How Much Wood Could a Woodchuck Chuck if this Wood was Sediment: The Effect of Marmota monax on the Archaeological Record

Megan Scalzo

Follow this and additional works at: https://scholarscompass.vcu.edu/uresposters

© The Author(s)

Downloaded from

This Book is brought to you for free and open access by the Undergraduate Research Opportunities Program at VCU Scholars Compass. It has been accepted for inclusion in Undergraduate Research Posters by an authorized administrator of VCU Scholars Compass. For more information, please contact libcompass@vcu.edu.
Abstract

Geomorphology is the study of the topographic effects of different physical, chemical, biological processes occurring along and within the landscape. Biological processes can occur from different faunal influences and subsequently get called geomorphic agents. In the majority of North American woodlands, Marmota monax (common names include groundhog, woodchuck) can be found and thus can be assumed to be geomorphic agents of these woodland areas. In this poster, I will discuss and organize the effects of Marmota monax on the archaeological record.

Introduction

Marmota monax, more commonly known as the groundhog, is one of many of North America’s native rodents. This rodent is considered as a trogloxene meaning it spends a larger portion—but not the entirety—of its life underground. These animals are known to burrow underground to spend a good portion of the year in hibernation. Groundhogs have had a very complicated relationship with humans; while popular during Groundhog’s Days festivities and as a valuable game animal, they are generally seen as a nuisance for farmers and agriculture alike. While their burrowing is seen as conducive for forest environments, they can cause catastrophic damage for both large-scale farms and small gardens. It’s important to understand their effects on surrounding sediments before understanding other historical contexts of an environment.

Methodology

To understand the effects that Marmota monax has on archaeological sites, we must first come to an understanding of how it not only affect sediment distribution but also have a look into the past studied behaviors of these animals. Sediments linked to activity of specific fauna can provide microenvironmental information. Understanding regional fauna and flora allows us to distinguish which sediments are biogenic (brought by living organisms) and which are specifically anthropogenic (brought by humans). Sherwood (2001) also having a general understanding of activities that affect the geomorphology of a site can help us understand the landscape further. Animals are significant geomorphic agents and need to be taken in consideration as landscape drivers rather than be ignored in this matter. (Butler 2013). By looking at loci of burrowing activity we can observe any effects on surrounding sediments before understanding other historical contexts of an environment.

Results/Discussion

Borrowing done by groundhogs is shown to cause significant damage to archaeological sites. In more open sites, marmots with generally choose more secure objects to burrow near such as buildings and rocky areas. These areas also contain significant chewing and gnawing damage which effects anything wood related like fencing or buildings containing wood. (Bruleigh 1998) However, not all groundhog activity causes quantifiable damage. Major effects are shown to be from faunalturbation—the disturbance of soil layers due to burrowing animals. These can look like movement of materials from digging and burrowing in the archaeological record in general. This relationship between fauna and stratigraphy of a site should be considered when looking at skeletal stratigraphic layers—especially those beneath the plow zone.

Burrowing by gophers is shown to cause significant damage to archaeological sites. In more open sites, marmots with generally choose more secure objects to burrow near such as buildings and rocky areas. These areas also contain significant chewing and gnawing damage which effects anything wood related like fencing or buildings containing wood. (Bruleigh 1998) However, not all groundhog activity causes quantifiable damage. Major effects are shown to be from faunalturbation—the disturbance of soil layers due to burrowing animals. These can look like movement of materials from digging and burrowing as well as the introduction of allochthonous clastic material from fecal matter and food waste. This disturbs the archaeological deposits by mixing sediments both within and between deposits. (Sherwood 2001) In burrowing, the groundhog’s excavation deposits material downslope in fan-shaped spoil mounds. (Whitesides 2016) Figure 1 represents how the stratigraphy of a site looks like before this occurs and Figure 2 represents how materials would move between layers. This can look like displacement of both flanks and other artifacts (Stafford 1998), and to a further extreme of disturbance of burial sites via moving human remains from their original resting place. (Moore 2009) In recording stratigraphic samples of sites we can see over time recognizable change of bioturbation from living organisms including groundhogs. (Marquardt 2005) This bioturbation looks different than modern agricultural practices and looting that affects sites. Not only does it reach past the plow-zone, groundhog holes can generally be identified normally via remains of the groundhog (as seen below) or from other flora remains. As long as research is done, bioturbation from groundhogs can be recognized and their effects on the archaeological record are apparent.

Conclusion

Marmota monax has the capabilities of affecting any kind of site found in North America by either moving and destroying artifacts and other remains found even below the plow zone. It can look to the extreme ends of bioturbation of stratigraphic layers. Because they are trogloxenes, they’re constantly adding to and affecting the archaeological record.

It is important to study these burrowing activities as they not only tell us more about the formation of archaeological site but help open new doors for identifications of other contexts for artifacts, ecofacts, and features. Knowing for the major possibility of displacement of sediments and material means we must not ignore this major factor of site formation. Becoming aware of this problem allows us also be more aware on how to protect the archaeological site from becoming irrelevant or lost. It is also important to remember while groundhogs have an all-around negative effect on the archaeological record, they are still important agents in controlling the microenvironments of their residences. Therefore future research should not center around removal of these animals, rather than just making sure they are on the radar when form histories of depositional environments.

Works Cited


Acknowledgements

3D scans of Gopherskull courtesy of the George Washington University; can be found here: https://sketchfab.com/l/3dcg/models/gopherskull-cc-vid-7d6-cc6d5d19957d3832c78237f79795b016e Figure drawings were hand-drawn on paper and scanned in— they were not acquired from another source.