Dynamics of the Thirteenth Century Depopulation of the Northern San Juan: The View from Cedar Mesa

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Was there a West to East population shift in the 1200s?

- Did SE Utah population decline while SW Colorado population continued to grow? (Lipe 1995, 2002; Glowacki 2006, 2010; Varien et al. 1996)

- Did climatic change and/or socio-cultural processes contribute?

- Following Glowacki (2006) we focus on the LSJ and WMV regions of SE Utah and the MM and MVP regions of SW Colorado. Cedar Mesa and Natural Bridges are in the eastern part of the LSJ. The Totah region is not considered at this time.
The most populous part of the Mesa Verde area was the McElmo-Monument region. Population estimates exist for the Village Ecodynamics Project study area (1800 km$^2$) in SW Colorado (Kohler et al. 2007; Varien et al. 2007).
What does the tree-ring record show?
(Cutting and near-cutting dates, standardized so no site contributes more than 20 dates)
Tree ring dates indicate some building continued after 1260 in all three areas

- In the McElmo-Monument area, the majority of post-1260 T-R dates are from the large Sand Canyon and Goodman Point villages, but other large villages date to this time as well

- On the Mesa Verde proper, a number of cliff dwellings were built post-1260

- What was going on in SE Utah?

Sand Canyon Pueblo

Rick Ahlstrom coring at Moon House, Cedar Mesa

Spruce Tree House, Mesa Verde
Breaking down the SE Utah tree-ring dates:

- West-Central Mesa Verde has few dates, but one in the early 1270s

- Most post-1260 dates in CM-NB come from Moon House complex on CM

- Ceramic seriations show Moon House is Latest PIII Cedar Mesa site (Curewitz and Matson)
Most Cedar Mesa-Natural Bridges canyon sites from the 1200s have a defensive aspect.

NB-CM dates are mostly from cliff Dwellings.

Main site in the Moon House complex

Sites in Grand Gulch
### Stem and Leaf Plots of Tree-Ring Dates

#### Natural Bridges Sites

- **1180s**: 118 359
- **1190s**: 119 011367778
- **1200s**: 120 000334444577899999
- **1210s**: 121 011222333444455555666
- **1220s**: 122 0122223333466677777889999
- **1230s**: 123 0000001122222222223334444555555666
- **1240s**: 124 01112222233333444444455555555666
- **1250s**: 125 000000000000233347
- **1260s**: Cutting & near-cutting dates are underlined

#### Moon House Complex

- **1180s**: 118 5
- **1190s**: 119 9
- **1200s**: 120 4677
- **1210s**: 121 1456689
- **1220s**: 122 668999
- **1230s**: 123 245566789
- **1240s**: 124 02222333333334444458999
- **1250s**: 125 00001111122222333445666667777777777889999
- **1260s**: 126 55

#### Cedar Mesa Sites w/out Moon House

- **1180s**: 118 0134588899
- **1190s**: 119 555556689
- **1200s**: 120 2333333455566677788
- **1210s**: 121 0111344445557778999
- **1220s**: 122 233344556889
- **1230s**: 123 2334445555788888
- **1240s**: 124 223334455777899
- **1250s**: 125 1122344556677889999
- **1260s**: 126 55

#### Defensive wall at Moon House Complex

- Cedar Mesa Sites w/out Moon House
- Natural Bridges Sites
- Moon House Complex
- Defensive wall at Moon House Complex
Another approach: compiling chronological and population data from “community centers”  (Glowacki 2006, 2010)

In the 1200s, population increasingly aggregated in large villages everywhere but in the lightly-populated Lower San Juan (which includes the Cedar Mesa-Natural Bridges area)

Community centers shown are from 1150-1300
Subregional population trends based on Community center room counts (Glowacki 2006)

Community centers are defined as having 50 or more structures, or 9 or more households, and/or public architecture (plaza, great kiva, multi-wall building)

The Cedar Mesa-Natural Bridges area had few community centers; population was much lower than in the other areas
Mesa Verde region population dynamics were complex, AD 1200-1280

- In the early to middle 1200s, population boomed in McElmo-Monument and Mesa Verde Proper. Peak was 1225-1260, but still sizable populations in 1270s.

- The Natural Bridges area peaked in the 1230s-40s; Cedar Mesa in the 1250s, with Moon House an isolated outpost in the 1260s.

- The W. Cent. MV area probably peaked by 1240 and then went into a long decline.

- In the mid-1200s, there were movements out of SE Utah to the McElmo-Monument area, or possibly to regions south of the San Juan.

- The populous McElmo-Monument area may have begun to decline by about 1260, but aggregation into large villages continued into the 1270s.

- McElmo-Monument tree-ring dates and population estimates for the 1260s and 1270s predominantly reflect occupation of these large late villages.

- On the Mesa Verde, cliff dwelling construction continued into the late 1270s.

- The entire Mesa Verde area appears completely depopulated by the early 1280s.
Do the population trends noted here correlate with broad regional patterns of drought? (SW Colorado has generally better soils and precipitation, so would be a better location for farmers in case of drought)

Benson and Berry (2009) argue that in the northern SW overall, the 1200s had relatively good precipitation until the 1270s.
In the Mesa Verde region, the precipitation record does not seem to correlate with population shifts until the onset of major drought in the 1270s.
What about temperature (length of growing season)?

The pollen record from SW Colorado indicates cooling during the 1200s.

The tree-ring record for the Cent. MV area (MM and MVP) indicates the early 1200s were quite cool but the later 1200s not so much.

Not clear how these trends would have differentially affected SE Utah populations.

Red line at 1260
What about socio-cultural factors?

- Warfare widespread in the 1200s, promoting aggregation into larger settlements
- Experiments with new forms of community organization in McElmo-Mon in mid-1200s: Multi-wall structures, site-enclosing walls, plazas, tower complexes, bilateral village layout, storage roomblocks
- These features less common or absent at community centers in W. Cent. Mesa Verde area of SE Utah; no large comm. centers in CM-NB
- “Safety in numbers” plus better agricultural potential in east, plus new forms of socio-religious organization, may have exerted west-to-east “pull”
Distribution of multi-wall structures in the AD 1200s

Half-circles represent D-shaped multi-wall structures; circles represent circular ones (Glowacki 2006-2010)

Also, in the middle and late 1200s, community centers declined in size in West-Cent. Mesa Verde, but continued to grow in the McElmo-Monument area.
Some concluding thoughts

Socio-cultural processes probably contributed to population concentration in the McElmo-Monument and Mesa Verde areas even as regional population declined:

- Widespread warfare in the 1200s contributed to aggregation and peer-polity competition, including efforts by political leaders to attract followers to enhance community security and power.

- The new forms of socio-religious organization that developed in the McElmo-Monument area may also have helped attract new community members.

- These processes were interactive and perhaps mutually amplifying.

Climatic problems do not seem to have been a major driver of population shifts until the mid-1270s, when a severe drought struck, affecting remaining population.

- However, deeper soils and higher precipitation in SW Colorado would have favored aggregation there, even in the absence of severe drought.

The most problematic parts of this reconstruction are the chronological and demographic estimates for the West Central Mesa Verde area. More data are needed from that area.
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