the reader an expert on any aspect of the law. But, a grasp of the concepts and principles in the literature will help managers or planners more easily wind their way through the various legal mazes they encounter.

* see the discussion regarding this thesis in this issue of FORUM


700-Year-Old Ceramic Pot Discovered at Isle Royale National Park

Bruce Weber

The recent discovery of a 14th Century ceramic clay cooking pot at Isle Royale National Park is one of the most remarkable archeological finds in the Great Lakes basin in recent years and is attracting considerable interest by archeologists and the public. Isle Royale is a wilderness island located in Michigan waters of Lake Superior, twenty miles from the Ontario mainland.

Discovery. The basketball-size relic was found in August 1985 lying in a bed of sand at a depth of 70 feet in Rock Harbor, where cold waters (probably 35°F year round) kept it in an optimal, stable environment for 700 years. The discovery was made accidentally by Scott McWilliam, a trained diver working with the National Park Service's Submerged Cultural Resource Unit, while performing an underwater search for the remains of a pontoon plane that crashed in 1935. The SCRU dive unit is completing a five year study of Isle Royale's underwater cultural resources which includes major shipwrecks and land-based cultural sites.

Significance. Dr. Pat Martin, Archeologist at Michigan Technological University who is studying the fourteen-inch-tall vessel, said the actual discovery in the well-used Rock Harbor waterway is remarkable in itself, but the pot has significance in several other ways as well.

First, the vessel is nearly intact; 75% of the original pot remains in one piece. This is highly unusual in a northern environment such as that found around Lake Superior, where relatively porous vessels such as this one typically succumb to damage caused by moisture and the 'freeze-thaw cycle.' Because frost-heaving commonly breaks ceramics into small pieces, very few vessels of this age that are this complete have survived from the Upper Great Lakes.

The pot is also a significant indicator of wide-area cultural contact. The vessel's distinctive style and technique of manufacture give several clues as to its age and cultural origin. The way that the
vessel has cracked indicates that it was originally formed by laying up coils of clay that were later annealed by paddling the outer surface while holding a hand on the interior. The rounded, globular shape and crushed granite tempering material are also distinguishing attributes of what is known as the Late Woodland Period in this region. Of particular interest are the decorative elements found on the upper portion of the pot. The constricted neck of the vessel rises to a splayed-out collar. This collar includes several raised points known as 'castellations' (built like a castle). Around the exterior of the collar are several sets of zig-zag diagonal lines formed by pressing a pointed tool into the clay while it was wet and plastic (a decorative method referred to by archeologists as 'jab and drag'). These lines rise to the rim at the castellations, the two design elements thus reinforcing one another. There are small tool impressions placed around the rim as well.

Dr. Martin indicates this combination of manufacture and design represents a distinctive style of pottery best known from an archeological site in the Straits of Mackinac (250 miles east and south of Isle Royale) known as the Juntunen Site. Excavated and analyzed by archeologists from the University of Michigan in the 1960s, the Juntunen Site yielded large quantities of artifacts and information about prehistoric Indians in the Upper Great Lakes. The characteristic pottery of the last group of people to inhabit the site included a large proportion of vessels very similar to the example from Rock Harbor. That similar vessels should be found in both locations is not terribly surprising. The occupants of the Juntunen Site were regular users of native copper, a mineral that could be obtained with ease by traveling to the Keweenaw Peninsula or Isle Royale, or by trading with people in these areas. The many small prehistoric copper mines of Isle Royale were utilized as far back as 3500 years.

Juntunen Phase pottery is known from a number of sites in the Upper Great Lakes: from sites on the Ontario shore of Lake Superior, along the North Channel of Georgian Bay on Lake Huron, and scattered southern Ontario locations. It has stylistic affinities (or inspirations) from the Ontario homeland of the Iroquois, and has been dated from circa 1200-1400 A.D., perhaps even later. Attaching an ethnic identity to material several centuries old in this region is tenuous at best, but the makers of this pot were probably ancestors of the Chippewa (or Ojibwa) people who lived in this region when European explorers first visited here.

Dr. Martin hypothesizes that the pot probably found its way into the waters of Rock Harbor via an overturned canoe, or perhaps was thrown into the water by someone who was angered when the pot's bottom broke. While these ideas remain speculative, we do know that the vessel was used for cooking, because a layer of charred residue still clings to its surface. Furthermore, the pot was found offshore from a 19th century copper mine—a mine that was established on the site of prehistoric mining activity. It is highly likely, therefore, that the presence of copper was the stimulus that attracted the pot's owner to this place.
Conservation. How to best care for this potentially delicate ceramic object became an immediate concern for diver Scott McWilliam, and thereafter for park naturalist Bruce Weber and park historian Dave Snyder. McWilliam quickly recognized the pot—which was first noticed by his diver partner—to be something of great significance: 'the largest most intact piece of Indian pottery ever recovered in this area.' McWilliam made the decision to bring it up to the surface not only because it was almost completely exposed and by itself with no other fragments around, but more importantly because it was in an area where it could be damaged by anchors from boats overhead. While his assistant juggled lights and TV camera to video the event, he excavated the pot and slowly brought it up to the surface. Rather than expose the artifact to fresh air, McWilliam had another assistant fill a plastic insulated picnic cooler with lake water and placed the pot inside the cooler before lifting it aboard the dive boat.

Back at park headquarters, the park staff received the valuable discovery with surprise and quickly set about finding the best conservation method to preserve the rare artifact. From the start it was assumed that the pot—which was in a cold, saturated, stable environment for hundreds of years—could become very fragile as it dried. Telephone calls to archeology laboratories throughout the Great Lakes brought little help, since conservation of entire pots is not commonly dealt with here. First hand conservation experience was needed. Through the grapevine of referrals eventually surfaced the name of M. Brigid Sullivan, conservator at the National Park Service's Western Archeological and Conservation Center in Tucson, Arizona.

Sullivan, with enthusiasm and a deep understanding of both arti...
immediately before drying further.

The preferred consolidant was the acrylic emulsion Rhoplex AC53. This would be used by mixing it 1:3 with distilled water and then immersing the pot (wrapped in a soft hairnet) slowly and completely into the solution in the container. After two days the pot would be slowly lifted, drained and allowed to dry. When this process is used, the ceramic object is stabilized but acquires a shiny, plastic appearance. Immersion in Rhoplex also eliminates the possibility of future carbon dating. Fortunately, however, the pot did not deteriorate and it was never necessary to use this non-reversible chemical consolidant.

**Future Use.** The Isle Royale pot is stabilized and ready for exhibition and further interpretation.

Archeologist Pat Martin concludes 'Many questions remain to be answered. We need to determine if an occupation site is located nearby the discovery site. We need to carefully study the residues in the pot to see if any fragments of bone or seeds remain, clues to the diet of the pot's owners. In addition, we are seeking funds to have a radiocarbon date run on the carbonized residue, to determine whether our dating on stylistic grounds is accurate. Finally, plans are afoot to find the best possible way to interpret the pot for the public, to offer insight into the lives of prehistoric visitors to Isle Royale.'


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**A Needs Assessment-Based Review of the National Park Service Science Program in the Rocky Mountain Region**

*Katherine Phelps Kitchell*

(Since Ms. Kitchell's thesis appeared in 1985, it has been rather widely read (for an unpublished paper) by those concerned about park management—especially USNPS managers and scientists. The FORUM is seeking ways and means to make available copies of this important work to the park management community; the 161-page typed document would consume about 80 pages of FORUM, however. We present here the abstract of Ms. Kitchell's thesis, and two reviews—one from an historical perspective by William E. Brown, and one from a scientist's viewpoint by J. Robert Stottlemyer...Eds.)

**Abstract**

The National Park Service science program, which provides research results to park managers for assistance in making resource decisions, was last reviewed in 1963 by a committee of scientists. That evaluation resulted in the establishment of an agency science