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# Prehistoric Archaeological Records of Freshwater Fishes in the Roanoke River, Virginia and North Carolina

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## INTRODUCTION

Ichthyologists have traditionally relied upon modern sampling and sometimes questionable historical accounts of fishes to establish historical distributions of species. Knowledge of earlier distributions and the relationships between eastern North American drainages has been supplemented by paleontological evidence (e.g., Hocutt et al., 1986). More recently, researchers have recognized the value of archaeological evidence to establish original Holocene distributions (e.g., Jenkins & Burkhead, 1994). In prehistoric Holocene times, fishes played an important role in diets of Indians of the eastern United States. Fish bones have been found on the earliest and the most recent prehistoric archaeological sites, both coastal and inland, in the region (McNett, 1985; Whyte, 1997). Their presence in archaeofaunal assemblages permits investigation of prehistoric human subsistence and settlement, as well as piscine geography (e.g., Dickinson, 1982; Manzano & Dickinson, 1991; Whyte, 1994; VanDerwarker, 2000).

Archaeological investigations of prehistoric and early historic Native American village sites along the Roanoke River and its tributaries in Virginia and North Carolina have yielded many thousands of ichthyofaunal specimens representing nearly every family and most genera of fishes known to have been native to the drainage in Holocene time (Whyte 1994, 1999). In addition, remains of species whose native status has been questioned (e.g., *Micropterus salmoides* and *Stizostedion vitreum*) or whose distribution within the pre-impoundment Roanoke drainage has been poorly understood (e.g., *Ameiurus natalis* and *Ambloplites cavifrons*), have been recovered.

This study examines ichthyofaunal data from the prehistoric Buzzard Rock site located on the Roanoke River in Roanoke, Virginia. Bones from this site were initially studied to reconstruct and explain prehistoric human life and adaptation. In the process it was observed that certain species whose bones were identified were of questionable status in the Roanoke River and that their identification may contribute to a better understanding of former species distributions. Data from other archaeological sites on the upper and lower Roanoke River and on the adjacent James River are provided for comparison. Special attention is given to the identification of bones of the largemouth bass (*M. salmoides*) and implications concerning its native distribution on the south Atlantic Slope of the United States.

## STUDY SITE AND METHODS

The Buzzard Rock site (44RN2) is located on the Roanoke River approximately 1.6 km upstream from Tinker Creek in the City of Roanoke (Fig. 1). It is situated in the Blue Ridge physiographic province along a slow-flowing, meandering river section. Salvage excavations by the Virginia Research Center for Archaeology in 1977, prior to construction of the 13th Street extension, revealed remains of a prehistoric Siouan village site dating between 600 and 700 B.P. (Clark, 1978; Gardner, 1980).

Animal remains recovered from 10 distinct archaeological deposits on the Buzzard Rock site include 2,750 ichthyofaunal specimens, as well as numerous remains of other classes of vertebrates and invertebrates. The fish remains were first identified with reference to comparative collections of the Appalachian State University Department of Anthropology. These collections are sufficiently comprehensive for the contemporary ichthyofauna of the Roanoke River. No specimens were evidently unidentifiable due to the absence of examples of certain species in the comparative osteological collection.

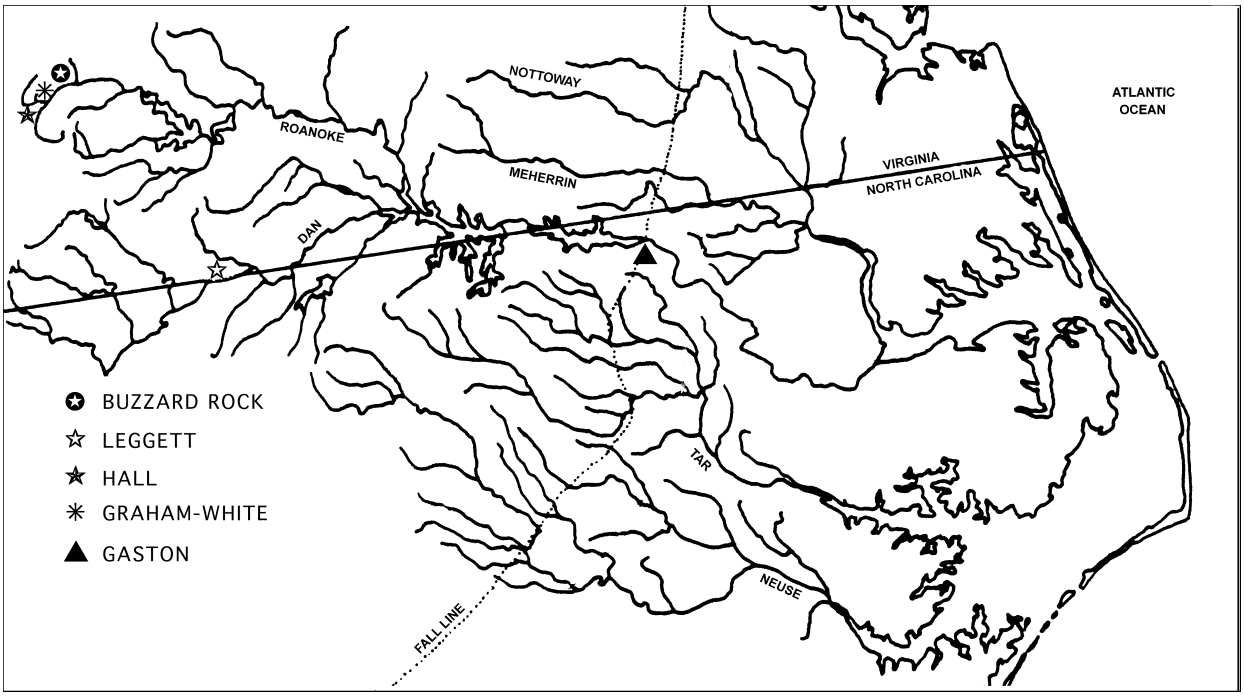


Fig. 1. Location of the Buzzard Rock site in relation to other archaeological sites in the Roanoke River drainage.

Specimens were identified as to skeletal element, side, element portion, and to the narrowest possible taxonomic division. In addition, observations of evidence of burning or other artificial modifications were recorded.

In most instances, no attempt was made to identify the species represented by postcranial bones (vertebrae, spines, pterygiophores, etc.). Certain fishes, however, such as gar (Lepisosteidae) and eel (Anguillidae) were identified by their distinctive vertebrae, while catfishes (Ictaluridae) were frequently identified by their diagnostic dorsal and pectoral fin spines. The distinctive, large cycloid scales of suckers (Catostomidae) were well preserved and easily recognized.

The 2,750 specimens recovered include 395 (14%) identified to species, genus, or family, the remainder identified only as bony fishes. Although fragmentation due to food processing, post-depositional processes, and recovery and handling account for many of the non-identified remains, most are relatively whole postcranial bones for which identification was not attempted. It was observed, however, that both cranial and postcranial elements were present in expected proportions, suggesting that the resulting tallies for each taxon are representative. A minimum of 13 species and six families including gars (Lepisosteidae), eels (Anguillidae), minnows (Cyprinidae), suckers (Catostomidae), catfishes (Ictaluridae), and sunfishes (Centrarchidae) is represented by the assemblage (Table 1).

## FAMILY LEPISOSTEIDAE (GARS)

One vertebra and one scale of longnose gar (*Lepisosteus osseus*) were recovered. Gar probably were rare above the Piedmont of the Roanoke drainage in prehistoric times. However, two bones may have arrived at the site from downriver perhaps as part of a skin or parts of tools, weapons, or ornaments. Similarly, only one gar scale was recovered from the prehistoric Mount Joy site on the upper James River in Botetourt County, Virginia (Whyte, 2000).

## FAMILY ANGUILLIDAE (EELS)

The American eel (*Anguilla rostrata*) is represented by 12 specimens from three features. In pre-impoundment time the American eel was abundant in Roanoke headwaters (Jenkins & Burkhead, 1994). The individuals represented were of varying sizes and likely served as food.

Table 1. Taxa represented among the ichthyofaunal remains from the Buzzard Rock Site, Roanoke, Virginia.

| Scientific Name | Common Name | NISP |
|---|---|---|
| *Lepisosteus osseus* | longnose gar | 2 |
| *Anguilla rostrata* | American eel | 12 |
| *Nocomis raneyi* | bull chub | 5 |
| *Nocomis* sp. | chub | 23 |
| *Semotilus atromaculatus* | creek chub | 3 |
| Cyprinidae | minnow | 10 |
| *Catostomus commersoni* | white sucker | 2 |
| *Hypentelium* sp. | hog sucker | 5 |
| *Moxostoma erythrurum* | golden redhorse | 2 |
| *Moxostoma* sp. | redhorse | 3 |
| Catostomidae | sucker | 78 |
| *Ameiurus natalis* | yellow bullhead | 2 |
| *Ameiurus nebulosus* | brown bullhead | 1 |
| *Ameiurus* sp. | bullhead | 2 |
| *Noturus insignis* | margined madtom | 49 |
| *Noturus* sp. | madtom | 87 |
| Ictaluridae | catfish | 2 |
| *Ambloplites cavifrons* | Roanoke bass | 34 |
| *Lepomis auritus* | redbreast sunfish | 24 |
| *Lepomis* sp. | sunfish | 20 |
| *Micropterus salmoides* | largemouth bass | 4 |
| Centrarchidae | bass/sunfish | 24 |
| Osteichthyes | bony fish | 2356 |
| Total | | 2750 |

*NISP = number of identified specimens

## FAMILY CYPRINIDAE (MINNOWS)

At least two species of minnows are represented among the 41 cyprinid specimens identified (Table 1). These include the bull chub (*Nocomis raneyi*) and the creek chub (*Semotilus atromaculatus*). Minnows remain abundant in the upper Roanoke and include approximately 20 native species. The two species represented are some of the larger minnows and may have been more sought as food. Smaller individuals, however, may be poorly represented because of archaeological recovery bias. Indeed, several tiny pharyngeal arches identified only as family Cyprinidae were recovered, indicating capture of very small individuals by the site's inhabitants.

## FAMILY CATOSTOMIDAE (SUCKERS)

Suckers are represented by 90 of the identified specimens and a minimum of three species (Table 1). As 71% of the sucker remains identified are the distinctive large cycloid scales, their representation in the assemblage is inflated relative to other families; scales were routinely used only in the identification of Catostomidae and Lepisosteidae. Species identifications were based on skull bones. They include white sucker (*Catostomus commersoni*), hog sucker (*Hypentelium nigricans* or *H. roanokense*), and golden redhorse (*Moxostoma erythrurum*).

## FAMILY ICTALURIDAE (CATFISHES)

Catfish remains, numbering 143, were assignable to three species: yellow bullhead (*Ameiurus natalis*), brown bullhead (*A. nebulosus*), and margined madtom (*Noturus insignis*). Represented by 49 specimens, the margined madtom probably accounts for the most individual fish in the assemblage (Table 1). As only

one other species of madtom (*N. gilberti*) is native to the upper Roanoke and it is osteologically distinct from *N. insignis*, probably all specimens identified as *Noturus* sp. are actually *N. insignis*. Remains of madtoms were recovered from most features containing faunal remains.

The yellow bullhead (*A. natalis*) was identified on the basis of an articulated right dentary and articular bone. These specimens were also compared to *A. nebulosus* and *A. catus*, which are native to the Roanoke. The identification of *A. natalis* in the assemblage supports the conclusion by Jenkins & Burkhead (1994) that it extended upriver from lowland areas of abundance.

## FAMILY CENTRARCHIDAE (SUNFISHES)

Three species were identified among the 106 centrarchid specimens (Table 1): Roanoke bass (*Ambloplites cavifrons*), redbreast sunfish (*Lepomis auritus*), and largemouth bass (*Micropterus salmoides*). The Roanoke bass formerly was widespread in the Roanoke drainage but, perhaps because of competition with its introduced congener, *A. rupestris*, all populations within the City of Roanoke and upstream are apparently extirpated (Jenkins & Burkhead, 1994). It is well represented in prehistoric archaeofaunal assemblages from other sites along the upper Roanoke and Dan rivers (Whyte, 1994).

The redbreast sunfish is the most abundant species of *Lepomis* in upland streams. The pumpkinseed sunfish (*L. gibbosus*), is also native to the upper Roanoke but is far less common (Jenkins & Burkhead, 1994).

The four largemouth bass (*M. salmoides*) bones identified include a basioccipital and right ceratohyal from medium to large individuals and two right premaxillaries from juveniles (Fig. 2). These were recovered from buried prehistoric contexts on the site and so do not represent potential recent contamination by means such as plowing or bioturbation. These identifications represent the first remains of *M. salmoides* identified from prehistoric sites along the upper Roanoke. Whyte (1994: 79), in previously examining smaller samples of archaeological fish remains from Buzzard Rock and three other sites on the upper Roanoke and Dan rivers, suggested that the largemouth bass "is probably not native to the Roanoke, Chowan, or drainages north of North Carolina." Ichthyologists also are engaged in controversy over the northern native extent of the species on the Atlantic Slope (Jenkins & Burkhead, 1994: 735). The Buzzard Rock specimens clearly establish native status of *M. salmoides* for the Roanoke drainage.

No remains of *M. salmoides* were identified among the many fish bones recovered from sites upriver from Buzzard Rock or from the Leggett site on the Dan River in Halifax County, Virginia (Whyte, 1994). It is possible, however, that depth, current, and substrate adjacent to these sites provided less-than-ideal conditions for the species. Numerous remains of *M. salmoides* were recently reported for the Gaston site on the lower Roanoke in Halifax County, North Carolina (VanDerwarker, 2000). The Buzzard Rock site thus may represent the upstream extent of the native distribution of the species which prefers the deeper, slower waters of the Piedmont and Coastal Plain segments of the drainage.

## DISCUSSION

It is now clear that the largemouth bass, *Micropterus salmoides*, has occupied the Roanoke River system since at least 600 B.P. Its remains are abundant on late prehistoric sites along the lower Roanoke (VanDerwarker, 2000) and present in minor amounts on sites along the upper Roanoke (Whyte, 1999). Furthermore, the distributions of certain native species within the Roanoke, including *Lepisosteus osseus*, *Ameiurus natalis*, and *Ambloplites cavifrons*, are now better understood as a result of their identifications in archaeofaunal assemblages.

Remains of *Micropterus* have been reported from at least two prehistoric archaeological sites along the lower James River in Prince George (Opperman, 1992) and York counties (Barber, 1983), Virginia. If these identifications are correct, then the debate concerning the introduced vs. native, original status of *M. salmoides* in the James drainage also is settled. However, accurate identifications are dependent upon adequate comparative collections and familiarity with fish osteology. Indeed, it appears that some archaeologists have used popular guides to contemporary fauna of a region as a basis for establishing what may or may not be represented in archaeofaunal assemblages. For example, at the Graham-White site on the Roanoke River in Salem, Virginia, Brown & Atkins (1998: Tables 3, 4) report remains of at least two species (*Pomoxis annularis* and *Lepomis macrochirus*) which were introduced to the Roanoke drainage in the 20th century (Jenkins & Burkhead, 1994). Moreover, in their discussion of the minnows of the upper Roanoke, they make several

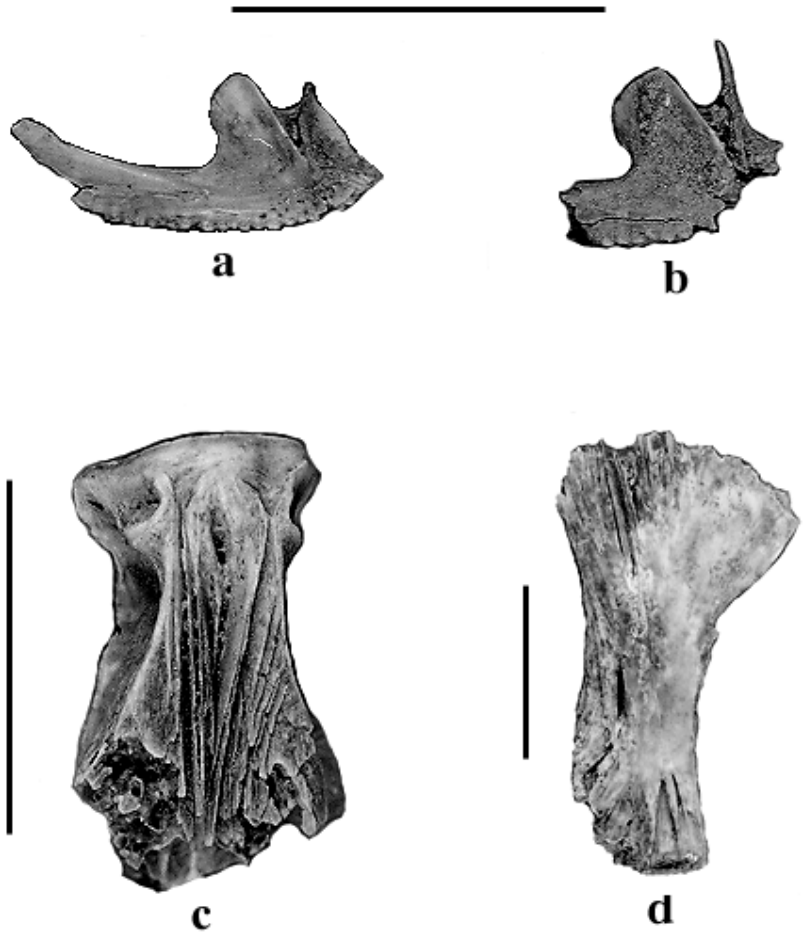


Fig. 2. Remains of largemouth bass (*Micropterus salmoides*) recovered from the Buzzard Rock site, Roanoke, Virginia: right premaxillaries (a-b), basioccipital (c), and right ceratohyal (d) (scale = 1 cm).

erroneous citations: river chub (*Nocomis micropogon*), bigmouth chub (*N. platyrhynchus*), bigeye chub (*Hybopsis amblops*), spotfin shiner (*Cyprinella spiloptera*), striped shiner (*Luxilus chrysocephalus*), and silver shiner (*Notropis photogenis*); none of these species is native to the Roanoke drainage (Jenkins & Burkhead, 1994).

Another species whose status in the Roanoke remains in question, the walleye (*Stizostedion vitreum*), has been positively identified by VanDerwarker (2000) and confirmed by me, based on a pair of dentaries from the Gaston site on the Roanoke River in Halifax County, North Carolina. Thus, the walleye also appears to be native to the Roanoke drainage. However, it is not impossible that prehistoric human residents of the area were capable of moving live fishes or their eggs between adjacent river systems. The largemouth bass, for example, may have been introduced to the Roanoke drainage from the Pee Dee by a transfer from the Yadkin to the Dan rivers in the North Carolina Piedmont.

The archaeological record of regional faunas bridges the gap between paleontological evidence and historical observation and sampling. In North America, it provides a rich record of Holocene Epoch faunas and their former distributions. The efforts of archaeologists, in their endeavors to reconstruct and explain past human subsistence and ethnozoology, can effectively benefit the biological sciences only if they are communicated beyond intradisciplinary publications.

## NOTES ON MATERIALS

Specimens identified as *Micropterus salmoides* from the Buzzard Rock site (44RN2) include a basioccipital bone from Feature 26, a ceratohyal from Feature 18, and two premaxillary bones from Feature 19. The archaeofaunal specimens recovered from the Buzzard Rock (44RN2), Hall (44MY33), Graham-White (44RN21), and Leggett (44HA23) sites are curated by the Virginia Department of Historic Resources, Richmond Virginia. Materials from the Gaston site (31HX7) are curated by the Research Laboratories of Archaeology, University of North Carolina, Chapel Hill.

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