

## **Old Methods Used in New Ways: Applications of Indigenous Peoples' Tracking Methods to Paleoichnology**

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The science of tracking animals is a well-tested tradition of some indigenous peoples, such as the Apache of North America, San of Africa, and aborigines of Australia, but their lack of written languages and increased assimilation into industrialized culture has resulted in a loss of knowledge about their tracking methods. However, scientific concepts associated with Apache methods were recently summarized in print by Tom Brown, Jr., an American tracker who has field-tested them for 42 years. The purpose of this study is to apply Apache methods as summarized by Brown to the study of fossil vertebrate tracks.

Preliminary study of modern tracks show that Apache methods result in interpretations that far exceed those of ichnologists who only identify a trackmaker and its gait. Through the use of pressure-release features associated with tracks, an ichnologist can reliably interpret changes in or maintenance of forward motion, head position, handedness, and gender. Drawbacks to using these methods on fossil tracks are: (1) most fossil trackmakers are extinct, thus behavioral interpretations can be only verified through comparison to modern analogues; and (2) most fossil tracks are preserved as undertracks, which result in fewer pressure-release features. Nevertheless, pressure-release features are universally recognizable regardless of what animals made the tracks and some pressure-release features are preserved in layers below track surfaces. Indeed, such features are evident in some Mesozoic archosaur and other fossil tracks, hence Apache methods can be applied to them. Further testing and application to fossil tracks should lend more insights into how these old methods can generate new hypotheses.