Sands of the Blackstone:
A PaleoIndian Site in the Narragansett Bay Drainage

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Cultural Resource Management (CRM) archaeological survey in the Blackstone River Valley has provided unequivocal evidence that today's Narragansett Bay Drainage Basin was a landscape known and occupied by PaleoIndians approximately 11,000 years ago. This paper describes the discovery and preliminary evaluation of the Sands of the Blackstone Site in Massachusetts.

Introduction

The Sands of the Blackstone archaeological site is extraordinary in several respects. To date, it is the only definitive in situ PaleoIndian site to be discovered in meaningful contexts within the river drainages that feed today's Narragansett Basin, the predominant coastal drainage of Rhode Island. The site is remarkable for its research potential and the data that can be shared with colleagues. However, complicating the dissemination of those data is that the site's discovery and subsequent archaeological evaluation occurred within a regulated consultation process involving representatives of corporate, federal, state, and tribal entities, who agreed that this important site be preserved in place and protected by not revealing its precise location. Accordingly, this paper describes only the Sands of the Blackstone Site's general proximity to the long and winding Blackstone River in Massachusetts. Preliminary investigations provided confirmation of the site's temporality and cultural affiliation, but the consensus was that further archaeological excavations would not be conducted.

Discovery – Intensive Survey

The Sands of the Blackstone Site was discovered in the fall of 2010, when archaeologists from The Public Archaeology Laboratory, Inc. (PAL) were conducting a survey for a proposed large-scale construction project in the Blackstone River Valley of eastern Massachusetts. During that survey's systematic subsurface testing, 108 pieces of pre-contact Native American lithic cultural material were recovered from a location that would be impacted by the proposed construction. Recovered chipping debris included a variety of raw materials: Blue Hills and other rhyolite, chert, quartz, and quartzite. A fragment of a bifacially flaked tool (biface), a utilized quartz flake, and a piece of calcined bone were also recovered. Flecks of charcoal were occasionally noted during the screening of materials from five, 50-x-50-centimeter (cm) test pits and two, 1-x-1-meter (m) excavation units (EUs). Eleven of the recovered flakes were from A_1 soils; 7 were from the B_2 stratum; and the majority were recovered from the B_1 stratum. PAL considered the site, designated the Sands of the Blackstone Site, to be potentially significant and recommended further evaluation.

Evaluation

An archaeological evaluation of the Sands of the Blackstone Site was conducted in the fall of 2011. Subsurface testing at and surrounding the planned construction area consisted of digging 88, 50-x-50-cm test pits and 5, 1-x-1-m excavation units (EU-01 to EU-05). A total of 1,211 pieces of pre-contact cultural material was recovered from 52 of the test pits and all five EUs within the approximately 3,200 square meter site. Twenty-eight pieces of post-contact cultural material were also recovered. The pre-contact artifact assemblage to date consists mostly of chipping debris (n = 1,267), with 54 other object types (Table 1).

Table 1. Pre-Contact Cultural Material by Object Type.

Object	Total
Biface	5
Burnishing Stone	1
Calcined Bone	3
Charcoal	18
Chipping Debris	1,267
Drill	2
Fire-Cracked Rock	4
Hammerstone	3
Manuport	1
Possible Pigment Stone	1
Projectile Point	3
Scraper	3
Uniface	4
Utilized Flake	6
Total	**1,321**

Table 2. Chipping Debris by Material Type.

Material	Total
Chert	132
Felsite	3
Hornfels	20
Jasper	2
Quartz	36
Quartzite	22
Rhyolite	1,038
Unidentified Igneous	2
Unidentified Metamorphic	10
Unidentified Sedimentary	2
Total	**1,267**

The post-contact materials consist of nineteenth- and twentieth-century ceramic fragments, glass shards, brick, and nails. Table 2 lists the wide range of lithic raw material types represented in the Sands of the Blackstone pre-contact assemblage, with rhyolite the most frequent. Small amounts of charcoal were recovered from five test pits across the site; the charcoal from three of these test pits provided radiocarbon results (discussed below).

The pre-contact cultural materials were recovered from the surface to 120 cm below the surface (cmbs), with the majority (77.9%) from the well-developed clearly distinguished B_1 stratum. The remainder of the materials were recovered from plow zone (A_{pz}) soils (7.2%); A horizon soils (9.8%); B_2/B_3 horizon soils (4.6%); and feature-related soils (0.5%) (Table 3). The distinctions between A_{pz} and A horizon soils across the site were not always clear; the topsoil stratum was as shallow as 9 cmbs to as deep as 40 cmbs, with an average of 20 cm across all testing units.

One feature, a shallow rock platform, 3 m (east–west) by 2 m (north–south), was recognized in the southwestern area of the site and partially excavated. The feature was first observed on and just below the surface and was distinguished by an irregular but generally ovate grouping of cobbles in sandy alluvial soils that were otherwise rock-free. Excavation of EU-04 showed that vertically the stones composing the feature's eastern limits were present from just beneath the surface to a maximum of 20 cmbs. There were no color or textural differentiations between the feature-related soils and those of the natural soil matrix surrounding it. Low densities of quartz, chert, and rhyolite chipping debris were recovered from and below the plow zone stratum containing the cobble feature.

The five EUs were used to further investigate areas of high and moderate densities of cultural materials identified during the intensive survey. EU-01 was placed in close proximity to test pit S25W25, which had yielded more than 120 pieces of chipping debris and was excavated to 100 cmbs through natural soils with

Table 3. Pre-Contact Cultural Materials, Sands of the Blackstone Site.

Object	Stratum										Total
	A	A_1	A_o/A_1	A_o/A_{pz}	A_{pz}	B_1	B_1/B_2	B_2	B_3	Feature 1	
Calcined Bone						1					1
Charcoal						1					1
Chipping Debris		7				61	1	5			74
Utilized Flake						1					1
Chipping Debris						1		1			2
Chipping Debris		4			1	25		1			31
Manuport						1					1
Calcined Bone						2					2
Charcoal				1		14		1		1	17
Biface						5					5
Chipping Debris	48	25	1	10	53	815	1	45	4	3	1,005
Drill					1			1			2
Fire-Cracked Rock					1	3					4
Hammerstone		1			1	1					3
Projectile Point					1	2					3
Scraper						3					3
Uniface					1						1
Utilized Flake						4					4
Chipping Debris		7				43					50
Possible Paint/Pigment Stone						1					1
Uniface						1					1
Burnishing Stone						1					1
Chipping Debris	11	12		6	14	57		3		2	105
Uniface	1					1					2
Utilized Flake						1					1
Total	**60**	**45**	**1**	**17**	**72**	**955**	**1**	**50**	**4**	**6**	**1,211**

no evidence of a plow zone. The recovery of only three pieces of chipping debris from EU-01 indicated that the high density of debitage was a localized concentration.

EU-02 was excavated to investigate the high density (more than 150 pieces) of chipping debris recovered from test pit S15W10. The unit was excavated to 100 cmbs. There was evidence of an A_{pz} extending to approximately 15 cmbs. A moderate density (more than 40 pieces) of chipping debris was recovered that extended to 80 cmbs, with the majority concentrated within the B_1 subsoil stratum. The recovered chert, rhyolite, jasper, and quartz indicate that lithics from multiple source areas of significant distance were being transported to the Sands of the Blackstone Site.

EU-03 was used to further investigate the chipping debris recovered from test pit S15W10 and as a result of the findings from EU-02. High densities of debitage, tool fragments, and utilized flakes were recovered from soils generally concentrated between the surface and 50 cmbs, but also from subsoil strata to 120 cmbs. The recovered material types and diagnostic tools (Figure 1) include a crystal quartz fluted projectile point base, re-worked and utilized as a bone splitter, a crystal quartz graver (Figure 2), and a

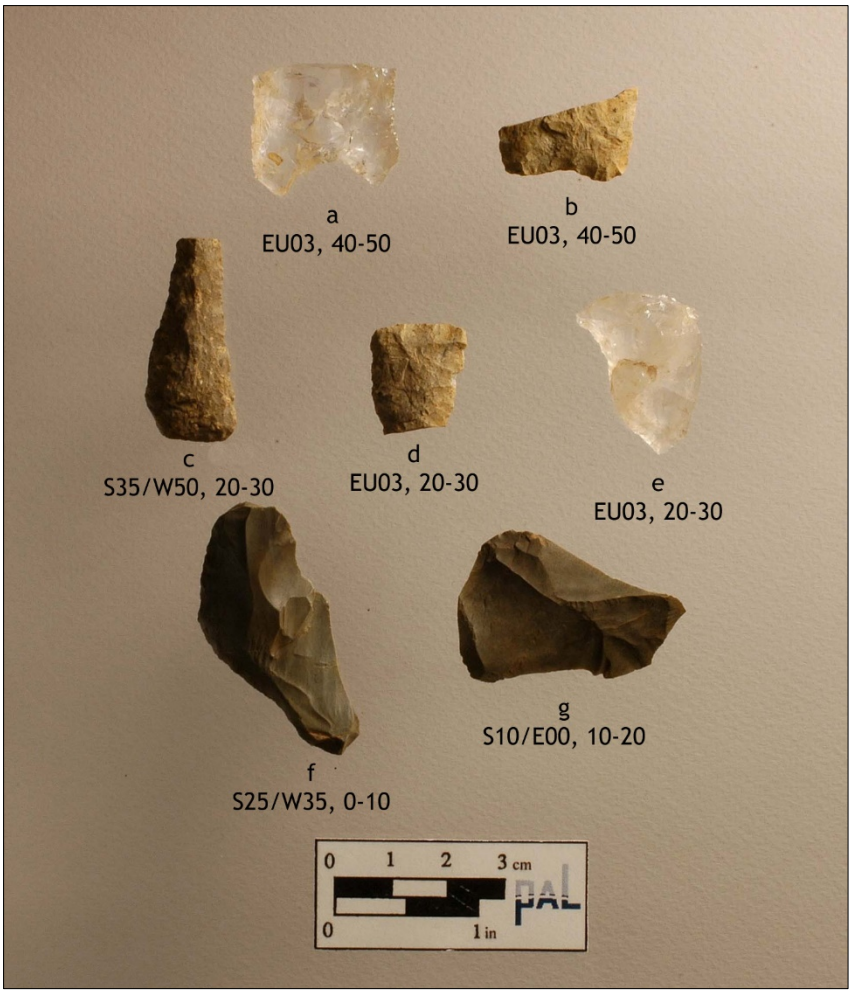

Figure 1. Representative stone tools from the Sands of the Blackstone Site: a) crystal quartz fluted point base/*pieces esquillees*; b) rhyolite point base; c) rhyolite drill fragment; d) rhyolite scraper; e) crystal quartz graver/scraper; f) Munsungen chert limace [after Gramly 1982]; and g) Munsungen chert utilized flake.

Figure 2. Fluted crystal quartz point base/*pieces esquillees* (left) and a graver (right) from EU-03, the Sands of the Blackstone Site.

variety of raw materials from distant source areas that indicate that the Sands of the Blackstone Site had been occupied by PaleoIndians about 11,000 years ago.

EU-04 was used to investigate the cobble concentration at and just below the surface in the southwestern area of the site. There was evidence of plowing to an average of 15 cmbs. The cobble feature (described above) within the upper portion of the A_{pz} stratum was characterized as a compact collection of small to medium (5–15 cm) river cobbles that were likely placed on the ground surface in an area otherwise devoid of rock in the topsoils. Because an A_{pz} was evident in EU-04 but not in EU-01, five m to the east, EU-04 appears to mark the edge of a former agricultural field. The cobble feature in EU-04 did not extend vertically below the A_{pz}/B_1 interface that began at approximately 28 cmbs. Low densities of quartz, chert, and rhyolite chipping debris were recovered from the A_{pz} and B_1 subsoils to 40 cmbs. The stratigraphic context of the cobble concentration feature indicates it is unrelated to the early pre-contact (PaleoIndian) Native American occupations of the Sands of the Blackstone Site and is likely a post-contact deposit of unknown function. Because the A_{pz} stratum was evident in EU-04 but not in EU-01 to the east-southeast, the cobble feature possibly resulted from clearing a field of surface rocks and concentrating them at the edge of the plowed field.

EU-05 was excavated to investigate the concentration of PaleoIndian materials recovered from EU-03. The unit was dug to 120 cmbs, with moderate densities of cultural material recovered between 20 and 60 cmbs in B_1 and B_2 finely textured alluvial sandy subsoils. The recovered materials were similar to those from EU-02 (rhyolite, chert, and jasper) and from EU-03 (quartz). Although no clearly diagnostic PaleoIndian tools were recovered in EU-05, a recovered rhyolite perforator/drill and raw materials from distant source areas were considered sufficient evidence to indicate a PaleoIndian locus of activity.

Interpretations

The Sands of the Blackstone Site is highly complex in terms of the temporal breadth indicated by radiocarbon dates; activity loci indicated by differential frequencies of material across the site; recovered diagnostic tool forms; and sources areas of recovered lithic raw materials.

Site Integrity and Radiocarbon Dates

The integrity of the Sands of the Blackstone Site is good, with material culture recovered from meaningful vertical and horizontal contexts. The soils are alluvial, and possibly partially aeolian. A sequence of radiocarbon dates (uncalibrated and uncorrected) was obtained from charcoal samples from various depths in several test pits: 11,990 ± 60 years B.P. at 80–90 cmbs in the B_2 stratum in test pit N0E0, 10,940 ± 50 years at 40–50 cmbs in the B_1 stratum in test pit S15W30; and 9780 ± 50 years at 20–30 cmbs in the B_1 stratum of test pit S15W10. These dates reflect vertical stratigraphic integrity and indicate depositional sequences that coincide with the human occupation of the site, discussed below.

Internal Density

The pre-contact cultural materials are differentially distributed across the site and reflect loci of activities during the site's occupation(s). Horizontally, there are as many as five areas that varied in densities and frequencies of debitage and tool fragments indicating spatially discrete depositional events and/or segregated activities. Site activity appears to have been focused along a slightly elevated sandy alluvial ridge in the Blackstone River Valley. Activity loci include areas of stone tool manufacture and maintenance of lithic raw materials, including Hudson River chert from New York, Munsungen chert from Maine, Pennsylvania jasper, Boston Basin rhyolites, and materials from more local sources.

Temporal Range of Occupations

Evidence of PaleoIndian Period (circa 12,000–10,000 B.P.) occupation of the Sands of the Blackstone Site is provided by its diagnostic stone tools, radiocarbon dates, and a suite of lithic raw materials consistent with known PaleoIndian site assemblages recovered elsewhere in New England. The PaleoIndian-associated material culture is of sufficient frequency and range to indicate an in situ component of multiple activity areas.

Temporally diagnostic tool forms consist of the base of a fluted crystal quartz projectile point and a chipped-stone tool assemblage similar to those recovered from other PaleoIndian sites in the Northeast, such as the Bull Brook, Neponset, and Wampanucket sites in Massachusetts, the Whipple Site in New Hampshire, and the Vail Site in Maine. Raw materials came from source areas in New York, Pennsylvania, Maine, New Hampshire, eastern Massachusetts, and Rhode Island (Jeff Boudreau and James Bradley, personal communications 2011). The fluted crystal quartz projectile point base has a well-defined rolling compression scar (impact fracture) at the break line. This scar indicates the point was hafted on a shaft or fore-shaft and broken during use via a lateral snap from leverage force. After the point was broken, the shaft was brought, or brought back, to the site, where the remnant point base was removed and reused as a bone/wood splitter (*pieces esquillees*), indicated by bipolar compression scars and use wear on the (former) blade edges and base (see Figures 1 and 2).

The other recovered tool forms and their material types that are consistent with a PaleoIndian assemblage are a crystal quartz graver manufactured from the same material as the fluted point; a Munsungen chert unifacially-flaked side scraper; a Normanskill chert utilized flake; and a Wakefield rhyolite uniface end scraper. Similar to the stone tools, the debitage includes materials from source areas across the Northeast.

Small fragments of charcoal from three test pits with PaleoIndian-related lithics were prepared and forwarded to Beta Analytic, Miami, Florida, for AMS radiocarbon dating. A date of 11,990 ± 60 (Beta 302800) B.P. (calibrated date = 13,970–13,740) was obtained for charcoal recovered between 80 and 90 cmbs in the B_2 stratum of test pit N0E0. Rhyolite, quartzite, and chert debitage had been recovered between 10 and 60 cmbs in the B_1 and B_2 strata. The charcoal fragment was collected 20 to 25 cm below the artifact-bearing levels in B_2 subsoil. The radiocarbon date is useful for documenting the alluvial formation of the site before its occupation by PaleoIndian peoples.

A date of 10,940 ± 50 (Beta 302802) B.P. (calibrated date = 12,930–12,840) was obtained for charcoal at 40–50 cmbs in the B_1 stratum of test pit S15W30. Two chert flakes were recovered between 30 and 40 cmbs in the level immediately above the dated charcoal sample. The radiocarbon date is useful for documenting the relative stability and formation processes of the site just before, and possibly contemporaneous with, the initial PaleoIndian occupation of the site.

A date of 9,780 ± 50 (Beta 302801) B.P. (calibrated date = 11,240–11,120) was obtained for charcoal at 20–30 cmbs in the B_1 stratum of test pit S15W10. Debitage from this test pit was recovered from the same depth and in association with the dated charcoal sample. The date is contemporaneous with and *possibly* a result of PaleoIndian occupation and activities at the site. Although the radiocarbon data from the site are important for establishing the alluvial depositional sequence of natural transforms and site stratigraphy, the analyzed charcoal flecks were not recovered from recognized features but from the subsoil strata in carefully excavated and recorded test pits from which pre-contact Native American cultural materials were recovered.

The lithic types in the site's cultural material assemblage (Munsungen chert, Normanskill chert, and Pennsylvania jasper) are consistent with the materials from other known New England PaleoIndian sites [Bull Brook (Eldridge et al. 1952), Neponset (Carty and Spiess 1992), Whipple (Curran 1999), and Vail (Gramly 1982)] (Figure 3). The recovered rhyolites, quartzite, and distinctive predominantly clear crystal quartz with a cloudy white inclusion reflect sources (Lynn volcanics and possibly Diamond Hill quartz) closer to the site (Jeff Boudreau and James Bradley, personal communications 2011).

Site Significance and Preservation

The Sands of the Blackstone Site represents a rare and fragile archaeological site with few, if any, comparable examples in southern New England. The site is temporally and culturally associated with the Bull Brook, Neponset, and Wampanucket sites in Massachusetts; the Whipple Site and the Israel River Complex sites in New Hampshire; and the Vail Site in Maine. It represents an important and early link in the Northeast's chain of related Post Pleistocene to Early Holocene pioneering human places (Boisvert 2011). Figure 4 illustrates the relationship of the Sands of the Blackstone fluted point base to other points recovered in the Northeast, as synthesized in Mary Lou Curran's (1999) bivariate analysis. Situated in the Blackstone River Valley and Narragansett River Drainage, the Sands of the Blackstone Site demonstrates unambiguous PaleoIndian occupation of the river valleys of southeastern New England before or during their inundation in the early stages of the formation of today's Narragansett Bay.

Before the Sands of the Blackstone Site was discovered, the earliest human occupation of the formative Narragansett Bay drainage had been represented by artifacts in private or museum collections (Bradley 2007, Bradley and Boudreau 2006a, 2006b, 2007; Smith et al. n.d.). Further research could provide insight about the role of the Blackstone River 11,000 years ago in a transportation network linking the ancient Northeastern interiors and Maritimes and about how the Sands of the Blackstone Site fits in current models of exploration, colonization, and marshalling.

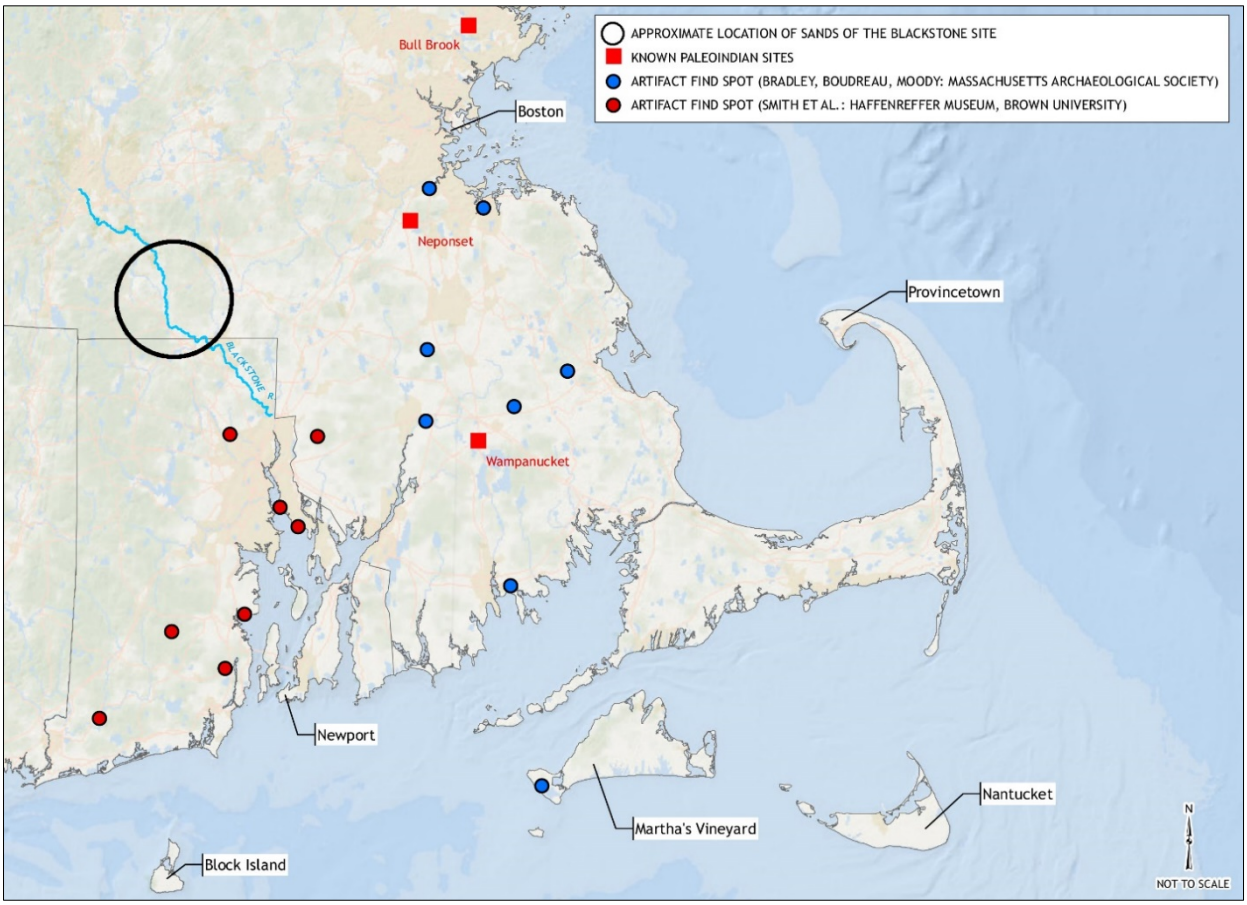

Figure 3. The Blackstone River Valley in Relation known PaleoIndian Sites in southeastern New England.

Proponents of the proposed construction project agreed that impacts to the Sands of the Blackstone Site could be avoided by redesigning the construction footprint. The Narragansett Indian Tribal Historic Preservation Office (THPO) and the Wampanoag Tribe of Gay Head (Aquinnah) THPO strongly advocated against an archaeological data recovery program and argued instead for a long-term protection and preservation plan. They agreed to work with the project proponents to develop strategies that would protect and preserve the Sands of the Blackstone Site. As a result of the project-specific consultation process involving representatives of corporate, federal, state, and tribal entities, this important site will be preserved in place and protected in the short-term by not revealing its location. It is unclear at this time what agency or tribe will take the lead in developing a long-term plan for the Sands of the Blackstone Site.

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This paper is dedicated to Gregg Laskoski and Michael Hubbard, PAL archaeologists who discovered the fluted crystal quartz point base and related pre-contact cultural materials that led to the identification and documentation of the Sands of the Blackstone Site. Mike died in 2013 and Gregg died in 2015 before the results of their exemplary archaeological work could be published. The author of this paper has synthesized their contributions using notes, site forms, and other materials and gratefully acknowledges their important contributions to PaleoIndian research in the Northeast.

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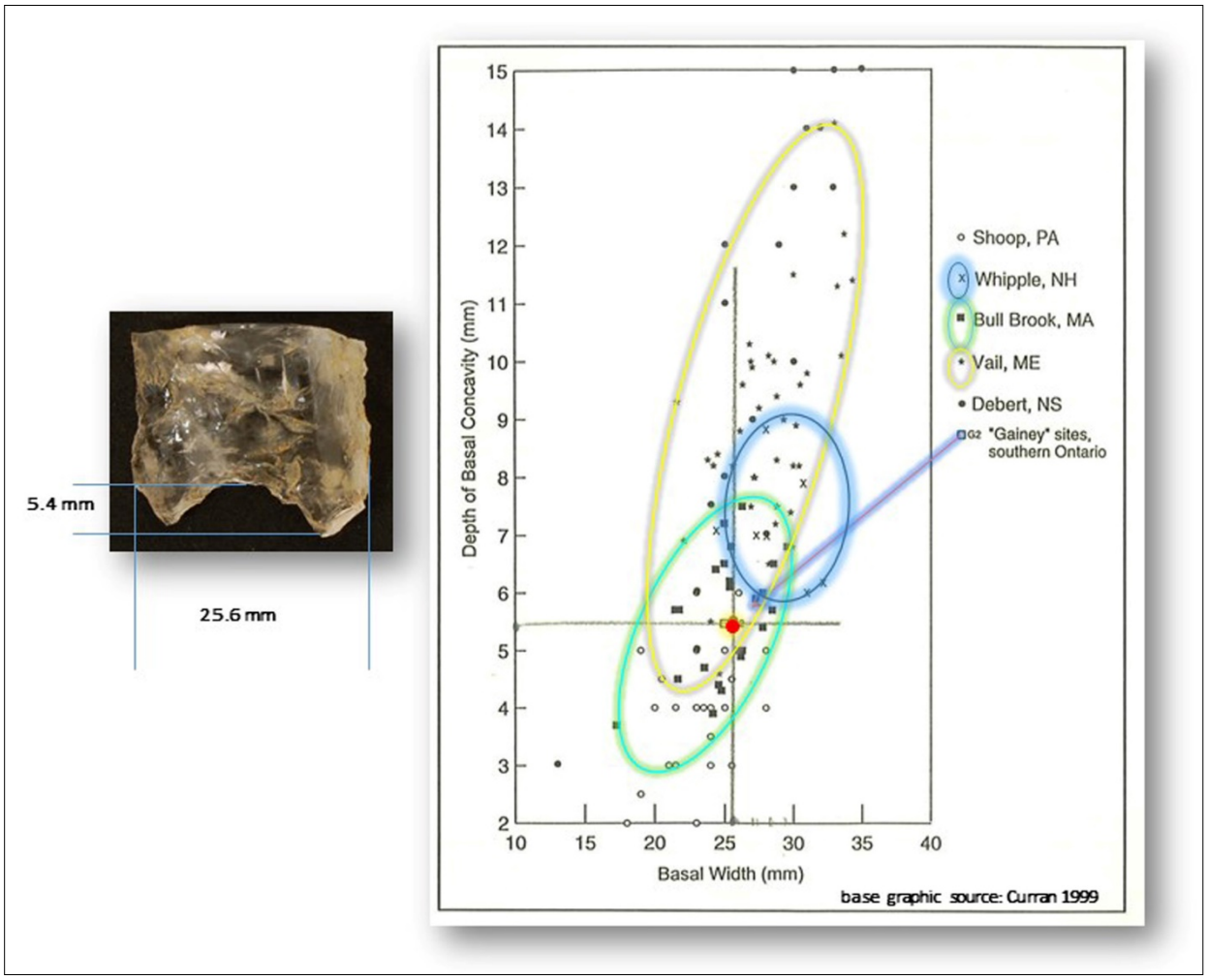

Figure 4. Relationship of the Sands of the Blackstone fluted point to points from other Northeast PaleoIndian sites (after Curran 1999 bivariate analysis).

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