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New sight on genesis of the Lake Biwa malacofauna

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Faunogenesis of ancient Lake Biwa, which predecessor water bodies are known from Pliocene is remains obscure in spite of more than a century long study. Primary used southern Chinese origin of the lake fauna is not supported by data on extinct and the relict pectinibranch gastropods in Valvatidae and Viviparoidea, as well as small bivalves "*Pisidium*". Extinct *Igapaludina* is similar to recent *Amuropaludina*, which nowadays endemic for the Amur basin. Not sculptured adult shell, subglobose embryonic shell with rounded periphery and fine spiral microsculpture are apomorphic Amuropaludinidae characters. DNA demonstrated the sister taxa of the Biwan endemic *Heterogen* is Japanese in origin *Cipangopaludina japonica*. Shell and soft body morphology of *"Pisidium" kawamurai* is closely related to *Lacustrina etorohuense* from southern Kuril Iturup Island.

Basing on morphological, molecular, paleontological and geological data a new theory on the origin and time of colonization of the Lake Biwa by these mollusc groups is suggested similar to that substantiated for Cyprinidae (Nakajima, 2012). We hypothesize that discussed mollusc groups have spread in Paleo-Biwa from the ancient lake system covering north-eastern Asia eastward Altai and Transbaikalia during Late Cretaceous and Paleocene (Martinson, 1961, 1998 and others). These big mesotrophic lakes at times connected with Paleo-Amur network, which the most ancient middle fragment was connected with Yellow Sea during the same period (Artemenko, Sorokin, 2009). Extinct genera of Bellamyidae and Amuropaludinidae, lower *Cipangopaludina, Semisulcospira, Megalovalvata*, small bivalves *Lacustrina* and various large bivalves dwelled the lakes. Relicts of Miocene malacofauna are recorded in Pliocene Kobiwa-ko (*Tulotomoides, Igapaludina, "Bellamya" suzuki*), Pliocene Lake Chuyskoye in Altai (amuropaludinids), Lake Biwa (*Biwakovalvata, Lacustrina*), Lake Baikal (*Megalovalvata*), lakes in Iturup Island (*Lacustrina*).

To develop the theory future investigations will focus molecular studies of these and related taxa as well as re-examination of fossil material. The work was supported by the Center for Northeast Asian Studies of Tohoku University and Far East Branch of the Russian Academy of Sciences, grant No 12-1-П30-01.