

PASSENGER PIGEON BONES FROM ARCHAEOLOGICAL SITES IN NEW MEXICO

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ABSTRACT: Three bones of the Passenger Pigeon, *Ectopistes migratorius* (Linnaeus), were recovered from archaeological sites in Taos and San Juan Counties, New Mexico. The elements represent at least two individuals and could date as early as A.D. 975. These records are the first Holocene records of *E. migratorius* in New Mexico and increase this species' known distribution in prehistoric western United States.

The extinct Passenger Pigeon, *Ectopistes migratorius* (Linnaeus), was a species whose preferred habitat was the forested areas of eastern North America (Ridgway 1916; Schorger 1955). There are only a few known records of this pigeon from western states; these include Idaho (Burleigh 1972), Nevada (Linsdale 1951), Washington (Jewett et al. 1953), and Wyoming (Ridgway 1916).

Howard (1937) described six elements representing at least two individuals of *Ectopistes migratorius* from the late Pleistocene deposits of Rancho La Brea. These specimens represented the first record of the Passenger Pigeon from California, and the first fossil record of this species from the western United States. A second fossil record from the western United States, also reported by Howard (1971), consisted of one bone from Pleistocene deposits in Dark Canyon Cave, Eddy County, New Mexico. Regarding the date of deposits in this cave, Howard (pers. comm.) states, "The Avifauna from Dark Canyon Cave certainly suggests a Late Pleistocene date of deposition. The three best represented species are *Coragyps occidentalis* (Miller), *Gymnogyys amplus* Miller, and *Caracara prelutosa* (Howard), which are characteristic of the Rancho La Brea avifauna, and have been found at other Late Pleistocene localities in the United States and Mexico."

MATERIAL

The specimens of *Ectopistes migratorius* reported on here were recovered from the archaeological sites of Una Vida in Chaco Canyon, San Juan County, and Picuris Pueblo (San Lorenzo), Taos County (Fig. 1). The specimens are:

Una Vida: right humerus complete, No. C265 (length: 43.0 mm), Room 46, floor. Left ulna with proximal end fragmented, No. C271 (approximate length: 47.3 mm), Room 65.

Picuris Pueblo: left tibiotarsus with the ends fragmented, No. 1192, TA III, Area III Test Pit C, bottom layer.

The Passenger Pigeon bone from Picuris Pueblo is currently housed at Adams State College, Alamosa, Colorado 81102 (in the care of Herbert Dick); the two bones from Una Vida are housed at the Chaco Center, University of New Mexico, P.O. Box 26176, Albuquerque, New Mexico 87125 (in the care of James Judge).

Una Vida is a large classic Chaco town of the Anasazi culture, Rooms 46 and 65 are contemporaneous and were dated by tree rings, architectural style, and ceramic typology to within the period A.D. 950–1030, with a more probable range of A.D. 975–1030 (Gordon Vivian pers. comm.). Picuris Pueblo has been continuously occupied since A.D. 1250. Ceramic evidence indicates the provenience in which the bone was found dates at A.D. 1300–1350 (Herbert Dick pers. comm.).

IDENTIFICATION

Pigeons other than *Ectopistes migratorius* whose remains might occur in archaeological sites in the western United States include the Band-tailed Pigeon, *Columba fasciata* Say, the Red-billed Pigeon, *C. flavivostris* Wagler, and the domestic Rock Dove, *C. livia* Gmelin. The latter species was introduced into North America but may occur intrusively in a prehistoric site and is especially important to consider here as Picuris Pueblo is also a historic site that is still inhabited. In addition, Hargrave identified bones of the Band-tailed Pigeon at Picuris Pueblo.

Comparisons were made with 26 adult skeletons of *Ectopistes migratorius*, 17 of *Columba fasciata*, 20 of *C. livia*, and six of *C. flavivostris*. Five skeletons of the White-crowned Pigeon, *C. leucocephala* Linnaeus, were also included in the comparisons. *E. migratorius* is distinguished from the species of *Columba* by having humerus with stockier shaft; deltoid crest more rounded, ectepicondylar papilla higher on shaft; and external condyle more elongate.

Ulna with a small depression on proximal intercotylar ridge (this depression is absent in *Columba flavivostris* and there is a small projection on the ridge in *C. leucocephala*); and bicipital attachment placed closer to impression of M. brachialis anticus.

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Figure 1. Archaeological specimens of *Ectopistes migratorius* from New Mexico (left to right): left tibiotarsus from Picuris Pueblo (No. 1192), right humerus from Una Vida (No. C265), left ulna from Una Vida (No. C271). (Scale in cm.)

Tibiotarsus with shaft narrower; and fibular crest less prominent.

In addition to the generic characters, the humerus of *Ectopistes migratorius* may be distinguished from those of *Columba livia* and *C. fasciata* by size (Table 1). It is probable that all wing long bones of *E. migratorius* are smaller, and do not equal or exceed the length of the same elements of *C. livia* and *C. fasciata*. The specimens from Una Vida and Picuris agree with characters listed for *E. migratorius*.

DISCUSSION

Locations of Pleistocene and Holocene records of *Ectopistes migratorius* in the western United States are illustrated in Figure 2. *Ectopistes migratorius* was known to occur regularly only as far west as "along the Missouri River to eastern Montana and to western Texas (Frio Canyon, Tom Green County, 1881)" (Ridgway 1916:336). The western records are:

California: Six elements representing at least two individuals from Pleistocene deposits at Rancho La Brea, Los Angeles County (Howard 1937).

Idaho: One skin (USNM No. 22006) collected at Pack River by C.B. Kennerly on 17 June 1860. This record was mistakenly listed by Ridgway (1916) as being from eastern Oregon (Burleigh 1971).

Nevada: One skin (USNM No. 53650) collected in West Humboldt Mountains by Ridgway on 10 September 1867 (Ridgway 1916).

Table 1. Comparison of archaeological humeri of *Ectopistes migratorius* with Recent species of *Columba*. All measurements are in mm.

Species	N	Mean	Range	Standard Deviation	Standard Error
<i>E. migratorius</i>					
Length	25	41.4	38.8–43.6	1.12	0.22
Proximal breadth	18	14.4	12.3–16.5	0.90	0.21
Distal breadth	26	9.5	9.0–10.4	0.37	0.07
<i>C. fasciata</i>					
Length	17	46.2	43.9–48.7	1.56	0.38
Proximal breadth	13	16.3	15.3–17.2	0.56	0.15
Distal breadth	17	11.2	10.6–12.3	0.46	0.11
<i>C. livia</i>					
Length	20	46.0	43.7–50.9	1.74	0.39
Proximal breadth	18	17.9	15.5–19.3	1.18	0.28
Distal breadth	20	10.9	9.8–12.0	0.53	0.12
<i>C. leucocephala</i>					
Length	5	42.7	40.3–44.5	1.83	0.82
Proximal breadth	5	13.1	12.0–14.0	0.65	0.29
Distal breadth	5	10.1	9.4–10.5	0.40	0.18
<i>C. flavirostris</i>					
Length	6	42.8	40.9–43.9	1.12	0.46
Proximal breadth	6	14.8	13.8–15.7	0.56	0.23
Distal breadth	6	10.7	10.0–11.2	0.38	0.16

New Mexico: One bone from Pleistocene deposits at Dark Canyon Cave, Eddy County (Howard 1971); two bones representing one individual from Una Vida, San Juan County, dated at A.D. 975–1030; one bone from Picuris Pueblo, Taos County, dated at A.D. 1300–1350 (the latter two records reported on here).

Utah: One bone from Archaic deposits at the Stansbury II site, Stansbury Island, The Great Salt Lake, Tooele County (see Parmalee this vol.).

Washington: Two specimens shot, but not collected, at Spokane Falls by Lt. A.V. Kautz in 1869; also recorded from Colville and Puget Sound (Jewett et al. 1953).

Wyoming: One skin (USNM No. 13382) collected at Horseshoe Creek, Albany County, by Ridgway on 16 September 1859 (Ridgway 1916).

In addition to the above, Schorger (1955) discusses possible sightings, but no skins, of *Ectopistes migratorius* in western Montana, Idaho (Lemi County), and Wyoming (Fort Laramie). The new records from New Mexico are the earliest Holocene records from this state. While all the above records seem to indicate *E. migratorius* was an accidental visitor to the western United States, Phillips (1968) discusses the probability of locating fossils of accidental species. Concerning the Pleistocene record of *E. migratorius* at Rancho La Brea, Phillips (1968:134) states, "The case for considering *Ectopistes* casual would be stronger if the abundant and similar (in size, and in some degree in habits) *Columba fasciata* were not represented by exactly the same number and scattering of individuals. Further, other notably gregarious birds (shorebirds, terns, blackbirds) are also poorly or not at all represented at Rancho La Brea." Phillips also points out that while *E. migratorius* is absent from the younger tar pits, so are remains of the condor, *Gymnogyps amplus*, the presumed direct ances-

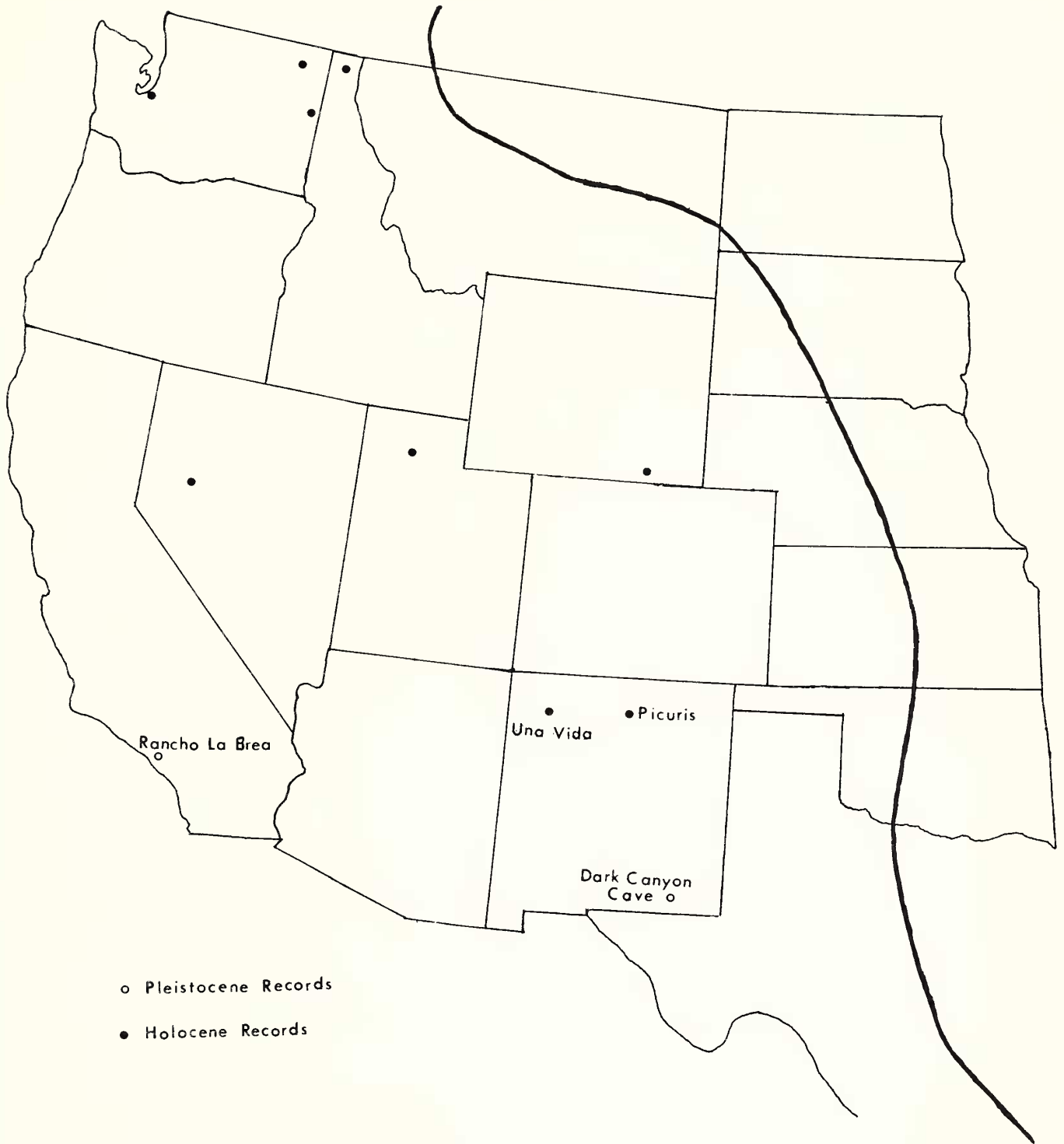


Figure 2. Locations of Pleistocene and Holocene records of *Ectopistes migratorius* in the western United States. Line indicates extent of normal distribution (after Schorger 1955).

tor (Howard 1962) of *G. californianus*, which is still found not far from Rancho La Brea.

Based on this argument, we can conclude that *Ectopistes migratorius* may have been a common species in southern California during the Pleistocene. In fact, the Pleistocene distribution of this species may have extended over much of western North America. The presence of *E. migratorius* in Idaho, Ne-

vada, Washington, and Wyoming as late as the 1850's shows that the species was still able to survive in isolated pockets in the west.

The Pleistocene record of *Ectopistes migratorius* in New Mexico suggests it was a common species of forests and woodlands there as well. Evidence exists that indicates long pluvial periods in New Mexico and Arizona during the Pleistocene

(Wright et al. 1973; Harris 1977; Van Devender et al. 1977; Porter 1978; Van Devender and Spaulding 1979), and these periods may have seen the extensive development of forests and open woodlands. However, it is unlikely that the archaeological records represent relict, post-Pleistocene populations of *E. migratorius* that resulted from climatic changes and their effect on vegetation patterns. It is more likely that Holocene climatic fluctuations, causing minor mesic intervals, allowed *E. migratorius* to re-extend its range into the state. Pollen studies have shown increases in moisture at Picuris Pueblo from A.D. 1335–1425 (Schoenwetter 1970) and at Chaco Canyon beginning about A.D. 1100 (Hall 1977). These periods may represent brief mesic intervals that allowed *E. migratorius* to expand into those areas.

CONCLUSIONS

Two new records of *Ectopistes migratorius* are the earliest Holocene records known from New Mexico. Pleistocene records of this species indicate that it was possibly common in the state at that time. It is questionable, however, that it was able to remain in New Mexico as relict populations following post-Pleistocene climatic changes. Rather, it probably re-extended its range into certain areas because of temporary climatic fluctuations that caused minor mesic intervals. We expect there will be other Pleistocene and archaeological records of *E. migratorius* in the western United States.

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LITERATURE CITED

- BURLEIGH, T.D. 1971. Birds of Idaho. Caxton Printers, Ltd. Cadwell, Idaho. 467 pp.
- HALL, S.A. 1977. Late Quaternary sedimentation and paleoecologic history of Chaco Canyon, New Mexico. Bull. Geol. Soc. Amer. 88:1593–1618.
- HARRIS, A.H. 1977. Wisconsin Age environments in the northern Chihuahuan desert: evidence from the higher vertebrates. Trans. of the Symposium on Biol. Resources of the Chihuahuan Desert Region: 23–52. Sul Ross State University, Alpine, Texas.
- HOWARD, H. 1937. A Pleistocene record of the Passenger Pigeon in California. Condor 39:12–14.
- . 1962. A comparison of prehistoric avian assemblages from individual pits at Rancho La Brea, California. Nat. Hist. Mus. Los Angeles Co., Contrib. Sci. No. 58:1–24.
- . 1971. Quaternary avian remains from Dark Canyon Cave, New Mexico. Condor 73:237–240.
- JEWETT, S.G., W.P. TAYLOR, W.T. SHAW, AND J.W. ALDRICH. 1953. Birds of Washington State. Univ. of Washington Press, Seattle. 767 pp.
- LINSDALE, J.M. 1951. A list of the birds of Nevada. Condor 53:228–249.
- PHILLIPS, A.R. 1968. The instability of the distribution of land birds in the southwest. Pp. 129–162 in Collected Papers in Honor of Lyndon Lane Hargrave (A.H. Schroeder, Ed.). Papers Arch. Soc. New Mexico No. 1. Univ. New Mexico Press, Albuquerque.
- PORTER, L.S.W. 1978. Pleistocene pluvial climates as indicated by present day climatic parameters of *Cryptotis parva* and *Microtus mexicanus*. J. Mammal. 59(2):330–338.
- RIDGWAY, R. 1916. The Birds of North and Middle America. Part VII. Bull. United States Natl. Mus. No. 50:1–543.
- SCHOENWETTER, J. 1970. Archaeological pollen studies of the Colorado Plateau. Amer. Antiquity 35(1):35–48.
- SCHORGER, A.W. 1955. The Passenger Pigeon. Univ. of Wisconsin Press, Madison.
- VAN DEVENDER, T.R., AND W.G. SPAULDING. 1979. Development of Vegetation and Climate in the Southwestern United States. Science 204:701–710.
- VAN DEVENDER, T.R., M. PHILLIPS, III, AND J.I. MEAD. 1977. Late Pleistocene reptiles and small mammals from the lower Grand Canyon of Arizona. Southwestern Naturalist 22(1):49–66.
- WRIGHT, H.E., JR., A.M. BENT, B.S. HANSEN, AND L.J. MAHER, JR. 1973. Present and past vegetation of the Chuska Mountains, northwestern New Mexico. Bull. Geol. Soc. Amer. 84:1155–1180.