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A FOSSIL TURTLE FROM THE GREEN RIVER FORMATION IN UTAH

Kenneth Larsen¹

In November, 1967, I found a fossil turtle in the talus of a 100 ft cliff whose base is 800 ft above the bottom of the Green River Formation. The cliff is 10.7 mi east of Thistle Junction on U.S. highway 50, Utah County, Utah. The fossil consists of the greater part of the carapace and plastron. The carapace is 240 mm long and 188 mm wide (fig. 1-A). The plastron is 200 mm long and 84 mm wide at the center of the bridge (fig. 1-B). This specimen is now in the Brigham Young University Earth Sciences Museum (No. BYU-R250).

The turtle belongs to the family Emydidae and keys to *Echmatemys ocyrrhoe* following the key of Hay (1908: 287, 298). He listed records for this genus from the Wasatch Formation of New Mexico, and the Bridger and Uintah Formations of Wyoming, however, it most closely resembles the illustrations of *E. stevensoniana* Leidy, 1870.

In order to determine the correct placement of the fossil, its measurements were compared with those of the closely related species *E. lativertebalis*, *E. aegle*, *E. cyane*, *E. ocyrrhoe*, *E. shaughnessiana*, and *E. stevensoniana*. The length and width ratios of the neural plates and vertebral scutes were computed to determine significant differences (Table 1). The degree of relationship between any two forms was taken as the average of the degrees of relationship for each measurement. This relationship ("R") was calculated with

the formula $R = 1 - \frac{|a - b|}{a + b}$ where "a" and "b" are the same mea-

surement in the two forms. The average "R"s between the different forms (Table 2) relate the new fossil more closely with *E. stevensoniana* ($R = .9582$) than with other species. Inasmuch as other pairs are more similar—*E. ocyrrhoe* and *E. aegle* = .9611, and *E. shaughnessiana* and *E. stevensoniana* = .9624 it is reasonable to assume that the recent find is a new species. On this basis and relative to the data in Table 1 some of Hay's species may be synonyms. I suggest three groupings: (1) *E. lativertebalis*; (2) *E. aegle*, *E. cyane*, and *E. ocyrrhoe*; (3) *E. shaughnessiana*, *E. stevensoniana*, and the recently discovered fossil from Utah.

The similarities between the Utah fossil turtle and *E. stevensoniana* support the hypothesis that the base of the Green River in central Utah correlates with the Bridger formation of Wyoming, but the Green River of Wyoming is actually older. However, one spe-

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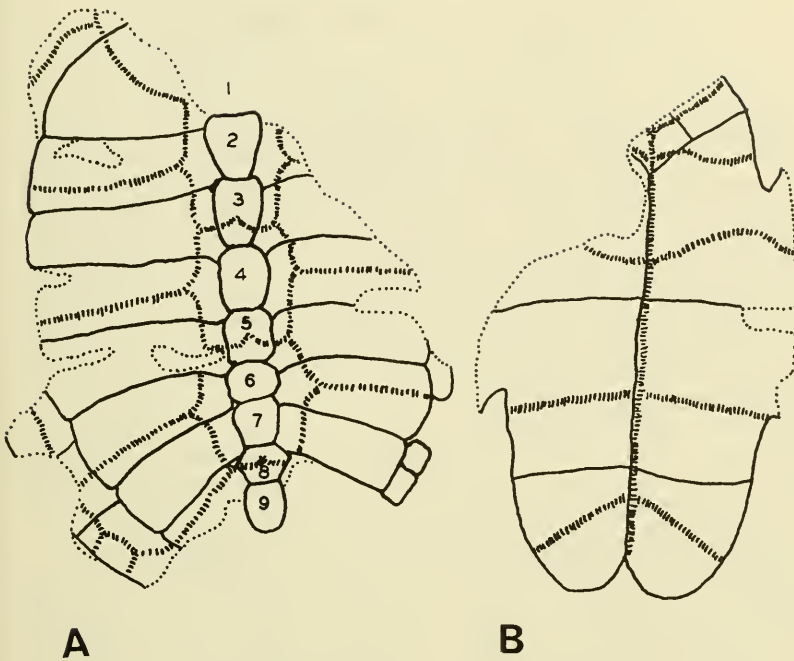


Figure 1: A. Carapace: B. Plastron

cimen is not sufficient and more work with the vertebrate fauna of the Green River Formation in central Utah is necessary before conclusive correlations can be made.

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