

COMPARATIVE TAPHONOMY OF MIOCENE FOSSIL BIOTAS WITH SOFT TISSUES IN LAKE DEPOSITS: CLARKIA (IDAHO, U.S.A.) AND SHANWANG (SHANDONG, P.R. CHINA).

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The recent discovery of Tertiary plant fossil DNA from the Clarkia Miocene lacustrine deposits, northern Idaho, has raised concerns of the taphonomic conditions of preservation of fossil biotas with soft tissues and the further prediction of such occurrence in ancient lake deposits. The exceptionally preserved Clarkia fossil biota is compared with the Shanwang biota in Shandong Province, eastern P.R.China, another example of Miocene conservative fossil *lagerstätten*. The comparison shows following similarities between the two extraordinarily preserved Miocene fossil biotas: (1) both were deposited under similar age, geological background, and depositional environment; (2) humid, warm-temperate paleoclimate was inferred in both areas; (3) both deposits contain diverse fossil biotas with soft tissues but having limited benthic organisms; (4) higher similarity coefficient exists between fossil diatoms, higher plants and insects at genus or higher taxonomic levels; and (5) overall similar taphofacies exists between the two fossil biotas.

However, following differences appear between the two areas: (1) diverse vertebrate fossils in Shanwang site are sharply contrasted with the Clarkia biota in which terrestrial vertebrates are absent; (2) comparison of taphonomic signatures shows slightly different patterns between the two; (3) the two Miocene lakes originated in different manners, thus differences appear in configuration, stratification, and other paleolimnologic parameters between the two ancient lakes.

The comparison of the two extraordinary fossil biotas, coupled with geologic, sedimentologic, paleoecologic and paleobiochemical studies, demonstrates that the formation and preservation of such fossil biotas with soft tissues in ancient lake deposits were strongly controlled by various paleolimnologic, paleoclimatic, taphonomic and compositional parameters.