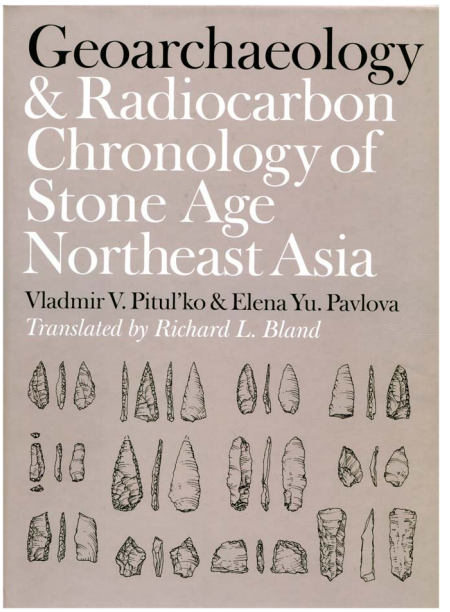
BOOK REVIEW



Geoarchaeological Analysis of Northeast Asian Stone Age – Review of V.V. Pitul'ko and E.Y. Pavlova. *Geoarchaeology & Radiocarbon Chronology of Stone Age Northeast Asia*. 2016. Texas A&M University Press. ISBN: 978-1-62349-330-1; xv + 222 pages, with 54 illustrations and 26 tables.

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Translation of Russian sources on prehistory of Siberian Arctic has continued in the last decades at a good pace (e.g., Dikov 2003, 2004; Khlobystin 2005; Kiriyak 2007; Mochanov 2009; Kiryak 2010, 2015; Pitul'ko 2013). A new book on geoarchaeology of Northeast Asia (essentially covers Northeastern Siberia and Yakutia, and neighboring regions; see Suslov 1961) was published by Vladimir V. Pitul'ko (a.k.a. Pitulko) and Elena Y. Pavlova; the original Russian volume was released in 2010. It was translated by Richard E. Bland, who made available numerous Russian books to international scientific audience. The main topics of this book are (1) critical evaluation of data on the geomorphology, stratigraphy, paleoenvironment, and archaeology of the prehistoric sites in Northeast Asia located mainly in the permafrost conditions; and (2) analysis of ^{14}C chronologies for these cultural complexes.

The volume under review consists of a preface, introduction, six chapters, and three appendices. In the introduction, a short overview of the history of archaeological research in the Siberian Arctic is given; also, the pre-Upper Paleolithic complexes are briefly mentioned. In Chapter 1, a short description of stratigraphic and chronological problems related to the Stone Age of

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Northeast Asia—Upper Paleolithic, Mesolithic, and Neolithic complexes—is presented. Chapters 2–5 contain analysis of the geomorphology, stratigraphy and ^{14}C chronology of the key prehistoric sites in this vast region. Chapter 6 summarizes the research; complicated and controversial issues are also discussed. In appendices, primary information on ^{14}C dates (in total, ca. 400 values from 108 sites) and geomorphology of the ^{14}C-dated prehistoric sites in Northeast Asia is given.

The earliest well-documented evidence of human presence in Northeast Asia comes from the Yana RHS site in the High Arctic (71°N). It is possible that people occupied the Siberian Arctic and sub-Arctic before that, beginning at ca. 45,000 BP (see Pitulko et al. 2017), but more work is needed to confirm this. The Yana RHS site is ^{14}C-dated to ca. 28,500–27,000 BP, based on more than 20 values obtained on bones, humic acids, and hearth charcoal. It belongs to the early Upper Paleolithic, with a flake-based stone assemblage, and a large number of bone tools, adornments, and eye needles (see Pitulko et al. 2012). It is noteworthy that along with compact set of human-related ^{14}C dates there are several values obtained on wood, range from ca. 44,000 BP to >47,000 BP. These dates were generated on material recovered from the cultural layer but they are not related to human occupation due to survival of wood in the permafrost and/or re-deposition from older sediments. This is an important observation because at some late Upper Paleolithic sites of Dyuktai Culture in Yakutia the ^{14}C dates on wood were previously considered unreliable (see Vasil'ev et al. 2002). The chronology of this cultural complex has been a subject of discussion: Mochanov (2009) considered its age as ca. 35,000–10,000 BP while other scholars suggested that its lower limit could be younger, ca. 26,000 BP or ca. 17,000–16,000 BP. Pitulko and Pavlova provide a critical evaluation of all available data (geomorphology, ^{14}C chronology, and archaeology), and concluded that the age of the Dyuktai Culture in the Aldan River basin of central Yakutia is ca. 17,000/18,000–10,000/11,000 BP, and possibly up to ca. 22,000/23,000 BP. Recent study of the Khayrgas site in the Lena River basin (also in central Yakutia), with Dyuktai cultural component in clear stratigraphic position, resulted in determination of its age as ca. 20,700–21,500 BP (Kuzmin et al. 2017), and this confirms opinion of Pitulko and Pavlova. In the northeasternmost part of the region, the duration of the Dyuktai complex has been extended up to ca. 8000 BP.

The Berelekh site (70°30′N), once considered as the oldest Paleolithic locality in the Siberian Arctic, was visited and re-examined by the authors (see also Pitulko et al. 2014). They recognized that re-deposition of organic materials (bones, wood, and plant macrofossils) in the Arctic hampers the exact determination of the ^{14}C age for human occupation, and dated only material unquestionably related to human activity— bones of extant species; in this case, a hare. The resulting ^{14}C date was ca. 11,450 BP; the older values of ca. 11,800–12,200 BP were previously obtained on plant samples collected from frozen talus, thus represent re-deposited material. The hare bone ^{14}C date is younger than the age of mass accumulation of mammoth bones and tusks nearby—ca. 12,000–13,700 BP. Therefore, ancient people did not co-exist with mammoths, and collected their ivory and bones from the stratum exposed in the vicinity of archaeological site.

Considering the final Upper Paleolithic of other territories (Kamchatka, Kolyma River basin and Chukotka), the issue of the chronology of the lowest layer (No. VII) of the Ushki cluster is the most controversial. The site's excavator Dikov (2003) dated it to ca. 13,600–14,300 BP, while Goebel et al. (2010) suggested a younger age of ca. 10,700–11,300 BP. Kuzmin and Dikova (2014) and Kuzmin et al. (2010) argued that the older cluster of ^{14}C dates, ca. 13,600–14,300 BP, can still be accepted, and they determined the age of Layer VII as ca. 11,070–14,300 BP. Pitulko and Pavlova state that it is quite possible that both views, expressed by Goebel et al. (2010)

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and Kuzmin et al. (2010), can be valid because different parts of this large site cluster were tested for ^{14}C dating by two teams, and this may explain the variations in the ^{14}C dates obtained.

As for the Mesolithic Sumnagin complex of Yakutia, including the northernmost site of this period in the world at Zhokhov Island (76°N; see Pitul'ko 2013), it is now dated to ca. 5000–9500 BP. The authors argue that late Dyuktai and early Sumnagin complexes co-existed. Outside of Yakutia, the Mesolithic sites are dated to ca. 8300–9800 BP. Chronology of the Neolithic (i.e. pottery-containing) cultural complexes in Northeast Asia is discussed briefly. The Syalakh Culture is dated to ca. 4200–6800 BP; Bel'kachi Culture to ca. 3500–5200 BP; and Ymyyakhtakh Culture to ca. 1500–5000 BP. The co-existence of these cultural complexes is noteworthy, in contrast to Mochanov (2009), who put them one after another.

In the concluding chapter, the authors present a summary of research for this region. One of the most important issues which they highlight is that particular complications of ^{14}C dating in Northeast Asia are caused by complex history of site formation and modification under the permafrost conditions. As a result, materials with different age are often introduced to Late Pleistocene and Holocene deposits and cultural layers after their initial deposition, and this distort the true age of strata. These taphonomic situations should be taken into consideration when the results of ^{14}C dating of potentially heterochronous materials are being analyzed. Pitul'ko and Pavlova stated that "getting unexpected results is a reason to consider the causes of the results rather than a reason to assume that the results are wrong" (p. 156).

This book is thoroughly illustrated with maps, photographs, profiles, and schemes, and drawings of artifacts from the Yana RHS site. This is a valuable piece of information on geoarchaeology of Northeast Asia, and can be recommended to scholars who study the Pleistocene and Holocene archaeology and chronology of Siberia and the northern North America.

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