

SEDIMENTARY FRAMEWORK OF THE LOWER BLACK BEAR RIDGE SECTION, BRITISH COLUMBIA: A POTENTIAL CARNIAN-NORIAN BOUNDARY GSSP

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The upper Ludington and lower Pardonet formations at Black Bear Ridge, northeastern British Columbia, Canada, represent a continuously exposed succession through the upper Carnian and lower Norian (Upper Triassic). These strata were deposited in a deep marine setting (distally steepened carbonate ramp/medial to distal slope) on the northwestern margin of the Pangean supercontinent. The Black Bear Ridge section is apparently continuous, with no evidence for either subaerial exposure or submarine erosion. The absence of erosional scours in the study interval confirms emplacement of these strata below both fairweather and storm wave base.

The Carnian-Norian boundary interval at Black Bear Ridge is dominated by event beds, particularly those resulting from sediment gravity flows. Upper Carnian strata, primarily assigned to the Ludington Formation at Black Bear Ridge, record an upward transition from moderate-scale, olistolith-bearing debris flow deposits (debrites) to medium/thin-bedded turbidites remobilized as small-scale sediment slump/slides. The Carnian-Norian boundary interval and the lower Norian succession is dominated by medium- to thin-bedded calcareous turbidites and lesser hemipelagic suspension deposits.

Diverse and abundant fossil assemblages, particularly conodonts and bivalves, occur within the study interval. Despite post-depositional sediment remobilization conodont faunal successions indicate that the Black Bear Ridge section represents a complete, continuous Carnian-Norian boundary succession. Rapid and relatively continuous sedimentation is attested to by the thickness of the section, the abundance of calcareous turbidites and the thin nature of intercalated hemipelagic beds.

Abundant fossils, evidence of continuous and rapid sedimentation and minimal alteration by tectonic disturbances, metamorphism or diagenesis make Black Bear Ridge an excellent candidate Global Stratotype Section and Point (GSSP) for the Carnian-Norian boundary.