

RECORDS AND DISTRIBUTIONAL RELATIONSHIPS OF THE ROANOKE BASS, *AMBLOPLITES CAVIFRONS*, IN THE ROANOKE RIVER DRAINAGE, VIRGINIA¹

ROBERT E. JENKINS, Department of Biology, Roanoke College, Salem, VA 24153

ROBERT C. CASHNER, Department of Biological Sciences, University of New Orleans, New Orleans, LA 70148

ABSTRACT. The Roanoke bass, *Ambloplites cavifrons*, is nearly extirpated from the Ridge and Valley province section of the upper Roanoke River drainage, Virginia, where it formerly was widespread. The species declined therein during the 1950s, coinciding with establishment of the introduced rock bass, *A. rupestris*. Siltation, pollution and impoundments also adversely affect *A. cavifrons* in this and other areas. Hybrids, *A. cavifrons* X *A. rupestris*, are known from 3 Ridge and Valley streams, only one of which still supports Roanoke bass. Populations of *A. cavifrons* remain widespread in Blackwater and Pigg Rivers, in the upper Piedmont section of the upper Roanoke. Significant new records of Roanoke and rock basses are reported from other Piedmont or Coastal Plain streams of the Roanoke and Chowan drainages, Va.

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INTRODUCTION

The Roanoke bass, *Ambloplites cavifrons* Cope (Centrarchidae), is known only from the Roanoke and Chowan drainages in Virginia and the Tar and Neuse drainages of North Carolina. It is a distinctive member of the genus *Ambloplites*, differing markedly from congeners by overall finer squamation, naked or incompletely scaled cheeks, gold to white iridescent spots on the head and body, and other features.

The Roanoke bass is a valued gamefish locally, attaining the largest size among *Ambloplites* species. A specimen 355 mm SL taken in 1883 from Virginia is documented (Cashner and Jenkins 1982). *Ambloplites* of one pound (0.45 kg) and larger are eligible for a citation in Virginia, but currently the citation program of the Virginia Commission of Game and Inland Fisheries does not distinguish between Roanoke bass and the similar rock bass, *Ambloplites rupestris* (Rafinesque). From parts of the range of the Roanoke bass in Virginia that exclude *A. rupestris*, there are reports into the 1950s by anglers

and fishery scientists of 1.4-1.8 kg (to about 4 lb) specimens, and recent reports of 300-350 mm TL, 0.9-1.1 kg specimens; at least most of these likely were *A. cavifrons* (in part, Petrimoulx and Jenkins 1979). The angling "world record" Roanoke bass is a 13 $\frac{7}{8}$ inch (probably TL; 352 mm), 2 lb 4.5 oz (1.0 kg) fish from the Tar River in 1977 (Anon. 1978).

Until recently the Roanoke bass was poorly known. Smith (1970-72) considered morphology and distribution of North Carolina populations, and Cashner and Jenkins (1982) treated systematics and distribution over its range. Many life history aspects were studied by Smith (1970-72), McBride et al. (1980) and Petrimoulx (1980, in press).

The range of *A. cavifrons* has receded, partly attributable to extensive habitat alteration. Large reservoirs were created in the upper and middle Roanoke drainage, which lacks natural lakes, and the Roanoke bass appears to be virtually intolerant of lacustrine habitats (except hatchery ponds) (Smith 1971, Cashner and Jenkins 1982). The upper Roanoke has had chronic pollution, at times causing major fish kills (Jackson and Henderson 1942, Cairns

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et al. 1971, James 1979). The current general localization of Roanoke bass populations within its total range limits suggests demise of many (undetected) populations due to widespread deforestation and consequent siltation. The Roanoke bass has been threatened further by competition from, and hybridization with, rock bass.

The rock bass has an extensive native range and has been introduced into many other regions including the Roanoke and other central Atlantic slope drainages (Cashner and Suttkus 1977, 1978, Cashner and Jenkins 1982). Stocking of *A. rupestris* into the upper Roanoke dates at least as early as 1898 and as recent as 1971. The combined effects of habitat alteration and introduction of a non-native congener are reasons *A. cavifrons* merits protection status of special concern in Virginia and North Carolina (Deacon et al. 1979, Jenkins and Musick 1980).

The following account documents distributional and ecological relationships between *A. cavifrons* and *A. rupestris* in the upper Roanoke system, and reports significant new records elsewhere in this and the Chowan drainage (often considered part of the Roanoke). In discussion, the upper Roanoke system is regarded as that part of the Roanoke drainage above

Leesville Dam, Va. (essentially from Pigg River upstream); the middle Roanoke system is between Leesville Dam and junction of Dan River; Dan River and its tributaries are termed the Dan system (fig. 1).

RELATIONSHIPS IN UPPER ROANOKE SYSTEM

The history of *Ambloplites* collections and general habitat in the upper Roanoke system are reviewed here. This information is critical in dating the establishment of *A. rupestris*, the near extirpation of *A. cavifrons*, and in determination of the taxonomic status of *A. cavifrons* based on reproductive and ecological interactions with *A. rupestris*. In the absence of this discussion, future analysis of these topics would be clouded or impossible due to splitting among museums and loss of critical collections. Records are documented in Cashner and Jenkins (1982) or herein. RIDGE AND VALLEY SECTION. A geochronographic map of part of the upper Roanoke system, from the city of Roanoke, Va., upstream, depicts collection stations, years of collections and numbers of specimens of *Ambloplites* taken (Cashner and Jenkins 1982) (fig. 2). The following discussion is based on data in that figure which should be consulted.

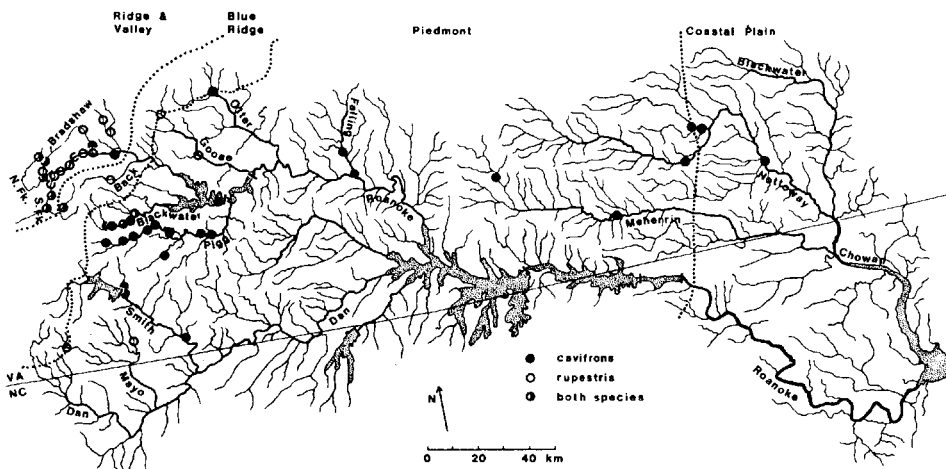


FIGURE 1. Records of *Ambloplites cavifrons* and *A. rupestris* in the Roanoke and Chowan River drainages, Virginia and North Carolina.

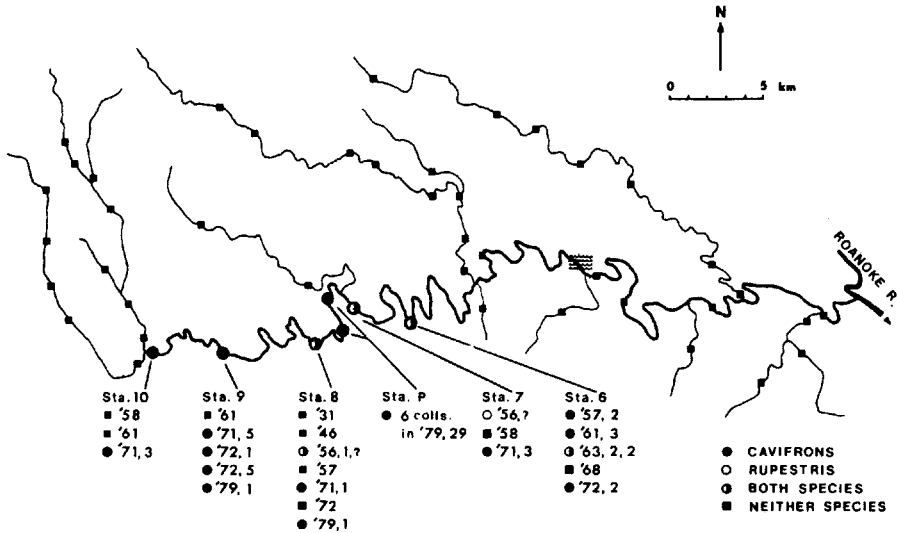


FIGURE 2. Geochronography of collections of *Ambloplites cavifrons* and *A. rupestris* in Blackwater River, upper Roanoke drainage, Franklin County, Va. Following the symbols are, respectively, the year of collection (1900s in all cases) and, if any taken, number of specimens. Station numbers are from Hambrick (1973); Sta. P represents sites collected by Petrimoulx. "BOTH SPECIES" denotes syntopic, synchronic collections. "?" indicates number of specimens unknown. All collections in area now part of Smith Mountain Reservoir (upper limit on Blackwater River shown by wavy lines) were taken prior to impoundment. Many small tributaries, none collected, are not shown.

The earliest collections, by Cope in 1867 and Jordan in 1888, yielded 3 *Ambloplites* specimens, all *A. cavifrons*. The distances between the 3 collection sites (lower main channel, South Fork Roanoke River, Bottom Creek) show this species was widespread. Few collections, none including *Ambloplites*, were made in the upper Roanoke between 1889 and 1940. From major increase in survey effort during 1941–1951, 3 more collections each of one *A. cavifrons* indicate this species still occurred widely (Mason Creek, South Fork, North Fork Roanoke River) for about 75 years more.

Ambloplites rupestris began appearing widely in collections starting in 1952. Although Jackson and Henderson (1942) reported *A. rupestris* or "rock bass" in several parts of the upper Roanoke around 1940, no specimens were found, and the identifications cannot be accepted. In 1952 the following were taken: one *A. rupestris* in a reservoir of the Tinker Creek watershed; 9 specimens comprising *A. cavifrons*,

A. rupestris and hybrids from the lower South Fork; 2 *A. rupestris* and a probable hybrid in the upper North Fork. Cashner and Jenkins (1982) discussed hybrid determination.

The last records of *A. cavifrons* (excepting the discovery of a remnant population of *A. cavifrons* in upper Bradshaw Creek, a lower North Fork tributary) were from 1956–1963; 3 collections, one specimen each, all from tributaries (South and North Forks); in each case one or 2 *A. rupestris* (but no apparent hybrids) were also taken.

Also during 1956–1963, *A. rupestris* was the only *Ambloplites* taken in the main Roanoke River. After 1963 (excepting Bradshaw Creek), *A. rupestris* has been the only *Ambloplites* in the upper Roanoke system, and it has been essentially contiguously distributed.

The above records show that *A. cavifrons* was originally widespread in the upper Roanoke system from Roanoke to the headwaters. In the 1950s there was no

record of *A. cavifrons* from main channel Roanoke River, and in the tributaries it was being replaced by, and at some localities hybridizing with, *A. rupestris*; at certain sites small numbers of both species were found syntopically without hybrids. The extirpation of *A. cavifrons* is suggested to have proceeded in an upstream direction. It was first missing from the main channel Roanoke River, and its last records were from upper South and North forks (1958 and 1963, respectively) and Bradshaw Creek (1978). Although stocking records of *A. rupestris* are incomplete, there is evidence (Cashner and Jenkins 1982) that this species was introduced in large numbers during the 1940s and 1950s, perhaps contributing to its dominance.

The relative paucity of collecting efforts prior to the 1950s makes it difficult to discern former species abundance, changes in abundance, and hence the influence of relative abundance on hybridization. However, a pattern appears when correlating different collecting methods with numbers of specimens captured. Prior to the first capture of *A. rupestris* in 1952, we have records of only 6 *A. cavifrons*, and from 1952–1963 only 3 more *A. cavifrons* (excluding 2 collections with hybrids). This suggests that *A. cavifrons* occurred in low density, perhaps increasing its liability to hybridization with a close relative that was becoming established via introductions and natural reproduction. However, there are obvious problems in making population estimates based solely on numbers of museum specimens, since seining was the usual early collecting method and the upper Roanoke often has high water, deep pools and obstructive cover.

Most larger series of *A. rupestris*, from the mid-1950s on, were taken by electroshocking or fish kill survey. However, since the early 1960s Jenkins has never found *A. rupestris* to be clearly common in the upper Roanoke. Even though greater numbers of *A. rupestris* have been taken

since the 1960s, compared with numbers of *A. cavifrons* taken previously, it seems reasonable to assume, considering the relative intensities of collecting, that the 2 species were about equally numerous, and uncommon, during the 1950s. The numbers of specimens of each species in all museum collections from this period are about equal. The species changeover in the upper Roanoke most likely occurred between 1945 and 1965.

Bradshaw Creek, a small (16 km long) stream, supports the only known extant population of *A. cavifrons* in the Roanoke system above Roanoke. The population appears to be restricted to the upper portion of the creek's lower half. Due to small size and intermittency, the upper half of the creek is unsuitable for *Ambloplites*. All specimens taken during 1978 came from 2 areas, each ca. 0.4 km long, centered at stream km 8.0 and km 3.5 above the mouth. At the uppermost site on 7 August, one *A. cavifrons* and one *A. rupestris* were taken; on 8 September, 3 apparent hybrids were found. At the lower site single specimens of only *A. rupestris* were collected on 7 August and 8 September 1978 and 2 August 1979. Recent collections from North Fork Roanoke River at the Bradshaw Creek mouth and elsewhere yielded only *A. rupestris*.

It appears that *A. cavifrons* is locked into a short stretch of Bradshaw Creek by *A. rupestris* in the lower section and unsuitable habitat above. The Roanoke bass may be on the verge of extirpation in Bradshaw due to reproductive and/or ecological interactions with syntopic *A. rupestris*. On the other hand, *A. cavifrons* (and hybrids) may have persisted with *A. rupestris* at the upper site for many years, because *A. rupestris* has been in the North Fork for at least 30 years, and because the habitat may favor *A. cavifrons*. The gradient in the section supporting *A. cavifrons* is somewhat low for the area; long pools are common and *Esox niger* is a characteristic species. The substrate at the upper site is among the least silted of warm upper

Roanoke tributaries. This site also has more permanent surface flow than upstream and many downstream sections, which are intermittent during drought.

BACK CREEK. This first major Roanoke River tributary below Roanoke is largely in the Blue Ridge. Jordan worked one site in 1888 and scattered samples were taken from 1946–1969. It was extensively surveyed, including 14 main channel sites, many collected by electroshocking, in the early 1970s by P. S. Hambrick and Jenkins (Hambrick 1973). Since numerous anglers said that “rock bass” or “redeye” were absent and only one collection of *Ambloplites* (5 adult *A. rupestris* in 1972 from mid creek) was taken, we conclude that *Ambloplites* is very localized. A stocking record of *A. rupestris* for Back Creek is from Titcomb (1905).

BLACKWATER RIVER. This extensively surveyed upper Piedmont tributary of Roanoke River had its lower section impounded by Smith Mountain Reservoir in 1966 (fig. 2). Preimpoundment samples, 2 each from 4 main channel sites during 1956–1961, took no *Ambloplites*, nor did 2 collections from one site just above the impounded section in 1958–1972. Many of these collections were made by electroshocker as were most of those taken farther upstream. In the latter (unimpounded) section during 1931–1979, 29 total samples were taken from 7 sites; 18 samples included *Ambloplites*, suggesting it may have been more numerous in, or restricted to, the upper half of the river. The well-surveyed tributaries produced no *Ambloplites*. Collections were made and/or summarized by Hambrick (1973), Petrimoulx (1980) and Cashner and Jenkins (1982; TU F242-3-7S actually from Sta. 9) (fig. 2).

Ambloplites cavifrons has been widespread and somewhat common in the upper half of the river. From 5 stations during 1956–1972, a total of 27 specimens are known. Petrimoulx took 31 more in 1979, 29 of them between Hambrick's (1973) Stations 7 and 8.

Ambloplites rupestris is known from one collection each from 3 of the upper 5 stations sampled in 1956 or 1963; at 2 of the sites it was synchronic with *A. cavifrons*. Two of the samples of *A. rupestris*, from Stations 7 (Va. Tech 692) and 8 (Va. Tech 690), apparently are lost. Although not collected by Hambrick, they were identified by him around 1971 at Virginia Tech. Hambrick had worked previously with us, knew of the *Ambloplites* systematic problem and was aware of diagnostic characters. The 2 series probably comprised one or few specimens each. The other series (orig. Va. Tech 190 from Sta. 6) is partially documented (Cashner and Jenkins 1982); it is split between the Virginia Tech and Tulane University collections, but the association of specimens is correct. When the entire collection first was sorted by Jenkins in 1963, both species were noted. In 1980 Jenkins reexamined the specimens, original jar tags, locality data and species list. None of the Blackwater *Ambloplites* specimens presented a problem in identification, suggesting none were hybrid. Ravenal (1898) reported the Blackwater was stocked with *A. rupestris*. The population that persisted until about 1963 may have originated from an unknown introduction(s) subsequent to Ravenal's.

PIGG RIVER. This Piedmont system just below the Blackwater has been extensively surveyed; summaries by Hambrick (1973) and James (1979) include our collections. Only *A. cavifrons* is known, widely in the main channel, and found in a major tributary, Big Chestnut Creek. It is generally rare.

A chemical spill in middle Pigg River at Rocky Mount, during 1975, caused a major fish kill within ca. 35 km of the spill (James 1979). Later in 1975, ca. 900 hatchery reared Roanoke bass (see Dan River system, below) were introduced by the Virginia Commission of Game and Inland Fisheries, ca. 600 of these at Rocky Mount and ca. 300 in the headwaters. Subsequent sampling by James (1979) and

Petrimoulx (1980) did not reveal Roanoke bass abundance to be augmented above that of recent prekill levels.

DISCUSSION. Four different relationships exist between *A. cavifrons* and *A. rupestris* in the upper Roanoke system: (1) In the extreme upper Roanoke (Ridge and Valley section, from Roanoke upstream), *A. cavifrons* formerly was widespread but probably uncommon; it was largely replaced by introduced *A. rupestris*; the 2 species hybridized at some widely spaced sites; they may have hybridized at other sites, but too few samples, of small numbers of typical specimens, are known. (2) In Back Creek only *A. rupestris* is known; it is rare and localized. (3) In upper Blackwater River the 2 species have been collected together, in small numbers, and hybrids are unknown; *A. rupestris* was found rarely and not since 1963; *A. cavifrons* persists widely and is not uncommon. (4) In Pigg River only *A. cavifrons* is known; it is widely distributed but rare.

Clinal changes are suggested in the interrelationships of the species and/or their individual reactions to local stream environments. The habitats grade from generally higher gradient, usually clear and less silted waters in the Ridge and Valley province above Roanoke, to the sluggish, generally turbid and more sedimented Pigg (and other rivers) on the Piedmont. Gradients of upper and middle Roanoke system streams treated herein, excluding their headwaters, are (expressed in m/km, calculated from data in Anon. 1972): North Fork Roanoke River 5.3; South Fork Roanoke River 6.2; Roanoke River, down to Tinker Creek, 3.4; Back Creek 7.2; Blackwater River 2.4; Pigg River 2.7; Goose Creek 2.8; Big Otter River 1.8; Falling River 1.8.

Evidence from life history data (Smith 1971, Petrimoulx 1980, Cashner and Jenkins 1982) indicates that the species have similar food and general spatial requirements. Competition between the two could be intense. A slight difference be-

tween the species in nonreproductive habitat appears to be a preference of Roanoke bass to occur closer to, often within, swifter current than rock bass, which is more often found in quiet parts of pools. Overlap in habitat, however, seems to be significant as judged from collections made in some areas of allotopy.

Ambloplites rupestris may have been favored above Roanoke by an apparent low population density of *A. cavifrons* when the former was becoming established. Additionally, the rock bass may be better adapted to higher gradients than is the Roanoke bass, as indicated by the ecological pattern of *A. rupestris* distribution elsewhere. Typically *A. rupestris* extends from moderate gradients to high gradient, marginal trout waters.

The upper half of Back Creek has a high gradient; the lower section is piedmontane in character but with a heavier load of sand than in upper Blackwater and Pigg Rivers. Only *A. rupestris* is known from Back Creek, localized in the middle section, perhaps favored by gradient. The substrate in lower Back Creek may be unfavorable for both species. We believe that *A. cavifrons* formerly occupied Back Creek, but was extirpated by habitat alteration and/or interaction with *A. rupestris*.

Long known populations of *A. cavifrons* exist in 2 upper Piedmont streams. In the Blackwater, *A. cavifrons* dominated *A. rupestris*. We have no record of capture or introduction of *A. rupestris* into Pigg River, and it is questionable that it would have reached the Pigg from upstream centers of stocking via Roanoke River prior to impoundment, since the latter river was heavily polluted. In comparison to many other Piedmont streams, the Blackwater and Pigg offer a greater extent of firm substrate and are clear for longer periods. The lower abundance of *A. cavifrons* in the Pigg, compared with the Blackwater, fits the pattern of its depletion farther down the Piedmont. Additionally, *A. cavifrons* is absent from most of the Roanoke tributaries below the Pigg and from nearly the

entire Dan River system on the Piedmont. The ability of the Roanoke bass to survive in moderate to low gradients, with suitable conditions such as at least localized areas of clean substrate and often clear water, is exemplified by its extension from the Piedmont into the Coastal Plain in the Chowan and Neuse drainages. The Roanoke bass may be differentially favored, relative to rock bass, in generally silted streams due to its preference for clean swept substrates closely adjacent to swift water.

In summary, both *A. cavifrons* and *A. rupestris* often occupy moderate gradients, but Roanoke bass may be better able to survive lower gradient and siltier conditions than rock bass. Neither species populates the still more heavily silted streams in much of the Roanoke drainage on the Piedmont. If not for the introduction of *A. rupestris*, it is likely that *A. cavifrons* would have persisted widely in the upper Roanoke above Blackwater River. Even though the 2 species seem to have slightly different habitat requirements, *A. rupestris* is suggested as a significant and better competitor for trophic and spatial aspects of niche in higher gradient streams. Petrimoulx (1980) discussed evidence for this based on ecological and reproductive interactions between the species.

NEW ROANOKE BASS RECORDS

DAN RIVER SYSTEM. *Ambloplites cavifrons* is still known with certainty only from the Smith River branch of this large, mostly Piedmont system. We formerly knew Roanoke bass only from Town Creek, Va., just above its mouth, collected in 1977 (Cashner and Jenkins 1982). This stream has its mouth in the upper section of middle Smith River, a cold tailwater of Philpott Reservoir that thermally isolates the Town Creek population. Sampling in Town Creek during 1979 found Roanoke bass distributed up to ca. 3 km above the mouth, its apparent upstream limit effected by small stream size above the junc-

tion of a major tributary. Below the junction the stream is 8–20 m wide.

Sampling in 1979 possibly significantly depleted the adult population, and young or small juveniles were not found. In 1980 Town Creek was stocked at 3 sites in the lower 5 km with ca. 900 total young Roanoke bass. The fish had been raised at Buller Hatchery, southwestern Va., by the Virginia Commission of Game and Inland Fisheries, whose stock was acquired from North Carolina hatchery stock originating from the Tar and/or Neuse drainages. We and Petrimoulx (1980) always had great difficulty locating small wild Roanoke bass. Evidence that they are highly secretive was behavior of the stocked young. They greatly hesitated leaving holding buckets, then darted under cover (W. H. Norton, pers. comm.)

Lower Smith River, beginning at Martinsville, Va., is a large, moderately silted stream that receives significant pollution from Martinsville, but recovers somewhat before reaching Eden, N.C., near its mouth. Surprisingly, in a survey of this river section during 1981 (for a proposed hydroelectric project), Jenkins took the first verified record of Roanoke bass for the river proper: 2 adults in about the middle of the section (Co. Rt. 636 bridge, Henry Co., Va.); both were from the same small area. This and the apparent absence of Roanoke bass at 4 other stations suggest localization. Anglers of lower Smith River informed us of long past runs during spring of large "redeye" into a tributary, Marrowbone Creek, but we took none in this now heavily silted stream.

Upper Smith River, Va., heads in and flows along the base of the Blue Ridge, before entering Philpott Reservoir. The river generally is in good physical and chemical condition, and from it we have recent reports of very large "rock bass." However, numerous attempts by Petrimoulx and Jenkins in 1979 to find *Ambloplites* yielded none. Based on sizes of the fish and proximity to Town Creek, the population probably is *A. cavifrons*.

FALLING RIVER. This middle Roanoke system, Piedmont tributary produced *A. cavifrons* in 1977 (Cashner and Jenkins 1982) and 1979 (Petrimoulx 1980). Few specimens were taken and other sites in the lower part of the system yielded none. Based on this and general siltation of Falling River, the population probably is marginal. An ecologically similar, non-native centrarchid, the spotted bass, *Micropterus punctulatus*, was introduced into Falling River in 1976 and 1977 by the Virginia Commission of Game and Inland Fisheries.

OTTER RIVER. North Fork Otter River, a tributary of Big Otter River of the middle Roanoke system, was collected in 1980 by Petrimoulx in reference to a recent citation "rock bass." Two adult *A. cavifrons* were taken at the Co. Rt. 644 bridge, Bedford Co., Va. None were found in Big Otter Creek at the time nor elsewhere previously in this widely sampled watershed. The capture site is at the base of the Blue Ridge, suggesting localization therein and extirpation in at least most of the remaining, silted and generally turbid, Piedmont portion of the system.

CHOWAN RIVER DRAINAGE. Records additional to those of Cashner and Jenkins (1982) are plotted for the Nottoway and Meherrin system (fig. 1). Those from the Piedmont and above the Fall Line were taken by Petrimoulx (1980) in 1978 and 1979 and M. D. Norman and R. Southwick in 1982. As an indication of localization and/or rarity of Roanoke bass in these river sections, 3 of the 4 recent record sites are in sections where it was previously known. (Numerous other Piedmont and Fall Line sites with marginal to fair habitat were searched without success.) The North Meherrin site yielded *A. cavifrons* in 1958 and 1979. In the Nottoway system, the 1978-79 records from Stony Creek are from the same section as the 1967 records. The 1982 record from main channel Nottoway River, in Fall Line-like habitat, corroborates a 1979 sighting by Jenkins of an *Ambloplites* stunned by electroshocker

but not captured. The unique record from above the Fall Line, in middle Meherrin River, is of 2 specimens taken by angling. Lack of shockerboat access and high water have impeded survey of this section of the Meherrin.

Somewhat anomalous records of citation *Ambloplites* continue to be reported in relatively high frequency from the Coastal Plain portion of the Nottoway by knowledgeable local anglers. The few specimens seen mounted or in photographs are *A. cavifrons* (M. D. Norman, H. J. Petrimoulx, pers. comm.). None of us were able to capture *Ambloplites* by boat-shocking in the lower Nottoway, suggesting localization and/or low density in this typical black water, swamp margined river. The Coastal Plain population may be recruited largely from the Fall Line, but sampling in the latter also indicates generally low population density of Roanoke bass.

TYPE SPECIMEN OF ROANOKE BASS

Cashner and Jenkins (1982) noted that the holotype of *A. cavifrons* could not be found. However, it is in the type collection of the Academy of Natural Sciences, Philadelphia, Pa., catalog number 12803 (E. B. Bohlke, pers. comm. 1982).

ROCK BASS RECORDS

GOOSE CREEK. This tributary of the middle Roanoke system heads on the Blue Ridge and flows mostly on the Piedmont of Bedford Co., Va. (fig. 1). The first verified *Ambloplites* specimens were taken in 1979: Petrimoulx took 13 rock bass at the base of the Blue Ridge (below dam along Co. Rt. 726), and one from mid length of the river (Rt. 122 bridge). Sampling was made relative to a citation "rock bass" reported from the upper site. Probable stocking(s) of rock bass may have been made long ago. This species (and *A. cavifrons*) could have been missed by prior collectors because the Goose Creek system has been only sparsely sampled.

DAN RIVER SYSTEM. Two records of *A. rupestris* were listed and plotted for this

system (Cashner and Jenkins 1980, 1982). One of these was misplotted on Smith River, and is replotted herein on Horsepasture Creek, a North Mayo River tributary. This places both Dan system records of *A. rupestris* in the Mayo River branch. A single (unknown) stocking may have led to the records. Because both records date from the 1940s, and the Dan system was extensively surveyed in the 1970s, the population apparently disappeared.

JAMES RIVER DRAINAGE. To clarify a statement (Cashner and Jenkins 1982) regarding an apparently erroneous early record of rock bass (ANSP 12627-31, not -37) from Tuckahoe Creek, a tributary of James River just above the Fall Line, we note that if this species had been native to the creek, it clearly would be expected to now inhabit the James River Fall Line. It does not. The James' Fall Line offers extensive suitable habitat; smallmouth bass, with habitat preferences similar to those of rock bass, flourish there today (and also are absent from Tuckahoe Creek). *Ambloplites* would not be expected to inhabit Tuckahoe Creek historically, because of unsuitable habitat.

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