

Testing the Paleo Maritime Hypothesis for Glacial Lake Iroquois

Fort Drum, New York

Laurie W. Rush, Ph.D. and Jim Cassidy, Ph.D., RPA

The Hypothesis:

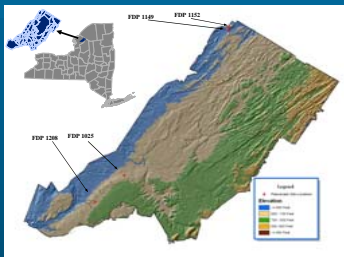
Boat building technology enabled Paleo Indians to navigate the wet environments of the post Pleistocene in northeastern North America.

Background

- Traditional views of Paleo lifeways are being questioned with recognition that Paleo resource procurement patterns were far more diverse than exploitation of large mammals (Cannon and Meltzer 2004).
- Paleo sites in the northeast show exotic lithics occurring far from original sources (Boisvert 1999, Rush et al. 2000). Waterways often were the most efficient pathways between the lithic source and the location of tool recovery.
- Archaeologists are increasingly recognizing that maritime technology dates back at least 50,000 years in other parts of the world (Englebrecht 1994).
- Cassidy et al. (2004) recently demonstrated evidence of maritime technology at least as far back as 8000 years on the North American Continent.



Atlantic, Massachusetts, Great Basin, Keweenaw Coast, ME to Island on a Paleo site in Connecticut, NH. Boisvert (1999), (Edgewater and others).



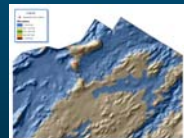
Fluted Point, Northeastern Coast, FDP 1025

Fort Drum Glacial Lake Model

(Corrected for Isostatic Rebound)
This DEM Model shows Fort Drum with two possible iterations of the Glacial Lake Iroquois shorelines. There are four potential Paleo sites identified on the installation. Three may be contemporaneous with blade technology. FDP 1208 is found on the shoreline, with FDP 1149 and FDP 1152 found on fossil islands. A fluted point was found slightly inland at FDP 1025 and may represent a later occupation.

Required Conditions

- Post glacial environment very wet
- Benefits of maritime travel outweigh investment in construction and risk of losses on the water
- Water and island landforms offer resources that can be exploited only through use of water craft



A reconstruction of the Fort Drum glacial lake environment approximately 11,200 BP shows this type of wet environment. Note the low island elevations.

Required Evidence

- Paleo sites should occur disproportionately on fossil shorelines and islands
- Boat building tools should be present in Paleo assemblages
- Paleo occupation should occur on landforms only accessible by boat at that time

The New York - California Connection



The Fort Drum, NY Assemblage



The California Channel Islands Assemblage



Brian Kester, Laurie Rush, Jim Sullivan, Bill Englebrecht, Jack Edgartner, and Jim Cassidy at FDP 1208.

On discovery, it was clear that the Fort Drum assemblage was unusual for the northeast. However, visual comparison showed remarkable similarities with the assemblage published by Cassidy et al. in American Antiquity, January 2004. Cassidy agreed to analyze the Fort Drum material during the 2004 field season.

Experimental Methods Edge Wear and Use Wear Analysis

Dr. Cassidy first cleaned selected tools from the assemblage by immersing the artifacts in a mild acid solution and gently vibrating them for twenty minutes. He then examined each tool at 10X, 50X, and/or 100X and documented the observed wear patterns. Dr. Cassidy then made stone tools using identical source material to match artifacts from the assemblages. Crew members were given the tools and repetitive motion tasks with different substances like bark and hide. The wear on the experimental tools was then compared at the same microscopic levels with the wear on the recovered tools.



LeRay chert quarry, source for experimental tools.



Experimental LeRay Punch to be used on wet hide for thirty minutes



Crew Member Katherine Warden punches birch bark with a LeRay chert punch.

Challenges

- Geo-archaeology not fully understood for Glacial Lake Iroquois – shorelines and dates need further definition
- We now know that FDP 1208 is multi-component in a complex depositional environment
- Paleo occupation of the northeastern US and Maritime Canada has never been synthesized
- Chronologies within Paleo occupation from 11,500 BP – 8,000 BP in northeastern North America have not been distinguished from each other or matched to the changing landscape conditions as reflected in the geology



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Boat Building Tools? Analytical Results



Prismatic Blade

The presence of a prismatic blade on a fossil island landform, FDP 1149, supports the Paleo maritime hypothesis. Edge wear analysis of this tool was inconclusive.



Microblite (10X) of the Working Edge of a Quartz Tool



Polyhedral Micro-Blade Core



Bi-polar reduction flakes were also found at this site.

FDP 1152, a second fossil island landform near FDP 1149, yielded another example of a blade tool, a drill, and a possible punch. These tools are seen on the left and are all quartz. The ochre pestle to the right is also from this site.

Findings:

Overall results of the identification and edge wear analysis for the Paleo assemblages were consistent with punching birch bark and grinding ochre – both are boat building related activities.



Polyhedral Micro-Blade Core With Vertical Striations 10X



Disrupted Indications of Worn Lateral Edges and Elemental Striations Provide Evidence of Drilling Use Wear Patterns on the Tool. Analysis at 50X.



At 100X, Particles Remounting Ochre were Seen Adhering to the Surface. Compare with the Replicated Example Right at 10X.



Thumbnail Scraper at 10X. Edge Remounting and Sharp Fractures are Consistent with Scraping Activities.



Punch with Vertical Striations and Cracking of the Distal End at 50X



Further Research

- Systematically evaluate known Paleo site locations for relationships with Pleistocene waterways
- Focus on the fossil island landforms on Fort Drum for more data recovery
- Expand testing of the Paleo Maritime hypothesis across other regions of the continental United States emphasizing model building for identification of landforms with potential for Paleo cultural remains and re-examination of previously collected Paleo assemblages