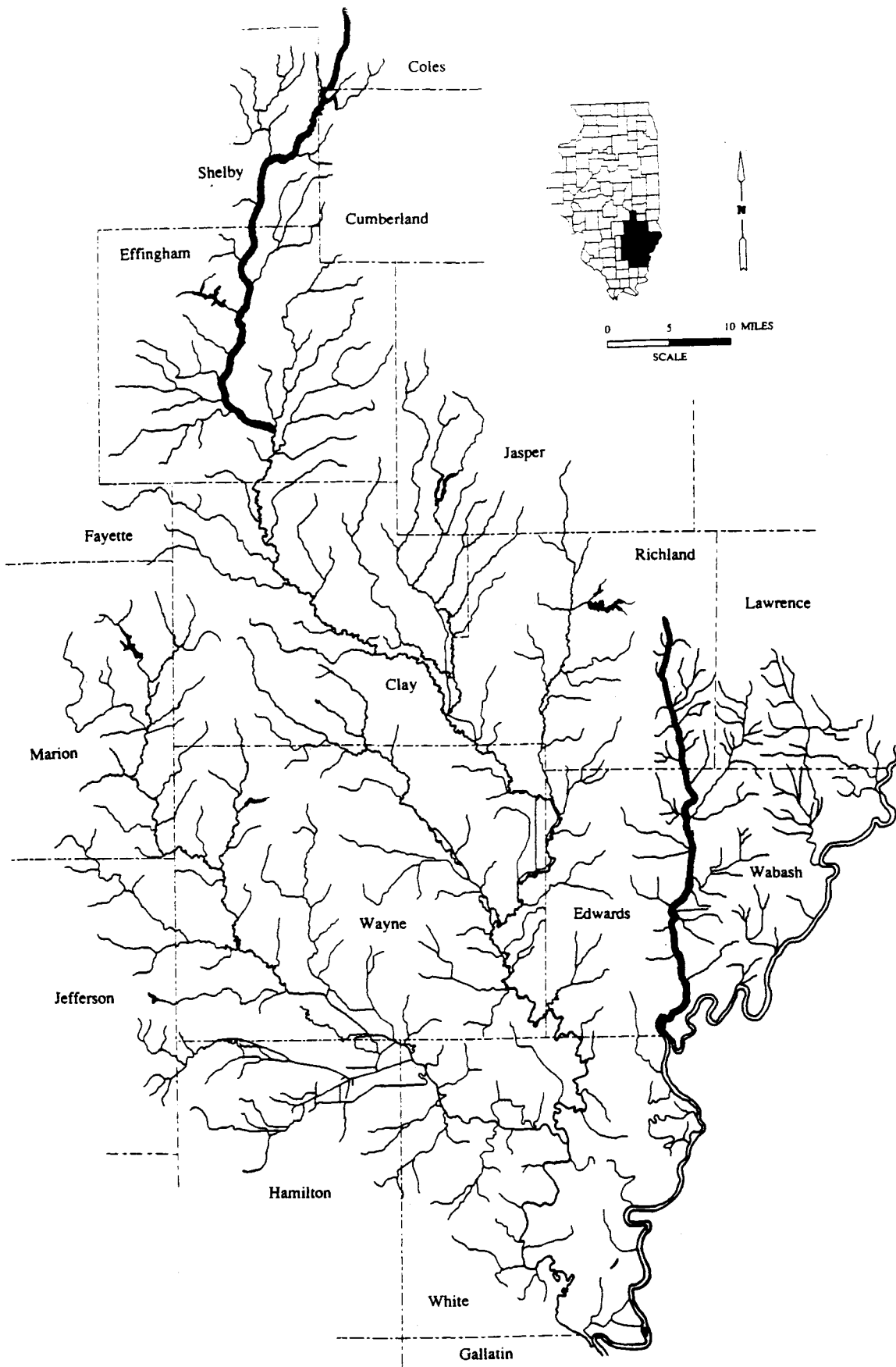
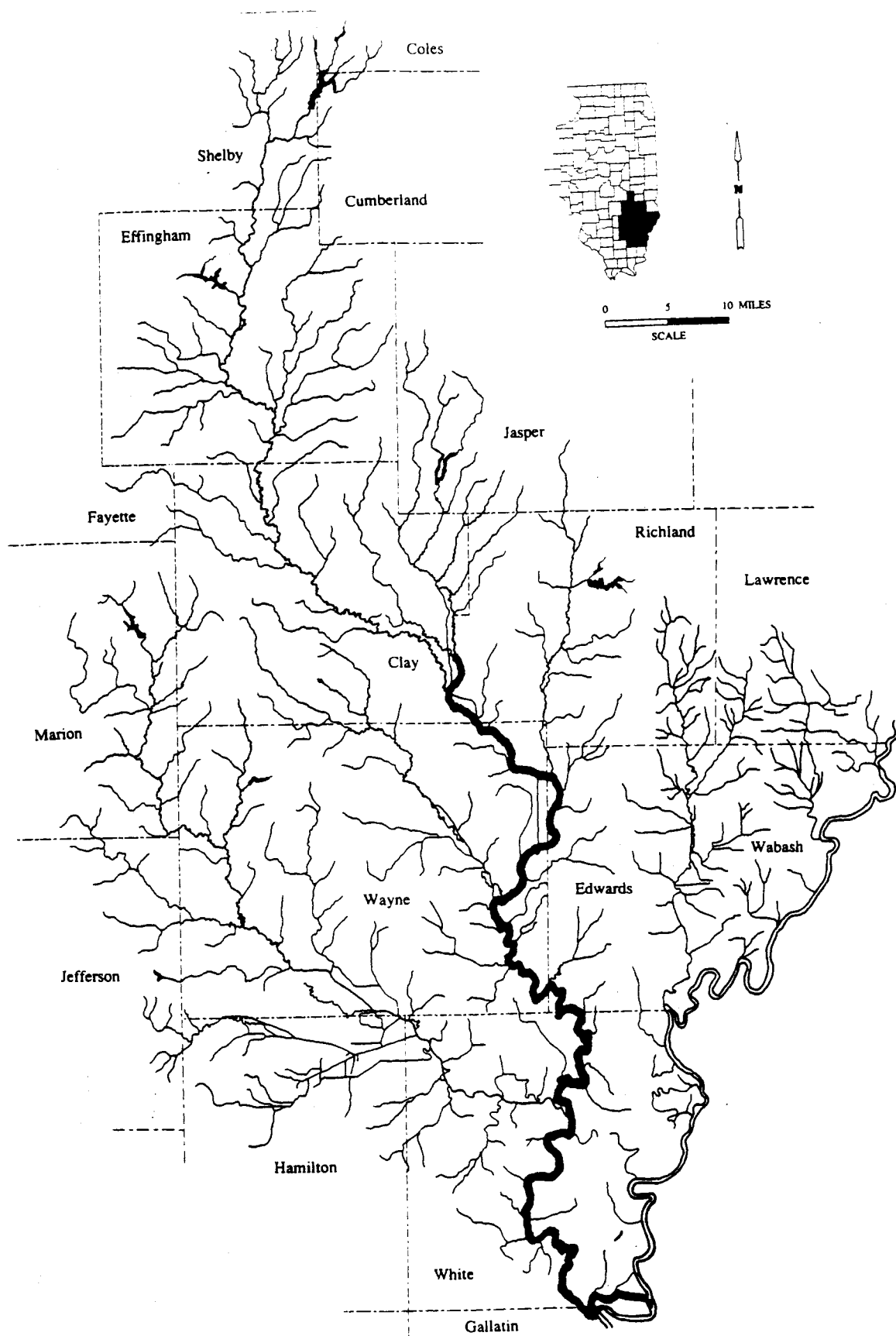


Figure 19-4. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered fishes (squares), mussels (circles), and crustaceans (triangles) in the Little Wabash River and Bonpas Creek Systems.

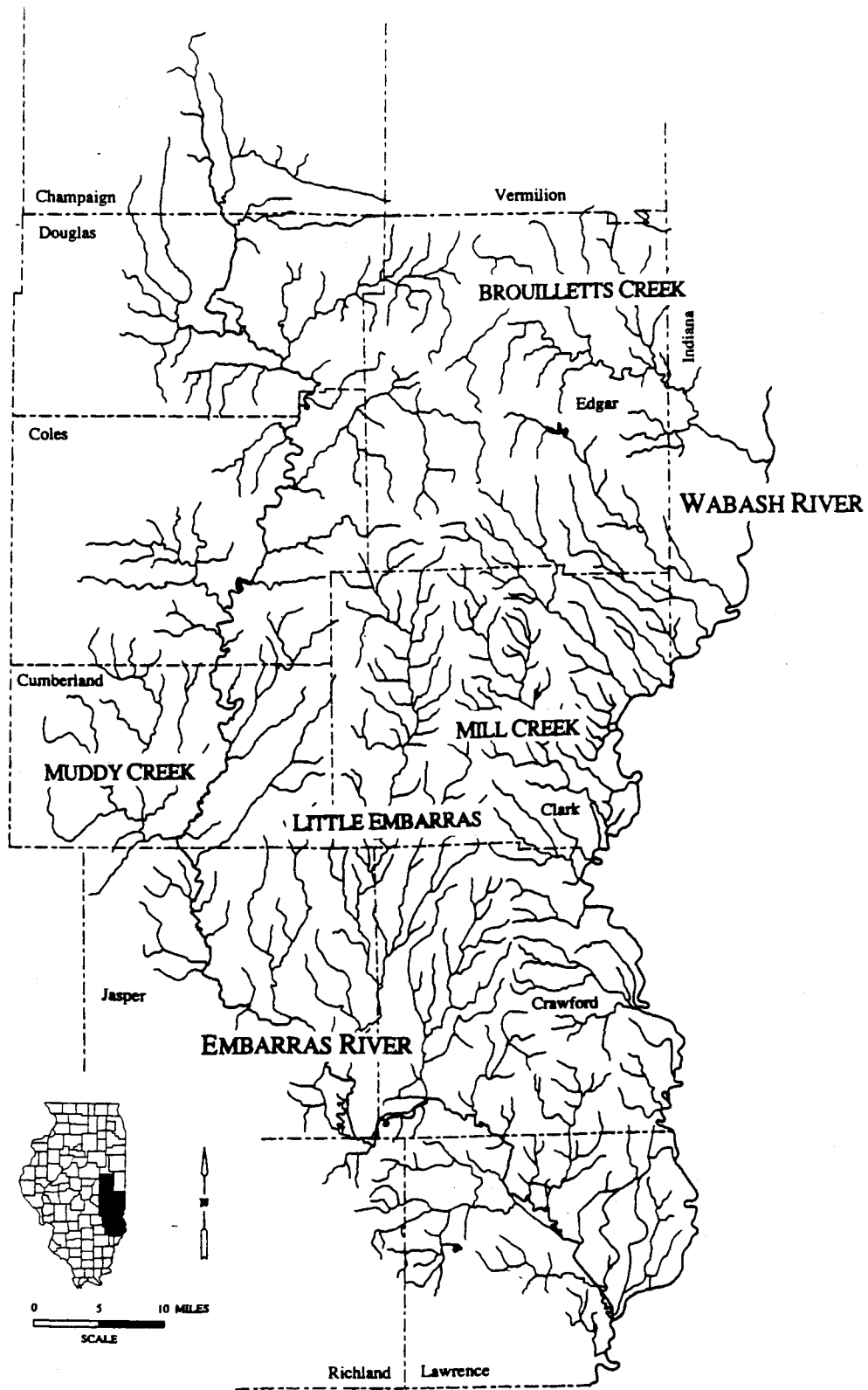


19. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Little Wabash River and Bonpas Creek Systems.

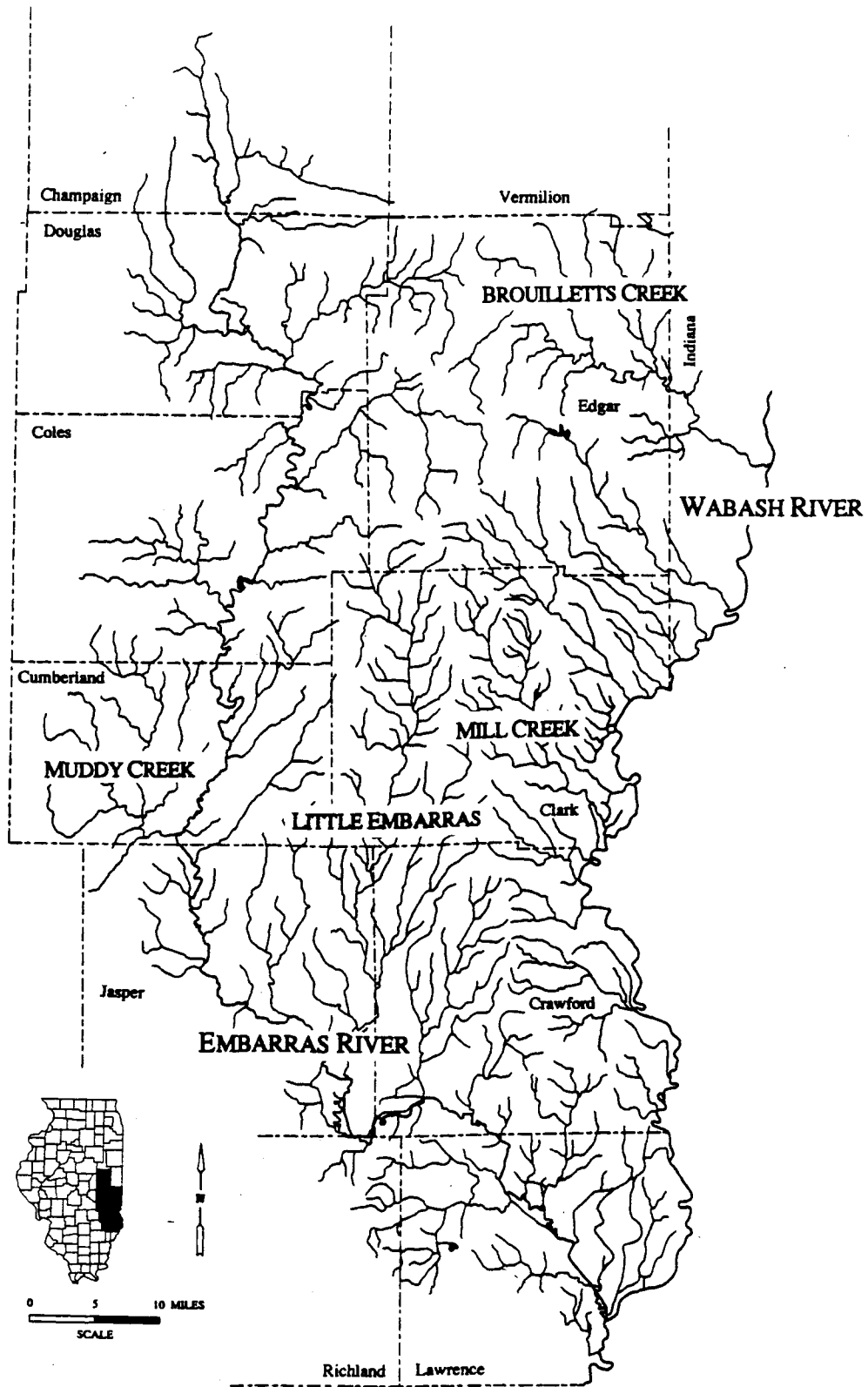


19. The Little Wabash River and Bonpas Creek System

- Little Wabash River, Rt. 50 to mouth, White Co.
(purple lilliput, high mussel diversity, redspotted sunfish, *Orconectes stannardi*)
- Brushy Slough, White Co.
(*Orconectes indianensis*)



20. Embarras River and Wabash River Tributaries



20. Embarras River and Wabash River Tributaries

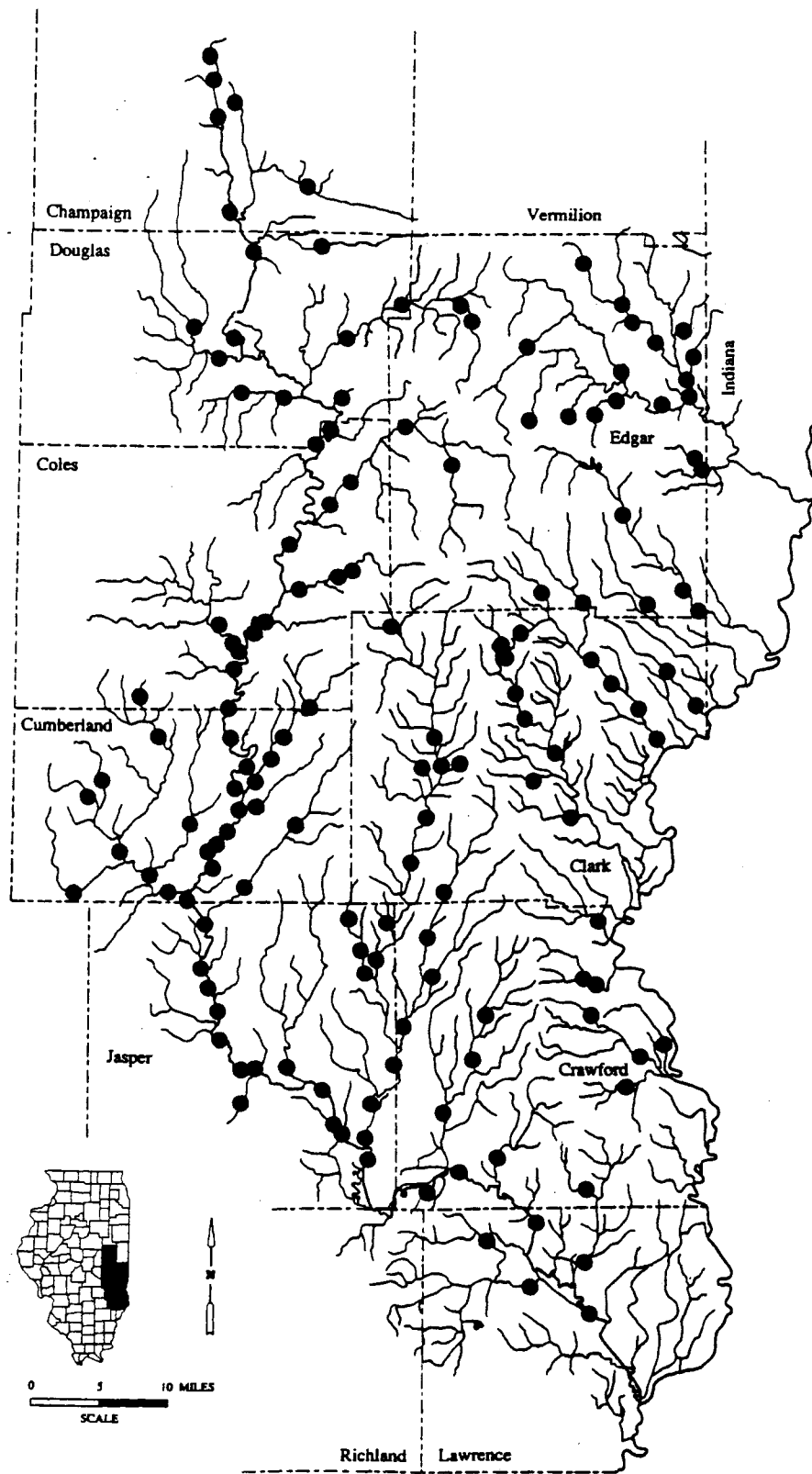


Figure 20-1. Map of fish collection sites in the Embarras River and Wabash River Tributaries represented in the Illinois Natural History Survey Fish Collection.

Table 20-1. Freshwater fishes recorded from the Embarras and Wabash River tributaries. Data from the Illinois Natural History Survey Fish Collection. FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened; I = Introduced.

PETROMYZONTIDAE	<i>Pimephales notatus</i>	ATHERINIDAE
<i>Ichthyomyzon unicuspis</i>	<i>Pimephales promelas</i>	<i>Labidesthes sicculus</i>
<i>Lampetra appendix</i>	<i>Pimephales vigilax</i>	MORONIDAE
LEPISOSTEIDAE	<i>Rhinichthys atratulus</i>	<i>Morone mississippiensis</i>
<i>Lepisosteus osseus</i>	<i>Semotilus atromaculatus</i>	CENTRARCHIDAE
ANGUILLIDAE	CATOSTOMIDAE	<i>Ambloplites rupestris</i>
<i>Anguilla rostrata</i>	<i>Carpiodes carpio</i>	<i>Chaenobryttus gulosus</i>
HIODONTIDAE	<i>Carpiodes cyprinus</i>	<i>Lepomis cyanellus</i>
<i>Hiodon alosoides</i>	<i>Carpiodes velifer</i>	<i>Lepomis humilis</i>
CLUPEIDAE	<i>Catostomus commersoni</i>	<i>Lepomis macrochirus</i>
<i>Alosa chrysochloris</i>	<i>Cycleptus elongatus</i> FC	<i>Lepomis megalotis</i>
<i>Dorosoma cepedianum</i>	<i>Erimyzon oblongus</i>	<i>Lepomis microlophus</i>
ESOCIDAE	<i>Hypentelium nigricans</i>	<i>Micropterus dolomieu</i>
<i>Esox americanus</i>	<i>Ictiobus bubalus</i>	<i>Micropterus punctulatus</i>
<i>Esox lucius</i>	<i>Ictiobus cyprinellus</i>	<i>Micropterus salmoides</i>
CYPRINIDAE	<i>Ictiobus niger</i>	<i>Pomoxis annularis</i>
<i>Campostoma anomalum</i>	<i>Minytrema melanops</i>	<i>Pomoxis nigromaculatus</i>
<i>Cyprinella spiloptera</i>	<i>Moxostoma anisurum</i>	PERCIDAE
<i>Cyprinella whipplei</i>	<i>Moxostoma duquesnei</i>	<i>Etheostoma asprigene</i>
<i>Cyprinus carpio</i> I	<i>Moxostoma erythrurum</i>	<i>Etheostoma blennioides</i>
<i>Ericymba buccata</i>	<i>Moxostoma macrolepidotum</i>	<i>Etheostoma caeruleum</i>
<i>Hybognathus nuchalis</i>	ICTALURIDAE	<i>Etheostoma chlorosomum</i>
<i>Hybopsis amblops</i> SE	<i>Ameiurus melas</i>	<i>Etheostoma flabellare</i>
<i>Luxilus chrysocephalus</i>	<i>Ameiurus natalis</i>	<i>Etheostoma gracile</i>
<i>Lythrurus fumeus</i>	<i>Ictalurus punctatus</i>	<i>Etheostoma histrio</i> SE
<i>Lythrurus umbratilis</i>	<i>Noturus eleutherus</i>	<i>Etheostoma nigrum</i>
<i>Macrhybopsis storeriana</i>	<i>Noturus flavus</i>	<i>Etheostoma pellucidum</i> SE, FC
<i>Notemigonus crysoleucas</i>	<i>Noturus gyrinus</i>	<i>Etheostoma spectabile</i>
<i>Notropis atherinoides</i>	<i>Noturus miurus</i>	<i>Percina caprodes</i>
<i>Notropis blennioides</i>	<i>Noturus nocturnus</i>	<i>Percina maculata</i>
<i>Notropis boops</i> ST	<i>Pylodictis olivaris</i>	<i>Percina phoxocephala</i>
<i>Notropis ludibundus</i>	CYPRINODONTIDAE	<i>Percina sciera</i>
<i>Notropis rubellus</i>	<i>Fundulus notatus</i>	<i>Stizostedion canadense</i>
<i>Notropis volucellus</i>	POECILIIDAE	SCIAENIDAE
<i>Opsopoeodus emiliae</i>	<i>Gambusia affinis</i>	<i>Aplodinotus grunniens</i>
<i>Phenacobius mirabilis</i>	APHREDODERIDAE	
<i>Phoxinus erythrogaster</i>	<i>Aphredoderus sayanus</i>	

Total number of species = 92 (91 native, 1 introduced)

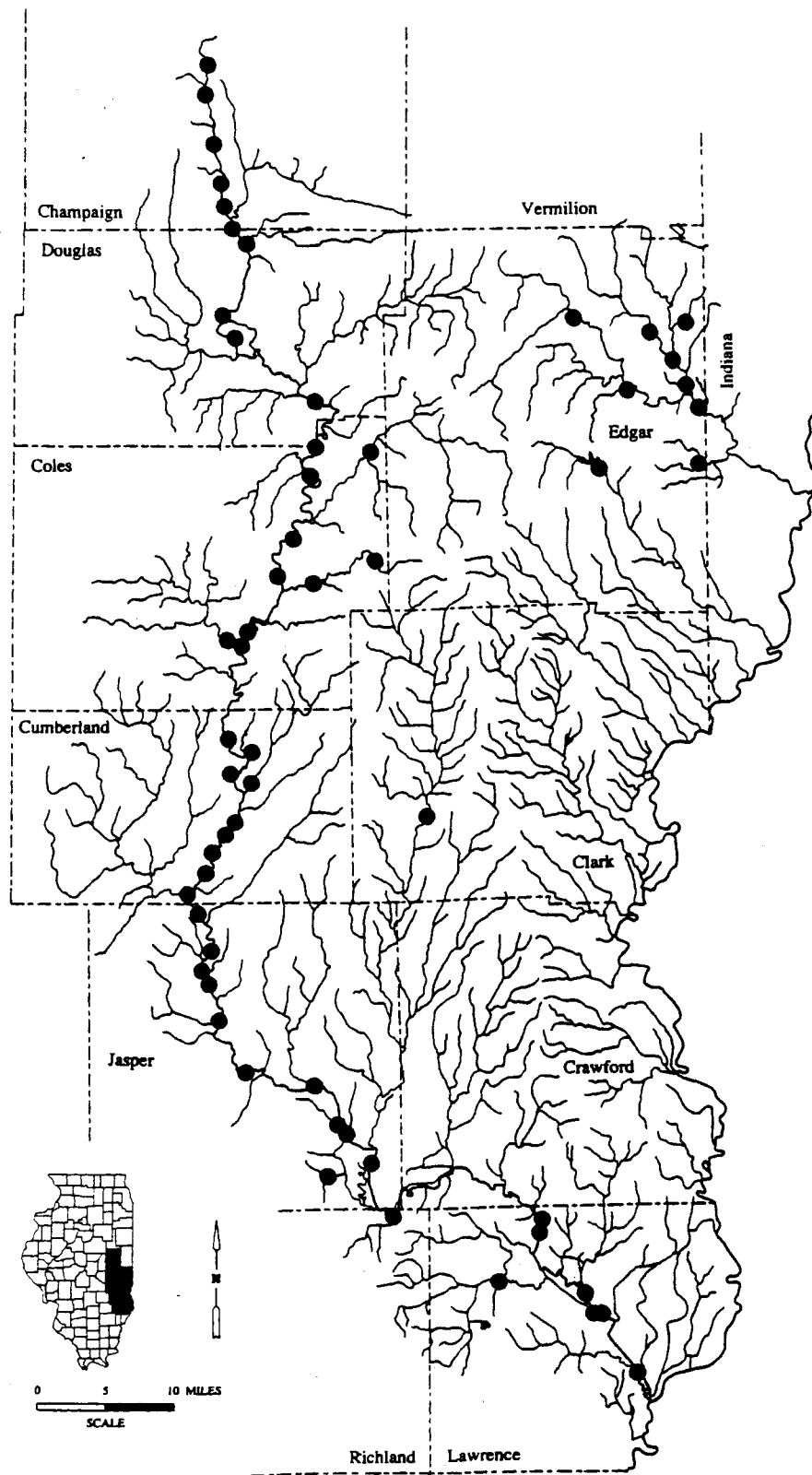


Figure 20-2. Map of mussel collection sites in the Embarras River and Wabash River Tributaries represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 20-2. Freshwater mussels recorded from the Embarras River and Wabash River Tributaries. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. FE = Federally Endangered; FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened; SC = State Candidate; X = Extirpated from Illinois.

<i>Actinonaias ligamentina</i>	
<i>Alasmidonta marginata</i>	
<i>Amblema plicata</i>	
<i>Anodonta grandis</i>	
<i>Anodonta imbecillis</i>	
<i>Anodonta suborbiculata</i>	
<i>Anodontooides ferussacianus</i>	
<i>Cyprogenia stegaria</i>	SE, FE
<i>Elliptio dilatata</i>	SC
<i>Epioblasma triquetra</i>	SE
<i>Fusconaia ebena</i>	SC
<i>Fusconaia flava</i>	
<i>Lampsilis cardium</i>	
<i>Lampsilis siliquoidea</i>	
<i>Lampsilis teres</i>	
<i>Lasmigona complanata</i>	
<i>Lasmigona costata</i>	
<i>Leptodea fragilis</i>	
<i>Ligumia recta</i>	
<i>Ligumia subrostrata</i>	
<i>Megalonaias nervosa</i>	
<i>Obliquaria reflexa</i>	
<i>Obovaria subrotunda</i>	SE
<i>Plethobasus cyphus</i>	ST
<i>Pleurobema sintoxia</i>	
<i>Potamilus alatus</i>	
<i>Potamilus ohioensis</i>	
<i>Ptychobranchus fasciolaris</i>	SE
<i>Quadrula cylindrica</i>	SE
<i>Quadrula metanevra</i>	
<i>Quadrula nodulata</i>	
<i>Quadrula pustulosa</i>	
<i>Quadrula quadrula</i>	
<i>Simpsonaias ambigua</i>	SE, FC
<i>Strophitus undulatus</i>	
<i>Toxolasma lividis</i>	SE, FC
<i>Toxolasma parvus</i>	
<i>Tritogonia verrucosa</i>	
<i>Truncilla donaciformis</i>	
<i>Truncilla truncata</i>	
<i>Uniomerus tetralasmus</i>	ST
<i>Villosa fabalis</i>	SE, FC
<i>Villosa lienosa</i>	SE

Total number of species = 43.

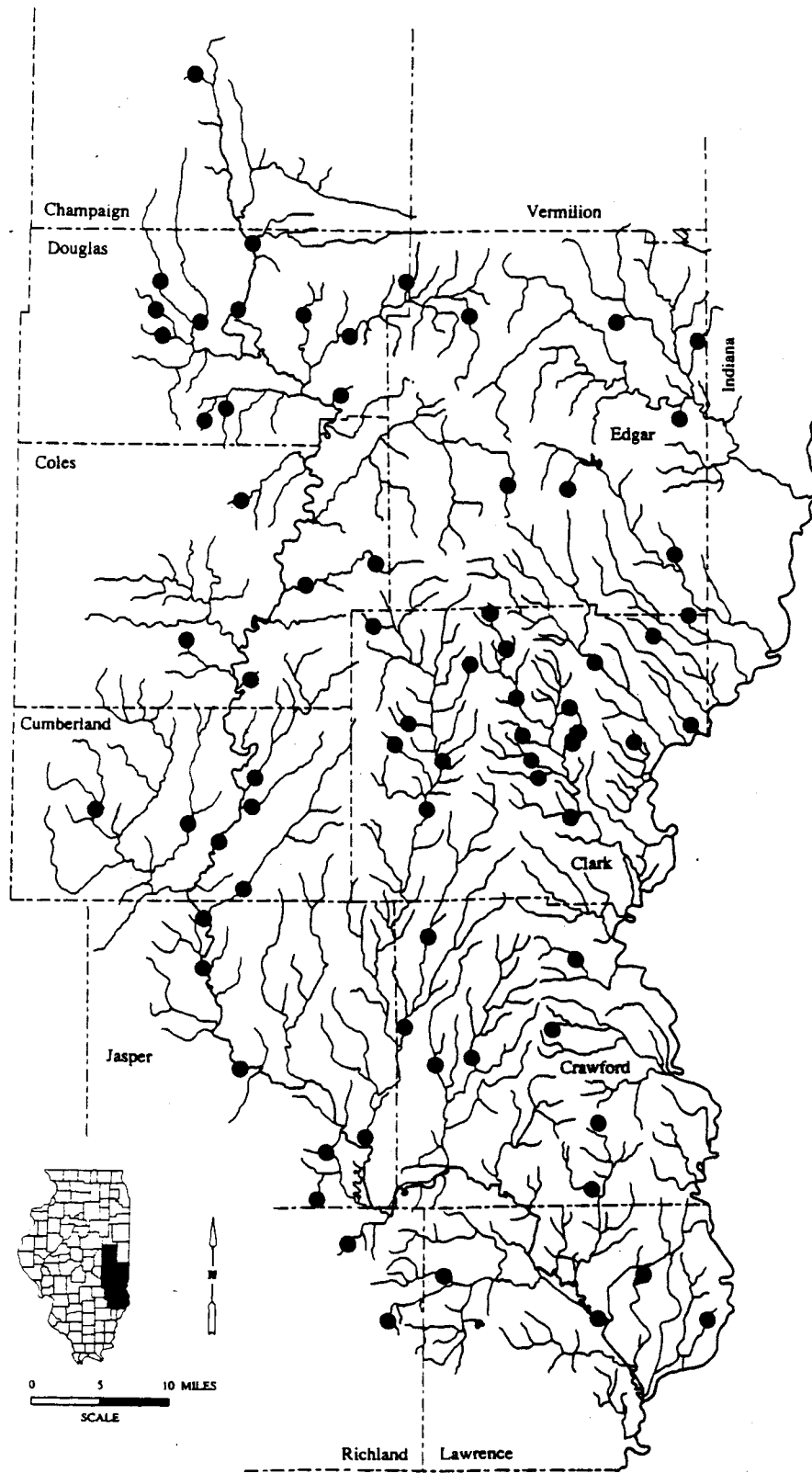


Figure 20-3. Map of crustacean collection sites in the Embarras River and Wabash River Tributaries represented in the Illinois Natural History Survey Crustacean Collection.

Table 20-3. Freshwater crustaceans recorded from the Embarras River and Wabash River tributaries. Data from the Illinois Natural History Survey Crustacean Collection.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea dentadactylus
Caecidotea forbesi
Caecidotea intermedia
Caecidotea kendeighi
Lirceus fontinalis

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Bactrurus mucronatus
Crangonyx forbesi
Crangonyx gracilis
Crangonyx minor
Crangonyx richmondensis

HYALELLIDAE

Hyaella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

CAMBARIDAE

Cambarus diogenes
Fallicambarus fodiens
Orconectes immunis
Orconectes propinquus
Orconectes virilis
Procambarus acutus
Procambarus gracilis

Total number of species = 18.

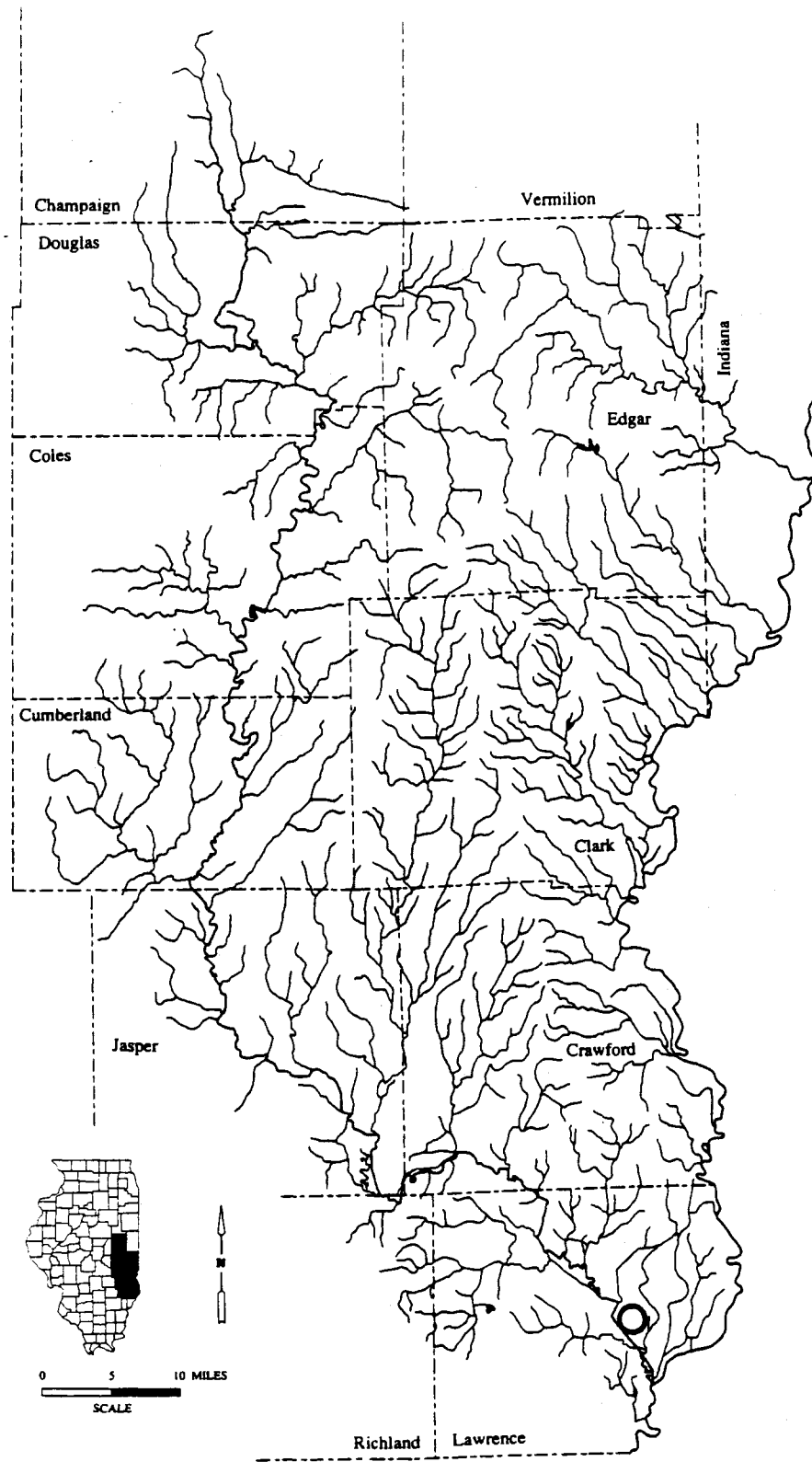


Figure 20-4. Map of historic (open symbols = pre-1980) populations of endangered lotic plants (circles) in the Embarras River System.

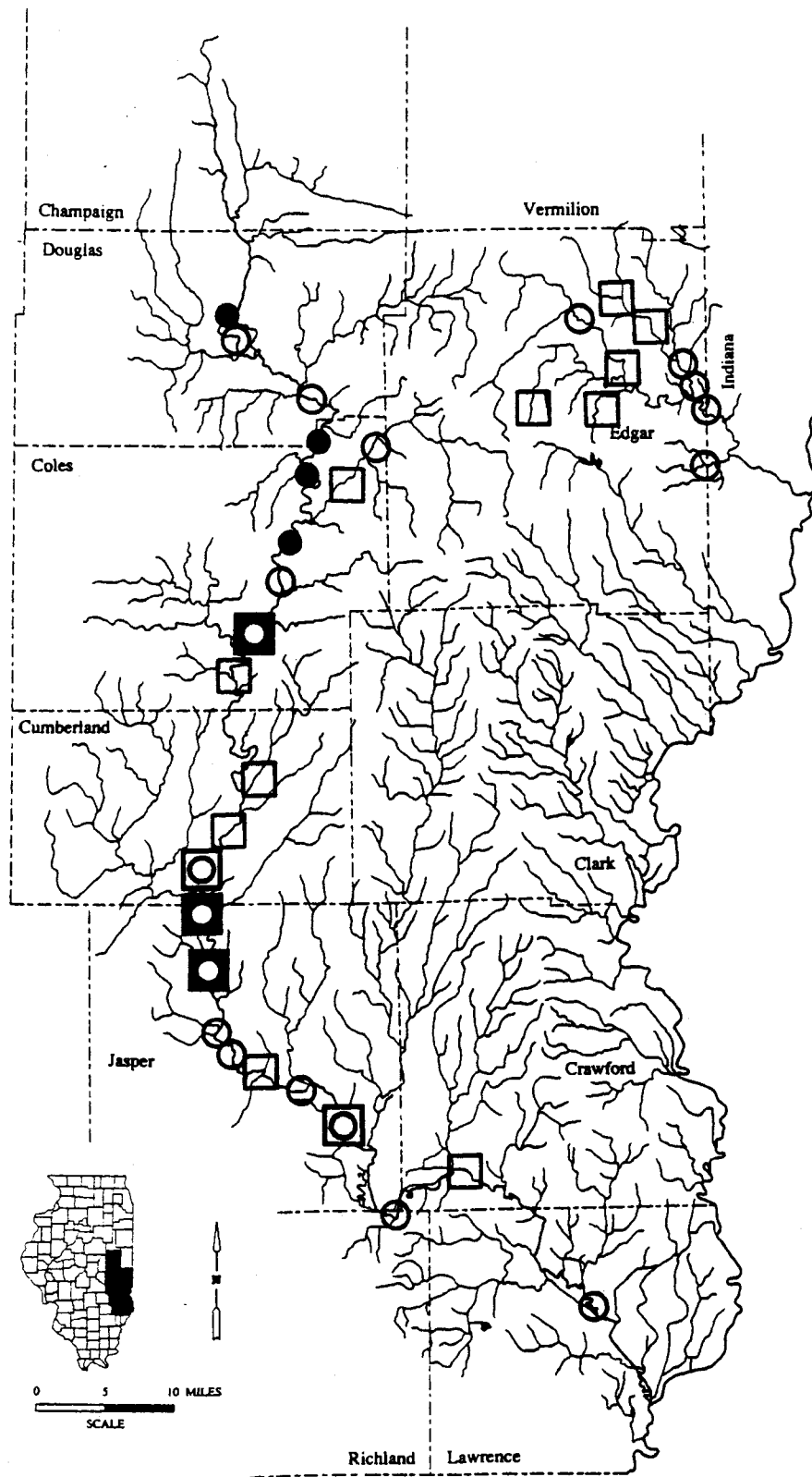
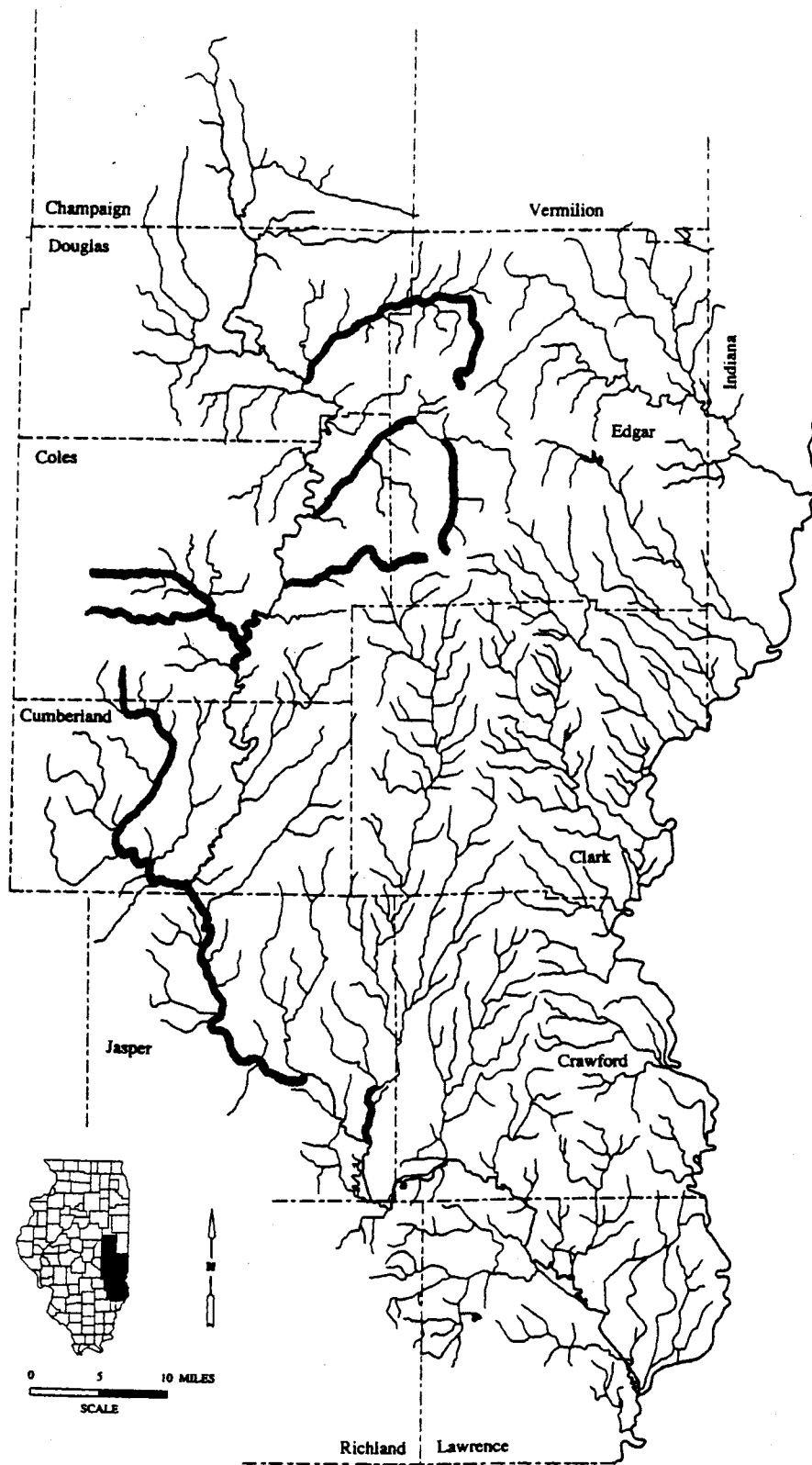
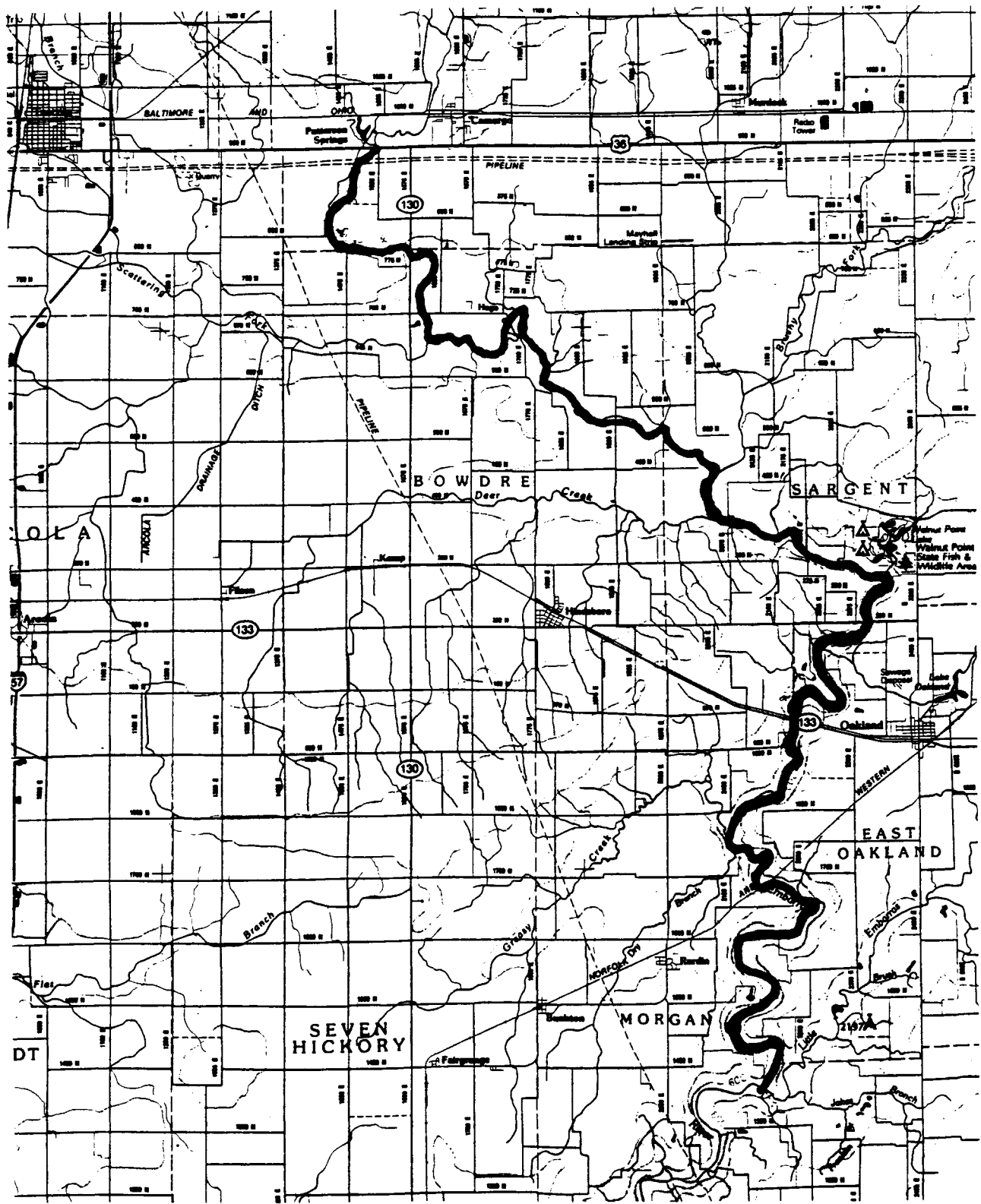


Figure 20-5. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered fishes (squares) and mussels (circles) in the Embarras River and Wabash River Tributaries.

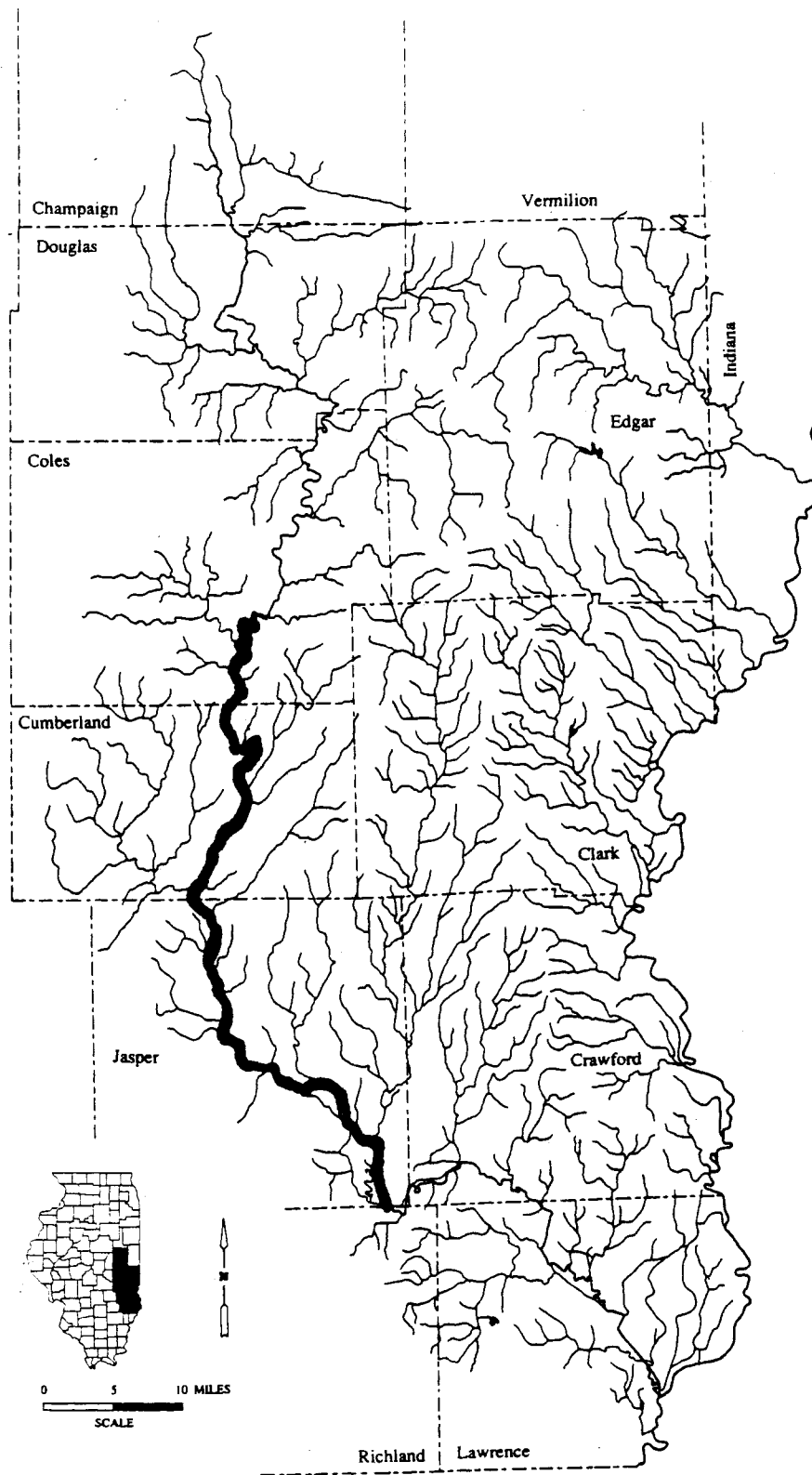


20. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Embarras River and Wabash River Tributaries.



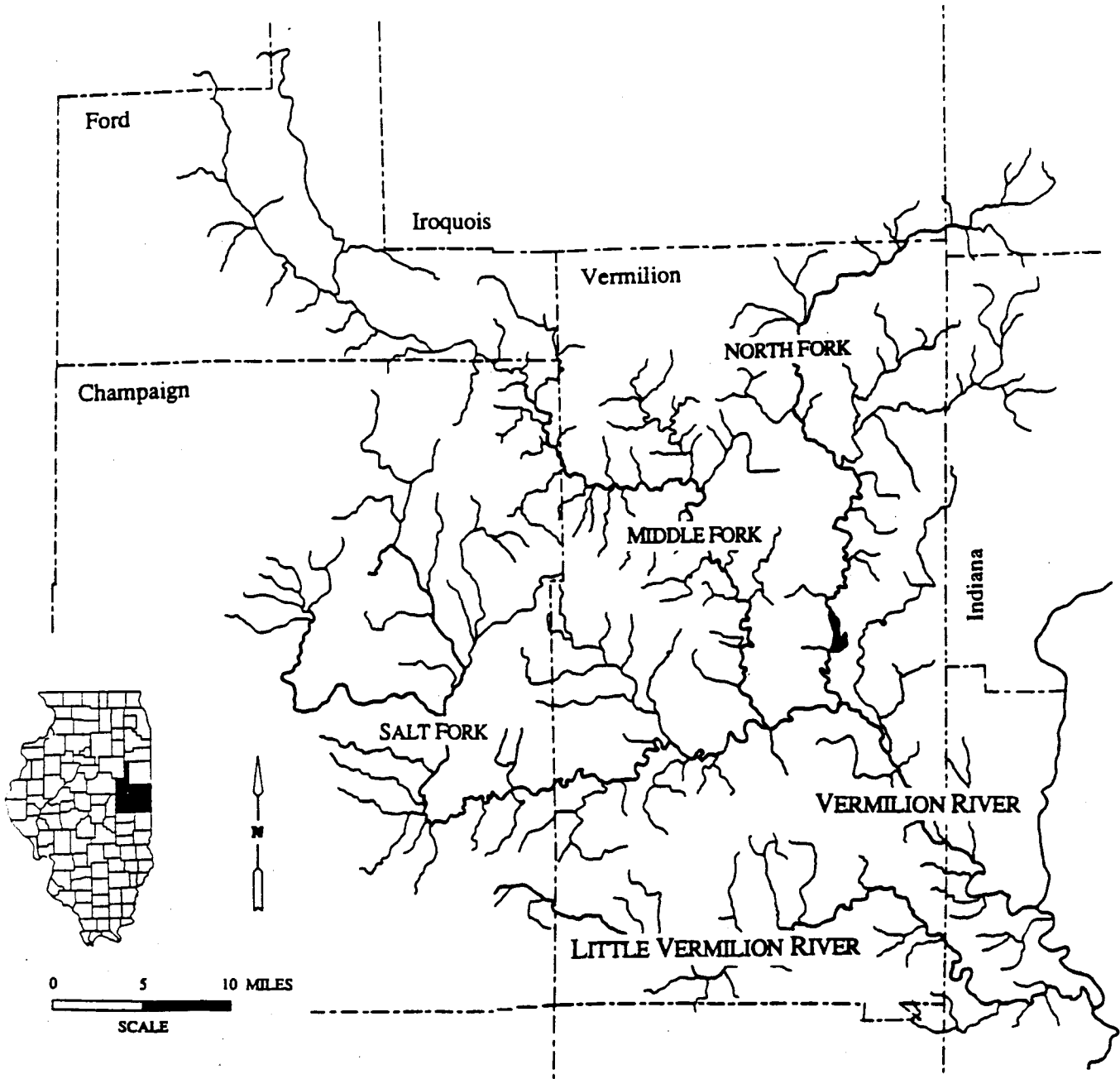
20. The Embarras River and Wabash River Tributaries

- Embarras River, U.S. Rt. 36 to Little Embarras River, Douglas/Coles Co.
 (kidneyshell, snuffbox, high mussel diversity)



20. The Embarras River and Wabash River Tributaries

- Embarras River, Lake Charleston spillway to Jasper/Richland County line (harlequin darter, blue sucker, eastern sand darter, high mussel diversity)



21. Vermilion and Little Vermilion River Systems

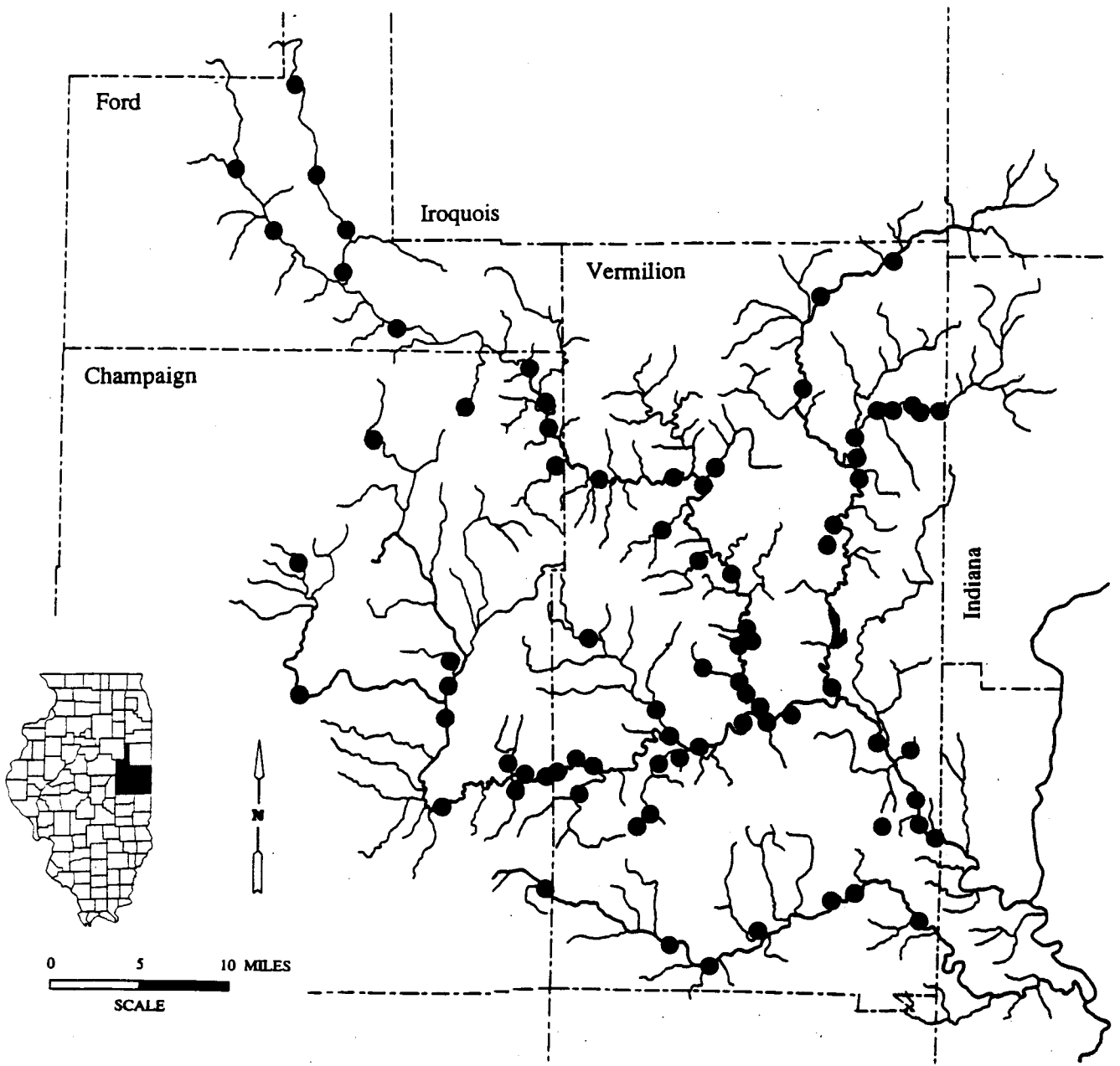


Figure 21-1. Map of fish collection sites in the Vermilion and Little Vermilion River Systems represented in the Illinois Natural History Survey Fish Collection.

Table 21-1. Freshwater fishes recorded from the Vermilion and Little Vermilion River System. Data from the Illinois Natural History Survey Fish Collection. FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened; WL = Watch List; I = Introduced.

PETROMYZONTIDAE	<i>Notropis rubellus</i>	ATHERINIDAE
<i>Ichthyomyzon unicuspis</i>	<i>Notropis volucellus</i>	<i>Labidesthes sicculus</i>
ACIPENSERIDAE	<i>Phenacobius mirabilis</i>	MORONIDAE
<i>Scaphirhynchus platyrhynchus</i>	<i>Pimephales notatus</i>	<i>Morone mississippiensis</i>
LEPISOSTEIDAE	<i>Pimephales promelas</i>	CENTRARCHIDAE
<i>Lepisosteus osseus</i>	<i>Pimephales vigilax</i>	<i>Ambloplites rupestris</i>
ANGUILLIDAE	<i>Rhinichthys atratulus</i>	<i>Chaenobryttus gulosus</i>
<i>Anguilla rostrata</i>	<i>Semotilus atromaculatus</i>	<i>Lepomis cyanellus</i>
CLUPEIDAE	CATOSTOMIDAE	<i>Lepomis humilis</i>
<i>Alosa chrysochloris</i>	<i>Carpiodes carpio</i>	<i>Lepomis macrochirus</i>
<i>Dorosoma cepedianum</i>	<i>Carpiodes cyprinus</i>	<i>Lepomis megalotis</i>
ESOCIDAE	<i>Carpiodes velifer</i>	<i>Lepomis microlophus</i>
<i>Esox americanus</i>	<i>Catostomus commersoni</i>	<i>Micropterus dolomieu</i>
<i>Esox lucius</i>	<i>Erimyzon oblongus</i>	<i>Micropterus punctulatus</i>
CYPRINIDAE	<i>Erimyzon sucetta</i>	<i>Micropterus salmoides</i>
<i>Campostoma anomalum</i>	<i>Hypentelium nigricans</i>	<i>Pomoxis annularis</i>
<i>Campostoma oligolepis</i>	<i>Minytrema melanops</i>	<i>Pomoxis nigromaculatus</i>
<i>Cyprinella lutrensis</i>	<i>Moxostoma anisurum</i>	PERCIDAE
<i>Cyprinella spiloptera</i>	<i>Moxostoma carinatum</i> ST	<i>Etheostoma blennioides</i>
<i>Cyprinella whipplei</i>	<i>Moxostoma duquesnei</i>	<i>Etheostoma caeruleum</i>
<i>Cyprinus carpio</i> I	<i>Moxostoma erythrurum</i>	<i>Etheostoma camurum</i> SE
<i>Ericymba buccata</i>	<i>Moxostoma macrolepidotum</i>	<i>Etheostoma exile</i> ST
<i>Erimystax x-punctatus</i> WL	ICTALURIDAE	<i>Etheostoma flabellare</i>
<i>Extrarius aestivalis</i>	<i>Ameiurus melas</i>	<i>Etheostoma nigrum</i>
<i>Hybognathus nuchalis</i>	<i>Ameiurus natalis</i>	<i>Etheostoma pellucidum</i> SE, FC
<i>Hybopsis amblops</i> SE	<i>Ictalurus punctatus</i>	<i>Etheostoma spectabile</i>
<i>Luxilus chrysocephalus</i>	<i>Noturus eleutherus</i>	<i>Etheostoma zonale</i>
<i>Lythrurus umbratilis</i>	<i>Noturus flavus</i>	<i>Perca flavescens</i>
<i>Macrhybopsis storeriana</i>	<i>Noturus gyrinus</i>	<i>Percina caprodes</i>
<i>Nocomis biguttatus</i>	<i>Noturus miurus</i>	<i>Percina maculata</i>
<i>Nocomis micropogon</i>	<i>Noturus stigmus</i> SE	<i>Percina phoxocephala</i>
<i>Notemigonus crysoleucas</i>	<i>Pylodictis olivaris</i>	<i>Percina sciera</i>
<i>Notropis atherinoides</i>	CYPRINODONTIDAE	<i>Stizostedion canadense</i>
<i>Notropis blennioides</i>	<i>Fundulus notatus</i>	COTTIDAE
<i>Notropis boops</i> ST	POECILIIDAE	<i>Cottus bairdi</i>
<i>Notropis dorsalis</i>	<i>Gambusia affinis</i>	
<i>Notropis ludibundus</i>		

Total number of species = 92 (91 native, 1 introduced)

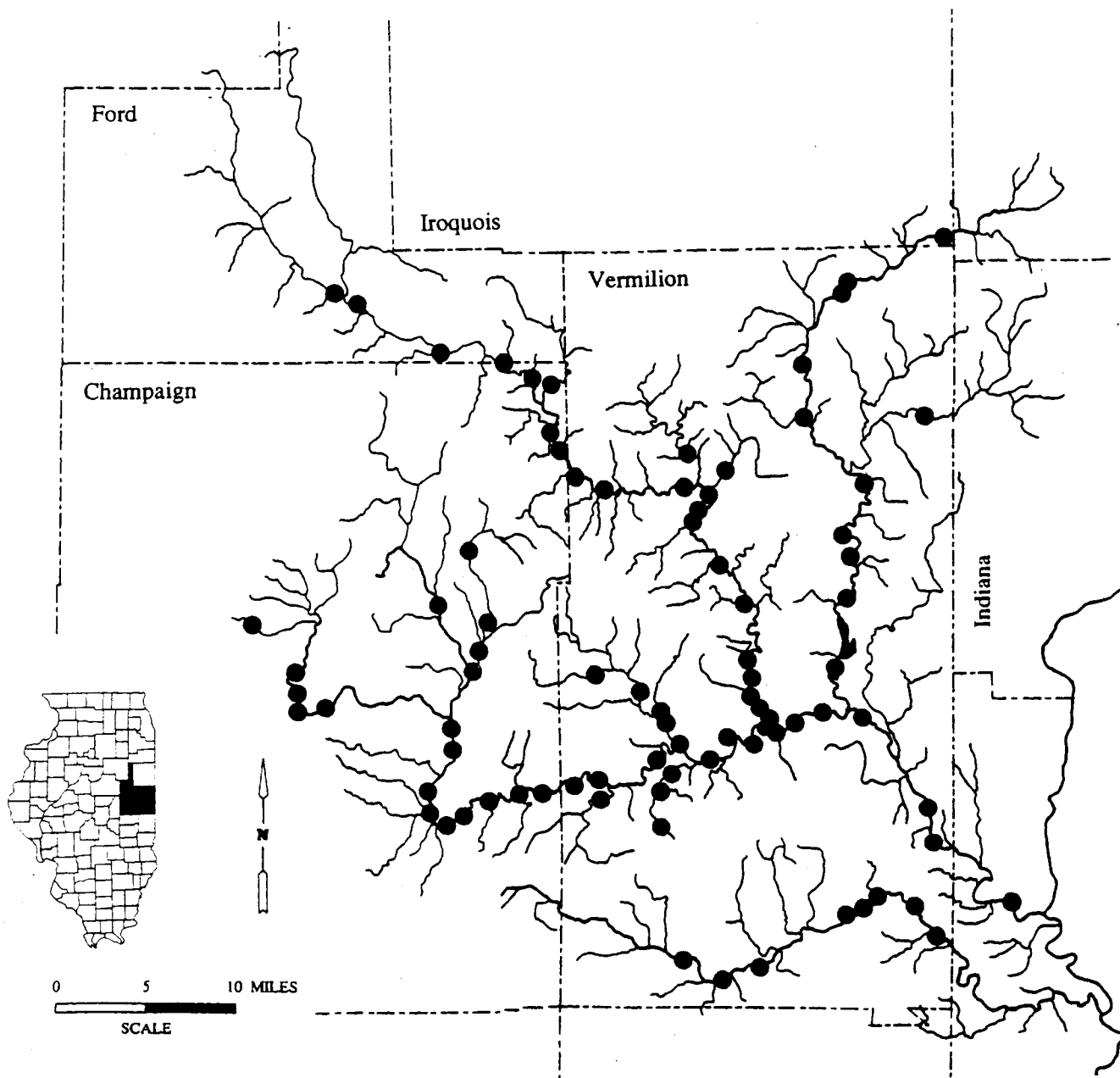


Figure 21-2. Map of mussel collection sites in the Vermilion and Little Vermilion River Systems represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 21-2. Freshwater mussels recorded from the Vermilion and Little Vermilion River Systems. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. FE = Federally Endangered; FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened; SC = State Candidate; X = Extirpated from Illinois.

<i>Actinonaias ligamentina</i>	
<i>Alasmidonta marginata</i>	
<i>Alasmidonta viridis</i>	SE
<i>Amblema plicata</i>	
<i>Anodonta grandis</i>	
<i>Anodonta imbecillis</i>	
<i>Anodontoides ferussacianus</i>	
<i>Cyclonaias tuberculata</i>	
<i>Ellipsaria lineolata</i>	SC
<i>Elliptio dilatata</i>	SC
<i>Epioblasma rangiana</i>	SC, FC, X
<i>Epioblasma triquetra</i>	SE
<i>Fusconaia flava</i>	
<i>Lampsilis cardium</i>	
<i>Lampsilis fasciola</i>	SE
<i>Lampsilis ovata</i>	SC
<i>Lampsilis siliquoidea</i>	
<i>Lampsilis teres</i>	
<i>Lasmigona complanata</i>	
<i>Lasmigona compressa</i>	ST
<i>Lasmigona costata</i>	
<i>Leptodea fragilis</i>	
<i>Ligumia recta</i>	
<i>Megalonaias nervosa</i>	
<i>Obovaria retusa</i>	SE, FE, X
<i>Obovaria subrotunda</i>	SE
<i>Plethobasus cyphus</i>	ST
<i>Pleurobema clava</i>	SE, FC
<i>Pleurobema sintoxia</i>	
<i>Potamilus alatus</i>	
<i>Ptychobranhus fasciolaris</i>	SE
<i>Quadrula cylindrica</i>	SE
<i>Quadrula metanevra</i>	
<i>Quadrula pustulosa</i>	
<i>Quadrula quadrula</i>	
<i>Simpsonaias ambigua</i>	SE, FC
<i>Strophitus undulatus</i>	
<i>Toxolasma lividus</i>	SE, FC
<i>Toxolasma parvus</i>	
<i>Tritogonia verrucosa</i>	
<i>Truncilla truncata</i>	
<i>Uniomerus tetralasmus</i>	ST
<i>Venustaconcha ellipsiformis</i>	SC
<i>Villosa fabalis</i>	SE, FC
<i>Villosa iris</i>	SE
<i>Villosa lienosa</i>	SE

Total number of species = 46.

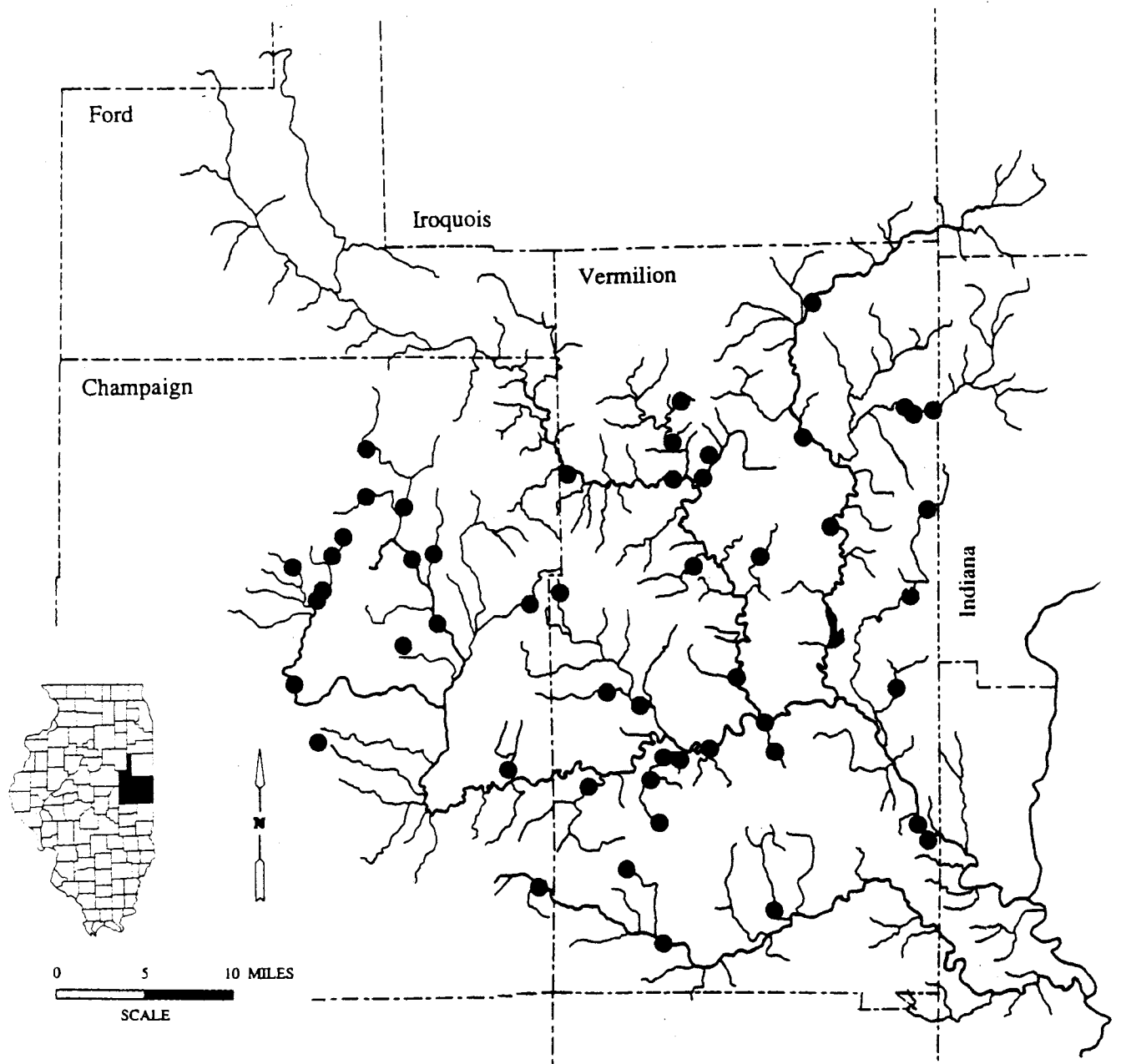


Figure 21-3. Map of crustacean collection sites in the Vermilion and Little Vermilion River Systems represented in the Illinois Natural History Survey Crustacean Collection.

Table 21-3. Freshwater crustaceans recorded from the Vermilion and Little Vermilion River Systems.
Data from the Illinois Natural History Survey Crustacean Collection.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea beattyi
Caecidotea forbesi
Caecidotea intermedia
Caecidotea kendeighi
Lirceus sp.

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Baetrus mucronatus
Crangonyx gracilis
Crangonyx minor

HYALELLIDAE

Hyalella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

CAMBARIDAE

Cambarus diogenes
Cambarus tenebrosus
Orconectes immunis
Orconectes propinquus
Orconectes virilis
Procambarus acutus
Procambarus gracilis

Total number of species = 16.

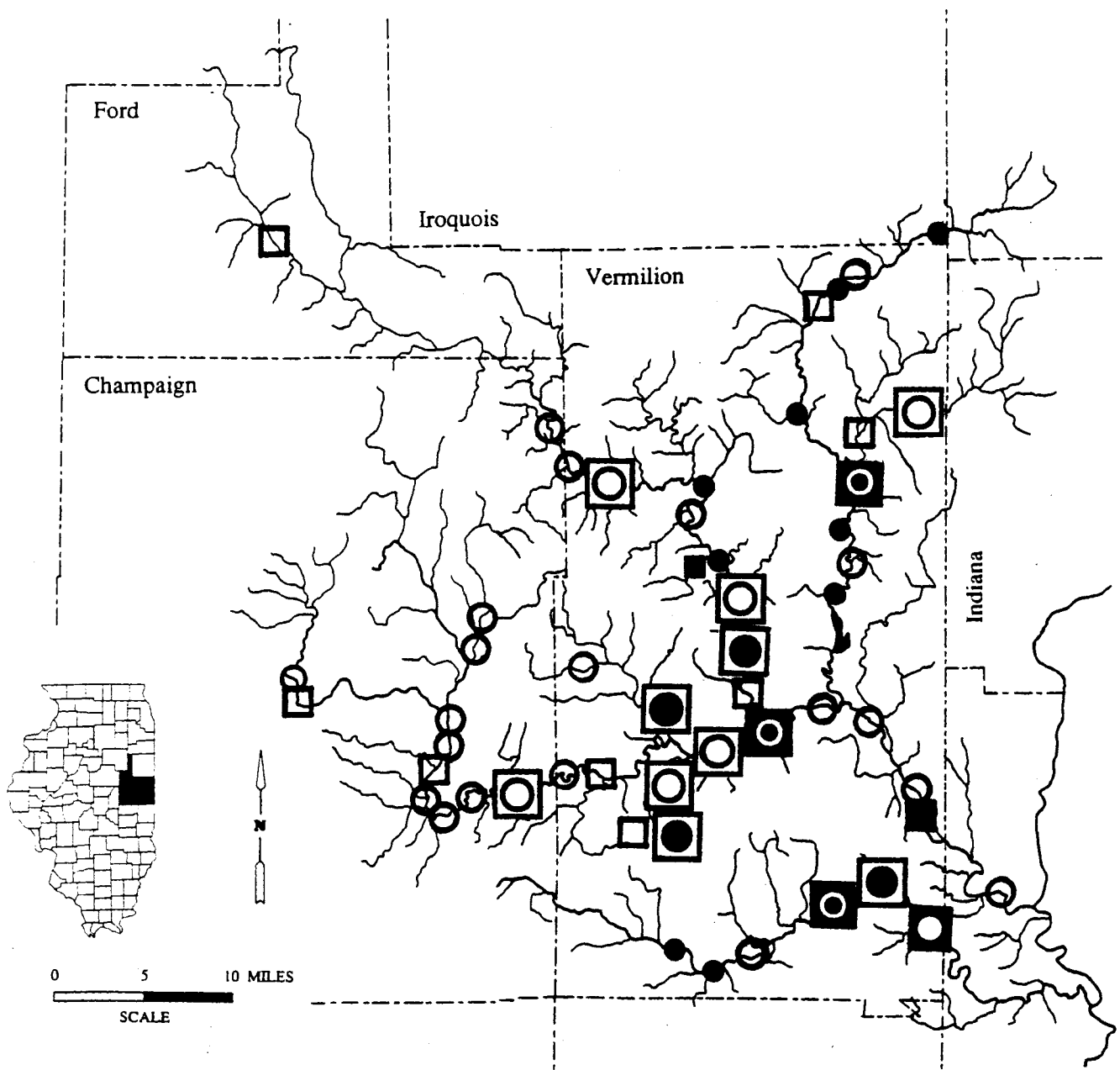
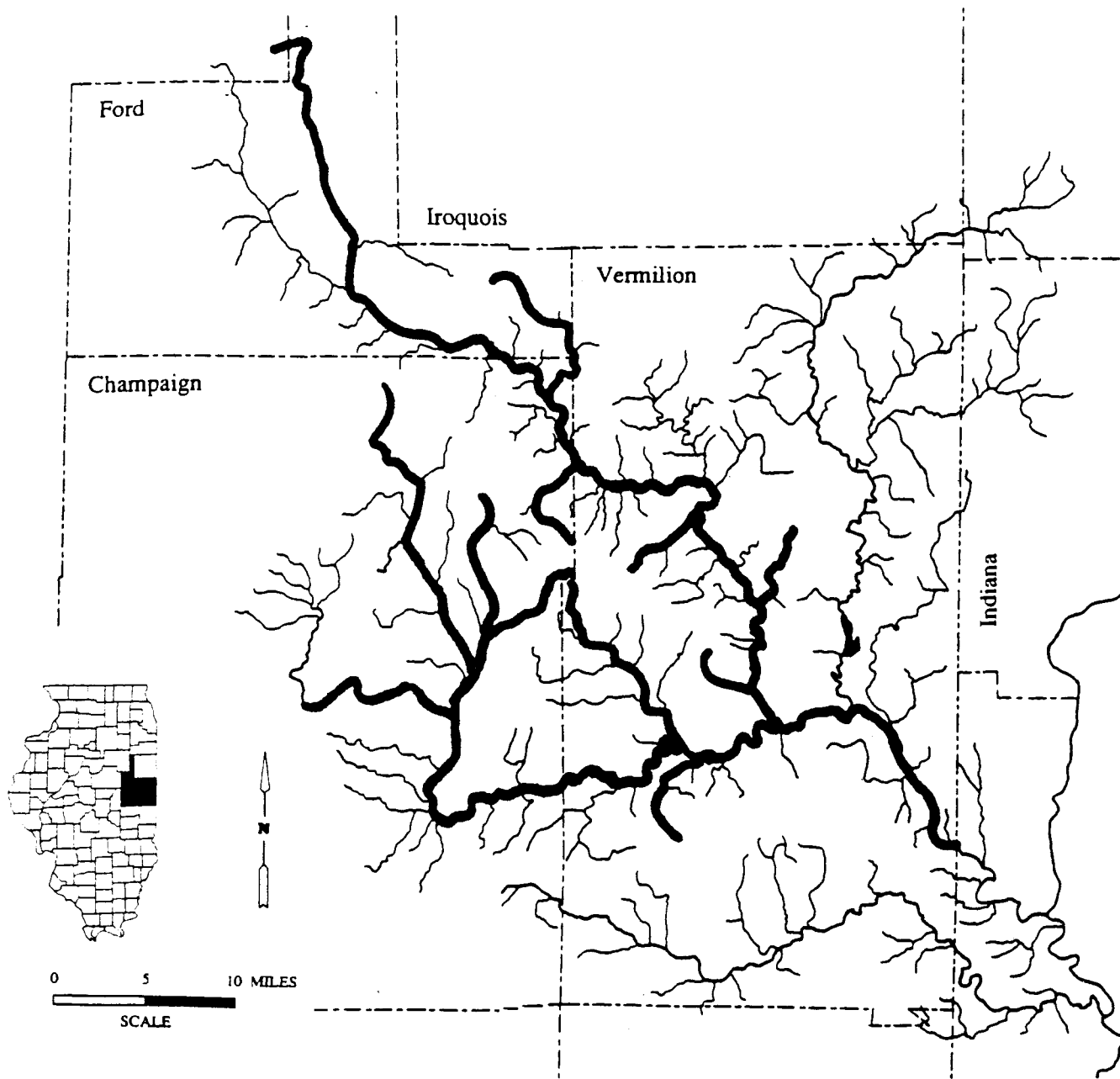
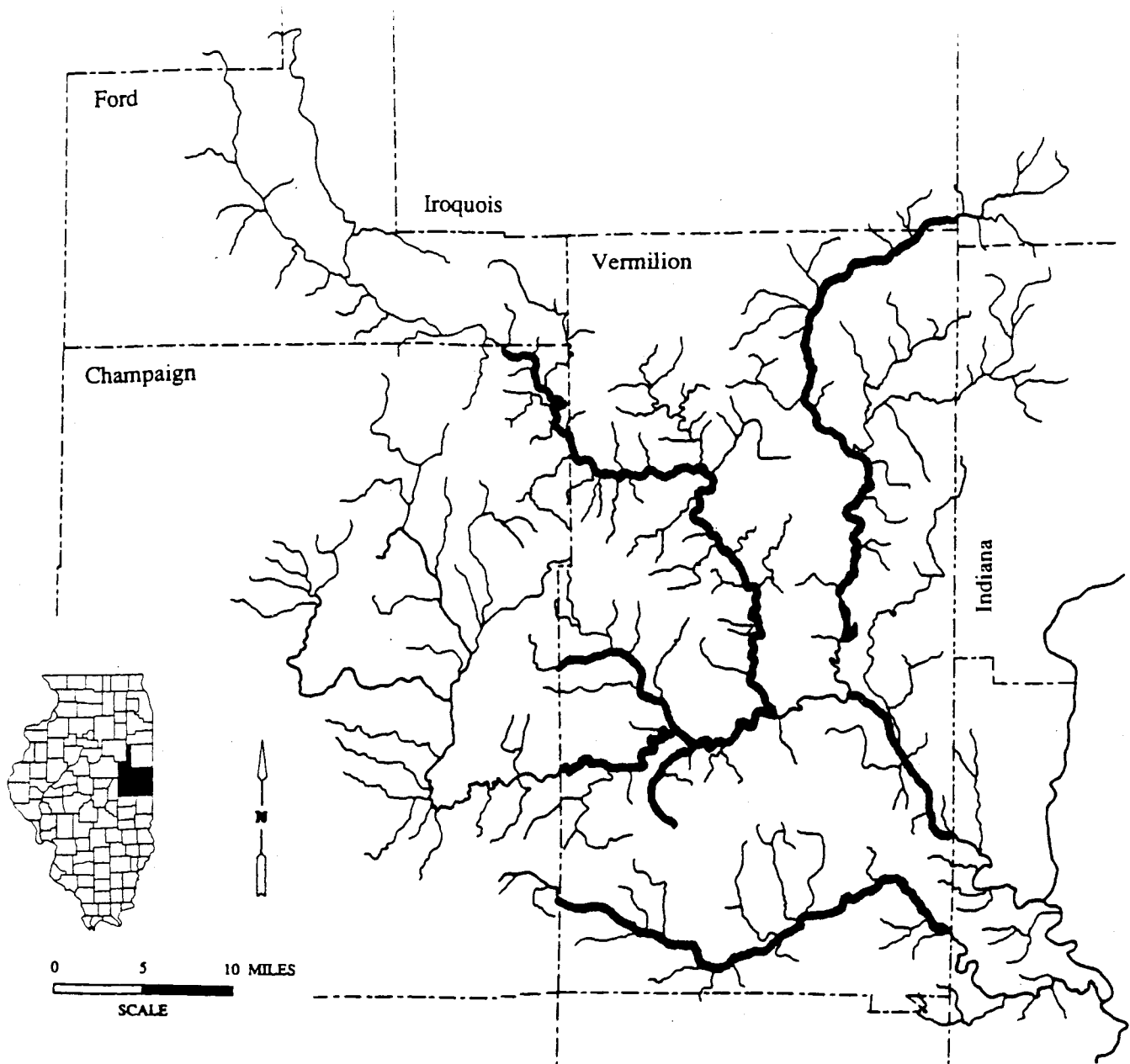


Figure 21-4. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered fishes (squares) and mussels (circles) in the Vermilion and Little Vermilion River Systems.

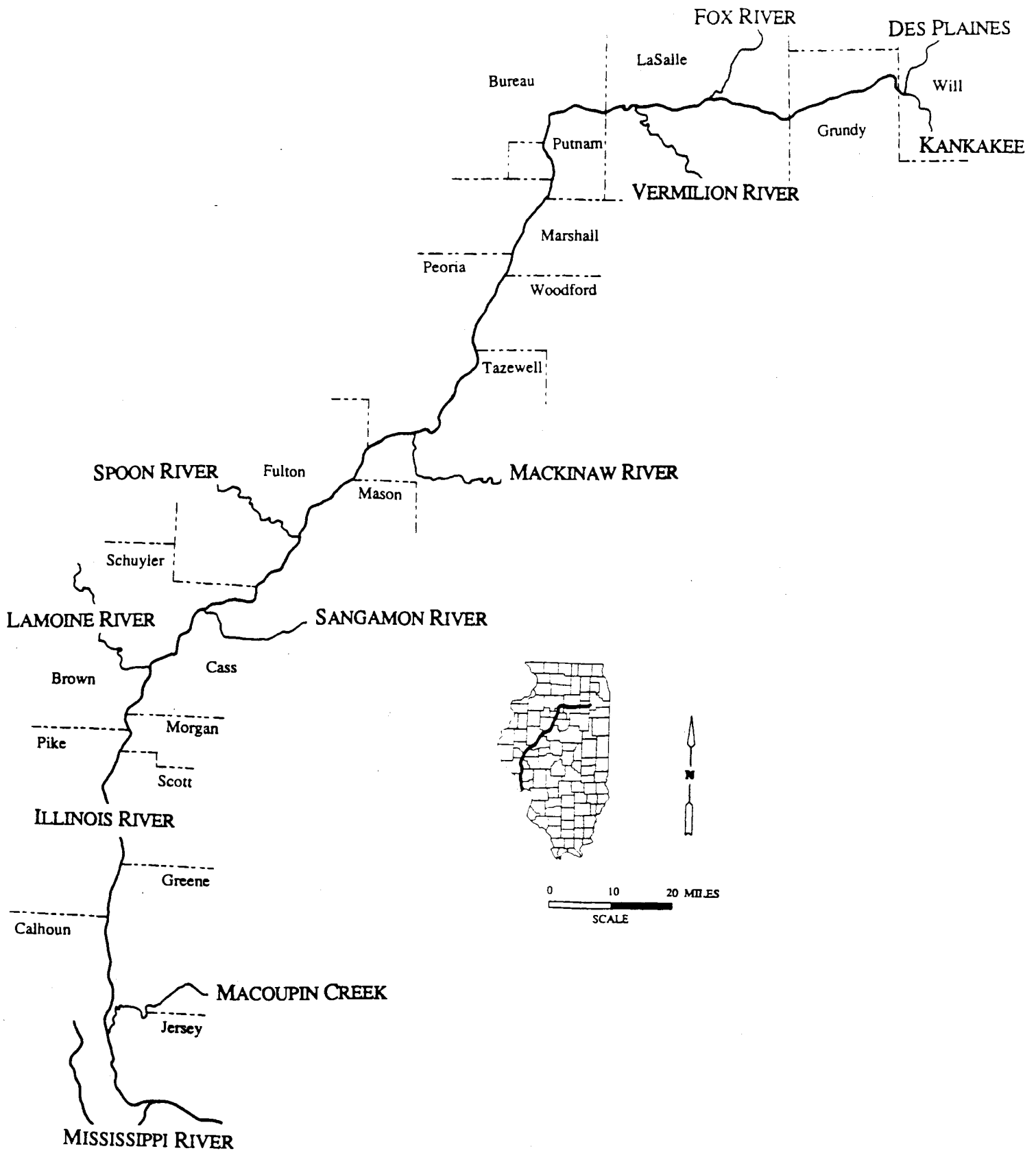


21. Map of Biological Stream Characterization (BSC) "A" and "B" streams in the Vermilion and Little Vermilion River Systems.



21. The Vermilion and Little Vermilion River Systems

- North Fork Vermilion River, Lake Vermilion reservoir upstream to Illinois State line (rabbitsfoot, creek heelsplitter, round hickorynut, kidneyshell, rainbow, little spectaclecase, wavy-rayed lampmussel, high mussel diversity, bigeye shiner, eastern sand darter)
- Middle Fork Vermilion River, Champaign/Vermilion Co. (wavy-rayed lampmussel, high mussel diversity, eastern sand darter, bluebreast darter, BSC Class "A" from mouth to Knights Branch)
- Salt Fork Vermilion River, Champaign Co. line to Middle Fork, Vermilion Co. (wavy-rayed lampmussel, round hickorynut, high mussel diversity, bluebreast darter)
- Jordan Creek, Vermilion Co. (creek heelsplitter, BSC Class "A")
- Stony Creek, Vermilion Co. (creek heelsplitter)
- Little Vermilion River, Vermilion Co. (little spectaclecase, slippershell)
- Vermilion River, Vermilion Co. (eastern sand darter)



22. Illinois River

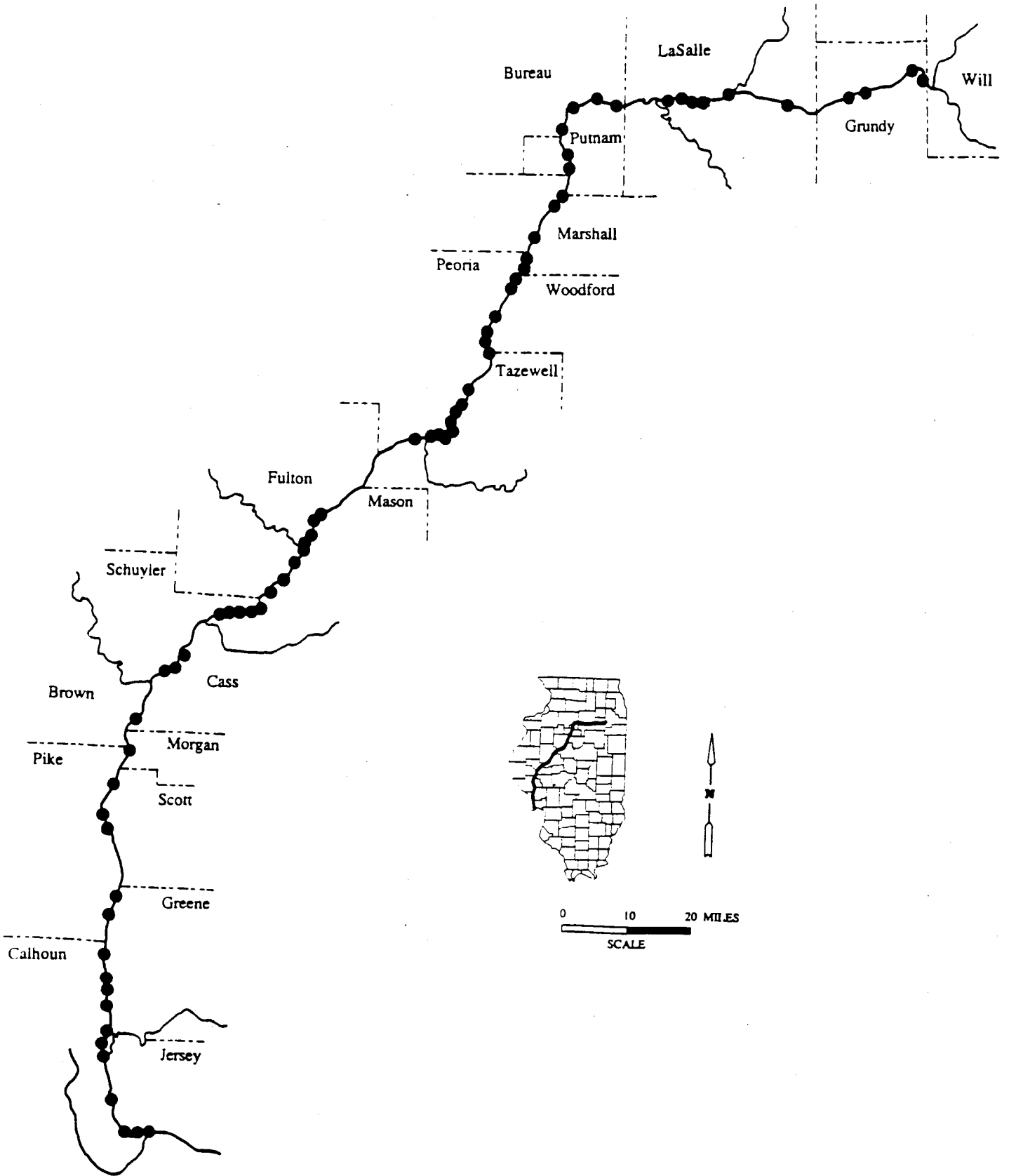


Figure 22-1. Map of fish collection sites in the Illinois River represented in the Illinois Natural History Survey Fish Collection.

Table 22-1. Freshwater fishes recorded from the Illinois River. Data from the Illinois Natural History Survey Fish Collection. FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened; I = Introduced.

PETROMYZONTIDAE	<i>Notemigonus crysoleucas</i>	<i>Fundulus dispar</i>
<i>Ichthyomyzon castaneus</i>	<i>Notropis anogenus</i> SE	<i>Fundulus notatus</i>
<i>Ichthyomyzon unicuspis</i>	<i>Notropis atherinoides</i>	POECILIIDAE
POLYDONTIDAE	<i>Notropis blennioides</i>	<i>Gambusia affinis</i>
<i>Polyodon spathula</i>	<i>Notropis boops</i> ST	APHREDODERIDAE
ACIPENSERIDAE	<i>Notropis buechanani</i>	<i>Aphredoderus sayanus</i>
<i>Acipenser fulvescens</i> ST FC	<i>Notropis dorsalis</i>	ATHERINIDAE
<i>Scaphirhynchus platyrhynchus</i>	<i>Notropis heterodon</i> ST	<i>Labidesthes sicculus</i>
<i>Atractosteus spatula</i> ST	<i>Notropis hudsonius</i>	LOTIDAE
LEPISOSTEIDAE	<i>Notropis ludibundus</i>	<i>Lota lota</i>
<i>Lepisosteus oculatus</i>	<i>Notropis rubellus</i>	PERCOPSIDAE
<i>Lepisosteus osseus</i>	<i>Notropis shumardi</i>	<i>Percopsis omiscomaycus</i>
<i>Lepisosteus platostomus</i>	<i>Notropis texanus</i> SE	GASTEROSTEIDAE
AMIIDAE	<i>Notropis volucellus</i>	<i>Culaea inconstans</i>
<i>Amia calva</i>	<i>Opsopoeodus emiliae</i>	MORONIDAE
ANGUILLIDAE	<i>Phenacobius mirabilis</i>	<i>Morone americana</i> I
<i>Anguilla rostrata</i>	<i>Phoxinus erythrogaster</i>	<i>Morone chrysops</i>
HIODONTIDAE	<i>Pimephales notatus</i>	<i>Morone mississippiensis</i>
<i>Hiodon alosoides</i>	<i>Pimephales promelas</i>	<i>Morone saxatilis</i>
<i>Hiodon tergisus</i>	<i>Pimephales vigilax</i>	CENTRARCHIDAE
CLUPEIDAE	<i>Rhinichthys atratulus</i>	<i>Ambloplites rupestris</i>
<i>Alosa chrysochloris</i>	<i>Semotilus atromaculatus</i>	<i>Chaenobryttus gulosus</i>
<i>Alosa pseudoharengus</i>	CATOSTOMIDAE	<i>Lepomis cyanellus</i>
<i>Dorosoma cepedianum</i>	<i>Carpionodes carpio</i>	<i>Lepomis gibbosus</i>
<i>Dorosoma petenense</i>	<i>Carpionodes cyprinus</i>	<i>Lepomis humilis</i>
SALMONIDAE	<i>Carpionodes velifer</i>	<i>Lepomis macrochirus</i>
<i>Coregonus artedii</i> ST	<i>Catostomus commersoni</i>	<i>Lepomis megalotis</i>
<i>Oncorhynchus mykiss</i>	<i>Cycleptus elongatus</i> FC	<i>Lepomis microlophus</i>
<i>Salmo trutta</i>	<i>Erimyzon succetta</i>	<i>Lepomis microlophus</i> ST
OSMERIDAE	<i>Hypentelium nigricans</i>	<i>Lepomis symmetricus</i> ST
<i>Osmerus mordax</i>	<i>Ictiobus bubalus</i>	<i>Micropterus dolomieu</i>
UMBRIDAE	<i>Ictiobus cyprinellus</i>	<i>Micropterus punctulatus</i>
<i>Umbra limi</i>	<i>Ictiobus niger</i>	<i>Micropterus salmoides</i>
ESOCIDAE	<i>Minytrema melanops</i>	<i>Pomoxis annularis</i>
<i>Esox americanus</i>	<i>Moxostoma anisurum</i>	<i>Pomoxis nigromaculatus</i>
<i>Esox lucius</i>	<i>Moxostoma carinatum</i> ST	PERCIDAE
CYPRINIDAE	<i>Moxostoma duquesnei</i>	<i>Etheostoma asprigene</i>
<i>Campostoma anomalum</i>	<i>Moxostoma erythrurum</i>	<i>Etheostoma chlorosomum</i>
<i>Carassius auratus</i> I	<i>Moxostoma macrolepidotum</i>	<i>Etheostoma clarum</i> SE
<i>Ctenopharyngodon idella</i> I	<i>Moxostoma valenciennesi</i> SE	<i>Etheostoma gracile</i>
<i>Cyprinella lutrensis</i>	ICTALURIDAE	<i>Etheostoma nigrum</i>
<i>Cyprinella spiloptera</i>	<i>Ameiurus catus</i> I	<i>Etheostoma spectabile</i>
<i>Cyprinus carpio</i> I	<i>Ameiurus melas</i>	<i>Etheostoma zonale</i>
<i>Ericymba buccata</i>	<i>Ameiurus natalis</i>	<i>Perca flavescens</i>
<i>Extrarius aestivalis</i>	<i>Ameiurus nebulosus</i>	<i>Percina caprodes</i>
<i>Hybognathus nuchalis</i>	<i>Ictalurus furcatus</i>	<i>Percina maculata</i>
<i>Hybopsis amnis</i> SE	<i>Ictalurus punctatus</i>	<i>Percina phoxocephala</i>
<i>Hypophthalmichthys nobilis</i> I	<i>Noturus flavus</i>	<i>Percina shumardi</i>
<i>Luxilus chrysocephalus</i>	<i>Noturus gyrinus</i>	<i>Stizostedion canadense</i>
<i>Lythrurus umbratilis</i>	<i>Noturus nocturnus</i>	<i>Stizostedion vitreum</i>
<i>Macrhybopsis storeriana</i>	<i>Pylodictis olivaris</i>	SCIAENIDAE
<i>Nocomis biguttatus</i>	CYPRINODONTIDAE	<i>Aplodinotus grunniens</i>

Total number of species = 130 (124 native, 6 introduced)

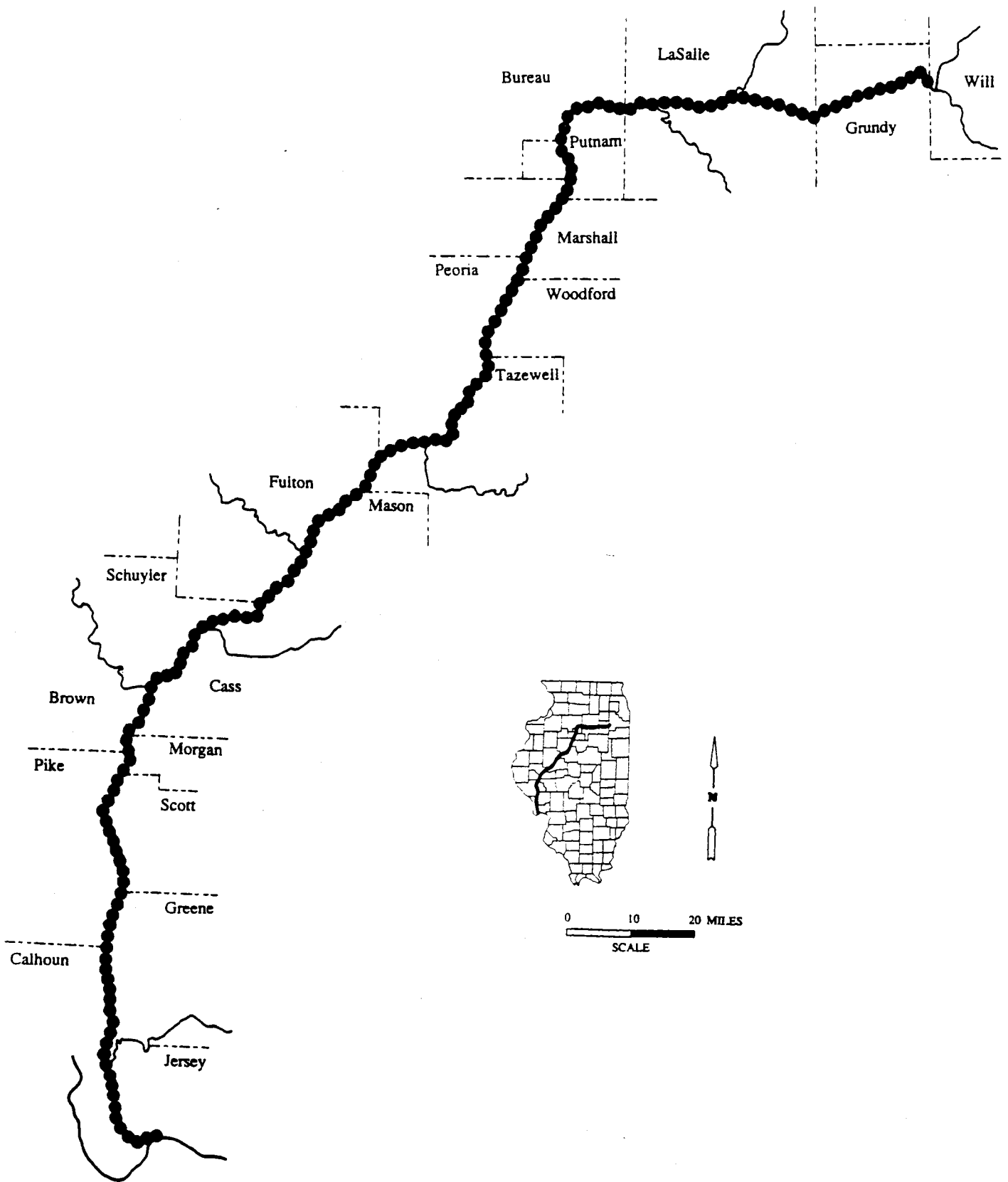


Figure 22-2. Map of mussel collection sites in the Illinois River represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 22-2. Freshwater mussels recorded from the Illinois River Mainstem. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. FE = Federally Endangered; FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened; SC = State Candidate; X = Extirpated from Illinois.

<i>Actinonaias ligamentina</i>	
<i>Alasmidonta marginata</i>	
<i>Alasmidonta viridis</i>	SE
<i>Amblema plicata</i>	
<i>Anodonta grandis</i>	
<i>Anodonta imbecillis</i>	
<i>Anodonta suborbiculata</i>	
<i>Anodontoides ferussacianus</i>	
<i>Arcidens confragosus</i>	
<i>Cumberlandia monodonta</i>	SE, FC
<i>Cyclonaias tuberculata</i>	
<i>Ellipsaria lineolata</i>	SC
<i>Elliptio crassidens</i>	ST
<i>Elliptio dilatata</i>	SC
<i>Epioblasma triquetra</i>	SE
<i>Fusconaia ebena</i>	SC
<i>Fusconaia flava</i>	
<i>Lampsilis cardium</i>	
<i>Lampsilis higginsii</i>	SE, FE
<i>Lampsilis siliquoidea</i>	
<i>Lampsilis teres</i>	
<i>Lasmigona complanata</i>	
<i>Lasmigona compressa</i>	ST
<i>Lasmigona costata</i>	
<i>Leptodea fragilis</i>	
<i>Leptodea leptodon</i>	SE, FC, X
<i>Ligumia recta</i>	
<i>Megalonaias nervosa</i>	
<i>Obliquaria reflexa</i>	
<i>Obovaria olivaria</i>	
<i>Plethobasus cyphyus</i>	ST
<i>Pleurobema sintoxia</i>	
<i>Potamilus alatus</i>	
<i>Potamilus capax</i>	SE, FE
<i>Potamilus ohioensis</i>	
<i>Quadrula metanevra</i>	
<i>Quadrula nodulata</i>	
<i>Quadrula pustulosa</i>	
<i>Quadrula quadrula</i>	
<i>Simpsonaias ambigua</i>	SE, FC
<i>Strophitus undulatus</i>	
<i>Toxolasma parvus</i>	
<i>Tritogonia verrucosa</i>	
<i>Truncilla donaciformis</i>	
<i>Truncilla truncata</i>	
<i>Uniomerus tetralasmus</i>	ST
<i>Villosa iris</i>	SE

Total number of species = 47.

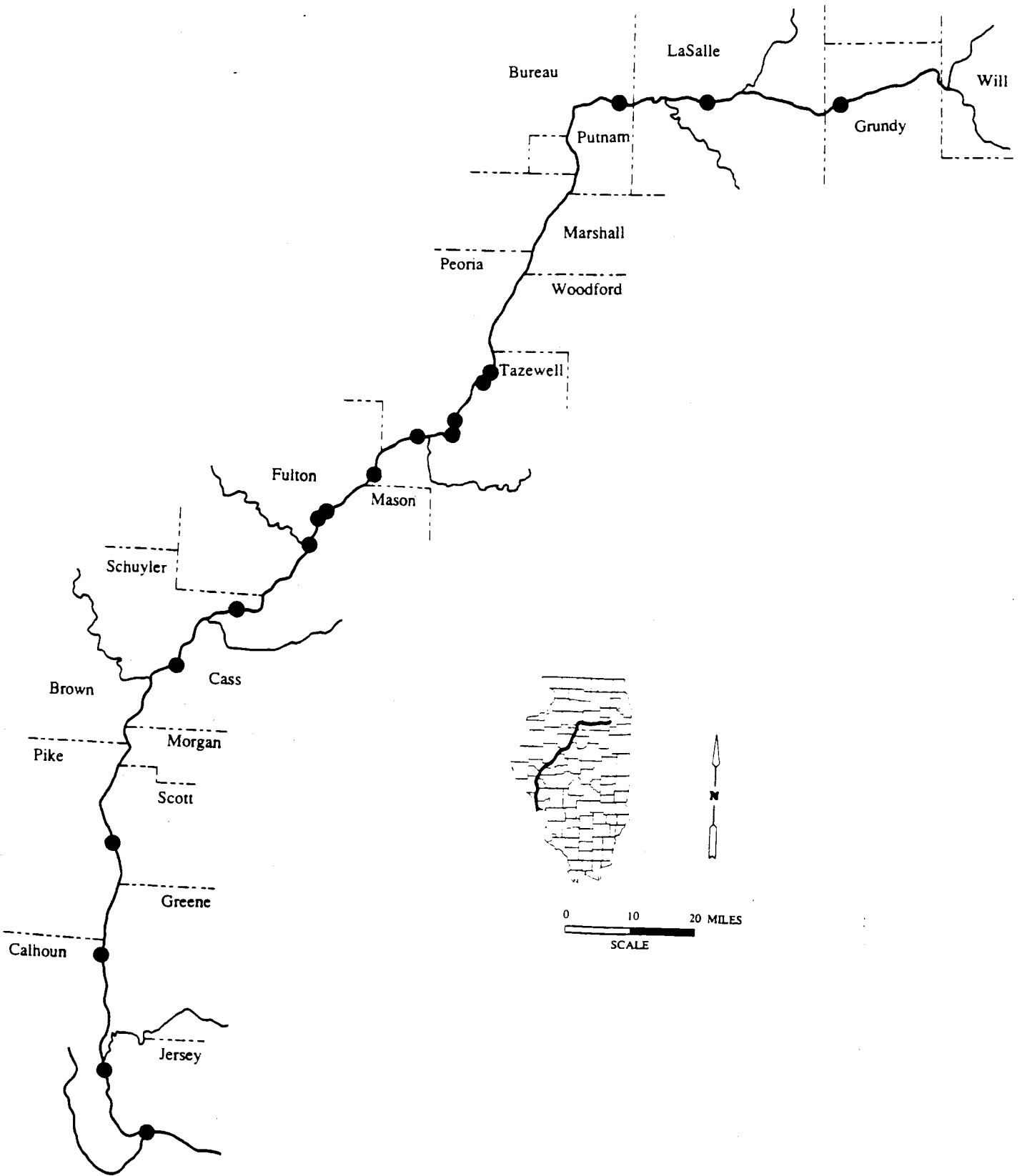


Figure 22-3. Map of crustacean collection sites in the Illinois River represented in the Illinois Natural History Survey Crustacean Collection.

Table 22-3. Freshwater crustaceans recorded from the Illinois River. Data from the Illinois Natural History Survey Crustacean Collection. I = Introduced.

ISOPODA (ISOPODS)

ASELLIDAE

Caecidotea intermedia

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Crangonyx richmondensis

Gammarus pseudolimnaeus

HYALELLIDAE

Hyalella azteca

DECAPODA (CRAYFISHES & SHRIMPS)

PALAEEMONIDAE

Palaemonetes kadiakensis

CAMBARIDAE

Cambarus diogenes

Orconectes immunis

Orconectes propinquus

Orconectes rusticus

I

Orconectes virilis

Procambarus acutus

Total number of species = 11 (10 native, 1 introduced)

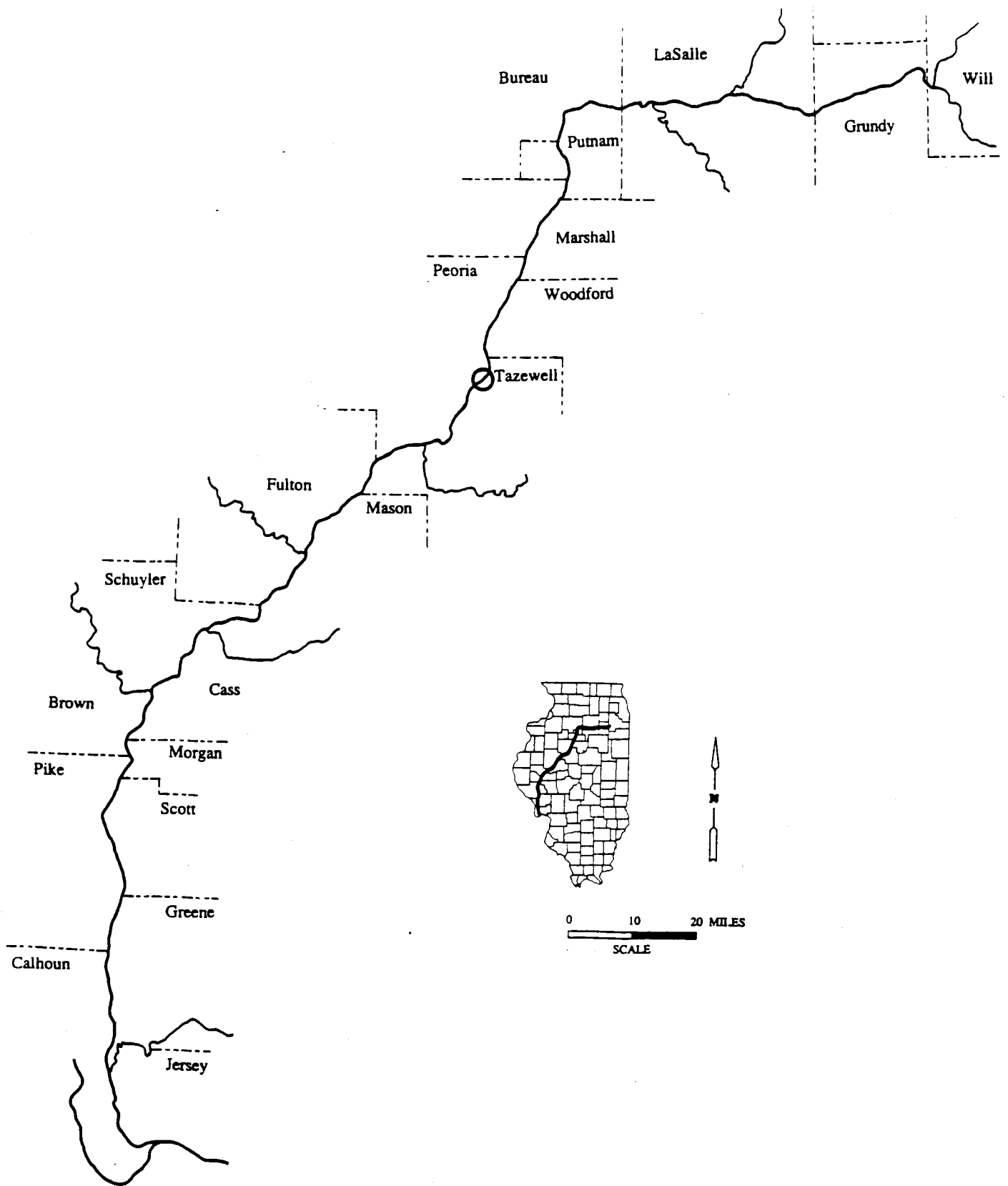


Figure 22-4. Map of historic (open symbols = pre-1980) populations of endangered lotic plants (circles) in the Illinois River System.

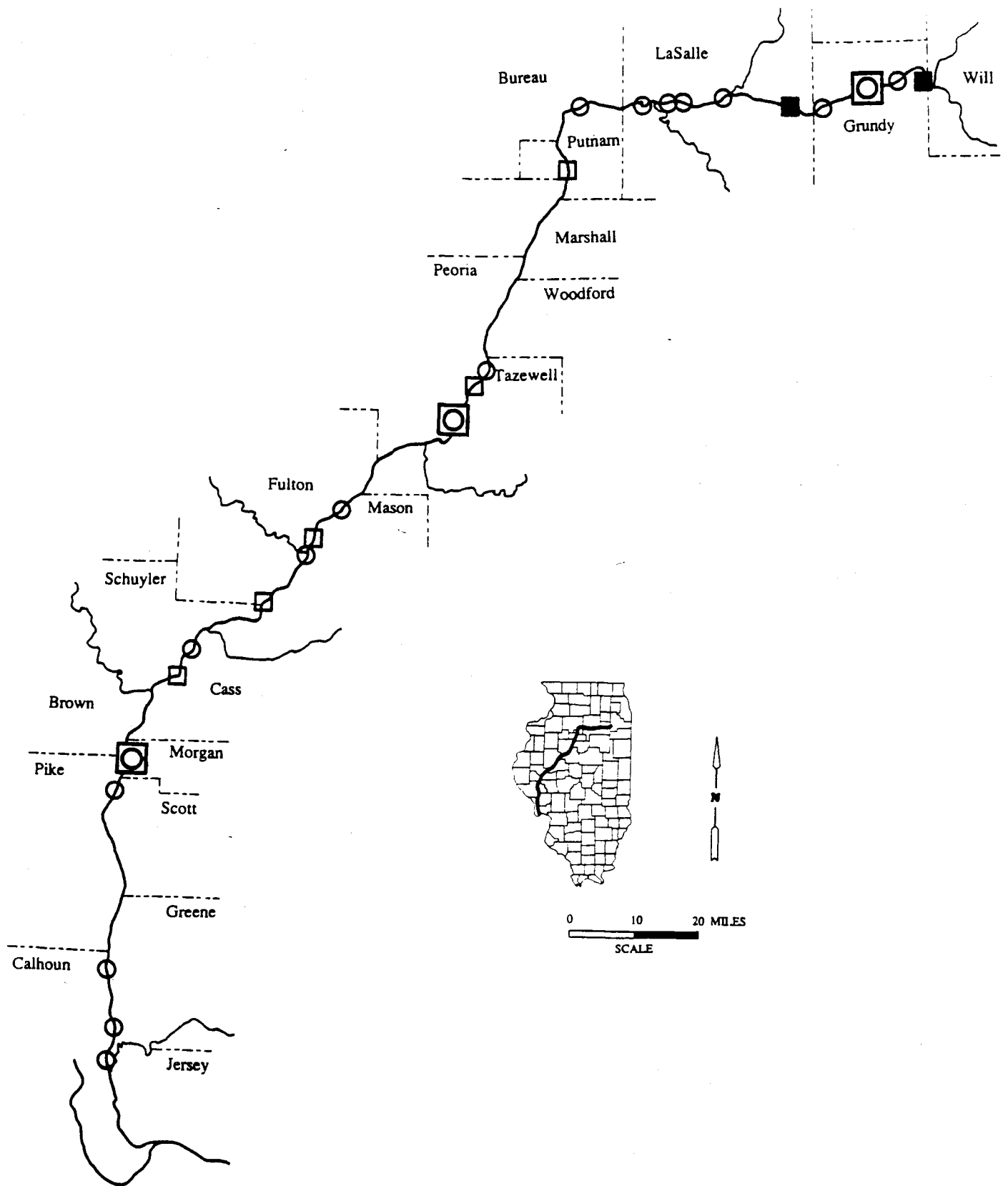
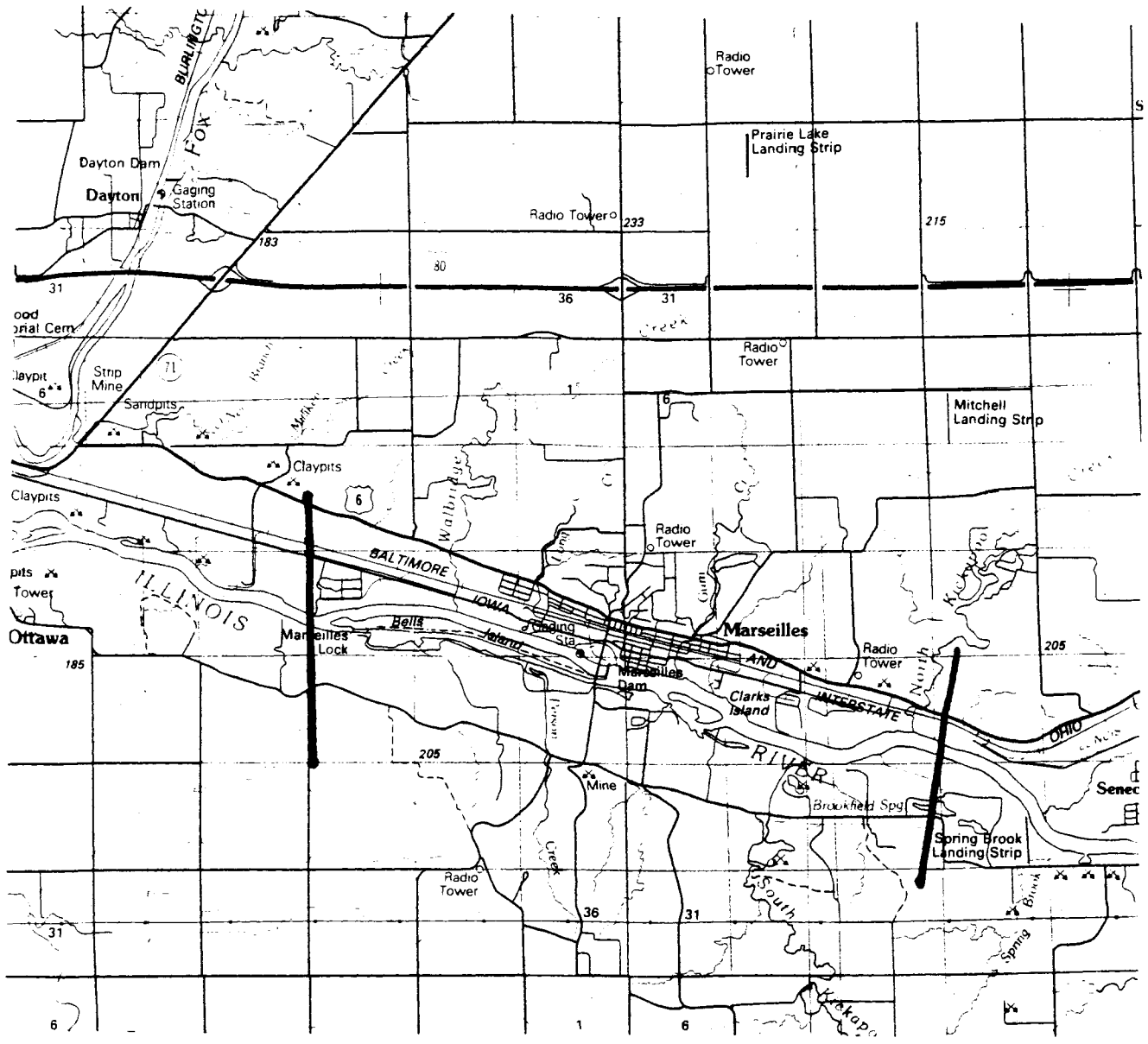
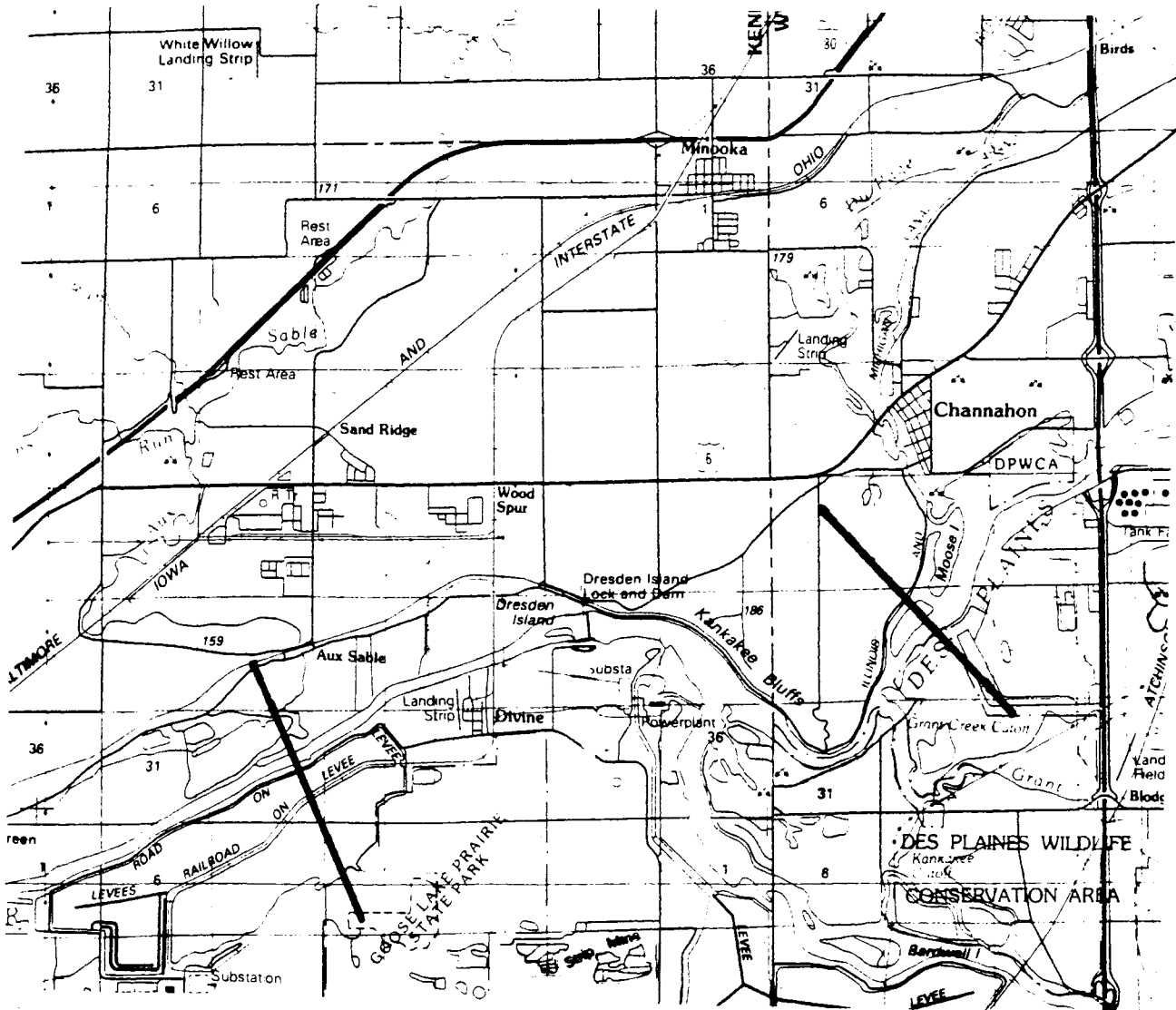


Figure 22-5. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered fishes (squares) and mussels (circles) in the Illinois River.

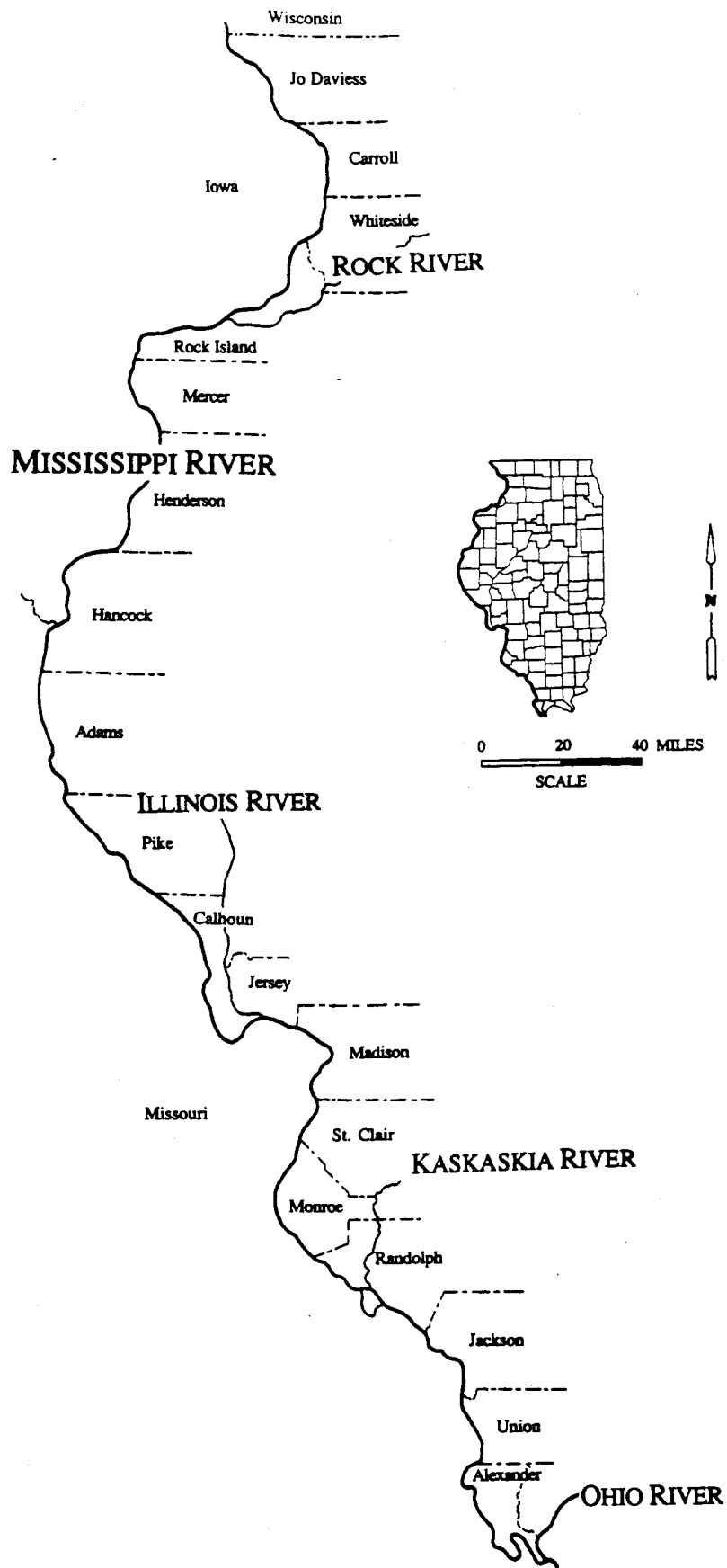


22. The Illinois River (Ottawa 1:100,000)
 - Illinois River, 2.5 mi above and below Marseilles, LaSalle Co.
 (greater redhorse)



22. The Illinois River (Ottawa 1:100,000)

- Illinois River, 2.5 mi above and below Dresden L & D, Grundy/Will Co.
 (pallid shiner, river redhorse, greater redhorse)



23. Mississippi River

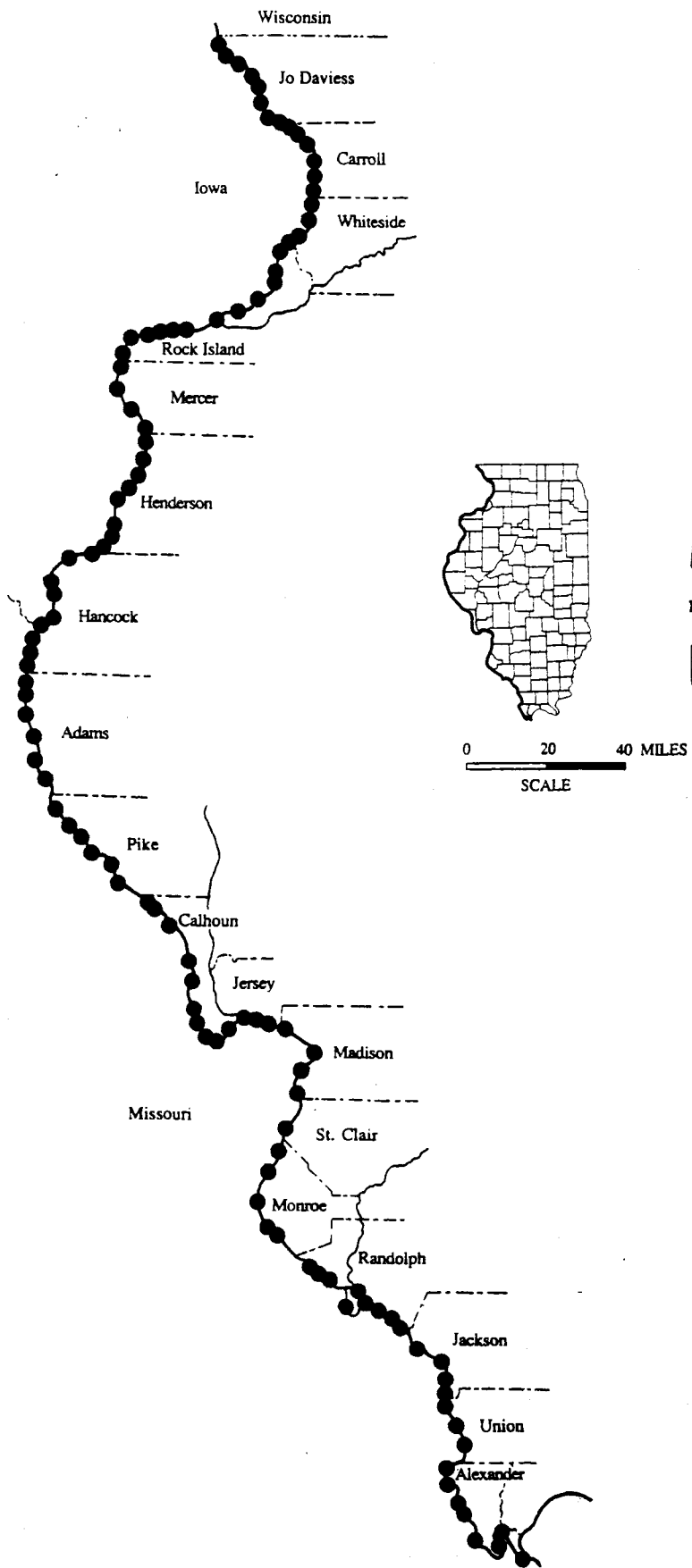


Figure 23-1. Map of fish collection sites in the Mississippi River represented in the Illinois Natural History Survey Fish Collection.

Table 23-1. Freshwater fishes recorded from the Mississippi River. Data from the Illinois Natural History Survey Fish Collection. FE = Federally Endangered; FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened; WL = Watch List; I = Introduced.

PETROMYZONTIDAE	<i>Hybopsis amnis</i> SE	<i>Pylodictis olivaris</i>
<i>Ichthyomyzon castaneus</i>	<i>Hypophthalmichthys molotrix</i> I	CYPRINODONTIDAE
<i>Ichthyomyzon unicuspis</i>	<i>Luxilus chrysocephalus</i>	<i>Fundulus catenatus</i>
POLYDONTIDAE	<i>Luxilus cornutus</i>	<i>Fundulus notatus</i>
<i>Polyodon spathula</i>	<i>Macrhybopsis gelida</i> FC	POECILIIDAE
ACIPENSERIDAE	<i>Macrhybopsis meeki</i> FC	<i>Gambusia affinis</i>
<i>Acipenser fulvescens</i> ST FC	<i>Macrhybopsis storeriana</i>	APHREDODERIDAE
<i>Scaphirhynchus albus</i> FE	<i>Nocomis biguttatus</i>	<i>Aphredoderus sayanus</i>
<i>Scaphirhynchus platyrhynchus</i>	<i>Notemigonus crysoleucas</i>	ATHERINIDAE
LEPISOSTEIDAE	<i>Notropis atherinoides</i>	<i>Labidesthes sicculus</i>
<i>Lepisosteus oculatus</i>	<i>Notropis blennioides</i>	<i>Menidia beryllina</i>
<i>Lepisosteus osseus</i>	<i>Notropis bethlemi</i>	LOTIDAE
<i>Lepisosteus platostomus</i>	<i>Notropis dorsalis</i>	<i>Lota lota</i>
AMIIDAE	<i>Notropis hudsonius</i>	PERCOPSIDAE
<i>Amia calva</i>	<i>Notropis ludibundus</i>	<i>Percopsis omiscomaycus</i>
ANGUILLIDAE	<i>Notropis nubilis</i>	MORONIDAE
<i>Anguilla rostrata</i>	<i>Notropis shumardi</i>	<i>Morone chrysops</i>
HIODONTIDAE	<i>Notropis volucellus</i>	<i>Morone mississippiensis</i>
<i>Hiodon alosoides</i>	<i>Opsopoeodus emiliae</i>	CENTRARCHIDAE
<i>Hiodon tergisus</i>	<i>Phenacobius mirabilis</i>	<i>Ambloplites rupestris</i>
CLUPEIDAE	<i>Pimephales notatus</i>	<i>Chaenobryttus gulosus</i>
<i>Alosa alabamiae</i>	<i>Pimephales promelas</i>	<i>Lepomis cyanellus</i>
<i>Alosa chrysochloris</i>	<i>Pimephales vigilax</i>	<i>Lepomis gibbosus</i>
<i>Dorosoma cepedianum</i>	<i>Platygobio gracilis</i>	<i>Lepomis humilis</i>
<i>Dorosoma petenense</i>	<i>Rhinichthys atratulus</i>	<i>Lepomis macrochirus</i>
SALMONIDAE	<i>Semotilus atromaculatus</i>	<i>Lepomis megalotis</i>
<i>Oncorhynchus mykiss</i>	CATOSTOMIDAE	<i>Micropterus dolomieu</i>
OSMERIDAE	<i>Carpiodes carpio</i>	<i>Micropterus salmoides</i>
<i>Osmerus mordax</i>	<i>Carpiodes cyprinus</i>	<i>Pomoxis annularis</i>
UMBRIDAE	<i>Carpiodes velifer</i>	<i>Pomoxis nigromaculatus</i>
<i>Umbra limi</i>	<i>Catostomus commersoni</i>	PERCIDAE
ESOCIDAE	<i>Cycleptus elongatus</i> FC	<i>Crystallaria asprella</i>
<i>Esox americanus</i>	<i>Ictiobus bubalus</i>	<i>Etheostoma asprigene</i>
<i>Esox lucius</i>	<i>Ictiobus cyprinellus</i>	<i>Etheostoma chlorosomum</i>
CYPRINIDAE	<i>Ictiobus niger</i>	<i>Etheostoma clarum</i> SE
<i>Campostoma anomalum</i>	<i>Minytrema melanops</i>	<i>Etheostoma nigrum</i>
<i>Carassius auratus</i> I	<i>Moxostoma anisurum</i>	<i>Perca flavescens</i>
<i>Ctenopharyngodon idella</i> I	<i>Moxostoma erythrurum</i>	<i>Percina caprodes</i>
<i>Cyprinella lutrensis</i>	<i>Moxostoma macrolepidotum</i>	<i>Percina phoxocephala</i>
<i>Cyprinella spiloptera</i>	ICTALURIDAE	<i>Percina shumardi</i>
<i>Cyprinella whipplei</i>	<i>Ameiurus catus</i>	<i>Stizostedion canadense</i>
<i>Cyprinus carpio</i> I	<i>Ameiurus melas</i>	<i>Stizostedion vitreum</i>
<i>Ericymba buccata</i>	<i>Ameiurus natalis</i>	SCIAENIDAE
<i>Erimystax x-punctatus</i> WL	<i>Ictalurus furcatus</i>	<i>Aplodinotus grunniens</i>
<i>Extrarius aestivalis</i>	<i>Ictalurus punctatus</i>	COTTIDAE
<i>Hybognathus argyritis</i>	<i>Noturus flavus</i>	<i>Cottus caroliniae</i>
<i>Hybognathus nuchalis</i>	<i>Noturus gyrinus</i>	
<i>Hybognathus placitus</i>	<i>Noturus nocturnus</i>	

Total number of species = 116 (112 native, 4 introduced)

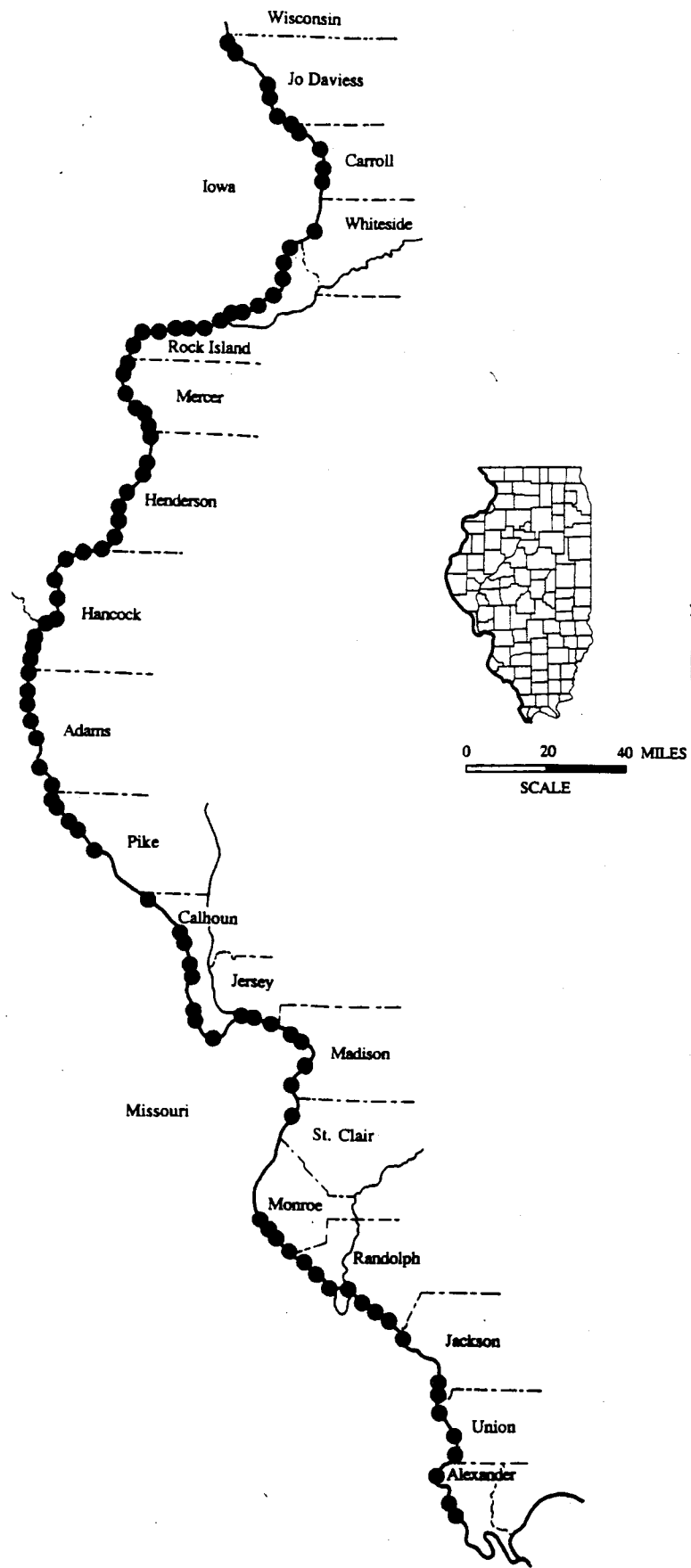


Figure 23-2. Map of mussel collection sites in the Mississippi River represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 23-2. Freshwater mussels recorded from the Mississippi River Mainstem. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. FE = Federally Endangered; FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened; SC = State Candidate; X = Extirpated from Illinois.

<i>Actinonaias ligamentina</i>		<i>Ligumia recta</i>	
<i>Alasmidonta marginata</i>		<i>Ligumia subrostrata</i>	
<i>Alasmidonta viridis</i>	SE	<i>Megalonaias nervosa</i>	
<i>Amblema plicata</i>		<i>Obliquaria reflexa</i>	
<i>Anodonta grandis</i>		<i>Obovaria olivaria</i>	
<i>Anodonta imbecillis</i>		<i>Plethobasus cyphus</i>	ST
<i>Anodonta suborbiculata</i>		<i>Pleurobema sintoxia</i>	
<i>Anodontoides ferussacianus</i>		<i>Potamilus alatus</i>	
<i>Arcidens confragosus</i>		<i>Potamilus capax</i>	SE, FE
<i>Cumberlandia monodonta</i>	SE, FC	<i>Potamilus ohioensis</i>	
<i>Cyclonaias tuberculata</i>		<i>Potamilus purpuratus</i>	SC
<i>Ellipsaria lineolata</i>	SC	<i>Quadrula fragosa</i>	SE, FE, X
<i>Elliptio crassidens</i>	ST	<i>Quadrula metanevra</i>	
<i>Elliptio dilatata</i>	SC	<i>Quadrula nodulata</i>	
<i>Epioblasma triquetra</i>	SE	<i>Quadrula pustulosa</i>	
<i>Fusconaia ebena</i>	SC	<i>Quadrula quadrula</i>	
<i>Fusconaia flava</i>		<i>Simpsonaias ambigua</i>	SE, FC
<i>Lampsilis cardium</i>		<i>Strophitus undulatus</i>	
<i>Lampsilis higginsii</i>	SE, FE	<i>Toxolasma parvus</i>	
<i>Lampsilis siliquoidea</i>		<i>Tritogonia verrucosa</i>	
<i>Lampsilis teres</i>		<i>Truncilla donaciformis</i>	
<i>Lasmigona complanata</i>		<i>Truncilla truncata</i>	
<i>Lasmigona compressa</i>	ST	<i>Uniomerus tetralasmus</i>	ST
<i>Lasmigona costata</i>		<i>Venustaconcha ellipsiformis</i>	SC
<i>Leptodea fragilis</i>		<i>Villosa iris</i>	SE
<i>Leptodea leptodon</i>	SE, FC, X		

Total number of species = 51.

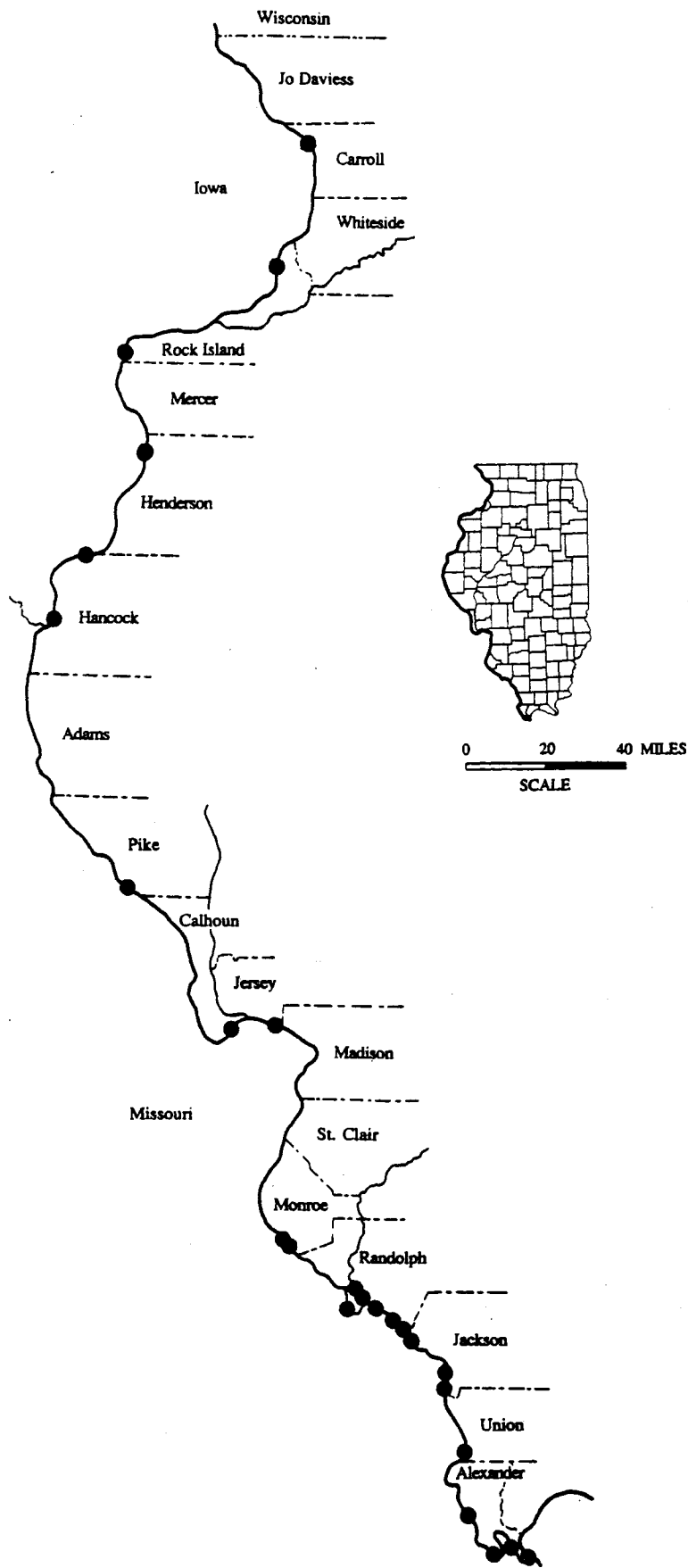


Figure 23-3. Map of crustacean collection sites in the Mississippi River represented in the Illinois Natural History Survey Crustacean Collection.

Table 23-3. Freshwater crustaceans recorded from the Mississippi River. Data from the Illinois Natural History Survey Crustacean Collection. SE = Illinois State Endangered.

ISOPODA (ISOPODS)

ASELLIDAE

- Caecidotea brevicauda*
- Caecidotea forbesi*
- Caecidotea intermedia*
- Caecidotea laticaudatus*
- Lirceus sp.*

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

- Crangonyx forbesi*
 - Crangonyx gracilis*
 - Crangonyx minor*
 - Crangonyx pseudogracilis*
 - Crangonyx richmondensis*
 - Gammarus pseudolimnaeus*
- HYALELLIDAE
- Hyaella azteca*

DECAPODA (CRAYFISHES & SHRIMPS)

PALAEEMONIDAE

- Macrobrachium ohione*
- Palaemonetes kadiakensis*

CAMBARIDAE

- Cambarus puer*
- Cambarus diogenes*
- Orconectes immunis*
- Orconectes placidus* SE
- Orconectes virilis*
- Procambarus acutus*

Total number of species = 20.

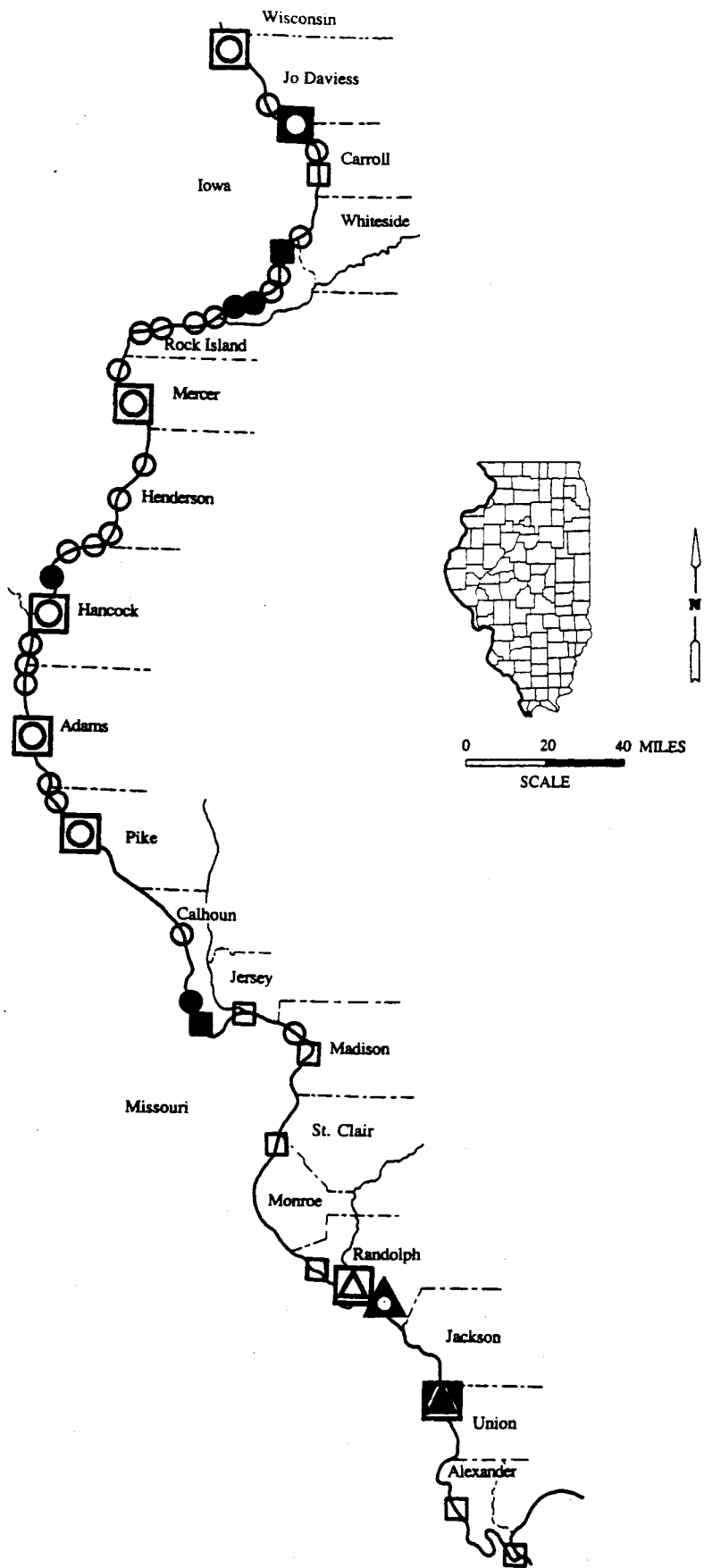
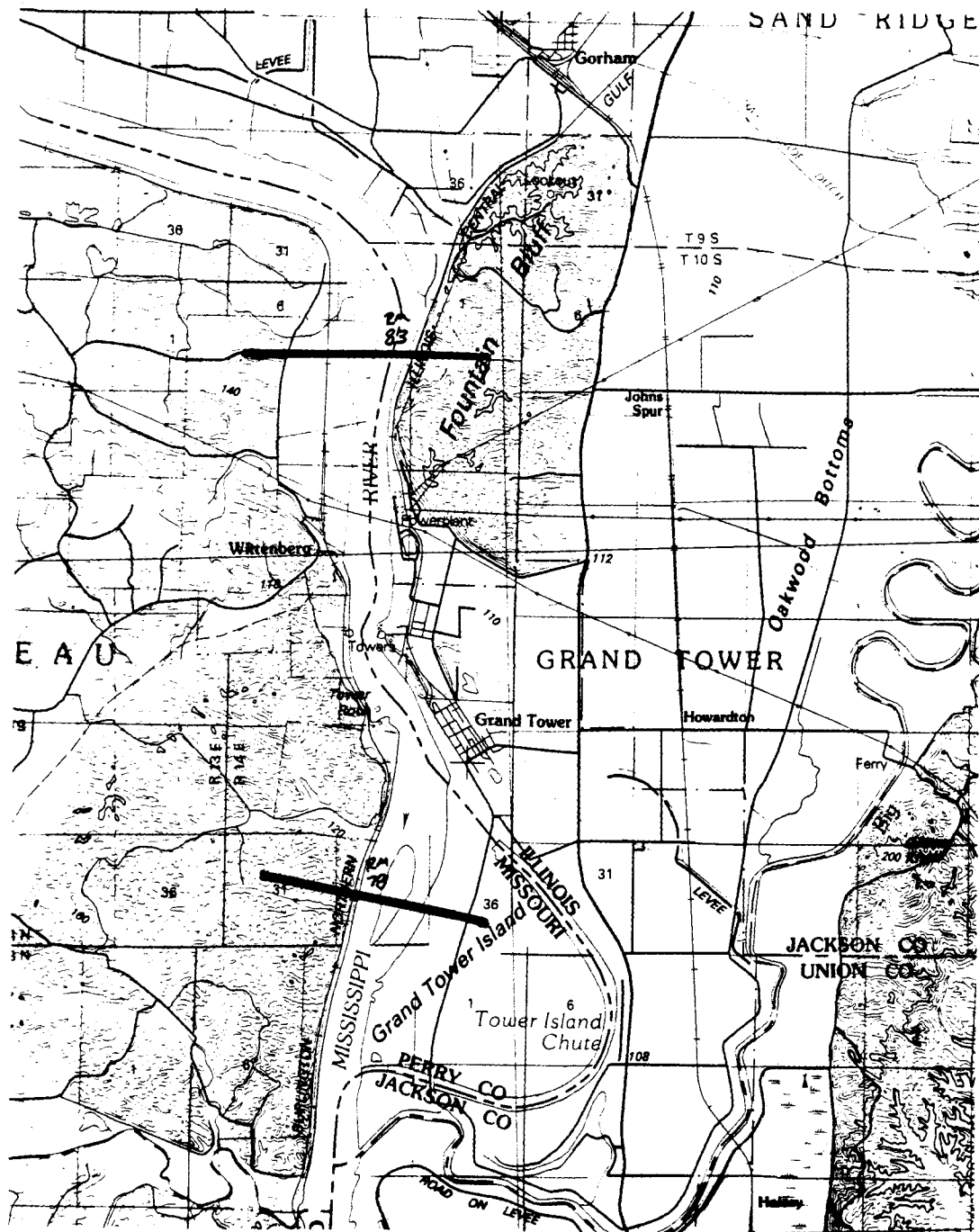


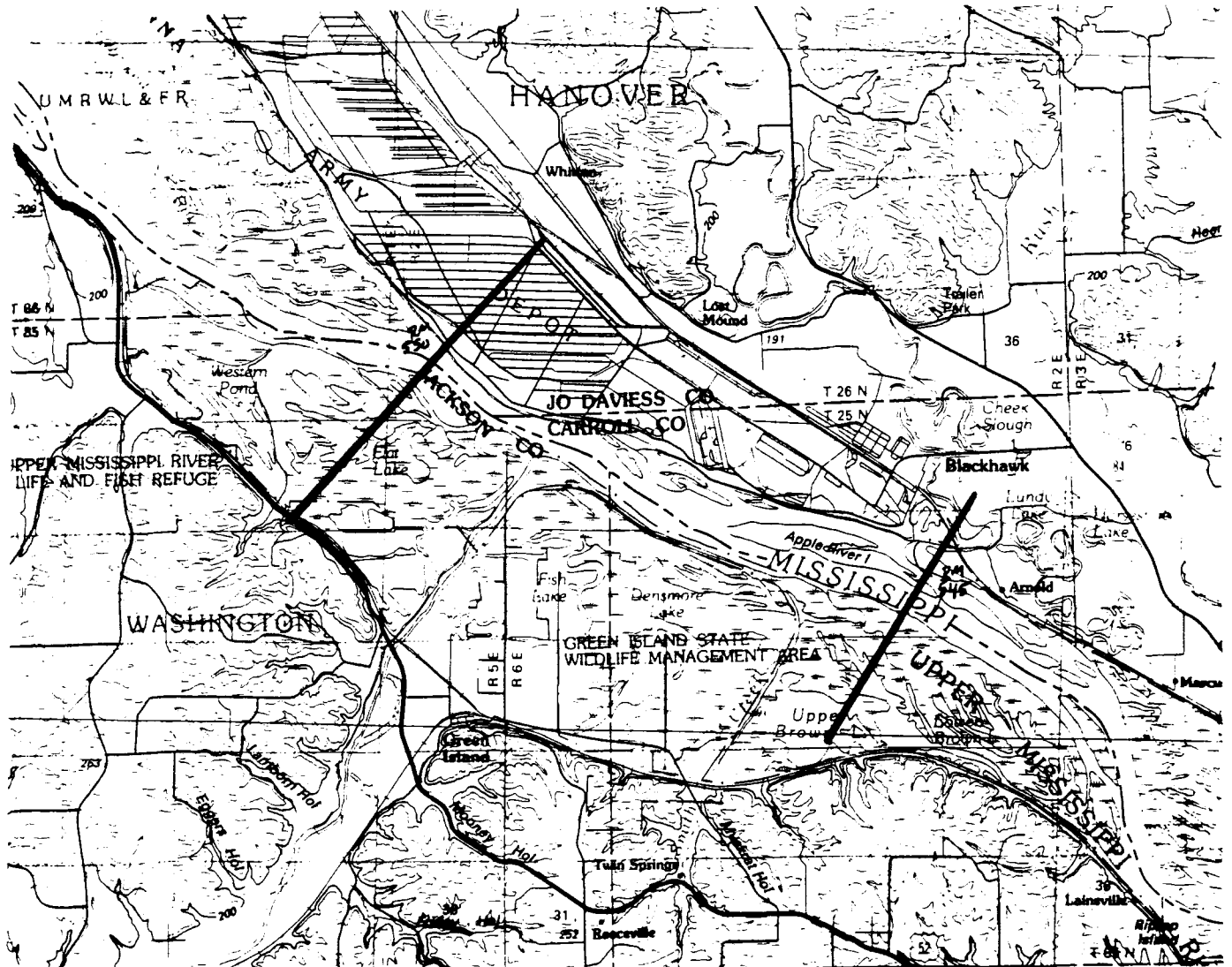
Figure 23-4. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered fishes (squares), mussels (circles), and crustaceans (triangles) in the Mississippi River.



23. The Mississippi River (Carbondale 1:100,000)

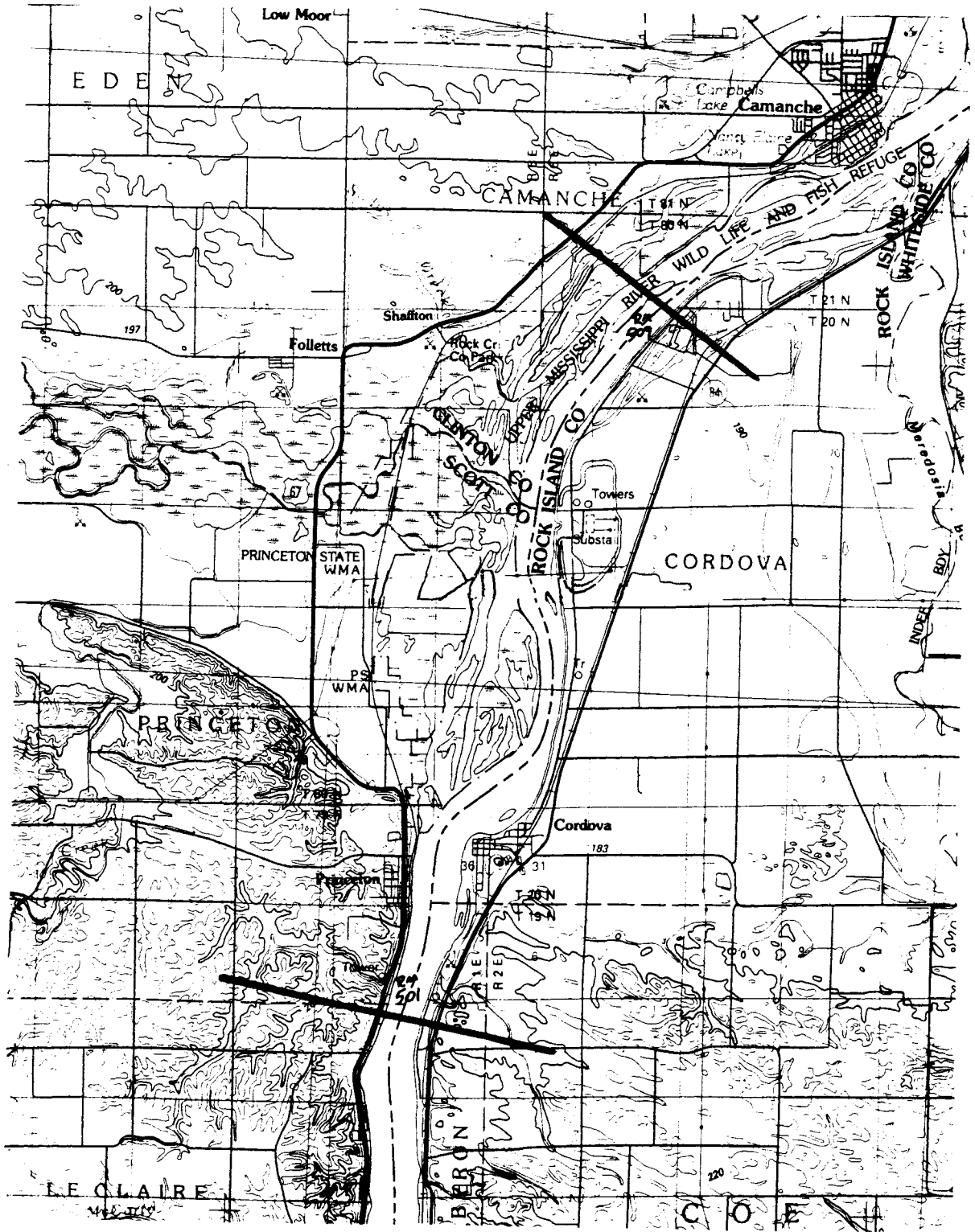
- Mississippi River, rm 78-83, Jackson Co.

(*Orconectes placidus*, sicklefin chub, sturgeon chub, western sand darter)

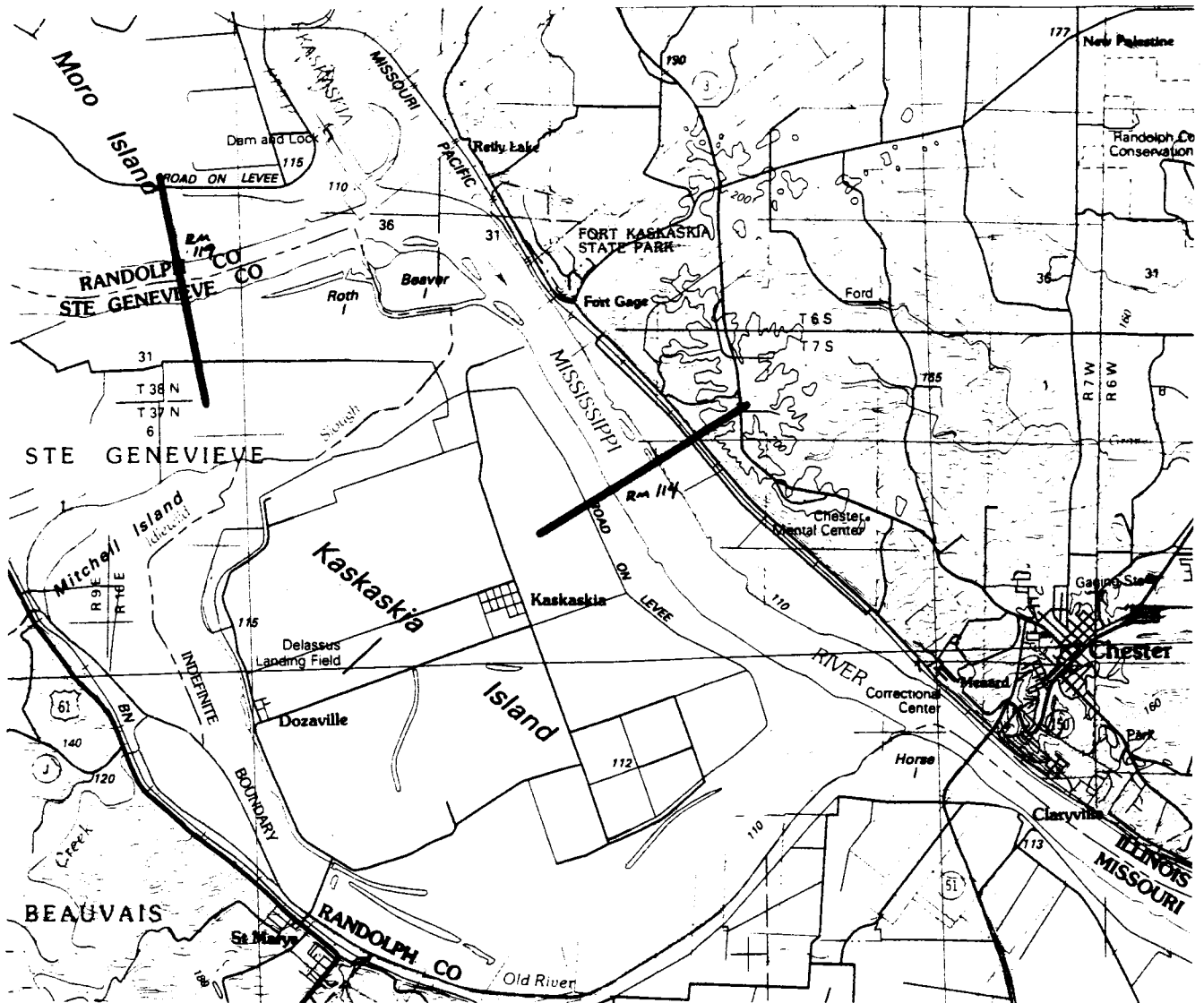


23. The Mississippi River (Dubuque South 1:100,000)

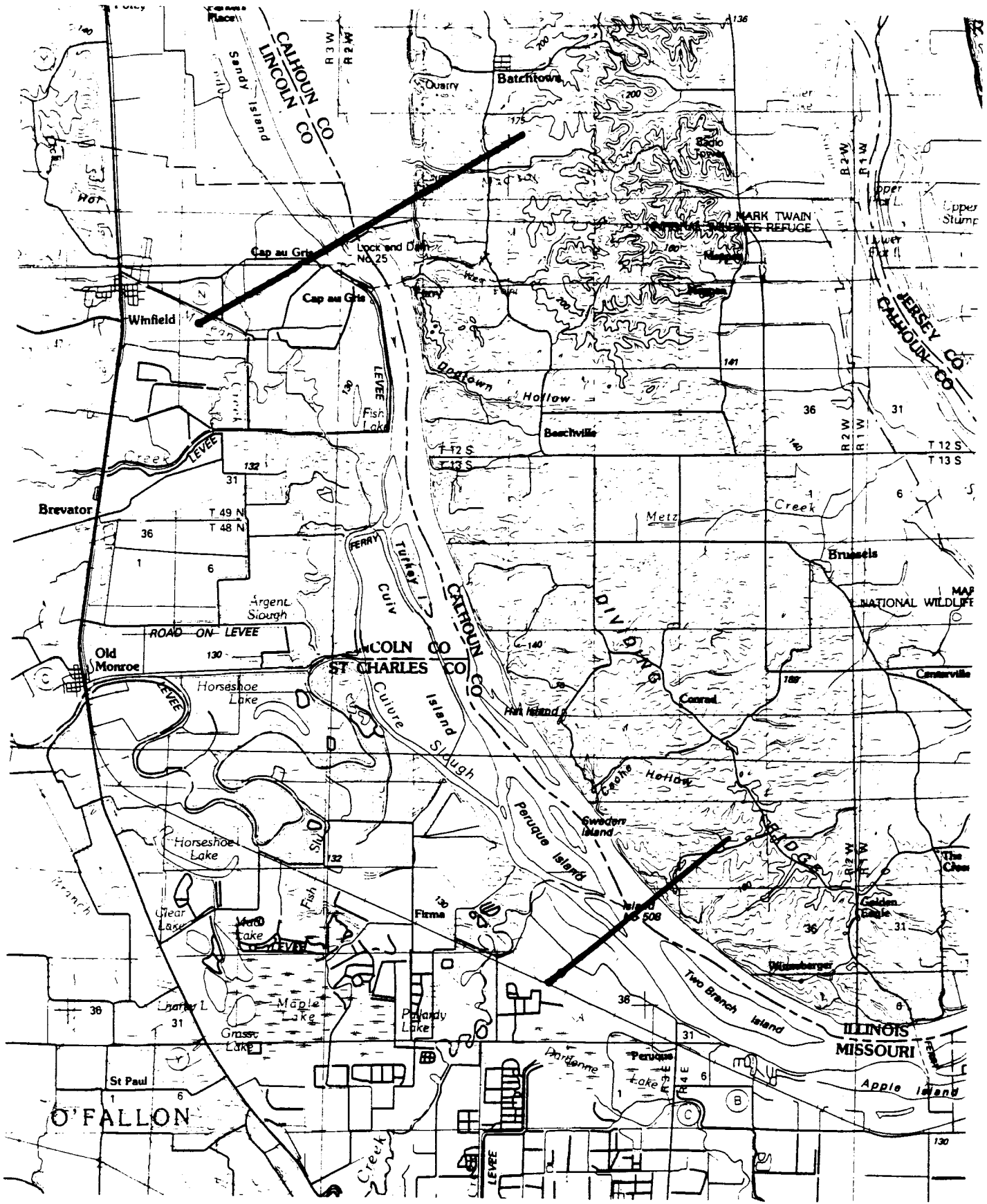
- Mississippi River, rm 545-550, Carroll Co.
 (western sand darter)



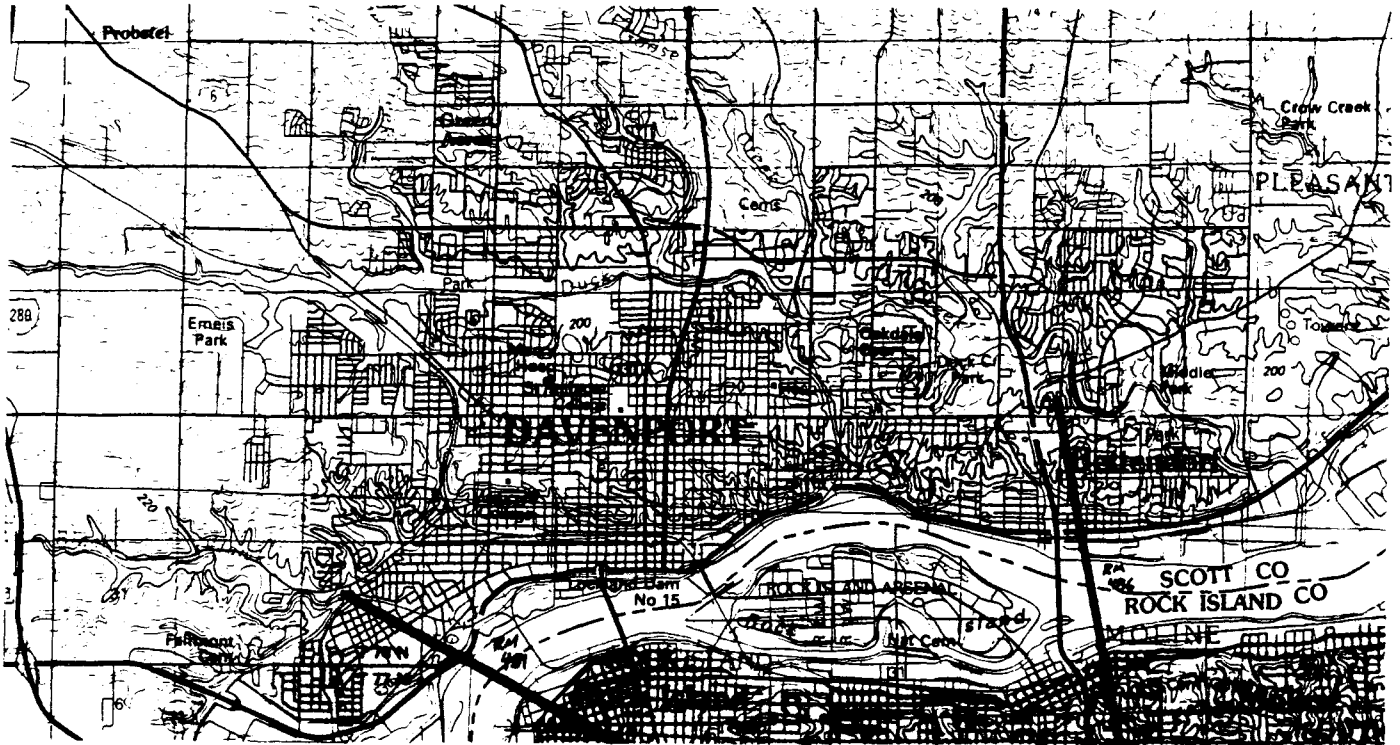
23. The Mississippi River (Davenport 1:100,000)
 - Mississippi River, rm 501-509, Rock Island Co.
 (Higgins eye, pallid shiner, western sand darter)



23. The Mississippi River (Carbondale 1:100,000)
 - Mississippi River, rm 114-119, Randolph Co.
 (*Orconectes placidus*)

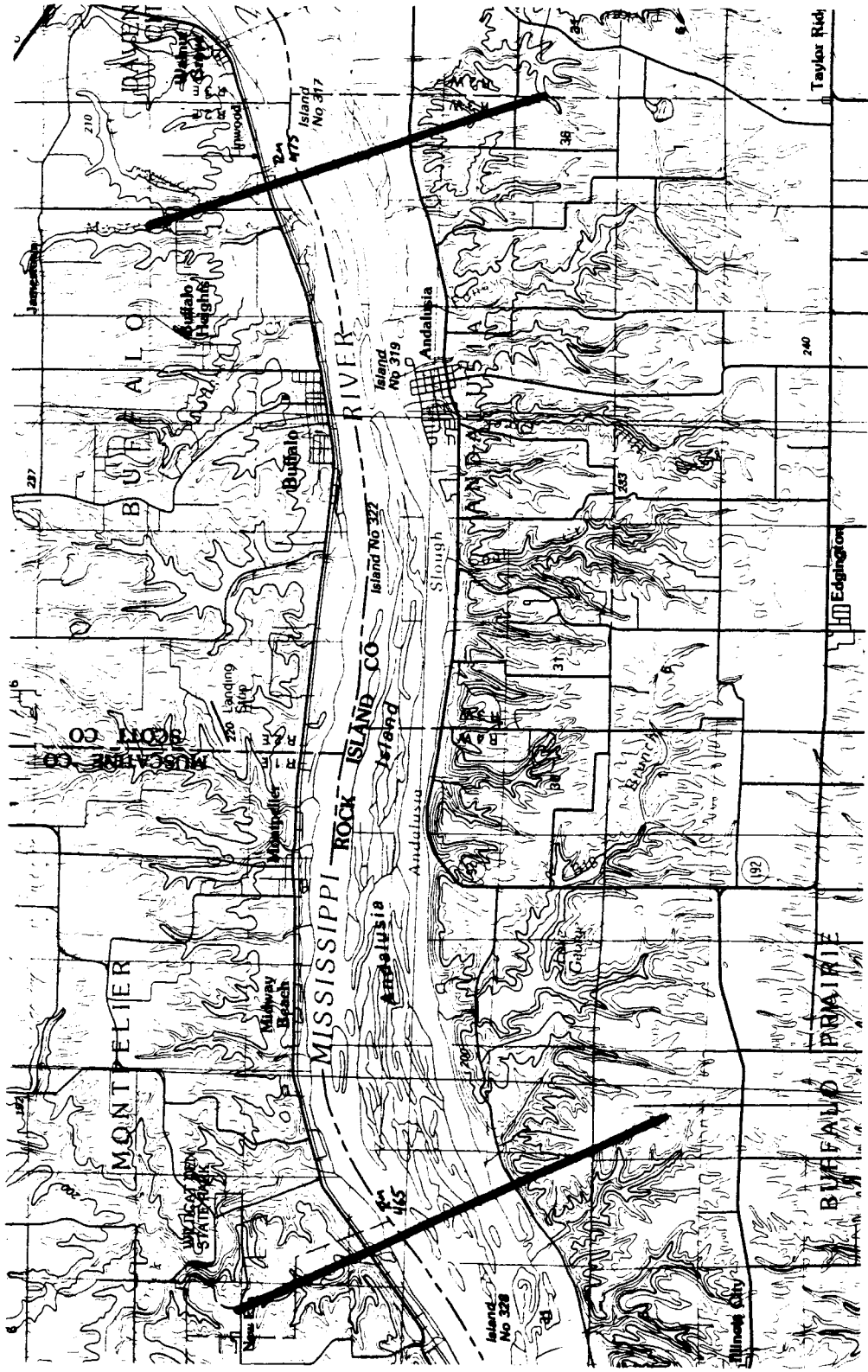


23. The Mississippi River (Jerseyville & St. Louis 1:100,000)
 - Mississippi River, below L & D 25, rm 232.5-241.5, Calhoun Co.
 (spectaclecase, western sand darter)



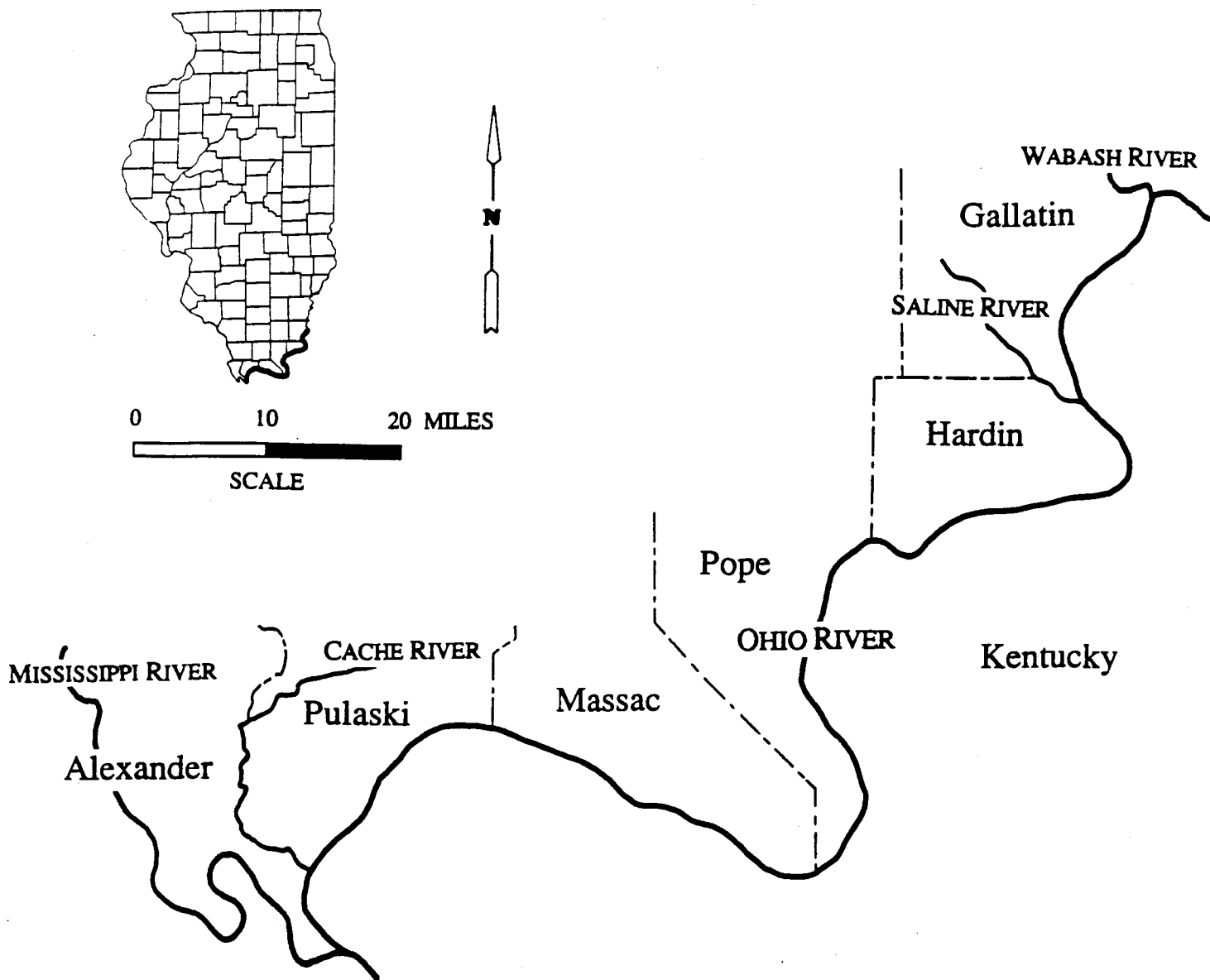
23. The Mississippi River (Rock Island 1:100,000)

- Sylvan Slough and Arsenal Island, rm 481 - 486, Rock Island, Co.
(Higgins eye, sheepsnose, high mussel diversity)



23. The Mississippi River (Andalusia 1:100,000)

- Andalusia Slough, rm 465-475, Rock Island Co. (spectaclecase)



24. Ohio River

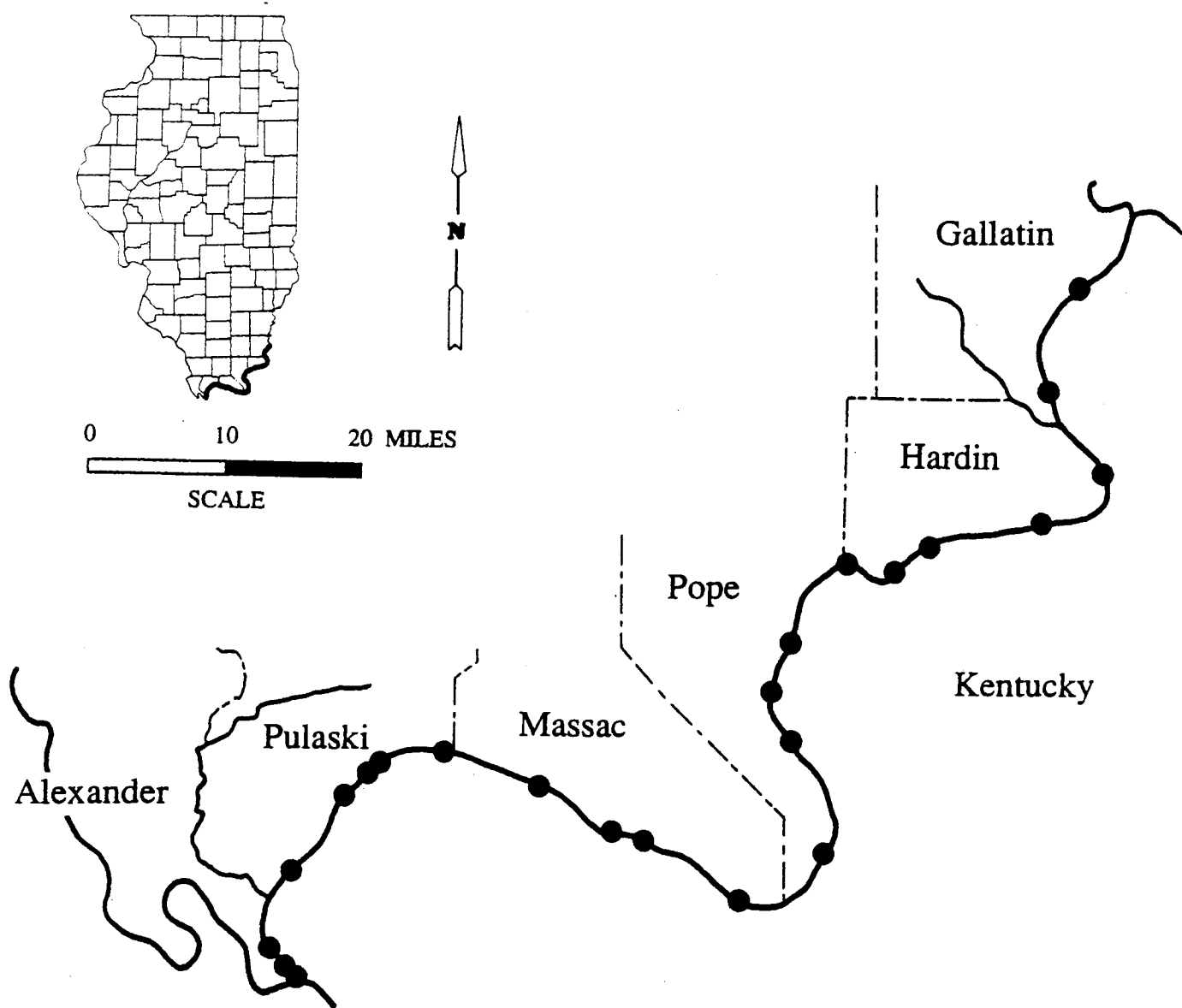


Figure 24-1. Map of fish collection sites in the Ohio River represented in the Illinois Natural History Survey Fish Collection.

Table 24. Freshwater fishes recorded from the Ohio River. Data from the Illinois Natural History Survey Fish Collection. FC = Federal Candidate I = Introduced.

PETROMYZONTIDAE	<i>Notropis buchamani</i>	ATHERINIDAE
<i>Ichthyomyzon castaneus</i>	<i>Notropis nubilus</i>	<i>Labidesthes sicculus</i>
<i>Ichthyomyzon unicuspis</i>	<i>Notropis shumardi</i>	MORONIDAE
LEPISOSTEIDAE	<i>Notropis volucellus</i>	<i>Morone chrysops</i>
<i>Lepisosteus osseus</i>	<i>Opsopoeodus emiliae</i>	CENTRARCHIDAE
<i>Lepisosteus platostomus</i>	<i>Pimephales notatus</i>	<i>Lepomis cyanellus</i>
HIODONTIDAE	<i>Pimephales vigilax</i>	<i>Lepomis humilis</i>
<i>Hiodon alosoides</i>	<i>Platygobio gracilis</i>	<i>Lepomis macrochirus</i>
<i>Hiodon tergisus</i>	<i>Rhinichthys cataractae</i>	<i>Lepomis megalotis</i>
CLUPEIDAE	CATOSTOMIDAE	<i>Lepomis microlophus</i>
<i>Alosa chrysochloris</i>	<i>Carpiodes carpio</i>	<i>Micropterus punctulatus</i>
<i>Dorosoma cepedianum</i>	<i>Carpiodes cyprinus</i>	<i>Micropterus salmoides</i>
<i>Dorosoma petenense</i>	<i>Carpiodes velifer</i>	<i>Pomoxis annularis</i>
CYPRINIDAE	<i>Cycleptus elongatus</i> FC	<i>Pomoxis nigromaculatus</i>
<i>Cyprinella lutrensis</i>	<i>Ictiobus bubalus</i>	PERCIDAE
<i>Cyprinella spiloptera</i>	ICTALURIDAE	<i>Etheostoma chlorosomum</i>
<i>Cyprinella venusta</i>	<i>Ictalurus punctatus</i>	<i>Etheostoma gracile</i>
<i>Cyprinus carpio</i> I	<i>Noturus nocturnus</i>	<i>Percina caprodes</i>
<i>Hybognathus nuchalis</i>	<i>Pylodictis olivaris</i>	<i>Stizostedion canadense</i>
<i>Hybognathus placitus</i>	CYPRINODONTIDAE	<i>Stizostedion vitreum</i>
<i>Luxilus chrysocephalus</i>	<i>Fundulus notatus</i>	SCIAENIDAE
<i>Macrhybopsis storeriana</i>	<i>Fundulus olivaceus</i>	<i>Aplodinotus grunniens</i>
<i>Notemigonus crysoleucas</i>	POECILIIDAE	COTTIDAE
<i>Notropis atherinoides</i>	<i>Gambusia affinis</i>	<i>Cottus carolinae</i>
<i>Notropis blennioides</i>		

Total number of species = 58 (57 native, 1 introduced)

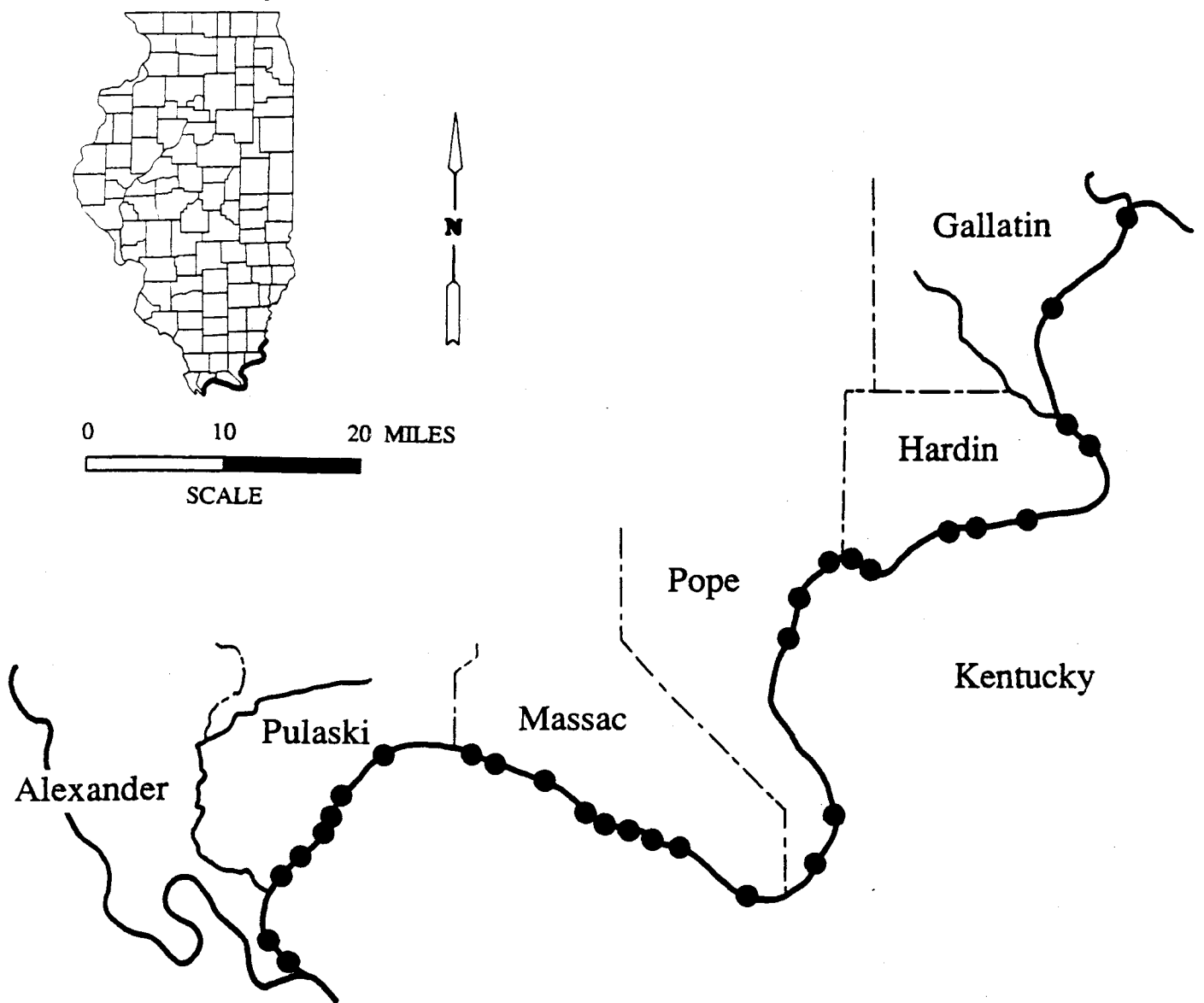


Figure 24-2. Map of mussel collection sites in the Ohio River represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 24-2. Freshwater mussels recorded from the Ohio River. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. FE = Federally Endangered; FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened; SC = State Candidate, X = Extirpated from Illinois; † = Extinct.

<i>Actinonaias ligamentina</i>		<i>Megalonaias nervosa</i>	
<i>Amblema plicata</i>		<i>Obliquaria reflexa</i>	
<i>Anodonta grandis</i>		<i>Obovaria olivaria</i>	
<i>Anodonta imbecillis</i>		<i>Obovaria retusa</i>	SE, FE, X
<i>Anodonta suborbiculata</i>		<i>Obovaria subrotunda</i>	SE
<i>Anodontoides ferussacianus</i>		<i>Plethobasus cooperianus</i>	SE, FE
<i>Arcidens confragosus</i>		<i>Plethobasus cyphus</i>	ST
<i>Cyclonaias tuberculata</i>		<i>Pleurobema cordatum</i>	SC
<i>Cyprogenia stegaria</i>	SE, FE	<i>Pleurobema plenum</i>	SE, FE, X
<i>Ellipsaria lineolata</i>	SC	<i>Pleurobema rubrum</i>	SC
<i>Elliptio crassidens</i>	ST	<i>Pleurobema sintoxia</i>	
<i>Elliptio dilatata</i>	SC	<i>Potamilus alatus</i>	
<i>Epioblasma flexuosa</i>	SE, (†)	<i>Potamilus capax</i>	SE, FE
<i>Epioblasma sampsonii</i>	SE, (†)	<i>Potamilus ohioensis</i>	
<i>Epioblasma torulosa</i>	SE, FE, X	<i>Ptychobranchnus fasciolaris</i>	SE
<i>Epioblasma triquetra</i>	SE	<i>Quadrula cylindrica</i>	SE
<i>Fusconaia ebena</i>	SC	<i>Quadrula metanevra</i>	
<i>Fusconaia flava</i>		<i>Quadrula nodulata</i>	
<i>Lampsilis abrupta</i>	SE, FE, X	<i>Quadrula pustulosa</i>	
<i>Lampsilis cardium</i>		<i>Quadrula quadrula</i>	
<i>Lampsilis ovata</i>	SC	<i>Simpsonaias ambigua</i>	SE, FC
<i>Lampsilis teres</i>		<i>Strophitus undulatus</i>	
<i>Lasmigona complanata</i>		<i>Tritogonia verrucosa</i>	
<i>Leptodea fragilis</i>		<i>Truncilla donaciformis</i>	
<i>Ligumia recta</i>		<i>Truncilla truncata</i>	
<i>Ligumia subrostrata</i>		<i>Villosa fabalis</i>	SE, FC, X

Total number of species = 52.

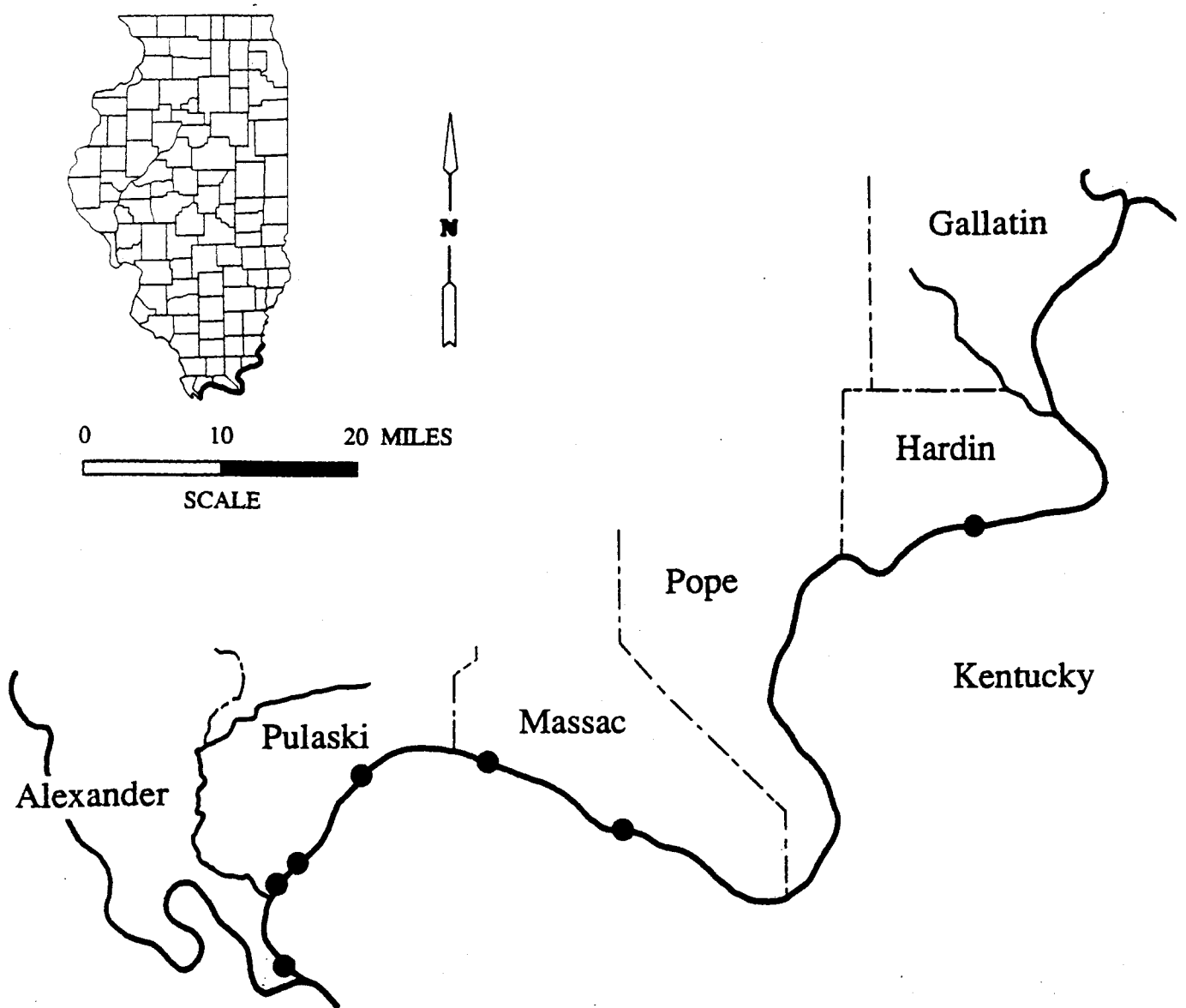


Figure 24-3. Map of crustacean collection sites in the Ohio River represented in the Illinois Natural History Survey Crustacean Collection.

Table 24-3. Freshwater crustaceans recorded from the Ohio River System. Data from the Illinois Natural History Survey Crustacean Collection. SE = Illinois State Endangered; ST = Illinois State Threatened.

ISOPODA (ISOPODS)

ASELLIDAE

Lirceus sp.

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

Gammarus bousfieldi ST

DECAPODA (CRAYFISHES & SHRIMPS)

CAMBARIDAE

Cambarellus shufeldtii

Cambarus tenebrosus

Orconectes placidus SE

Orconectes virilis

Procambarus acutus

Total number of species = 7.

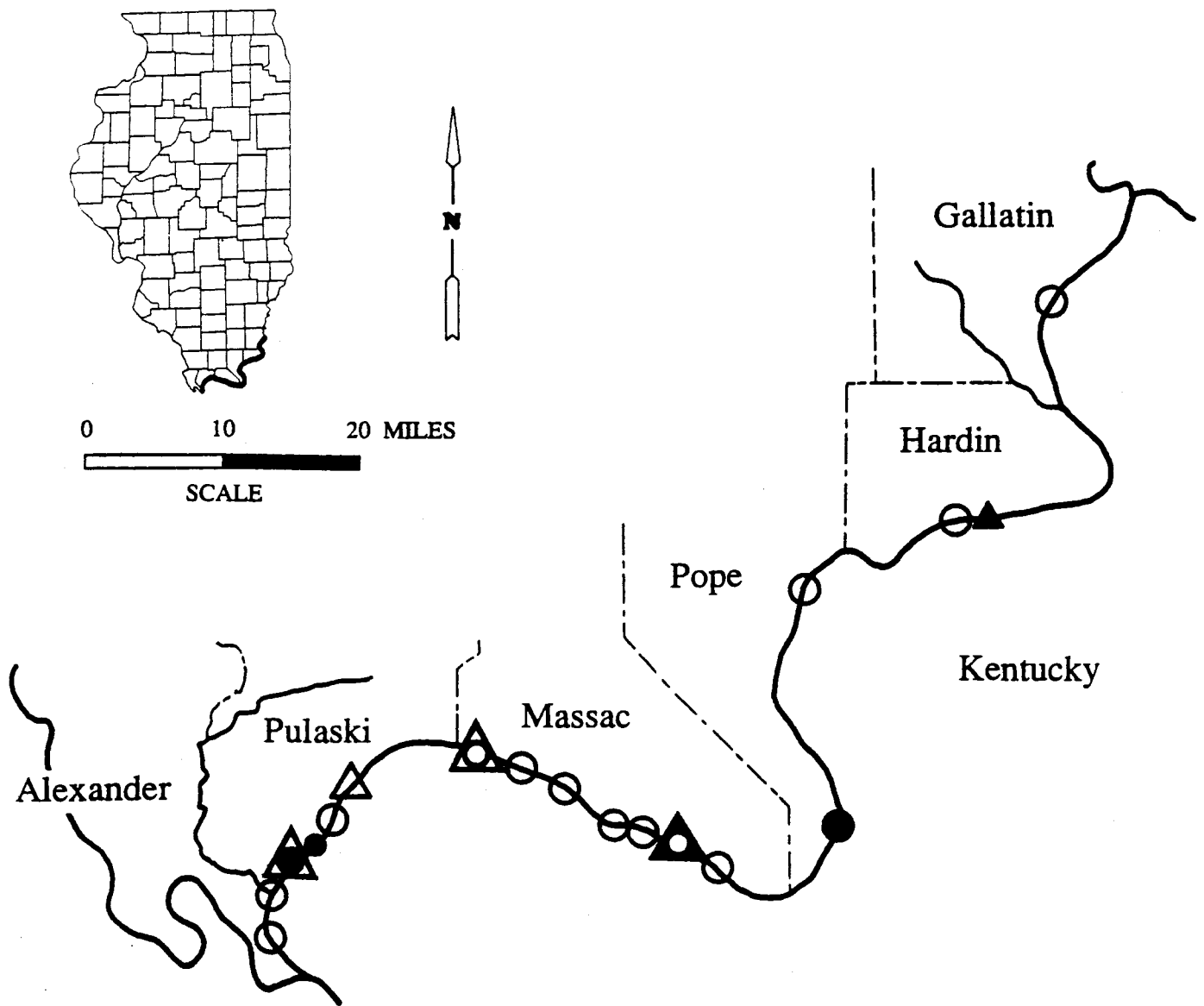
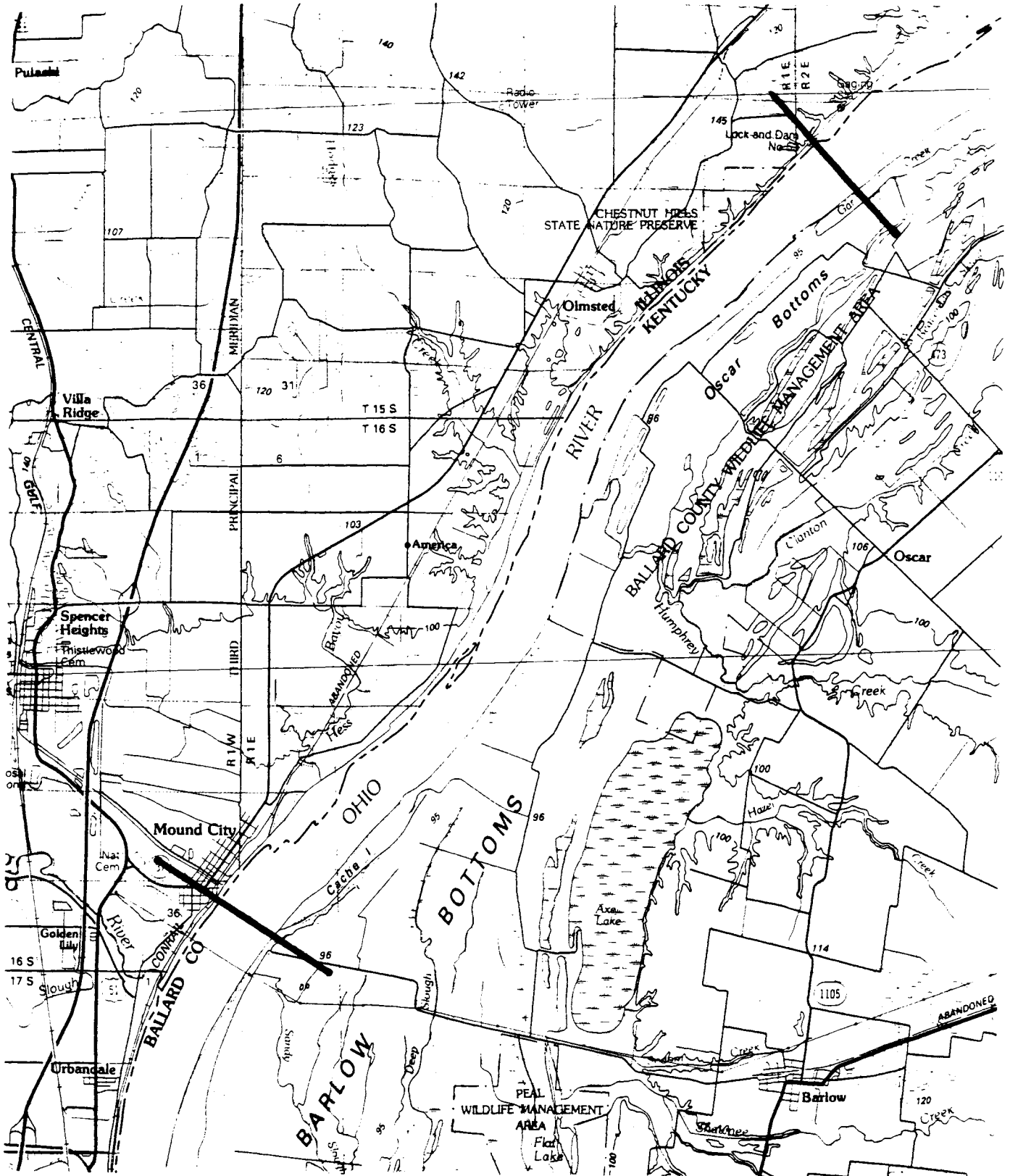


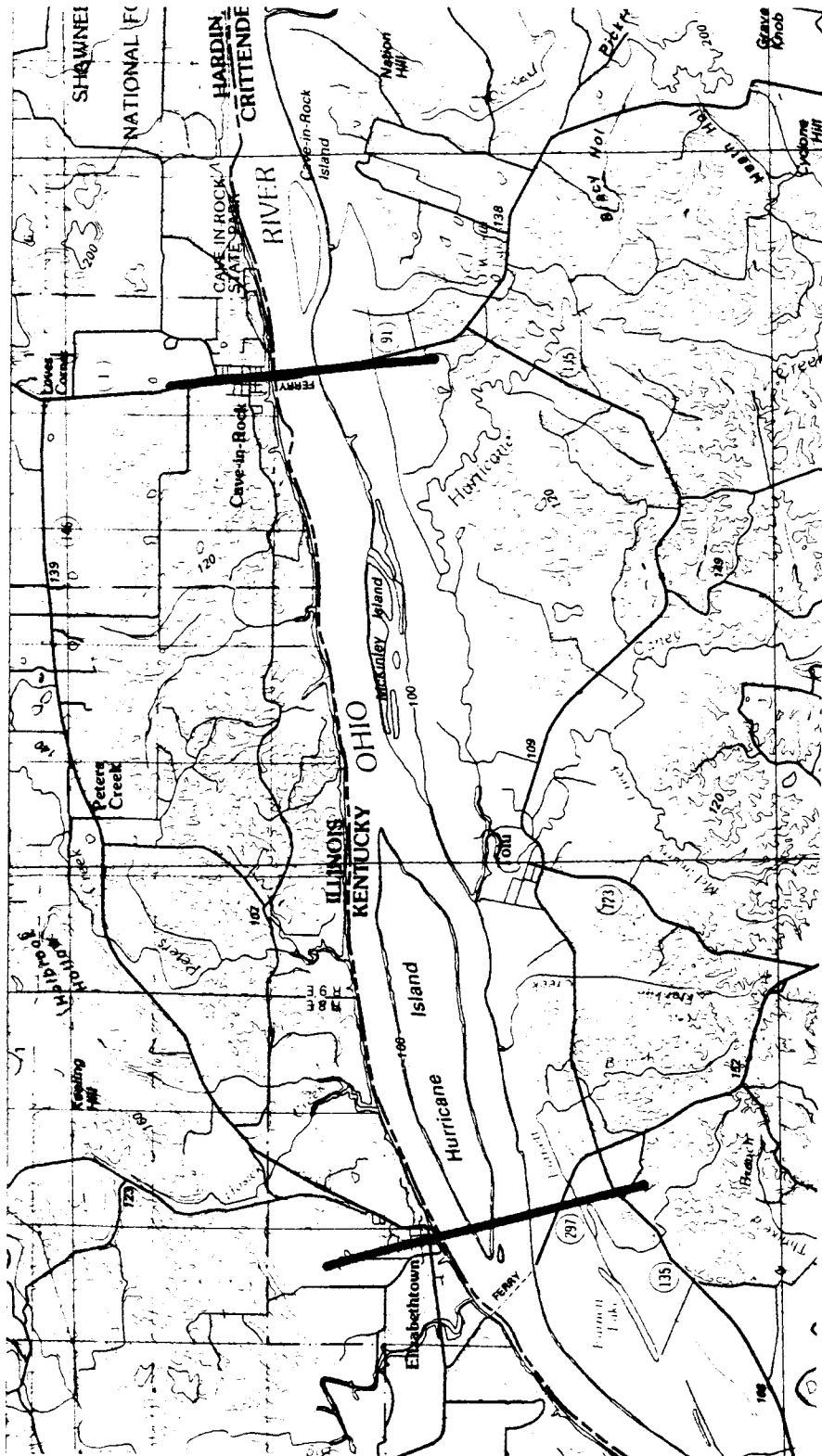
Figure 24-4. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered mussels (circles) and crustaceans (triangles) in the Ohio River.



24. The Ohio River (Cape Girardeau 1:100,000)

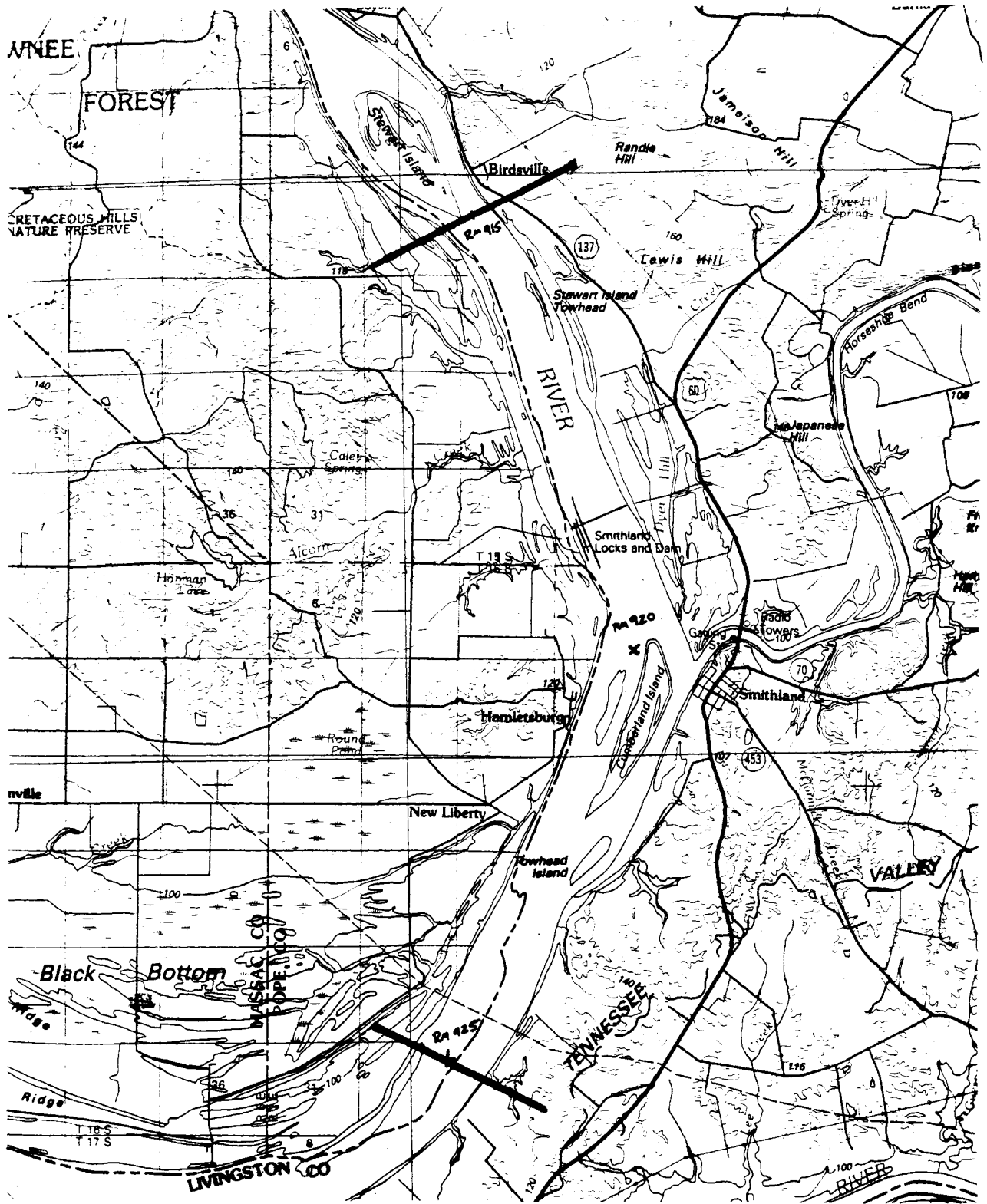
- Ohio River, L & D 53 to Mound City, Pulaski Co.

(orange-foot pimpleback, elephant-ear, *Gammarus bousfieldi*, *Orconectes placidus*)



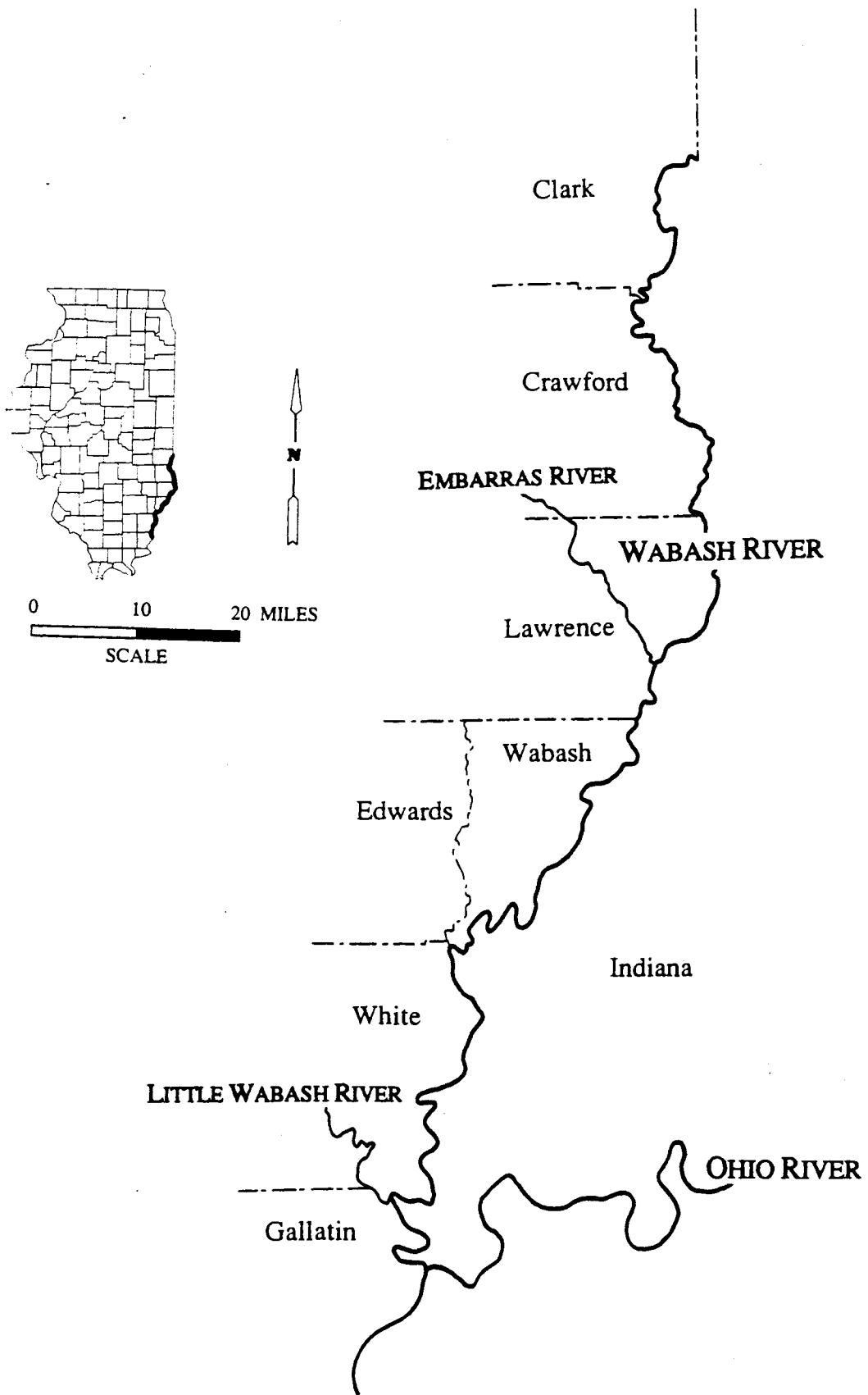
24. The Ohio River (Paducah 1:100,000)

- Ohio River, Elizabethtown to Cave in Rock, Hardin Co.
 (*Gammarus bousfieldi*)



24. The Ohio River (Paducah 1:100,000)

- Ohio River, 5 miles above and below mouth Cumberland River, Pope Co.
(fat pocketbook)



25. Wabash River

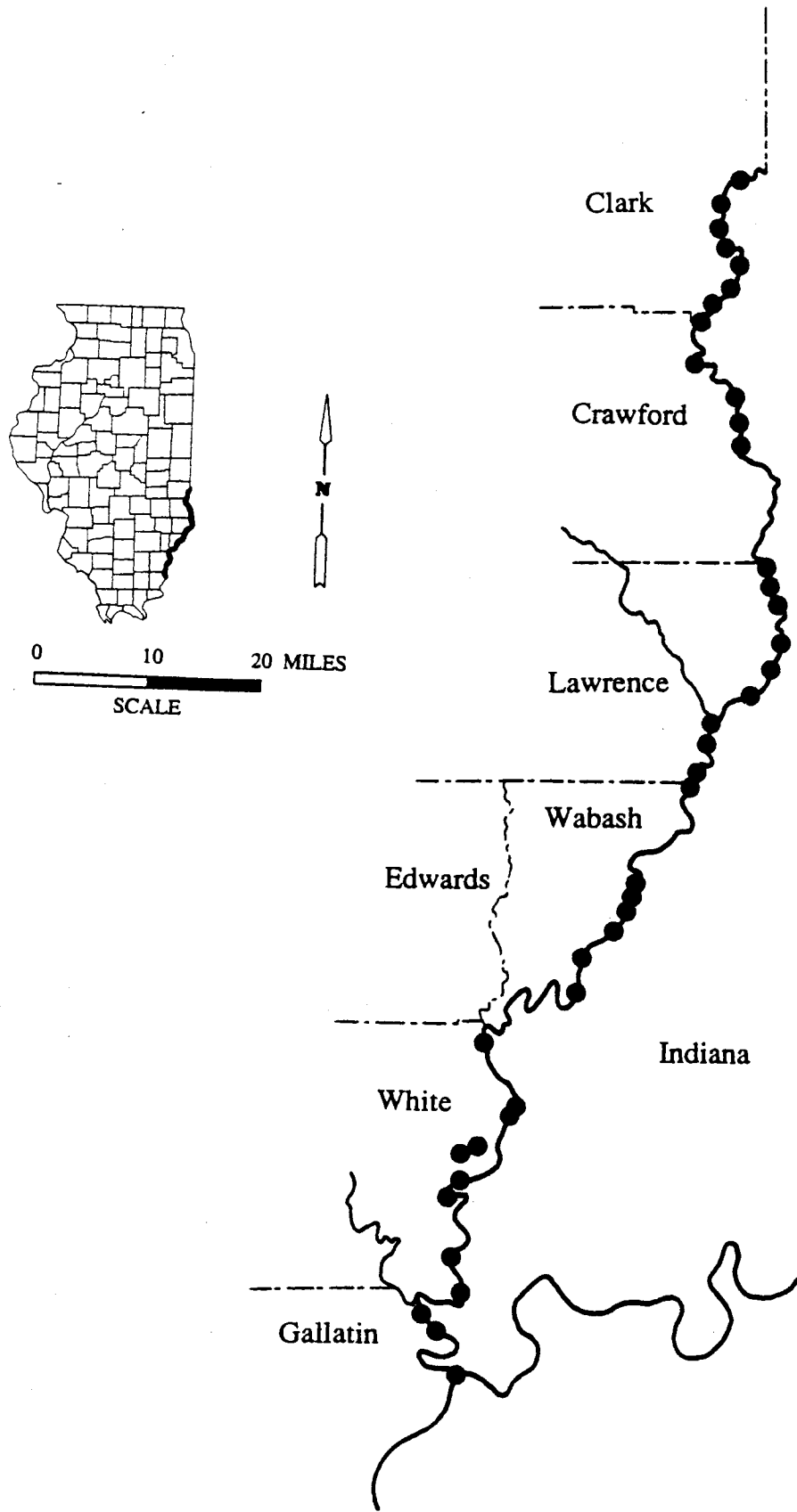


Figure 25-1. Map of fish collection sites in the Wabash River represented in the Illinois Natural History Survey Fish Collection.

Table 25-1. Freshwater fishes recorded from the Wabash River. Data from the Illinois Natural History Survey Fish Collection FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened; WL = Watch List; I = Introduced.

PETROMYZONTIDAE	<i>Nocomis micropogon</i>	POECILIIDAE
<i>Ichthyomyzon castaneus</i>	<i>Notropis atherinoides</i>	<i>Gambusia affinis</i>
<i>Ichthyomyzon unicuspis</i>	<i>Notropis blennioides</i>	ATHERINIDAE
POLYODONTIDAE	<i>Notropis ludibundus</i>	<i>Labidesthes sicculus</i>
<i>Polyodon spathula</i>	<i>Notropis volucellus</i>	LOTIDAE
ACIPENSERIDAE	<i>Phenacobius mirabilis</i>	<i>Lota lota</i>
<i>Scaphirhynchus platyrhynchus</i>	<i>Pimephales notatus</i>	MORONIDAE
LEPISOSTEIDAE	<i>Pimephales vigilax</i>	<i>Morone chrysops</i>
<i>Lepisosteus osseus</i>	<i>Rhinichthys atratulus</i>	CENTRARCHIDAE
<i>Lepisosteus platostomus</i>	CATOSTOMIDAE	<i>Ambloplites rupestris</i>
AMIIDAE	<i>Carpionodes carpio</i>	<i>Chaenobryttus gulosus</i>
<i>Amia calva</i>	<i>Carpionodes cyprinus</i>	<i>Lepomis cyanellus</i>
ANGUILLIDAE	<i>Carpionodes velifer</i>	<i>Lepomis humilis</i>
<i>Anguilla rostrata</i>	<i>Cycleptus elongatus</i> FC	<i>Lepomis macrochirus</i>
HIODONTIDAE	<i>Hypentelium nigricans</i>	<i>Lepomis megalotis</i>
<i>Hiodon alosoides</i>	<i>Ictiobus bubalus</i>	<i>Lepomis miniatus</i> ST
<i>Hiodon tergisus</i>	<i>Ictiobus cyprinellus</i>	<i>Micropterus dolomieu</i>
CLUPEIDAE	<i>Ictiobus niger</i>	<i>Micropterus punctulatus</i>
<i>Alosa chrysochloris</i>	<i>Moxostoma anisurum</i>	<i>Micropterus salmoides</i>
<i>Dorosoma cepedianum</i>	<i>Moxostoma erythrurum</i>	<i>Pomoxis annularis</i>
<i>Dorosoma petenense</i>	<i>Moxostoma macrolepidotum</i>	<i>Pomoxis nigromaculatus</i>
UMBRIDAE	ICTALURIDAE	PERCIDAE
<i>Umbra limi</i>	<i>Ameiurus melas</i>	<i>Etheostoma asprigene</i>
ESOCIDAE	<i>Ameiurus natalis</i>	<i>Etheostoma blennioides</i>
<i>Esox americanus</i>	<i>Ictalurus furcatus</i>	<i>Etheostoma caeruleum</i>
CYPRINIDAE	<i>Ictalurus punctatus</i>	<i>Etheostoma chlorosomum</i>
<i>Campostoma anomalum</i>	<i>Noturus eleutherus</i>	<i>Etheostoma gracile</i>
<i>Cyprinella spiloptera</i>	<i>Noturus flavus</i>	<i>Etheostoma nigrum</i>
<i>Cyprinella whipplei</i>	<i>Noturus gyrinus</i>	<i>Etheostoma spectabile</i>
<i>Cyprinus carpio</i> I	<i>Noturus miurus</i>	<i>Percina caprodes</i>
<i>Ericymba buccata</i>	<i>Noturus nocturnus</i>	<i>Percina maculata</i>
<i>Erimystax x-punctatus</i> WL	<i>Noturus stigmosus</i> SE	<i>Percina phoxocephala</i>
<i>Extrarius aestivalis</i>	<i>Pylodictis olivaris</i>	<i>Percina sciera</i>
<i>Hybognathus nuchalis</i>	CYPRINODONTIDAE	<i>Stizostedion canadense</i>
<i>Luxilus chrysocephalus</i>	<i>Fundulus notatus</i>	SCIAENIDAE
<i>Macrhybopsis storeriana</i>		<i>Aplodinotus grunniens</i>

Total number of species = 86 (85 native, 1 introduced)

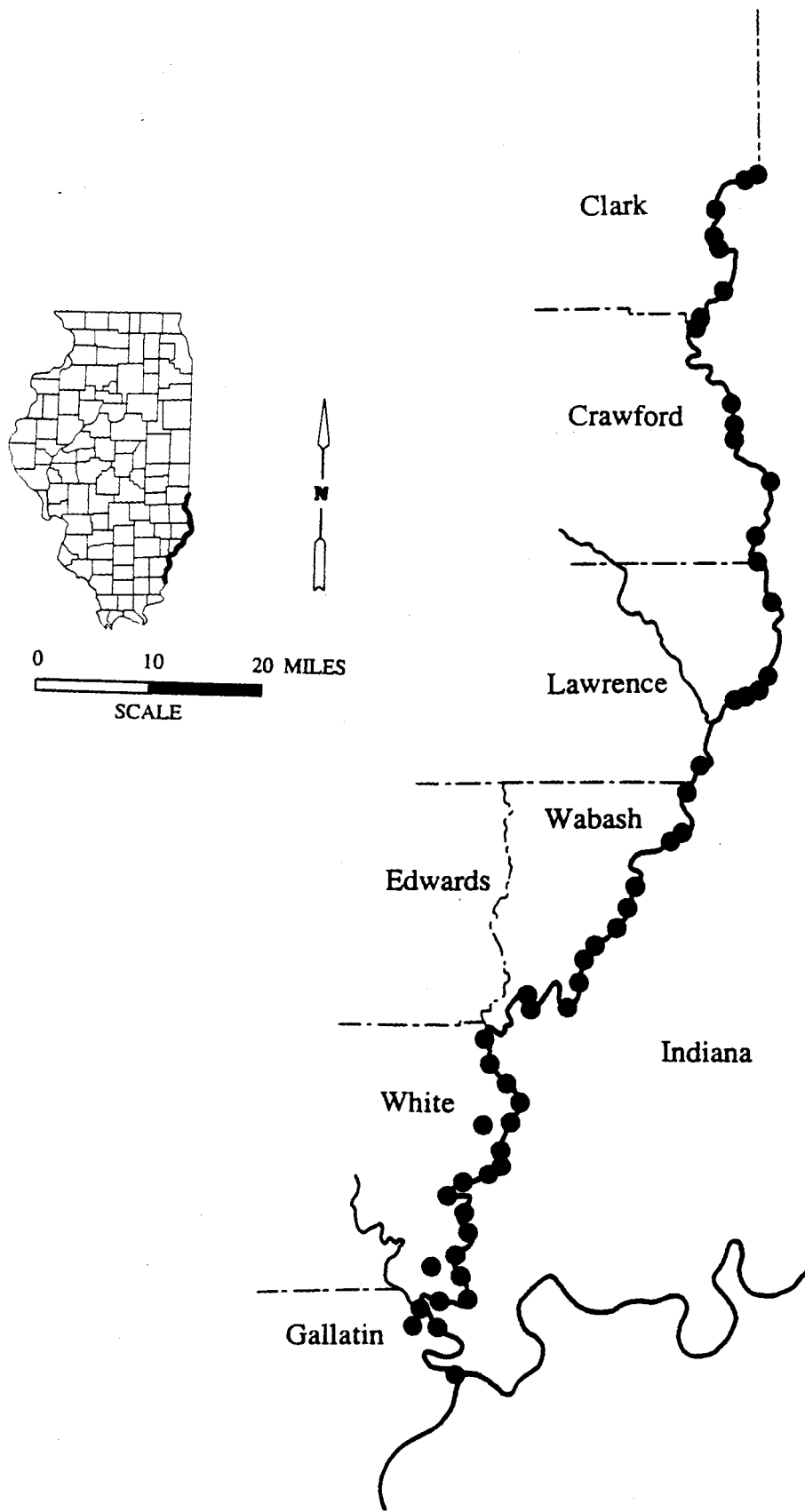


Figure 25-2. Map of mussel collection sites in the Wabash River represented in the Illinois Natural History Survey Mollusk Collection and other museum collections.

Table 25-2. Freshwater mussels recorded from the Wabash River Mainstem in Illinois. Data from the Illinois Natural History Survey Mollusk Collection and other museum collections. FE = Federally Endangered; FC = Federal Candidate; SE = Illinois State Endangered; ST = Illinois State Threatened, SC = State Candidate; X = Extirpated from Illinois; † = Extinct.

<i>Actinonaias ligamentina</i>		<i>Ligumia subrostrata</i>	
<i>Amblema plicata</i>		<i>Megalonaias nervosa</i>	
<i>Anodonta grandis</i>		<i>Obliquaria reflexa</i>	
<i>Anodonta imbecillis</i>		<i>Obovaria olivaria</i>	
<i>Anodonta suborbiculata</i>		<i>Obovaria retusa</i>	SE, FE, X
<i>Anodontooides ferussacianus</i>		<i>Obovaria subrotunda</i>	SE
<i>Arcidens confragosus</i>		<i>Plethobasus cicatricosus</i>	SE, FE, X
<i>Cumberlandia monodonta</i>	SE, FC	<i>Plethobasus cyphus</i>	ST
<i>Cyclonaias tuberculata</i>		<i>Pleurobema clava</i>	SE, FC
<i>Cyprogenia stegaria</i>	SE, FE	<i>Pleurobema cordatum</i>	SC
<i>Ellipsaria lineolata</i>	SC	<i>Pleurobema plenum</i>	SE, FE, X
<i>Elliptio crassidens</i>	ST	<i>Pleurobema rubrum</i>	SC
<i>Elliptio dilatata</i>	SC	<i>Pleurobema sintoxia</i>	
<i>Epioblasma flexuosa</i>	SE, †	<i>Potamilus alatus</i>	
<i>Epioblasma obliquata</i>	SE, FE, X	<i>Potamilus capax</i>	SE, FE
<i>Epioblasma personata</i>	SE, †	<i>Potamilus ohioensis</i>	
<i>Epioblasma propinqua</i>	SE, †	<i>Potamilus purpuratus</i>	SC
<i>Epioblasma rangiana</i>	SC, FC, X	<i>Ptychobranchus fasciolaris</i>	SE
<i>Epioblasma sampsonii</i>	SE, †	<i>Quadrula cylindrica</i>	SE
<i>Epioblasma torulosa</i>	SE, FE, X	<i>Quadrula metanevra</i>	
<i>Epioblasma triquetra</i>	SE	<i>Quadrula nodulata</i>	
<i>Fusconaia ebena</i>	SC	<i>Quadrula pustulosa</i>	
<i>Fusconaia flava</i>		<i>Quadrula quadrula</i>	
<i>Fusconaia subrotunda</i>	SC, FC, X	<i>Simpsonaias ambigua</i>	SE, FC
<i>Hemistena lata</i>	SE, FE, X	<i>Strophitus undulatus</i>	
<i>Lampsilis cardium</i>		<i>Toxolasma lividus</i>	SE, FC
<i>Lampsilis fasciola</i>	SE	<i>Toxolasma parvus</i>	
<i>Lampsilis ovata</i>	SC	<i>Toxolasma texasensis</i>	
<i>Lampsilis siliquoidea</i>		<i>Tritogonia verrucosa</i>	
<i>Lampsilis teres</i>		<i>Truncilla donaciformis</i>	
<i>Lasmigona complana</i>		<i>Truncilla truncata</i>	
<i>Lasmigona costata</i>		<i>Unio merus tetralasmus</i>	ST
<i>Leptodea fragilis</i>		<i>Villosa fabalis</i>	SE, FC, X
<i>Leptodea leptodon</i>	SE, FC, X	<i>Villosa lienosa</i>	SE
<i>Ligumia recta</i>			

Total number of species = 69.

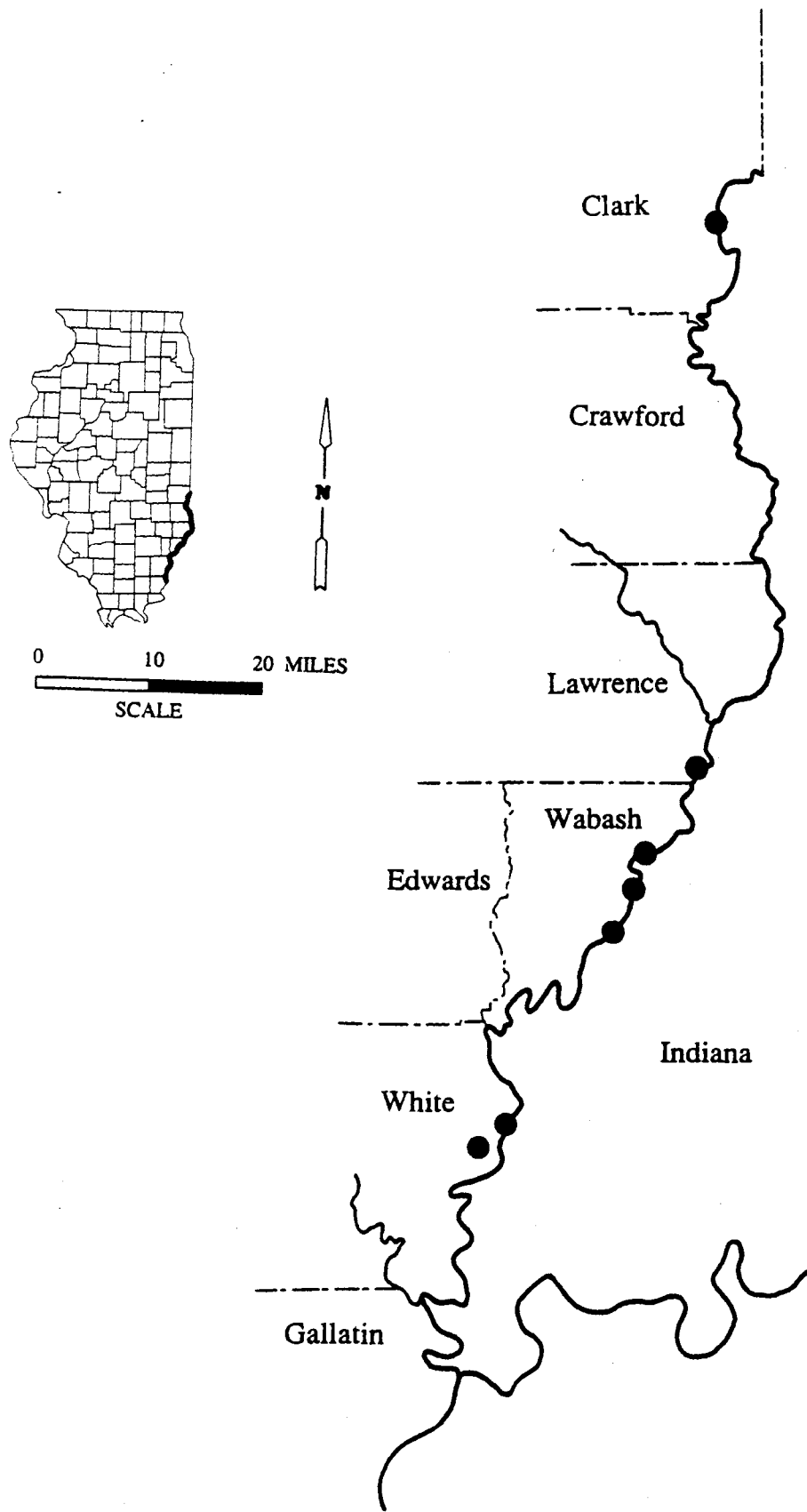


Figure 25-3. Map of crustacean collection sites in the Wabash River represented in the Illinois Natural History Survey Crustacean Collection.

Table 25-3. Freshwater crustaceans recorded from the Wabash River. Data from the Illinois Natural History Survey Crustacean Collection.

ISOPODA (ISOPODS)

ASELLIDAE

- Caecidotea forbesi*
- Caecidotea intermedia*
- Lirceus sp.*

AMPHIPODA (AMPHIPODS)

GRAMMARIDAE

- Crangonyx forbesi*
- Crangonyx gracilis*
- Crangonyx pseudogracilis*

HYALELLIDAE

- Hyaella azteca*

DECAPODA (CRAYFISHES & SHRIMPS)

PALAEEMONIDAE

- Macrobrachium ohione*

CAMBARIDAE

- Fallicambarus fodiens*
- Orconectes immunis*
- Orconectes propinquus*
- Orconectes virilis*
- Procambarus acutus*
- Procambarus gracilis*

Total number of species = 14.

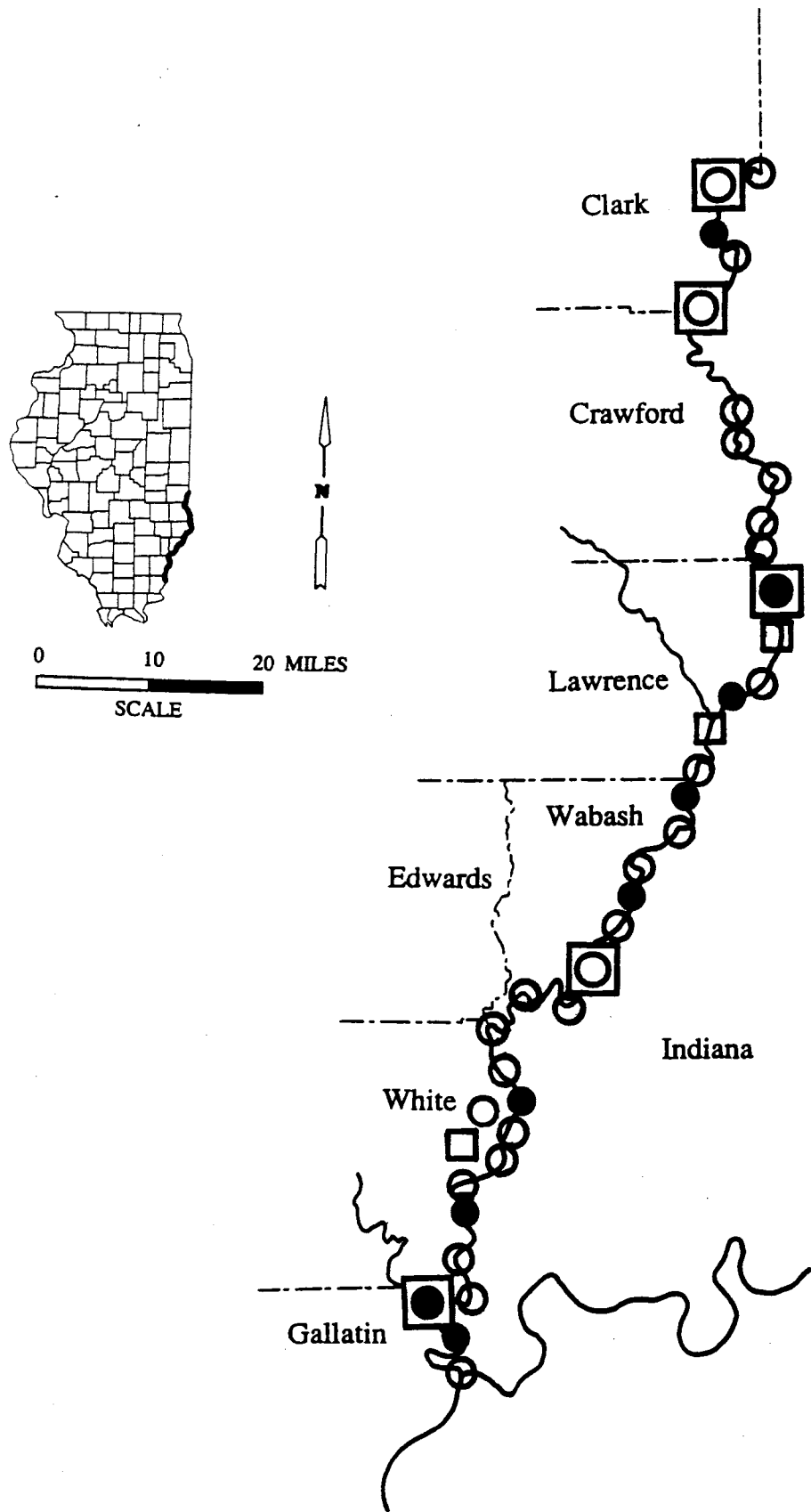
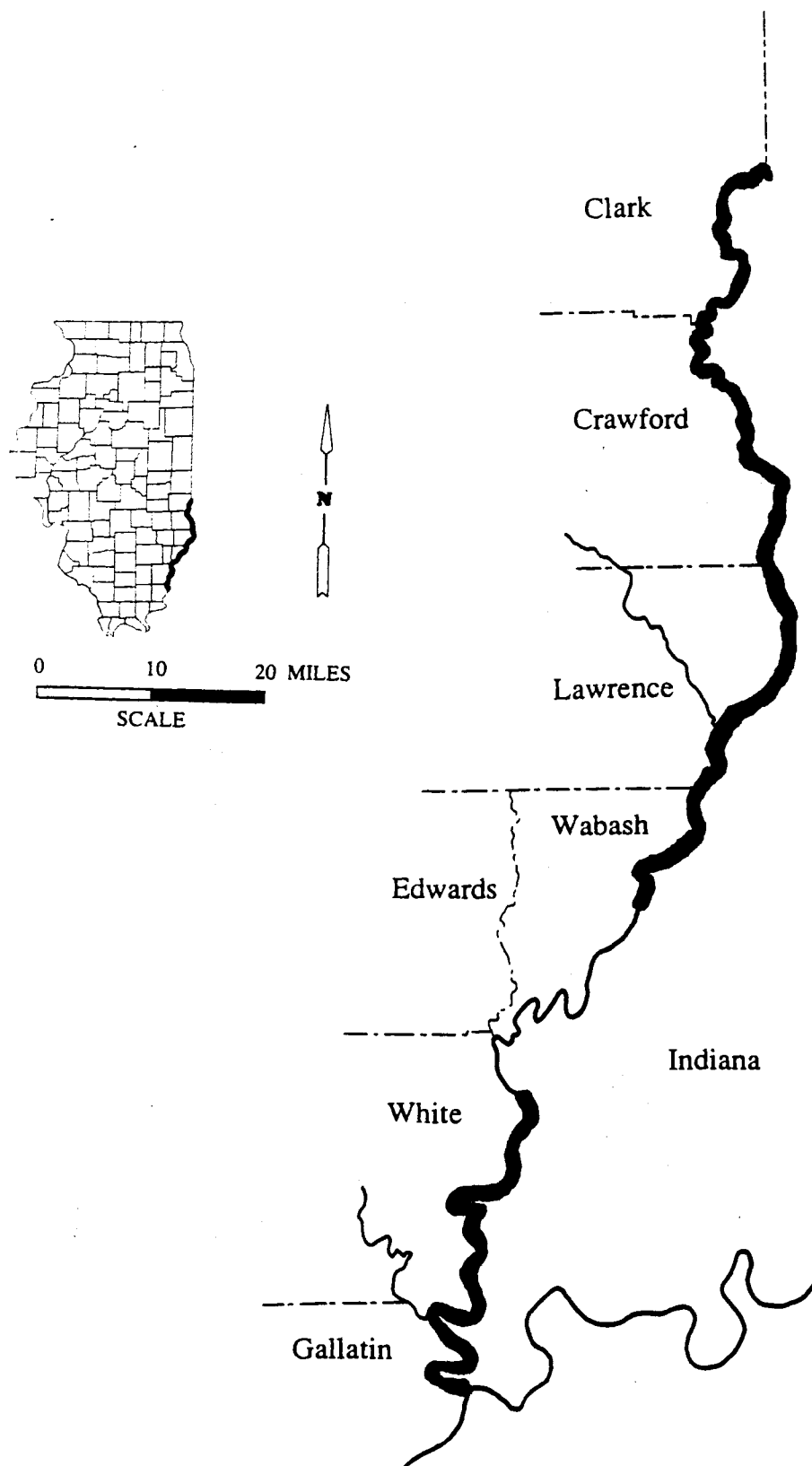


Figure 25-4. Map of historic (open symbols = pre-1980) and extant (solid symbols = 1980 to present) populations of threatened or endangered fishes (squares) and mussels (circles) in the Wabash River.



25. The Wabash River

- Wabash River, New Harmony to Ohio River, Gallatin/White Co.
(fat pocketbook, fanshell, redspotted sunfish)

- Wabash River, Illinois state line in Clark Co., Ill., to White River,
Clark/Crawford/Lawrence/Wabash Co.
(elephant-ear, sheepnose, high mussel diversity)