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Reviewed work(s):
Published by: Society for American Archaeology
Stable URL: http://www.jstor.org/stable/281969

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PREHISTORIC MACAW BREEDING IN THE
NORTH AMERICAN SOUTHWEST

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The scarlet macaw (Ara macao) was an important prehistoric trade item in northern Mexico and southwestern United States. Paquimé (or Casas Grandes) in northwestern Chihuahua has been assumed to have dominated or even monopolized the macaw trade. This conclusion is a result of the fact that Paquimé is the only site with evidence of substantial macaw-breeding facilities. Two recent archaeological projects in Chihuahua indicate that macaw production was not limited to Casas Grandes. Furthermore, the political relations of production for these ritually and economically important birds differed depending on whether or not the producers were part of the complex polity centered at Casas Grandes.

En tiempos prehispánicos, guacamayas (Ara macao) fueron de mucha importancia en el ritual y en los sistemas económicos del suroeste de los Estados Unidos y del norte de México. Por muchos años el intercambio de guacamayas se ha considerado como monopolio de la comunidad grande de Paquimé (o Casas Grandes), lo cual se encuentra en el noroeste del estado de Chihuahua, México. Esta conclusión es el resultado de que Paquimé fué el único sitio donde habían sido descubiertas facilidades para procrear guacamayas. Ahora, dos proyectos arqueológicos que recientemente se llevaron a cabo en Chihuahua indican que la producción de guacamayas no se limitó a Paquimé. Además, hay indicaciones de que las circunstancias de la producción de estos pájaros fueron variables entre los pueblos situados adentro de la zona de influencia máxima de Paquimé y los que se encuentran afuera de dicha zona.

Macaws and macaw feathers were widely traded prehistorically in the North American Southwest—the United States Southwest and far northern Mexico. Until now just one site, Paquimé (also known as Casas Grandes), in northwestern Chihuahua, Mexico, had provided evidence of extensive macaw breeding (Di Peso 1974; Di Peso et al. 1974). While other sites within the North American Southwest contained macaw remains, there has been insufficient evidence to conclude that these were breeding populations (Hargrave 1970). Archaeologists have had good reasons to suggest that the Paquimé community dominated, if not controlled, the exchange of parrots during the Medio period within the North American Southwest (e.g., Di Peso et al. 1974; Minnis 1989; Neitzel 1989). Two current archaeological projects, one in west-central Chihuahua (Proyecto Arqueológico Chihuahua [PAC]) and one in northwestern Chihuahua (Reconocimiento Regional Paquimé [RRP]), document that macaw breeding was practiced more widely than previously thought and that the political relationships of macaw production seem to have been different between the two project areas.

The multicolored and iridescent macaw feathers were necessary ritual items for many indigenous peoples in the North American Southwest. While live birds were exchanged, feathers were undoubtedly the more ubiquitous item of prehistoric trade. However, feathers are unlikely to be preserved under most archaeological conditions, although exceptions do occur (Hargrave 1979). Ironically, the macaw presumed to have been most widely used, the scarlet macaw (Ara macao), is an inhabitant of the tropical lowlands of Mexico normally found as far north as Veracruz, over 500 km south of Paquimé. In contrast, the locally available military macaw (Ara militaris) and thick-billed parrot (Rhynchopsitta pachyrhyncha) were used infrequently (Di Peso et al. 1974; Hargrave 1970; but see Bullock [1991] and Olsen and Olsen [1974]).
Casas Grandes’ florescence occurred during the Medio period when it was one of the most influential communities in the North American Southwest (e.g., Cordell 1984; Di Peso 1974; Johnson 1989; Phillips 1989). There is continuing debate concerning the dating of the Medio period (e.g., Di Peso 1974; LeBlanc 1980; Lekson 1984; Phillips 1989; Ravesloot et al. 1986; Wilcox and Shenk 1977), and the major chronological remains unpublished (Ravesloot et al. 1986). Consequently, we set the chronological parameters of the Medio period broadly, from A.D. 1150/1250 to 1350/1450.

Casas Grandes was one of the most complex prehistoric polities in the North American Southwest (Cordell 1989; Di Peso 1974). Evidence of sociopolitical complexity includes the presence of wealth accumulation and elites, abundance of monumental structures, sophisticated architecture, specialized economic production, and integration of communities on a regional scale (Di Peso 1974; Minnis 1989; Ravesloot 1988).

MACAW BREEDING AT CASAS GRANDES

The presence of at least 144 scarlet macaw skeletons recovered before 1970 in numerous archaeological sites from southern Utah to northern Mexico attests to some trade in live birds (Hargrave 1970). Many more have been found since Hargrave’s compilation. Yet, the immediate source of the macaws was unknown prior to the excavation of Casas Grandes in the late 1950s by the Joint Casas Grandes Project, since no evidence of macaw breeding had been found. Research at Paquimé revealed multiple lines of evidence, such as a large number of macaw skeletons, the presence of breeding-age birds, macaw feces, nesting cages, and macaw eggshell fragments, indicating extensive macaw breeding (Di Peso 1974). For example, the Joint Casas Grandes Project recovered a total of 322 scarlet macaw skeletons, which was more than twice the number of macaw remains excavated from all sites in the North American Southwest at that time.

Somewhat troubling, however, is the fact that only one sample of macaw egg shells was found by the Joint Casas Grandes Project. While this might suggest very limited macaw breeding, we believe that there is a more likely explanation for the few macaw shell remains. The extent of turkey production (as measured by the number of turkey pens and skeletons excavated) at Paquimé is similar to that of macaws (Minnis 1988), and only four lots of turkey egg shells were recovered. Consequently, the small number of shell fragments of both turkeys and macaws is more likely due to poor preservation and the absence of fine screening during excavation than to the lack of macaw eggs.

The many types of evidence for macaw breeding have been lacking from other sites, and it had been reasonable to assume that Casas Grandes was the source for macaws recovered throughout the North American Southwest. It must be recognized that macaw remains predating the Medio period have been found from sites in the North American Southwest (Hargrave 1970). The source of these birds remains unknown, although there may have been some macaw breeding in the Mimbres region before the Medio period (Darrell Creel, personal communication 1992).

Macaw cages (nesting boxes) have, until now, only been found at Casas Grandes. Nesting boxes were small rectangles of adobe walls, approximately 1.2 m deep by .8 m wide, with an open top, presumably covered by matting (Di Peso et al. 1974). An interior perch was present, and disintegrated macaw feces have been found in the boxes. The front wall had an embedded donut-shaped stone (macaw nesting box stone, henceforth simply called cage stone) with a pestle-like plug, which offered additional access to the cage for feeding and tending. Cage stones from Paquimé averaged approximately 16,000 g with an overall diameter of 35 cm and an entrance-hole diameter averaging 17 cm (Di Peso et al. 1974).

Macaw breeding was widely practiced within Casas Grandes. Intact macaw-nesting boxes were uncovered in at least six areas of the site, having between 2 and 20 pens per location with an average of 14 (Di Peso et al. 1974). The recovery of 125 cage stones from throughout the excavation suggests that nesting boxes were present elsewhere within the community but had disintegrated when surrounding adobe buildings decayed and collapsed (Di Peso et al. 1974). Since only a portion of the site was excavated, there is a high probability that the remains of even more macaw breeding areas may yet remain undetected.
Two recent archaeological research projects in Chihuahua recovered cage stones, clearly documenting macaw production at sites other than Paquimé. The first project, RRP, recorded a total of 87 archaeological sites in northwestern Chihuahua around Casas Grandes, from the Carretas Basin to the Santa Maria Valley (Figure 1). This was the first archaeological project in the area since the excavation of Casas Grandes from 1959 to 1961. The presence of a single cage-stone artifact was noted at each of five sites other than Casas Grandes. The second project, PAC, examined around 120 sites in west-central Chihuahua south of Casas Grandes in the area between Laguna Bustillos and the Babicora Basin. Three Medio period sites in this region produced six cage-stone artifacts; four cage-stone fragments came from a single site (three were surface finds, and one was excavated), and one was found at each of two other sites (Figure 2).

Numerous archaeologists and adventurers conducted limited reconnaissance and test excavation prior to the Joint Casas Grandes Project (e.g., Blackiston 1905, 1906a, 1906b, 1908, 1909; Brand 1943; Carey 1931; Lister 1946, 1958; Lumholtz 1902; Noguera 1926; Robles 1929; Sayles 1936), yet there are only three possible previous examples of cage stones. Sayles (1936:Plate XXII) illustrated an extremely well-made circular ground-stone artifact with a hole in the center recovered from Chihuahua D:8:1 (Gila Pueblo designation system). The dimensions of the hole are consistent with cage-stone artifacts reported for Paquimé, and extremely well-made cage stones similar to

Figure 1. Location of the two project areas in Chihuahua. Reconocimiento Regional Paquimé (RRP) surveyed northwestern Chihuahua around the major site of Paquimé. Proyecto Arqueológico Chihuahua (PAC) worked to the south in west-central Chihuahua.
Sayles's example were recovered at Paquimé. We cannot be certain of the exact location of Sayles's site, D:8:1. The best-known site within the D:8 area is the Ramos site. Furthermore, the current owner's family has owned the Ramos site property for many decades, and he informed us that cage stones had been taken from the Ramos site (J. Queveda, personal communication 1989). Therefore, it is quite likely that D:8:1 is the Ramos site.

Two possible cage stones (which we have yet to examine) are reported in Lumholtz's collection curated at the American Museum of Natural History (Martha Graham, personal communication 1992). These two specimens (catalog numbers 30/4030 and 30/4031) are reported to have been collected from Cave Valley, a portion of the Piedras Verdes River valley in the Sierra Madre mountains west of Paquimé famous for two sites, Swallow Cave (Lister 1958) and Olla Cave (Di Peso 1974).

Most of the specimens discussed here were found on the surface of looted sites, since sites in both project areas have been badly vandalized. It is possible that extensive site disturbance has affected the distribution of cage stones in various ways. People illegally searching for artifacts in these sites have destroyed the original context, and some cage stones may have been removed by looters. However, heavy ground-stone artifacts, such as cage stones, are more likely to be left at sites than are lighter, more valuable, and more attractive artifacts. Pothunting can also result in a greater variety of artifact types being present on the surface than is often the case with intact sites, because subsurface artifacts have a greater chance of being exposed due to land-disturbing activities. Alternatively, it is possible that other surveyed sites had cage stones that had been removed. While the effects of looting on the distribution of artifacts such as cage stones is not clear, we suspect that looting has increased the visibility of these artifacts.

For the region immediately around Casas Grandes surveyed by RRP, the presence of cage stones is not associated with any class of site size; they were found at sites of all size ranges, from small sites representing a pueblo of several rooms to sites with hundreds of rooms and public ritual architecture suggestive of regional centers. Site size in this area was measured by the areal extent of the mound resulting from the disintegration of the adobe rooms, a reasonably close measure of the amount of enclosed architectural space at the site. The size range for the entire survey sample of 87 sites is 150 m²–13,000 m². Sites with cage stones include small (289 m², 620 m²), medium
(2,900 m²; 6,016 m²), and large (10,000 m²) sites. Our estimate for the Ramos site is 5,200 m², a medium-sized site.

The geographic distribution of macaw production as determined by the assemblage of cage stones within northwestern Chihuahua is puzzling. The one consistent pattern is that sites with cage stones are located within a short distance of Paquimé, approximately 30 km. No cage stones were found by RRP at sites farther from Casas Grandes in northwestern Chihuahua, although many sites were more than 30 km from Paquimé. Additionally, the Ramos site is approximately 27 km from Casas Grandes. Lumpholtz’s possible cage stones from Cave Valley may be exceptions, being found in an area approximately 45 km from Paquimé. We do not want to place too much weight on these examples, because we have not examined the artifacts from Cave Valley, and this location is outside the RRP study area. The pattern of limited cage-stone distribution might be expected with strong centralized control of macaw production, which was most likely one of the most important sources of Paquimé’s wealth.

However, cage stones are also found in west-central Chihuahua, an area where the primary regional center of Casas Grandes seems not to have exerted strong control. Here, the sites presently known to have cage stones are small-to-medium-sized sites located at basin margins or in valleys above the main valleys. Due to differences in topography, vegetation, and history of land use, it is not now possible to develop site-size measures comparable to the those used in northwestern Chihuahua.

**DISCUSSION AND SUMMARY**

Much work is needed to form a clearer understanding of the economic and political structure of the Paquimé-dominated polity and its relationships with adjacent populations, and of how macaw production was controlled and related to other social, political, and economic characteristics of these extinct cultures. Nonetheless, the distribution of cage stones at sites so close to a large and regionally dominating site is most suggestive of tight production control of this commodity within Casas Grandes’ sphere of strongest influence. West-central Chihuahua, in contrast, would appear to be an outlying and presumably more autonomous region outside the Paquimé system. Here macaw production may have been practiced more independently. Multiple lines of independent evidence indicate that sites within approximately 30 km of Casas Grandes may have had stronger ties or a special relationship with Paquimé and may have constituted the “nucleus” or “core” of the Paquimé polity. Ball courts, the locations of public rituals that integrated communities and which presumably were similar to those recorded in Mesoamerica to the south (Scarborough and Wilcox 1991), are far more common within this zone and seem to have been less frequent farther from Paquimé (Minnis and Whalen 1989, 1990; see also Naylor [1985] for an exploratory study of ball courts in northwestern Chihuahua). Similarly, a series of morphologically distinct circular alignments of stones up to 6 m² in diameter, some of which are located next to ball courts and may be associated with rituals, is found only in and near sites within 30 km of Casas Grandes. The large sites within this area also have much greater architectural diversity and seem to have a different occupational history from the large sites further from Paquimé (Minnis and Whalen 1989, 1990).

Importantly, we do not yet have evidence for as many specialized architectural features in west-central Chihuahua, suggesting a regional social organization different from that around Paquimé. For example, no ball courts or stone circles have been identified from west-central Chihuahua. While more research is needed to fully understand the regional organization of prehistoric Chihuahua, the archaeological data clearly demonstrate important differences between west-central and northwestern Chihuahua and clarify the fact that the technology necessary for macaw production was not restricted just to the primate center of Casas Grandes itself.

No cage stones are recorded from sites contemporaneous with Casas Grandes in the North American Southwest despite the significant amount of archaeological research conducted in these areas. Especially interesting is the absence of cage stones from Medio period sites in other regions within the International Four Corners (Chihuahua, Sonora, Arizona, and New Mexico). A reasonable explanation for the distribution of cage stones restricted to the small area of northwestern and west-
central Chihuahua invites further research. We simply do not know why macaw breeding seems to have been absent from most of the North American Southwest.

Macaw production is not only more widespread than has been known previously, but the social relations of production of these ritually and economically important birds differed depending on whether or not the producers were part of the complex polity centered at Paquimé.

Acknowledgments. RRP was supported by the National Science Foundation (BNS 88-20597) and a University of Oklahoma Junior Faculty Summer Fellowship. PAC is supported by the Social Sciences and Humanities Research Council of Canada (Grant 410-90-1070) following a University of Calgary Pilot Grant and a Lakehead University Senate Research Grant. Both projects are conducted under permits from the Instituto Nacional de Antropología e Historia, and its support is gratefully acknowledged. We thank Sylvia Abonyi, Darrell Creel, Paul Fish, Patricia Gilman, Martha Graham, Warren Hill, David Phillips, Jr., Randall McGuire, and David Wilcox for their assistance with this manuscript.

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Received December 12, 1991; accepted February 20, 1992