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# **C<sup>14</sup> age control on a Rappahannock Native American site on Totuskey Creek (44RD0206) in Richmond County, Virginia**

by

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## **ABSTRACT**

The discovery of well-preserved bone material in a Native American site allowed C<sup>14</sup> dating of the associated artifacts. The primary goal of this report is to determine the absolute age of the bone fragment, and the secondary goal is to compare this result with the ages of the artifacts based on the typological approach using the associated prehistoric ceramic and stone artifacts. The site is along Totuskey Creek in Richmond County in the area traditionally mapped as part of the Rappahannock tribal area at contact in 1607 and across the creek from their 1653 relocation site. The bone was identified as a jaw fragment from a raccoon. It was found along with ceramic (clay pipe and pottery fragments) and stone artifacts (points and drills). The pottery was dated from the Late Woodland Period to the Proto-Historic Period. The points were dated from the Late Archaic Period to the Proto-Historic Period. C<sup>14</sup> dating of the bone gave a comparable age of 1000-1160 A.D. which places it in the Late Woodland Period which is also the median age of all the dating methods.

## **INTRODUCTION AND HISTORY OF THE RAPPAHANNOCK TRIBE**

Quantifying the age of archeological materials is one of geoarchaeology's primary goals (Rapp and Hill 2006). New quantitative dating techniques are always being developed (e.g., Wilson et al. 2009), but the most commonly used archeological radiometric dating technique is C<sup>14</sup> (Inashima 2008). The value of dating techniques, such as C<sup>14</sup>, is that they provide absolute age constraints to relative ages from the traditional typological approach using pottery sherds and projectile points. This combined approach using C<sup>14</sup> along with the typology of pottery sherds and projectile points is applied to a Rappahannock tribe site in Virginia.

The Rappahannock tribe is a sub-tribe of the Powhatan Chiefdom, which is part of the larger Algonquian linguistic group (Swanton 1952; Maccord 1996). There is limited historical documentation of the Rappahannock tribe before contact with the Jamestown English. In 1608 John Smith traveled up the Rappahannock River, which resulted in his 1612 map showing the distribution of Native American settlements in the area (Figure 1). From 1608-1649, the Rappahannocks were spread over an area 30 km by 20 km (20 mi by 13 mi) along the northeast shore of the Rappahannock River from the headwaters of Totuskey Creek upstream to Cat Point Creek (Figure 2). Due to the influx of settlers desiring land along the navigable estuaries after 1649, the Rappahannock tribe was forced inland. In 1651 they sold their waterfront property to the English Settler, Colonel Moore Fautleroy (Rountree 1990: 118). Legislation in 1653 restricted the tribe to an area 8 km by 5 km (5 mi by 3 mi) on the north side of Totuskey Creek, east of Little Totuskey Creek and Garland's Mills pond (McCartney 1988) where they lived until 1674 (Figure 2). Cromwell and Miller (1989), working at the Hipkins Site (44RD30) downstream of the Totuskey Creek Site studied in this project, concluded that English settlement began in the upper reaches of Totuskey Creek by 1664. The Rappahannock tribe was displaced again in 1674 to a site across the Rappahannock River, 4-5 km (2-3 mi) northwest of the current town of Tappahannock (Figure 2) where they lived until 1684 when they were moved upriver to Portobago Bay in King George County until 1704. By 1705 just a few families remained in Essex County (McCary 1950; Beverly 1968; Maccord 1976, 1989; Feest 1978; Harper 1992). The Rappahannock tribe is still extant (Speck 1925; Speck et al. 1946; Rappahannock Tribe 2006) and was officially recognized in 1983 by the General Assembly of Virginia (Virginia Acts of Assembly 1983, HJR 54).

The Totuskey Creek site is located on Totuskey Creek upstream from two of the 16 villages of the Rappahannock tribe: Menaskunt on the northwest side of the mouth of the creek and Auhomesk on the southeast side (Maccord 1976). Feest (1978), Potter (1993), and Haile (1996) all interpreted Smith's 1612 map to suggest that the Native Americans of Totuskey Creek were under the influence of the Rappahannock tribe (Figures 3-5). In addition, Ryland (1976) stated that Totuskey Creek itself is named after a local 17th century Rappahannock chief, Totoskoi. According to Rountree (1990: 118), the Rappahannock tribe actually consisted of two separate tribes, the Rappahannock Creek tribe based on Cat Point Creek and the Totosha or Tanks Rappahannocks based on the east side of Totuskey Creek and also known as the Totuskey tribe.

Holland (1988) described the Totuskey tribe as a separate tribe in between the Rappahannock tribe to the northwest and the Moratico/Moraughtacund tribe to the southeast as suggested by Feest (1978) and Potter (1993)(Figures 3-4). Holland's (1988) interpretation is derived from his reconstruction of Native American pathways in the Northern Neck based on his reading of geographic landmarks in land patents recorded in courthouse records. He argues that the main branch of Totuskey Creek upstream of Little Totuskey Creek was variously called Cross Creek and Matchycomico or Matchacomaco Creek in courthouse records (Figure 6). From this, he argued for the existence of another 'king's house' (i.e., district chief's village) on par with Moratico/Moraughtacund and Toppahannock/Toppahanock (Figures 1 and 3-5). He termed it Totuskey Village, and if Holland is correct, it was located only 1,100 m (3,600 ft) southwest of the Totuskey Creek Site (Figure 6). There are no Virginia Department of Historic Resources sites matching Holland's (1988) hypothesized location of Totuskey Village, but there are for his Indian Fields shown in Figure 6.

Others have argued that the southeast side of Totuskey Creek was occupied by the Moratico/Moraughtacund tribe. According to this interpretation, their main village was near the Corotoman River further down the Northern Neck, but their area of control extended to Totuskey

Creek (Sanford and Klein 1994). In 1658 colonial expansion forced them to move their main village, which became known as Morattico Indian Town, to the east bank of Totuskey Creek until they once again moved on by 1672 (Pullins 1992; Potter 1993; Rountree 1996). Sanford and Klein (1994) suggested the Moratico/Moraughtacund tribe simply came to be called Totuskey by the colonists only when they moved their main village to Totuskey Creek.

#### STUDY SITE

The Virginia Department of Historic Resources site number for the Totuskey Creek Site is 44RD0206. It is located 2.8 km (1.8 mi) southeast of Indian Field on the Haynesville 7.5' U.S. Geological Survey topographic quadrangle. It is located 8 km (5 mi) up Totuskey Creek from its mouth at the Rappahannock River. This distance has undoubtedly changed since the time of occupation as soil erosion due to historic agricultural practices has caused siltation, whereas waves, tides, storm surges, groundwater flow, and relative sea-level rise have caused widespread erosion around the Chesapeake Bay (Rosen 1980). The site is situated 3 m (10 ft) above the current water level in Totuskey Creek with unobstructed views up and down stream.

#### METHODS

The site was initially identified by surface exposures as well as in-situ cliff exposures along the bank of Totuskey Creek. An excavation site was selected based on the density of surface artifacts exposed. It was tested by 20-30 shovel tests, and an area 3 m (10 ft) by 6 m (20 ft) was completely excavated to depth of 30 cm (1 ft). In addition, 0.5-1.0 m<sup>2</sup> (5-10 ft<sup>2</sup>) pits were excavated down to 60-90 cm (2-3 ft) along the creek bank. The majority of the oyster shells as well as ceramic and stone artifacts came from 30-45 cm (12-18 in) below the surface. A jaw fragment (Figure 7A) was found at a depth of 35 cm (14 in).

An X-ray of the jaw fragment (Figure 7B) indicates that the roots of the two molars are the wrong size and shape for humans. The occlusal surfaces are well worn (Figure 7C) indicating a long history of chewing tough food. The curved

upper surface of the fragment preserves the orbit (eye socket). The infraorbital foramen (hole for facial nerves) is preserved (Figure 7A), indicating the fragment comes from the upper left maxilla (upperjaw).

All this indicates that the fragment was from the upper left jaw of a small herbivorous or omnivorous adult mammal preserving the last premolar, first molar, and the alveolar bone for the second molar. By comparing the jaw fragment to complete skulls of herbivorous or omnivorous mammals in the vertebrate zoology teaching collection in the Biology Department at Dickinson College, we identified it as raccoon (*Procyon lotor*). The: 1) size and shape of the upper left maxillary bone, 2) position of the orbit, 3) size, shape, and location of the infraorbital foramen, 4) size, shape, and position of the teeth, all match very well with a raccoon. It is not unusual to find raccoon remains at Native American sites as the Powhatans are known to have worn raccoon skins at the time of contact with the English (Feest 1978), and living descendants of the Rappahannock tribe are known to take raccoons (Speck et al. 1946). In fact raccoon is a Powhatan word (Rountree 1989).

The raccoon jaw sample was not friable indicating the presence of its original collagen fraction lending it to radiocarbon dating. The sample was dated by Beta Analytic Radiocarbon Dating Laboratory in Miami, Florida using the following protocol. As the sample was bone, it received a collagen extraction pretreatment. It was washed in de-ionized water; then the surface was scraped free of the outer most layers to remove any surface contamination. It was then gently crushed to increase the surface area to volume ratio. Dilute cold HCl was repeatedly applied and replenished until the mineral fraction (i.e., bone apatite) was eliminated. The residual collagen was then dissected and inspected for rootlets. None were found which eliminates possible contamination from this younger C source. The sample then received an alkali wash with NaOH to remove secondary organic acids. The resulting sample carbon was reduced to graphite (100% C) and then detected for C<sup>14</sup> content in an accelerator mass spectrometer.

The prehistoric ceramic artifacts (mostly pottery) were dated using published local-regional typologies. The pottery wares were mainly distinguished by their temper and surface treatment (sensu Griffith 1980) and were identified by comparison to the well-illustrated pottery from the Chicacoan sites in the Northern Neck (Potter 1982), the Accokeek Creek Site on the Potomac River in Maryland (Stephenson et al. 1963), and the Patuxent River sites in Maryland (Steponaitis 1980). These references were augmented by review articles by Evans (1955) and Egloff and Potter (1982).

The prehistoric stone artifacts (mostly points) were dated using published local-regional typologies. Shapes of the blade (plan view and cross section), stem, and base were qualitatively described (sensu Hranicky 1986, 1991, 1994). The points were mainly distinguished by the shape of the blade, stem, and base and were identified by comparison to the well-illustrated points from the Chicacoan sites in the Northern Neck (Potter 1982), the Accokeek Creek Site on the Potomac River in Maryland (Stephenson et al. 1963), and the Patuxent River sites in Maryland (Steponaitis 1980). These references were augmented by Hranicky and Painter's (1989) and Hranicky's (1991, 1994) Virginia typologies.

As the primary goal of this report is to determine the absolute age of the bone fragment, and the secondary goal is to compare this result with the ages of the artifacts based on the typological approach using the associated prehistoric ceramic and stone artifacts, the relative numbers of pottery and point types were not counted. Therefore the typological approach was not used to calculate an artifact frequency-weighted mean age (sensu Key and Gaskin 2000) but simply a maximum age range. This paper uses the following cultural period time line of Hranicky and Painter (1989) for the Woodland Period in the Virginia Tidewater: Early Woodland (1600-300 B.C.), Middle Woodland (300 B.C.-800 A.D.), Late Woodland (800-1521 A.D.), and Proto-Historic (1521-1609 A.D.).

## RESULTS OF C<sup>14</sup> DATING

The raccoon jaw sample was dated using Talma and Vogel's (1993) mathematical approach. This gave a C<sup>13</sup>/C<sup>12</sup> ratio of -17.9 and a measured radiocarbon age of 850 ± 40 years before present. This age was converted to an uncalibrated conventional radiocarbon age of 970 ± 40 radiocarbon years before present by applying a standard C<sup>13</sup>/C<sup>12</sup> correction. This age was converted to a calibrated calendar year of 1030 A.D. with a 95% probability range (i.e., ± 2 standard deviations) of 1000-1160 A.D. using Reimer et al.'s (2004) INTCAL04 calibration curve. This places it in the Late Woodland Period.

## POTTERY TYPOLOGY

Figure 8A is tempered with crushed oyster shells, but the shell fragments have been leached out. It is decorated in Field 1 with horizontal and vertical pseudo-corded impressions sensu Griffith (1980, Figures 2-4). We identified it as a type of Townsend Ware called Townsend Corded (Griffith 1980, closest to Figure 5, TC3; Steponaitis 1980, closest to Plate 6.1) which is Late Woodland (Griffith 1980; Potter 1982) and dates in the Virginia coastal plain from 1400 A.D. to the Proto-Historic Period (Smith 1971; Egloff and Potter 1982).

Figure 8B is tempered with crushed oyster shells, but the shell fragments have been leached out. It is decorated in Field 1 with diagonal cross-hatched incisions sensu Griffith (1980, Figures 2-4). We identified it as a type of Townsend Ware called Rappahannock Incised (Griffith 1980, closest to Figure 5, R18; Steponaitis 1980, closest to Plate 5.; Egloff and Potter 1982, closest to Figure 11, third row, far right) which dates in Delaware to 1045-1285 A.D. (Griffith 1980) in the Late Woodland Period.

Figure 8C is tempered with crushed oyster shells, but the shell fragments have been leached out. It is decorated in Field 1 with shallow pits (or punctae sensu Stephenson et al. 1963, Plate XVIII.D) which cross cut near vertical scrape marks indicating the surface has been smoothed-over. We identified it as Yeocomico Ware (Egloff and Potter 1982, closest to Figure 15) which is dated to the late 1500s to 1600s (Egloff and Potter 1982) in the Proto-Historic Period.

Figure 8D is tempered with quartz sand. It is decorated in Field 1 with shallow pits (or punctae sensu Stephenson et al. 1963, Plate XVIII.D) which cross cut net mat impressions. We identified it as a type of Potomac Creek Ware called Potomac Creek Plain (Egloff and Potter 1982, closest to Figure 11, first row, far right) which dates from 1300 A.D. to the 1600s (Clarke 1980; Egloff and Potter 1982) in the Late Woodland to Proto-Historic Periods. Potomac Creek Ware was also found at the nearby 44RD50 Site (Pullins 1992).

Figure 8E is tempered with crushed oyster shells, and the shell fragments are preserved. It is decorated in Field 1 with horizontal pseudo-corded impressions sensu Griffith (1980, Figures 2-4). We identified it as a type of Townsend Ware called Townsend Corded (Griffith 1980, closest to Figure 5, TC3; Steponaitis 1980, closest to Plate 6.1) which is Late Woodland (Griffith 1980; Potter 1982) and dates in the Virginia coastal plain from 1400 A.D. to the Proto-Historic Period (Smith 1971; Egloff and Potter 1982).

## POINT TYPOLOGY

Figure 9A is a 56 mm long, 33 mm wide, well made, chert, triangular form with straight edges and a concave base. We identified it as a Levanna Triangle Type (Hranicky and Painter 1989:80-81; Hranicky 1991:35) which dates to 1000-1500 AD. (Hranicky 1991) in the Late Woodland Period.

Figure 9B is a 23 mm long, 23 mm wide, well made, chert, triangular form with straight edges and a straight base. We identified it as a Clarksville/Potomac Triangular Type (Hranicky and Painter 1989:78-79; Hranicky 1991:19, 46, 1994:87) and termed Potomac Type by Stephenson et al. (1963, Plate XXVLS). It dates to 1000-1600 A.D. (Hranicky 1994) in the Late Woodland to Proto-Historic Periods. Alternatively, it could be a Madison Triangular Type (Hranicky and Painter 1989:81; Hranicky 1991:37, 1994:99) with slightly younger dates of 800-1400 A.D. in the Late Woodland Period.

Figure 9C is a 54 mm long, 20 mm wide, quartzite, stemmed form with a triangular cross section and a rounded/pointed base. We identified it as a Piscataway Stemmed Type (Hranicky and Painter

1989:59; Hranicky 1991:43, 1994:101) and termed Piscataway Type by Steponaitis (1980, closest to Plate 1.q). It dates to 0-300 A.D. (Hranicky 1994) in the Middle Woodland Period. Alternatively, it could be a Rossville Stemmed Type (Hranicky and Painter 1989:59-60; Hranicky 1991:48, 1994:105) with older dates of 800 B.C.-100 A.D. (Hranicky 1994) in the Early to Middle Woodland Periods.

Figure 9D is a 74 mm long, 35 mm wide, well made, chert, stemmed form with small shoulders and a square stem. We identified it as an Adena Stemmed Type (Hranicky and Painter 1989:44-45; Hranicky 1991:10, 1994:83) which dates to 800 B.C.-200 A.D. (Hranicky 1994) of the Early to Middle Woodland Periods.

Figure 9E is a 37 mm long, 24 mm wide, quartz, notched form with straight edges and a convex base. We identified it as a Vernon Type (Stephenson et al. 1963, Plate XXIV.F) which dates to the Late Archaic to Early Woodland Periods (Stephenson et al. 1963; Steponaitis 1980).

Figure 9F is a 17 mm long, 15 mm wide, possibly re-sharpened, chert, triangular form with excurvate edges and a concave base. We identified it as a Jack's Reef/PeeDee Pentagonal Type (Hranicky and Painter 1989:34-44; Hranicky 1991:30, 1994:96) which dates to 500-1000 A.D. (Hranicky 1994) in the Middle to Late Woodland Periods.

Figure 9G is a 86 mm long, 65 mm wide, well made, chert, triangular form with incurvate edges and a concave base. We identified it as a Yadkin Triangle Type (Hranicky and Painter 1989:83; Hranicky 1991:55) which dates to 800-1400 A.D. (Hranicky 1991) in the Late Woodland Period.

Figure 9H is a 93 mm long, 31 mm wide, metarhyolite, stemmed form with small shoulders and a stem with straight sides and concave base. We identified it as Fox Creek/Selby Bay Stemmed Type (Hranicky and Painter 1989:50-51; Hranicky 1991:24) which dates to 1000-500 B.C. (Hranicky 1991) in the Early Woodland Period.

#### MISCELLANEOUS ARTIFACTS

A single pipe fragment was found (Figure 10A and B). It is an orange, obtuse-angle, quartz sand-tempered, clay, elbow pipe of Native American

origin (Key and Jones 2000) similar to that figured by Stephenson et al. (1963, Plate XXI.A-U). It is more weathered but similar in size to those found at another Rappahannock tribe site in Richmond County dated before 1650 (McCary 1950).

Also found was an internal mold of a fossil clam (Figure 10C). There is no local source for such a fossil. It most likely came from the Miocene cliffs outcropping along the south shore of the Potomac River on the north side of the Northern Neck. Other fossils (i.e., fossil shark teeth) from those outcrops have been found at other Chesapeake Native American sites (e.g., Potter 1993, Figure 51.g) including one on Totuskey Creek (Harper 1992:17).

Associated with the above artifacts were numerous oyster shells. Oyster shells are indicative of Native America occupation in the Chesapeake Bay in general as Native Americans were observed by the early colonists to eat oysters (Percy 1967; Smith 1986a; Strachey 1953). Beale (1967) indicated this was true for the Northern Neck as well. The oysters are also evidence of Native American occupation of this site in particular as today there are no oysters this far up Totuskey Creek as the water is too fresh. They must have been transported upstream to this site. Holmes et al.'s (1891) survey of Northern Neck oyster shell middens suggested that all these sites were occupied by historic Virginia Algonquians, but subsequent archeological research has shown the sites were not all contemporaneous, with some of the oyster shell middens representing intermittent native occupations from at least the Late Archaic to Historic Periods (Potter 1993). The Totuskey Creek Site was probably one of these smaller, intermittently occupied sites.

#### DISCUSSION AND CONCLUSIONS

The age estimates from the pottery- and point-based typological approach and the C<sup>14</sup> date are summarized in Table 1. The pottery was dated from the Late Woodland Period to the Proto-Historic Period. The points were dated from the Late Archaic Period to the Proto-Historic Period. C<sup>14</sup> dating of the bone gave a Late Woodland age which is also the median age of all the dates (Table 1). The C date is a single date from a single horizon. In contrast, the pottery and points

represent a larger age range simply because there are more samples possibly from multiple horizons and/or due to stratigraphic mixing during excavation of the site.

The C<sup>14</sup> date (1000-1160 A.D.) predates the Rappahannock tribe in the Totuskey Creek area coming into contact with the English colonists (Figures 1-5). The date is not relevant to human occupation of the Totuskey Creek site during the Rappahannocks' later disturbed occupation from 1653 until 1674 (Figure 2). This is not surprising as it is a single data point. The pottery and points date to as late as the Proto-Historic Period and do support the presence of the Rappahannock tribe at this site during resettlement.

The Totuskey Creek Site was most likely occupied throughout the Woodland Period and perhaps as early as the Late Archaic Period and as late at the Proto-Historic Period. It was probably a site periodically inhabited by the Rappahannock tribe. This ephemeral site was probably occupied seasonally to exploit the natural resources in the upper Totuskey Creek. Sanford and Klein (1994) initially developed and Klein (1995) refined a model to predict prehistoric settlement sites in the Northern Neck. The Totuskey Creek Site meets three of the four significant predictors in the model. These include: 1) within 12,000 ft of the lower stretches of four named creeks including Totuskey; the distance to the main branch of

Totuskey Creek is 8,000 ft (2.4 km). 2) on level to gently sloping, well-drained soils of a floodplain or ridge top; the site is on a gently sloping, well-drained soil of a ridge top. 3) proximity to natural marshes; there are natural marshes 100 m (330 ft) directly across the creek from the site as well as further up and down stream. Distance to the Rappahannock River was a significant variable in Klein's (1995) model, but the sites tended to be within 24,000 ft (7.3 km); the Totuskey Creek Site is currently just outside this range at 26,000 ft (7.9 km). Thus, the Totuskey Creek Site is a typical Woodland settlement site in the Northern Neck.

#### ACKNOWLEDGEMENTS

David Archibald (San Diego State University) and Janet Wright (Dickinson College) helped identify the jaw fragment. Thomas Filip (Carlisle, Pennsylvania) X-rayed the jaw fragment. Jeff Smith (Virginia Department of Historic Resources) provided access to their Historic Resources Sharing System. Douglas Sanford (University of Mary Washington) helped with the literature research. Ben Edwards (Dickinson College) helped determine the lithology of the points. Darden Hood (Beta Analytic Radiocarbon Dating Laboratory in Miami, Florida) helped with the interpretation of the C<sup>14</sup> date. This project was made possible by a grant from Dickinson College's Research and Development Committee.

Source	Type	Period
pottery	Yeocomico Ware	Late Woodland to Proto-Historic
pottery	Townsend Corded	Late Woodland to Proto-Historic
pottery	Potomac Creek Plain	
point	Clarksville/Potomac/Madison Triangular	Late Woodland to Proto-Historic
pottery	Rappahannock Incised	Late Woodland
point	Levanna Triangle	Late Woodland
bone	C <sup>14</sup>	Late Woodland
point	Yadkin Triangle	Late Woodland
point	Jack's Reef/PeeDee Pentagonal	Middle to Late Woodland
point	Piscataway/Rossville Stemmed	Early to Middle Woodland
point	Adena Stemmed	Early to Middle Woodland
point	Fox Creek/Selby Bay Stemmed	Early Woodland
point	Vernon	Late Archaic to Early Woodland
	Youngest:	Proto-Historic
	Median:	Late Woodland
	Oldest:	Late Archaic

Table 1. Summary of age estimates of Totuskey Creek site comparing typological approach using pottery and points with the C<sup>14</sup> date. Arranged from youngest at top to oldest at bottom

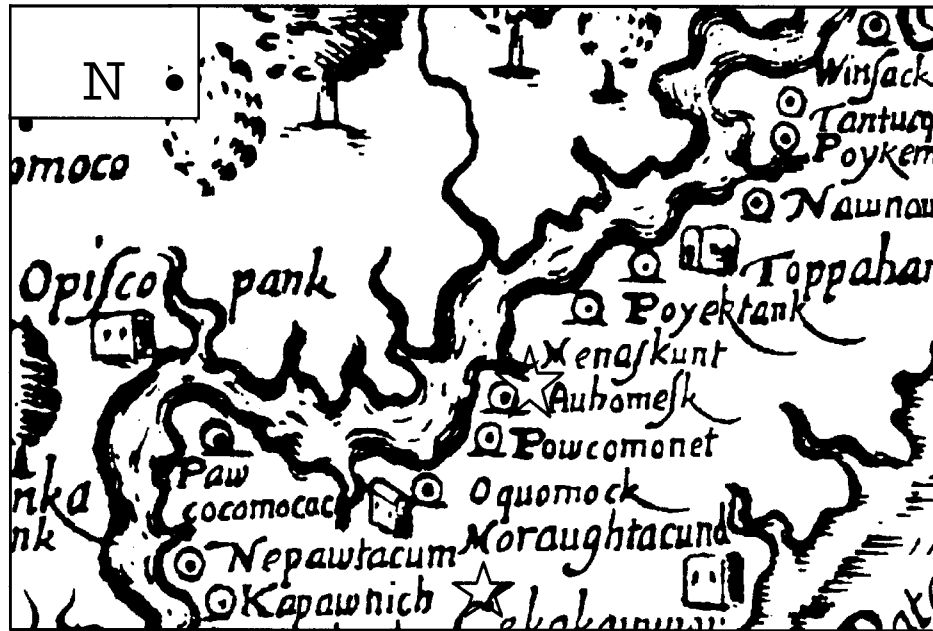


Figure 1. John Smith's 1612 map showing Native American sites along the Rappahannock River relative to the Totuskey Creek Site (indicated by the star). Houses indicate locations of 'king's houses' (i.e., larger district chiefs' villages). Circles with central dots indicate smaller hamlets. Modified from Smith (1986b:Pages 140-141).

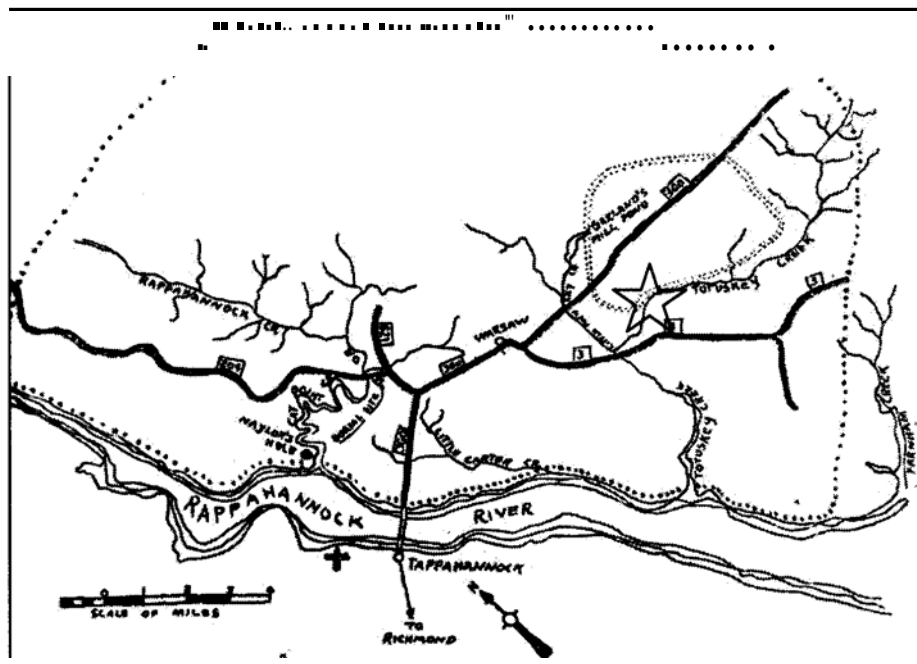


Figure 2. McCary's (1950) map showing location of Totuskey Creek Site (indicated by the star) in relation to the approximate territory of the Rappahannock tribe from 1608 to 1649 (single line of dots), their first relocation site from 1653 to 1674 (double line of dots), and their second relocation site from 1674 to 1684 (cross). Modified from Ryland (1976:Figure 2).



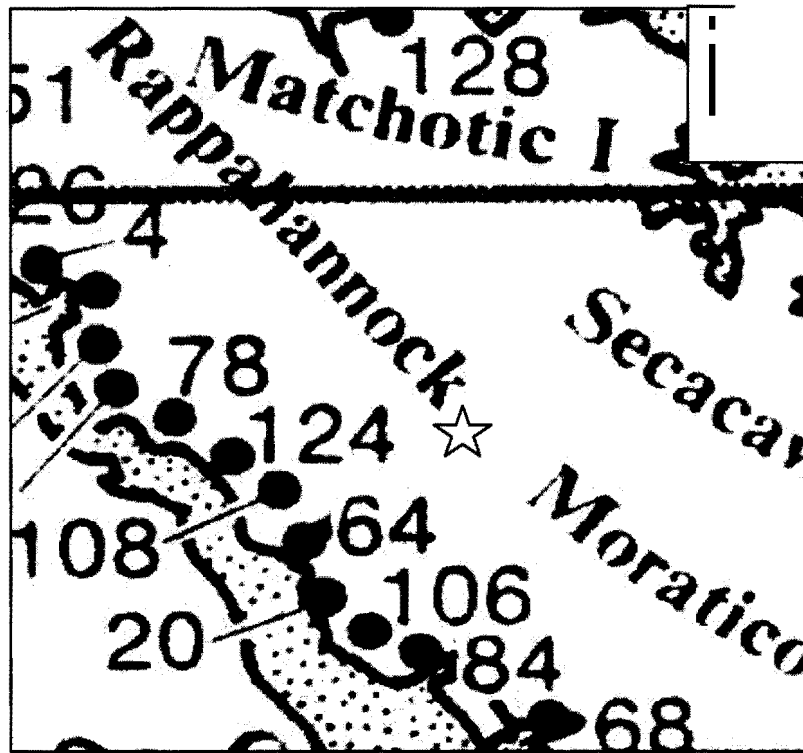


Figure 3. Feest's (1978) interpretation of John Smith's 1612 map showing positions of Native American sites relative to the Totuskey Creek Site (indicated by the star). 68 = Moratico/Moraughtacund 'king's house' (i.e., district chiefs' village). 84 = Oquomock/Oquornock hamlet. 106 = Powcomonet hamlet. 20 = Auhomesk hamlet. 64 = Menaskunt hamlet. 108 = Poyektank hamlet. 124 = Toppahannock/Toppahanock 'king's house' (i.e., district chiefs' village). Modified from Feest (1978:Figure 2).

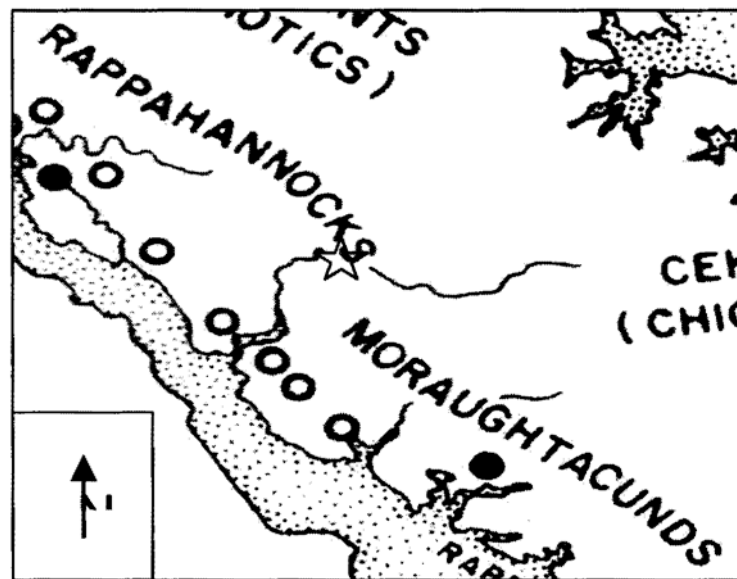


Figure 4. Potter's (1993) interpretation of John Smith's 1612 map showing positions of Native American sites relative to the Totuskey Creek Site (indicated by the star). Solid circle indicates location of district chief's village. Open circles indicate smaller hamlets. Modified/ram Potter (1993:Figure 1).

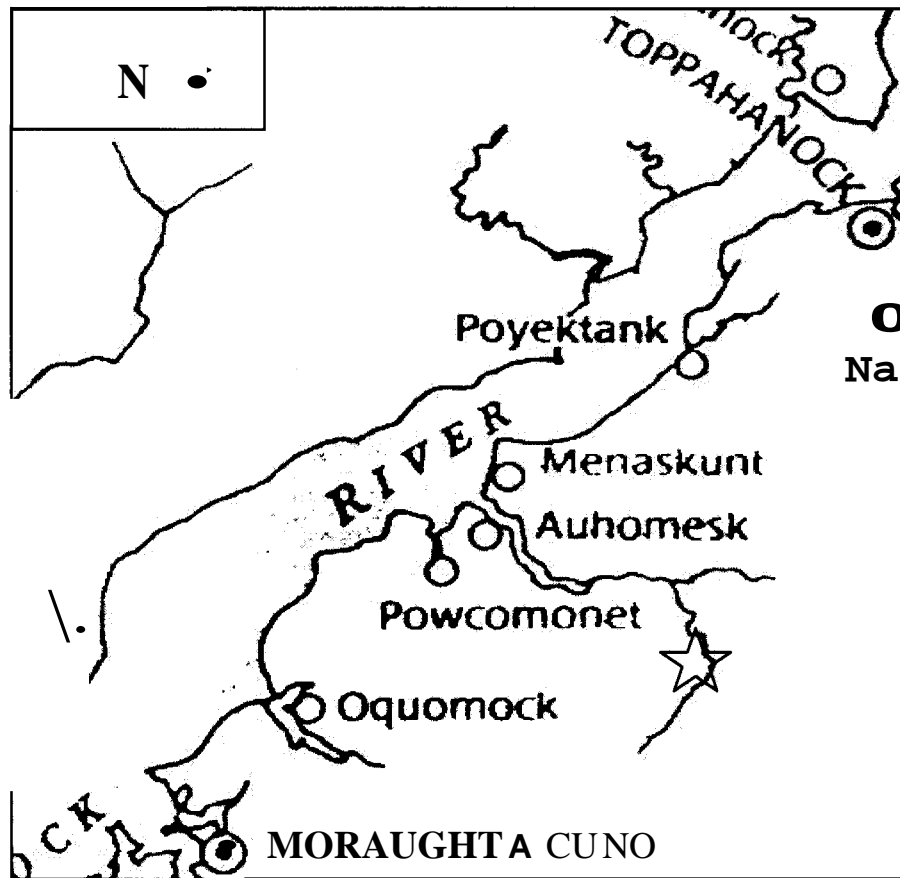


Figure 5. Haile 's (1996) interpretation of John Smith's 1612 map showing positions of Native American sites relative to the Totuskey Creek Site (indicated by the star). Circle with central dot indicates location of 'king's house'. Open circles indicate smaller town. Modified from Haile (1996).

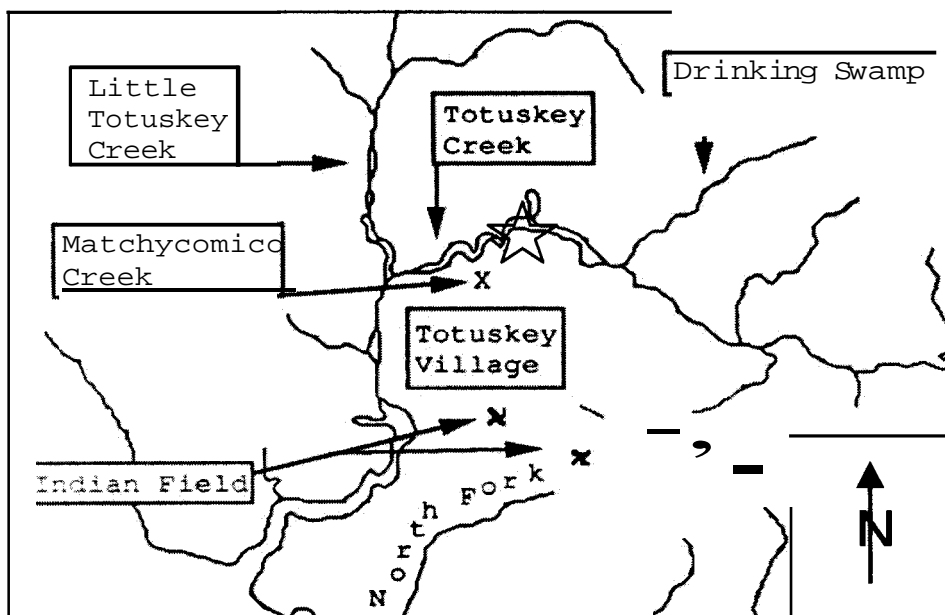


Figure 6. Holland 's (1988) inferred positions of Totuskey Village (indicated by the X) relative to the Totuskey Creek Site (indicated by the star). Creek names are those used in land patent records. Modified from Holland (1988:Map 3).

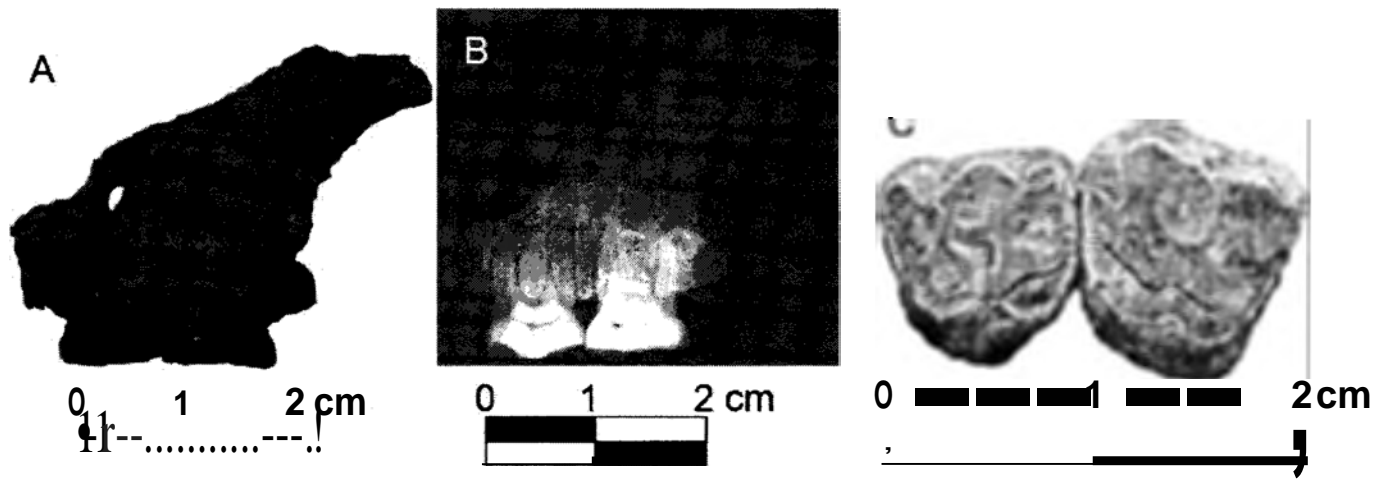


Figure 7. Raccoon jaw fragment used to  $C^{14}$  date the Totuskey Creek Site. A: photograph of side view; B: X-radiograph of side view showing interior teeth roots; C: photograph of worn occlusal surface of molars.

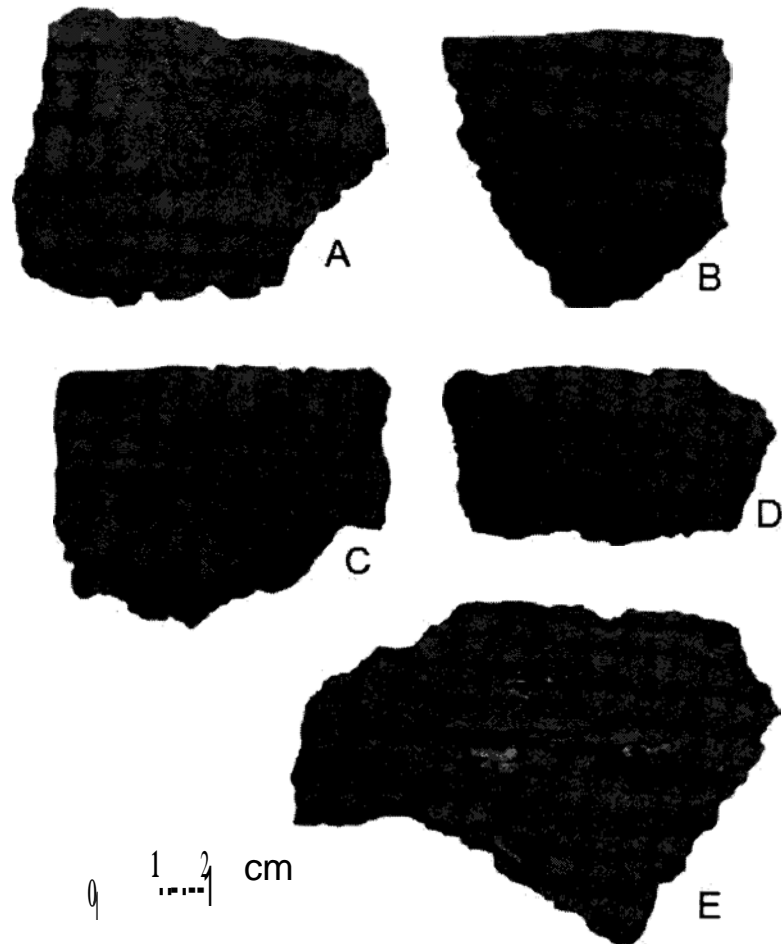


Figure 8. Pottery shards discovered with the raccoon jaw fragment. A: Townsend Corded; B: Rappahannock Incised; C: Yeocomico; D: Potomac Creek Plain; E: Townsend Corded

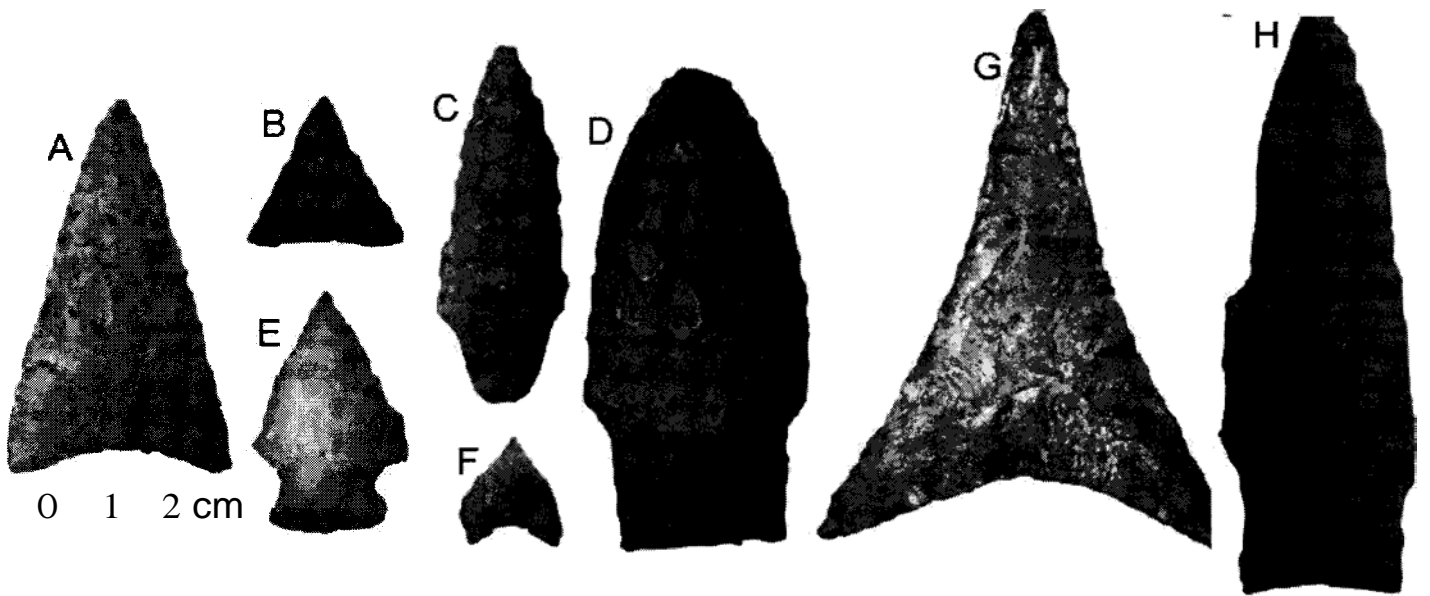


Figure 9. Points discovered with the raccoon jaw fragment. A: Levanna Triangle; B: Clarksville/Potomac or Madison Triangular; C: Piscataway or Rossville Stemmed; D: Adena Stemmed; E: Vernon; F: Jack's Reef/PeeDee Pentagonal; G: Yadkin Triangle; H: Fox Creek/Selby Bay Stemmed.

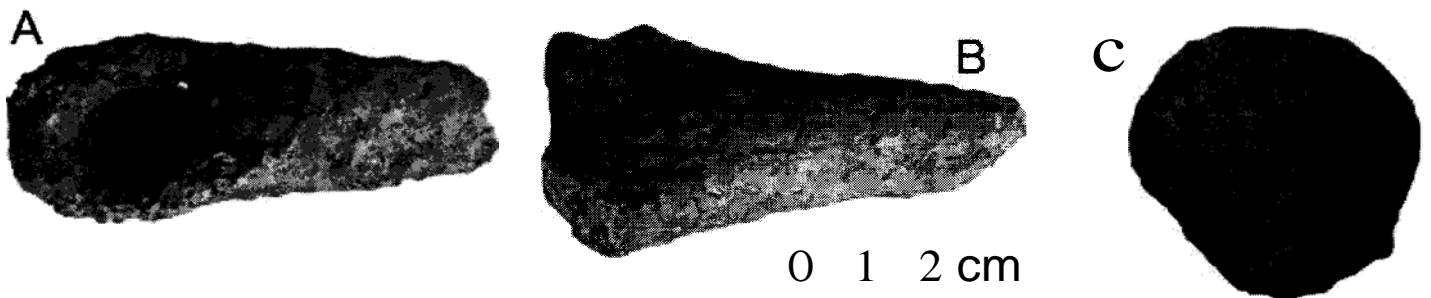


Figure 10. Terra cotta clay tobacco pipe (A top view, B side view) and Miocene fossil clam (C) discovered with the raccoon jaw fragment.

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