

**Project Summary**  
**Rocky Mountains Cooperative Ecosystem Studies Unit**

<b>Project Title:</b> Evaluating Whitebark Pine Monitoring Protocols in the Greater Yellowstone Area
<b>Type of Project:</b> Technical Assistance/biological science
<b>Funding Agency:</b> National Park Service
<b>Other Partners/Cooperators:</b> Greater Yellowstone Coordinating Committee, USGS-BRD, Interagency Grizzly Bear Study Team, and USFS
<b>Effective Dates:</b> September 1, 2003 - March 30, 2005
<b>Funding Amount:</b> \$9775
<p><b>Investigators and Agency Representative (include name, address, phone, email):</b>  NPS Key Official: Cathie Jean, Program Manager, Greater Yellowstone Network, National Park Service, Forestry Sciences Lab, 1648 S. 7<sup>th</sup> Ave, Bozeman, MT 59717-2780 406.994.7530, <a href="mailto:Cathie_jean@nps.gov">Cathie_jean@nps.gov</a></p> <p>UNIVERSITY CONTACT: Dr. Steve Cherry, Associate Professor, Department of Mathematical Sciences, Montana State University, Bozeman, MT 59717, phone: 406-994-5367, FAX: 406-994-1789, email: <a href="mailto:cherry@math.montana.edu">cherry@math.montana.edu</a></p>
<p><b>Project Abstract:</b>  The purpose of this task agreement is to conduct analysis of existing whitebark pine data using statistical methods to help guide the development of a sampling design and the field methods protocol. In collaboration with the Greater Yellowstone Network, Yellowstone Center for Resources, Resource Management and Visitor Protection, Interagency Grizzly Bear Study Team (IGBST), and the Greater Yellowstone Coordinating Committee, the biometrician will evaluate whitebark data sets of information collected in the Greater Yellowstone Area (GYA) by biologists Katherine Kendall, USGS, and Dr. Dan Tyers, U.S. Forest Service during 1995 to 2003. This data set will be available in digital form by October 2003. The biometrician will evaluate this pooled data set and determine which environmental variables, if any, relate to whitebark pine, white pine blister rust, mountain pine beetle, and may contribute to whitebark pine forest condition and distribution in the GYA. The biometrician will specifically evaluate existing whitebark-blister rust-mountain pine beetle data sets and sampling methodology collected during 1995 through 2003, and recommend a long-term, GYA-wide sampling regime for monitoring whitebark pine. The biometrician will examine the relationship among white pine blister rust infestation, mountain pine beetle, infestation, and environmental covariates revealed from existing whitebark pine data sets.</p> <p>Following these analyses, the biometrician will recommend a reasonable landscape level sampling regime based on the results of the initial analysis. The sampling regime should represent the spatial distribution of whitebark pine throughout the GYA as well as the selected environmental variables.</p> <p>The biometrician will recommend necessary changes to the existing sampling designs. In collaboration with the Greater Yellowstone Network, Yellowstone National Park, the IGBST, and the Greater Yellowstone Coordinating Committee (GYCC) White Bark Pine Subcommittee, this monitoring protocol will be developed as a long-term monitoring program for quantitatively evaluating temporal and spatial trends in the overall condition of whitebark pine throughout the GYA.</p>
<b>Outcomes with completion dates :</b> Final Report - September 30, 2004
<b>Keywords:</b> whitebark pine, Greater Yellowstone Area, white pine blister rust, statistical analysis, grizzly bears, inventory and monitoring protocols
<p><b><u>For Administrative use only:</u></b>  <i>Date Annual Report Received:</i>  <i>Date Final Report Received:</i>  <i>Publications, etc. on file:</i></p>

