Palaeo-Indian and Archaic Occupations of the Rideau Lakes

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Present knowledge of ***the*** *Palaeo-Indian and Archaic occupations of the Rideau Lakes area is reported and assessed. Recent adjustments to the dates* ***when the*** *Champlain Sea receded from eastern Ontario permit a reassessment of a side-notched fluted* ***point*** *from an area* ***previously thought*** *to have* ***been*** *flooded* ***throughout*** *Palaeo-Indian times. The identification of a lanceolate point which is also side-notched suggests that these two points may represent the beginning of the side-notching* ***technique*** *in late Palaeo-Indian times.*

Excavated evidence and radiocarbon dates from the Wyght site (BfGa-11) confirm the presence of an early Archaic component ***dating*** *to* 6000 *B.C. on the eastern shoreline of Lower Rideau Lake.*

Surface-collected Archaic projectile points of the Rideau Lakes have been classified by computer discriminant analysis ***and the*** *frequency of occurrence of different types is discussed.*

Introduction

The Rideau Lakes comprise Upper, Big and Lower Rideau Lakes, but in a more general sense include all the lakes in the drainage basin of the Rideau River which flows into the Ottawa River at Ottawa, Ontario (Fig. 1). The lakes lie to the southeast of Perth and to the southwest of Smiths Falls, Ontario. They are connected by the Rideau Waterway (Legget 1955) through the height of land south of Upper Rideau Lake to the lakes and rivers of the Cataraqui River drainage basin which empties into Lake Ontario at Kingston.

The prehistory of the Rideau Lakes is known from surface collections made by several early settlers of the area (Beeman 1894; Boyle 1895; Watson 1976a) and from archaeological surveys and excavations undertaken between 1975 and 1984 (Watson 1976b; 1977; 1979; 1980a; 1980b; 1981; 1982a; 1982b; 1983a; 1985). Some of the early collections, of which those of W. L. McLaren and C. C. Inderwick are the largest, and some recently excavated material, are in the Perth Museum. When the museum displays were first made, in 1975, the only way to interpret the Rideau Lakes artifacts was to compare them to descriptions and photographs of artifacts from other dated sites in Ontario (Wright 1972; Kennedy 1966, 1970), New York (Ritchie 1969) and Ohio (Converse 1973). The displays were updated in 1983 to present newer information based on Rideau Lakes surveys and excavations and on data from New York (Funk 1976) and elsewhere in the Northeast (Trigger 1978).

Archaeological work has included two field seasons of survey and eight of excavation, undertaken to find new sites, to evaluate the potential of sites identified from the McLaren collection, and to build a data base to aid in the classification and evaluation of the large surface collections from the area (Watson 1976b, 1977, 1979, 1980a, 1980b, 1981, 1982a, 1982b, 1983a, 1985).

The four periods defined by Wright (1972) were initially used for this paper. However, more recent publications of Wright and others suggest the need to restructure the chronological framework. Palaeo-Indian occupations in the Northeast have been placed at 9500-8200 B. C. (Roberts *et al.* 1987: Plate 2), while Trigger (1978:26) and Converse (1973:2) date the Early Archaic to 7000 B.C. Both Trigger (1978) and Funk (1976:232) date the Bifurcate-Base Tradition of the Early Archaic to about 6300 B.C. Also, Wright *et al.* (1987: Plate 6) place the development of the Early Archaic from the Palaeo-Indian Period around 8000 B.C., when some Palaeo-Indians moved north into the eastern Great Lakes basin in Ontario. While there are no new data from the Rideau Lakes concerning these matters, evidence is presented in this paper for the appearance of the Archaic in the region by about 6000 B.C. The start of the Palaeo-Indian period has been set at 9500 B.C. and the onset of the Archaic has been set back from 5000 B.C. to 7000 B.C. Thus, the following temporal framework is used in this paper:

Palaeo-Indian Period (9500 B.C. to 7000 B.C.)

Archaic Period (7000 B.C. to 1000 B.C.)

Initial Woodland Period (1000 B.C. to A.D. 1000)

Terminal Woodland Period (A.D. 1000 to Historic Period)

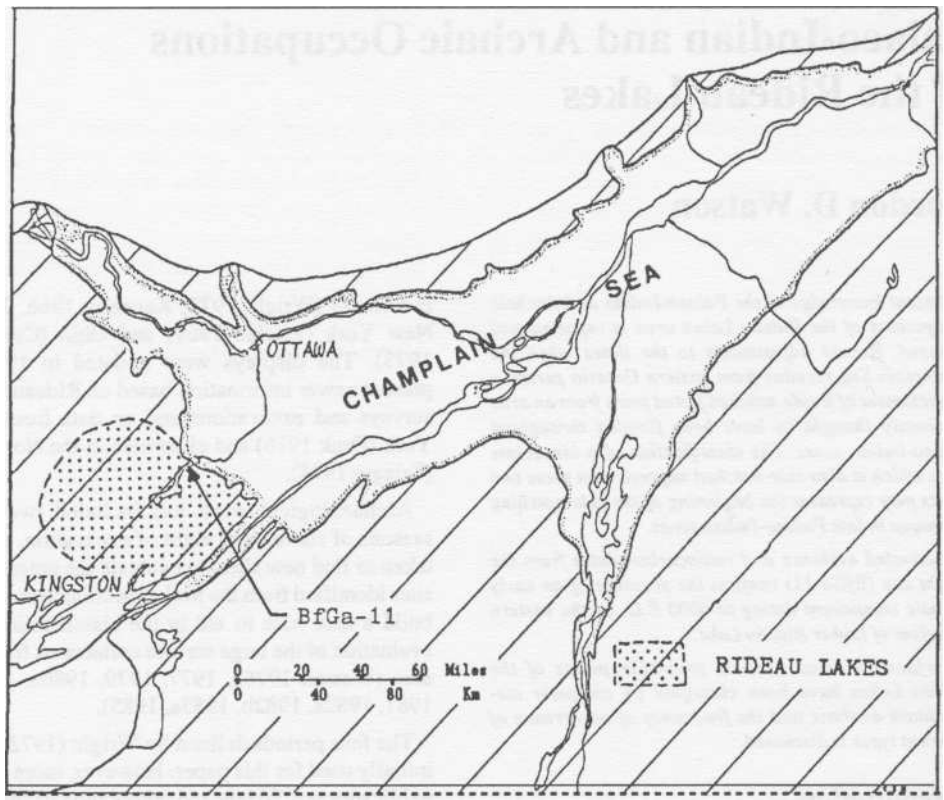

FIGURE 1
Champlain Sea (after Harington 1976) and its relationship to the Rideau Lakes area and the Wyght Site (BfGa-11)

The Palaeo-environment of the Rideau Lakes at the time of the Champlain Sea

The date of the earliest possible post-glacial human occupation of the Rideau Lakes was determined by the timing of deglaciation, the later draining of the Champlain Sea and by the re-establishment of an environment capable of sustaining human populations. In preparation for archaeological research of the area, a study of *The Palaeo-Environment of the Rideau Lakes/Eastern Ontario Area* was undertaken (Watson 1976c).

The Rideau Lakes occupy the western edge of the St. Lawrence Lowlands which are "bounded by highlands on the north, south, east and west but open to the Atlantic to the northeast and to the Great Lakes Basins to the southwest" (Fulton *et al.* 1987:7). There are still some uncertainties about the history of deglaciation and the formation of the Champlain Sea.(Fulton *et al.* 1987:10-12). However, at the maximum transgression of the Sea, most of Ontario southeast of Pembroke, including the Rideau Lakes, was under salt water (Prest 1970; Fulton *et al.* 1987:10; Gadd 1987:75) (Fig. 1). The detailed location of the western boundary of the Champlain Sea at different times, from its maximum extent until it had receded from the area, is of particular relevance for archaeological survey. The rocky nature of the region of this western boundary means that remnant beaches of the Sea exist only in a few locations and non-uniform uplift means that present-day elevations cannot be used without correction to trace the possible boundary of the Sea between these established locations. These difficulties have resulted in the western boundary being drawn in the very general way depicted in Figure 1. That general boundary is obviously too simple, since the ruggedness of the terrain means the boundary of the Sea must have had many inlets and promontories. Chapman and Putman (1973:117) defined the problem as follows:

> The first fact to record about the Champlain Sea is that because of the rocky nature of the slope, it did not have shore features along its western shore. Two short gravel beaches near Westport just above the 525-foot contour are probably Champlain Sea beaches. Since the Champlain Sea lacks a definite shoreline, we can only set its limits at the limits of the stratified clay, bearing in mind the beach at Kingsmere 'north of Ottawa, at 690 feet above sea level.

The study of the area's palaeo-environment (Watson 1976c) combined the use of satellite imagery, air photographs, soil and topographic maps and field observations. Thirty-five millimetre slides of the Landsat imagery were made, so they could be projected as an overlay on other maps.

When the Landsat images were projected onto Map 2227 of Chapman and Putman (1973), it was found that a clearly defined boundary on the Landsat imagery, presumed to be the result of vegetation contrast between the clay plains and the rocky highlands, matches the clay boundary on Map 2227 in the more clearly defined areas with steep boundaries to the rocky highlands. This boundary is also clearly visible on parts of NTS Sheet 31 prepared from multispectral imagery Band 6 by Surveys and Mapping Branch, Department of Energy, Mines and Resources. The apparent shoreline of the Sea, determined by these techniques, is illustrated in Fig. 2. The western boundary, along the line between Clayton, Wemyss and Westport, includes the flooding of the valleys which contain Bennett and Silver Lakes on the north and Christie, Farren and Bobs Lakes to the southwest of the formerly accepted western limit. The boundary south of Westport in the low slope areas around Charleston Lake is more difficult to define by this method because freshwater clays laid down by glacial Lake Iroquois underlie the clays of the Champlain Sea. These freshwater clays can be expected to affect the vegetation in a similar fashion to the Champlain Sea clays, which is the factor that generates the photographic contrast at the boundary between the lowland vegetation and that of the rocky highlands in the Landsat imagery.

Other data support the validity of the boundary determined by this method. In particular, the Clayton beach gravels, at an elevation of 555 feet and dated at 12800±100 B.P. (GSC-2151) (Fulton *et al.* 1987:13) lie near the boundary determined by the satellite imagery. The finding of clays on some of the shorelines of Bobs Lake during the archaeological survey, and of vegetation adapted to the Champlain Sea habitat on the western shoreline of the lake, supports the conclusion that the Champlain Sea flooded Bobs Lake at its maximum western extension. Dr. John J. Gillett and M. J. Shchepanek of the National Museum of Natural Sciences (personal communication 1989) provide the following account of their work on the theory that there is present day floral evidence of the Champlain Sea boundaries:

> The flora that existed around the Champlain Sea was likely not identical to that of the present day. Preliminary field investigations have shown that a group of plant species *(ca.* 40) occur at many specific locations in a band approximating the ancient perimeter of the Champlain Sea. These sites all are located on exposed south-facing raised rocky outcrops. This severe habitat apparently protected them from encroachment by more widespread and aggressive species. Investigations carried out on similar sites remote from the relict sea have so far not produced any of these indicator plants as a group or as a partial group. Although initial research is promising, more field studies are required to confirm which plants are involved and their relationship to the ancient Champlain Sea environment.
>
> A botanical survey was conducted at the northwest end of Bobs Lake in September 1986. Plants studied on an open wooded south-facing steep slope above the lake included 11 of the indicator plants as a group. Based on the relict Champlain Sea flora theory, Bobs Lake could have been associated with the sea.

Knowledge of the temporal sequences of the advances and recessions of the Sea are important to establish which areas could have been populated at different times. These sequences have been significantly revised in recent publications (Watson 1987a). A new synthesis of the latest information is presented by Fulton *et al.* (1987:7-20), who provide references to the primary sources. The earliest radiocarbon dates for the high stand near the western limit of the Sea range from 12800±100 B.P. (GSC-2151) at Clayton (Fig. 2), about 10 km northwest of Carleton Place, to 12100±100 B.P. (GSC-3110) at White Lake (Fig. 2) (Fulton *et al.*

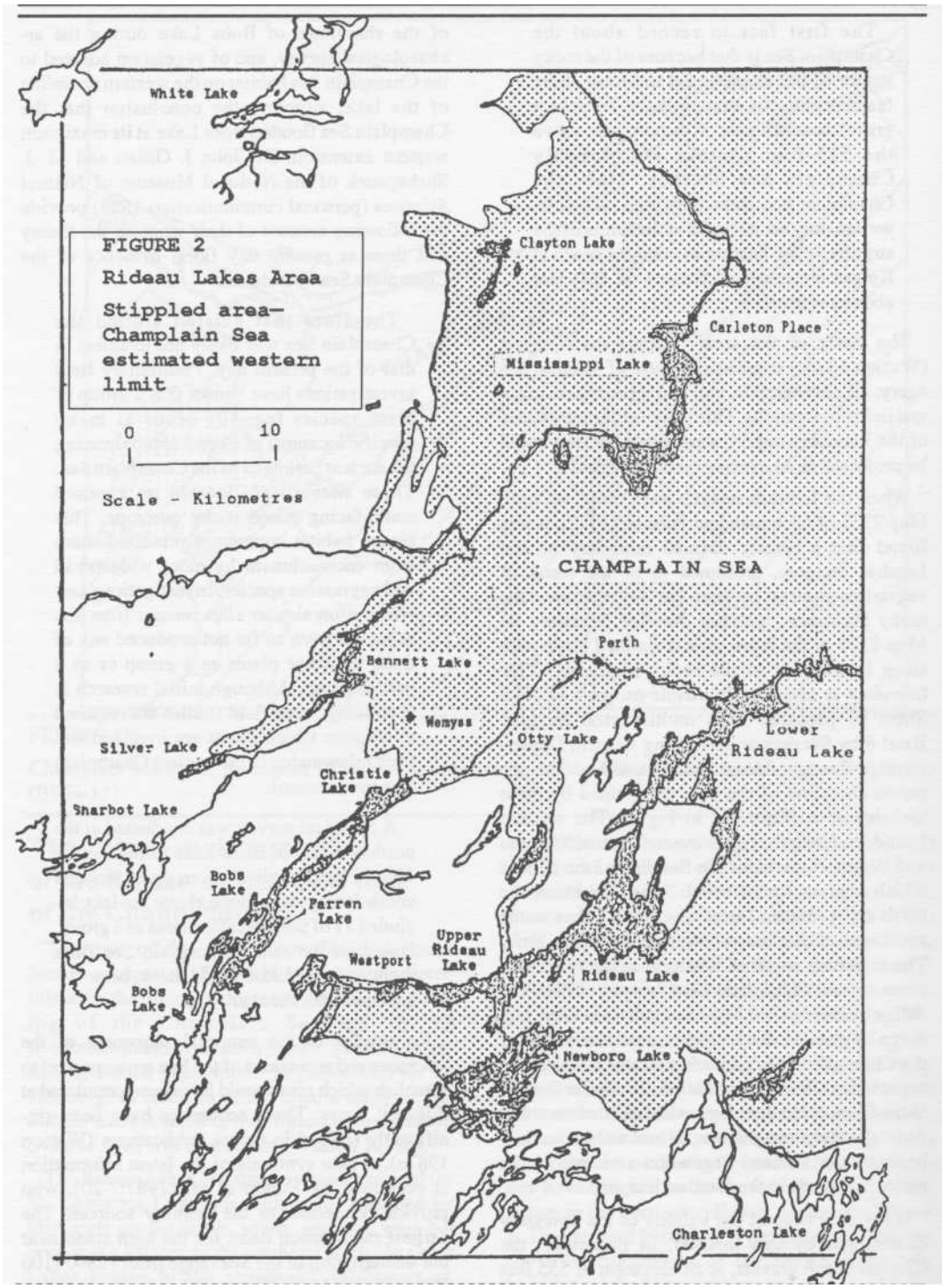

FIGURE 2
Rideau Lakes area—Champlain Sea estimated western limit

1987:13), while other dates in the basin lie between 10000±320 B.P. (GSC-1553), the youngest marine date, and 11900±160 B.P. (GSC-1772) for the marine limit at Martindale, in the Gatineau River Valley of Quebec, about 60 kilometres north of Ottawa. These new data indicate that only the part of the Rideau Lakes area west of the Champlain Sea could have been occupied by Palaeo-Indians between about 12800 and 10000 B.P. (10800 and 8000 B.C.). It is significant for the study of Palaeo-Indian occupations of the Rideau Lakes that the Champlain Sea was already receding from its highest level by 10000 B.P. (8000 B.C.) and was gone from eastern Ontario by 9000 B.P. (7000 B.C.). Therefore, areas which had been flooded by the Sea at its maximum extension were available for occupation during the last thousand years of the Palaeo-Indian Period.

The availability of flora and fauna in sufficient quantity and of suitable kind to support a human population is a necessary condition to establishing that environmental conditions were adequate for the sustenance of the earliest post-glacial populations. The fauna of Ontario apparently occupied the newly available habitat early in the post glacial period (Harington 1971, 1976, 1978, 1981, 1983). Both mammoth *(Mammuthus* sp.) and mastodon *(Mammut americanum)* remains have been found in Ontario, the latter being more abundant. Sixty-two mastodon occurrences have radiocarbon dates between 11000 and 9000 B.P. (Harington 1976). Harington also reports scattered remains of wapiti *(cervus elephus)* and a grizzly bear skull from Orillia, which has a radiocarbon date of 11700±250 B.P.

Some evidence of early fauna comes from Champlain Sea and Lake Iroquois beaches of early post-glacial age. Harington (1971:71) reports that remains of mammals that lived at the time have been recovered from Lake Iroquois beach deposits formed about 10200 B.C. (Prest 1970:717). These beaches have also yielded evidence of many present-day species of small mammals, fish and birds, which indicates that these species were already established in the deglaciated areas of Ontario in Palaeo-Indian times. Also relevant to the late Palaeo-Indian Period are Harington's findings at Green Creek, Ottawa, which show that many vertebrate remains of Champlain Sea age include several kinds of whale (i.e. white, humpback, and common finback), harbour porpoise, harp seal and bladder-nose seal. Harington (1971) also reports that snowshoe hare and marten apparently frequented the Boreal forest along the edges of the receding Champlain Sea. Evidence of shore birds and ducks and several species of fish, such as capelin, sculpin, smelt, three-spine stickleback and lake trout, is also preserved in the clay nodules from Green Creek. These fossils, estimated to be more than ten thousand years old, allow the inference that both marine and land animals (Wagner 1967, 1970; Harington 1971, 1983) inhabited eastern Ontario during the period when early man might be expected to have first occupied the area in the post-glacial Palaeo-Indian Period.

Recent studies confirm that the Champlain Sea had receded from the Rideau Lakes by about 8000 B.C. (Anderson 1987) when the vegetation in the adjacent area was already recovering from glaciation (Richard 1985:46-47, 49 Fig. 6; 1986). The vegetation is described as Preboreal between 8000 B.C. and 7000 B.C., as Boreal from 7000 B.C. to 6000 B.C., and as Atlantic from 6000 B.C. to 3000 B.C. (Fulton 1987:20).

There is evidence (Ogden 1967:117-127) of a sudden warming change of climate about 10600-10000 B.P., which resulted in rapid replacement of coniferous forests by deciduous forests in the region just south of the Great Lakes. This corresponds to the later phase of the Champlain Sea when, because of its saline nature, as much as 20,000 square miles (Harington 1976) of the Sea would have remained unfrozen in winter. This would have moderated the climate near the Sea. This warming trend would also have been influenced by the formation of glacial Lake Agassiz, which reached significant size about 12000 B.P. Between 10900 B.P. and 10000 B.P., Lake Agassiz oscillated between draining southward through Missouri-Mississippi outlets and eastward through the upper Great Lakes-Champlain Sea (Prest 1970:717-721 and 732). Lake Agassiz occupied an area of at least 50,000 square metres (Prest 1970:732) and was relatively shallow. Aside from providing a significantly moderating influence to an otherwise mid-continental climate, it delivered large volumes of summer-warmed water into the Upper Great Lakes and the Champlain Sea during the periods that it discharged eastward. This glacial melt water was carrying not only the energy absorbed from the solar warming of Lake Agassiz but also the heat of fusion of 80 calories/gram released by the melting of large surface areas of the Laurentide glacier. Having this energy retained at northern latitudes instead of being discharged into the Gulf of Mexico apparently had a significant warming effect on the climate of the Great Lakes-Champlain Sea region (Watson 1976c).

About 6000 B.C., during the Early Archaic, rivers and lakes took approximately their present configuration, a point that is confirmed by the radiocarbon dates from the Wyght Site (Watson 1985:14, 16). It was, therefore, about 5,500 years after deglaciation, about 2,000 years after the retreat of the Champlain Sea and at the time when present water configurations were reached, that the Early Archaic Period in the Rideau Lakes began in a fully modem forested environment, which included white pine, birch, hemlock and oak (McAndrews *et* al. 1987:P1. 4). In the Archaic Period, the Rideau Lakes would have been a particularly attractive habitat for human occupations, since the lakes lie on the boundary between the rocky highlands to the west and the bed of the former Champlain Sea to the east. This would have provided two different ecosystems with a variety of plant and animal resources to be exploited at different seasons.

The Palaeo-Indian peoples of the Champlain Sea and the Rideau Lakes

At the time of the Champlain Sea, Palaeo-Indian peoples were established in southwestern Ontario (Kidd 1952; Garrad 1971; Wright 1972; Deller 1976; Roosa and Deller 1982; Storck 1984), in the American states immediately south of the St. Lawrence Valley and Lake Ontario (Ritchie 1969, 1971; Funk 1976), and as far east as Debert in central Nova Scotia (MacDonald 1968). At that time, the Upper Great Lakes drained through the Ottawa River and into the Champlain Sea at about Pembroke (Prest 1970; Fulton, ed. 1986). There is limited archaeological evidence that as the climate became milder and the vegetation recovered, Palaeo-Indians moved eastward to the shores of the Champlain Sea, near present-day Perth. The most important archaeological evidence for the presence of Palaeo-Indians in the region consists of two fluted points on deposit in the Royal Ontario Museum (Kidd 1952; Garrad 1971:7; Watson 1976a:7).

One (Fig. 3a), with double flutes on one face and three on the opposite face, is reported to have been recovered just northwest of Lower Rideau Lake. This location would have been on the Champlain Sea shoreline at its highest level and the point could be contemporaneous with Clovis points from other locations. The Clovis age of 9000-8000 B.C. (Fogelman 1988:16-17) is also supported by the fact that "multiple fluting of the base is a typical feature of Clovis points" (Justice 1987:17; Fogelman 1988:16). This point provides, therefore, limited evidence of a Middle Palaeo-Indian occupation in the Rideau Lakes.

The other fluted point has been side-notched (Fig. 3b and 3c) which indicates that, either,

1) side notching occurred earlier than has been previously accepted, or
2) it was side-notched by later, possibly Archaic, peoples who reworked it in accordance with their concept of a suitable projectile point form.

It is reported to have been recovered from a location on Lower Rideau Lake, which would have been flooded by the Champlain Sea from about 10800 to 8000 B.C. Therefore, it must be a late Palaeo-Indian example made between 8000 B.C. and 7000 B.C., or it must have been brought there at some post-Palaeo-Indian time.

The side-notching of this fluted point has been attributed to post-Palaeo-Indian people (Garrad 1971; Storck, personal communication). That conclusion was based, at least in part, on the belief that the location where it was found would have been flooded by the Champlain Sea throughout the Palaeo-Indian period. However, the latest geological data, cited above, show that the Sea was receding as much as a thousand years before the end of the period and the possibility that this point could be a late Palaeo-Indian manifestation must be considered. This conclusion is also supported by its exceptionally long flute and its strongly excurvate lateral margins, which are attributes of late Palaeo-Indian fluted points. For example, the Crowfield type (Deller and Ellis 1984; Fogelman 1988:18) and points of the Reagen site of northern Vermont (Ritchie 1953:249-258; 1969:16; Trigger 1978:20; Fogelman 1988:24) show these characteristics. It is of interest to note the crudely executed unifacial side-notches of the point. This attribute suggests the notching was an experimental or tentative trait in an early phase of development. It is suggested that it is more probable that the notching was part of the original manufacture, than that the point was side-notched by later peoples, especially since side-notched fluted points have not been reported from dated Archaic sites.

Lanceolate projectile points of the Rideau Lakes

There are two lanceolate projectile points in collections from the Rideau Lakes that, on typological grounds, belong to the Plano stage of the late Palaeo-Indian Period. One is side-notched (Fig. 3d)

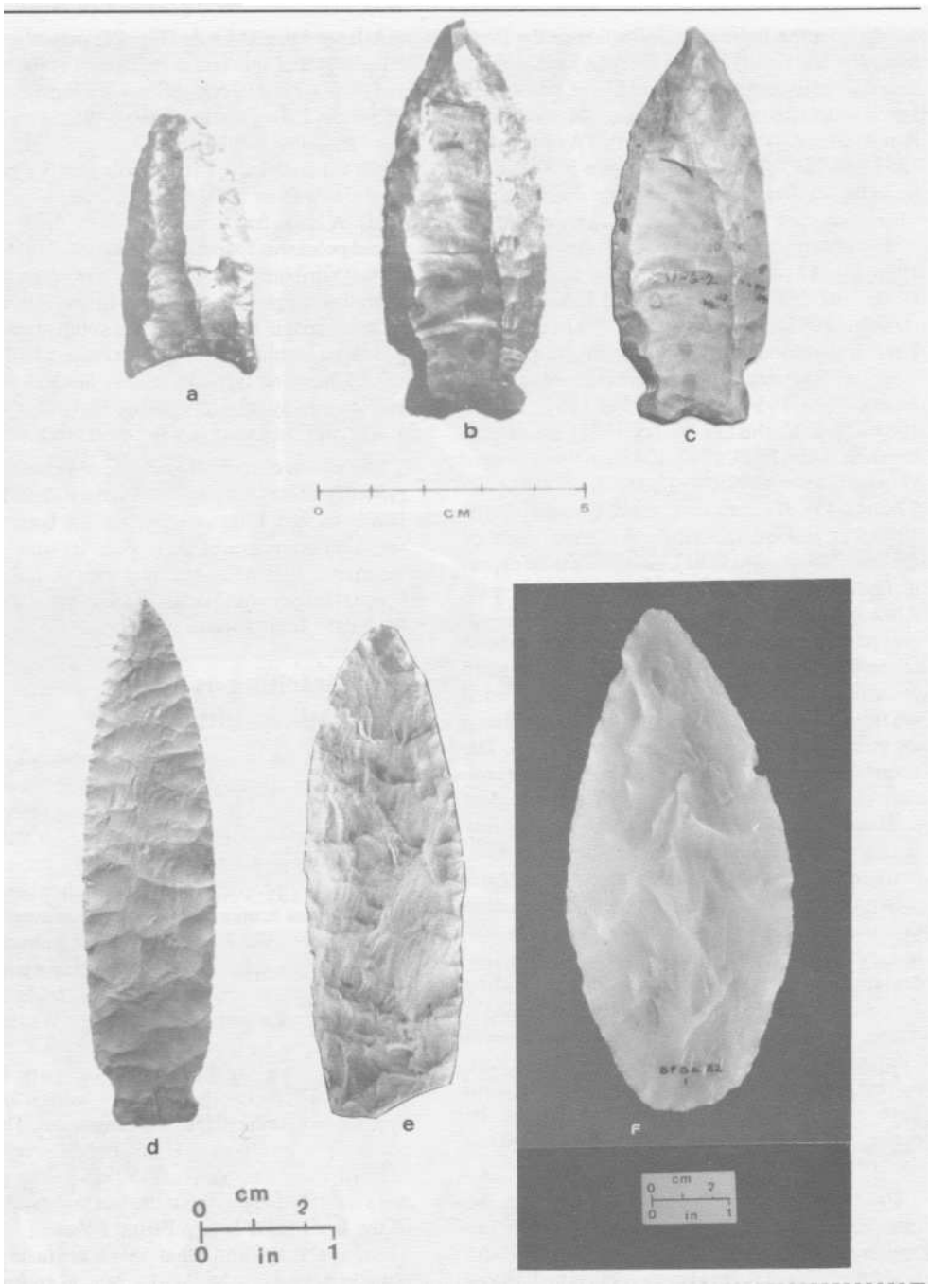

FIGURE 3

Palaeo-Indian projectile points of the Rideau Lakes. a: Fluted point (ROM C-4627059); b: Side-notched fluted point (ROM C-47.891.62); c: Obverse of b (note the unifacial side notches); d: Side-notched lanceolate Plano point of the Inderwick Collection, Perth Museum (note the unifacial side notches); e: lanceolate Plano point of the Innesville Museum; f: Large bifacial blade or spearhead from the Mason Site (BfGa-22).

and is from the Inderwick Collection in the Perth Museum. It is lightly ground from the base to about one-third of its length and except for the side-notching, is most like the transverse parallel flaked thin lanceolate Agate Basin points (Wormington 1957:268-269). The range of Agate Basin points includes eastern Ontario (Justice 1987:32-35). There are several surface-collected or excavated Plano sites from Lac Dubonnet, Manitoba (Pettipas 1970: Fig. 12 e-g) through the Rainy River district (Reid 1980:33-36) to the head of Lake Superior (Dawson 1983, 1984:9; Fox 1976,1977), at George Lake I (Greenman 1943, 1966) in the northern Georgian Bay area, at Sheguiandah on Manitoulin Island (Lee 1954, 1955, 1956, 1957; Storck 1984:21), at Flesherton (Storck 1972), near Peterborough (Dibb 1979, 1982, 1983), in southwestern Ontario (Deller 1979:8-9, 15-18); Ellis and Deller 1986:44-45), at Thompson Island, Quebec (Storck 1984:22) and on the northern Gaspe coast of Quebec (Benmouyal 1981). Thus, we would expect to find Plano material in the Rideau Lakes area. Although the provenance of the Inderwick Collection point is not recorded, it is most likely to be in the area, since all of the points of the Perth Museum collections for which the provenance is recorded are from this region and Inderwick, who recovered the point, is reported to have collected locally. The atypical side-notching of this lanceolate point consists of crude unifacial notches, of a standard of workmanship lower than that of the high quality flaking of the blade. As for the atypically side-notched fluted point described above, this suggests either a later modification by a less skilled artisan or a tentative experimentation with a new technique. Although other examples of side-notched lanceolate points are known (Harp 1964:207), some with only incipient notching (Ritchie 1969:17, Plate 2; Doyle *et al.* 1985:29; Benmouyal 1981:345b, 372a), this is the only one known from eastern Ontario. Wright (personal communication 1988) does not find a lanceolate Plano point to be out of place in the Rideau Lakes area, nor is it too unexpected that it be side-notched.

The other lanceolate point (Fig. 3e) is in the Innesville Museum. Its provenance is reported to be Lanark County. It is typical of eastern Plano Early Archaic points and is very similar to the point illustrated by Storck (1972:44-45), which he classified as "within the inclusive Plano complex". The Eastern Plano is estimated to begin about 7000 B.C. (Roberts *et al.* 1987: Plate 5) and lacking more specific information, these two lanceolate points can be assumed to postdate that time.

A large bifacial blade (Fig. 30 may also be of Palaeo-Indian age. It was recovered at the Mason site (BfGa-22) which is about two kilometres north of Smiths Falls (Watson 1980a, 1982a) on an ancient shoreline that belongs to the receding phases of the Champlain Sea. It is typologically similar to the bifaces from Debert (MacDonald 1968: Plate VIII). A lithic fragment that may be the base of a fluted point was found in the vicinity. Although its formal attributes and its recovery from an ancient shoreline suggest it is of Palaeo-Indian age, similar bifaces occur in the Adena phase south of the Great Lakes, so it cannot be assigned a Palaeo-Indian age on the basis of typology alone. Several days of surface survey and test pitting in 1982 (Watson 1983a) did not locate any more evidence.

There is no excavated evidence of Palaeo-Indian (9500-7000 B.C.) occupations in the Rideau Lakes. However, very little investigation has been undertaken in the areas most likely to yield results. More extensive survey at the western limits of the Champlain Sea could be expected to show traces of the Palaeo-Indian occupation.

Side-notching as a Late Palaeo-Indian Trait?

It is difficult to account for the notches on the Rideau Lakes fluted point (Fig. 3b and 3c) and the lanceolate point (Fig. 3d), since side-notching is not a typical attribute of these point types. It has been suggested that the fluted point must have been reworked by people of a later period when side-notching was a normal attribute. However, these Rideau Lakes fluted and lanceolate points, both with crude unifacial notches suggesting a tentative design, may represent the beginnings of side-notching in late Palaeo-Indian times. While this hypothesis is reasonable on the basis of the evidence from the Rideau Lakes, only future evidence will permit the choice between it and the hypothesis that the points were reworked. The important new information is that the recovery locations of these two atypical Palaeo-Indian points were not flooded for about the last thousand years of the late Palaeo-Indian Period (Watson 1976c). Thus, the possibility that these artifacts were reworked need not be the one which exclusively explains their existence.

The Archaic Peoples of the Rideau Lakes

The watercourses of the Rideau Lakes make it an

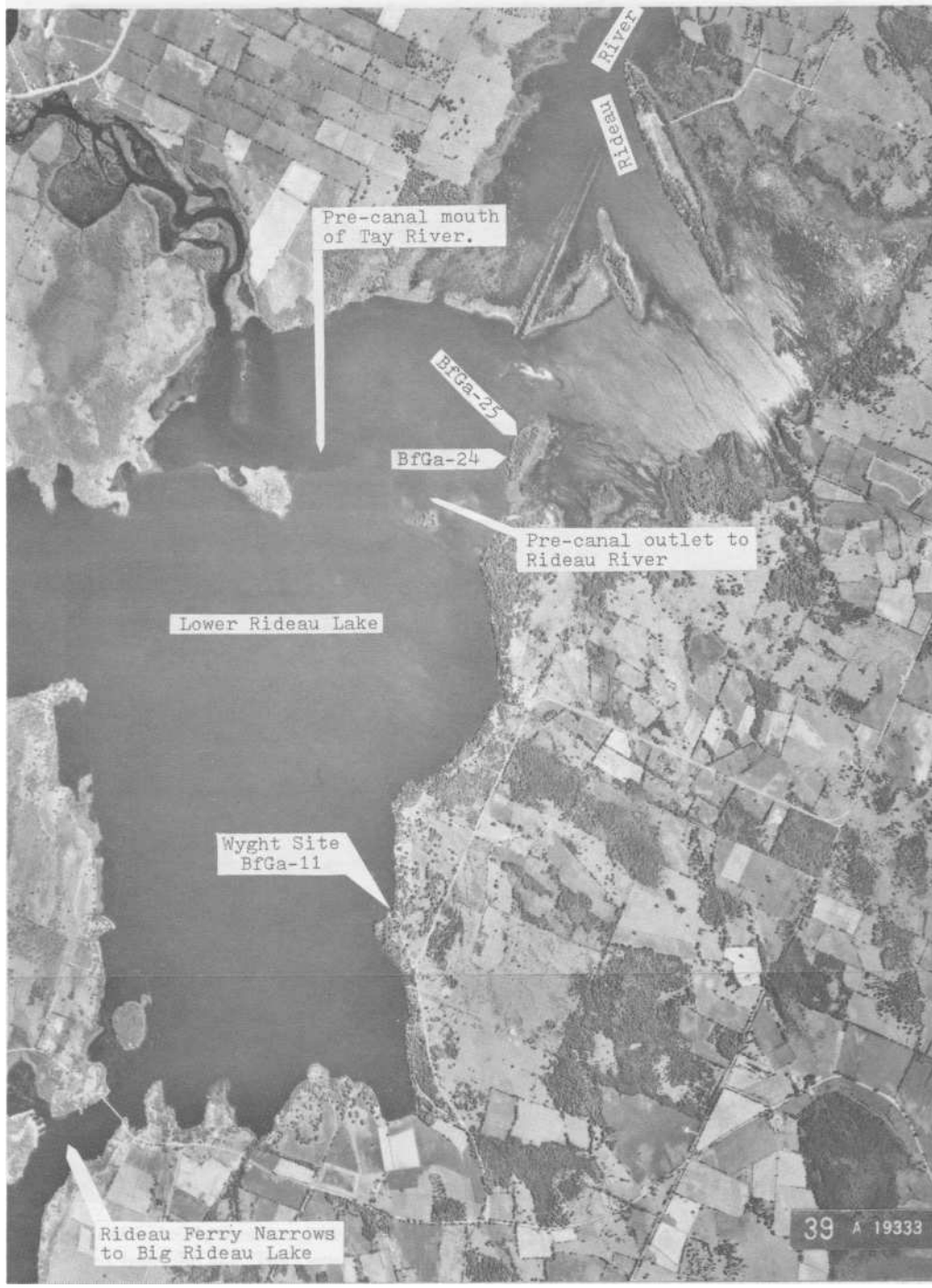

FIGURE 4

Air photograph 39 A 19333 of Lower Rideau Lake.

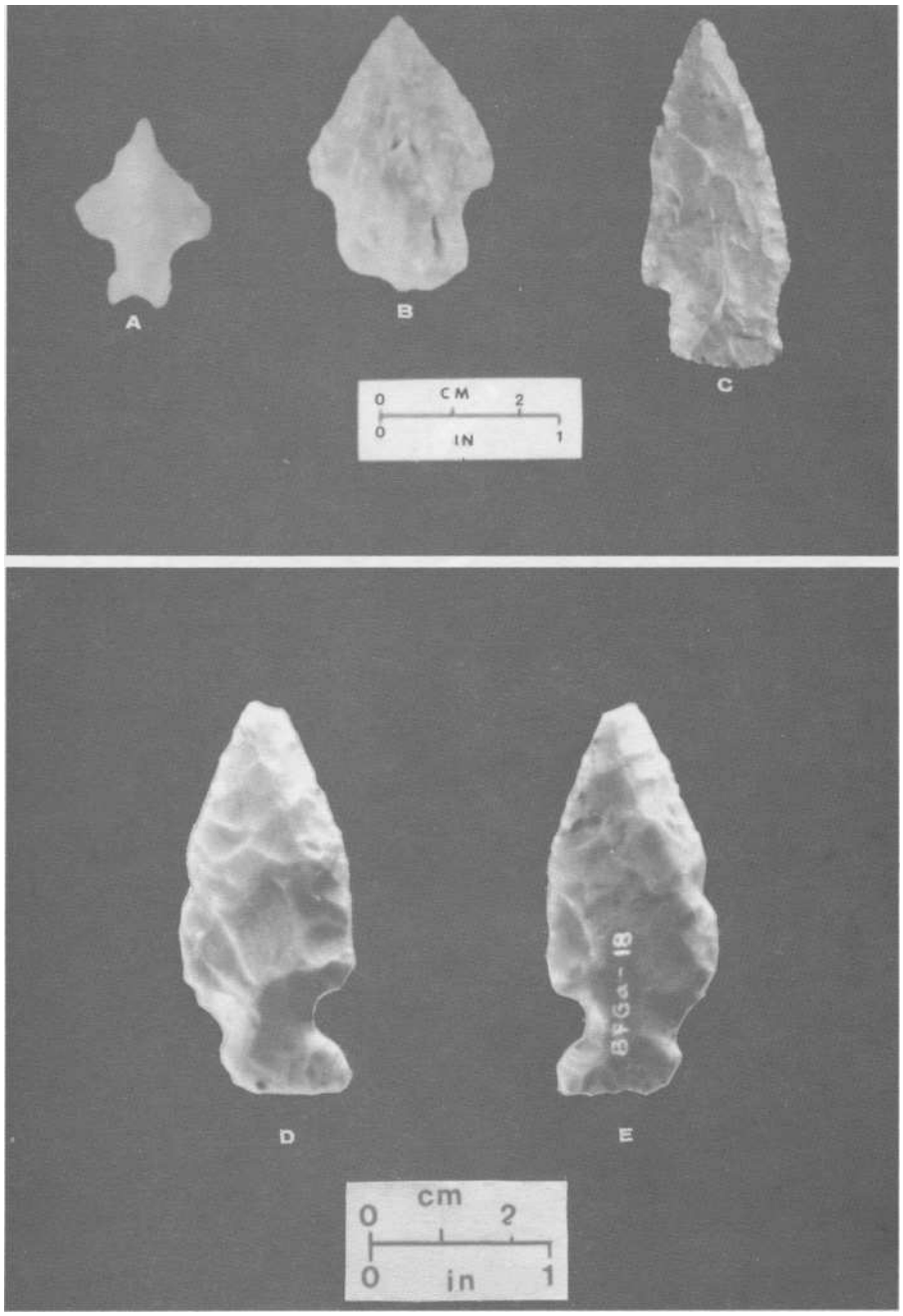

FIGURE 5

a: LeCroy type Early Archaic point of the Wyght Site (BfGa-11); b: Wading River type Middle Archaic point of the Wyght Site (BfGa-11); c: Genesee type Late Archaic point of the Wyght Site (BfGa-11); d: Beveled side-notched Early Archaic point from the Joynt Site (BfGa-18), about 100 metres north of the Wyght Site e: Obverse of d.

important area for the study of prehistory. Lower Rideau Lake, particularly, is at the crossroads of the waterways in all directions (Fig. 4). Prehistoric man could have travelled south to Lake Ontario and the St. Lawrence Valley, or north on the Rideau River to the Ottawa and Gatineau Rivers and their tributaries, or on the Ottawa to the St. Lawrence and Hudson Rivers. He could also have travelled west on the Tay River to Christie and Bobs Lakes or by a short portage from the Tay into Bennett Lake and the Mississippi River (of Ontario), he could get to Dalhousie Lake, Mazinaw Lake, and the many lakes of Algonquin Park. Similarly, he could have followed the Mississippi down to the Ottawa River, with its many connections to the north and east. Surveys have confirmed that many of the shoreline locations with level terraces became the camping places for prehistoric travellers (Watson 1976b, 1977).

In spite of large surface collections with Archaic artifacts, excavated evidence from the Early and Middle Archaic periods is extremely limited and no habitation site of any significance has yet been found in eastern Ontario. The site at Morrison's Island, Quebec, in the Ottawa River (Kennedy 1966, 1970:59-61) is the nearest excavated site. There are, however, two Early Archaic radiocarbon dates of 6080 B.C.±1965 (S`--1842) and 5645 B.0 ±270 (S`-1841) from the Wyght Site. Because of the large standard deviation of the earlier date, it cannot be distinguished from the later one. Both probably refer to the same occupation. Neither date is associated with tools but the 6080 B.C. date is associated with lithic flakes of white quartzite.

A small bifurcated stem point of the LeCroy type (Fig. 5a) with an estimated age of about 6300 B.C. (Ritchie 1971, preface to the revised edition; Trigger 1978:22; Funk 1976:233; Justice 1987:84, 91; Fogelman 1988:84) was excavated in a disturbed area of the Wyght Site, about 12 metres from the charcoal sample dated at 5645 B.C. and 32 metres from the sample dated at 6080 B.C.

Two other radiocarbon dates, of 2550 B.C.-1-640 (S(1847) and 1455 B.0 15 (S-1844), from the Wyght Site fall within the Archaic Period. A Wading River point (Fig. 5b) (Ritchie 1971:131; Tuck 1978:35) and a Genesee point (Fig. 5c) (Ritchie 1971:24; Justice 1987:159) were recovered from the site. The Genesee point was recovered from a depth of 16.5 centimetres, which is below the lowest pottery at 16 centimetres and is 5.2 centimetres below the mean depth (11.3 centimetres) of the pottery in the square in which it was found. These point types are consistent with the Late Archaic dates cited above. Projectile points of the Late Archaic Broadpoint Phase have also been found at several other locations, including Nobles Bay in Big Rideau Lake and Sand Island in Lower Rideau Lake (Watson 1981; 1983a:11-14).

The owners of a cottage about 100 metres from the Wyght Site found (Watson 1980a) a bevelled side-notched projectile point (Fig. 5d and 5e) of a type generally attributed to the Early Archaic (Converse 1973:23). All of these data, taken together, confirm the presence of Archaic occupations in the Rideau Lakes region.

Surface-collected Archaic artifacts

Projectile points are the best temporal indicators in the pre-ceramic periods of the prehistory of eastern North America. Fortunately, surface-collected points of the Archaic Period (7000 B.C. to 1000 B.C.) are well represented in collections from the Rideau Lakes area (Watson 1983b, 1983c, 1983d, 1983e, 1987b). Since excavated sites have so far yielded only limited data, a more systematic approach to the classification by attribute comparison of the surface collections has been undertaken.

Four hundred and fifty-six (456) chipped stone projectile points from the Rideau Lakes were attribute-coded following the procedures of Ahler (1971) and classified (Fisher 1979) by using SPSSX (Ed 2, 1986) discriminant analysis to compare them to types of New York (Ritchie 1971), Ohio (Converse 1973) and Ontario (Fox and Kenyon 1980a, 1980b, 1980c, 1981a, 1981b; Kennedy 1966). These results are shown in Table 1, and illustrated on Figure 6. Because of the unavailability of comparative attribute data on Palaeo-Indian types, this discriminant analysis does not include the two fluted points and the two lanceolate points discussed above. However, the visual classification recognizes a maximum of four points of the Palaeo-Indian Period (they are not included in Table 1 but are in Fig. 6). In addition to the four points of the Palaeo-Indian Period, there are a few types of the Early Archaic. A large number of the points are assignable to the Middle Archaic and a small number to the Late Archaic, while the numbers increase again in the Initial Woodland and Terminal Woodland Periods (Table 1 and Fig. 6). Although the subject of this paper is the Palaeo-Indian and Archaic periods, Woodland points have been included for comparison. Note that the small number of Palaeo-Indian and Early

Point type	Age B.P. ± 500 yrs	Frequency	# Percent	Valid * Percent	Cum Percent
ARCHAIC PERIOD					
Otter Creek	9000	16	3.5	3.7	3.7
Bifurcates	8000	1	.2	.2	3.9
Lamoka	5000	87	19.1	20.3	24.2
Bare Island	5000	58	12.7	13.6	37.8
Brewerton Cor-Not	4000	22	4.8	5.1	42.9
Brewerton Eared-Not	4000	4	.9	.9	43.8
Brewerton Side-Not	4000	75	16.4	17.5	61.3
Genesee	4000	14	3.1	3.3	64.6
Snook Kill	4000	22	4.8	5.1	69.7
Orient Fishtail	4000	4	.9	.9	70.6
Perkiomen Broad	4000	3	.7	.7	71.3
Sylvan Side Not	4000	1	.2	.2	71.5
WOODLAND PERIOD					
Meadowood	3000	9	2.0	2.1	73.6
Normanskill	3000	2	.4	.5	74.1
Rossville	3000	1	.2	.2	74.3
Susquehanna Broad	3000	2	.4	.5	74.8
Adena	2000	8	1.8	1.9	76.7
Middle Woodland	2000	17	3.7	4.0	80.7
Chesser Notched	2000	2	.4	.5	81.2
Jack's Reef Penta	1000	10	2.2	2.3	83.5
Levanna	1000	53	11.6	12.4	95.9
Madison	1000	10	2.2	2.3	98.2
Steubenville Lanc	1000	3	.7	.7	98.9
Steubenville Stemmed	1000	3	.7	.7	99.6
Untyped side-notched	Age not assigned	1	.2	.2	99.8
Unclassifiable	Age not assigned	28	6.1		
Total		**456**	**100.0**	**100.0**	**99.8**[&]

Includes 6.1% of unclassifiable points
* Percent without the unclassifiable points
& Difference from 100% because of rounding error.

TABLE 1

Frequencies of Rideau Lakes Archaic and Woodland Period projectile point types.

Archaic points date to the deglaciation and early post-glacial periods, that is, when climate was cold, whereas the largest number date to the period between 5000 to 2000 B.C., when the climate was warming to temperatures above those of the present (McAndrews *et al.* 1987: Plate 4). The decline in frequencies, in the Late Archaic and Woodland periods, occurs during the cooling period (McAndrews *et al.* 1987: Plate 4) after 2000 B.C. Climate and population density may have been related, as reported by Bower and Kobusiewicz (1988) for Middle Europe and the north central United States. The increase in frequencies of late Woodland triangular types probably relates to the rapidly increasing Iroquoian populations in the nearby St. Lawrence Valley.

Point types were assigned their dates on Table 1 on the basis of the "age and cultural affiliations" data included in Ritchie (1971) and Justice (1987), supplemented by the 4700 B.P. date for Brewerton points from the Morrison's Island-6 Site (Kennedy 1966, 1970:61). It should be noted that, since measurements of Beekman triangle Archaic points (Ritchie 1971:121; Funk 1976:244; Trigger 1978:23; Justice 1987:116) were not available,

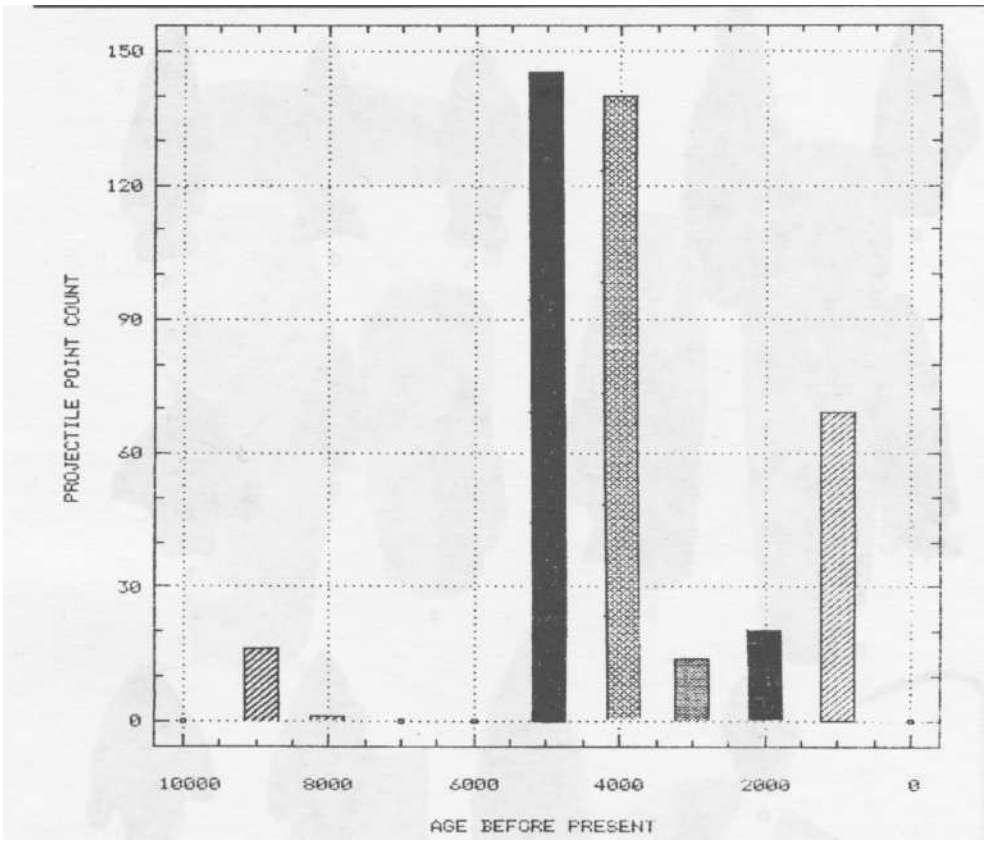

FIGURE 6
Rideau Lakes projectile points: Frequency vs. Age B.P.

most of the triangular points from the Rideau Lakes clustered with the Levanna and Madison points. In fact, it is doubtful whether Archaic and Late Woodland triangular points can be distinguished, either visually or by discriminant analysis, unless they occur in datable contexts. If some of these triangular points are Archaic, the frequency of Archaic points dating to about 2500 B.C. would be greater than that presented in Table 1 and Fig. 6 and the frequency of Woodland points would be correspondingly smaller. The interpretation of this distribution of types must be done with caution, since relative frequencies could partly relate to the success rate of the surface collectors. However, in a very general way, it shows the presence of projectile points of the different periods. Since the provenance of many of them is known (Watson 1976b, 1977, 1979, 1980a, 1981, 1982a, 1983a, 1983b, 1983c, 1983d, 1983e, 1987b) this data can be used to focus the search for sites suitable for excavation, or more intense surface investigation.

Examples of the surface-collected artifacts of the area that are estimated to be of Archaic age are illustrated in Figs. 7, 8 and 9. In addition to the chipped stone points (Fig. 7:a-j) and the groundstone axes, adzes and gouges (Fig. 8:a-e), there are ground or chipped semilunar ulus (Fig. 8:f-i), plummets (Fig. 7:o-p), ground slate projectile points (Fig. 7:k-n) and a few copper projectile points and a copper gaff (Fig. 7:q-s). The largest ulu (Fig. 8:0 shows strong similarities in both size and form to the large flaked crescent shaped biface found with Clovis artifacts in the Anzick Clovis Cache (Alison 1989:1, 6) and the possibility of this large ulu being of Palaeo-Indian age must be considered. There is also an image, inscribed on a fragment of a ground slate tool, of a six-passenger dugout canoe (Fig. 9). Although the inscription cannot be dated, its occurrence on a fragment of an

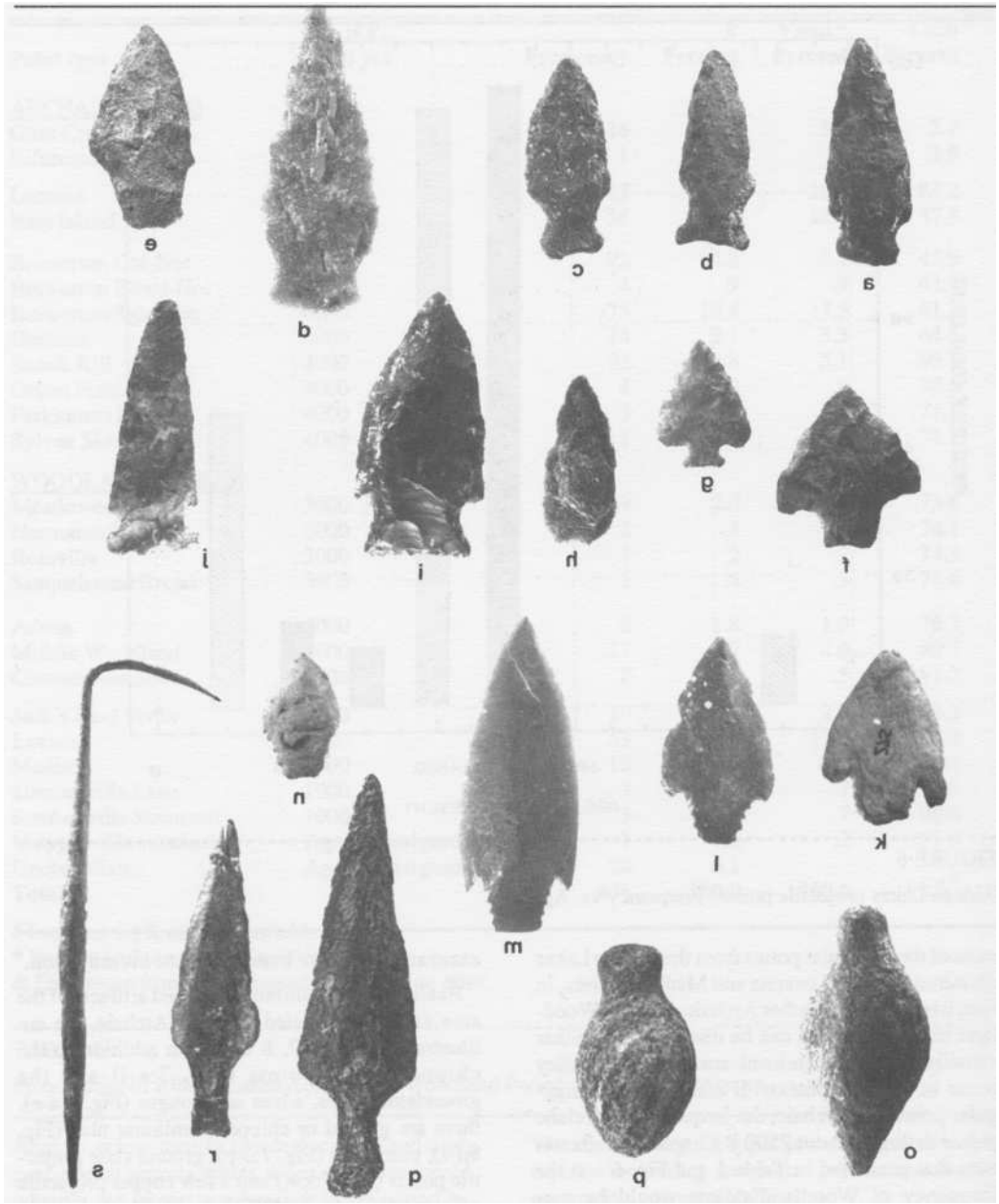

FIGURE 7

Representative projectile points from the surface collections of the Rideau Lakes. a: McLaren Collection, BfGa-10 153 Lamoka; b: BfGa-10 152 Otter Creek; c: BfGa-10 163 Bare Island; d: BfGa-10 155 Red quartzite (probably Late Archaic); e: BfGa-10 162 Red quartzite Late Archaic; f: BfGa-10 164 Stanley Stemmed Early to Middle Archaic; g: BfGa-10 165 Perkiomen Broad; h: BfGa-10 161 Red quartzite biface blank (probably Late Archaic); i: BfGa-10 156 Lowe Flared Base (Justice 1987:210); j: BfGa-10 178 Meadowood; k-n: ground slate projectile points (m is 9.5 centimetres long); o-p: Plummets o is from Lot 15, Conc. 5, South Elmsley Township and p is from Pig Island, Lower Rideau Lake; q-s: Copper projectile points from the Rideau Lake at Rideau Ferry and a gaff from Bob's Lake.

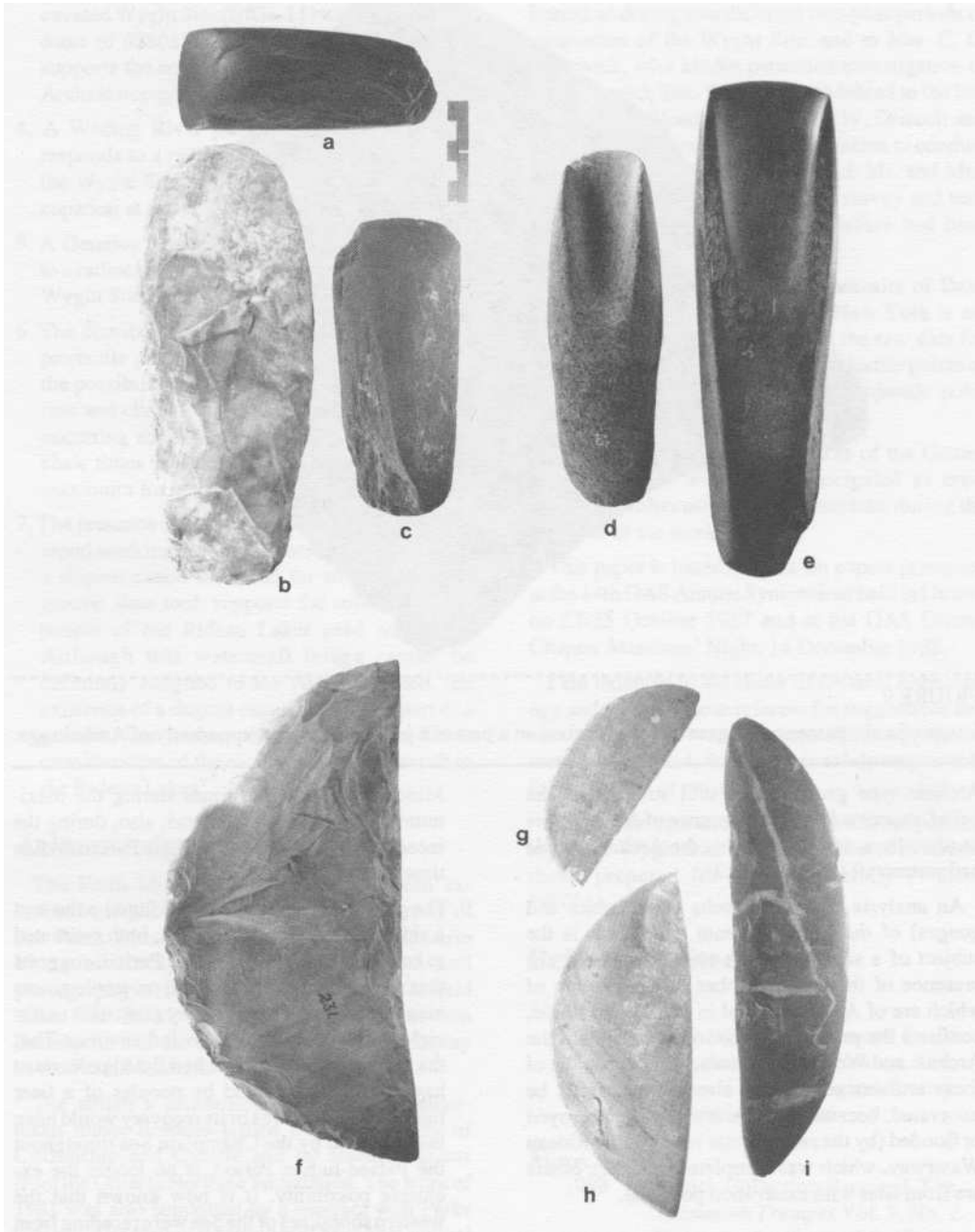

FIGURE 8

Representative celts and ground slate ulus from the surface collections of the Rideau Lakes. a-c: Ground stone axes and adzes; d-e: Ground stone gouges (e is from Lot 20, 9th concession, Drummond Township); f: Large chipped stone ulu from Bob's Lake, length=25 centimetres; g-i: Ground stone ulus or knives (h is 18.5 centimetres long, g and h are from sites in the Lower Rideau Lake).

FIGURE 9

Image of a six-passenger dugout canoe inscribed on a part of a ground slate tool, apparently of Archaic age.

Archaic type ground slate tool strengthens the belief, supported by the occurrence of Archaic sites on shorelines and islands, that the Archaic people had watercraft (Harris 1987:2).

An analysis of the 148 celts (axes, adzes and gouges) of the Perth Museum collections is the subject of a separate future paper. However, the presence of this large number of celts, some of which are of Archaic Period in the Rideau Lakes, confirms the practice of woodworking in both the Archaic and Woodland Periods. Although some of these artifacts come from sites which cannot be excavated, because the sites are already destroyed or flooded (by the raised water levels of the Rideau Waterway, which was completed in 1832), others are from sites with excavation potential.

Summary

1. The presence of fluted and lanceolate points, together with current knowledge of the temporal sequences of the Champlain Sea, suggests that the Palaeo-Indian peoples used this region in Middle Palaeo-Indian times during the maximum extension of the Sea and, also, during the receding phases of the sea in Late Palaeo-Indian times.
2. The presence of a side-notched fluted point and a side-notched lanceolate point, both estimated to be of the Late Palaeo-Indian Period, suggests that some fluted and lanceolate projectile points may have been side-notched by a tentative unifacial technique in Late Palaeo-Indian times. That the Rideau Lakes side-notched fluted point must have been side-notched by peoples of a later time, because the area of its recovery would have been flooded by the Champlain Sea throughout the Palaeo-Indian Period, is no longer the exclusive possibility. It is now known that the western shorelines of the Sea were receding from the vicinity of the Rideau Lakes about 1,000 years before the end of the Palaeo-Indian Period. It is suggested that it is more probable that these side-notched points were originally made with notches than that they were modified by later peoples.

3. The identification of a LeCroy Early Archaic projectile point of about 6300 B.C. in the excavated Wyght Site (BfGa-11) with radiocarbon dates of 6080±1965 B.C. and 5640±270 B.C., supports the conclusion that there was an Early Archaic occupation at the site.
4. A Wading River projectile point, which corresponds to a radiocarbon date of 2550 B.C., in the Wyght Site, indicates a Middle Archaic occupation at the site.
5. A Genesee projectile point, which corresponds to a radiocarbon date of 1455±315 B.C. from the Wyght Site indicates a Late Archaic occupation.
6. The distribution of the age of surface-collected projectile points of the Rideau Lakes suggests the possibility of a correlation between population and climate with the maximum population occurring about 4000-5000 B.P. in Middle Archaic times when temperatures were also at the maximum for any period since the glacial age.
7. The presence of many axes, adzes and gouges for wood working, and the presence of an image of a dugout canoe inscribed on an Archaic type ground slate tool, supports the conclusion that people of the Rideau Lakes used watercraft. Although this watercraft image cannot be definitely assigned to the Archaic period, the existence of a dugout canoe image on a part of a ground slate tool, must be assessed in future consideration of the earliest use of watercraft in the Rideau Lakes.

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