



## Two new species of freshwater amphipods (Crustacea: Gammaridae) from Central Asia, with comments on the unusual upper lip morphology

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### Abstract

This paper describes two new species of the genus *Gammarus* Fabricius from the freshwaters of Central Asia: *G. montaniformis* sp. nov. (Kazakhstan, Dzungarian Alatau, Borohudzyr River) and *G. alius* sp. nov. (Kyrgyzstan, Chatyr-Kul Lake). The morphology of the mouth parts of the new species *G. alius* is characterised by a peculiar upper lip with “hooks” on its epistome that is discussed. The affinity of the new species for their congeners is discussed, emphasizing morphological and biogeographical relationships.

**Key words:** Amphipoda, *Gammarus*, freshwaters, Kazakhstan, Kyrgyzstan

### Introduction

The genus *Gammarus* Fabricius, 1775, includes approximately 204 species, which are widespread across the Holarctic and are mostly confined to continental freshwater/brackish habitats, although some also live in coastal marine environments (Väinölä *et al.* 2007).

The faunistic research of the amphipods of Central Asia is extremely poorly represented, having begun at the turn of the 19<sup>th</sup> century, with several reports by Uljanin (1875), Sars (1901) and Chevreux (1908). Without being too specific from a historical perspective, we can distinguish several periods without strict boundaries. Perhaps the most significant investigation of amphipods in the region was conducted by Martynov (1930, 1935, 1936) and Martynov & Behning (1948) who described gammarid species from the Balkhash and Aral Sea basins, and from other parts of Central Asia. However, almost all gammarid species documented by Martynov are difficult to distinguish and can only be assigned with substantial uncertainty. The subsequent studies conducted by Birstein (1945, 1948, 1950) also do not clarify the taxonomy of Central Asian gammarids. Birstein also questioned the validity of several of Martynov's species including *G. ocellatus* Martynov, 1930 the same to *G. lacustris* Sars, 1863 and *G. bergi* Martynov, 1930 which is identical to *G. pulex* (Linnaeus, 1758) (see Birstein 1945, p. 152). Subsequently, a redescribed *G. bergi* based on topotypic materials (Karaman & Pinkster 1977) was identified early by Chevreux (1908) as *G. pulex*. The latter species was mentioned by Chevreux and Martynov (1930) in both the Issyk-Kul and Chatyr-Kul lakes. There are authors who have appointed a rather wide geographic distribution for *G. pulex*, including all of Europe (including Great Britain), Russia (including Baikal and Hövsgöl lakes, Kamchatka and the Amur River basin), North Africa, Asia Minor and Central Asia, China and Afghanistan (see Birstein 1945, Pinkster 1972, Dedju 1980). However, Karaman (1991) assumed that Derzhavin misidentified *G. lacustris* and *G. koreanus* Ueno, 1940, in the Kamchatka and Primory regions, respectively, and Safronov (2006) noted the absence of *G. pulex* in Hövsgöl, suggesting a possible misidentification of *G. lacustris*. Therefore, the question of the existence of *G. pulex* in Central Asia is still open. Considering the historical period under review, there are informative works by Karaman (1984), who reviewed some *Gammarus* species from the discussed area, and there is a summary of amphipod distribution in Kazakhstan by Kulkina (1990). Finally, the report by Hou *et al.* (2004) describes several new gammarid species from the upper course of the Ili River in China.

Recent biological exploration of the freshwaters in Eastern and Central Tien-Shan resulted in the collection of amphipods of the family Gammaridae from the Ili River basin (Kazakhstan) and Chatyr-Kul Lake (Kyrgyzstan).