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Late Triassic conodonts from the Wrangell and Stikine terranes in Alaska, Yukon, and British Columbia

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Summary

The Late Triassic was a time of widespread environmental and ecological change, culminating in the end-Triassic mass extinction. This event led to the demise of several higher taxa, including conodonts. New conodont occurrences from the Norian and Rhaetian (Late Triassic) of the Wrangell and Stikine terranes of western Canada and Alaska are presented. These terranes were located on, or just off-board of, the northwestern Laurentian margin during the Late Triassic. The new conodont occurrences in the Wrangell terrane come from sections of the Parson Bay Formation at Holberg (northern Vancouver Island, British Columbia) and the McCarthy Formation at Grotto Creek (near McCarthy, Alaska). Those from the Stikine terrane are found in sections of the Sinwa Formation located on Mt. Sinwa (near Atlin, northern British Columbia) and the Aksala Formation at Lime Peak (near Whitehorse, Yukon). In addition to conodonts, samples were collected for analysis of carbon isotope geochemistry and major element geochemistry in order to characterize environmental changes in the lead up to the mass extinction at the end of the Triassic.

The conodont fauna of each section is dominated by species of *Mockina*, including *M. englandi, M. carinata,* and morphotypes of *M. mosheri* which can be used to approximate the position of the Norian-Rhaetian boundary. The proposed index species for this boundary, *Misikella posthernsteini*, is common in Europe, but rare in North America. The only North American occurrences of this species are in the Wrangell terrane (from sections on Haida Gwaii) and in the Stikine terrane (from isolated samples on Mt Sinwa). Excursions in the carbon isotope signatures of the new sections in the vicinity of the Norian-Rhaetian boundary allow correlation between these sections, as well as with others in the Tethys region of Europe and Asia. The youngest conodonts recovered in this study are late Rhaetian in age.

The conodont faunas of both the Wrangell terrane and the Stikine terrane show great similarities in species composition during the Norian and Rhaetian. This may be due to cosmopolitan nature of these species, proximity of the two terranes at this time, or similarity of depositional environments between the two terranes. The ongoing analysis of conodonts from these terranes contributes to studies of paleobiogeography to determine relative positions of terranes adjacent to the Laurentian margin, as well as elucidating environmental and ecological changes during the interval leading up to the Triassic-Jurassic boundary.