A new Late Pleistocene fauna from northeastern New Mexico

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A NEW LATE PLEISTOCENE FAUNA
FROM NORTHEASTERN NEW MEXICO

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INTRODUCTION

In the spring of 1969, Dr. Sidney R. Ash donated to the Sternberg Memorial Museum some fossil molluscs which he and Fred Trauger of the U.S. Geological Survey had collected in northeastern New Mexico (Fig. 1) from a sand deposit of late Pleistocene age. Examination of the material revealed that some bone fragments, including a partial salamander vertebra, had been included in the matrix from which the molluscs were obtained. Discovery of the vertebra prompted the acquisition of more matrix from the site. Approximately forty pounds of additional matrix was provided by Trauger who reported also an earlier discovery of a 24-inch length of proboscidean tusk from the beds. The additional matrix was washed using the method described by Hibbard (1949). Subsequently, the site was visited by Zakrzewski and additional material was collected. The specimens obtained are housed in the collection of the Sternberg Memorial Museum (catalogue numbers 13579 to 13602). These remains comprise a new local fauna, here named the Casados Ranch. We wish to acknowledge Mr. Fred Trauger for his discovery of this site and aid in this study, Drs. Henry van der Schalie and Claude W. Hibbard of the University of Michigan and Dr. Eugene D. Fleharty of Fort Hays Kansas State College for the loan of specimens in their care, and Dr. Jerry R. Choate of Fort Hays Kansas State College for critically reading the manuscript.

FAUNAL LIST

A total of twenty species of molluscs and three vertebrate classes are represented in the fauna. A complete faunal list follows (extinct taxa are denoted by an asterisk):

Class Pelecypoda
  Order Teleodesmacea
    Family Sphacriidac
      Pisidium casertanum (Poli)

Class Gastropoda
  Order Basommatophora
    Family Lymnacidae
      Stagnicola reflexa (Say)
      Fossaria dalli (Baker)
      F. obrussa (Say)
    Family Planorbidac
      Gyraulus circumstriatus (Tryon)
      G. parvus (Say)
      Promenetus exauces form kansasensis (Baker)
  Order Stylommatophora
    Family Pupillidae
      Physa gyrina (Say)
    Family Physidae
      Physa gyrina (Say)
  Order Stylommatophora
    Family Pupillidae
      Pupilla blandi Morse
      P. muscorum (Linnaeus)
      Gastrocopta cristata (Pilsbry & Vanatta)
      G. tappaniana (Adams)
      Vertigo elatior (Sierki)
      V. milium (Gould)
      V. ovata (Say)
    Family Valloniidae
      Vallonia cyclophorella Sterki
      V. gracilicosta Reinhardt
    Family Succineidae
      Succinea sp.
PALEOECOLOGICAL INTERPRETATIONS

The paleoecology of the Casados Ranch I.f. (local fauna) is based on the habitat preferences of extant representatives in the fauna. Habitat preferences for the molluscs are from Taylor (1960), Hibbard and Taylor (1960), and Miller (1966) and follow:

**HABITAT**

**SPECIES**

Hygrophilic: situated under debris, leaf mulch or sticks in shaded areas.

*Vertigo ovata*

*V. milium*

*V. elatior*

*Gastrocopta tappaniana*

*Nesovitrea electrina*

*Gastrocopta cristata*

*Papilla blandi*

*P. muscorum*

*Vallonia cyclophorella*

*Fossaria dalli*

*F. obrussa*

Woodland: found under leaf mulch, among tall grasses, and fallen timber.

*Pisidium casertanum*

*Stagnicola reflexa*

*Physa gyrina*

*Gyraulus circumstriatus*

*Gyraulus parvus*

*Promenetus exacuous form kansasensis*

*Succinea sp.*

Sheltered areas: confinement to a woodland situation is not mandatory as these species can withstand dry conditions.

*Marginal: occurring near water's edge under drift, mud and in shallow pools.*

Shallow quiet water: oxbows, marshes and sloughs that may be subjected to seasonal drying.

*Phalacronia kansasensis*

** age of the fauna**

The presence of molluscs with extant northern or high altitude distribution suggests that the fauna represents a glacial age. Unfortunately, the stratigraphic ranges of the taxa, with one exception, are throughout most of the late Cenozoic. Only *Promenetus exacuous form kansasensis* has not been reported from faunas younger than Illinoian age (Miller, 1966). Because we have found only one specimen of this taxon and because considerable controversy exists with regard to the systematics of the *P. exacuous-kansasensis* complex (see Miller, 1966 for discussion) use of this form as a stratigraphic indicator does not seem justified.

The molluscan elements of the Casados Ranch I.f., however, do show a high correlation with Illinoian local faunas previously reported from the High Plains (Hibbard and Taylor, 1960; Miller, 1966). Simpson's (1962, p. 36) index of faunal resemblance was used to compare the Casados Ranch with five Illinoian High Plains local faunas. Each correlation was greater than 60 percent and the resemblance was 95 percent with the Doby Springs I.f. of Oklahoma (of the forms present in the Casados Ranch I.f. only *Vallonia cyclophorella* is not known from the Doby Springs) and 90 percent with the Butler Spring I.f. from southwestern Kansas. The index of faunal resemblance was less than 50 percent with faunas of Wisconsin age from the southern Great Plains.

The Casados Ranch I.f. has three taxa in common, *Papilla blandi*, *Vallonia gracilicosta*, and *Succinea sp.* (index of resemblance = 20%), with the Dry Cave I.f. of southeastern New Mexico. The latter fauna is Woodfordian (late Wisconsin) and as a radiometric date of 14,470 ± 250 B.P. (Metcalf, 1970). The lack of faunal resemblance, however, may reflect the presence of two distinct biotic provinces, as is the case between these areas today, rather than dissimilarity of age.

The fact that these three taxa, which occur in the late Pleistocene of northeastern New Mexico, are also found in the late Pleistocene of southern Kansas lends support to Metcalf's (1970) suggestion that migration of molluscs was southward along an extension of the piedmont grasslands rather than (or in addition to) downward from nearby mountain ranges.

**CONCLUSIONS**

The character of the Casados Ranch I.f. suggests that a cooler, more humid climate must have existed at the time of deposition than is found in northeastern New Mexico at the present time. Comparison of the Casados Ranch I.f. with five Illinoian local faunas from the High Plains demonstrates a closer resemblance to the latter than to Wisconsin local faunas from the same vicinity. The presence of similar molluscs in late Pleistocene deposits of southern Kansas, northeastern New Mexico, and southeastern New Mexico implies that migration of these taxa might have taken place along an extension of the piedmont grasslands rather than (or in addition to) downward from nearby mountain ranges.
REFERENCES


