# A Natural and Unnatural History of Faunal Change in Southwestern New Mexico since AD 500







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# **Project goals**

- Compile faunal datasets (published and unpublished) and analyze key existing collections from as many archaeological sites as possible (currently, 96 assemblages comprising nearly 200 taxa of mollusks, fishes, amphibians, reptiles, birds and mammals from 45 sites)
- Focus on Mimbres and Upper Gila San Francisco drainage areas in southwest New Mexico
- Examine changes in species abundance and distribution over time using archaeological and historic records
- Enhance interdisciplinary communication for archaeology and biology
- Publish results in a variety of venues

### **Aquatic species**

Fish are uncommon in most archaeological assemblages, even in finescreened contexts. However, a few sites (Fornholt, 3-Up, and WS Ranch in the San Francisco drainage, Saige-McFarland and Woodrow Ruin in the Cliff Valley, Janss and Montoya in the Mimbres Valley) have larger numbers, sometimes from just a few contexts.

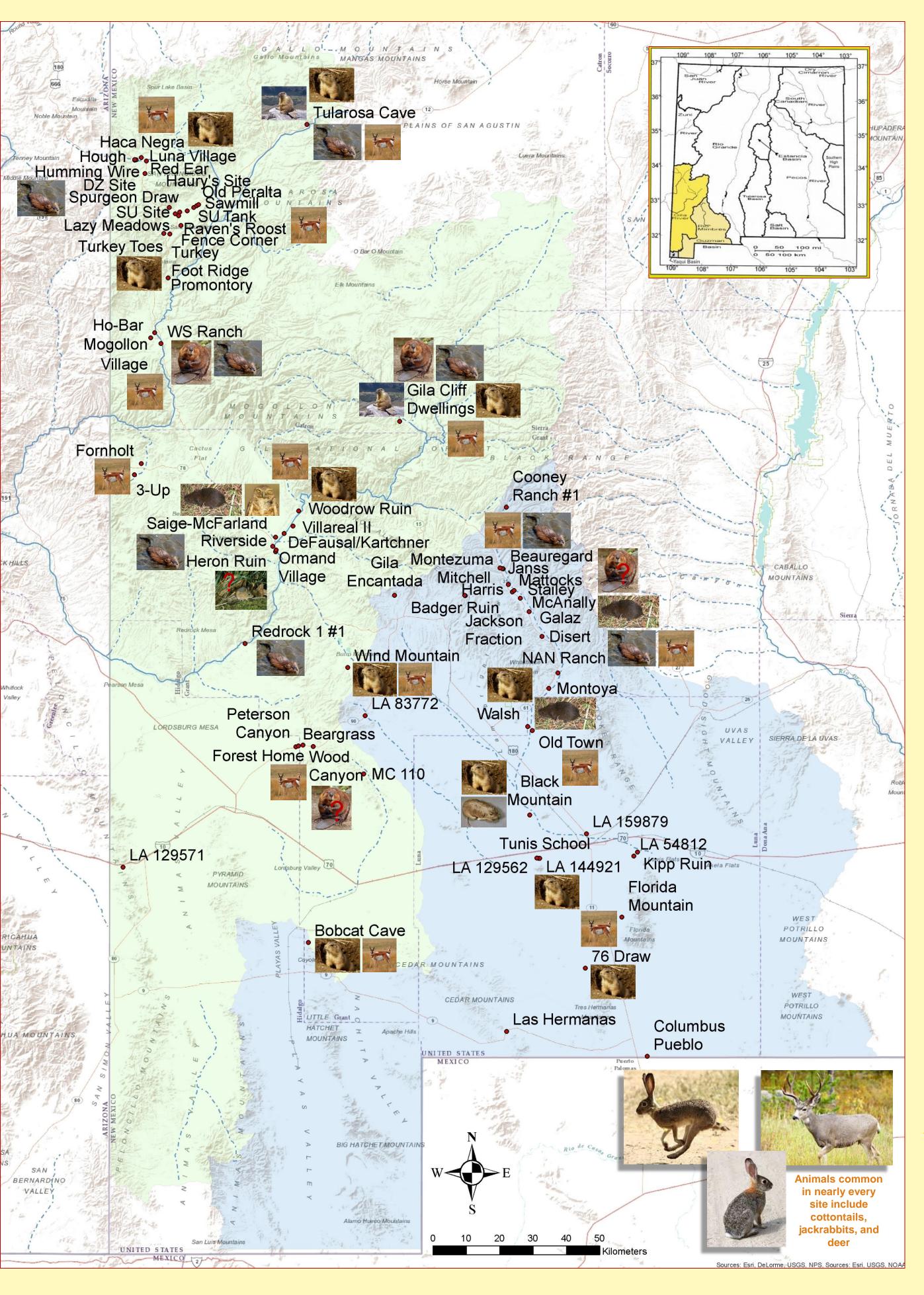
Archaeological fish remains are nearly always identified to the family level at best. Where possible, more specific identifications are highly desirable for understanding the distribution of native fishes. More than half of the region's native fish species are threatened or endangered today.



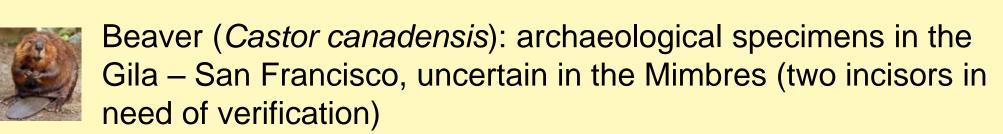
Catfish (Ictaluridae): listed in some archaeological reports, but the only native Southwestern species known historically (Ictalurus pricei) occurs only in the Rio Yaqui and Rio Casas Grandes drainages. Unclear identification criteria in published archaeological reports make assessing potential changes in distribution difficult.

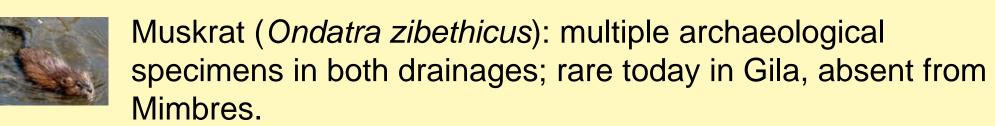


California floater (Anodonta californiensis): numerous archaeological worked and unworked specimens from the Gila and Mimbres valleys. This shell is unworkable after 48 hours, so transport is unlikely. May now be extirpated from its former range in Arizona, New Mexico and northern Mexico.



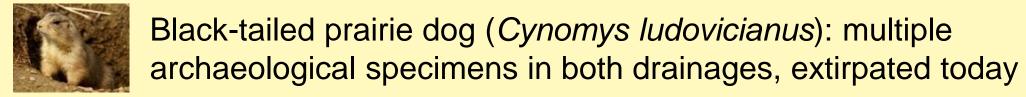
# Riparian species





Meadow voles (Microtus sp.): archaeological specimens in the upper Mimbres and Gila/Cliff Valley

#### **Grassland species**



Burrowing owl (Athene cunicularia): few archaeological specimens in the Cliff Valley, rare to absent today due to the destruction of their grassland habitat and the loss of the prairie dog colonies they associate with



Pronghorn (Antilocapra americana): multiple archaeological specimens in the grasslands of the region. Populations seriously depleted by the 1900s with local extinctions in the areas north of the Big Burro Mountains

### Changes in species distributions



Meadow jumping mouse (Zapus hudsonius): possible archaeological specimens (yet to be verified) in Cliff Valley. Closest extant populations of this riparian-dependent species are in the White Mountains of Arizona, the Blue River just inside New Mexico, and southward to the middle Rio Grande.

Yellow-faced pocket gopher (Cratogeomys castanops): three specimens from Black Mountain site, current range is east of

#### **Literature Cited**

Wooton, E.O. 1908. The range problem in New Mexico. NM Agriculture Experimental Station, Bulletin No. 66

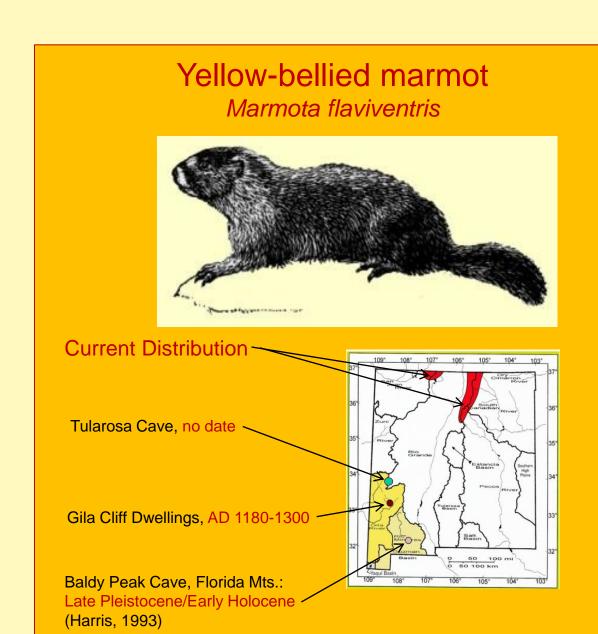
#### **Initial results**

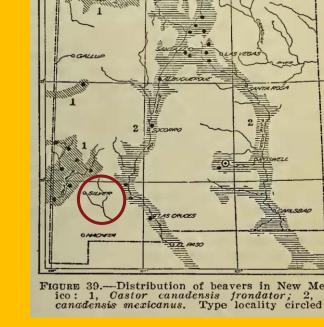
#### Naturogenic change

Holocene epoch warming and increasing aridification from south to north led to contraction of marmot range and apparently of several species of voles (Microtus sp.) as well. In contrast, the ranges of peccary and coati, for example, have recently expanded northward into the region.

#### Anthropogenic change

Several obligate aquatic, riparian, and grassland species found in archaeological assemblages are rare or absent today (e.g., mud turtle, muskrat, prairie dog), as the increased scale of human impacts has disproportionately affected these





#### Beaver range: a Mimbres conundrum

Two incisors reported as beaver have been recorded from the closed basin of the Mimbres River (Mattocks site), the only record of this species outside the watersheds of the Gila/San Francisco and Rio Grande. Were beavers once present in the Mimbres (there are no historical records-see figure from Bailey, 1931, at left), or were the incisors brought there from the Gila? Compounding the issue, recently beavers have been found active in stretches of the Mimbres. These are undoubtedly the result of unauthorized translocations.

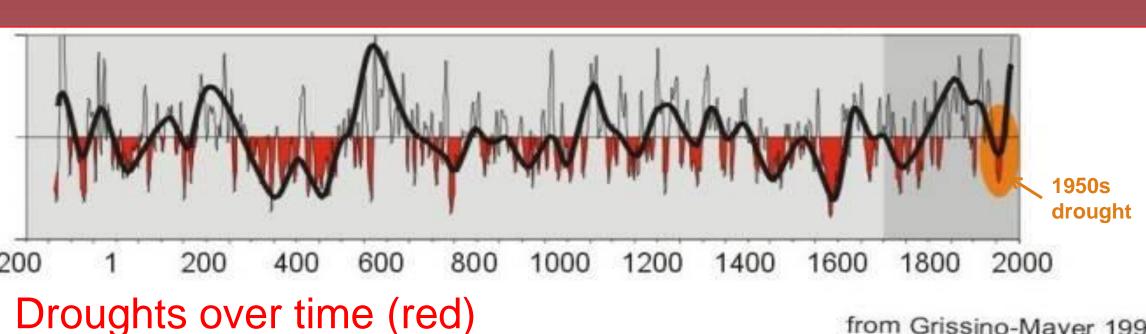
# Improving reporting in zooarchaeology

Zooarchaeologists should be more aware of when taxa occur out of their historic and modern ranges, and discuss this in reports. The use of fine screens to capture rodent teeth and other small but highly informative remains should become a more standard practice (Scarbrough and Harris, 1985).

When unusual or out-of-range taxa are found, we must discuss how they were identified and distinguished from similar taxa, with reference to anatomical markers or published discussions.

#### Acknowledgments

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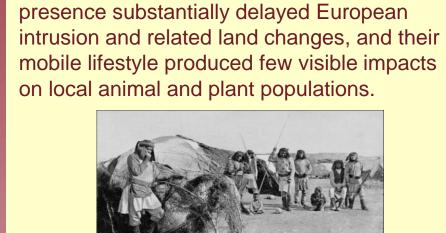


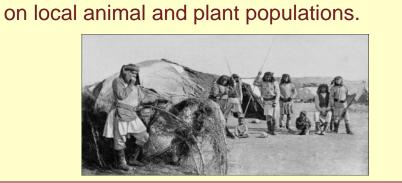
940-1040: long-term droughts **1210-1305:** severe droughts **1917-1922:** severe droughts **1949-1956:** severe droughts

logical and other evidence is The prehispanic status of wapiti (elk) in the region is historic times. unclear. Based on the archeological record, apparently at no time were they numerous and by the turn of the last century, all were gone

revealing the natural occurrence of modern bison far "West of the Pecos" up to prehistoric/early

A growing body of archaeo-



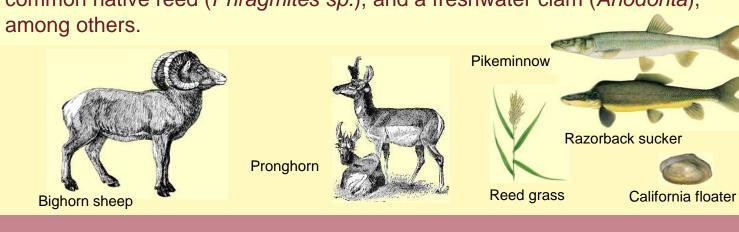


Apachean presence in the region by the

late 1400s or early 1500s had profound

consequences for land health. Their

Late 1800s-early 1900s: a number of fishes, including the beautiful shiner (Mimbres), Gila topminnow (San Francisco), Palomas pupfish (Mimbres-Guzman), roundtail chub (San Francisco), and probably the razorback sucker and Colorado pikeminnow (Gila), went extinct from the region. Extirpations during this period also included bighorn sheep, pronghorn (Cliff area), a once common native reed (Phragmites sp.), and a freshwater clam (Anodonta), among others.





of grizzly bear in the region 1941: last record of wolf 1950s: last black-tailed prairie dogs (south of White 1953: last river otter trapped near Cliff

2000

900 600 800 1400 700 1200 1500 1000 1300 AD 500 1100 1600 1700 1800

1000 BC-7000 BC Paleoindian Period: mobile hunter gatherers, Clovis and Folsom points; sites with megafauna in SW generally, but the few sites known in this area consist of lithic scatters.

7000-1500 BC Early, Middle, and Late Archaic **Periods:** mobile hunter gatherers, low population density, small sites with short-term occupations.

1500 BC-AD 200 Late Archaic/Early Agricultural **Period:** agriculture begins supplementing wild resources; semi-sedentary villages in some places.

200-550 Early Pithouse Period: small clusters of houses, mix of farmed and wild resources, sedentary but likely short-term villages.

from Grissino-Mayer 1996

550-1000 Late Pithouse Period: villages become larger and more permanent as emphasis on farming increases; declines in large game relative to lagomorphs (hares, rabbits) visible by ca. 800.

1000-1130 Classic Mimbres Period: pea regional population, low mobility, emphasis on farming; large game relatively less common than lagomorphs; anthropogenic impacts on floodplain trees and preferred wild plant foods; "famine food" plants more

1130-1300 Early Postclassic Period: many people leave the region around 1130; villages linked to the Tularosa, Black Mountain, and Animas phases; perhaps a rebound in large game and floodplain forest and other riparian plants and animals.

1300-1450+ Late Postclassic Period: large Cliff phase Salado and Animas phase villages; sycamores and reed grass still present in the Mimbres Valley, but absent during the American Period.





**1747:** first Spanish campaign into the Gila country against the Apaches and to explore the region. Todos Santos (near present-day Cliff) established to serve as a base of operations and used again in the 1756 campaign.



Late 1800s: the exclusion of Apaches and resulting influx of ranchers and their abundant livestock, homesteaders, miners, and thers into the region near the end of the 19th century quickly esulted in unprecedented destruction of land and wildlife through xtensive overgrazing coupled with severe drought, widespread narket hunting, and the relentless extermination of predators and other "pests." Aquatic and riparian habitats, where a large proportion Mangas Valley, near Mangas Springs. Cut out in Of regional biodiversity resided, were especially impacted or

1900



one night as result of an ordinary rain of about