



## INVESTIGATOR'S ANNUAL REPORT

United States Department of the Interior  
National Park Service

All or some of the information you provide may become available to the public.

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<b>Reporting Year:</b> 2007	<b>Park:</b> Glacier NP	<b>Select the type of permit this report addresses:</b> Scientific Study	
<b>Name of principal investigator or responsible official:</b> Douglas MacDonald		<b>Office Phone:</b> 406-243-5814	
<b>Mailing address:</b> Department of Anthropology  University of Montana  Missoula, Montana 59812 Missoula, MT 59812 United States		<b>Office FAX:</b> 406-243-4918 <b>Office Email:</b> douglas.macdonald@mso.umt.edu	
<b>Additional investigators or key field assistants (first name, last name, office phone, office email)</b> No co-investigators			
<b>Project Title (maximum 300 characters):</b> Survey Many Glacier Valley Archeological Sites For Visitor Interpretation And Management Needs			
<b>Park-assigned Study or Activity #:</b> GLAC-00107	<b>Park-assigned Permit #:</b> GLAC-2007-SCI-0070	<b>Permit Start Date:</b> Jul 01, 2007	<b>Permit Expiration Date:</b> Dec 31, 2008
<b>Scientific Study Starting Date:</b> Jul 01, 2007		<b>Estimated Scientific Study Ending Date:</b> Dec 31, 2008	
<b>For either a Scientific Study or a Science Education Activity, the status is:</b>  Continuing		<b>For a Scientific Study that is completed, please check each of the following that applies:</b>  <input type="checkbox"/> A final report has been provided to the park or will be provided to the park within the next two years <input type="checkbox"/> Copies of field notes, data files, photos, or other study records, as agreed, have been provided to the park <input type="checkbox"/> All collected and retained specimens have been cataloged into the NPS catalog system and NPS has processed loan agreements as needed	
<b>Activity Type:</b> Inventory			
<b>Subject/Discipline:</b> Archeology			

<b>Purpose of Scientific Study or Science Education Activity during the reporting year (maximum 4000 characters):</b> This project will field survey approximately 35-40 previously identified archeological sites in the Many Glacier Valley of Glacier National Park to provide condition assessments, identify threats and determine needed treatment, synthesize known information for interpretive programs, and educate law enforcement rangers to reduce visitor impacts to sites and prevent looting.
<b>Findings and status of Scientific Study or accomplishments of Science Education Activity during the reporting year (maximum 4000 characters):</b> The University of Montana's archeological inventory and assessment of Lake Sherburne Reservoir in summer 2007 was a success despite the low percentage of sites (n=13/46, or 28.3%) relocated relative to Reeves' original survey. This success is based not only on the sites which were relocated but also those that were not. Glacier National Park wants data which will help guide management of

sites within Sherburne Reservoir. The University of Montana's goal to relocate and assess the sites in Sherburne Reservoir was ambitious. In the thirteen years that have passed since Reeves's work in the reservoir over 70% of the sites have been significantly impacted by reservoir operations hindering their relocation. These data, as well as data from relocated sites, will help guide the Park's management of sites in the reservoir.

The UM team successfully relocated 28.3 percent (n=13/46) of previously-identified sites around Lake Sherburne. The highest relocation success rates were in the Cracker Flats/Swiftcurrent Falls (40%), Windy Creek (33.3) and Apikuni Flat (30%) sub-areas, followed closely by the Upper Lake area (28.6%).

Of note, the sub-areas with the highest success rates are more distant from the Sherburne Dam structure. A regression correlation shows a significant and strong relationship between distance from the dam and relocation success rate (df=4, r<sup>2</sup>=.82; Anova F=13.26; Significance F=.037). These data clearly indicate that the rise and fall of the lake in proximity to the dam has had a significantly negative effect on cultural resources around Lake Sherburne. Those sites closest to the dam (and subject to the most dramatic lake-level fluctuations) in the Lower Sherburne Lake and Upper Sherburne Lake sub-areas have the lowest relocation success rates, while those more distant (and subject to reduced lake-level fluctuation) have higher site relocation success rates.

Based on the data presented in this study, it is apparent that site relocation success rates are directly related to ground surface conditions. Of the thirteen relocated sites, nine of them (69.2%) are primarily on mud surfaces. This is an indication that archeological sites in Lake Sherburne Reservoir are more visible on mud surfaces than they are on cobble surfaces.

Due to the nature of the reservoir and water-level fluctuation, no sites are immune from the impacts of Lake Sherburne Dam and fluctuating water levels. However, as indicated by data presented in this report, sites most proximate to the dam appear to be in greater jeopardy of disturbance than those sites more distant from the dam. In any case, it is not possible to avoid disturbances via lake level fluctuations. Instead, measures must be taken to protect sites from further disturbance.

One example of successful site protection comes from Voyageurs National Park. The general process of this type of stabilization is as follows. A smooth surface on the site is created via clearing and raking and with sediment fill. Trenches are dug at the toe of the site and the top of the slope above the site. The filter fabric is placed on the smooth surface, it allows water movement but not sediment movement, covering the site and extending into both trenches. After the filter fabric has been stabilized with pins the trenches are filled with sediment. The sediment is also placed on the filter fabric and smoothed. Grass seed is then sprinkled on the sediment which is then covered by a turf stabilization mat (to anchor vegetation). The fabric, sediment, and seed are stabilized with riprap at the high water line. This process essentially places a natural looking cover over those areas which are being stabilized.

<p><b>For Scientific Studies (not Science Education Activities), were any specimens collected and removed from the park but not destroyed during analysis?</b>                  Yes  <b>If "Yes", identify where the specimens currently are stored:</b>                  The University of Montana Department of Anthropology</p>	
<p><b>Funding specifically used in this park this reporting year that was provided by NPS (enter dollar amount):</b>                  \$20000</p>	<p><b>Funding specifically used in this park this reporting year that was provided by all other sources (enter dollar amount):</b>                  \$0</p>
<p><b>List any other U.S. Government Agencies supporting this study or activity and the funding each provided this reporting year:</b></p>	

**Paperwork Reduction Act Statement:** A federal agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. Public reporting for this collection of information is estimated to average 1.625 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the forms. Direct comments regarding this burden estimate or any aspect of this form to Dr. John G. Dennis, Natural Resources (3127 MIB), National Park Service, 1849 C Street, N.W., Washington, DC 20240.