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Abstract: Faunal remains from Wadi Mataha, Site 16, were identified and analyzed to provide explanations for the presence and significance of animal remains found in Nabataean tombs. This analysis provides essential information on the Nabataeans of Petra, a people that left a shortage of literary and written works from which to piece together their history and culture. This research centers on the remains of domestic dog (*Canis lupus familiaris*) and skipjack tuna (*Katsuwonus pelamis*) found in burial site 16. Analysis of the remains indicates their inclusion in the tomb was the result of cultural exchange or shifts in the Petra region, based on political, economic, and religious relationships the Nabataeans had with Rome and Egypt at the time—specifically between the second century BCE and the late first century CE.

Studying the type, distribution, and use of animals in past cultures is an important and effective way to gather archaeological data. The way animals were used in ancient cultures can provide crucial insights into diet, resources, climate, ritual, and trade, as well as a given culture's relationships with other civilizations. The Nabataeans of Petra, Jordan, have few first-hand or secondary written accounts about their culture, thus, faunal analysis is a useful and necessary study that can help uncover previously unknown information about Nabataean culture. Unfortunately, few have studied Nabataean faunal remains, and even fewer have discussed the possible connections between the faunal assemblage and the various cultures that influenced the Nabataeans. This leaves a gap in faunal interpretations and explanations, which requires more research that considers cross-cultural

connections, and how that played a part in the appearance and use of animals among the Nabataeans of Petra.

The Nabataeans settled in the region around the fourth century BCE and thrived there until at least the fourth century CE. As a nomadic people, they originally wandered the desert with herds of animals in search of food and water sources. By the second century BCE, they became a sedentary people and developed a complex, stratified society with kings and queens, sophisticated hydraulic systems, standardized currency, and impressive monuments. They also developed agriculture and animal husbandry, domesticating goats, sheep, camels, and other animals which were utilized for food, transportation, raw materials, sacrifice, or grave goods. Due to their location in the desert, and their available resources—particularly their dependable water supply—the Nabataeans became an influential center of travel and trade throughout the region. They built trade relationships and alliances with the surrounding cultures, two of the most prominent being Egypt and Rome.[1]

These relationships with Egypt and Rome played a crucial role in the economic growth and success of the Nabataeans, who borrowed from these cultures in architectural styles, worship, and the manufacturing of currency. Egypt and Rome also influenced the Nabataeans in seemingly smaller ways—for example, the appearance, distribution, and use of animals in Nabataean burials. The present study deals with faunal remains from a burial site in Wadi Mataha known as Site 16, a region of Petra which lies north of the main city center. The remains were excavated in 2008 and stored in Brigham Young University's Museum of Peoples and Cultures. The faunal bones were identified, documented, and analyzed from 2020 to 2021, with the primary aim to understand more about the Nabataeans' use of animals, specifically those found in burial contexts. Though there were many different animals identified from the assemblage at Site 16, the focus of this research is on the fish bones recognized as Skipjack tuna (*Katsuwonus pelamis*), and domesticated dog (*Canis lupus familiaris*). This research demonstrates how the Nabataeans' relationship with Egypt and Rome affected the material remains found in the burials and supplies previously unknown information about the Nabataean culture regarding specific diet and mortuary practices.

When the Romans took over the Nabataean Kingdom in the first century CE, this led to an exchange of Roman culture in Petra and the whole of Jordan. The presence of Skipjack tuna found in Site 16 can be explained through this increase in Roman influence in the area, as seen through archaeological and historical

1. Philip C. Hammond "Cult and Cupboard at Nabataean Petra." *Archaeology* 34, no. 2 (1981): 27–34.

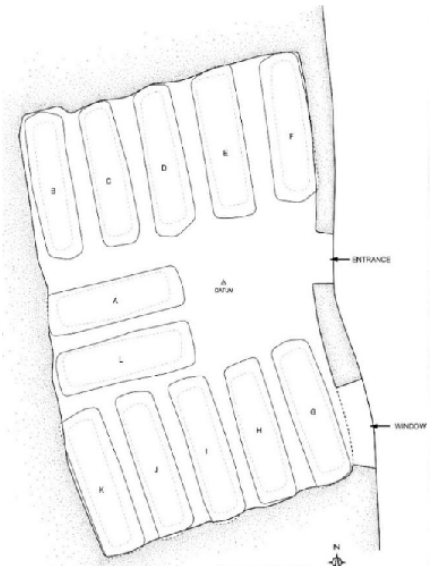

Figure 1: Site 16 layout with loculi A-L Johnson, "Nabataean Chamber Tomb," 119-126..

accounts addressed in this article. The Egyptians were also a large cultural and political power in the area at the time of the Nabataeans, and the Nabataeans are known to have worshipped Egyptian gods such as Isis, and to have followed some Egyptian practices. The inclusion of dog paw bones in the Site 16 burials can be attributed to the Egyptian's mortuary practices at the time that included dogs—an especially dominant Egyptian practice at the time of the deposition of the dog bones at Site 16,[2] deposited around the first century BCE.

Site Background

Wadi Mataha is a region just north of Petra, Jordan, where many Nabataean tombs and burial sites are located. Site 16 is in the Jebel al Mudhlim region in the northern drainage of Wadi Mataha.[3] Site 16 is a rock-cut tomb which houses twelve loculi (otherwise known as chamber tombs), which were cut into standing stone in the floor. These loculi are designated A through L, starting in the back of the chamber and proceeding clockwise around the tomb (fig. 1 and 2). Generally, the loculi had three levels of stratigraphy, known as a stratigraphic unit (SU), SU 1 being the closest to the surface, SU 2 being in the middle, and SU 3 being the furthest down, and thus the earliest in deposition (not accounting for any possible natural or cultural formation processes which may have occurred.) One outlier is loculus I, where a fourth stratigraphic level was recorded, which is a layer of soil deposited below the Nabataean burials found in SU 3. The Site 16 tomb is cut from the surrounding rock at 2 meters above the Wadi bed and must be accessed through cut handholds to reach the entrance of the tomb. From East to West, the tomb is 4.6 meters wide, from north to south is 6.5 meters long and is 2.7 meters high.[4]

2. Salima Ikram, "The Loved Ones: Egyptian Animal Mummies as Cultural and Environmental Indicators." In *Proceedings of the Sixth International Symposium on the Archaeozoology of Southwestern Asia and Adjacent Areas*, pp. 240-248. 2005.

3. David Johnson, "A Nabataean Chamber Tomb and Carved Block in the Wadi Mataha, Petra, Jordan." In *Studies on the Nabataean Culture I: Refereed Proceedings of the International Conference on the Nabataean Culture*, pp. 119-126. 2013.

4. Dana Blackburn, "An Archaeological Exploration of the Role of Votive Offerings in a Nabataean Burial." *Studia Antiqua* 8, no. 1 (2010): 35-45.

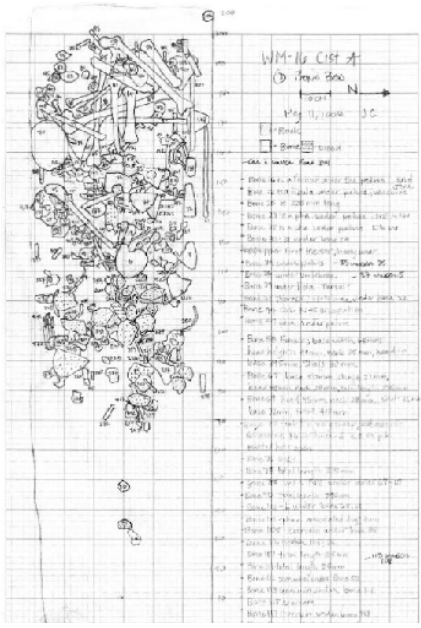

Figure 2: Site 16 loculus A with artifact findings and placements. Johnson, "Nabataean Chamber Tomb," 119-126.

During the excavation of the loculi at Site 16, 38 adults, 9 adolescents, and 13 children were found buried, along with numerous other grave goods including pottery which was dated to periods ranging from the Late Hellenistic (c. 200–31 BCE) to the Middle Nabataean periods (c. 27 BCE– 100 CE).[5] Site 16 specifically was utilized by the Nabataeans for the burial of individuals. Because the tomb is located two meters above the Wadi bed, the medium and large mammals found in Site 16 were likely intentionally placed by the Nabataeans, as opposed to wandering in and dying of natural causes. The same does not necessarily apply to the rodents, birds, or reptiles found in Site 16 as they would have been able to enter the tomb on their own, though one should not dismiss the possibility of their having had intentional cultural significance. Some of the grave goods found in Site 16 may have been used as votive offerings, as they have depictions of various Nabataean deities such as Dhushares, Harpocrates, Hermes, Isis, and Allat.[6] The items excavated included glass, metal, lithics, stones, and most significantly for this research—animal bones. Based on the findings of black glazed ware fusiform and Nabataean fine wares which included a piece of dark red painted ware, the Site 16 tomb was dated between the second century BCE and the late first century CE.[7]

Data Presentation

The assemblage of faunal bones identified and recorded from Site 16 is from loculi A, C, I, J, and L. In loculi A and C, faunal bones were present in stratigraphic units 1, 2, and 3. From loculus I, stratigraphic unit 4 had faunal remains that were identified and recorded. Loculi J and L had faunal remains from stratigraphic unit 3. In Wadi Mataha, SU 3 is where the Nabataean human remains are generally found in any given burial, therefore, any faunal remains found in SU 3 are more likely to have been intentionally buried with the individual(s) upon their death.

5. Johnson, "Nabataean Chamber Tomb," 119-126.
6. Johnson, "Nabataean Chamber Tomb," 119-126.
7. Johnson, "Nabataean Chamber Tomb," 119-126.

Animal bones found in SU's 1 and 2 are found deposited above the graves and were possibly placed there after the original burial for a ritual feast or votive offering, or are the result of discarded animal remains, or animals that entered the tomb and died.

Overall, 463 faunal bones were identified from Site 16. loculus A had the majority of the faunal bones, with 434 bones. Loculus C had 8 bones identified, loculus I had 5 faunal bones, J had 4, and L had 12 bones. Skipjack tuna, *Katsuwonus pelamis*, is the best-represented species identified, comprising 32.82% of the assemblage. The domesticated goat, *Capra aegagrus hircus*, is also well-represented with 19% of the bones from the assemblage. Domesticated dogs were a significant find as well, comprising 7.77% of the faunal remains. The rest of the identifiable faunal bones present in this assemblage were from domesticated sheep, *Ovis Aries*; rodents, identified as Sundevall's jird (*Meriones crassus*), and birds. 4 medium mammal bones, 140 small mammal bones, and 30 bones that were labeled unidentified mammal complete the assemblage. Though all the species identified in the faunal assemblage were analyzed, the focus of this research is on the domesticated dog bones and the skipjack tuna found in Site 16.

Fish Findings

The fish bones found in the faunal assemblage at Site 16 were identified as Skipjack tuna (*Katsuwonus pelamis*) (Fig. 3). Skipjack Tuna has been found in other faunal assemblages from Nabataean sites in Jordan as well, such as in excavations done at Ez-Zantur.[8] Petra is over 100 km from the Red Sea and approximately 200 km from the Mediterranean coast.[9] Despite these distances, because Petra was a major center of trade during the peak of the Nabataean Kingdom, particularly for spices, frankincense, and myrrh, (a trade route which spanned the Mediterranean coast to Southern Arabia) many materials were available in Petra that the Nabataeans did not have direct access to. As evidenced by the Site 16 fauna analyzed here and confirmed by other research,[10] one of the resources that was traded into Petra was fish.

8. Jacqueline Studer, "The World of the Nabataeans: Animal Exploitation in the Nabataean World." Volume 2 of the International Conference the World of the Herods and the Nabataeans held at the British Museum, 17–19 April, 2001: 251-272.; Jacqueline Studer, "Like a Fish out of Water: Fish in the Diet of Classical and Medieval Populations in the Petra Region (Jordan)." *ResearchGate*, January 2008: 281-293, here 282.

9. Studer, "Fish out of Water," 282.

10. Studer, "Fish out of Water," 281-293; Jacqueline Studer, "Roman Fish Sauce in Petra, Jordan. In: W. Van Neer (Ed.), Fish Exploitation in the Past. Proceedings of the 7th Meeting of the ICAZ Fish Remains Working Group." *ResearchGate*, January 1994: 191-196; Wim Van Neer and S. Thomas Parker. "First Archaeozoological Evidence for Haimation, the 'Invisible' Garum." *Journal of Archaeological Science* 35, no. 7 (2008): 1821–1827.

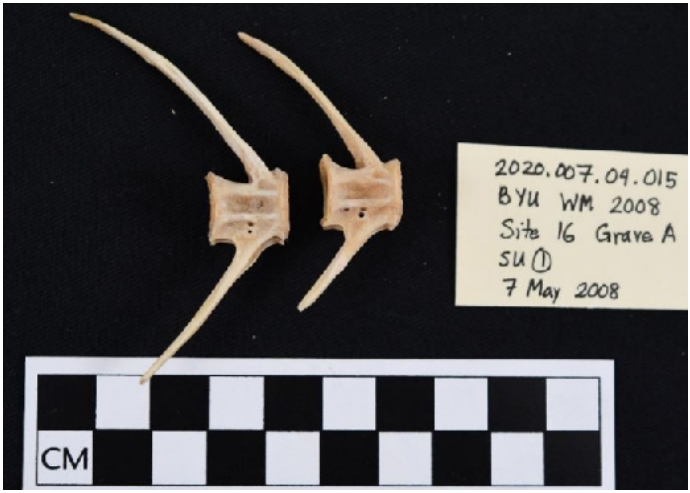

Figure 3: Skipjack tuna complete trunk vertebrae, Site 16 loculus A SU 1.

Though a secondary source of food among the Nabataeans, fish was an important part of the diet of those in higher socioeconomic classes. One of the faunal assemblages analyzed at Ez-Zantur was dated from the first century BCE to the first century CE, from the time of the independent Nabataean Kingdom to Rome's conquest of Petra. This assemblage at Ez-Zantur included 134 identified fish remains, with Scombridae the most common family of fish at 34% of the faunal total. Within the Scombridae family, Skipjack tuna was the main fish species represented in the assemblage.[11] By the Late Roman period, Scombridae was outnumbered by other families of fish. However, the Skipjack tuna was still the main tuna taxa exploited, and overall numbers had increased from what they were in the Nabataean period as fish became more commonly consumed in the region during the Roman periods. These findings are also echoed by the faunal assemblages found at Jabel el-Khubta, Avdat, and Tell Hesban in Jordan. All the fish found in the faunal assemblages from these sites were identified as being traded from the Red Sea.[12]

The Nabataeans were not the only culture that relied on fish for a part of their subsistence. Fresh fish and fish products were in high demand throughout the Roman Empire during the Roman periods. Fish sauce in particular was a delicacy used frequently by the Romans during the Nabataean and through the late Roman periods.[13] There were different kinds of sauces that varied in quality and affordability, and different species of fish were used for each. A fish sauce known as *muria* is likely to have been in demand in the Petra region. Skipjack tuna and other

11. Studer, "Fish out of Water," 283.
12. Studer, "Fish out of Water," 281-293.
13. Studer, "Fish out of Water," 281-293.

tuna species were used in the production of *muria*, which removed the innards of the tuna to create the sauce.[14] *Muria* was thought to have been less affordable, indicating that those who lived in the Petra region and consumed *muria* may have been of a higher socio-economic class. *Haimation* was another high-quality fish sauce, which was made with the gills and entrails of tuna, to which salt was added. [15] *Haimation* may have been consumed by those in the Petra region as well, as evidenced by the increased amount of tuna bones found in Petra and the surrounding regions from the Nabataean to late Roman Periods.

Haimation has also been found in excavations at Aila, a port city on the southern coast of Jordan by the Red Sea, known today as Aqaba. Excavations done at Aila indicate that tuna sauces like *haimation*, (argued to be the highest-quality fish sauce in the ancient world) were not imported or made from the Mediterranean or the Black Sea, but were produced at ports in and near Aila from fish caught in the Red Sea.[16] Aila and the surrounding region were controlled or inhabited by the Nabataeans until the Romans annexed Petra and seized control of the area.[17] Aila was likely a large port by the first century CE, as Strabo describes it as a *polis*, a city-state in ancient Greece.[18] Aila produced large amounts of courseware pottery through the first to fourth centuries CE, which was filled with various goods, and then exported to other regions throughout the Negev and Jordan, including Petra. This courseware was filled with different types of marine products which included tuna.[19] This port was likely an important source of trade while the Nabataeans controlled it and became an important asset to the Romans once they conquered the region and could use the port as a means of producing fish sauce which they traded to other regions.

Historical and archaeological evidence indicates that fish was an important part of Nabataean life and of the cultures that influenced them, particularly from around the first century BCE through the Late Roman period and beyond. Though it appears many Nabataeans did not consume fish in large amounts and only used it as a secondary source of food, trade with Rome and other regions where fish was in higher demand led to fish and fish products gradually becoming a more

14. Studer, "Roman Fish Sauce," 191-196.

15. Thomas H. Corcoran, "Roman Fish Sauces." *The Classical Journal* 58, no. 5 (1963): 204–210.

16. Wim Van Neer and S. Thomas Parker. "Evidence for Haimation." 1821–1827; Corcoran, "Roman Fish Sauces," 204-210, here 205; S. Thomas Parker, et al. *The Roman Aqaba Project Final Report, Volume 1: The Regional Environment and the Regional Survey*. Vol. 19. The American Schools of Oriental Research, 2014: 1-384.

17. Strabo, H.C. Hamilton, W. Falconer, "Strabo, Geography." *Perseus Digital Library*. George Bell & Sons, n.d. 16.4.18.

18. Strabo et al. "Strabo, Geography." 16.2.30.

19. Parker et al. *Roman Aqaba Project*, 1-384.

important part of the diet in Petra. Especially as the Romans grew in influence over the Nabataeans and eventually annexed Petra, fresh fish and fish sauce became dramatically more popular in the area. The increase in tuna and fish found in Nabataean archaeological sites is likely also due to the Romans conquering the region and turning Aila into a larger-scale fishing port, from whence they shipped tuna and fish sauces to northern regions such as Petra.

The tuna fish bones found at Site 16 are evidence that fish became important for reasons outside of popular diet as well. It is likely the tuna bones found in these burials are the result of the Nabataean people holding mortuary feasting rituals. The Nabataean people regularly visited burials from among their dead, would hold feasts, and leave behind items such as incense, perfumed oils, and material goods that would "impress and entertain" the dead.[20] Among the items given were the remains of funerary feasts that were placed in the individual graves to provide food offerings and commemoration for their dead.[21] As fish became more accessible in the Petra region due to Roman dietary and economic influences, tuna fish would have become a viable choice for Nabataean individuals when holding mortuary feasts for their departed.

The prevalence of tuna in the loculi at Site 16 are only found in SU's 1 and 2, during or after the time the Romans annexed Petra and seized control of other regions like the fishing port at Aila, and into the Late Roman period and beyond. This suggests that tuna may not have been a very common dietary or ritual choice in the Wadi Mataha region until the Romans gained more power and cultural influence in Petra. Understanding the context surrounding animals and their use in subsistence and ritual in the Petra region and the surrounding influential cultures is key to understanding why and how certain species of animals were deposited in Nabataean graves. The use of fish by the Nabataeans was certainly influenced by the Romans and their subsistence patterns and can explain the prevalence of Skipjack tuna in the Site 16 tomb in Wadi Mataha.

Domestic Dog

Perhaps the most interesting and unexpected faunal finding at Site 16 was the consistent pattern of dog paw bones found in the burials. In total, 36 dog bones were found, which made up 7.77% of the faunal remains from Site 16. One complete paw was found in situ in loculus A, stratigraphic unit 3 (Fig. 4),[22] where the associated human remains were found as well. These bones were from the

20. Megan A. Perry, "Sensing the Dead: Mortuary Ritual and Tomb Visitation at Nabataean Petra." Syria, no. 94 (2017): 99–106.

21. Megan A. Perry, "Sensing the Dead," 99–106.

22. Johnson, "Nabataean Chamber Tomb," 119-126.

Figure 4: Complete Domestic dog paw in situ at Site 16, loculus A SU 3. Johnson, "Nabataean Chamber Tomb," 119-126.

rear left foot, which included the metatarsals, the proximal, middle, and distal phalanges, the proximal sesamoids, and the carpal bones. Originally, both jackal and Arabian wolf were considered candidates for the bones found in Site 16, as these species would have been found in Petra at the time. However, these species were ruled out because the size and structure of the bones did not match those of a jackal or Arabian wolf. A possible caveat is the muscle attachments found on the dog metatarsals, which were more similar to a gray wolf than a modern dog upon comparison. However, this is not surprising to find in a domesticated dog from over 2,000 years ago, as dogs shared many more wolf-like characteristics because their survival would require more muscle and a larger build than their modern counterparts.[23]

The complete dog paw from loculus A SU 3 was not an isolated occurrence of canine remains in the graves. Loculus A had two other dog metatarsal bones as well, though these were from the right rear foot. Loculus A is not the only Site 16 burial with remains from *Canis lupus familiaris*, as loculi L and C also contained dog remains. In loculus L, four metatarsal bones and one phalange from the right rear paw were identified. In loculus C, two metatarsals and one phalange were found, which also came from a rear right paw.

There are not many reports from faunal assemblages excavated in the Petra region, and even fewer mention any remains of a canine. However, there is evidence of a canine in a few faunal assemblages that were previously studied. One is from the site of Ez-Zantur, which was from a small hill located in a domestic quarter in the city of Petra. The few dog bones that were found did not have any butchery marks on the bones, indicating that they were not included in the diet

23. Darcy F. Morey, "The Early Evolution of the Domestic Dog." *American Scientist* 82, no. 4 (1994): 336–47.

of the Nabataeans, but were there as pets.[24] Another site provides evidence of dogs being kept domestically by the Nabataeans. To the Northeast of Wadi Musa was a domestic place of residence for the Nabataeans, known as Area I. A team was excavating Byzantine occupations when they reached a Nabataean domestic building, which collapsed due to an earthquake. In the remains of this dwelling, they found the family dog, whose skeleton was discovered crouched in a niche in the wall, that died there when the house fell on him during the earthquake.[25] This discovery at Wadi Musa indicates that domesticated dogs were part of Nabataean society, perhaps including their use as pets or household dogs. Due to the lack of butcher marks found, they were likely used for other utilitarian purposes like hunting, guarding Nabataean homes, or watching over and herding their animals. However, Site 16 also suggests that domestic dogs may have had other uses in Nabataean society—being used for votive offerings in Nabataean graves.

There is more evidence of domestic dogs in burial contexts from the Nabataean crypt in tower tomb 303, which is located at Ath-Thughrah in Petra.[26] This site includes an underground burial chamber, where the remains of dogs were found among other animal and human remains. Based on some C14 dating of human bone and charcoal, use of the tomb was dated to between the third and second centuries BCE, and the first century BCE to the second century CE.[27] Evidence shows that the dog and goat bones were swept aside to the northwest corner of the chamber with the human bones and that the chamber was utilized as a dump two different times. The report from tomb Th303 included the identification of 91 fragments of dog bones, with an overall count of 11 dogs. There was one male, three juveniles, one individual less than six months, and seven fetuses present in the assemblage. The report states that "…the best represented anatomical parts are the skull, anterior limb and foot…The presence of these dog remains scattered all over the chamber is difficult to explain."[28] Though this chamber was a dumping ground, as opposed to an intentional human burial chamber like at Site 16, the high representation of foot bones is of note.

This example demonstrates that the use of dogs in burial contexts is not isolated to Site 16 in Wadi Mataha. The inclusion of dogs in burials seems to be a purposeful inclusion and was likely a practice in other Nabataean burials as well.

24. Studer, "Animal Exploitation," 251-272.
25. Hammond, "Cult and Cupboard," 27–34.
26. Isabelle Sachet, Nathalie Delhopital, Charlène Bouchaud, C. Tomé Carpentier, "The Hellenistic-Nabataean Crypt in Tower Tomb 303 at ath-Thughrah in Petra. Results of the Archaeological and multi-disciplinary Studies." Annual of the Department of Antiquities of Jordan 57 (2013): 141-165.
27. Isabelle Sachet et al., "Hellenistic-Nabataean Crypt," 145.
28. Isabelle Sachet et al., "Hellenistic-Nabataean Crypt," 156

Especially given that one of the most prevalent dog bones from Site Th303 were dog paw bones—which is the only anatomical part from a dog that is found at Site 16—there may have been symbolic significance for the inclusion of dog paw bones for the Nabataeans, and a specific purpose for their use in burials. This inclusion in Nabataean burials may have been the direct result of Egyptian practices which included dogs in their own burials.[29]

The only bone that had evidence of burning from Site 16 was from a domestic dog metatarsal, one of the 4 metatarsals that were found in loculus L in SU 3. Despite the signs of charring which often indicates the butchering of an animal, this bone does not have any clear butcher marks, meaning it may not have been killed for food, but was perhaps burned as a votive offering. None of the other dog paw bones from any loculi or SU at Site 16 show any clear evidence of butchering either, so this is not surprising. However, none of the other dog bones are charred, so this find is singular. It is unclear why only one bone in the assemblage has evidence of burning, and why it would be from a dog metatarsal. It may be the result of a burial/feasting ritual, votive offering, or charm that the Nabataeans placed with the human remains during burial—a practice that was done by the Nabataeans, which may have extended to burning individual bones.[30]

Because of the evidence this assemblage and other faunal studies provide,[31] it appears that dogs were not used for subsistence (lack of butcher marks, dogs found in dwellings, etc.) but were likely used as pets, and it is more likely that this dog's metatarsal was burned for ritual purposes—as opposed to being cooked for food. The complete dog paw found in loculus A SU 3 may have been a symbol of the Egyptian god Anubis, which symbolized mummification and the afterlife.[32] Out of all 36 dog bones found in Site 16, the only anatomical part of the dog found are rear paw bones, indicating there was purposeful selection by the Nabataeans for this exact part of the dog. The Nabataeans may have been following Egyptian tradition in the form of burying beloved pets with them, though why they specifically selected burial with exclusively the rear dog paws is uncertain and will require further research.

The dog bones from Site 16 were present in SU's 1, 2, and 3. SU 3 is dated to approximately the first century BCE, at a time when the Nabataeans traded and had political associations with the Egyptians. The Nabataeans borrowed from

29. Salima Ikram, "Man's best friend for eternity: dog and human burials in ancient Egypt." *Anthropozoologica* 48, no. 2 (2013): 299-307.

30. Megan A. Perry, "Sensing the Dead," 99–106.

31. Isabelle Sachet, "Hellenistic-Nabataean Crypt," 141-165; Hammond, "Cult and Cupboard," 27–34; Studer, "Animal Exploitation," 251-272.

32. Johnson, "Nabataean Chamber Tomb," 119-126, here 4.

many Egyptian symbols of religion and worship, having idols and names of gods that overlapped with their Egyptian neighbors. As their cultures intermixed, the Nabataeans would have encountered new burial traditions associated with their gods Anubis and Wepwawet who were represented by jackals and dogs in Egyptian culture. These were deities of travel, either for safe passage through the desert, or were utilized to journey to the afterlife in peace.[33] Dogs have been included in Egyptian graves since the pre-dynastic periods, though their inclusion and the meaning behind it are yet to be interpreted. By the Greco-Roman periods the practice had become very popular, and the number of burials in Egypt that had dogs in them as either pets or votive offerings increased. In earlier Egyptian history, it was only the wealthy or those with royal ties who appeared to have dogs in and around their burials. However, around the time of the Nabataeans, this popular burial rite extended to most Egyptian socio-economic classes, and pilgrims would often use dogs in burials as votive offerings to the gods.[34] The burial of dogs in Egyptian tombs, catacombs, and pits as votive offerings became very common in the Late Period and the Greco-Roman era, from 650 BCE to 398 CE.[35]

This practice of burying dogs in tombs or burials, either as pets or votive offerings likely extended to the Nabataean culture as seen in Wadi Mataha Site 16. Dog paw bones were deposited in the loculi of Site 16 around the first century BCE to the first century CE, which correlates to a time when there was a strong Egyptian influence in Petra, and when the Egyptians had a prevalence of animal cults. These cults practiced the placement of dog totems in many forms, either from once living dogs or through stelae or statuary figures. These gifts were given to allow the deceased safe travels in the afterlife, or as a token of the giver's prayers and wishes for eternity. It was thought that once living dogs may have been more effective as votive offerings, as opposed to their counterparts made from metal and wood. The Egyptians believed they had a "…direct path to the god's ear as they had once been living, breathing emissaries of the god on earth, and consequently more worthy of immediate attention."[36] Dogs being significant in the Egyptian afterlife was a belief that may have transferred to Nabataean burial practices as a result of their proximity to Egypt and their interconnected cultures.

The inclusion of the dog paw bones in Site 16 Wadi Mataha can be explained through the practices and beliefs of surrounding cultures that were influential in the development of Nabataean culture. The Egyptians had a cultural influence on the Nabataeans with their worship of deities and the implications of certain

33. Ikram, "Man's Best Friend," 299-307.
34. Ikram, "Man's Best Friend," 299-307.
35. Ikram, "The Loved Ones," 240-248.
36. Ikram, "Man's Best Friend," 300.

ritualistic practices. The placement of dog paw bones in the loculi at Site 16 were most likely intentional, based on the selection for only one anatomical part of the dog being found within the burials. The Nabataeans may have placed the bones in the graves as a gift to the deities Anubis or Wepwawet to ensure safe passage to the afterlife for the deceased, or they may have used the bones to send their own prayers for the afterlife.

Conclusion

The Nabataeans of Petra were a culture that developed in the center of some of the biggest and most well-known civilizations in history. Their ties with Rome and Egypt spanned far and wide, in political, economic, and cultural spheres. While architecture, pottery, water systems, and other aspects of Nabataean culture have been studied more extensively by archaeologists and have been tied to other cultures that were influential during the time of the Nabataean kingdom, faunal analysis in the Nabataean world has often been overlooked. The few faunal studies done on the Nabataeans ignore the influence of other cultures outside of the Petra region. They focus instead on internal shifts dealing with the environment, nomadism vs. sedentism, and subsistence strategies through time, in a unilinear fashion considering only the Nabataeans and their own culture. However, understanding the presence of faunal remains in Petra requires a study of the surrounding and influential cultures outside of Petra at the time as well. The faunal assemblage from Site 16 in Wadi Mataha cannot be studied as a single entity unto itself, as this restricts the interpretations that can be made about the faunal assemblage, the appearance of certain species, and their significance in Nabataean culture.

The appearance or prevalence of certain species of animals represented in a faunal assemblage can give a lot of information on what kinds of socio-political or economic alliances the culture may have had, and it is no different with the Nabataeans. The dog paw bones present in Site 16 burials are, so far, an isolated discovery in Petra that can only be explained through understanding outside cultures and their influence on Petra. Subsistence changes, like an increase and change in fish representation, can also be explained through understanding the surrounding culture's subsistence patterns, like the Romans bringing an increase in fish consumption with their growing influence in the Petra region. The faunal remains at Wadi Mataha Site 16 demonstrate that while some of the animal remains are likely the result of environment or internal culture—rodents, birds, goats, and sheep—some of the faunal remains could only be explained through researching the surrounding cultures of the Nabataean world.