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Robert E. Cleary
Iowa Conservation Commission

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An Annotated Check-List of the Fishes of the Iowa-Cedar River Drainage Basin in Iowa

By ROBERT E. CLEARY

The Iowa-Cedar River drainage basin, which finds the larger of the two rivers, the Cedar, as a tributary to the smaller, is second in size of various inland river drainage basins in the state. The combined rivers drain 11,615 square miles or, roughly, one-fifth of the area of the state.

The Iowa River, which has its source in Crystal Lake, in Hancock County, flows southeast for a distance of 329 miles and has a 685-foot fall from source to mouth. From its source the river has a gentle slope of 1.5 feet per mile till it reaches Franklin and Hardin Counties, where the gradient increases to 7.5 feet per mile. It levels off sharply below Iowa Falls and nearly returns to its original gradient. The valley of the Iowa is narrow and gives rise to only one important tributary, the English River, which enters the Iowa 30 miles above its junction with the Cedar.

The Cedar River has its source near Hayfield, Minnesota, and flows parallel to the Iowa for a distance of 300 miles to its junction

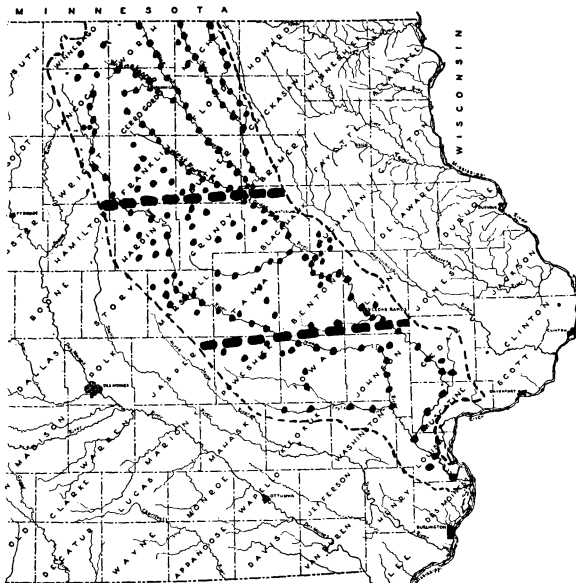


Figure 1. Map showing Cedar-Iowa Drainage basin, location of 1948-1952 collection points, and arbitrary reaches of drainage basin.

with the latter 28 miles from the Mississippi. Its sharpest gradient in Iowa is from the Iowa-Minnesota border to Floyd (5 plus feet per mile). From this point it slopes gradually to 1.7 feet per mile at its confluence with the Iowa. As with the Iowa, the Cedar has a single important tributary in the Shellrock River. The Shellrock, however, also gives rise to two major tributaries, the West Fork and the Winnebago Rivers.

Approximately 70 percent of the joint river basins lie in the eastern Iowa lobe of the Wisconsin glacier. The remaining portion of the basin lies almost entirely in an area covered by the Kansan glacier with the lower reaches of the Iowa River cutting through Illinoian glacial area to its junction with the Mississippi River. The principal soil areas in the Iowa River drainage are Wisconsin drift in the upper basin and Mississippi loess in the middle and lower reaches. The Cedar River flows through Iowan drift in the major portion of its course while the western feeder streams to the Cedar primarily drain Mississippi loess as does the lower reach of the main river.

During the years 1948 and 1952, there were 254 collections made at 189 stations in the combined basins by the writer (see map). These collections were principally in flowing waters with several marginal pond and small lake collections added to increase habitat variety. Distribution data have been augmented by 22 collections made from natural and artificial lakes in the combined drainage. These collections were made by the State Conservation Commission's Lake Survey crew during the above-mentioned years. The flowing water collections were made primarily with short $\frac{1}{4}$ -inch drag seines. In addition to this equipment, larger $\frac{1}{4}$ to $1\frac{1}{2}$ -inch mesh seines up to 300 feet in length, trap nets, and hoop nets were used. The standard lake survey equipment consists of a 500-foot, $\frac{1}{4}$ -inch mesh seine augmented by trap nets. Collections were made from the following natural and artificial lakes in the basin: Clear Lake, Rice Lake, East Twin, West Twin, Crystal Lake, Beeds Lake, Pine Lakes, Union Grove Lake, Cherry Lake, and Lake MacBride.

With the exception of Clear Lake, the other natural lakes (Rice, East and West Twin and Crystal Lakes) are small and shallow and subjected to periodic winter kills. Black bullheads, fathead minnows, and common suckers are the most stable fish populations in these lakes. In recent years substantial stockings of largemouth

black bass and northern pike have been made in these lakes. Carp were found to be abundant in Crystal Lake. Bailey & Harrison (1945) listed 43 species of fish found in Clear Lake. Since this publication, two additional species were discovered by members of the Cooperative Fisheries Research Unit of Iowa State College. The two new species, the northern hog sucker, *Hypentelium nigricans*, and brook stickleback, *Eucalia inconstans*, normally found in small creeks, are believed to have been introduced through an angler's minnow-bucket. Of the 45 species found in the lake, only the following have not been found in recent collections elsewhere in the flowing waters of the drainage system: *Esox masquinongy immaculatus*, northern muskellunge; *Notropis hudsonius*, spottail shiner; *Ameiurus natalis*, yellow bullhead; *Lepomis gibbosus*, pumpkin seed; *Etheostoma nigrum eulepsis*, scaly Johnny darter. The above listed muskellunge, a single specimen, represents the second known record of this species in the inland waters of the state.

The artificial lakes, Beeds, Pine, Union Grove, Cherry, and MacBride, contain established populations of black and white crappies, bluegills, black bullheads and largemouth bass. Common suckers and fathead minnows are the main forage fish present. Adventitious species from the streams, which have been impounded to create these lakes, appear in the samples in varying abundance. However, all species found in these impounded lakes are also found elsewhere in the flowing waters of the drainage.

Other previous collections in the combined drainages were made by Jordan & Meek (1885), and Meek (1892 and 1893). Collections made by Carl Hubbs, J. Clark Salyer, and Reeve M. Bailey, while never published, are incorporated into this check-list since the field notes reside in the State Conservation Commission's files and at Iowa State College. Their collections are present either at the University of Michigan or at Iowa State College's Museum of Zoology. Type specimens taken by the writer are either housed by the Conservation Commission or in the museums of the following colleges and universities: Coe, Iowa State, Iowa State Teachers, Wartburg or Michigan. Due to the difficulty of locating some of Meek's early collections for verification, species noted by him as present in either watershed and not found in recent collections or verified by past investigators will be listed as literature citations. Further, some of Meek's records and identifications are confused, especially in the genera *Carpionodes*, *Moxostoma*, and in those species of *Notropis* which have a black lateral band. For this reason, the writer arbitrarily makes no reference to the presence of some of these

obviously confused species, although they are listed in Meek's publication on his collections in the combined watersheds. Further, upon re-examination of some of Meek's collections housed in the Chicago Natural History Museum, Dr. Carl Hubbs found specimens included and classified as *Notropis heterodon* to be No. 976, *Notropis roseus richardsoni* from West Liberty; No. 954 is the same species from Dumont; and No. 2114, the same from Cedar Rapids. One specimen in No. 976 from West Liberty is *Notropis chalybaeus*. No. 945 is *Notropis heterolepis* from Dumont. Therefore, while not listed in Meek's publications, these species of black-striped *Notropis* are included as such in this check-list.

The writer is especially grateful to Dr. Reeve M. Bailey, University of Michigan, for his encouragement, verification of doubtful species, and aid in utilization of Meek's check-lists; to Paul and Fred J. Pierce and to Seth Shepherd, State Conservation Commission, for aid in collecting; to Tom Moen and Earl Rose, State Conservation Commission, for the collections from artificial and natural lakes in the drainage; and to E. B. Speaker, State Conservation Commission, for suggestions and comments on the manuscript.

The following is an annotated table of 22 families and 104 species and subspecies found or reported to be found in the Cedar-Iowa drainage system. With the inclusion of the five species found only in Clear Lake, the total check-list comprises 109 species and subspecies. The systematic arrangement and nomenclature of species follows that used by Bailey (1951) in his check-list of Iowa fishes. For the purpose of more specific geographical delineation, the table has been divided into several sub-headings. The dashed lines on the map are arbitrary divisions and from top to bottom are defined as Upper, Middle and Lower reaches of the individual main rivers (see map). The annotation of abundance is relative and purely the author's opinion. Since certain populations may shift in abundance at certain times of the year or even day, in an overall distribution work, individual sample abundance is of relatively little importance and is used only as an indice to the findings at the time each collection was made.

Legend to Abbreviations Used in Table

- | | |
|----------------|--------------------------------------|
| A—Abundant. | (Prime Numbers) |
| C—Common. | 1. Literature citation, not verified |
| Oc—Occasional. | (Meek, 1892 or 1893). |
| R—Rare. | 2. Verified from, but not listed in |
| | Meek's collections. |

	Lower Cedar R.	Middle Cedar R.	Upper Cedar R.	Lower Iowa R.	Middle Iowa R.	Upper Iowa R.	Shellrock R.	West Fork R.	Winebago R.	Cedar Streams	Iowa Streams	Cedar Creeks	Iowa Creeks
Petromyzontidae													
<i>Lampetra lamottei</i>													
American brook lamprey													Oc
Polyodontidae													
<i>Polyodon spathula</i>													
Paddlefish	R ¹			Oc ¹									
Acipenseridae													
<i>Scaphirhynchus platyrhynchus</i>													
Shovelnose sturgeon	R												
Lepisosteidae													
<i>Lepisosteus platostomus</i>													
Shortnose gar	R			R							VR		
<i>Lepisosteus osseus oxyurus</i>													
Northern longnose gar	Oc ¹			Oc ¹									
Amiidae													
<i>Amia calva</i>													
Bowfin	Oc			Oc ¹									
Salmonidae													
<i>Salmo trutta</i>													
Brown trout				R									C
<i>Salmo gairdneri</i>													
Rainbow trout				R									C
<i>Salvelinus fontinalis</i>													
Brook trout													R
Clupeidae													
<i>Alosa chrysochloris</i>													
Skipjack		R ¹											
<i>Dorosoma cepedianum</i>													
Gizzard shad		R		R									
Hiodontidae													
<i>Hiodon tergisus</i>													
Mooneye		R ¹											
Umbridae													
<i>Umbrina limi</i>													
Central mudminnow		VR					VR ¹						VR
Esocidae													
<i>Esox vermiculatus</i>													
Grass pickerel		Oc											
<i>Esox lucius</i>													
Northern pike			Oc	Oc	R	Oc	Oc	Oc	Oc				Oc
<i>Esox masquinongy immaculatus</i>													
Northern muskellunge													
		(VR—CLEAR LAKE ONLY)											
Catostomidae													
<i>Ictiobus cyprinellus</i>													
Bigmouth buffalo			C			C							
<i>Carpiodes forbesi</i>													
Plains carpsucker				R	R				R				
<i>Carpiodes cyprinus</i>													
Quillback	A	A	A	A	A	A		Oc		C		C	Oc

	Lower Cedar R.	Middle Cedar R.	Upper Cedar R.	Lower Iowa R.	Middle Iowa R.	Upper Iowa R.	Shellrock R.	West Fork R.	Winebago R.	Cedar Streams	Iowa Streams	Cedar Creeks	Iowa Creeks
<i>Carpiodes carpio carpio</i> Northern river carpsucker		C	C							Oc	Oc	Oc	
<i>Carpiodes velifer</i> Highfin sucker		C			Oc		Oc			Oc			
<i>Moxostoma erythrurum</i> Golden redhorse		Oc	Oc		R			Oc				Oc	
<i>Moxostoma anisurum</i> Silver redhorse		Oc	Oc		Oc		Oc	R		Oc			
<i>Moxostoma aureolum</i> Northern redhorse		Oc	R		R					Oc		Oc	
<i>Hypentelium nigricans</i> Northern hog sucker		R	R		R			R	R	Oc		Oc	
<i>Catostomus c. commersoni</i> Common white sucker	VR	Oc	Oc		Oc	Oc	Oc	Oc	Oc	C	R	Oc	
<i>Minytrema melanops</i> Spotted sucker		R ¹		VR ¹									
<i>Erimyzon sucetta</i> Western lake chubsucker	VR ¹												
Cyprinidae													
<i>Cyprinus carpio</i> Carp	A	A	C	A	A	Oc	C	C	Oc	Oc	Oc	R	R
<i>Notemigonus crysoleucas auratus</i> —W. golden shiner	VR	R	R		Oc					R		VR	
<i>Semotilus a. atromaculatus</i> Northern creek chub		R	Oc		R	Oc	Oc	C	Oc	C	Oc	C	Oc
<i>Chrosomus erythrogaster</i> Southern redbelly dace			VR				VR	VR	VR	VR		Oc	
<i>Hybopsis biguttata</i> Hornyhead chub		R	R		Oc	C ¹	R	R	R	Oc	Oc	Oc	Oc
<i>Hybopsis storeriana</i> Silver chub	VR			VR						R ¹	R		
<i>Hybopsis aestivalis</i> Speckled chub		R									VR		
<i>Hybopsis sp.</i> Gravel chub		VR					Oc						
<i>Rhinichthys atratulus meleagris</i> —W. blacknose dace								R	R	R		Oc	Oc
<i>Phenacobius mirabilis</i> Plains suckermouth minnow	R	Oc			R			R		Oc	Oc	Oc	
<i>Notropis a. atherinoides</i> Common emerald shiner		C			C								
<i>Notropis rubellus</i> Rosyface shiner		R	Oc		R		Oc	Oc	Oc	Oc		C	
<i>Notropis umbratilis</i> Redfin shiner			VR									Oc	VR
<i>Notropis cornutus frontalis</i> Northern common shiner													

	Lower Cedar R.	Middle Cedar R.	Upper Cedar R.	Lower Iowa R.	Middle Iowa R.	Upper Iowa R.	Shellrock R.	West Fork R.	Winneshago R.	Cedar Streams	Iowa Streams	Cedar Creeks	Iowa Creeks
<i>Notropis chalybaeus</i> Ironcolor shiner	VR ²												
<i>Notropis roseus richardsoni</i> Northern weed shiner	VR ²	VR ²						VR ²					
<i>Notropis heterodon</i> Blackchin shiner	Oc ¹	Oc ¹				R ¹	R ¹	R ¹					
<i>Notropis hudsonius</i> Spottail shiner	(C—CLEAR LAKE ONLY)												
<i>Notropis blennioides</i> River shiner	VR	VR											VR
<i>Notropis d. dorsalis</i> Central bigmouth shiner	Oc	C	A	Oc	Oc	A	A	A	A	A	C	A	A
<i>Notropis spilopterus</i> Spotfin shiner	Oc	A	A	Oc	C	A	C	C	C	C	R	Oc	Oc
<i>Notropis l. lutrensis</i> Plains red shiner	C			C						C	C	C	C
<i>Notropis d. deliciosus</i> Eastern sand shiner	R	C	A	R	C	C	A	A	A	A	C	A	C
<i>Notropis d. missouriensis</i> Plains sand shiner											VR		
<i>Notropis topeka</i> Topeka shiner		R ¹				VR	R ¹						
<i>Notropis heterolepis</i> Blacknose shiner						C ¹		R ²					
<i>Notropis v. volucellus</i> Northern mimic shiner									VR				
<i>Dionda nublina</i> Ozark minnow						A ¹						O ^c	
<i>Hybognathus hankinsoni</i> Brassy minnow	R	Oc	C	Oc	Oc	C	Oc	Oc	Oc	C	R	C	Oc
<i>Hybognathus n. nuchalis</i> Western silvery minnow	Oc	Oc		Oc	R					R			
<i>Pimephales perspicuus</i> Bullhead minnow	Oc	R	VR	Oc					VR	Oc			
<i>Pimephales notatus</i> Bluntnose minnow	R	C	C	R	C	C	C	C	C	A	C	A	C
<i>Pimephales p. promelas</i> Northern fathead minnow	R	R	Oc	R	Oc	A	C	Oc	C	C	C	R	A
<i>Campostoma anomalum pullum</i> Central stoneroller	VR	R	Oc	VR	R	Oc	Oc	C	Oc	Oc		C	Oc
<i>Campostoma a. oligolepis</i> Largescaled stoneroller							VR		VR				
Ameiuridae													
<i>Ictalurus lacustris lacustris</i> Channel catfish	C	C	Oc	C	C	R	C	Oc		R	R		
<i>Ameiurus n. nebulosus</i> Northern brown bullhead	C ¹							Oc ¹					R ¹

	Lower Cedar R.	Middle Cedar R.	Upper Cedar R.	Lower Iowa R.	Middle Iowa R.	Upper Iowa R.	Shellrock R.	West Fork R.	Winebago R.	Cedar Streams	Iowa Streams	Cedar Creeks	Iowa Creeks
<i>Ameiurus melas melas</i> Northern black bullhead	C	C	R	C	C	R	C	C		R	R		
<i>Ameiurus natalis</i> Yellow bullhead	(OC—CLEAR LAKE ONLY)												
<i>Pilodictis olivaris</i> Flathead catfish	OC	R		OC	R						VR		
<i>Noturus flavus</i> Stonecat		OC	R		OC								
<i>Schilbeodes insignis</i> Slender madtom													VR
<i>Schilbeodes mollis</i> Tadpole madtom							OC						VR
Anguillidae													
<i>Anguilla rostrata</i> American eel	VR	VR											
Cyprinodontidae													
<i>Fundulus diaphanus menona</i> Western banded killifish								R ¹					
<i>Fundulus notti dispar</i> N. starhead topminnow	C ¹												
<i>Fundulus notatus</i> Blackstripe topminnow						R ¹							R
Atherinidae													
<i>Labidesthes s. sicculus</i> N. brook silversides		VR				R ¹							
Serranidae													
<i>Morone chrysops</i> White bass				OC									
<i>Morone interrupta</i> Yellow bass							OC						
Centrarchidae													
<i>Micropterus d. dolomieu</i> N. smallmouth bass		OC	C		OC	OC	OC	OC	OC	OC	R	C	OC
<i>Micropterus s. salmoides</i> N. largemouth bass		R	R		R		R						
<i>Chaenobryttus coronarius</i> Warmouth	C				R ¹								
<i>Lepomis cyanellus</i> Green sunfish	VR	VR	VR	R			OC	OC	R	OC		R	VR
<i>Lepomis gibbosus</i> Pumpkinseed	(OC—CLEAR LAKE ONLY)												
<i>Lepomis m. macrochirus</i> Northern bluegill		R			R		R						
<i>Lepomis humilis</i> Orangespotted sunfish		OC			R		OC	OC	OC				
<i>Lepomis megalotis peltastes</i> N. longear sunfish			VR	C ¹				R ¹					
<i>Ambloplites r. rupestris</i> Northern rock bass		R	C				OC						

	Lower Cedar R.	Middle Cedar R	Upper Cedar R.	Lower Iowa R.	Middle Iowa R.	Upper Iowa R.	Shellrock R.	West Fork R.	Winnebago R.	Cedar Streams	Iowa Streams	Cedar Creeks	Iowa Creeks
<i>Pomoxis annularis</i>													
White crappie		C	C	Oc	C		C	C		R			
<i>Pomoxis nigromaculatus</i>													
Black crappie		Oc	C		Oc								
Percidae													
<i>Stizostedion v. vitreum</i>													
Walleye		Oc	Oc		Oc		Oc	R		VR			
<i>Perca flavescens</i>													
Yellow perch						C ¹							
<i>Hadropterus maculatus</i>													
Blackside darter			R			VR	Oc			Oc		VR	
<i>Hadropterus evides</i>													
Gilt darter		R ¹											
<i>Hadropterus phoxocephalus</i>													
Slenderhead darter		R								R	VR		
<i>Percina caprodes semifasciata</i>													
Northern logperch				VR						VR			
<i>Ammocrypta clara</i>													
Western sand darter		VR					R						
<i>Etheostoma nigrum nigrum</i>													
Central Johnny darter	R	Oc	C	R	R	C	C	Oc	R	C	Oc	C	R
<i>Etheostoma nigrum eulepis</i>													
Scaly Johnny darter													
<i>Etheostoma chlorosomum</i>													
Bluntnose darter	VR												
<i>Etheostoma zonale</i>													
Banded darter													VR
<i>Etheostoma asprigensis</i>													
Mud darter	VR	R ¹										R ¹	
<i>Etheostoma exile</i>													
Iowa darter		R	VR		Oc ¹				VR	VR			
<i>Etheostoma caeruleum</i>													
Rainbow darter													R
<i>Etheostoma s. spectabile</i>													
N. orangethroat darter													R
<i>Etheostoma flabellare lineolatum</i>													
Striped fantail darter					VR		R				R	R	
<i>Etheostoma microperca</i>													
Least darter	R ¹												
Sciaenidae													
<i>Aplodinotus grunniens</i>													
Freshwater drum	C ¹			VR									
Cottidae													
<i>Cottus cognatus gracilis</i>													
Eastern slimy sculpin													Oc
Gasterosteidae													
<i>Eucalia inconstans</i>													
Brook stickleback						R	R	R	R	R			

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