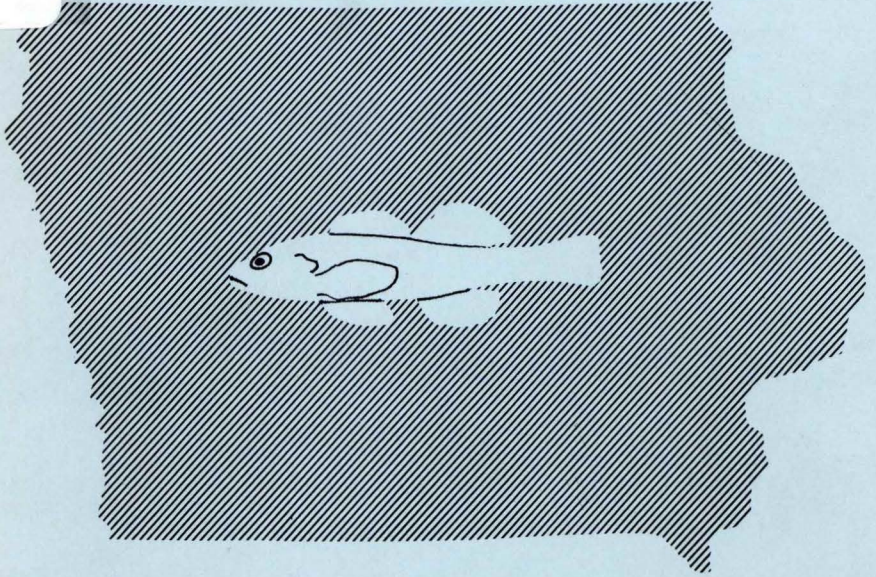


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ENDANGERED AND THREATENED FISH OF IOWA

Compiled by

Dean M. Roosa, Ecologist

State Preserves Advisory Board

In Cooperation With The

Fisheries Section, Iowa Conservation Commission

October, 1977

Special Report of the Preserves Board

No. 1

Des Moines, Iowa

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## IOWA'S THREATENED AND ENDANGERED SPECIES OF FISH

Compiled by  
Dean M. Roosa, Ecologist  
State Preserves Board

### INTRODUCTION

Biologists, especially conservationists and ecologists, share a common concern over the impending or actual disappearance of a species from our state; often it is caused by human activity. Members of aquatic communities have been most affected by man's activities, especially pollution and agricultural intensification. Polder (1953), Miller (1954) and Goellner (1964) made early pleas for the study and preservation of Iowa's lesser-known species; Goellner also pointed out the moral responsibility we have to future generations. Loss, or sharp decline of a species should invoke immediate action as it hails changing, and often worsening, conditions.

Early Iowa, over 85% prairie, must have abounded with clear, pure streams with diverse fish populations. Today, such streams are at a premium and a number of fish species have been unable to adapt to the changes and have vanished; others are having an increasingly difficult time existing.

Bailey (1956) listed 136 species or subspecies of native and four introduced species of fish for Iowa. Since then, four additional species have been added; the Pugnose Shiner Notropis anogenus (Bailey, 1959), the Mottled Sculpin Cottus bairdi (Johnson, 1972), the Pearl Dace Semotilus margarita (Menzel and Boyce, 1973) and the White Amur Ctenopharygedon idella first introduced into Iowa waters by Iowa Conservation Commission Biologists in 1972. The Mottled Sculpin, though recognized as part of the states ichthyofauna only since 1972, it is now considered sufficiently abundant in northeastern Iowa waters to not be included on this list and now appears to be more abundant than the Slimy Sculpin Cottus cognatus Richardson (Don Degan, State Conservation Commission Fisheries Biologist, personal communication, 1977.)

Fortunately, Meek (1889-1894) and Call (1892) provided some good baseline data on Iowa fish populations from about the turn of the century. Later, reports on Lake Okoboji (Larabee, 1926), Mississippi River near Keokuk (Coker, 1930), Clear Lake (Bailey and Harrison, 1945), Boone County (Starrett, 1950), Des Moines River Basin (Harrison, 1950), Missouri River tributary streams (Harrison and Speaker, 1954) Wapsipinicon and Iowa-Cedar River drainages (Cleary, 1952, 1954) have furthered the knowledge of Iowa's ichthyofauna. Perusal of the literature gives dramatic evidence of the impact of man on Iowa's native fish populations. Meek's studies will grow in value, as will the studies which followed in the same area, as Iowa's ichthyofauna is further attenuated. Repeat studies have already shown a number of extirpations and a number of species once widespread, are now rare or very local. During compilation of this list it became obvious that we badly need a state-wide fish survey. This should be a top priority of the non-game and endangered species program.

Even though some species that appear on this list are found in Iowa at the edge of their range, these species were part of our native fauna and should be protected. The genetic material existing in these peripheral populations may be more valuable because they are separated from the main population and may be evolving their own adaptive strategies.

This list should be regarded as somewhat preliminary as it is the first attempt to treat Iowa's rare species of fish. The list will be revised in two years and at that time, hopefully with a greater knowledge of rarities, a highly accurate list will result.

The following terminology was utilized in compilation of the list:

- Extirpated; gone from our state but still occur elsewhere. Those listed as 'probably extirpated' or 'possibly extirpated', if found in Iowa waters, should be regarded as 'endangered'.
- Endangered; may become extirpated in the foreseeable future if their habitat worsens and if no action is taken. This category may have a modifier due to distribution; for example, 'endangered-peripheral' signifies an endangered species on the edge of its range in Iowa.
- Threatened; may become endangered in the foreseeable future if their habitat worsens and if no action is taken.
- Undetermined; not enough information has been collected to make a determination of its status within the state, but is of concern, appears in low numbers and should be investigated. This category would include those species that have declined in recent years, but not to the point to be considered threatened.

This is strictly a state list; these species may be more abundant in another part of their range. It is hoped that a regional (i.e. Upper Mississippi) list can be compiled when all state lists are completed. The list was compiled in response to the Iowa Endangered Species Act. A copy of this act, now Chapter 109A of the Code of Iowa, can be found in Appendix I.

North American ranges are from Carlander (1969), Hubbs and Lagler (1941, 1947) or Pfleiger (1975). Taxonomic arrangement follows Bailey (1956).

#### ACKNOWLEDGMENTS

The list is a result of literature review and from correspondence with Dr. Virgil Dowell, University of Northern Iowa, Cedar Falls, Dr. Karl Goellner, Coe College, Cedar Rapids, Dr. Bruce Menzel, Iowa State University, Ames, James Russell, Cedar Rapids and from comments during review by the Iowa Conservation Commission's Fisheries section.

Table I. Status of Iowa's Endangered or Threatened Fish.

	Endangered	Threatened	Probably or Possibly Extirpated	Undetermined
Chestnut Lamprey		X		
American Brook Lamprey		X		
Lake Sturgeon	X			
Pallid Sturgeon	X			
Alabama Shad			X	
Skipjack Herring		X		
Grass Pickerel		X		
Redside Dace			X	
Southern Redbelly Dace				X
Sturgeon Chub			X	
Sicklefin Chub	X			
Lake Chub	X			
Gravel Chub		X		
Pugnose Shiner		X		
Ironcolor Shiner			X	
Blacknose Shiner	X			
Weed Shiner		X		
Silverband Shiner	X			
Topeka Shiner		X		
Pugnose Minnow				X
Pearl Dace	X			
Lake Chubsucker			X	
River Redhorse			X	
Black Redhorse	X			
Starhead Topminnow	X			
Plains Topminnow	X			
Longear Sunfish	X			
Crystal Darter				X
Western Sand Darter		X		
Mud Darter		X		
Bluntnose Darter		X		
Least Darter	X			
Orangethroat Darter	X			
Gilt Darter			X	
Pirate Perch				X

PETROMYZONTIDAE (LAMPREYS)

Primitive elongate fishes that lack jaws but have an oral sucking disk armed with horny rasping teeth. Adults of some species are parasitic on other fishes

\* Chestnut Lamprey Ichthyomyzon castaneus Girard

Status: Threatened. Listed as 'endangered' by Miller (1972) for Nebraska and 'rare' for Kansas.

Range in North America: Interior lowlands from western Manitoba and northern Wisconsin to the Alabama River system in Georgia and to Louisiana and eastern Oklahoma.

Range in Iowa: Known only from Allamakee County in 1953 and Clayton County in 1953 and 1977.

Habitat: Adults require large rivers and lakes; larvae need clear medium-sized permanent flowing streams with stable sand bars. They require several years to reach adulthood, when they return to the large streams.

Reason for decline: Probably never common in Iowa. Difficult to distinguish from silver lamprey. A study by Fisheries Biologist Gary Ackerman (1976) revealed this species much less abundant than the silver lamprey in Pools 10, 11 and 12 of the Mississippi River.

Recommendations: Its interesting life history should be further investigated. We should protect enough small to medium tributary streams for spawning.

\* American Brook Lamprey Lampetra lamottei (LeSueur)

Status: Threatened: Listed by Miller (1972) as threatened for Connecticut, Massachusetts and Missouri; listed on the Minnesota list as a 'species of special interest'; not on the Illinois, Michigan or Missouri lists.

Range in North America: Missouri and Minnesota east to Maryland and Connecticut.

Range in Iowa: Known only from collections in Buchanan, Delaware, Fayette and Linn counties, plus an 1892 Meek Collection from Polk county. The brief duration of the adult stage and the secretive habits make collection difficult.



Habitat: Spring spawning requires sandy bottoms and swift current; the larvae live in burrows for several years. In Iowa, adults are normally found in small creeks; elsewhere in its range it may be found in medium-sized rivers, but never in large, silty rivers.

Reason for decline: Never common; fishery biologists feel this species has decreased markedly in recent years, perhaps due to loss of high quality spawning streams. (Don Degan and Gaige Wunder, State Conservation Commission Fishery Biologists, personal communication).

Recommendations: Fall and spring surveys should be undertaken to delineate this species' status in Iowa waters.

#### ACIPENSERIDAE (STURGEONS)

This primitive family is distinguished by rows of armorlike bony plates which partially cover the body and by the presence of four fleshy barbels which act as sense organs for feeding and are located on the underside of the snout.

#### \* Lake Sturgeon Acipenser fulvescens Rafinesque

Status: Endangered. Listed as 'highly vulnerable' by Illinois and 'endangered' for Iowa and for almost its entire U.S. range by Miller (1972): appears on Nebraska's 'threatened or endangered' list; 'endangered' on the Missouri list.

Range in North America: From Alberta to the Gulf of St. Lawrence, south in the Mississippi River Valley to Louisiana.

Range in Iowa: Known only from the Mississippi River bordering the following counties: Allamakee, 1953; Clayton, 1953; Muscatine, 1892 and Lee, 1930.

Habitat: Bottom feeder in large, moderately clear rivers and lakes.

Reason for decline: Never common during this century. Commercialization of the Mississippi River has probably caused some decline.

Recommendations: The Commission should do all it can to prevent further degradation of its Mississippi River habitat.

\* Pallid Sturgeon Scaphirhynchus albus (Forbes and Richardson)

Status: Endangered. Listed as 'rare', 'restricted or uncertain status' by Illinois and is on Nebraska's list of 'threatened or endangered' fish and 'endangered' by Missouri. Listed by Miller (1972) as 'threatened' throughout its U.S. range and 'endangered' for Iowa.

Range in North America: Mississippi River and its larger tributaries and the Missouri River.

Range in Iowa: Known only from a 1930 collection from the Mississippi River near Keokuk and from the Missouri River in 1977. Possibly has not occurred in the Iowa portion of the Mississippi River since the Keokuk dam was built.

Habitat: Bottom feeder in large, turbid rivers.

Reason for decline: Never common: surely has been harmed by the degradation of the two rivers of its occurrence.

Recommendations: None.

CLUPEIDAE (HERRINGS)

\* Alabama Shad Alosa alabamae Jordan and Evermann

Status: Probably extirpated. Listed as 'rare' by Miller (1972) for Missouri; 'rare' on Missouri's list (1974).

Range in North America: An anadromous species, entering the principal eastern streams tributary to the Gulf of Mexico; up the Mississippi River system to Iowa and Kentucky.

Range in Iowa: Known only from the Mississippi River near Keokuk in 1930. Not now known from the Mississippi River drainage system, except for recent reports from Oklahoma and Kentucky (Carlander 1969). There are a few recent reports from Missouri (Pflieger, 1975).

Habitat: Enters large fresh water rivers to spawn; may not eat while on spawning migration.

Reason for decline: Never common; damming the Mississippi River may have interfered with its spawning migration.

Recommendations: None

\* Skipjack Herring Alosa chrysochloris (Rafinesque)

Status: Threatened. Listed by Miller (1972) as 'rare' for South Dakota.

Range in North America: Gulf of Mexico and streams of Gulf drainage; up Mississippi River at least as far as Lake Pepin.

Range in Iowa: Formerly Mississippi River and eastern Iowa rivers; presently in Missouri River where it was collected in 1972, 1973 and 1974 (Kay R. Hill, Iowa Conservation Commission Fisheries Research Biologist, personal communication).

Habitat: Large rivers where it feeds on minute plants, animals and small fishes.

Reason for decline: It is probable that impoundment of the Upper Mississippi River for navigation caused this highly migratory species to sharply decline.

ESOCIDAE (PIKES)

\* Grass Pickerel Esox americanus Gmelin

Status: Threatened. Not mentioned by the Illinois, Missouri or Wisconsin lists, or by Miller (1972).

Range in North America: From St. Lawrence River at Montreal, along Lake Ontario southern Michigan, Wisconsin, Nebraska south to Gulf of Mexico in Texas.

Range in Iowa: Now restricted to Mississippi River and its tributaries in southeast Iowa. Formerly in upper reaches of streams throughout Iowa. Not taken in 1946-48 by Harrison (1949), and not in 1948-52 by Cleary (1952) in the Wapsipinicon, and reported as "occasional" in the lower Cedar River by Cleary (1953).

Habitat: Requires clear, vegetated water of low current.

Reason for decline: Preferred habitat is less common now than formerly.

CYPRINIDAE (MINNOWS)

\* Redside Dace Clinostomus elongatus (Kirtland)

Status: Probably extirpated. Listed as 'rare' for Michigan by Miller.

Range in North America: Discontinuous from Minnesota, Wisconsin and Michigan to New York south to Ohio and Kentucky.

Range in Iowa: Formerly known from Yellow River in Allamakee County by an 1892 Meek collection;

Habitat: Typically in clear, gravelly creeks.

\* Southern Redbelly Dace Phoxinus erythrogaster (Rafinesque)

Status: Undetermined. Not mentioned in lists of nearby states.

Range in North America: Discontinuous range from Minnesota and Wisconsin to Ohio, Kentucky and Missouri .

Range in Iowa: Restricted to streams in northeast Iowa. Reported by Meek (1892) as common in a creek in Jones Co.; it was not found there by Cleary (1952). Listed as 'occasional' by Cleary for Cedar Creek. Taken in Lime, Bear and Buffalo Creeks in Buchanan County during 1958-1966 (Dr. Virgil Dowell, personal communication 1976) and recently in Buchanan and Linn counties (James Russell, Cedar Rapids, personal communication, 1977). Still found in Maquoketa River in Delaware County (Don Degán, Fisheries Biologist, personal communication, 1977).

Habitat: Lime-rock creeks.

Reason for Decline: Possibly not less abundant today than formerly; however, degradation and siltation of habitat could prove disastrous.

Recommendations: This species reaches its greatest abundance in Iowa in the above-mentioned streams. Because of its restricted range in North America, Iowa streams are important to its continued existence and should be given protection.

\* Sturgeon Chub Hybopsis gelida (Girard)

Status: Possibly extirpated. Listed by Ill. as 'rare, restricted or uncertain status'. Listed as 'rare or endangered' for Missouri by Miller (1972). Does not appear on the Wisconsin or Missouri state lists.

Range in North America: Missouri River drainage from Montana to the Mississippi River drainage to southern Illinois.

Range in Iowa: Known only from a 1951 collection from the Missouri River at Mills Co. Reported as abundant

by Meek (1892), but these specimens were later referred to H. meekii by Bailey (1951).

Habitat: Channels of the larger rivers with gravel bottoms.

Reason for decline: Probably linked to the general decline of the Missouri River as a natural waterway.

Recommendations: None

\* Sicklefing Chub Hybopsis meeki (Jordan and Evermann)

Status: Endangered. Listed by Miller (1972) as 'rare or endangered' for Missouri and 'rare' for South Dakota. Not on Illinois or Nebraska's list; 'endangered' on the Missouri list.

Range in North America: Missouri River system from Montana to Missouri; Mississippi River in southeast Missouri; lower parts of Kansas rivers.

Range in Iowa: Known only from a few Missouri River collections.

Habitat: Strong currents of large rivers with fine sand or silt bottoms.

Reason for decline: Always rare; more so now due to degradation of Missouri River.

Recommendations: If habitat for this species still exists in the Missouri River, attempts should be made to protect it from further degradation.

\* Lake Chub Couesius plumbeus (Agassiz)

Status: Endangered-relict. Listed by Miller (1972) for Massachusetts as 'depleted'. 'Rare, restricted or uncertain status' on Illinois' list.

Range in North America: From the Delaware and Hudson River systems to the Fraser system in British Columbia.

Range in Iowa: Known only from "Twin Springs", cold springs in Dubuque County. A relict species. The original collection site has since been destroyed (James Russell, personal correspondence, 1977).

Habitat: Cold streams and cold lakes.

Reason for decline: Not common in historic times.

Recommendations: Springs near original collecting site should be investigated for occurrence of this species; if

it still exists, some form of state protection should be given.

\* Gravel Chub Hybopsis x-punctata (Hubbs and Crowe).

Status: Threatened. Listed by Miller (1972) as endangered for Wisconsin.

Range in North America: Southern Ontario, Pennsylvania and Kentucky to Minnesota, Kansas and Oklahoma.

Range in Iowa: Known from scattered locations, mainly in eastern Iowa; perhaps the remaining good habitat is at the Buchanan County site on the Wapsipinicon River, where Cleary (1952) took a single specimen. Meek found this species in four locations, one of which was the Wapsipinicon River in Buchanan County, where Harlan and Speaker (1956) reported taking a series 60 years later from the exact site. Dowell (personal communication, 1976) took this species in the Cedar River north of Cedar Falls in the period 1956-present, the Volga River in 1963 and the Turkey River in 1963. Russell (personal communication 1977) reported taking this species recently from the Cedar River at Cedar Rapids.

Habitat: Swift water over pea-sized gravel or limestone rubble bottom.

Reason for decline: Habitat requirements of this species are very specific and it is intolerant to siltation.

Recommendations: Little is known of this species; its habits should be investigated and watersheds of its remaining habitats should be given protection.

\* Pugnose Shiner Notropis anogenus (Forbes)

Status: Threatened. Listed by Miller (1972) as 'endangered' for Wisconsin and 'vulnerable' on the Illinois list.

Range in North America: New York to North Dakota.

Range in Iowa: Not reported by Harlan and Speaker (1956). 'Occasionally collected in West Okoboji' (Dowell, personal comment 1976).

Habitat: Clear vegetated lakes.

Reason for decline: Loss of preferred habitat in Iowa.

Recommendations: Every attempt should be made to maintain high quality and clear water conditions for West Okoboji Lake.

\* Ironcolor Shiner Notropis chalybaeus (Cope)

Status: Possibly extirpated. Listed by Miller (1972) as endangered for Delaware, 'rare and depleted' for Maryland, 'rare' for Michigan, and 'indeterminate' for Wisconsin. Illinois (1976) lists it as 'rare, restricted or uncertain status.'

Range in North America: Coastal lowlands, New Jersey to Texas and north in Mississippi drainage to Iowa.

Range in Iowa: Known only from three collections, all more than 50 years old; the one with locality was from the Cedar River.

Habitat: Very clear waters with submerged vegetation and low flow.

\* Blacknose Shiner Notropis heterolepis (Eigenmann and Eigenmann)

Status: Endangered. It is listed as 'vulnerable' on the Wisconsin (1972) state list and 'endangered' on the Missouri (1974) list. Miller (1972) lists it as 'depleted' for Missouri, 'rare' for Nebraska and Iowa and 'endangered' for South Dakota.

Range in North America: Southeast Alberta to Hudson Bay, Quebec, Ohio, Illinois and Nebraska.

Range in Iowa: Formerly widespread in Iowa (see Meek, 1893 or Dowell, 1962, for discussions of former occurrence). Thought to be extirpated until recollected in 1941 by Dr. Raymond Johnson from a small stream flowing into Lake Okoboji and in 1955 from Trumbull Lake by a Conservation Commission fishery survey crew (Cleary, 1956). Dowell (1962 and personal communication, 1976) has since collected it at the Trumbull Lake site as well as from streams in Clay, Dickinson and Osceola counties during the years 1961, 1962 and 1964.

Habitat: Requires clear and vegetated waters.

Reason for decline: Loss of our clear water lakes and vegetated streams in its habitat area.

Recommendations: Trumbull Lake, which seems to be the point of greatest abundance in Iowa for this species, and the streams where Dowell found it, should be further investigated. Attempts should be made to assure degradation of habitat does not occur.

\* Weed Shiner Notropis texanus (Girard)

Status: Threatened; not mentioned by Miller (1972), the Illinois or Wisconsin state lists.

Range in North America: Southeast Minnesota and northeast Iowa to the Mississippi Basin in Wisconsin and Illinois and the Lake Michigan drainage of Wisconsin; also in the Grand, Kalamazoo and Saginaw River systems in Michigan, the Lower Mississippi Valley and Lower Gulf drainages.

Range in Iowa: Presently only known from weedy habitats in the Mississippi River. Formerly known from such habitats in the Cedar River, but not collected by Cleary during his 1948-1952 study.

Habitat: Vegetated rivers.

Reason for decline: Requires weedy backwater habitats; in Iowa, these have been largely lost.

Recommendations: A survey should be done to determine the present status of this species.

\* Silverband Shiner Notropis shumardi (Girard)

Status: Endangered; possibly extirpated. Miller (1972) listed it as 'rare' for South Dakota.

Range in North America: South Dakota east and south to Indiana, Alabama and Texas.

Range in Iowa: Known only from a single collection by Meek in the Missouri River near Sioux City.

Habitat: Large, turbid rivers.

Reason for decline: Unknown; little is known of the biology of this species.



Recommendations: Obviously the Missouri River is badly in need of collecting to determine what species are present and to help assess the damage of engineering practices during the past several decades.

\* Topeka Shiner Notropis topeka Gilbert

Status: Threatened. Listed by Miller (1972) as 'endangered' for Nebraska and 'rare' for South Dakota.

Range in North America: South Dakota and southern Minnesota to Kansas and Missouri.

Range in Iowa: Northwest Iowa streams. Harrison (1949) noted it was common in the upper Des Moines River in 1946, but becoming rare in 1948. Cleary (1953) listed it as 'very rare' for the upper part of the Iowa River. Harrison and Speaker (1954) took a single specimen from the Rock River at Rock Rapids, Lyon County. Dowell (personal communication, 1976) collected this species during 1958-1964 from the Little Rock River in Lyon County, the Boyer River and Raccoon River in Sac County and Lake Okoboji in Dickinson County. Russell (personal communication 1977) reports recent collections from Van Buren County.

Habitat: Quiet pools of small clear streams with sandy shoals and low flow.

Reason for decline: General loss of favorable habitat and the species' restricted range.

Recommendations: A survey of northwestern Iowa streams should be conducted and selected ones protected. The species apparently is most abundant in the Little Rock River in Lyon County (Dowell, personal communication, 1976).

\* Pugnose Minnow Notropis emiliae (Hay)

Status: Undetermined. Listed as 'rare, possibly endangered' for Missouri by Miller (1972).

Range in North America: Southern Minnesota to Michigan south to Florida and Texas.

Range in Iowa: Mississippi River and lower reaches of the Yellow River in Allamakee County. Dowell (personal communication, 1976) collected it on eight separate occasions from two sites in Clayton County in the Mississippi River and found it abundant in two collections.

Habitat: Requires gravel bars for spawning, associated with weed shiners in Mississippi River.

Reason for decline: Perhaps no less common than formerly; possibly undercollected.

Recommendations: The true status of this species should be determined.

\* Pearl Dace Semotilus margarita (Cope)

Status: Endangered. Listed by Miller (1972) as 'rare' in Nebraska and 'endangered' in South Dakota.

Range in North America: Most of Canada south of the tundra and east of the Rockies south to the Nebraska sandhills, northern two-thirds of Michigan, Pennsylvania, and east of Alleghenies to Virginia.

Range in Iowa: First discovered in Iowa in 1972 by Dr. Bruce Menzel in Worth County (Menzel and Boyce, 1973). This station is now the southern-most for this species in the Mississippi River Valley.

Habitat: Small spring-fed creek with clean gravel bottom.

Reason for decline: This species may have existed in small numbers in Iowa in suitable habitats historically.

Recommendations: Thought should be given to trying to protect the habitat of this species.

CATOSTOMIDAE (SUCKERS)

\* Lake Chubsucker Erimyzon sucetta (Lacepede)

Status: Possibly extirpated. Listed by Miller (1972) as 'rare' for Wisconsin.

Range in North America: Southeast Minnesota to New York and south to Florida and Texas.

Range in Iowa: Known only from an 1892 collection by Meek from the Cedar River in Cedar County.

Habitat: Shallow weedy areas of low flow; gravel bars required for spawning.

\* River Redhorse Moxostoma carinatum (Cope)

Status: Possibly extirpated. Listed by Miller (1972) as 'rare' in Michigan and 'depleted' in Kansas. Listed as 'vulnerable' on the Illinois state list.

Range in North America: Nebraska to St. Lawrence and south to northern Georgia, Alabama and Oklahoma.

Range in Iowa: Known only from the Raccoon and Floyd Rivers before the turn of the century, not collected in 1946-48 by Harrison, (1949), not mentioned by Cleary (1954).

Habitat: Deeper waters of large rivers.

Reason for decline: Intolerant of pollution and heavy siltation.

Recommendations: Gary Ackerman, Conservation Commission Fisheries Section, has seen this species in the Platt and Grant Rivers in Wisconsin. Perhaps larger streams in northeast Iowa should be sampled to determine if it is still a member of the state fauna.

\* Black Redhorse Moxostoma dugesnei (LeSeuer)

Status: Endangered. Listed by Miller (1972) as 'rare' for Wisconsin. Listed as 'extirpated' on the 1973 Wisconsin state list.

Range in North America: Southern Minnesota to St. Lawrence near Montreal south to northern Alabama and Oklahoma.

Range in Iowa: Confined to the upper reaches of the Turkey River watershed.

Habitat: Pools of swifter flowing portions of medium to large streams with clear water and clean bottoms.

Reason for decline: It swims up the smaller streams to lay its eggs. Loss of quality of these streams has been damaging. It is intolerant of siltation.

Recommendations: An investigation on the status of this species should be conducted; perhaps some portions of the upper Turkey River watershed would qualify for some form of protection.

CYPRINODONTIDAE (KILLIFISHES)

\* Starhead Topminnow Fundulus notti (Agassiz)

Status: Endangered, possibly extirpated. Listed by Miller (1972) 'rare' in Wisconsin, 'depleted' in Missouri and Michigan. Listed on the Illinois state list as 'rare, restricted or uncertain status'.

Range in North America: From Mississippi River tributaries of Iowa and southeast Wisconsin and from lower Michigan drainage of Michigan and Indiana to northeast Arkansas and western Tennessee and central Gulf drainages.

Range in Iowa: Known only from Lost Island Lake, Palo Alto County (no date), Pine Creek, Muscatine County (ca 1956) and Cedar River Oxbow, Cedar County in 1892.

Habitat: Has preference for weedy, quiet water of a minimum depth.

Reason for decline: Perhaps historically rare in Iowa.

Recommendations: Additional survey work is needed to more accurately establish the status of this species.

\* Plains Topminnow Fundulus sciadicus (Cope)

Status: Endangered. Listed by Miller (1972) as 'rare' in Kansas and South Dakota.

Range in North America: Nebraska, eastern Colorado, southern South Dakota, northwestern Iowa; isolated stocks in central and southeastern Missouri, Kansas and Oklahoma.

Range in Iowa: Known only from Little Sioux River, Dickinson County (ca 1956), East Okoboji L., in 1894, Floyd R., Woodbury County in 1894 and Rock R., Lyon County (UMMZ, no date). Harlan and Speaker (1956) noted "This species may be on its way to extinction in the state". Harrison and Speaker (1954) took a single specimen in the Little Sioux River.

Habitat: Quiet pools and backwater areas of small creeks.

Reason for decline: Unknown, but probably general loss of habitat.

Recommendations: A survey should be conducted to determine the present status of this species.

CENTRARCHIDAE (SUNFISHES)

\* Longear Sunfish Lepomis megalotis

Status: Endangered, possibly extirpated. Not mentioned by Miller (1972) or by the Illinois, Michigan or Wisconsin lists.

Range in North America: Northern Minnesota, northern Illinois and Lower Peninsula of Michigan to the Lake Erie and Huron drainages of Ontario, the Lake Erie tributaries of Ohio to southern Quebec and parts of Allegheny system of Pennsylvania south to northern Mexico and Gulf slope.

Range in Iowa: Known only from the Raccoon River in Dallas County and Cedar River in Mitchell County. Perhaps no longer present in the state as it has not been collected since 1932.

Habitat: Needs clear, vegetated streams with sandy or rocky bottoms.

Reason for decline: General loss of the clear, vegetated streams through our state; it is apparently on the edge of its range in Iowa.

Recommendations: Harlan and Speaker (1956) said "It may possibly still exist in the Cedar River near Otranto since this area is a vegetated stream relict - the only major one left in the state". This site should be investigated and given some form of protection by the state if its relict nature still persists. This species may be a true relict.

PERCIDAE (PERCHES)

\* Crystal Darter Ammocrypta asprella (Jordan)

Status: Undetermined. The only record mentioned by Harlan and Speaker (1956) was from the Wisconsin side of the Mississippi River. Perhaps it has by now become part of the Iowa fauna.

Range in North America: Central Mississippi and Ohio Valleys south to Louisiana, Alabama and Texas.

Range in Iowa: Known only from a Mississippi river collection from the Wisconsin side.

Habitat: Open stretches of large, clear streams with low flow and moderate gradient.

\* Western Sand Darter Ammocrypta clara (Jordan and Meek)

Status: Threatened. Listed as 'vulnerable' by Illinois (1976); Miller (1972) lists it as 'depleted' for Missouri and 'rare' for Iowa.

Range in North America: Mississippi River Valley from Wisconsin and Minnesota to Louisiana and eastern Texas.

Range in Iowa: Now largely confined to the Mississippi River. Formerly from larger rivers across the state. Taken in Des Moines River in Boone County by Harrison in 1946-48. Reported as rare by Meek for the Wapsipinicon River, it could not be found there by Cleary (1952). Listed by Cleary (1953) as very rare for the Middle Cedar River and 'rare' for the Shellrock River. Dowell (personal communication, 1976) found it in West Fork Cedar River. A specimen was taken in Pool 14 of the Mississippi River in 1977 (M. Steve Pallo, Northbrook, Illinois, personal communication, 1977).

Habitat: Quiet margins and shallow backwaters of stream channels; invariably found over sandy bottom.

Reason for decline: It is intolerant of excessive siltation and turbidity; this may be a contributing factor to its decline.

\* Mud Darter Etheostoma asprigene (Forbes)

Status: Threatened. Listed by Miller as 'rare and endangered' for Kentucky and 'rare' for Wisconsin.

Range in North America: Mississippi Valley from Iowa, Minnesota, Wisconsin and southern Indiana southward to northeast Arkansas, Louisiana and eastern Texas. Not taken in Harrison 1946-48 study. Cleary (1953) listed it as 'very rare' for the Middle Cedar River. Dowell (personal communication, 1976) collected it at two locations in Mississippi River at Clayton County between 1958 and 1964.

Range in Iowa: Known from the Mississippi in Allamakee and Clayton Counties. Formerly known from Cedar River overflow in Muscatine county.

Reason for decline: Unknown.

Habitat: Soft bottoms in sluggish parts of large rivers.

Recommendations: Further study needed.

\* Bluntnose Darter Etheostoma chlorosomum (Hay)

Status: Threatened. Listed by Miller (1972) as 'indeterminate' for Wisconsin.

Range in North America: Mississippi Valley from Iowa, Illinois and southern Indiana to the Alabama River system in Alabama and to Texas.

Range in Iowa: Known only from the Mississippi River near New Albin and from an overflow pool of the Cedar River in Muscatine County. Cleary (1953) listed it as 'very rare' for the lower Cedar River. Dowell (personal communication, 1977) collected it at two locations in Mississippi River, Clayton County during the period 1957-1968 and James Russell, (personal communication, 1977) recently collected it near Guttenberg.

Habitat: Sandy, sluggish, lowland streams.

Reason for decline: Probably historically a scarce species; our lack of good baseline data makes it difficult to determine if a decline has occurred.

\* Least Darter Etheostoma microperca Jordan and Gilbert

Status: Endangered, possibly extirpated. Listed by Miller (1972) as 'rare' for Kansas and 'endangered' for Pennsylvania.

Range in North America: Mississippi River system in Minnesota, east through the Michigan-Huron basin and southern drainage of the Lake Superior and western portion of Lake Ontario, south to Kentucky southeastern and southwestern Missouri, n.w. Arkansas and northeast Oklahoma.

Range in Iowa: Known from three east central Iowa collections before 1890; at two of these sites, it was listed as 'rare' by Meek (1892). Collected recently by James Russell near Strawberry Point (personal communication, 1977).

Habitat: Dense vegetation over soft bottom, in quiet waters of streams and in lakes.

Reason for decline: Unknown.

\* Orangethroat Darter Etheostoma spectabile (Agassiz)

Status: Endangered. Not mentioned by Miller. Not on the Illinois or Wisconsin lists.

Range in North America: Eastern Kansas, most of Missouri and parts of Northern Arkansas, to Iowa, Illinois, s.w. Michigan and western Ohio southeast to the Tennessee River in Tennessee and Virginia.

Range in Iowa: Found by Goellner (1964) to exist in two and possibly three widely separated places in eastern Iowa. However, it was noted that one location was in danger of destruction by real estate development. Listed as 'rare' by Cleary (1953) for Cedar Creek. Russell (personal communication, 1977) collected it near Marion and Hiawatha during 1976.

Habitat: Shallow gravelly riffles in smaller permanent creeks.

Reason for decline: In Iowa it is on the northern edge of its range. It has rather narrow habitat requirements, thus subtle changes in streams could be especially damaging. It is quite intolerant of turbidity or intermittent flow.

Recommendations: Its final Iowa holdouts should be given some form of protection.

\* Gilt Darter Percina evides (Jordan and Copeland)

Status: Probably extirpated. Miller (1972) lists it as 'rare' in Kentucky. Wisconsin (1973) lists it as 'changing status'.

Range in North America: Northwest Wisconsin, the Maumee River; the Ohio River drainage from Illinois to New York south to the Tennessee River Systems of North Connecticut and Tennessee; west of the Mississippi River from Iowa to the Ozark region of Missouri; in the Arkansas River drainage of Arkansas and Oklahoma.

Range in Iowa: Known only from old collections (ca 1890) from the Cedar River in Black Hawk and Linn Counties. Harlan and Speaker (1956) state "Doubtless this colorful species is extinct in Iowa".



Habitat: Rocky riffles in rivers.

Reason for decline: Apparently this species had very narrow habitat tolerances.

APHREDODERIDAE (PIRATE-PERCH FAMILY)

\* Pirate Perch Aphredoderus sayanus (Gilliams)

Status: Undetermined. Listed by Miller (1972) as endangered for New York and 'endangered, possibly extinct' for Pennsylvania. Not mentioned on nearby state lists.

Range in North America: Southeastern Minnesota, southern Wisconsin, southern Michigan and southern tributaries of Lake Ontario southbound to the Gulf Coast.

Range in Iowa: Known only from Allamakee County in 1953, Lee County (Harlan and Speaker, 1952) and a 1976 collection from Muscatine County from Chicken Creek (Merle Ihne, Muscatine, personal comm., 1976). Preserved specimen at Muscatine Community College.

Habitat: Small weedy overflow ponds in river bottoms.

Reason for decline: Never common. It is solitary and secretive and hence not easily collected. Perhaps it is being overlooked.

Recommendations: Habitat for this species suffers greatly from channelization. Southeastern Iowa streams should be protected from this.

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A P P E N D I X I

CHAPTER 109A  
MANAGEMENT AND PROTECTION OF ENDANGERED PLANTS  
AND WILDLIFE

Referred to in §109.1

109A.1	Definitions.	109A.6	Species not on list.
109A.2	Co-operation with federal government.	109A.7	Special care to ensure survival.
109A.3	Investigations.	109A.8	Damage to property or human life.
109A.4	Programs.	109A.9	Exemptions.
109A.5	Prohibitions.	109A.10	Penalties.

109A.1 Definitions. As used in this chapter:

1. "*Commission*" means the state conservation commission.

2. "*Director*" means the director of the state conservation commission.

3. "*Endangered species*" means any species of fish, plant life, or wildlife which is in danger of extinction throughout all or a significant part of its range. "Endangered species" does not include a species of insect determined by the commission or the secretary of the United States department of interior to constitute a pest whose protection under this Act would present an overwhelming and overriding risk to man.

4. "*Fish*" or "*wildlife*" means any member of the animal kingdom, including any mammal, fish, amphibian, mollusk, crustacean, arthropod, or other invertebrate, and includes any part, product, egg, or offspring, or the dead body of parts thereof. Fish or wildlife includes migratory birds, nonmigratory birds, or endangered birds for which protection is afforded by treaty or other international agreement.

5. "*Import*" means to bring into, or introduce into, or attempt to bring into, or attempt to introduce into, any place subject to the jurisdiction of this state.

6. "*Person*" means person as defined in section 4.1, subsection 13.

7. "*Plant*" or "*plant life*" means any member of the plant kingdom, including seeds, roots, and other parts thereof.

8. "*Species*" includes any subspecies of fish, plant life, or wildlife and any other group of fish, plants, or wildlife of the same species or smaller taxa in common spatial arrangement that interbreed or cross-pollinate when mature.

9. "*Take*", in reference to fish and wildlife, means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect and it includes an attempt to engage in any such conduct.

10. "*Take*", in reference to plants, means to collect, pick, cut, dig up or destroy in any manner.

11. "*Threatened species*" means any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. [66GA, ch 109,§1]

109A.2 Co-operation with federal government. The commission shall perform those acts necessary for the conservation, protection, restoration, and propagation of endangered and threatened species in co-operation with

the federal government, pursuant to Public Law 93-205, and pursuant to rules promulgated by the secretary of the interior. [66GA, ch 109,§2]

**109A.3 Investigations.** The director shall conduct investigations on fish, plants, and wildlife in order to develop information relating to population, distribution, habitat needs, limiting factors, and other biological and ecological data to determine management measures necessary for their continued ability to sustain themselves successfully. On the basis of these determinations and other available scientific and commercial data, which may include consultation with scientists and others who may have specialized knowledge, learning, or experience, the commission shall pursuant to chapter 17A promulgate a rule listing those species of fish, plants, and wildlife which are determined to be endangered or threatened within the state.

The commission shall review the state list of endangered and threatened species at least every two years and may amend the list. [66GA, ch 109,§3]

Referred to in §§109A.4, 109A.5, 109A.6

**109A.4 Programs.** The director shall establish programs, including acquisition of land or aquatic habitat, necessary for the management of endangered or threatened species.

In carrying out the programs authorized by this section, the commission may enter into co-operative agreements with federal and state agencies, political subdivisions of the state, or with private persons for the administration and management of any area or program established under this section or for investigation as outlined in section 109A.3. [66GA, ch 109,§4]

**109A.5 Prohibitions.** Except as otherwise provided in this chapter, a person shall not take, possess, transport, import, export, process, sell or offer for sale, buy or offer to buy, nor shall a common or contract carrier transport or receive for shipment, any species of fish, plants, or wildlife appearing on the following lists:

1. The list of fish, plants, and wildlife indigenous to the state determined to be endangered or threatened within the state pursuant to section 109A.3.
2. The United States list of endangered or threatened native fish and wildlife as contained in the code of federal regulations, Title 50, part 17 as amended to December 30, 1974.
3. The United States list of endangered or threatened plants as contained in the code of federal regulations, Title 50, part 17 as amended to December 30, 1974.
4. The United States list of endangered or threatened foreign fish and wildlife as contained in the code of federal regulations, Title 50, part 17 as amended to December 30, 1974.

5. A species of fish, plant, or wildlife appearing on any of the lists which enters the state from another state or from a point outside the territorial limits of the United States may enter, be transported, possessed and sold in accordance with the terms of a federal permit issued pursuant to Public Law 93-205 or an applicable permit issued under the laws of another state. [66GA, ch 109,§5]

**109A.6 Species not on list.** The commission may, by rule, treat any species as an endangered species or threatened species even though it is not listed pursuant to section 109A.3 if it finds that the species so closely resembles in appearance a species which is listed pursuant to section 109A.3 and that enforcement personnel would have substantial difficulty in attempting to differentiate between the listed and unlisted species, and the effect of this substantial difficulty is an additional threat to an endangered or threatened species, or finds that the treatment of an unlisted species will substantially facilitate the enforcement and further the intent of this chapter. [66GA, ch 109,§6]

**109A.7 Special care to ensure survival.** The director may permit the taking, possession, purchase, sale, transportation, importation, exportation, or shipment of endangered or threatened species which appear on the state list for scientific, zoological, or educational purposes, for propagation in captivity of such fish, plants, or wildlife, to ensure their survival. [66GA, ch 109,§7]

**109A.8 Damage to property or human life.** Upon good cause shown and where necessary to reduce damage to property or to protect human health, endangered or threatened species found on the state list may be removed, captured, or destroyed, but only pursuant to a permit issued by the director. [66GA, ch 109,§8]

**109A.9 Exemptions.** This chapter shall not prohibit:

1. The importation of a trophy under a permit issued pursuant to Public Law 93-205 which is not for resale and which was lawfully taken in a manner permitted by the laws of the state, territory, or country where the trophy was caught, taken, or killed.
2. The taking of a threatened species when the commission has determined that its abundance in the state justifies a controlled harvest not in violation of federal laws or regulations. [66GA, ch 109,§9]

**109A.10 Penalties.** Whoever violates any of the provisions of this chapter shall be fined not less than ten dollars nor more than one hundred dollars or be imprisoned in the county jail not more than thirty days. [66GA, ch 109,§10]



