The following is a progress report on the research that Smithsonian scientists have conducted since the signing of the above mentioned MOU in 2004 in co-operation with their colleagues at the Mongolian Academy of Sciences (MAS) and the National Museum of Mongolian History.

I. Laser-Scanning and Documentation of Mongolia’s Deer Stones
Harriet F. (Rae) Beaubien, Museum Conservation Institute

Conservators from the Smithsonian’s Museum Conservation Institute (MCI) have participated in the Deer Stone Project’s field seasons in Mongolia since 2004. There are two components, as described below.

Documentation
Documentation activities – featuring the use of 3D scanning technology – have been carried out during the 2005, 2006 and 2007 field seasons, and are producing records that will become part of a national registry of these important and threatened monuments. MCI’s efforts have been supported by funding from the Smithsonian Institution (including a grant from the Office of the Under Secretary of Science) and the Samuel H. Kress Foundation.

Results:
3D digital files, produced for 40 deer stones at 9 sites, as follows:

5 – site of Ulaan Tolgoi [2005, 2006]
3 – site of Khushuugiin Dev (Erkhel East 1) [2005, 2007]
2 – site of Erkhel North 1 [2005]
1 – site of Evdt Valley 1 [2005]
14 (including 1 in 3 pieces) plus fragments of 3 – site of Ushkiin Uver [2006]
1 (in 2 pieces) from Ushkiin Uver – Hovsgol Museum, Muren [2007]
4 (including 1 in 2 pieces) – site of Avtiin [2007]
2 – site of Hort Uzuur [2007]
4 – site of Khyadag west group [2007]
1 – site of Khyadag east group [2007]

In addition to the files, 3D models and other graphic products are being produced experimentally, using 3D digital files for Ushkiin Uver DS #14 and Ulaan Tolgoi DS #5. Supplementing these records are photographs and condition notes for the deer stones listed above. Systematic photographs have also been taken at a variety of other sites, including Khanuy Valley KYR 119 (Arkhangai aimag), Tsatstain Khoshuu, Olziyt, Khushuutii Am and Burdnii Ekh.

Publications:

R. Beaubien (right) and L. Weber scan deer stone #2 at the site of Ushkiin Uver at night. Darkness increases the pattern definition of the structured light the scanner projects. (photo: V. Karas 2006)


*MCI reports* (distributed; archived at MCI, Suitland, MD):


Karas, B.V. *MCI 5945*. Testing the utility of 3D laser scanning technology for future use in the documentation and replication of Bronze Age deer stones in northern Mongolia (January 2006).

Karas, B.V. *MCI 6085*. 3D digital data post processing report: Ulaan Tolgoi, EL.01-EL.05 (27 March 2007).

Karas, B.V. *MCI 6086*. 3D digital data post processing report: Erkhel East 1, EE.1-01 and EE.1-02 (13 March 2007).

Karas, B.V. *MCI 6087*. 3D digital data post processing report: Erkhel North 1, EN.1-01 and EN.1-02 (14 March 2007).


**Archaeological Conservation**

Issues and techniques in the preservation of the material record, from the field to the museum, have been the subject of training seminars, offered by Beaubien and others, as part of the annual symposia organized by the Deer Stone Project, as well as in consultations with conservation colleagues at the Cultural Heritage Center, during the 2004, 2005, 2006 and 2007 field seasons. In addition, MCI conservators have provided hands-on conservation assistance with freshly excavated material during the field seasons of both the Deer Stone Project and the Khanuy Valley Archaeological Project (2005, 2006).
Publications:

MCI reports (distributed; archived at MCI, Suitland, MD):

II. Botanical and Cultural Explorations in the West Darkhad Taiga
Paula DePriest, Museum Conservation Institute

Project Summary
In the past several years the Smithsonian-Mongolian Deer Stone Project’s botany team led by Paula DePriest and including American botanist Steve Young and Smithsonian staff Deborah Bell, Sue Lutz, and Gregory McKee, with Mongolian members O. Sukbaatar, J. Oyumaa, J. Oyunbileg, and Ts. Tsendeehuu, has explored the territories of the Mongolian Tsaatan, ethnic Tuvan reindeer herders living around the northern Darkhat Valley of Hovsgol Aimag in northern Mongolia. These territories include hunting grounds, plant-gathering places, and traditional, but now abandoned, reindeer seasonal pastures up to 100 km from the Tsaagannur, Ulaan Uul, and Renchinlkhumbe sum centers.

The most notable destinations west of the Darkhat Valley and the West Taiga reindeer camps have included the extraordinary Salag Davaa hunting ovoo (N51°06.702’ E 098°08.961’) with over 60 carved images of knives, rifles, and animals dedicated to ceremonially requesting good fortune in hunting. The ovoo, visited with Tsaatan herders in 2005 and 2007, was initially established to ritually facilitate sable hunting after Mongolia’s independence in the early 1910s and is maintained still by Dukha and Darkhat hunters traveling through the pass on their

Salag Davaa hunting ovoo in its impressive setting (photo: P. DePriest)