

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:



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)

- 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:

Mongolia Deer Stone Project: Field Report 2007

- Beaubien, H.F., 2005. "3D laser scanning documents Mongolia's deer stones." *Arctic Studies Newsletter* (December 2005)13: 27-28.
- Beaubien, H.F., and B.V. Karas, 2006. "3D scanning Mongolia's ancient deer stones." *Arctic Studies Center Newsletter Supplement* (October 2006):12-14.
- Beaubien, H.F., B.V. Karas, and W.W. Fitzhugh, 2007. "Documenting Mongolia's deer stones: Application of digital imaging technology to preservation." In *Scientific Research on the Sculptural Arts of Asia, Proceedings of the third Forbes Symposium at the Freer Gallery of Art*, ed. J.G. Douglas, P. Jett, and J. Winter, 133-142. London: Archetype Publications, Ltd., and Washington, DC: Smithsonian Institution Press.
- Beaubien, H. F., B.V. Karas, and L.G. Weber, 2007. "Documentation of Mongolia's deer stones: 2006 field season. Part IV." In *American-Mongolian Deer Stone Project: Field Report 2006*, ed. W.W. Fitzhugh, 71-83. Washington, DC: ASC Field Report Series.
- Karas, V.B., and H.F. Beaubien, 2007. "3D scanning Mongolia's deer stones." *Arctic Studies Newsletter* (February 2007) 14: 43-44.
- Karas, B.V., H.F. Beaubien, and W.W. Fitzhugh, In press. "Documenting Mongolia's deer stones: Application of 3D laser scanning technology to archaeological conservation." In *Conservation of Archaeological Materials: current trends and future directions*. Williamsburg, VA: Colonial Williamsburg Foundation.
- MCI reports* (distributed; archived at MCI, Suitland, MD):
- Beaubien, H.F., and B.V. Karas. *MCI 5945*. Documentation of Mongolia's deer stones: 3D scanning results, Report #1 (24 May 2007).
- Beaubien, H.F. and B.V. Karas. *MCI 5974*. Joint Mongolian-Smithsonian Deer Stone Project: Conservation report, 2005 field season (25 January 2006).
- Beaubien, H.F., B.V. Karas, and L.G. Weber. *MCI 6047*. Documentation of Mongolia's deer stones, 2006 field season: Conservation report (30 April 2007).
- 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).
- Karas, B.V. *MCI 6088*. 3D digital data post processing report: Evid Valley: EV.01 (12 March 2007).
- Wachowiak, M.J. *MCI 6089*. Technical illustration of deer stone #14 from Ushkiin Uver, Hovsgol aimag, Mongolia (23 May 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:

- Beaubien, H.F., 2005. "Workshop summaries – introduction." In *The Deer Stone Project: Anthropological Studies in Mongolia 2002-2004*, ed. W.W. Fitzhugh, 163-164 (English), 165-166 (Mongolian). Washington, DC: Arctic Studies Center, and Ulaanbaatar: National Museum of Mongolian History.
- Beaubien, H.F., 2005. "Archaeological conservation: Collections care from the field to the museum." In *The Deer Stone Project: Anthropological Studies in Mongolia 2002-2004*, ed. W.W. Fitzhugh, 167-176 (English), 177-184 (Mongolian). Washington, DC: Arctic Studies Center, and Ulaanbaatar: National Museum of Mongolian History.
- Beaubien, H.F., 2006. "Archaeological conservation with two field projects in Mongolia." *Arctic Studies Newsletter* (December 2005) 13: 26.
- Beaubien, H.F., and L.G. Weber, 2007. "Archaeological conservation in Ulaanbaatar, Mongolia: 2006 field season. Part V." In *American-Mongolian Deer Stone Project: Field Report 2006*, ed. W.W. Fitzhugh, 84-96. Washington, DC: ASC Field Report Series.

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

Beaubien, H.F., and B.V. Karas. *MCI 5999*. Khanuy Valley Project on early nomadic pastoralism, Arkhangai Aimag: Conservation report, 2005 Field Season (12 January 2006).

Beaubien, H.F., and L.G. Weber. *MCI 6048*. Conservation report: Archaeological conservation in Mongolia (26 January 2007).

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 Renchinlkhumbé sum centers.



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

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