

## VERTEBRATE PALEONTOLOGY IN JACKSON HOLE, WYOMING

Dr. John F. Sutton  
Carnegie Museum of Natural History  
Pittsburgh, Pennsylvania

Objectives

Tertiary rocks are extensively exposed in Jackson Hole, Wyoming, covering a span of time from the Paleocene to the Pliocene. The most extensive deposits most commonly seen along Pilgrim Creek are those of the Colter Formation which is Miocene in age. At the base of the Colter Formation along the east fork of Pilgrim Creek is a small exposure of Oligocene rocks, the western-most deposit of this age known in Wyoming. This deposit has been the target of research for the past several seasons.

The primary objectives center around defining more precisely the exact time of deposition and age of the included fossils as well as the correlation of this deposit with others of similar age in Montana and Wyoming. Correlation between the fauna of this deposit and the late Eocene faunas in the Wind River Basin to the east has provided information previously unexpected. Of secondary importance is the examination of small outcrops of Eocene rocks to the east of the Oligocene locality for the presence of vertebrate fossils.

Procedures

Collection of vertebrate fossils in areas such as this require a thorough surface examination of the outcrop for fragments of bone and small teeth. Once the outcrop has been completely prospected for surface debris, the surface of the weathering rock is scraped and washed through screens or burlap bags to remove the silt-sized particles. This process results in a matrix of small grained rocks, sand, and also bone fragments and teeth. The matrix is dried, screened again and returned from the field to be sorted under a microscope for removal of the bone and teeth from the remaining matrix. The resulting fossils are then cleaned and prepared as needed for identification.

Discussion

Complete picking of the resulting matrix has not been completed as of this writing, however, that which has been done has yielded the rodents Ischyromys, Cylindrodon, Yoderimys, Prosciurus, Paradjidaumo as well as several unidentified rodents of the Family Eomyidae. The above mentioned rodents are components of faunas known to be of early Oligocene age such as Pipestone Springs, Montana, and McCarty's Mountain, Montana. Other faunal elements include Peratherium (Marsupicarnivora), Domnina (Insectivore), as

well as Paleolagus (Leporidae). The rabbits are common in the deposits as are the eomyid Paradjidaumo which are both indicative of an early Oligocene age for the deposits. New additions this year include a titanotherium tooth fragment and an artiodactyl premolar, both not yet identified to the level which will make them useful in a stratigraphic sense.

Previous work has turned up several primarily Eocene elements such as a multituberculate (the first reported for the Oligocene), the problematical rodent Giphomys known only from the late Eocene of the Wind River Basin, Wyoming, and Sespe Formation of California.

Geological considerations of the faunal accumulation seem to indicate that the deposits represent a typical stream overbank deposit as well as channel deposits characterized by pockets of channel lag debris containing the majority of the fossil vertebrate remains. Samples of the overbank deposits yield the same fossils as the channel lag indicating the two faunas are probably contemporaneous. The channel lag deposits probably do not represent a scour of an Eocene deposit resulting in a mixed fauna. If the fauna represented is both Eocene redeposition and Oligocene deposition the Eocene fossils should show signs of rounding common in water washed specimens and there also should be differences in the preservation of the two faunas, however breakage is sharp and there is no color difference in preservation between the Oligocene and Eocene faunas.

The Eocene deposits located east of the Oligocene exposures failed to produce any bone fragments, however the sediments are distinctly different than those of the Oligocene. Radiometric dating indicates that these beds are of the late Eocene age (Love, J.D., personal communication), very similar to the late Eocene beds of the Wind River Basin. Future efforts here may yet result in a fauna which is more directly comparable to that of the Wind River Basin.

### Conclusions

The faunas thus far recovered from the Oligocene deposits along the east fork of Pilgrim Creek indicate that the age of the fauna is very early Oligocene, but slightly younger than the latest Eocene Badwater fauna of the Wind River Basin. The late Eocene components of the fauna (multituberculates and some of the rodents) may be indicative of an environmental effect reflecting a relictual fauna surviving in isolated, perhaps high altitude situations in the face of a generally warming environment.

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