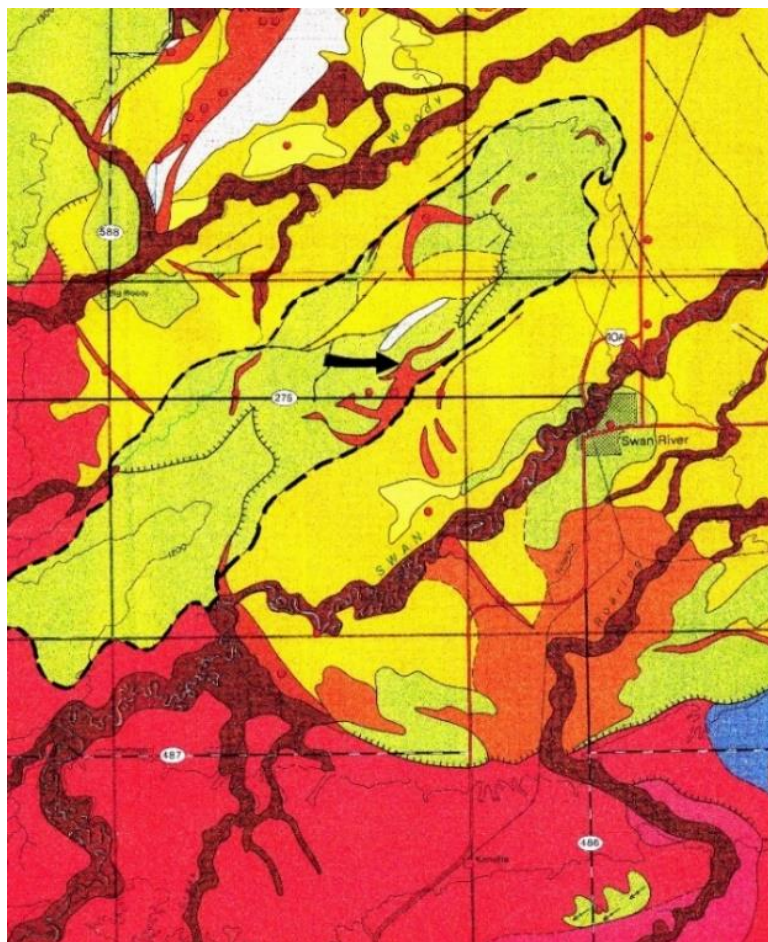


## **WATER-WEAR – SOONER ... OR LATER?**

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In late July of 1966, crew members of the University of Manitoba's Glacial Lake Agassiz Survey (GLAS) surface-collected a recently discovered site (LAS-266) located on a section of the Lower Campbell beach in the Swan River valley (Fig 1). The beach was directly associated with a prominent, elongated ridge of ground moraine that projects in a SW-NE direction through the central long axis of the valley. This feature is heavily charged with boulders of Swan River Chert, and was the source of rock material that went into the formation of the affiliated Campbell beaches.



***Fig. 1. Portion of the Swan River valley showing the ground-moraine ridge (green, within dashed line); associated Agassiz strandline features (beaches -- orange curvilinear lines; wave-cut scarps -- hash lines), and location of LAS-266 on the Lower Campbell beach (arrow). Base map from Nielsen 1988.***

LAS-266 itself yielded a sizeable assemblage of lithic workshop refuse and a few stone projectile points. It became immediately apparent that a goodly percentage of the materials showed evidence of natural surface modification -- in particular, what was initially interpreted as water-wear.<sup>1</sup> This hypothesis was reiterated, but not tested, in a recent synthesis of the GLAS (Pettipas 2015:63).

Since a key objective of the GLAS was to locate signs of Early Indigenous ("Palaeo-Indian") use of the Agassiz shorelines while they were still awash thousands of years ago, these findings were potentially significant: "if these artifacts are actually water-worn and located in some sort of context within the beach structure, this site will be the first to establish human occupation of the Campbell Beach during its active formation" (Tamplin 1966:7; Pettipas 2015:63). It was felt that follow-up test-excavation might be worthwhile (never happened), as would "laboratory examination of the nature of the abrasion" (Tamplin 1966:6); see below.

The kind of situation found at LAS-266 was not unprecedented. In 1940, a "quarry workshop" (site GL 1) was discovered near Killarney, Ontario near the present-day shoreline of Lake Huron (Greenman 1943). The site lay on a raised beach 90m above the present lake level and about 6.4m inland. A goodly number of stone implements and flakes were found on and beneath the beach surface to a depth of about 30cm. Of singular importance to us here is the fact that many of the artefactual materials displayed a "a rolled or worn condition for which no other cause than wave action" could be deduced (Greenman 1943:260; Fig. 3, this paper). In consultation with geologists, it was concluded that the beach marked the level of prehistoric Lake Huron as it existed at around 9,000 RCYBP.

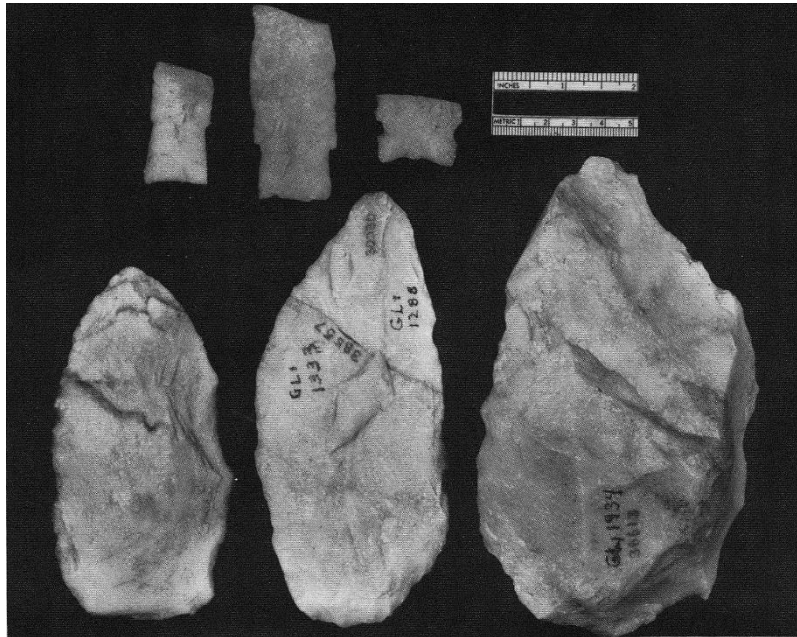
Of surpassing interest to me was the presence of two partial Scottsbluff-type (Great Lakes Cody) projectile points in the GL 1 collection (Fig.2). Today, points of this type are dated to 9,400-8,600 BP on the northern plains (Hofman and Graham 1998:111-113). This time range is compatible with the estimated 9,000-BP date for the Killarney-area beach and the archaeological site that is located on it. The Lower Campbell beach in Manitoba on which LAS-266 is situated dates to ~9,000 BP (Lepper et al 2013:96; Liu et al 2014:852). Therefore, the possibility arose that LAS-266, like GL 1, was a Cody component.

The general LAS-266 locality is of particular interest in that it has yielded a surface-found Scottsbluff point of Knife River Flint (Cat. # SR-92 [Pettipas 1967:265-266], Fig. 3) some 6km northeast of LAS-266. This artefact is the only one of its kind thus far reported from below the elevation of the Upper Campbell strandline in the Swan River valley. Furthermore, the find spot was said to be on the *Lower* Campbell beach – the same natural feature upon which LAS-266 is situated. The point is not water-worn, but this could simply mean that it was deposited shortly after the Lower Campbell had become permanently high- and-dry (i.e., relict) 9,000 years ago or shortly thereafter. The Cody complex persisted for another ~300 years after the water level fell

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<sup>1</sup> "Water-wear" is defined as the erosive smoothing of a stone artefact by virtue of its movement over an underwater ground surface, or by the movement of mineral particles over the surface of a submerged artefact, by waves or currents.

from the Lower Campbell elevation, so it is entirely possible that the find spot of SR-93 as reported is legitimate.



**Fig. 2. Artefacts from GL 1. Note the two Scottsbluff points in the top row. Credit: University of Michigan Museum of Anthropology.**



**Fig. 3. Scottsbluff Type 2 projectile point reportedly found on a section of the Lower Campbell beach c. 6.0km northeast of LAS-266. Photo by the writer.**

With these considerations in mind I decided to view the collection at the U of M Laboratory of Anthropology and put the preliminary field hypothesis to the test. In May of 2016 I visited the Lab and examined with the naked eye (i.e., without the aid of a microscope) the LAS-266 assemblage. I quickly determined that the diagnostics (projectile points) were all of post-Palaeo vintage and hence were unconnected time-wise with the “living” Lake Agassiz. Furthermore, (1) many of the flakes and cores did indeed exhibit water-wear, and that must have been what gave rise to the original notion that they were produced on an active, wave-washed beach thousands of years ago; but (2) the water-wear on the artefacts obviously came about *before* flintknappers ever got their hands on the original materials, and the water-worn artefacts were simply decortication flakes still showing natural cortex.

The strandline feature at LAS-266 was heavily invested with beach cobbles, and what we were apparently looking at in the field were numerous cases of cobble cortex, the formation of which occurred long before the flintknappers’ handling of the subject pieces. They were not abraded surfaces created by wave-wash at the time or immediately after the artefacts were created on the shore of Lake Agassiz: the scars and arêtes on the flaked surfaces showed no sign of smoothing or polish, nor did the sharp edges of the pieces that were created by their having been struck from beach cobbles (Fig. 4, 5).

In sum, there is no reason to believe that the cultural materials recovered from LAS-266 were generated in an active lakeshore setting millennia ago as originally hypothesized. Rather, they were culturally modified long after the beach-forming processes ceased and Lake Agassiz had disappeared forever from the local area.



**Fig. 4. Decortication flake from LAS-266. The rough cortex is plainly visible over most of the piece. Note the form-flaking on the top margin, producing a crude spur. This attribute shows no sign of water-wear.**



***Fig. 5. On this specimen, the cortical surface is clearly visible, as is the large trianguloid area of subsequent flake removal. The edges of the latter show no sign of water-wear to the naked eye. Coins are one-dollar Cdn pieces. Photos by K. Pettipas.***

The main lesson to be learned from LAS-266, then, is not that it functioned as a source of raw lithic material and as a workshop while it was awash, but rather that the relict strandlines served as quarries and as workshop loci for thousands of years *after* the Early Indigenous era had drawn to a close and *after* Lake Agassiz had withdrawn from the Lower Campbell level.

Case closed ... after 50 years!

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