

Appendix 3. Depopulation dates, citations, and discussion

The identification of the dates and duration of SW/NW depopulation must be built from multiple references as no single source of these dates and data exist.

Table A3.1. Table 1. Depopulation dates, notes, and citations.

Archaeological Culture Areas	Depopulation (start and end dates)	Duration, years
Fremont	1150 to 1300 ¹	150
Ancestral Puebloan	1240 to 1285 ²	45
Mogollon	1325 to 1450 ³	125
Hohokam	1375 to 1450 ⁴	75
Sinagua and Central AZ	1375 to 1425 ⁵	50
Trincheras	? to 1450 ⁶	-
Casas Grandes	? to 1450 ⁷	-
Rio Sonora	No evidence of population decline ⁸	
Patayan	No evidence of population decline ⁹	

1. **Fremont:** We selected the 1150 CE start date based on Allison’s (2019:286, Fig. 13.3) identification of a significant drop in radiocarbon dates associated with the use of maize agriculture around this time and a similar drop (but not as substantial) in overall radiocarbon dates (mostly charcoal) also around this time (Allison 2010:137-139). Depopulation in the Range Creek drainage has been dated to ca. 1200 (Boomgarden et al. 2014), providing additional support for a longer rather than shorter depopulation period. Uncertainty: Moderate due to the reliance on radiocarbon samples. The end date of ca. 1300 is more secure than the start date, which might have begun as early as 1125 based on Allison’s (2019) maize radiocarbon data.

2. **Ancestral Puebloan:** Varien (2010:27), relying on tree-ring cutting dates, determined that population decline in the Northern San Juan region “began sometime after AD 1225 and continued until about AD 1285.” Glowacki (2015:56) determined that the people across the Northern San Juan emigrated with increasing frequency after 1240, although there was subregional variation in the pace and timing. We selected 1240 as the start date, following Hegmon et al. (2018) and Clark et al. (2019). Limited migration from the Mesa Verde core area occurred during the twelfth and early thirteenth centuries (Clark et al. 2019:275). Depopulation

of the northern portion of the Ancestral Puebloan culture area is coincident with population increases in other locations within the culture area, such as the Northern Rio Grande River region of New Mexico, suggesting migration to this sub-region as well as elsewhere (Clark et al. 2019, Ortman 2012). Uncertainty: Low.

3. **Mogollon:** The Mogollon culture area was a destination of migrants moving out of the northern SW during the late 1200s. The influx of migrants, the large geographical area, and variably occurring settlement-scale aggregations and depopulations thereafter create challenges for identifying the strong patterns and the duration of depopulation in this culture area. Our start date for depopulation is based on detailed investigations of multiple sites in the Mogollon Highlands of west central New Mexico. Oakes and Zamora (1999:46) determined that this heavily populated area within the Mogollon culture area was depopulated by 1325-1350. Our inferred population growth rates computed from room counts available through the Coalescent Communities Database (Hill et al. 2012) identified culture area declines in growth rates began during the 1350 to 1399 interval and declines persisted through the 1400 to 1449 interval. One of the largest sites, “Grasshopper” (east-central Arizona) was depopulated about 1400. Our end date for depopulation is 1450 based on mostly consistent but reduced room counts from the 1450 to 1499 through 1550 to 1599 intervals and a prevailing archaeological consensus that the pattern had ended by 1450. The settlement reorganization of the Mimbres area within the Mogollon culture area during the mid-1100s is outside of the period of declining regional-scale population levels that are the focus of this study. Uncertainty: Moderate.

4. **Hohokam:** Hill and colleagues (2010) conducted the most extensive study of settlement depopulation in the Hohokam core area (modern day Phoenix, Arizona). They found, “During the early fourteenth century, the largest sites controlled the intakes of the largest canal systems in the valley. By the late fourteenth century, all large sites in the central area had fallen into decline” (Hill et al. 2010:46). Also based on Hill and colleagues (2010:632, Table 5a), population estimates for 15 Classic period sites in the core area (modern day Phoenix, Arizona) peak during the 1300 to 1349 interval and decline (slightly) during the 1350 to 1399 interval. Our analysis of inferred population growth rates for the entire culture area, computed from room counts available through the Coalescent Communities Database (Hill et al. 2012), identified positive growth rates during the 1250 to 1299 and 1300 to 1349 intervals. Negative growth rates emerged sometime during the 1350 to 1399 interval. Thus, we estimate 1375 as the start of the depopulation and rely on the archaeological consensus of 1450 for the end of the depopulation, based on a lack of archaeologically visible settlement beyond this period. People persisted in the Hohokam culture area beyond the depopulation with descendants continuing to live in their ancestral homelands today (Loendorf and Lewis 2017). Uncertainty: Moderate. The lack of tree species in the culture area amenable to tree-ring dating prevents more precise dating.

5. **Sinagua and Central Arizona:** The approximate beginning of the depopulation of the Sinagua and Central Arizona area is 1375 based on declining room numbers during the 1350 to 1399 period documented in the Coalescent Communities Database (Hill et al. 2012). Pilles’ (2015:109) estimates fairly stable total population levels during the early and late Sinagua Tuzigoot phases (1300 to 1400). This suggests relatively rapid population decline in the Sinagua area (Verde Valley) of the culture area polygon. Pilles (2015) determined a ca. 1400 depopulation date for Sinagua. The Central Arizona Tradition portion of the culture area appears to have persisted into the early 1400s with very low population levels (Hill et al. 2012, Wilcox,

Robertson, and Wood 2001), thus we estimate that by 1425 the depopulation was nearly complete. Uncertainty: Moderate for start date; Moderate for end date. The lack of tree species in the culture area amenable to tree-ring dating prevents more precise dating.

6. **Trincheras:** The depopulation of the major town in the culture area, Cerro de Trincheras, has been assigned a 1450 date by McGuire and Villalpando (2016:19) and Villalpando and McGuire (2017:388). The timing of the initiation of depopulation is not known. Based on a lack of evidence for a prolonged depopulation, we expect it was relatively quick, perhaps a single human generation. Uncertainty: High for start date; Low for end date.

7. **Casas Grandes:** The 1450 or shortly thereafter end date is reasonably secure (Dean and Ravesloot 1993, Phillips and Carrera 2016:54, Whalen et al. 2010:546). The start of depopulation is less clear. Phillips and Carrera (2016:54) found a rapid fall-off in radio-carbon dates about 1450 in dated sites in the Casas Grandes culture area, suggesting “the entire culture ended when Paquime did.” Di Peso (1974), based on archaeological excavations that revealed the presence of unburied bodies in a portion of the site, interpreted a violent attack at the end of Paquime, though this interpretation is not widely accepted (Pailes 2017). Thus, the limited evidence suggests a relatively short depopulation period. Uncertainty: High for start date; Low for end date.

8. **Rio Sonora:** Based on the best available evidence, populations persisted in the Rio Sonora and Serrana culture areas without evidence of significant population loss (Matthew Pailes, personal communication 1 February 2020; see also Pailes 2017). Thus, this culture area is a case of persistence and demographic stability.

9. **Patayan:** According to Rogers (1945) and Aaron Wright (2020, personal communication May 2020) and the best available data, the Patayan culture area did not experience depopulation similar to other culture areas within the SW/NW. Uncertainty: Moderate.

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