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Permian-Triassic Boundary in Southwestern Montana and Western Wyoming

In western Wyoming and adjacent areas, the Permian-Triassic boundary has been traditionally considered coincident with the contact between the Phosphoria/Park City Formation and the overlying Dinwoody Formation. The traditional placement of the systematic boundary has been challenged recently by discoveries of Permian fossils in Dinwoody-like rocks. These anomalous Permian rocks are recognized as part of the newly-defined Blacktail Member of the Park City Formation and the systematic boundary is maintained at the base of the Dinwoody.

The Blacktail Member forms the top of the Permian sequence over a large area in western Wyoming and southwestern Montana where it is laterally equivalent to the Shedhorn Sandstone and the Ervay Member of the Park City Formation. The Blacktail Member is composed of lithologies not previously recognized as typical of the topmost Permian sequence. It is a light-colored unit that is comprised principally of cherty, dolomitic mudstone, siltstone and silty carbonate rocks. Fossiliferous Blacktail rocks are characterized as the *Echinauris* assemblage which is dominated by brachiopods of typical Phosphoria aspect. The Blacktail Member was deposited in a shallow marine, subtidal shelf environment as part of a widespread regressive sequence. Blacktail strata are late Wordian to early Capitanian in age, similar to that of other units at the top of the Permian sequence.

Lithologic changes across the systematic boundary are not pronounced where the Blacktail Member forms the topmost Permian unit. Dinwoody rocks are differentiated from those of the Blacktail Member primarily by their non-cherty and highly argillaceous character. Blacktail strata are readily distinguished from the Dinwoody on the basis of sharp differences in fossil assemblages. The Blacktail-Dinwoody contact is disconformable and represents a major gap in the rock record of western Wyoming and adjacent areas.