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Abstract

A Revised List of the Freshwater Fishes of Maryland and Delaware. By D.L. Lee et al., 10 pp.

Keywords

freshwater fishes, maryland, delaware



Southeastern Fishes Council **PROCEEDINGS**

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A Revised List of the Freshwater Fishes of Maryland and Delaware

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and Arnold Norden ³

Since Lee et al. (1976) published their original checklist of Maryland and Delaware freshwater fishes, several pertinent studies on this fauna have appeared. Lee (1976) provided a general summary of the aquatic zoogeography of Maryland, Stauffer et al. (1978) discussed the zoogeography of the freshwater fishes of the Potomac River basin, and Hendricks et al. (1979) compiled a preliminary checklist of the fishes of the Youghiogheny River. Our knowledge of the fish fauna of the two states has also been enhanced by studies in adjacent states, namely Pennsylvania and West Virginia (E.L. Cooper, J.R. Stauffer, Jr., C.H. Hocutt, M.L. Hendricks, and R.E. Denoncourt), and Virginia (R.E. Jenkins and N.M. Burkhead), and by a compilation of records in the *Atlas of North American Freshwater Fishes* (Lee et al. 1980). These recent studies have been important in clarifying previously clouded distributional patterns of the ichthyofauna of Maryland and Delaware, particularly where the possibility of natural occurrence of species once considered introduced is concerned.

These developments, and a number of additions and modifications, necessitate a revised Maryland-Delaware list. We have added distributional information on nine anadromous forms. This version also denotes all Delaware species by an asterisk (*). An abbreviated discussion of extinct, extirpated, endangered, threatened, and rare fishes of Maryland appears here, but a more detailed one is in preparation.

The major drainage basins of Maryland are the Susquehanna (including its drowned basin, the Chesapeake Bay) and Potomac rivers. Fish distributions within these drainages are far from uniform. This results, in part, from the complex geologic histories of the drainages and their physiogeographic provinces. Some headwater streams of a third major river drainage, the Monongahela, lie in extreme western Maryland. The freshwater areas in Delaware are limited to the headwaters of several Maryland rivers and small, independent drainages that enter Delaware River and Bay. We have divided the area into seven subunits, cor-

responding to local drainages and physiographic areas (Figure 1). We believe this system will best define the approximate distributions of native species as we know them, and at the same time conserve space. Table 1 is in the same basic format as in Lee et al. (1976), with appropriate corrections, additions, and modifications.

A total of 106 species has been recorded from the two states. Of these we have considered 74 to be native to Maryland and 52 to be native to Delaware, a smaller state with considerably less topographic and ecological diversity. Although several Maryland fishes are not found in Delaware, all species known from Delaware have been recorded from Maryland. There is no question regarding the origin (native vs. introduced) of any of the Delaware ichthyofauna, whereas we have listed 13 species from Maryland as possibly native. The principal reason for this uncertainty pertains to the fish fauna of the Youghiogheny River, the uppermost reaches of which are located in extreme western Maryland. This area was severely polluted by acid mine wastes in the late 19th century (Ortmann 1913) before any studies on the native aquatic fauna were conducted. Although pollution has since abated, species that may have been extirpated from the state have been prevented from recolonizing the Maryland section of the river by a dam constructed on the main river at Confluence, Pennsylvania.

Our concepts of which species are rare or common (denoted by lower vs. upper case letters in Table 1) are in part value judgements, and subsequent studies may indicate that changes are in order for certain species. In totaling the number of native and introduced species at the end of the table, all species of questionable status (NI or ni) were regarded as native.

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Table 1. The fishes of Maryland and Delaware and their general distributions. An = anadromous, E = endemic, N = native, NI = regarded as native but possibly introduced, I = introduced, IP = probably introduced, Ma = euryhaline or diadromous, ? = presence suspected in Delaware, * = recorded from Delaware (appears before species name). Lower case letters = rare or restricted distributions. Letters A-G correspond to various physiographic areas (see Figure 1) [i.e., A

-Coastal Plain section of Delmarva peninsula; B - Coastal Plain of southern Maryland; C - eastern division of Piedmont (Chesapeake and Delaware bay drainage); D - western division of Piedmont (Potomac drainage); E - Blue Ridge, Ridge and Valley, Great Valley; F - Atlantic Slope drainage of Appalachian Plateau; G - Ohio basin drainage of Appalachian Plateau]. Explanations of superscript numbers appear at end of table.

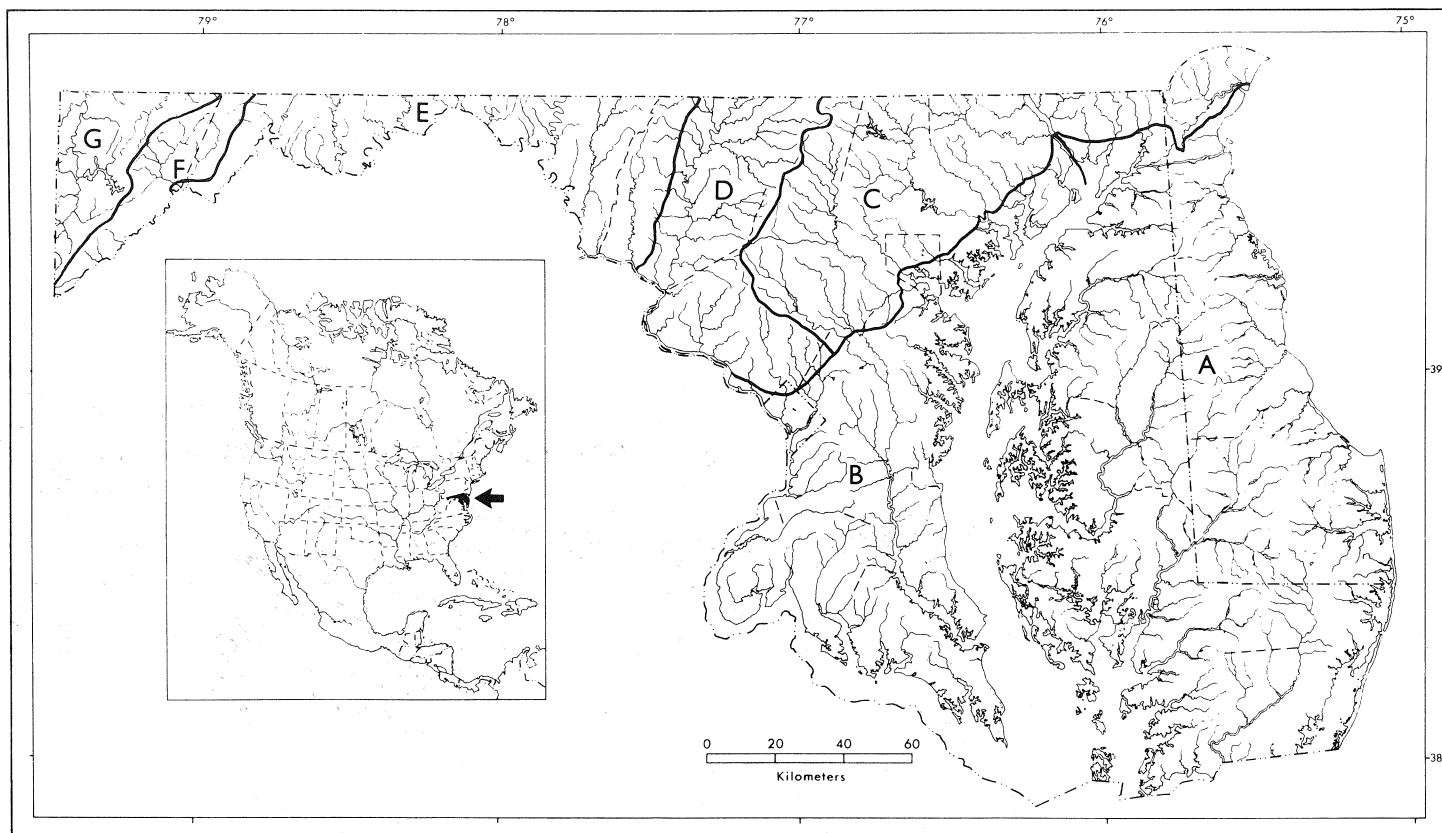
Figure 1.

	A	B	C	D	E	F	G
PETROMYZONTIDAE							
* <i>Lampetra appendix</i> (DeKay) ¹ American brook lamprey	n ²	n	n	3			
* <i>Lampetra aepyptera</i> (Abbott) least brook lamprey	N ²	N					
* <i>Petromyzon marinus</i> Linnaeus sea lamprey	An	An	An				
ACIPENSERIDAE							
* <i>Acipenser brevirostrum</i> Lesueur shortnosed sturgeon	an	an	an				
* <i>Acipenser oxyrhynchus</i> Mitchill Atlantic sturgeon	an	an	an				
LEPISOSTEIDAE							
* <i>Lepisosteus osseus</i> (Linnaeus) longnose gar	Ma	Ma	Ma ⁴				
AMIIDAE							
<i>Amia calva</i> Linnaeus bowfin	n	n	ip				
ANGUILLIDAE							
* <i>Anguilla rostrata</i> (Lesueur) American eel	Ma	Ma	Ma	Ma	ma	ma ⁴	
CLUPEIDAE							
* <i>Alosa aestivalis</i> (Mitchill) blueback herring	An	An	An				
* <i>Alosa mediocris</i> (Mitchill) hickory shad	An	An	An				
* <i>Alosa pseudoharengus</i> (Wilson) alewife	An	An	An				
* <i>Alosa sapidissima</i> (Wilson) American shad	An	An	An				
* <i>Dorosoma cepedianum</i> (Lesueur) gizzard shad	Ma	Ma	ma	ma			
<i>Dorosoma petenense</i> (Günther) ⁵ threadfin shad	i	i		I			
SALMONIDAE							
<i>Coregonus artedii</i> Lesueur cisco or lake herring			i ⁶				
<i>Salmo gairdneri</i> Richardson rainbow trout			I	I	I	I	I
<i>Salmo trutta</i> (Linnaeus) brown trout			I	I	I	I	I
<i>Salvelinus fontinalis</i> (Mitchill) brook trout							
							native to upland streams widely introduced elsewhere
OSMERIDAE							
<i>Osmerus mordax</i> (Mitchill) rainbow smelt			i ⁷				
UMBRIDAE							
* <i>Umbra pygmaea</i> (DeKay) eastern mudminnow	N	N	N	n			
ESOCIDAE							
* <i>Esox americanus americanus</i> Gmelin redfin pickerel	N	N	N				i
<i>Esox lucius</i> Linnaeus northern pike			i				ip
<i>Esox masquinongy</i> Mitchill muskellunge			i				

	A	B	C	D	E	F	G
* <i>Esox niger</i> Lesueur chain pickerel	N	N	i		IP		I
CYPRINIDAE							
<i>Camptostoma anomalum</i> (Rafinesque) central stoneroller			n	N	N	N	N
? <i>Carassius auratus</i> (Linnaeus) goldfish	I ⁸	I	I ⁸	I			
<i>Clinostomus elongatus</i> (Kirtland) redside dace							ni ⁹
? <i>Clinostomus funduloides</i> Girard rosyside dace	n ^{8,10}	n	N ⁸	N	n		
<i>Ctenopharyngodon idella</i> Valenciennes grass carp		i ¹¹					
* <i>Cyprinus carpio</i> Linnaeus common carp	I	I	I	I	I	?	I
<i>Ericymba buccata</i> Cope silverjaw minnow				N	N		
* <i>Exoglossum maxillingua</i> (Lesueur) cutlips minnow		n	N	N	N	n	
* <i>Hybognathus regius</i> Girard eastern silvery minnow	N	N	N	n			
<i>Leuciscus idus</i> (Linnaeus) ¹² ide				i			
<i>Nocomis micropogon</i> (Cope) river chub		n	N	N	N	N	N
* <i>Notemigonus crysoleucas</i> (Mitchill) golden shiner	N	N	n	n	n	n	N
* <i>Notropis amoenus</i> (Abbott) comely shiner	n	n	N	N	N		
* <i>Notropis analostanus</i> (Girard) satinfin shiner	n	N	N	N	N		
* <i>Notropis bifrenatus</i> (Cope) bridle shiner	n	N	n				
* <i>Notropis chalybaeus</i> (Cope) ironcolor shiner	N	N					
* <i>Notropis cornutus</i> (Mitchill) common shiner		n	N	N	N	N	N
* <i>Notropis hudsonius</i> (Clinton) spottail shiner	N	N	n	N	N		
* <i>Notropis procne</i> (Cope) swallowtail shiner	n	n	N	N	N		
<i>Notropis rubellus</i> (Agassiz) rosyface shiner		n	N	N	n	n	
? <i>Notropis spilopterus</i> (Cope) spotfin shiner			n ⁸	N	n		
<i>Pimephales notatus</i> (Rafinesque) bluntnose minnow			N	N	N	N	N
<i>Pimephales promelas</i> Rafinesque fathead minnow			i	i	i		
* <i>Rhinichthys atratulus</i> (Hermann) blacknose dace	n ^{8,10}	N	N	N	N	N	N
? <i>Rhinichthys cataractae</i> (Valenciennes) longnose dace		n	N ⁸	N	N	N	N
* <i>Semotilus atromaculatus</i> (Mitchill) creek chub		N	N	N	N	N	N
* <i>Semotilus corporalis</i> (Mitchill) fallfish	n	N	N	N	N		
<i>Semotilus margarita</i> (Cope) pearl dace			n	n	n		n
<i>Tinca tinca</i> (Linnaeus) ¹² tench	i	i	i	i			
CATOSTOMIDAE							
<i>Carpiodes cyprinus</i> (Lesueur) quillback	n	n	n	n ⁴			
<i>Catostomus catostomus</i> (Forster) longnose sucker							n ¹³
* <i>Catostomus commersoni</i> (Lacepede) white sucker	n	N	N	N	N	N	N
* <i>Erimyzon oblongus</i> (Mitchill) creek chubsucker	N	N	n	N	n		
? <i>Hypentelium nigricans</i> (Lesueur) northern hog sucker		n	N ⁸	N	N	N	N
<i>Moxostoma duquesnei</i> (Lesueur) black redhorse							14
<i>Moxostoma erythrurum</i> (Rafinesque) golden redhorse					ni ¹⁵		

	A	B	C	D	E	F	G
<i>?Moxostoma macrolepidotum</i> (Lesueur) shorthead redhorse	n ^{8,10}	n	n	n			
ICTALURIDAE							
* <i>Ictalurus catus</i> (Linnaeus) white catfish	N	N	n	n			
<i>Ictalurus furcatus</i> (Lesueur) ¹² blue catfish				i			
* <i>Ictalurus natalis</i> (Lesueur) yellow bullhead	N	N	N	N	N	N	N
* <i>Ictalurus nebulosus</i> (Lesueur) brown bullhead	N	N	N	N	N	N	N
<i>Ictalurus punctatus</i> (Rafinesque) channel catfish	IP	IP	IP	IP	ip		
<i>Noturus flavus</i> Rafinesque stonecat							n ¹⁶
* <i>Noturus gyrinus</i> (Mitchill) tadpole madtom	N	N					
<i>Noturus insignis</i> (Richardson) marginated madtom	n ¹⁰	n	N	N	n	n	ip
APHREDODERIDAE							
* <i>Aphredoderus sayanus</i> (Gilliams) pirate perch	N	N					
PERCOPSIDAE							
<i>Percopsis omiscomaycus</i> (Walbaum) ¹⁷ trout-perch			ni	ni			
CYPRINODONTIDAE							
* <i>Fundulus diaphanus</i> (Lesueur) banded killifish	Ma	Ma	ma	ma			
POECILIIDAE							
* <i>Gambusia affinis</i> (Baird and Girard) mosquitofish	Ma	Ma					
PERCICHTHYIDAE							
* <i>Morone americana</i> (Gmelin) white perch	An	An	An				
* <i>Morone saxatilis</i> (Walbaum) striped bass	An	An	An				
CENTRARCHIDAE							
* <i>Acantharchus pomotis</i> (Baird) mud sunfish	N		8				
<i>Ambloplites rupestris</i> (Rafinesque) rock bass			I	I	I	I	NI
<i>Centrarchus macropterus</i> (Lacepede) flier		ni ¹⁸					
* <i>Enneacanthus chaetodon</i> (Baird) blackbanded sunfish	N	¹⁹	8				
* <i>Enneacanthus gloriosus</i> (Holbrook) bluespotted sunfish	N	N	8				
* <i>Enneacanthus obesus</i> (Girard) banded sunfish	N	n ⁴	8				
* <i>Lepomis auritus</i> (Linnaeus) redbreast sunfish	N	N	N	N	N	?	
<i>Lepomis cyanellus</i> Rafinesque green sunfish		i	I	I	I		NI
* <i>Lepomis gibbosus</i> (Linnaeus) pumpkinseed	N	N	N	N	N	?	I
? <i>Lepomis gulosus</i> (Cuvier) warmouth	ip ⁸			ip	ip		
* <i>Lepomis macrochirus</i> Rafinesque bluegill	IP	IP	IP	IP	IP		ni
<i>Lepomis megalotis</i> (Rafinesque) longear sunfish		I		i	I		
* <i>Micropterus dolomieu</i> Lacepede smallmouth bass	i	i	I	I	I	I	NI
* <i>Micropterus salmoides</i> (Lacepede) largemouth bass	IP	IP	IP	IP		?	NI
* <i>Pomoxis annularis</i> Rafinesque white crappie	I	?	I	I		?	
* <i>Pomoxis nigromaculatus</i> (Lesueur) black crappie	IP	IP	IP	IP	IP	IP	NI
PERCIDAE							
<i>Etheostoma blennioides</i> Rafinesque greenside darter				N	N		N

	A	B	C	D	E	F	G
<i>Etheostoma flabellare</i> Rafinesque fantail darter				N	N	N	
* <i>Etheostoma fusiforme</i> (Girard) swamp darter	N	N					
<i>Etheostoma nigrum</i> Rafinesque johnny darter							N
* <i>Etheostoma olmstedii</i> Storer tessellated darter	N	N	N	N	N		
<i>Etheostoma sellare</i> (Radcliffe and Welsh) Maryland darter			e				
<i>Etheostoma vitreum</i> (Cope) glassy darter		n	n				
<i>Etheostoma zonale</i> (Cope) ²⁰ banded darter			i				
* <i>Perca flavescens</i> (Mitchill) yellow perch	N	N	N ⁸	n	ip		i
<i>Percina caprodes</i> (Rafinesque) logperch		ni ²²	ni ²²				
<i>Percina notogramma</i> (Raney and Hubbs) ²¹ stripeback darter		n	n				
<i>Percina peltata</i> (Stauffer) shield darter	n	n	N	n			
<i>Stizostedion vitreum vitreum</i> (Mitchill) walleye		ip	IP				NI
COTTIDAE							
* <i>Cottus bairdi</i> Girard mottled sculpin	n ¹⁰		N	N	N	N	N
<i>Cottus girardi</i> Robins ²³ Potomac sculpin					n	N	
NATIVE	52	60	56	42	34	19	26
INTRODUCED	11	14	21	19	14	5	9
TOTAL	63	74	77	61	48	24	35



Explanation of superscript numbers appearing in Table 1

1. Formerly called *Lampetra lamottei* (or *L. lamottenii*), which awaits taxonomic clarification.
2. On the Delmarva Peninsula, *Lampetra appendix* is confined to tributaries of Delaware Bay, whereas *L. aepyptera* occurs only in Chesapeake Bay tributaries (Rohde et al. 1974, 1975).
3. The question mark (?) under physiographic area D under *Lampetra appendix* has been eliminated since the record on which this is based cannot be substantiated.
4. We have recently documented penetration of these areas by these species.
5. The presence of stocked *Dorosoma petenense* populations in the lower Potomac River was noted by Stauffer et al. (1978).
6. An introduced population of *Coregonus artedii* is established in the Susquehanna River at Conowingo reservoir (T.W. Robbins, pers. comm.).
7. A population of *Osmerus mordax* occurs in the lower Potomac River. Although Stauffer et al. (1978) were uncertain of its status, it certainly is an introduction.
8. Possibly (but not definitely) occurs in area indicated in Delaware.
9. Hendricks et al. (1979) reported *Clinostomus elongatus* from Bear Creek, (Youghiogheny River system), Garrett Co., Maryland. See additional discussion under "Maryland Species of Special Concern."
10. A diverse upland fauna has been recorded from the central Delmarva Peninsula. The included species are considered to be relicts or semi-relicts isolated on the Coastal Plain by rising sea levels (Lee et al. 1975, Franz and Lee 1976, Lee and Norden 1976).
11. Guillory and Gasaway (1978) reported *Ctenopharyngodon idella* from one locality in southern Maryland. This is not believed to represent a breeding population.
12. The current status of *Leuciscus idus*, *Tinca tinca*, and *Ictalurus furcatus* in Maryland is unknown. We are not aware of any recent specimens and assume there are few, if any, extant populations. Burkhead et al. (1980) discussed the history surrounding the perpetuation of the Maryland literature records of *Ictalurus furcatus*.
13. *Catostomus catostomus* has recently been found at several additional localities in western Maryland. See additional discussion under "Maryland Species of Special Concern."
14. Lack of specimens of *Moxostoma duquesnei* makes its past existence in Maryland suspect. See additional discussion under "Maryland Species of Special Concern."
15. *Moxostoma erythrurum* is known from several localities in the Potomac River drainage.
16. We have recently collected *Noturus flavus* in the Casselman River.
17. *Percopsis omiscomaycus* has not been collected in Maryland since 1911. See additional discussion under "Maryland Species of Special Concern."
18. *Centrarchus macropterus* is known from only one farm pond in Maryland. See additional discussion under "Maryland Species of Special Concern."
19. *Enneacanthus chaetodon* was erroneously reported earlier (Lee et al. 1976) from area B.
20. A specimen from an introduced upstream (Pennsylvania) population of *Etheostoma zonale* was recently collected from the Maryland part of the Susquehanna River.
21. *Percina notogramma* has not been reported from Maryland for many years.
22. Several questions surround the native status of the Maryland populations of *Percina caprodes*. See additional discussion under "Maryland Species of Special Concern."
23. Although *Cottus girardi* was synonymized with *C. bairdi* by Savage (1962), Matthews (1980) showed that *C. girardi* is a valid species.

Maryland Species of Special Concern

At the 1976 symposium on Endangered and Threatened Plants and Animals of Maryland, sponsored by the Chesapeake Audubon Society, we expressed concern for 17 species of Maryland fishes, all but three of which are exclusively freshwater forms. Since the proceedings of this symposium were never published we thought it desirable to provide a list of these species, with abbreviated comments about their current status. The status of Delaware species was discussed by Wang and Kernehan (1979). At least two, and possibly four, species have been extirpated from Maryland. Two other species are recognized as endangered by the U.S. Fish and Wildlife Service, five are locally threatened (MD), and another eight are rare in Maryland. Five species listed as rare and depleted in Delaware are not treated here.

We feel these listings are conservative and certainly many other species could be added. Yet even conservative tallies suggest that 15-20% of the areas freshwater fish fauna is in some degree of jeopardy. It should also be noted that because of the geographic position of the two states, many of the native fishes reported are peripheral or disjunct and perhaps more susceptible to local depletion than they would be otherwise.

EXTIRPATED

Percopsis omiscomaycus

A small, disjunct population of the trout-perch, *Percopsis omiscomaycus*, known from several localities in the Potomac River near Washington, D.C. was apparently extirpated by 1911. Based on the number of specimens previously collected at these localities, the trout-perch must have been fairly abundant. Increased siltation and urban pollution are thought to have contributed to its demise. A population was reported from the Susquehanna River by Uhler and Lugger (1876), who stated "inhabits the lower Potomac River, and is often mistaken for a young salmon. Professor Baird has seen specimens from the Susquehanna River." The same population was also reported by Schwartz (1964). Apparently no specimens exist. Both of these populations may be remnants of native populations, but it is equally possible that they were introduced as a result of widespread, often indiscriminant, transplanting of fish from the Ohio River drainage during the late 19th and early 20th centuries (also see discussion of status of *Percina caprodes*).

Percina notogramma

The stripeback darter, *Percina notogramma*, is known only from the James River, Virginia, north to the Patuxent River drainage of Maryland. This very localized darter has been collected from approximately 13 sites in Maryland, all adjacent to the Fall Line in the Patuxent and Potomac river drainages. It has not been collected in Maryland since 1944 and since most localities lie in an area of high urbanization, the species is regarded as recently extirpated. A few populations may have survived at some of the sites located within the confines of the U.S. Fish and Wildlife Services' Patuxent Wildlife Research Center, an area that we presume has remained ecologically stable.

FEDERALLY ENDANGERED

Acipenser brevirostrum

Little is known of the relative abundance or life history of the shortnose sturgeon, *Acipenser brevirostrum* (listed as endangered by U.S. Fish and Wildlife Service) in Maryland. This lack of knowledge is due in part to the difficulty of studying populations inhabiting extensive estuaries. Like most anadromous species, it probably has difficulty getting past various man-made barriers to reach spawning beds. That it has become so uncommon while other anadromous fish have only become depleted could indicate a greater sensitivity to the developing adverse environmen-

tal conditions of the estuaries along the Atlantic Coast in general, and the Chesapeake Bay in particular.

Etheostoma sellare

The endemic Maryland darter, *Etheostoma sellare*, considered endangered by the U.S. Fish and Wildlife Service, has been collected from only three localities (Deer Creek, Swan Creek, and Gasheys Run), all in Harford County, Maryland. It apparently exists only in the lowermost riffle of Deer Creek, just below the Stafford Road bridge. This last remaining population is apparently threatened by increased amounts of agricultural runoff and a sewage treatment plant located in Stewartstown, Pennsylvania, near the headwaters of Deer Creek (Knapp 1976).

THREATENED

Catostomus catostomus

A relict population of the longnose sucker, *Catostomus catostomus*, was discovered in 1956 (now apparently extirpated) in extreme western Garrett County, Maryland, during the draining of Lake Koshare (=Whitehorn Lake). Recent collections from the Youghiogheny River system (Hendricks et al. 1979) revealed the presence of this glacial relict at three additional localities, the Casselman River, Buffalo Run, and Mill Run. Although the longnose sucker maintains stable population levels throughout the major part of its range, there is a decline in these isolated populations. This may be due to increased siltation and the subsequent warmer water caused by current lumbering practices.

Noturus flavus

We collected the first Maryland specimens of the stonecat, *Noturus flavus*, from the Casselman River in 1977. It was subsequently collected at three additional localities in that river by Hendricks et al. (1979). These four clustered localities represent the only known Maryland localities for this native of the Ohio River drainage. Although common throughout its overall range, this limited local distribution and the vulnerability of this species to acid mining wastes make the stonecat's continued existence in the state a matter of concern and reason enough to consider it threatened.

Fundulus luciae

The spotfin killifish, *Fundulus luciae*, ranges in the brackish waters of Maryland from 15 miles above the mouth of the Potomac River (Smith

1892) to as far up the Chesapeake Bay as Annapolis and Love Point. Always regarded as rare and very localized, it is disappearing from most of the few known localities. Dredging, filling of marshes and siltation have contributed to its decline.

Etheostoma vitreum

The glassy darter, *Etheostoma vitreum*, considered threatened in Maryland, is restricted to a small part of the lower Potomac and Patuxent river drainages (on or closely adjacent to the Fall Line) and one site in Harford County. The latter, Winters Run, represents the northernmost limit of its range. Although uncommon throughout the state, it may be locally common at certain sites such as the Western Branch Creek near Largo, Prince Georges County, where Winn and Picciolo (1960) studied its reproductive habitats. Because of its limited range and close proximity to heavy urbanization, the future existence of this fish in Maryland is in jeopardy. We are aware of only one extant Maryland population.

Percina caprodes

The logperch, *Percina caprodes*, is known from the following Maryland localities: a small relict population in the lower Susquehanna River (current status unknown but assumed to be native and extant), a collection from Winters Run in Harford County, and a population in the Potomac River near Washington, D.C. (last collected in 1938). Although most authors consider the Potomac River population native, lack of recent collections and localized distribution of this big-river fish make its current status in the Potomac River uncertain. Its occurrence in this area may be the result of an introduction from indiscriminant transplanting of Ohio River basin fishes during the latter part of the 19th or early 20th century.

RARE

Acipenser oxyrhynchus

Depleted in recent times, the Atlantic sturgeon, *Acipenser oxyrhynchus* would be a good candidate for consideration for endangered or threatened status. However, little information is available on its present abundance or local distribution and, since there have been no attempts to legally protect the species, we have simply chosen to treat it as rare and depleted. Despite the fact that at one time the Atlantic sturgeon could be found throughout the Chesapeake Bay and its larger tributaries, its major foraging and spawning areas still remain unknown.

Amia calva

The bowfin, *Amia calva*, appears to be wide ranging, but rare in Maryland. Known from less than a dozen localities throughout the state, it is not normally encountered by conventional collecting techniques and, therefore, may be more common than our few records indicate. Pearson and Ward (1972) commented on the escape of stocked bowfins from a farm pond along the Gunpowder River, an area that is probably within the historic range of the species.

Clinostomus elongatus

The reidside dace, *Clinostomus elongatus*, was first collected in Maryland (one individual) in the south branch of Bear Creek, Youghiogheny River system, Garrett County, on 26 July 1977 (Hendricks et al. 1979). Although native to the system, this collection represents a significant extension of the known range of this species. It may be that this is the result of a bait bucket introduction. Bear Creek, a heavily fished and stocked trout stream, also yielded a specimen of the fathead minnow, *Pimephales promelas*, at the same time the reidside dace was collected. Subsequent collections at the same locality, however, revealed no more specimens of either fish. The reidside dace is certainly rare in Maryland, but there is question about its native status.

Carpoides cyprinus

The quillback, *Carpoides cyprinus*, is a big-river species known from the lower part of the larger tributaries of the Chesapeake Bay and the Potomac River near Washington, D.C. It does not seem to be common, but this is in part an artifact of collecting methods. If the species is as rare as records indicate, then there is ample reason for concern.

Moxostoma erythrurum

The golden redhorse, *Moxostoma erythrurum*, is known from several localities along the Potomac River, from Seneca, Montgomery County, to Spring Gap, Allegany County. This fish is primarily a Mississippi basin species, but Atlantic slope populations exist in the James and Roanoke river drainages of Virginia and North Carolina, certainly the result of stream capture. In view of the number of reported captures between the Potomac and Mississippi rivers, it is possible that the golden redhorse is native to the Potomac River. Because of its extremely localized distribution here, however, it could be argued with equal legitimacy that its presence represents an undocumented transplant.

Centrarchus macropterus

The flier, *Centrarchus macropterus*, a small sunfish of the southeastern states and lower Mississippi Valley, may not be native to Maryland. To date it is known from only one farm pond in St. Marys County, but few farm ponds or other suitable habitats have been intensively surveyed. Since more information is needed before this fish can be considered native to the state, we tentatively list it as rare.

Enneacanthus chaetodon *Enneacanthus obesus*

The blackbanded sunfish, *Enneacanthus chaetodon*, and the banded sunfish, *Enneacanthus obesus*, are two Atlantic Coastal Plain species which, in Maryland, are restricted to the Delmarva Peninsula. Both species occur in the nutrient poor habitats of standing acidic and heavily vegetated waters of the eastern shore and are much less common than *E. gloriosus* or the game fish of the genus *Lepomis*. Pond management for game species would favor *Lepomis* populations and most likely exclude *Enneacanthus* from many of its present habitats.

STATUS UNCERTAIN

Moxostoma duquesnei

The black redhorse, *Moxostoma duquesnei*, likely occurred in Maryland waters at one time, but this can not be confirmed with certainty since no Maryland specimens exist. Mansueti (1957) stated that the black redhorse was probably once present, and Uhler and Lugger (1876) recorded it (as "Pittsburg sucker") from the Maryland part of the Youghiogheny River system. Hendricks et al. (1979) reported it from adjacent parts of this system in Pennsylvania. Other species known to have been introduced here were probably native to the Youghiogheny River system as well (i. e. *Ambloplites rupestris*, *Micropterus dolomieu*).

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