Stratigraphy and trilobite biofacies of the Late Ordovician (Katian) of the Taimyr Peninsula, Arctic Russia

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The thick Late Ordovician (Katian) succession on the Taimyr Peninsula, Arctic Russia is divided into three regions showing a transition from a southern carbonate dominated facies, a central transitional facies, and a siliciclastic dominated northern facies. All regions are rich in trilobites but hitherto only the southern fauna was described. New collections have been added to this and allow a division into two very different biofacies for the Katian succession. Black limestone and shales have taxa similar to those of the peripheral Laurentian Scoto-Appalachian belt (Ampyxella, Ampxyina, Faillleana, Pararemopleurides, Raymonella, Remopleurides, Robergia, Stygina, Taimyraspis, Telephina, and Toernquistia), and is termed the raphiophorid association. Further subdivisions may be possible, but the small number of new collections does not allow this at the moment. From shelf limestone a contrasting fauna contains monorakine trilobites (Carinopyge, Ceratevenkaspis, Elasmaspis, Evenkaspis, and Monorakos) endemic to the Siberian platform. Trilobites such as isotelines, Calyptaulax, Xylabion, and Cheirurus otherwise typical of inshore Laurentia co-occur with this fauna. This biofacies is termed the monorakine-cheirurid-illaenid association. Our results show that the Taimyr Peninsula, as an open shelf marginal to the Siberian Platform, typically would have the endemic monorakine-cheirurid-illaenid association, while similar conditions to those on the eastern fringes of the Iapetus Ocean permitted a short lived establishment of comparable faunas of the raphiophorid association.