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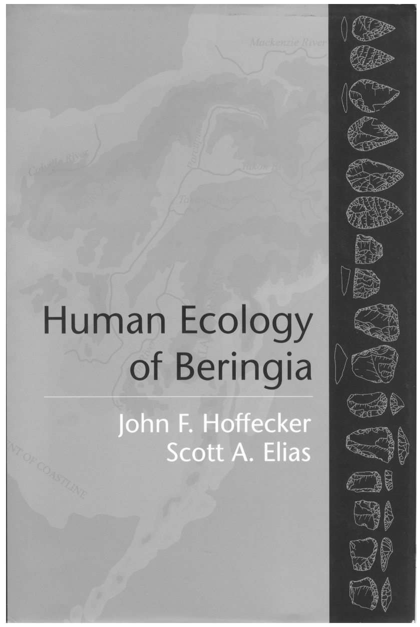
BOOK REVIEW



Archaeology and Paleogeography of Beringia. A View from Siberia: Review of John F Hoffecker and Scott A Elias. *Human Ecology of Beringia*. 2007. New York: Columbia University Press. ISBN: 978-0-231-13060-8; 290 pages with 79 figures and 11 tables. List price $45 US, hardback.

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This book is the long-awaited volume on archaeology and paleoenvironment for one of the most important regions in the Northern Hemisphere—Beringia—which connected Asia and North America in the Pleistocene. Among the previous sources for prehistory and paleogeography of Beringia, volumes edited by West (1996) and Bonnichsen and Turnmire (1999) are noteworthy. However, rapid progress in excavations on both sides of the Bering Strait requires creating an updated compendium, and now we have it in hand. There are 2 major aspects discussed by Hoffecker and Elias (2007): 1) the natural environment of Beringia in the second part of the Late Pleistocene, mainly during about 20,000–10,000 BP; and 2) archaeological sites of the late Middle Paleolithic in Siberia, Upper Paleolithic sites in Northeastern Siberia, and Paleoindian complexes of Alaska and Yukon. Here, I present the view from the Siberian side of Beringia regarding the factual materials and concepts that the authors have put forward.

This book contains characteristic features of the modern geography (climate, vegetation, permafrost, and landscapes) and paleoenvironment (topography, ice sheets, vegetation, mammal fauna, and climate) of Beringia, and information about the Paleolithic sites in Northeastern Siberia (or western Beringia) and Paleoindian sites in northwestern North America (or eastern Beringia). Each principal stage in the Pleistocene human occupation of Beringia is described by key archaeological sites in an environmental context. The authors present their concept of the peopling of the New

World from Siberia via the shrinking Bering land bridge and further south either through the "ice-free corridor" or by the coast; they also discuss other existing models. The book is richly illustrated with maps of Pleistocene shorelines and ice sheets, modern geographic patterns, archaeological sites, and possible scenarios for the peopling of the New World; as well as drawings of sites' profiles, plans, and artifacts. The ^{14}C dates and faunal remains from archaeological sites are combined in the form of tables.

Undoubtedly, the monograph by Hoffecker and Elias (2007) is the most complete source for Pleistocene archaeology and environment of Beringia to the present day. In this review, I would like to draw the readers' attention to the following subjects: 1) environment of Beringia and Siberia in general at the Last Glacial Maximum (LGM), about 20,000–18,000 BP, and human occupation of Siberia at that time; 2) the origin of microblade technology in Siberia and Beringia; 3) presentation of data on Paleolithic sites in Siberia; and 4) patterns of Pleistocene obsidian use in Beringia. A complete analysis of the book by Hoffecker and Elias (2007) will be published elsewhere (Kuzmin 2009).

Two main opinions exist about the LGM landscapes in Beringia: 1) treeless cold tundra-steppe with scarce trees and shrubs such as dwarf pine, birch, and alder (e.g. Hoffecker and Elias 2007:14–5; henceforth, only page numbers in this book are indicated); and 2) tundra and tundra-steppe, with trees (larch, spruce, and pine) and shrubs in river valleys (e.g. Brubaker et al. 2005; see review in Kuzmin 2008:171–3). The presence of larch macrofossils in mammoth gut contents at the Taimyr Peninsula in northernmost Siberia (74°N), ^{14}C dated to ~20,600 BP (Mol et al. 2006), testifies strongly that some trees survived the LGM even in the extreme north of Eurasia. Recent DNA studies in eastern Beringia (Anderson et al. 2006) confirm that trees were present in Alaska at the LGM.

The issue of absence or presence of trees in Beringia during the LGM is closely related to the wider problem of the human occupation of Siberia at that time. The authors (pp. 17–8, 95–6) accept the opinion that no archaeological sites in Siberia existed north of 55°N at the LGM. They attribute this to restricted technological abilities, which prevented humans from coping with the cold, dry LGM environment (p. 18), and the lack of fuel (p. 14). However, the concept of complete or significant LGM depopulation of Siberia is not supported by primary evidence (e.g. Kuzmin 2008:199–207). The presence of humans in southern and central parts of Siberia (up to 58°N, and perhaps even to 63°N) at about 20,000–18,000 BP is well-documented (Kuzmin 2008:173–98). People in Siberia and Europe were able to make tailored fur cloths *before* the LGM, as the finds of eye needles in Upper Paleolithic complexes dated to ~26,000 BP show (e.g. Kuzmin 2008:206–7). Also, artificial shelters in the form of dwellings already existed in Siberia *before* the LGM, at least at ~26,000 BP (e.g. Kuzmin 2008:206). Thus, people in Northern Eurasia were well-equipped and well-adapted to the cold LGM environment. The "absence" of sites in Beringia belonging to the LGM, therefore, is not due to lack of fuel and protection against the cold conditions but perhaps is the result of the still inadequate degree of surveys in vast regions of Siberia with a few permanent settlements and logistical problems. The "low archaeological visibility" of the possible LGM sites is also mentioned by the book's authors (p. 95). Most probably, in the future such sites will be found in Beringia, like the pre-LGM site of Yana RHS (Pitulko et al. 2004), discovered in a remote region previously not considered a place to search for Paleolithic finds. Several pre-LGM sites are already known in Yakutia and neighboring territories (some of the early Dyuktai complexes dated to about 26,000–20,000 BP, and Khayrgas and Nepa sites—see Vasil'ev et al. 2002:509–10; Stepanov et al. 2003; Goebel 2004), which are next to western Beringia. However, they are not considered in the book (pp. 88–97), and only sites in Yakutia (Aldan River valley), dated to ~12,700 BP (or 15,000 cal BP), are mentioned (p. 99) along with note that the age of the early Dyuktai sites (about 35,000–25,000 BP) is controversial (p. 237).

Microblade technology is usually regarded as an advanced step in prehistoric tool-making, which reflects adaptation to cold environments. The authors (p. 97) and Craig M Lee, who wrote a separate piece about microblade technology in Beringia ("Box 4.2", pp. 122–5), believe that the earliest microblades in Siberia appeared in Transbaikal around 17,000 BP. This opinion is out of date because it is well-known that the earliest evidences of microblade manufacture in Siberia are dated to at least ~35,000 BP in the Altai Mountains (Derevianko 2001, 2005; see also Kuzmin 2006, 2007; Kuzmin et al. 2007). As for the earliest microblades in eastern Beringia, the find of a wedge-shaped core in the lowermost part (zone 4) of the Swan Point site in Alaska dated to ~11,700 BP (p. 121) is very important. This component is considered by some scholars as belonging to the Nenana complex where microblades were unknown. Now there is more evidence about the microblades in Nenana assemblages as testified by the recent identification of a core tablet from a wedge-shaped microblade core in component I of the Dry Creek site (Odess and Shirar 2007) dated to ~11,100 BP (p. 137). Another site with very early traces of microblade technology in Alaska is Nogaharaba I, dated to ~11,100 BP (pp. 157, 160) and ~11,800–10,800 BP (Odess and Rasic 2007; but see Holmes et al. 2008). Its assemblage contains unifacial and bifacial tools (typical for the Nenana complex) and microblades and wedge-shaped cores (common in the Denali complex). Thus, it seems that microblade technology appeared in eastern Beringia at least 1000 yr earlier than previously thought (e.g. West 1996:547; Bonnichsen and Turnmire 1999:156–99), and the presence of microblades in the Nenana complex is quite possible.

Part of the book (pp. 77–100) is devoted to the peopling of Siberia. However, the authors' knowledge of Paleolithic archaeology in this part of the Old World is far from satisfactory. It seems that they are not acquainted with data obtained by Russian researchers in the last decade or so. By stating the absence of "archaeological evidence of modern behavior" in Siberia except blades at the Kara Bom and Makarovo 4 sites (p. 89), the authors show that results of extensive excavations of the earliest Upper Paleolithic complexes in the Altai Mountains and Transbaikal are unknown to them. It should be highlighted that in these 2 regions numerous adornments, bone tools, and art objects were discovered in cultural layers dated to at least ~43,000 BP (e.g. Derevianko 2001, 2005:232–55; see review in Kuzmin 2006), and these are definite indicators of "modern behavior." Some important Paleolithic sites in Siberia (Ust'-Izhul'; Chlachula et al. 2003) and Beringia (Druchak-V; Vorobei 2003) are not mentioned in the book. When considering Yana RHS, the oldest site in Beringia (~28,000 BP), the authors note that "few artifacts" were obtained (p. 209), although in the primary article it is clearly indicated that 383 stone items were found, and more than 90% of them were redeposited (Pitulko et al. 2004:54). Perhaps the old age of this site does not fit the authors' paradigm about the inability of early modern humans to colonize northern regions of Siberia until about 18,000 BP (see below).

As for some well-known sites, the authors' unfamiliarity with original data has led to errors. For example, the Dvuglazka Cave in southern Siberia is mistakenly associated with the Last Interglacial, about 128,000–116,000 yr ago (pp. 6, 230), and the faunal assemblage from the Middle Paleolithic component of this site is incorrectly characterized as reflecting "warm conditions" (p. 81). Primary data show that this cultural layer is ^{14}C dated to ~27,200 BP (e.g. Vasil'ev et al. 2002:521), and mammal remains belong mainly to Pleistocene horse, woolly rhinoceros, Mongolian gazelle, and cave lion (e.g. Vasil'ev 2003:530; Davis 1998:183). Skepticism about the authentic nature of the Diring Yuriakh site in Yakutia (pp. 17, 230) is based on the opinion of single scholar, although several well-known experts confirm that artifacts are genuine (e.g. Ackerman and Carlson 1991); however, their papers are not mentioned, nor are other reviews (e.g. Kuzmin and Krivonogov 1999).

The exploitation of obsidian in Beringia is an important issue because the determination of its sources gives us *direct* data on the scale and routes of prehistoric migrations (p. 103). In Alaska, geochemical analysis of artifacts from the earliest components of the Broken Mammoth and Swan Point sites (about 12,400–11,000 BP) and obsidian sources allows to establish that the distance between the sites and sources is up to several hundred kilometers (p. 122), while obsidian at the Nogahabara I site was taken from a nearby source (p. 157). The latest data for Swan Point show that 3 sources were used by Paleoindians, and the distance to utilization place is no less than 400–500 km (Speakman et al. 2007). At the Mesa site, obsidian was brought about 10,700–9900 BP from 300 km away (Kunz et al. 2003:40). As for western Beringia, a recent study of the Ushki site cluster at Kamchatka Peninsula reveals use of multiple obsidian sources since the late Upper Paleolithic, about 14,300–10,700 BP, with distances up to 200–300 km (Kuzmin et al. 2008). All this new information shows the high mobility of the earliest inhabitants of Beringia and their excellent knowledge of the location of good quality raw materials.

It is obvious that the volume produced by Hoffecker and Elias (2007) will serve as an important source for professionals and students, especially in the Anglophone scholarly community. Unfortunately, some parts of the book are incomplete and biased. The authors do not accept the possibility of early modern humans coping with the Late Pleistocene periglacial environment of Siberia (pp. 9, 17–8, 88–90, 94–100, 208, 230). This is why they try to demonstrate that people were practically unable to occupy Siberia (especially its central and northern parts) permanently before the post-LGM time, despite strong evidence already published and accepted by many scientists. I think that more efforts should be made in the future to receive first-hand information, especially if a second edition of Hoffecker and Elias (2007) book will follow.

REFERENCES

Ackerman RE, Carlson RL. 1991. Diring Yuriak: an Early Paleolithic site in Yakutia. *Current Research in the Pleistocene* 8:1–2.

Anderson LL, Hu FS, Nelson DM, Petit RJ, Paige KN. 2006. Ice-age endurance: DNA evidence of a white spruce refugium in Alaska. *Proceedings of the National Academy of Sciences of the USA* 103(33): 12,447–50.

Bonnichsen R, Turnmire KL, editors. 1999. *Ice Age People of North America: Environments, Origins, and Adaptations*. Corvallis: Oregon State University Press. 536 p.

Brubaker LB, Anderson PM, Edwards ME, Lozhkin AV. 2005. Beringia as a glacial refugium for boreal trees and shrubs: new perspectives from mapped pollen data. *Journal of Biogeography* 32(5):833–48.

Chlachula J, Drozdov NI, Ovodov ND. 2003. Last Interglacial peopling of Siberia: the Middle Palaeolithic site Ust'-Izhul', the upper Yenisei area. *Boreas* 32(3): 506–20.

Davis RS. 1998. The Enisei River of Central Siberia in the Late Pleistocene. *Journal of Archaeological Research* 6(2):169–94.

Derevianko AP. 2001. The Middle to Upper Paleolithic transition in the Altai (Mongolia and Siberia). *Archaeology, Ethnology & Anthropology of Eurasia* 2(3)[No. 7]:70–103.

Derevianko AP, editor. 2005. *The Middle to Upper Paleolithic Transition in Eurasia: Hypotheses and Facts.* Novosibirsk: Institute of Archaeology and Ethnography Press. 510 p.

Goebel T. 2004. The search for a Clovis progenitor in sub-Arctic Siberia. In: Madsen DB, editor. *Entering America: Northeast Asia and Beringia before the Last Glacial Maximum.* Salt Lake City: University of Utah Press. p 311–56.

Hoffecker JF, Elias SA. 2007. *Human Ecology of Beringia*. New York: Columbia University Press. 290 p.

Holmes CE, Potter BA, Reuther JD, Mason OK, Thorson RM, Bowers PM. 2008. Geological and cultural context of the Nogahabara I site. *American Antiquity* 73(4):781–90.

Kunz M, Bever M, Adkins C. 2003. *The Mesa Site: Paleoindians above the Arctic Circle* (BLM-Alaska Open File Report 86). Anchorage: Bureau of Land Management-Alaska. 81 p.

Kuzmin YV. 2006. The timing of Middle-to-Upper Palaeolithic transition in Eurasia: the Siberian contribution to the origin of modern humans. *The Review of Archaeology* 27:30–7.

Kuzmin YV. 2007. Chronological framework of the Siberian Paleolithic: recent achievements and future directions. *Radiocarbon* 49(2):757–66.

Kuzmin YV. 2008. Siberia at the Last Glacial Maximum: environment and archaeology. *Journal of Archaeological Research* 16(2):163–211.

Kuzmin YV. 2009. Arkheologiya i paleogeografiya Beringii: novye dannye, starye problemy [Archaeology and paleogeography of Beringia: new data, old problems]. *Arkheologicheskie Vesti* (in press).

Kuzmin YV, Krivonogov SK. 1999. More about Diring Yuriakh: unsolved geoarchaeological problems at a "Lower" Paleolithic site in Central Siberia. *Geoarchaeology* 14(4):351–9.

Kuzmin YV, Keates SG, Shen C, editors. 2007. *Origin and Spread of Microblade Technology in Northern Asia and North America*. Burnaby, British Columbia: Archaeology Press. 222 p.

Kuzmin YV, Speakman RJ, Glascock MD, Popov VK, Grebennikov AV, Dikova MA, Ptashinsky AV. 2008. Obsidian use at the Ushki Lake complex, Kamchatka Peninsula (Northeastern Siberia): implications for terminal Pleistocene and early Holocene human migrations in Beringia. *Journal of Archaeological Science* 35(8):2179–87.

Mol D, Tikhonov A, van der Plicht J, Kahlke R-D, Debruyne R, van Geel B, van Reenen G, Pals JP, de Marliave C, Reumer JWF. 2006. Results of the CERPOLEX/Mammuthus expeditions on the Taimyr Peninsula, Arctic Siberia, Russian Federation. *Quaternary International* 142/143:186–202.

Odess D, Rasic JT. 2007. Toolkit composition and assemblage variability: the implications of Nogahabara I, northern Alaska. *American Antiquity* 72(4):691–717.

Odess D, Shirar S. 2007. New evidence of microblade technology in the Nenana complex type site at Dry Creek, central Alaska. *Current Research in the Pleistocene* 24:129–31.

Pitulko VV, Nikolsky PA, Girya EY, Basilyan AE, Tumskoy VE, Koulakov SA, Astakhov SN, Pavlova EY, Anisimov MA. 2004. The Yana RHS site: humans in the Arctic before the Last Glacial Maximum. *Science* 303(5654):52–6.

Speakman RJ, Holmes CE, Glascock MD. 2007. Source determination of obsidian artifacts from Swan Point (XBD-156), Alaska. *Current Research in the Pleistocene* 24:143–5.

Stepanov AD, Kirillin AS, Vorobyev SA, Solovyeva EN, Efimov NN. 2003. Peshchera Khayrgas na Srednei Lene (rezultaty issledovaniyi 1998–1999 gg.) [The Khayrgas Cave in middle course of the Lena River (results of studies in 1998–1999)]. In: Alekseev AN, editor. *Drevnie Kultury Severo-Vostochnoi Azii. Astroarkheologiya. Paleoinformatika.* Novosibirsk: Nauka Publishers. p 98–113.

Vasil'ev SA. 2003. Faunal exploitation, subsistence practices and Pleistocene extinctions in Paleolithic Siberia. In: Reumer JWF, de Vos J, Mol D, editors. *Advances in Mammoth Research*. Rotterdam: Natural History Museum. p 513–56.

Vasil'ev SA, Kuzmin YV, Orlova LA, Dementiev VN. 2002. Radiocarbon-based chronology of the Paleolithic in Siberia and its relevance to the peopling of the New World. *Radiocarbon* 44(2):503–30.

Vorobei I. 2003. Druchak microblade industry of Northeast Asia. *Current Research in the Pleistocene* 20:81–3.

West FH, editor. 1996. *American Beginnings: The Prehistory and Palaeoecology of Beringia*. Chicago: University of Chicago Press. 576 p.