

Late Pleistocene Vertebrates from a Packrat Midden in the South-Central Sierra Nevada, California

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Since the 1960s detailed reconstructions of Wisconsin age vegetational changes in the arid western United States have been derived from fossil plant remains preserved in packrat (*Neotoma* spp.) middens (Van Devender and Spaulding 1979). Cole (1983) provided the first report of late Pleistocene packrat middens from the western side of the Sierra Nevada. Plant remains along with dung pellets of the packrat are the dominant fossils recovered from *Neotoma* middens. Often these deposits also contain bones, epidermal scales, teeth, and/or dung of other animals from the local (less than 100 m) community. The skeletal elements recovered from the hardened *Neotoma* deposits may be from commensal inhabitants in the middens or transported to the locality by raptorial birds, small mammalian predators such as the ringtail cat (*Bassariscus astutus*), or the packrat. Faunas from packrat middens have greatly increased our understanding of the zoogeography of ice age amphibians and reptiles (Van Devender and Mead 1978).

Here we report on the fauna recovered from a *Neotoma* midden discussed in Cole (1983). Although fossil plants from seven midden units were discussed, only Kings Canyon No. 8a produced identifiable skeletal remains. The fossil *Neotoma* midden was collected from a shelter in lower Kings Canyon, south-central Sierra Nevada, California at 1,280 m elevation. The locality has a western slope aspect and is within the present chaparral-oak (*Quercus*) woodland vegetation zone. The present climate is Mediterranean with 90% of the precipitation falling between November and April. The locality today is inhabited by eagles which bring in a variety of prey from the canyon area. Radiocarbon dates on the water-soluble (amberat: crystalized and cementing *Neotoma* urine) and insoluble (plant remains) fractions produced infinite ages of >45,000 yr B.P. (A-2339) and >30,000 yr B.P. (A-2338) respectively.

The following animals were recovered from the packrat midden: web-toed salamander (*Hydromantes* sp.), southern alligator lizard (*Gerrhonotus* cf. *multicarinatus*), western fence lizard (*Sceloporus* cf. *occidentalis*), garter snake (*Thamnophis* sp.), pocket gopher (*Thomomys* sp.), and bushy-tailed packrat (*Neotoma*

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cf. *cinerea*). The identification of the web-toed salamander was based on the shape of the transverse process and the height and division of the crests on the posterior portion of the neural arch. The keel on the anterior part of the arch is like that in *Hydromantes*, and unlike the other plethodontid salamanders in the area. The vertebral characters match those of both Mount Lyell salamander (*H. platycephalus*) and limestone salamander (*H. brunus*). Both species presently live in the central Sierra Nevada Range. Although neither occurs in the immediate vicinity of the fossil packrat midden, *H. brunus* today occurs at about the same elevation in mixed chaparral-oak woodland along the Merced River to the north of this site. This is the first known fossil of *Hydromantes*.

Associated with the animal remains is a plant macrofossil assemblage dominated by western juniper (*Juniperus occidentalis*), incense cedar (*Calocedrus decurrens*), and ponderosa pine (*Pinus* cf. *ponderosa*) (Cole 1983). These trees are present only during the late Pleistocene and are not in the modern local community. Two less abundant species in the midden, little leaf mountain mahogany (*Cercocarpus intricatus*) and single-needle pinyon pine (*Pinus monophylla*) were present in the middle and early Wisconsin, and although rare, are still in the modern community (Cole 1983). The pollen of the giant sequoia (*Sequoiadendron* sp.) (growing today at higher elevations) also was identified from the midden.

The fossil faunal and floral assemblage indicates a mosaic of the present and more mesic habitats. An alternative is that some of the elements were introduced to the midden locality by a raptor, thereby mixing local and extralocal taxa. In either case, the fossil assemblage contains a significant middle or early Wisconsin record.

References Cited

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