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## **Bivalve biostratigraphy of terminal Permian (pre-Otoceras part) of the South Verkhoyansk Region (Northeast Asia)**

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The upper part of the known Permian deposits is presented in the South Verkhoyansk region by sandstones and siltstones of the Imtachan Fm containing mainly *Inoceramus*-like bivalves. The lower part of examined deposits where *Maitaia* cf. *tenkensis* Biakov have found attributed to the lower half of the Khal'pirki regional stage of the Verkhoyansk region. The lying above rocks contain bivalves of *Intomodesma* genus characterizing the upper half of the Khal'pirki regional stage [3]. This regional stage is correlated with the Uppermost Permian [4]. Hence identified: *Phestia* ex gr. *magna* (Popow), *Intomodesma* ex gr. *costatum* Popow, *I. cf. costatum* Popow, *I. cf. evenicum* Kusnezov, *Pachymyonia bicarinata* (Astafieva-Urbajtis), *Myonia gibbosa* (Maslennikow), *Cunavella etheridgeiformis* Astafieva-Urbajtis and others.

The comparison of bivalve complex from the Imtachan Fm with other relatively shallow complexes of terminal Permian from the Verkhoyansk-Okhotsk region [2, 4] show their close affinity. The presence of such common bivalve species as *Intomodesma* ex gr. *costatum* Popow, *I. cf. evenicum* Kusnezov, *Pachymyonia bicarinata* (Astafieva-Urbajtis), *Myonia gibbosa* (Maslennikow), *Cunavella etheridgeiformis* Astafieva-Urbajtis leaves no doubt that the upper parts of the Imtachan, Khal'pirki, and Kulu Fm have the same age.

Stratigraphic distribution of intomodesms quite well agrees with the biostratigraphic materials from other Permian sections of the North-East Asia, and generally confirms the previously established the possibility of a more detailed subdivision the Costatum Zone in the four subzones on the basis of phylogenetic trend: *Maitaia hurenensis* → *Intomodesma costatum* → *Intomodesma evenicum* [2]. The interval devoid of *Intomodesma evenicum* and indexed as the *Intomodesma postevenicum* Subzone stands out in the studied section directly above the *Evenicum* Subzone as well as in the sections on the Titan Creek, northeastern framing of the Okhotsk basin [2]. This interval can be compared with the

upper part of the Pautovaya river section in the Balygychan basin where Late Changhsingian *Claraioides* aff. *primitivus* (Yin) was found together with the latest intomodesms [1].

Correlation of the upper part of Permian section with the upper part of the Changhsingian is confirmed by recent studies of  $\delta^{13}C_{org}$  of mudstone from the Imtachan and Nekuchan Fms [5, 6].

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