

# AN ASSEMBLAGE OF FRESHWATER INVERTEBRATES AND OTHER FOSSILS FROM THE UPPER CRETACEOUS FOSSIL FOREST MEMBER OF THE FRUITLAND FORMATION, FOSSIL FOREST RESEARCH NATURAL AREA, SAN JUAN COUNTY, NEW MEXICO

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Numerous fossil bivalves in shale/conglomerate were prepared out of several blocks (~227 kg) of sediment that were excavated from the Upper Cretaceous (upper Campanian) Fossil Forest Member of the Fruitland Formation in the Fossil Forest Research Natural Area (T23N, R12W) of San Juan County, northwestern NM. The Fossil Forest is named for an extensive *in situ* stump field preserved as a result of flooding. However, the area also contains numerous vertebrate and invertebrate fossils and other plant fossils. Much of the invertebrate and smaller vertebrate material is concentrated in channel-lag deposits; larger dinosaur and turtle fossils are more broadly distributed. One channel complex, located stratigraphically between the highest thick coal bed (> 1m) and the Bisti Bed, is especially rich in invertebrate specimens. The prepared blocks with bivalves are from this complex. Macerated plant debris and fragments of carbonized wood are common in the blocks. Dozens of shells of freshwater bivalves were preserved in the matrix. These bivalves are disorganized sedimentary clasts, together with inorganic pebbles, wood and bone fragments, suggesting that the fossiliferous sediment is part of a channel-lag deposit. Thus, few of the bivalves were preserved intact; most consist of single (non-articulated) valves. Nevertheless, many valves are in excellent condition, including some with internal nacre. Two species of bivalves were found, of approximately equal abundance. Both species are taxonomically classified within the Order Unionida (Gray); Family Unionidae (Rafinesque).

Commonly referred to as freshwater mussels, unionids are common throughout the world, and the family persisted in similar forms since the Triassic. Mollusks in general, and especially unionids, are variable in overall shell shape (e.g., ecologically plastic in morphology). Minor variations and deformation of the shell can result from environmental conditions, disease, and poor nutrition. Therefore, diagnostic features such as external ribbing and position of the umbo (hinge apex or "beak") are important for species identification. In addition to the genus *Unio*, two other genera of unionids have been documented from the Fruitland Formation: *Proparreysia* and *Plesielliptio*. The two species of bivalves found in this study are identified as *Unio* sp. 1 and sp. 2. *Unio* sp. 1 (very likely *U. baueri* Stanton) is the larger of the two species. Characteristics: average height = 5 cm; average length = 9 cm; subovate in outline; dorsal margin in front of beak descending steeply into a broadly rounded front margin; and very fine concentric ribbing (when preserved). *Unio* sp. 2 (possibly *Proparreysia holmesiana* (White)) is smaller and more ovate than sp. 1, with a more pronounced umbo (beak), and much heavier concentric ribbing. In addition to the bivalves, the following other fossils were present in the matrix: one gastropod, identified as *Campeloma amarillensis* (Stanton); one coprolite, light brown in color and not well mineralized, ~3 cm long, 2 cm wide, with evident plant fiber inclusions; several fragments of trionychid turtle carapace; one crocodile tooth, 4 cm long; and one conifer branchlet, 5 cm long.