

Threatened Fishes of Daniel Boone National Forest, Kentucky

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ABSTRACT

Long-term field collecting, surveys of the literature, and museum holdings indicate that at least 21 fish species within the confines of Daniel Boone National Forest, Kentucky, are threatened by various human undertakings, principally surface mining. Of those, 13 species are judged as rare or endangered. The most critical areas lie in the upper Kentucky River drainage, lesser impacts being felt in the Cumberland and Licking river systems.

INTRODUCTION

During the last decade, there has been a concerted attempt to understand native American animals that are becoming rare and endangered, particularly fishes. The Endangered Species Preservation Act of 1966, following extensive clamoring by various scientific societies, gave impetus to the preservation movement. Following that, the U.S. Department of the Interior (1968) printed the so-called "Red-Book of Rare and Endangered Fish and Wildlife of the United States" and Miller (1972) presented a list of the threatened fishes of the entire United States. However, the information in both works concerning the fishes of Kentucky is sparse, indeed, and has led to the conclusion that dependence upon such works with regard to localized fish faunas, such as that of the Daniel Boone National Forest in Kentucky, can be highly misleading. As suggested by Robinson et al. (1974), a fish species may be seriously threatened in one part of its total range and yet be comparatively safe elsewhere. Not only is this true from a broader geographic vantage, it is also true from one river system to another. Thus, among the more than 140 fish species of the Daniel Boone National Forest, only 2 appear in the Red Book. One, *Lagochila lacera*, the harelip sucker, is doubtless extinct, and the second, *Acipenser fulvescens*, the lake sturgeon, is designated as threatened.

Because of the points made above, I deemed it necessary to discuss the threatened fishes of the Daniel Boone National Forest. This article is extracted from a

longer report prepared for the U.S. Forest Service. The results are supported by literature records, extensive field work in eastern Kentucky, and museum holdings of other institutions as well as those of Eastern Kentucky University.

In the annotated list which follows, the scientific and common names follow Bailey et al. (1970). The judgement terms that describe the status of each species in the Daniel Boone National Forest are those of Miller (1972) except threatened, which is used in the context explained below:

Endangered: facing extinction; continued survival unlikely without special protective measures.

Rare: not immediately faced with extinction, but present in such small numbers or in restricted to highly specialized habitats that could vanish. Requires careful watching.

Threatened: massive and active habitat degradation occurring across a broad spectrum of the range.

It must be stressed here that these designations apply only to fishes within the confines of the Daniel Boone National Forest and not the entire Commonwealth of Kentucky.

ANNOTATED LIST OF THREATENED FISHES

Within the confines of the Daniel Boone National Forest, 21 species of fishes are judged to suffer at one level or another by way of habitat deterioration. Of those, 9 are considered rare and 4 endangered; the remaining 8 are listed as threatened.

Polyodon spathula. Paddlefish.—Kentucky

distribution: formerly abundant in the main stems and principal tributaries to the Ohio and Mississippi rivers, principally in the lower ends of the Cumberland, Kentucky, Licking, and Big Sandy rivers.

Remarks: Professor A. L. Whitt (pers. comm.) has recently observed specimens at Kentucky Lake near the dam, and I saw a living adult at Lake Cumberland during April 1975. Several specimens, 25–38 cm, were secured from lock chambers at Cannelton, Uniontown, Newburgh, and McAlpine locks and dams during 1972–1974, indicating successful reproduction in the Ohio River (Dr. Louis A. Krumholz, pers. comm.).

Status: threatened.

Acipenser fulvescens. Lake sturgeon.—Kentucky distribution: before 1900, the lake sturgeon was common in the Ohio River, in portions of the Cumberland River below the falls, and abundant in the lower Licking River. Only a single Kentucky record (1954) since the early 1900's.

Remarks: most of the large runs within the state have been decimated severely, but still persists in the Ohio and Tennessee rivers (Clay 1975).

Status: endangered.

Scaphirhynchus platyrhynchus. Shovelnose sturgeon.—Kentucky distribution: the only verified record is from the Licking River at Farmer (Welter 1938) with regard to the Daniel Boone National Forest. However, Krumholz et al. (1962) reported one taken in August 1959 in a hoopnet set in the lower reaches of the Ohio River near Mound City, Illinois. Charles (1962) reported specimens taken by commercial fishermen throughout the Kentucky waters of the Ohio River.

Remarks: probably extinct in Kentucky waters other than the Ohio River.

Status: endangered.

Amia calva. Bowfin.—Kentucky distribution: principally in the southwestern lowlands and in the Ohio River as far eastward as Cincinnati.

Remarks: the only specimens from Daniel Boone National Forest waters came from backwater pools of Tygarts Creek, Carter County. The main reason for this species rarity in national forest waters probably is the lack of suitable habitat.

Status: rare.

Clinostomus funduloides. Rosyside dace.—Kentucky distribution: published records from the Big Sandy and Little Sandy rivers, Tygarts and Kinniconick creeks. Eastern Kentucky University has specimens from the Little Licking River.

Remarks: both species of *Clinostomus* that occur in Kentucky are considered as specialized relics (Clay 1975) that occupy marginal habitats. Since the distribution of the species under consideration barely includes Daniel Boone National Forest streams, the species is judged as rare.

Status: rare.

Hybognathus nuchalis. Silver minnow.—Kentucky distribution: Lower Ohio River drainage and western portion of the state.

Remarks: earlier collectors (Woolman 1892) reported the species from more easterly streams, but the only recent record from the Daniel Boone National Forest is that of Branson and Batch (1972a), a single specimen from Clear Creek near Wildie, Rockcastle County. The fish has nearly disappeared from the Upper Ohio River basin (Clay 1975, Trautman 1957) as the result of massive siltation.

Status: rare.

Hybopsis aestivalis. Speckled chub.—Kentucky distribution: lower portions of all main rivers.

Remarks: threatened in the uplands by dam construction and silt and acid from strip mines. Extirpated from the Red Bird River and greatly reduced in numbers in the rest of the upper Kentucky River basin.

Status: rare.

Notropis ariommus. Popeye shiner.—Kentucky distribution: upper Green, Cumber-

land, Laurel, Rockcastle, and Kentucky rivers.

Remarks: now very rare in most of the upper Kentucky River system. Extirpated from Red Bird River and Goose Creek by strip mining, but still relatively abundant in Greasy Creek, although that stream's drainage is now involved in mining operations.

Status: threatened.

Notropis telescopus. Telescope shiner.—Kentucky distribution: known only from Crocus and Rock creeks, both in the Cumberland River system.

Remarks: because this species requires clear, headwater streams, its habitat is now strongly threatened by surface mining.

Status: rare.

Lagochila lacera. Harelip sucker.—Kentucky distribution: apparently once confined to the Cumberland River system (Woolman 1892).

Remarks: since the species has not been reported during the last 75 years, it is considered extinct.

Status: extinct.

Stizostedion vitreum. Walleye.—Kentucky distribution: in most of the larger streams before the turn of the century (Evermann 1918; Carter and Jones 1969; Small 1970, unpublished master's thesis, University of Kentucky, Lexington, Kentucky; Welter 1938; Woolman 1892).

Remarks: there has been a dramatic reduction in populations of the walleye in the Daniel Boone National Forest (Clay 1975). The Cave Run hatchery is attempting to rear walleyes artificially for repopulating Kentucky waters.

Status: rare (threatened?).

Percina burtoni. Blotchside logperch.—Kentucky distribution: formerly abundant in the Little South Fork of the Cumberland River in Wayne and McCreary counties

(pers. comm., Dr. David Etnier, University of Tennessee, Knoxville, Tennessee).

Remarks: since there are no recent records of the species from Kentucky, and since the headwater streams of the Cumberland River are being assaulted by strip mining, the species must be judged endangered.

Status: endangered.

Percina evides. Gilt darter.—Kentucky distribution: Big Sandy, Green, Licking, and Kentucky river systems.

Remarks: although comparatively safe in parts of its total range, the gilt darter has nearly disappeared from Ohio and Indiana (Trautman 1957), principally because of increased siltation and construction of dams. Extensive collecting has not disclosed specimens from the upper Cumberland River and only rarely is the species encountered in the Licking and upper Kentucky river systems.

Status: rare.

Percina cymatotaenia. Bluestripe darter.—Kentucky distribution: Big Sandy, Green, Licking, and Kentucky river drainages, and Station Camp (Jackson County) and Obion (Hickman County) creeks.

Remarks: the epithet used above is utilized for this species pending completion of Mr. Bruce Thompson's research at Tulane University. With the exception of habitats in the Red River of Powell and Wolfe counties, and in Station Camp Creek, much of this species range in eastern Kentucky is being heavily influenced by strip mining.

Status: threatened.

Ammocrypta pellucida. Eastern sand darter.—Kentucky distribution: originally from the sandy portions of all principal drainages from the mouth of the Cumberland River eastward (Clay 1975).

Remarks: Evermann (1918) reported specimens from the upper Cumberland River from a site now inundated by Lake Cumberland; sand darters have not been reported from that drainage since. Before

impoundment of the Licking and Kentucky rivers, sand darters were abundant in both streams; now the species is very rare. Strip mining is also destroying many habitats, although sand darters are still present in downstream sections of the Red River in Powell and Clark counties.

Status: threatened.

Etheostoma rufilineatum. Redline darter.—Kentucky distribution: Clark's River (Tennessee River system) and portions of the Cumberland River drainage. In eastern Kentucky, the species has been reported from Cumberland, Pulaski, and Wayne counties only (Zorach 1970).

Remarks: I also have specimens from Buck Creek (Kentucky State Highway 192 crossing) in Pulaski County. Other than that, all records lie peripheral to the forest. Although apparently healthy elsewhere, the redline darter is scarce or rare in Daniel Boone National Forest streams.

Status: rare.

Etheostoma tippecanoe. Tippecanoe darter.—Kentucky distribution: middle portions of the Kentucky and Licking river drainages.

Remarks: populations in Red Bird River and South Fork of the Kentucky River have markedly declined following strip mining in those drainages.

Status: threatened.

Etheostoma obeyense. Barcheek darter.—Kentucky distribution: Cumberland and Green river systems.

Remarks: a peripheral species which barely enters forest waters.

Status: rare.

Etheostoma cinereum. Ashy darter.—Kentucky distribution: known only from the Little South Fork of the Cumberland River, Rock Creek in McCreary County (Kirsch 1892) and Buck Creek near Highway 80, Pulaski County (Clay 1975) and the Rockcastle River below the mouth of Buck Creek.

Remarks: the rarest darter in Kentucky; only 3 specimens have been collected since 1892. The habitat area is now under siege by strip mining.

Status: threatened.

Etheostoma atripinne. Cumberland snub-nose darter.—Kentucky distribution: Cumberland River system.

Remarks: since much of the Cumberland River basin is being influenced by strip mining, there has been a marked decrease in the abundance of snubnose darters.

Status: threatened.

Etheostoma sagitta. Arrow darter.—Kentucky distribution: upper Cumberland and upper Kentucky river basins.

Remarks: there are 2 subspecies of this darter in Daniel Boone National Forest waters, *E. sagitta sagitta* in the headwaters of the Cumberland River (Bailey 1948), type locality in Wolf Creek near Pleasant View, Whitley County, Kentucky, and *E. sagitta spilotum*, type locality at Travelers Rest, Owsley County, Kentucky, in the upper Kentucky River basin (Kuehne and Bailey 1961). In addition to the upper Kentucky River records of Kuehne and Bailey, Gilbert (1887), and Woolman (1892), I have specimens from Red Bird River, Middle and South forks of the Kentucky River in Breathitt and Leslie counties, all heavily afflicted by strip mining and acid mine drainage (see also Branson and Batch 1972b). The fish's habitat streams in the upper Cumberland are also greatly damaged by surface mining.

Status: threatened.

DISCUSSION

At the present time, approximately 140 fish species, distributed through 22 families and 54 genera, are known from the Daniel Boone National Forest, Kentucky, and an additional 16 species are "possibles" since they have been collected from streams near the forest boundaries. Twenty-one species are judged as threatened. Exclud-

ing the extinct harelip sucker, 3 species are endangered and 10 are rare; the remainder are in the threatened category. Protective measures are indicated, if this appreciable segment of the Kentucky fish fauna is to survive within the forest.

The principal habitat degraders in this area are municipal sewage pollution, highway construction, improper farming practices, channel straightening, strip mine silt and acid mine drainage, deforestation, stone quarrying operations, and construction of many dams. In many areas, the effects have been tragically destructive to fish faunas. Because of these interacting forces, the Daniel Boone National Forest stands a good chance of having a sizeable segment of its fish fauna extirpated. The first step to prevent such a catastrophe is recognition of the fact that various segments of the fauna and some individual species are threatened. Logically, this type of recognition should be followed by an evaluation of local faunas and by legislative action when protective measures are deemed necessary.

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