

# INQUA SEQS 2021

Conference Proceeding



## Quaternary Stratigraphy – palaeoenvironment and humans in Europe

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Uniwersytet  
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## TAPHONOMIC ANALYSIS OF *CRASEOMYS* VOLE REMAINS FROM THE LATE PLEISTOCENE AND HOLOCENE CAVE DEPOSITS OF THE RUSSIAN FAR EAST

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Preservation assessment (damage, fragmentation, roundness or staining) is widely used in taphonomic analysis both to clarify the conditions of deposits accumulation (site formation processes) and to understand the site stratigraphy (Smirnov et al., 1986; Andrews, 1990).

It was shown that the main factor of accumulating small mammal assemblages from different sites is a predation by avian or mammalian predators (Andrews, 1990; Fernández-Jalvo et al., 2016). However, damage to the bones and molars involved different agents such as digestion, abrasion and corrosion have different origins (predation, transport) (Fernández-Jalvo et al., 2016).

We studied the dental characters of *Craseomys rufocanus* as the most numerous species of small mammal assemblages from the Late Pleistocene and Holocene deposits of the Tetyukhinskaya cave (the Middle Sikhote-Alin, Russia Far East) and considered the possibilities of using them for taphonomic analysis. It is assumed that the accumulation of bone remains in the Tetyukhinskaya cave occurred as a result of the vital activity of predators (small mustelids, badgers and owls) that used the cave as a dwelling or temporary shelter (Borodin et al., 2018; Tiunov and Gusev, 2020).

In order to test this hypothesis a taphonomic method provided by Andrews (1990) and later by Y. Fernandez-Jalvo et al. (2016) was used. The 1<sup>st</sup> lower, 3<sup>rd</sup> upper molars and incisors were available for study and classified into four stages according to the intensity and grades of digestion (Fernández-Jalvo et al., 2016). The obtained results and the fact that the percentage of molars with different degrees of digestion varies, it can be assumed that there could be several potential agents forming taphocenosis – these were nocturnal birds of prey from both category 2 and 3. These could be a Great grey owl and European eagle owl, which are found in the vicinity of the Tetyukhinskaya cave. The grades of damage by mammalian predators are almost always high, and we assumed that they could not be the main source of accumulation of vole remains.

The burrowing activity of predators as well as the post-depositional processes of the layers could lead to repeated redeposition of bone remains of different deposits. It extremely complicated the taphonomic structure and stratigraphy of the cave deposits. Color of bone is the indicator, which depends primarily on host sediments and the residence time in the strata (Smirnov et al., 1986; Strukova et al., 2006). To identify the presence of redeposition of the cave deposits and mixing of layers, the color of molars was analyzed. Despite that there may be several different agents and processes that staining molars, we categorized by color rather than agent.

It was revealed that both in the upper and in the deeper layers there are *C. rufocanus* molars from different color groups – both light and very light, dark, and black. The presence of different color group in layers indicates significant assemblage heterogeneity but we assumed that dark and black ones belong to Late Pleistocene deposits, while very light molars belong to Holocene. It's consistent with the published data of small and large mammal fauna, and the AMS-dating from the cave (Kosintsev et al., 2020; Borodin et al., 2018). In addition, that confirms the assumption that the sediments of this cave were accumulated by several agents for a long period of time and can be dated to a wide range during MIS2-5 (Kosintsev et al., 2020).

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