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Taphonomy of lacustrine interbeds in the Kirkpatrick Basalt (Jurassic), Antarctica

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ABSTRACT

The Kirkpatrick Basalt (Jurassic) of South Victoria Land and the Central Transantarctic Mountains, Antarctica, includes sedimentary interbeds representing shallow lakes and ephemeral ponds (some with microbial mat accumulations), deep permanent lakes, and lake-margin areas, especially vegetated wetlands. Fossil assemblages in these sedimentary interbeds are dominated by spinicaudatans (conchostracans), but ostracodes, insect nymphs, actinopterygian fish, and plants are locally abundant. Similar biotas in contrasting contemporaneous deposits allow the taphonomy of these organisms to be compared across lacustrine depositional settings. Spinicaudatan carapaces and fish remains are preserved primarily in calcium phosphate, whereas ostracode carapaces are preserved in calcium carbonate, reflecting the original skeletal composition of the animals. Where microbial mats are present, silica replacement of spinicaudatan carapaces occurs more extensively than in other deposits; microbial processes may have enhanced silicification. This study is the first well-documented example of microbial mat influence on preservation in high-latitude lacustrine systems.