

NOTE

Early Hemingfordian (Early Miocene) Squamate Reptiles from the Quarry A Local Fauna, Logan County, Colorado

J. ALAN HOLMAN

Michigan State University Museum

Following earlier studies by W. D. Matthew, B. Brown, and E. D. Cope in Logan County, Colorado, explorations by University of Kansas field parties (see Galbreath 1953 and Wilson 1960) resulted in the discovery of a concentration of fossils in a nodular, tan, silty sandstone designated the Quarry A Local Fauna. This local fauna is important because it is one of the few mammalian faunas that correlate with the early Hemingfordian Running Water Fauna of Nebraska (Tedford et al. 1987). The present paper adds three squamate reptiles to the Quarry A Local Fauna. Numbers are of the Vertebrate Paleontology Collections, Michigan State University Museum (MSUVP).

Genus *Ophisaurus* Daudin, 1803

The legless lizard genus *Ophisaurus* (Squamata: Anguillidae) presently occurs in the New World in eastern and central United States south into eastern Mexico and in the Old World in Morocco, southeastern Europe into Afganistan, southeastern Asia, Borneo, and Sumatra (Estes 1983). It occurs from the Miocene to the Recent in North America and ranged into Saskatchewan, Canada in late Barstovian times (Holman 1970), well northwest of its present range.

Ophisaurus sp. indet.

Material—A single trunk vertebra MSUVP 1476.

Remarks—Vertebral characters that separate *Ophisaurus* from the closely related genus *Anguis* are given in Holman (1998). The Quarry A vertebra represents the earliest record of the genus *Ophisaurus* in the New World. Other Miocene records include the modern species *Ophisaurus ventralis* from the late Barstovian of the Egelhoff Local Fauna of Nebraska (Holman 1973), the extinct species *Ophisaurus canadensis* from the late Barstovian of the Wood Mountain Formation of Saskatchewan, Canada (Holman 1970), and the modern species *Ophisaurus attenuatus* from the Clarendonian of the Wakeeney Local Fauna of Kansas (Holman 1975). Pliocene and Pleistocene records of North American *Ophisaurus* are summarized in Estes (1983). Presently the nearest the genus occurs to Colorado is in central Kansas where the species

Ophisaurus attenuatus occurs (Conant and Collins 1998, 227). The legless glass lizards are good burrowers and usually occur where there is loose or sandy soil. Their diet consists of small invertebrates and vertebrates.

Genus *Charina* Gray, 1849

The Rubber Boa, genus *Charina* (Squamata: Boidae), is composed of a single Miocene species, *Charina probottae*, that occurs from the early Hemingfordian to the early Hemphillian of western North America (Holman 1979; Parmley and Holman 1995) and a single modern species, *Charina bottae* that is restricted to the United States west of the Rocky Mountains and in extreme southwestern Canada (Stebbins 1985).

Charina probottae Brattstrom, 1958

Material—A single posterior trunk vertebra MSUVP 1477.

Remarks—The species was described on the basis of vertebral remains from the middle Miocene of California by Brattstrom (1958) who did not supply a figure of the type material. However, figures of a trunk vertebrae of this species were provided by Holman (1987) and Parmley and Holman (1995). *Charina probottae* is very similar to the living genus *Charina bottae* and was probably directly ancestral to it (Holman 1979). But the range of *Charina probottae* was much more extensive than that of *C. bottae* (Stebbins 1985, map L27) as the fossil species extended east of the Rocky Mountains into the plains of Colorado, South Dakota, Nebraska, and Texas (Holman 1979, Parmley and Holman 1995). Modern *Charina* are rather secretive snakes that are especially fond of young mice and shrews.

Genus *Texasophis* Holman, 1977

Texasophis (Squamata: Colubridae), an extinct, archaic colubrid snake genus, is important in that *Texasophis galbreathi* from the early Oligocene (Orellan) of eastern Colorado represents one of the first appearances of the huge family Colubridae in North America (Holman 1984a). Two other North American species of *Texasophis* are *T. fossilis* (the nominate species) from the late Barstovian of the Gulf Coastal Plain of Texas (Holman 1977) and *T. wilsoni* from the Clarendonian of Kansas (Holman 1984b). Two species of *Texasophis* have been described from Europe, *T. bohemiacus* from the early Miocene of the Czech Republic (Szyndlar 1987) and *T. memi* from the middle Miocene (Astaracien) of France (Rage and Holman 1984).

Texasophis fossilis Holman, 1977

Material—A trunk vertebra MSUVP 1478.

Remarks—The vertebrae of *Texasophis* are distinguished by their small size, elongate vertebral form, moderately vaulted neural arch, low neural spine, and especially by the distinct hemal keel that is separated from strong subcentral ridges by very deep grooves. The above vertebra is assigned to *Texasophis fossilis*, previously reported only from the middle Miocene (Barstovian) of the Gulf Coastal Plain of Texas (Holman 1977).

Although the Colorado specimen represents a younger individual and is from a more anterior position in the vertebral column than the Texas *T. fossilis*, it is similar to *T. fossilis* in all of its trenchant characters (see Holman 1977). This is the only record of this genus and species from the Hemingfordian Land Mammal Age. On the basis of vertebral morphology, it has been suggested that *Texasophis* was a semifossorial or at least a secretive ground form (Holman 1984b).

Summary—Three squamate reptile taxa are added to early Hemingfordian Quarry A Local Fauna of Logan County, Colorado: the legless lizard *Ophisaurus* sp., the extinct rubber boa species *Charina prebottae*, and the extinct colubrid genus and species *Texasophis fossilis*. This is the earliest New World record of *Ophisaurus* and *Ophisaurus* and *Texasophis* are new records for the Hemingfordian Land Mammal Age. Modern species of *Charina* presently live west of Colorado and modern species of *Ophisaurus* presently live east of the state. These three squamates were probably semifossorial or secretive forms and *Ophisaurus* probably indicates a habitat with sandy or loose soils.

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