INQUA SEQS 2020

Conference Proceedings

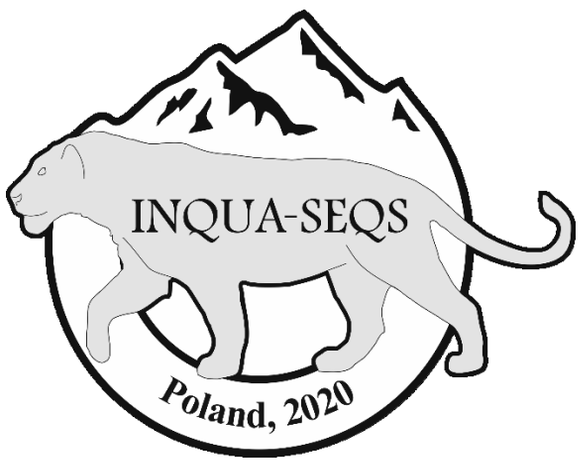
Quaternary Stratigraphy – palaeoenvironment, sediments, palaeofauna and human migrations across Central Europe

Edited by

Artur Sobczyk
Urszula Ratajczak-Skrzatek
Marek Kasprzak
Adam Kotowski
Adrian Marciszak
Krzysztof Stefaniak

Uniwersytet Wrocławski

RESEARCH UNIVERSITY
EXCELLENCE INITIATIVE



INQUA SEQS 2020

Conference Proceedings

Wrocław, Poland, 28th September 2020

Quaternary Stratigraphy – palaeoenvironment, sediments, palaeofauna and human migrations across Central Europe

International conference
dedicated to the 70th Birthday Anniversary of
prof. Adam Nadachowski

Uniwersytet Wrocławski

Editorial Board: Artur Sobczyk, Urszula Ratajczak-Skrzatek, Marek Kasprzak, Adam Kotowski, Adrian Marciszak & Krzysztof Stefaniak

Cover design & DTP: Artur Sobczyk

Cover image: Male skull of the Barbary lion *Panthera leo leo* (Linnaeus, 1758) from the collection of Department of Paleozoology, University of Wrocław, Poland. Photo by Małgorzata Marcula

ISBN: 978-83-942304-8-7 (Polish Geological Society)

Supporting Organizations

INQUA – SEQS Section on European Quaternary Stratigraphy
INQUA – SACCOM Commission on Stratigraphy and Chronology
INQUA – International Union for Quaternary Research
Polish Academy of Sciences (PAS)
Committee for Quaternary Research, PAS
Polish Geological Society
University of Wrocław

Please cite this book as:

Sobczyk A., Ratajczak-Skrzatek U., Kasprzak M., Kotowski A., Marciszak A., Stefaniak K. (eds.), 2020. Proceedings of INQUA SEQS 2020 Conference, Wrocław, Poland. University of Wrocław & Polish Geological Society, 124 p.

DENTAL CHARACTERS IN CRASEOMYS VOLES FROM THE LATE PLEISTOCENE AND HOLOCENE CAVE DEPOSIT OF THE RUSSIAN FAR EAST

Maria A. Fominykh [1], Alice O. Usoltseva [1,2], Mikhail P. Tiunov [3], Aleksandr V. Borodin [1,2]

[1]Institute of Plant and Animal Ecology Ural Branch of Russian Academy of Sciences, Yekaterinburg, Russia; email: fominykh.m@mail.ru, usoltseva_ao@ipae.uran.ru, bor@ipae.uran.ru

[2]Ural Federal University, Yekaterinburg, Russia,
[3] Federal Scientific Center of the East Asia Terrestrial Biodiversity, Far Eastern Branch of Russian Academy of Sciences, Vladivostok, Russia; email: tiunov@biosoil.ru

Keywords: *dental, Craseomys, Late Pleistocene, Holocene, small mammals*

Voles of the genus Craseomys are known from the Quaternary sites at least since the Late Pleistocene and as a common species in Holocene faunas in the Russian Far East (Kawamura, 1988, 1991; Omelko et al., 2020). During the excavation of Tetyukhinskaya cave (Middle Sikhote-Alin, 44°35′N, 135°36′E) a lot of bone remains of large and small mammals from the Late Pleistocene and Holocene complexes was found (Gasilin et al., 2013; Kosintsev et al., 2020). We studied the *Craseomys rufocanus* molars (N=4208) which were the most numerous among small mammals from six excavation pits of the cave. The taxonomical status of each individual was determined based on the morphotypic and morphometric characters of the third upper (M3) and first lower (m1) molars. Among the molars that were difficult to identify, there were some classified to ex gr. *C. rufocanus* and also the morphotypes that are characteristic to modern *C. rex* were found.

Throughout the entire depth of the cave filling the studied molars have different colors from very light to practically black. It was revealed that despite the number of molars from five color groups and their heterogeneity there are differences depending on the depth in all excavation pits ($H(16; N=4022)=111.17$, $p<0.05$). It can be assumed that very light molars belong to Holocene deposits, while dark and black ones belong to Late Pleistocene ones. It is consistent with the published AMS-dating and data of large mammal fauna (Gasilin et al., 2013; Kosintsev et al., 2020) as well as the finds of isolated molars of Mimomys (Borodin et al., 2018) from Tetyukhinskaya cave.

C. rufocanus molars were divided into groups according to the ontogenetic stages (Fominykh et al., 2010). It was found that the stages of m1 and M3 are equally distributed - most of the molars belonged to young specimens with still undeveloped roots (stage 4) or completely formed (stage 5) and old animals with the molar root length smaller than half of the molar height (stages 7 and 8). This may be due to the fact that the accumulation of vole remains in the cave took place at the same periods over a long period of time.

Occlusal surface of molars was analyzed using a morphotype ranking approach (according to Markova, 2014). An analysis of the occurrence of m1 complexity ranks showed that the fossil *C. rufocanus* are characterized by the m1 configuration with completely formed T6 and T7 prisms without reentrant angles, regardless of the depth of deposits and the color group. Among the reserve and rare ones, there are both more complex (with reentrant angles at T6-T7) and simpler variations (T7 is not or not completely formed). The complexity ranks of the fossil molars fall into the range of variability of modern *C. rufocanus* from the mainland of the Russian Far East ($H=0.28$, $p=0.59$).

This study was supported by the Russian Foundation for Basic Research (projects no. 18-04-00327 and 19-04-00966).

References

Borodin, A., Tiunov, M., Strukova, T., Zykov, S., 2018. New finds of Mimomys in the Late Pleistocene cave deposits in Russia. INQUA SEQS-Quaternary Stratigraphy in Karst and Cave Sediments, Postojna, Slovenia, 15.

Gasilin, V.V., Panasenko, V.E., Vasilieva, L.E., Tatarnikov, V.A., 2013. Paleo-fauna from Tetukhinskaya Cave (Middle Sikhote-Aline range). In: Askeyev, I.V., Ivanov, D.V. (Eds.), The Dynamics of Modern Ecosystems in the Holocene: Proceedings of the Third Russian Scientific Conference with International Participation. "Otechestvo" Publishing House, Kazan, 127–130 (in Russian, with English abstract).

Kawamura, Y., 1988. Quaternary Rodent Faunas in the Japanese Islands (Part 1). Memoirs of the Faculty of Science, Kyoto University, Series of Geology and Mineralogy 53, 31–348.

Kawamura, Y., 1991. Quaternary Mammalian Faunas in the Japanese Islands. The Quaternary Research 30 (2). 213-220.

Kosintsev, P.A., Zykov, S.V., Tiunov, M.P., Shpansky, A.V., Gasilin, V.V., Gimranov, D.O., Devjashin, M.M., 2020. The First Find of Merck's Rhinoceros (Mammalia, Perissodactyla, Rhinocerotidae, Stephanorhinus kirchbergensis Jäger, 1839) Remains in the Russian Far East. Doklady Biological Sciences 491 (1). 47–49. https://doi.org/10.1134/S0012496620010032

Markova, E.A., 2014. Assessment of Tooth Complexity in Arvicolines (Rodentia): A Morphotype Ranking Approach. Biology Bulletin 41 (7), 589–600. https://doi.org/10.1134/S1062359014070061

Omelko, V.E., Kuzmin, Y.V., Tiunov, M.P., Voyta, L.L., Burr, G.S., 2020. Late Pleistocene and Holocene small mammal (Lipotyphla, Rodentia, Lagomorpha) remains from Medvezhyi Klyk Cave in the Southern Russian Far East. Proceedings of the Zoological Institute RAS 324 (1). 124–145. https://doi.org/10.31610/trudyzin/2020.324.1.124

Fominykh, M.A., Markova, E.A., Borodin, A.V., Davydova, Yu.A., 2010. Intrapopulation variation in odontometric characters of the bank vole *Myodes glareolus* Schreber, 1780 in the Middle Urals. Russian Journal of Ecology 41 (6), 535–538. https://doi.org/10.1134/S1067413610060123