

## THE CONSUMPTION OF VERTEBRATES IN THREE HABITATIONAL GROUPS AT SIHO, YUCATÁN

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Siho is located in the northwest portion of the state of Yucatán, México, approximately 30 km west of the Gulf Coast. It has been investigated since 2001 by the Siho Archaeological Project of the School of Anthropological Sciences, Autonomous University of Yucatán (Cobos *et al.* 2002). The prehispanic settlement was occupied from the Middle Preclassic to the Terminal Classic times (600 BC – 1100 AD), with an apparent interruption in the occupation verified during the Late Preclassic, and a populational peak occurred during the Late Classic period. During the Terminal Classic (800-1100 AD), several structures were added and modified, while the occupation dropped considerably as of this epoch (Cobos *et al.* 2002: 92-93).

This work will show the results of the zooarchaeological analysis of the skeletal features of vertebrate animals recovered between 2001 and 2003 in three prehispanic middens of the site. The work explores the food exploitation of vertebrate animals by the prehispanic inhabitants of the site. The three zooarchaeological contexts examined here are associated with habitational structures 5D2, 5D16 and 5D13/5D14 respectively, all attributed to elite socio-economical levels (Figure 1). The zooarchaeological analysis establishes a comparison between the three middens, and investigates the food patterns of the local elite between the Late Classic and the Terminal Classic periods, contextualizing the zooarchaeological results with the archaeological information of the site. The results are contrasted both at a micro and macro regional level, with zooarchaeological analysis of sites such as Dzibilchaltun and Yula in the Northern Lowlands (Wing 1980; Carr 1995), as well as Ceibal and the Petexbatun area in the Central Lowlands (Pohl 1976, 1990; Emery 1997), to establish differences and similarities in regard to this cultural practice. In this way, an analysis will be presented on the exploitation of the faunal environment and on the strategies of food procurement in the Northern Maya Lowlands during the Classic period, according to the present knowledge on the matter.

### FIELD AND LABORATORY METHODOLOGY

*The analyzed faunal materials of Siho come from test pits and horizontal excavations. The matrix of all the excavations was entirely sifted with a 5 mm strainer, and it is therefore believed that the representativity of presence or absence*

*of small bones and bone fragments must be considered equal for the three comparison areas.*

*The taxonomic and osteologic identification of the Siho materials was accomplished through the comparison of the archaeological specimens with others from a modern comparative collection, with a photographic digital database of modern skeletal specimens of the Maya region (EA.FLMNH 2003), and with manuals of faunal osteology for mammals, birds and reptiles (Olsen 1968; Gilbert et al. 1980, 1985). The taxonomic terminology is based on recent publications on regional fauna (Reid 1997; Lee 2000; Peterson et al. 1973).*

*Together with the taxonomic identification, the skeletal featured represented was denominated, as also the side to which an odd feature corresponds. In this way the number of specimens identified by taxon (NISP) and the minimum number of individuals (MNI) were estimated, as well as the distribution of fragments of corporal portions of each taxon in the corresponding contexts (skeletal frequency).*

*A limiting factor in the analysis of the faunal skeletal remains of Siho is the poor amount of bone fragments recovered. In total, 361 bone fragments of vertebrate animals were found throughout the site. For the contexts discussed, 160 fragments identified by gender or species will be considered here in addition to 28 fragments identified by family and order, resulting in a number of 32 minimum individuals (Figure 2). The comparisons of the contexts, thus, are based on the number of specimens identified per taxon (NISP; Gautier 1984), as the minimum number of individuals for the majority of the taxa is too low to reveal significant differences or similarities. Thanks to the fact that the bone fragmentation of the similar taxa showed identical patterns in contexts directly compared, it is deemed that the NISP quantifications are valid among others (O'Connor 2000:56), and can, together with the representations of the skeletal frequencies, express the differences found in the three faunal contexts.*

*As to the subsequent interpretations, it should of course be taken into account that the NISP expresses only the quantitative values provided by the contexts themselves, while for the time being no estimates may be made regarding the populational parameters of the prehispanic fauna at the site. The archaeological context of the faunistic data is based on the reports of the Siho Archaeological Project (Cobos et al. 2002; Cobos et al. 2004, as well as on ceramic analysis (Cobos et al. 2004; Jiménez 2004).*

## **THE GROUP OF STRUCTURE 5D2**

Structure 5D2 encloses from the west the central plaza of the site, formed as well by Structures 5D1 (east), 5D7 (south), and 5D17 (north). During the works accomplished by the Siho Archaeological Project, only Structures 5D2 and 5D7 were excavated. Probably, Structure 5D1 was the main pyramid of the site (Maler 1997:240). Structure 5D17 was apparently an elite habitational structure of the palace type (Cobos et al. 2002), while Structure 5D7 is characterized as an auxiliary building with habitational functions (Tun 2004). Structure 5D2 is a palace-type

building with two vaulted rooms (Dunning 1993:1). It has been architecturally dated to the Proto-Puuc style, between 550 and 710 AD (Cobos *et al.* 2002:15; Fernández and Peniche, in Cobos *et al.* 2004:45), a date supported by the finding of a glyph indicating the year 652 AD (Lacadena, in Cobos *et al.* 2004). For what it seems, the structure, of an elite habitational character, was in use between the Late Classic and the Terminal Classic periods.

The faunistic materials from Structure 5D2 were found in a midden located along the north wall of the foundation, accumulated, according to ceramic analyses, between the early stages of the Late Classic, and the Terminal Classic period (Figure 1; Fernández and Peniche, in Cobos *et al.* 2004:50). The Late Classic materials (550-800 AD), in most of the lots originated in layer II, are architecturally associated with the construction of the building, while the Terminal Classic materials (800-1050/1100 AD), of layer I and of the surface in most of the lots, are associated with architectural remodeling works accomplished on the building (Jiménez 2004). In total, 100 bone fragments of vertebrate animals were found in the midden of Structure 5D2, 93 of which could be attributed to the Late Classic period, and seven to Terminal Classic times.

The Late Classic fragments identified comprise, in different proportions, one species of large bird not fully identified, possibly a hocco pheasant (*Crax rubra*) or turkey (*Meleagris ocellata*); sea fish such as the sea catfish (*Arius felis*) and stingrays (ray-shaped); land reptiles such as rattle snakes (*Crotalus durissus*), and boa (*Boa constrictor*); black iguanas (*Ctenosaura similis*); and turtles (*Testudinae cf. Terrapene*), as well as mammals like the temazate deer (*Mazama Americana*) and the white-tailed deer (*Odocoileus virginianus*; Figures 2 and 3). Today, all these animals are present in the region of Siho and are considered endemic (Reid 1997; Lee 2000; Peterson 1973). The Terminal Classic layers only yielded deer fragments, with no gender or species identification due to heavy erosion (*Cervidae n.d.*), and white-tailed deer (*Odocoileus virginianus*; Figure 2).

Most of the fragments, both from the Late Classic and Terminal Classic periods, showed heavy traces of fire and fractures on the fresh bones. The white-tailed deer and the black iguana are represented by their complete skeleton (head, axial skeleton, extremities and legs), while the other animals were only represented by selected parts of their bodies, like the extremities (birds), the axial skeleton (land turtles, snakes, stingrays), or their heads (catfish; Figure 3). The sea catfish is present in the form of a few otoliths (or statocysts), and one dorsal spine, suggesting that there was at least several heads of these fish in use.

## **THE GROUP OF STRUCTURE 5D16**

Structure 5D16, and together with Structure 5D19 and 5D20, form a small habitational group located approximately 200 m at the northwest of Siho's center (Cobos *et al.* 2002:19). The three structures of the group were excavated by the Siho Archaeological Project. Structure 5D16 seems to have been, because of the dimensions and volume of the construction, the main building of the group. The building is integrated by vaults that resemble those of the architectural styles of Early

Oxkintok (300-550 DC) or Proto Puuc (550-710 AD), while the foundations features traits of the Megalithic style (300-600 AD; Fernández *et al.* 2003). According to the interpretations of Fernández *et al.* (2003), Structure 5D16 seems to have been the residence of high ranking individuals during Late Classic and Terminal Classic times. Structures 5D19 and 5D20 were built with perishable materials on top of a stone foundation, possibly destined to works connected with food processing and the storage of goods.

Both sides of the stairway of Structure 5D16 revealed accumulations of materials interpretable as garbage pits (Figure 1). These two garbage accumulations are apparently contemporary and date to the Terminal Classic period (Lilia Fernández Souza, personal communication 2004). During the excavations conducted in Structure 5D16 no large garbage pit was found like the one present in Structure 5D2, and the accumulations in the stairway were the only way to reconstruct the use of fauna in the group we are now referring to. The amount of garbage and its localization suggest they were preliminary middens or the swept of the structure, which was found practically empty at the time of excavation.

The preliminary middens or sweepings are characterized for being relatively small accumulations of garbage located close to the structures, in platform corners or stairways (Chase and Chase 2000:69). This differentiates them from the garbage pit of Structure 5D2 and from Pit 5, which reflect large middens. The sweeping midden probably accumulated garbage during a period of time, to be later disposed of someplace else, not yet identified.

It could be argued that the sweeping middens contained less animal bone remains to prevent the smell of decomposition of the adhered flesh, and that this is the reason why they are less representative when it comes to feeding habits reconstruction. However, also the midden in Structure 5D2, containing a great variety of bone materials, was located close to the structure, producing unpleasant smells. Likewise, it should be considered that the remains of the preparation and consumption of meat near the domestic structures were usually cooked, and thus produced less smell while decomposing. In this sense, and in spite of the presumed difference in regard to the type of a midden, it is here posited that both contexts are equally useful for the reconstruction of the food habits of the ancient users.

Altogether, 39 fragments of vertebrate animal bones were found in the two dumpsters, which shall hereafter be treated as one single unit. The remains come mostly from small animals, such as rodents (*Rodentia* n.d. and *Orthogeomys hispidus*), black iguanas (*Ctenosaura similis*) and serpents (*Boa constrictor*); only 15% of the remains correspond to dogs (*Canis familiaris*), deer (*Cervidae* n.d.) and large indeterminate mammals (Figures 2 and 4). Just like in the case of Structure 5D2, one sea catfish spine was found (*Arius felis*), which probably was used as a perforating utensil. The remains of rodents, toucans, serpents and indeterminate mammals show traces of having been fractured in fresh, besides showing, in a few cases, traces of fire (rodent and indeterminate mammal; Figure 4).

Despite the paucity of fire traces and the absence of cutting marks, the garbage pit is here interpreted as food remains produced by the inhabitants of the structure, with

the argumentation that small animals were usually prepared using their entire body (for example, roasted chickens), and that the bones were still covered with skin and flesh at the time of cooking, and therefore presented lesser visible fire traces. The fresh fractures were probably made at the time of splitting the animal in eatable portions through hand breaking, without the need to use cutting instruments.

## **THE MIDDEN BETWEEN STRUCTURES 5D13 AND 5D14**

Test pit No. 5 revealed a circular opening in the platform between structures 5D13 and 5D14, apparently used as a garbage disposal in prehispanic times (Figure 1). Structures 5D13 and 5D14 were not excavated, but their localization at east of the center, as well as its shape and architecture, suggest a residential function connected to the elite (Rafael Cobos and Lilia Fernández Souza, personal communication 2004). The stratigraphy divides the garbage pit in five layers; the deeper layers were dated to the Late Classic (550-750/800 AD), and layer I and the surface material to the Terminal Classic (Jiménez 2004).

In total, 155 Late Classic fragments were recovered as well as 42 Terminal Classic fragments. The Late Classic layers previously referred to in this report revealed remains of turkey (*Meleagris ocellata*), dog (*Canis familiaris*), as well as white-tailed deer (*Odocoileus virginianus*), boar (*Tayassuidae cf. Tayassu tajacu*), indeterminate deer (*Cervidae n.d.*) and an indeterminate mammal (Figure 2). Just like in the garbage pit of Structure 5D2, there is a great amount of fractures in fresh, traces of burn, and traces of cut in the faunal bone fragments, mostly in the remains of deer and indeterminate mammals (Figures 5 and 6).

## **INTERPRETATION OF FEEDING HABITS IN SIHO DURING THE CLASSIC PERIOD**

Faunal contexts in the recent excavations conducted at Siho, Yucatán, revealed different patterns and strategies of animal procurement by the elite since the earlier stages of the Late Classic and up to the Terminal Classic period. The taxa identified in Pit 5 are limited to large animals, basically deer, boar, turkey and ocellated turkey. Dog fragments show no traces of preparation, though previously in this report we indicated that only traces of cut and fire had been observed in the metapode, calcaneous and astragalus bones of these animals as evidence of their having been processed as food (Pohl 1990:164), features that are little represented in our sample. In total, the animals in Pit 5 represent an important supply of meat, and occur in many elite faunal contexts in Classic Maya sites. Deer, boars and ocellated turkey represent, even today, one of the favorite captures of rural hunters (Leopold 2000).

The majority of the deer fragments correspond to their rear extremities, followed by a smaller number of fragments of their axial skeleton, and a still smaller number of their anterior extremities. Boar is mostly represented by head fragments. These patterns show a difference in the skeletal frequencies of deer and boars described for the Central Lowlands during the Late Classic times. Both in Ceibal (Pohl 1976)

and in the Petexbatun region (Emery 1997:313), the anterior extremities of deer were associated, while their axial skeletons were used by the lower ranking population (Pohl 1990: 161-163), and the head of boars seemed to be associated to ritual feasting.

A high incidence of traces of preparation in the bones suggest intensive exploitation of the taxa present in Pit 5, most of all in those parts with a greater content of flesh. Pit 5 probably corresponds to a midden for the consumption of these species, as almost no skeletal parts with a small amount of flesh were found (metapodes, phalanxes, caudal vertebrae), which may have resulted from a butchery's processing. Although the possibility exists that some missing skeletal features may have been selected for the preparation of artifacts, it is worth noticing that in no context at the site significant remains of finished bone artifacts, or bone artifacts in process of elaboration, were found.

The materials from Structure 5D2 consist of abundant remains of deer, as well as different species of middle-sized reptiles, all of which are consumption remains. Deer are represented practically by their entire skeleton, with traces of preparation both in the extremities and in the cranium fragments. In contrast with Pit 5, it was found, here also, metapodes and proximal deer phalanxes, these latter with traces of carnivore mastication, probably suggesting that deer arrived in one piece to Structure 5D2 where they were cut into pieces and prepared on the spot. Medial and distal phalanxes are missing probably because they remained annexed to the skins that were worked (Pohl 1990:158). Besides the deer, no other animals "rich in meat" were found, as seen in Pit 5. Instead, consumption of middle-sized reptiles was observed. Both in the remains of black iguana and boa, there were traces of preparation that rule out a natural intrusion of these remains and favor their interpretation as food, although it is argued that snakes were rather used in rituals (Carr 1995: 2, 6).

Likewise, probably some sea catfish were consumed, as shown by cranial remains. However, the presence of fish in these contexts should not necessarily be interpreted as a significant use of these species as food, because both the dorsal spine of the sea catfish and the perforated vertebrae of stingrays would point instead to their use as utensils and/or adornments. Thus, just a small number of signs of trade involving sea fish from the coast near Siho were found, as reported for sites such as Chichen Itza (Carr 1995: 3), located farther away from the sea.

The inhabitants of Structure 5D2 seem to have enhanced their diet of meat with small species, a trait that has been reported for many sites in the Maya area during the end of the Late Classic and the Terminal Classic period. The difference between the taxa of Pit 5 and those of Structure 5D2 leads us to consider that the people who created the midden in Pit 5 probably had a better access to animals richer in meat and of a better quality than those of Structure 5D2, in a way that speculations could be made about the existence of socioeconomical differences between both contexts. In this sense, the inhabitants of Structures 5D13/14 possibly represented a higher ranking elite than that of Structure 5D2, a piece of information that is still to be refuted through the excavation of the structures adjacent to Pit 5.

The Terminal Classic layers of Structure 5D2 revealed just a small number of deer remains, though all of them were burnt and presented cut marks that point to the fact that they were consumed. In the Terminal Classic layers of Pit 5, dog remains were abundant, while there was little white-tailed deer and very little boar. Many fragments of the layers corresponding to the Terminal Classic could not be identified beyond their being “medium to large mammals”, due to their heavy fragmentation. These indefinable fragments originate in the diaphysis of the long bones and are the only existing evidence of any trace of preparation in the form of fractures in fresh and fire marks.

Both in regard to Pit 5 and Structure 5D2, we are positing an intensive exploitation of the few existing large animals, by roasting portions of their extremities (black spots on the bone surfaces that at the time of roasting were not covered by flesh), and then the breakage of bones for obtaining the marrow (small fragments of bone flakes with a spiral fracture resulting from the impacts aimed at breaking the bone). The bone fragments of large animals of the Terminal Classic period are smaller than those present in the Late Classic layers, a fact that is interpreted like an intensified use, together with a reduction in the diversity and amount of taxa.

The patterns that are evidenced in the faunistic materials of Structure 5D16 favor the interpretation mentioned earlier in this report. Also, Structure 5D16 yielded highly fragmented remains of middle-to-large mammals. Also these fragments are originated in the diaphysis of the long bones, and they likewise show fracture in fresh and traces of fire. However, the amount of these remains, in proportion to the total faunal material recovered in the structure, is considerably poorer, and as a complement, there are remains of rodents and medium sized reptiles, many of which exhibit traces of preparation. Likewise, remains of bird wings were found, as opposed to that which one would normally expect, inasmuch as birds are more frequently represented by their rear extremities (Emery 1997:313; Wing 1980:331) as they constitute the parts richer in meat.

The inhabitants of Structure 5D16 apparently had a lesser access to large animals than the inhabitants of the immediate center had, comprising Structure 5D2 and 5D13/14 (Pit 5). Some difference could be presumed in regard to power at the site, regarding access to prestige goods, among which meat, in times of scarcity, was probably one. The socioeconomical differences, and with them the possible differences in power, are expressed by the isolated localization of Structure 5D16 at the core of the site, as well as by the fact that Structure 5D16, in spite of having received a greater labor investment in its construction, is accompanied only by two perishable structures, while the structures at the center rise in the vicinities of the main pyramid and of several palace buildings.

## **CONCLUSIONS**

In short, we can say that the fauna consumed during the Late Classic period at Siho included mainly large mammals (white-tailed deer, boar and probably dog), as well as medium size reptiles (iguanas and turtles; Figure 7), and represents, *grosso modo*, the meat side of the so-called “Maya traditional diet” in the Classic Lowlands

(among others, Wing 1981:27). Particularly, the predominance of white-tailed deer is a very common trait of this time throughout Mesoamerica (Álvarez 1999; Carr 1995, 1996; Emery 1997; Pohl 1976, 1990; Wing 1980). The inhabitants of Structure 5D2 consumed, in addition, reptiles and birds, although these animals do not stand out when compared to deer.

The Terminal Classic brings about a change in food patterns (Figure 8). According to the evidence, large animals begin to diminish at Siho at that time, a trait that is expressed in the four points below:

- In the first place, this period features a much lesser amount of the large taxa (white-tailed deer, boar).
- Moreover, these remains were broken at a larger scale, and all of them exhibited fractures in fresh, suggesting that the little that was available had to be used at a larger scale, by completely breaking a large number of bones with the purpose of getting to the marrow.
- Furthermore, in the terminal layers of Pit 5 there was an abundance of dog remains, a domesticated animal whose consumption may have been deemed as an immediate help to face the reduction of the large wild fauna.
- The fourth evidence is the proportionally significant occurrence of small animals (rodents, reptiles) in the diet of the residents of Structure 5D16 during the Terminal Classic, together with little remains of deer, very fragmented in fresh.

It could be argued that the drop of large fauna at Siho during the Terminal Classic compared to the previous period was a consequence of the reduction of human population that took place at that time (Cobos *et al.* 2002). However, a reduction in population in optimum environmental conditions would not have demanded intensified means of procurement.

In the zooarchaeological analyses conducted at Dzibilchaltun (Wing 1980), and Ceibal (Pohl 1990:167), it was similarly observed a trend towards the reduction of the large fauna, together with an increase of small fauna in the food contexts of the Late and Terminal Classic periods. The authors associate this phenomenon with a heavy pressure of hunting and deforestation during the Late Classic (Carr 1995:4; Wing 1980:331). Wing proposes the idea of a drop in large fauna during the late phases of Dzibilchaltun, in comparison with the Preclassic period. At Siho, the large fauna seems to have been present even during the Late Classic, while the large reduction apparently began during the Terminal Classic. For example Yula, in Yucatan, and in spite of being a relatively small zooarchaeological sample, shows Late-Terminal Classic faunal profiles rich in large mammals (Carr 1995-8), just like the Petexbatun area, where a drop of the large fauna was not recorded for this period (Emery 1997:357).

Still, there is plenty to investigate in regard to the patterns of meat consumption during the Classic in the Maya Lowlands. The drop of the large fauna as a



consequence of an excessive hunting activity, deforestation, and the moving of wild populations, may have taken place at different stages and in different areas. Hopefully, future investigations will make it possible to accomplish more in-depth studies on what where the causes of the posited drop of large animals in the Northern Maya Lowlands, with what repercussions of the historic process of the Maya they are related to, and for what reasons this reduction does not appear in all sites at a same time. These investigations could not only clarify many issues regarding the life of the prehispanic Maya, but could also provide indications on the major issue of environmental preservation today.

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## REFERENCES

- Álvarez, Ticul, and Aurelio Ocaña  
1999 Sinopsis de restos arqueo-zoológicos de vertebrados terrestres – Basada en informes del Laboratorio de Paleozoología del INAH. INAH Colección Científica 386. México.
- Carr, Helen Sorayya  
1995 Some Reflections on Interpreting Archaeofaunas from Northern Yucatan. Paper, 60 Annual Meeting, Society for American Archaeology, Minneapolis.
- 1996 Precolumbian Maya Exploitation and Management of Deer Populations. In *The Managed Mosaic: Ancient Maya Agriculture and Resource Use* (edited by S. Fedick), pp. 251-261. University of Utah Press, Salt Lake City.
- Chase, Diane, and Arlen Chase  
2000 Inferences about Abandonment: Maya Household Archaeology and Caracol, Belize. *Mayab* 13: 66-77.
- Cobos, Rafael, Lilia Fernández Souza, Nancy Peniche May, Edgar D. Pat Cruz, Socorro Jiménez Álvarez, Vera Tiesler Blos, Christopher M. Götz and Alfonso Lacadena  
2004 *Proyecto Arqueológico El Surgimiento de la Civilización en el Occidente de Yucatán: Los Orígenes de la Complejidad Social en Siho*. Activity

Report of the 2001 Field Season submitted to the Archaeology Council, INAH. Autonomous University of Yucatan, School of Anthropological Sciences, Merida, Yucatan.

Cobos, Rafael, Lilia Fernández Souza, Vera Tisler, Pilar Zabala, Armando Inurreta, Nancy Peniche May, Ma. Luis Vázquez and Diana Pozuelo.

2000 *El Surgimiento de la Civilización en el Occidente de Yucatán: Los Orígenes de la Complejidad Social en Siho*. Activity Report of the 2001 Field Season submitted to the Archaeology Council, INAH. Autonomous University of Yucatan, School of Anthropological Sciences, Merida, Yucatan.

Dunning, Nicholas P.

1993 Preliminary Data of the Site of Siho. Typewritten. Archive of the Archaeology Section of the Yucatan INAH Center, Merida.

EA.FLMNH

2003 Digital photographic collection of 243 endemic specimens of the Maya region, taken by Christopher Götz, and in possession of the department of Environmental Archaeology of the Florida Museum of Natural History, Vol. 2.

Emery, Katherine F.

1997 *The Maya Collapse: A Zooarchaeological Investigation*. Ph.D. Dissertation, Anthropology, Graduate School, Cornell University, Ithaca.

Fernández Souza, Lilia, Marisa Vázquez de Agredos and Rafael Cobos Palma

2003 Análisis de una estructura de tipo palacio en Siho, Yucatán. In *XVI Simposio de Investigaciones Arqueológicas en Guatemala, 2002* (edited by J.P. Laporte, H. Escobedo, B. Arroyo and H. Mejía), pp. 1031-1036. National Museum of Archaeology and Ethnology, Guatemala.

Fernández Souza, Lilia and Nancy Peniche May

2004 Informe de la excavación horizontal realizada en la Estructura 5D2. In *El Surgimiento de la Civilización en el Occidente de Yucatán: Los Orígenes de la Complejidad Social en Siho*. Activity Report of the 2001 Field Season submitted to the Archaeology Council, INAH (edited by R. Cobos Palma), pp. 41-68. FCA UADY, Mérida.

Gautier, Achilles

1984 How Do I Count You? Let Me Count The Ways. Problems of Archaeozoological Quantification. In *Animals and Archaeology 4*. Husbandry in Europe (edited by C. Grigson and J. Clutton-Brock), pp. 237-251. British Archaeological Reports International Series 227, Oxford.

Gilbert, Miles B.

1980 *Mammalian Osteology*. Missouri Archaeological Society, Laramie, Wyoming.

- Gilbert, Miles B., Larry D. Martin and Howard G. Savage  
1985 *Avian Osteology*. Missouri Archaeological Society, Laramie, Wyoming.
- Jiménez Álvarez, Socorro  
2004 Siho como Unidad Política. Paper presented at the Congreso Internacional de Mayistas, Villahermosa, Tabasco.
- Lacadena, Alfonso  
2004 El Panel 1 de Siho: Informe epigráfico. In *El Surgimiento de la Civilización en el Occidente de Yucatán: Los Orígenes de la Complejidad Social en Siho*. Activity Report of the 2001 Field Season submitted to the Council of Archaeology, INAH (edited by R. Cobos Palma), pp. 159-162. FCA-UADY, Mérida.
- Lee, Julian C.  
2000 *A Field Guide to the Amphibians and Reptiles of the Maya World*. Cornell University Press, Ithaca.
- Leopold, A. Starker  
2000 *Fauna Silvestre de México*. Editorial Pax México. México D.F. (reprint of original work, 1959).
- Maler, Teobert  
1997 Península de Yucatán (edited by H.J. Prem). *Monumenta Americana* 5. Gebrüder Mann Verlag, Berlin.
- O'Connor, Terry  
2000 *The Archaeology of Animal Bones*. Texas A&M University Press, College Station.
- Olsen, Stanley J.  
1968 *Fish, Amphibian and Reptile Remains from Archaeological Sites*. Papers of the Peabody Museum of Archaeology and Ethnology, Vol. 56 (2), Harvard University, Cambridge, Massachusetts.
- Peterson, Roger Tory, and Edward L. Calif  
1973 *Mexican Birds*. Peterson Field Guides, Houghton Mifflin Company, Boston & New York.
- Pohl, Mary Ellen Deland  
1976 *Ethno zoology of the Maya: An Analysis of Fauna from Five Sites in the Peten, Guatemala*. Ph.D. Dissertation, Anthropology, Harvard University, Cambridge, Massachusetts.  
  
1990 The Ethnozoology of the Maya. In *Excavations at Seibal* (edited by G.R. Willey), pp. 142-174. Harvard University, Cambridge, Massachusetts.

Reid, Fiona A.

1997 *A Field Guide to the Mammals of Central America and Southeastern Mexico*. Oxford University Press, New York.

Tun Ayora, Gabriel Ernesto

2004 *La organización de viviendas Mayas prehispánicas: Análisis de estructuras domésticas asociadas a unidades habitacionales de élite de Siho, Yucatán*. Bachelor's Thesis, Archaeology, School of Anthropological Sciences, Autonomous University of Yucatán, Mérida, México.

Wing, Elizabeth S.

1980 Appendix: Vertebrate Remains from Dzibilchaltun. In *Excavations at Dzibilchaltun* (edited by E. Andrews Wyllys IV and E. Wyllys Andrews V), pp. 326-331. Middle American Research Institute, Tulane University, Publ. 48. New Orleans.

1981A Comparison of Olmec and Maya Foodways. In *The Olmec and Their Neighbours* edited by E. Benson), pp. 21-28. Dumbarton Oaks. Washington, D.C.

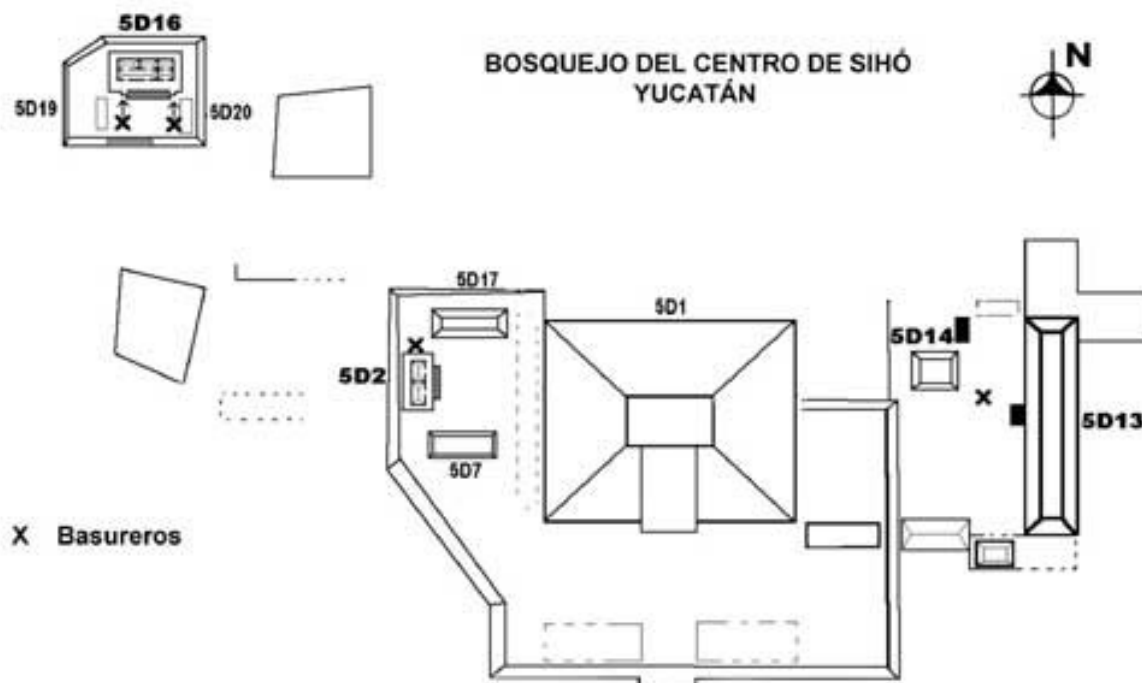


Figure 1. Sketch of Siho's center, Yucatán, showing structures referred to throughout text.

		Taxon	Head	Axial skeleton	Extremities				Legs	Total NISP	MNI per species or gender	
					n.d.	Anterior		Posterior				
						Upper	Lower	Upper				Lower
5 D 2	L a t e  C l a s s i c	Sea catfish	1							1	1	
		Stingray		1						1	1	
		Reptile, n.d.	1		8						9	--
		Black iguana	9	2	3				3	17	4	
		Boa		4						4	1	
		Rattle snake		1						1	1	
		Land turtle		2						2	1	
		Medium size bird						2		2	--	
		Medium size mammal					7			7	--	
		Deer n.d.	12	1	8	1			1	23	--	
		Temazate	2							2	1	
		White-tailed deer	11	1		3		3		6	24	2
		Terminal Classic	Deer n.d.					1			1	--
		White tailed deer	4					1	1	6	1	
5 D 1 6	T e r m i n a l	Sea catfish	1							1	1	
		Black iguana			1				1	2	1	
		small - medium size			3					3	--	
		Snakes		7						7	--	
		Medium size birds				1				1	--	
		Rodent n.d.		14						14	--	
		Toucan	1		2				2	5	1	
		Dog							1	1	1	
		Medium and large				4				4	--	
		Deer	1							1	1	
5 D 1 3 / 5 D 1 4  ( P i t 5 )	L a s t i c	Ocellated		1			2			3	1	
		Dog	2		5				1	10	1	
		Medium size mammal	50	10	16					76	--	
		Deer n.d.		6	20					26	--	
		White-tailed deer		3		5		16	6	30	4	
		Collared boar	7			2				9	1	
	Terminal Classic	Dog	17					2	19	1		
		Medium size mammal		3	15				18	--		
		White-tailed deer	4						4	1		
		Collared boar						1	1	1		

Figure 2. Table with identified taxa of the different structures at Siho together with the representation of corporal parts and the estimate of minimum number of individuals.

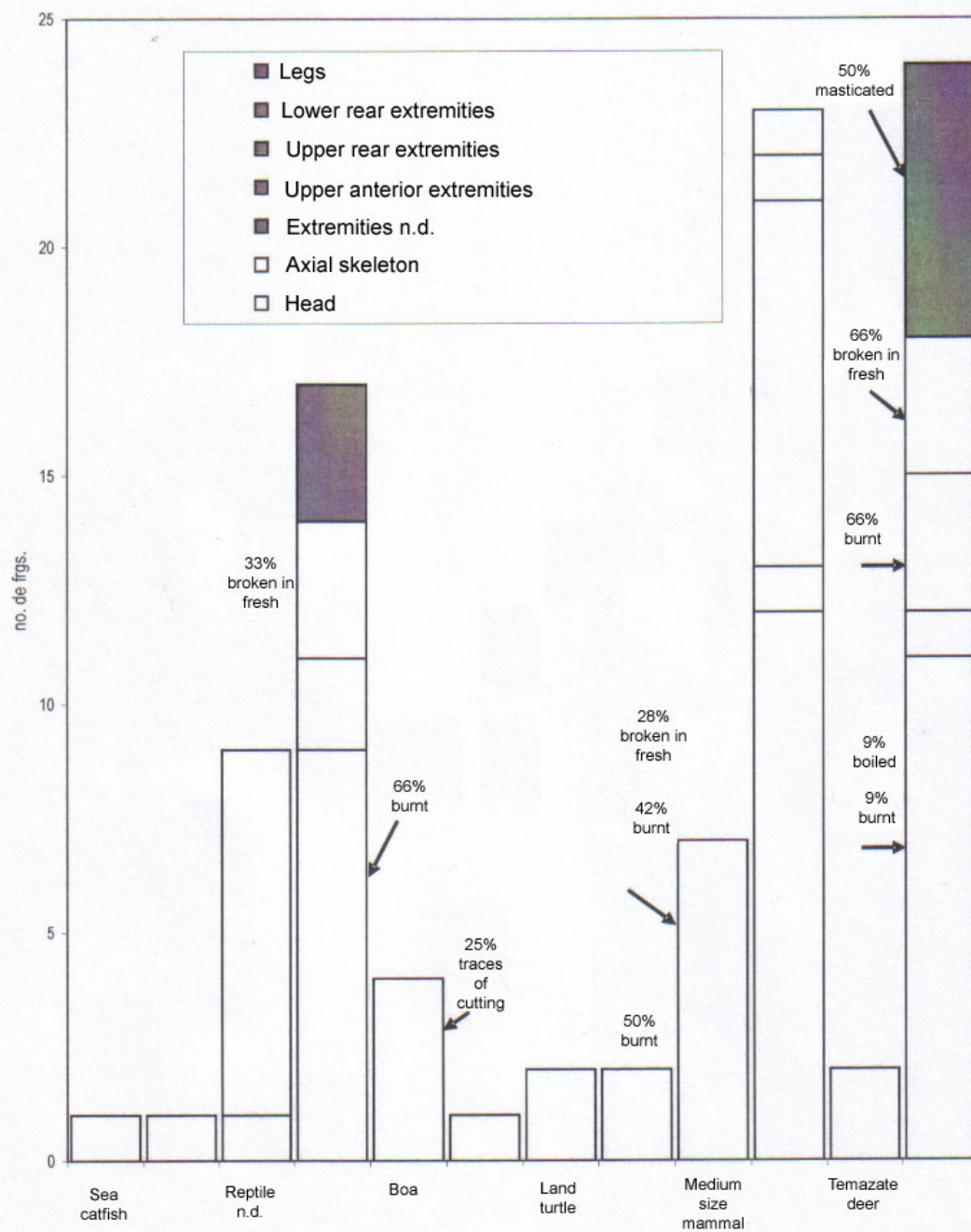


Figure 3. Skeletal frequency, midden of Structure 5D2 (Late Classic period).

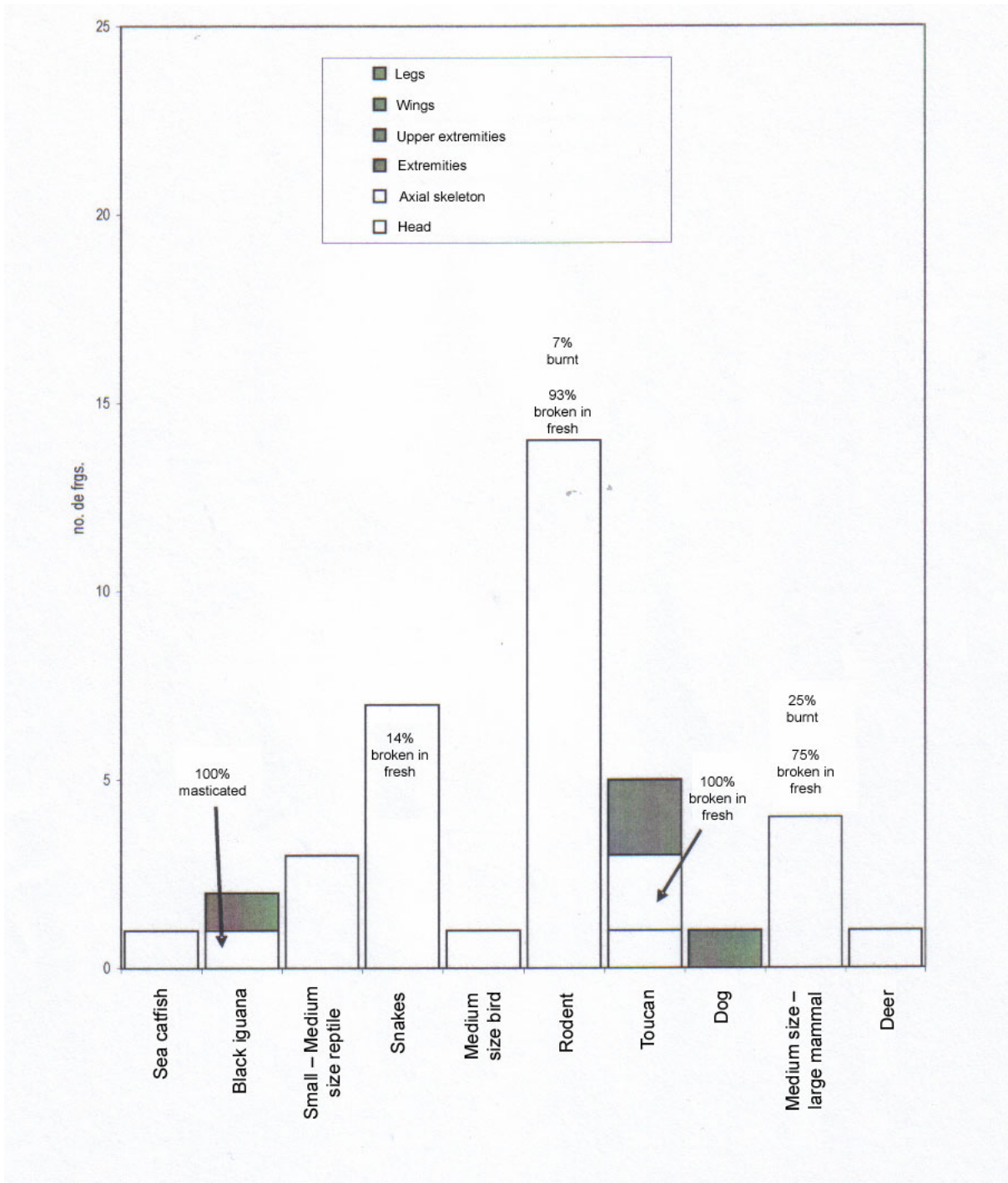


Figure 4. Skeletal frequency, midden of Structure 5D16.

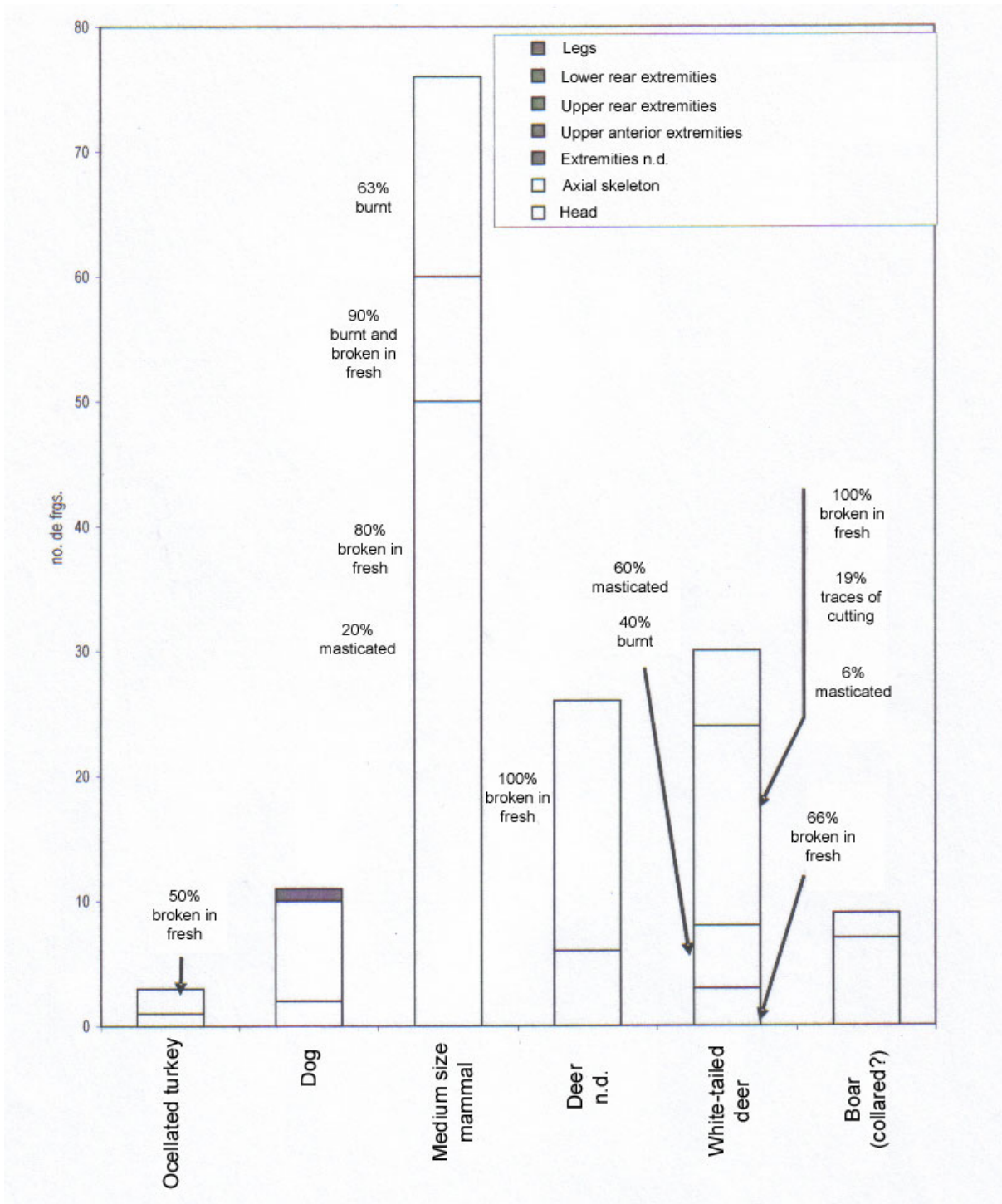


Figure 5. Skeletal frequency, midden, Pit 5 (Late Classic).



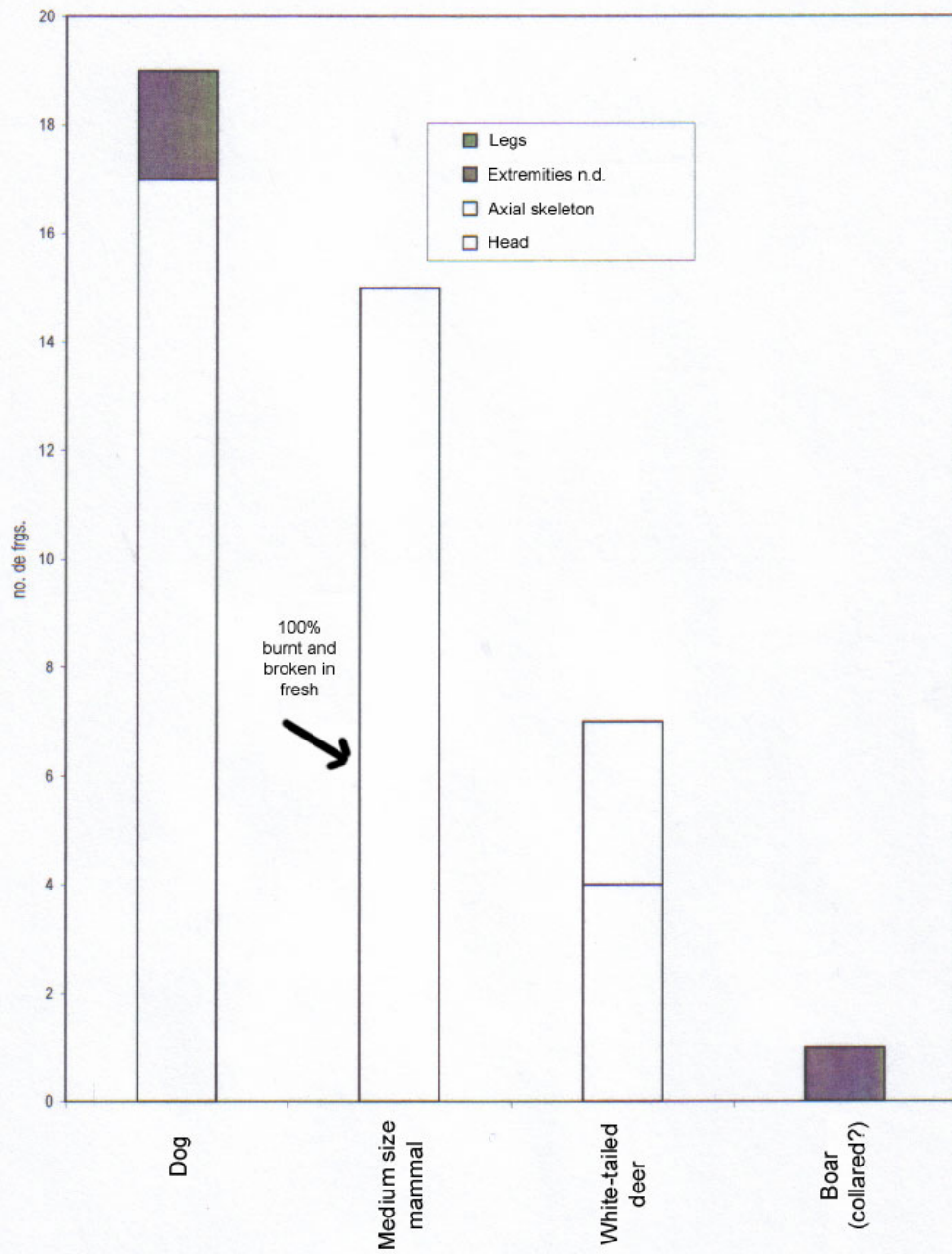


Figure 6. Skeletal frequency, midden, Pit 5 (Terminal Classic).

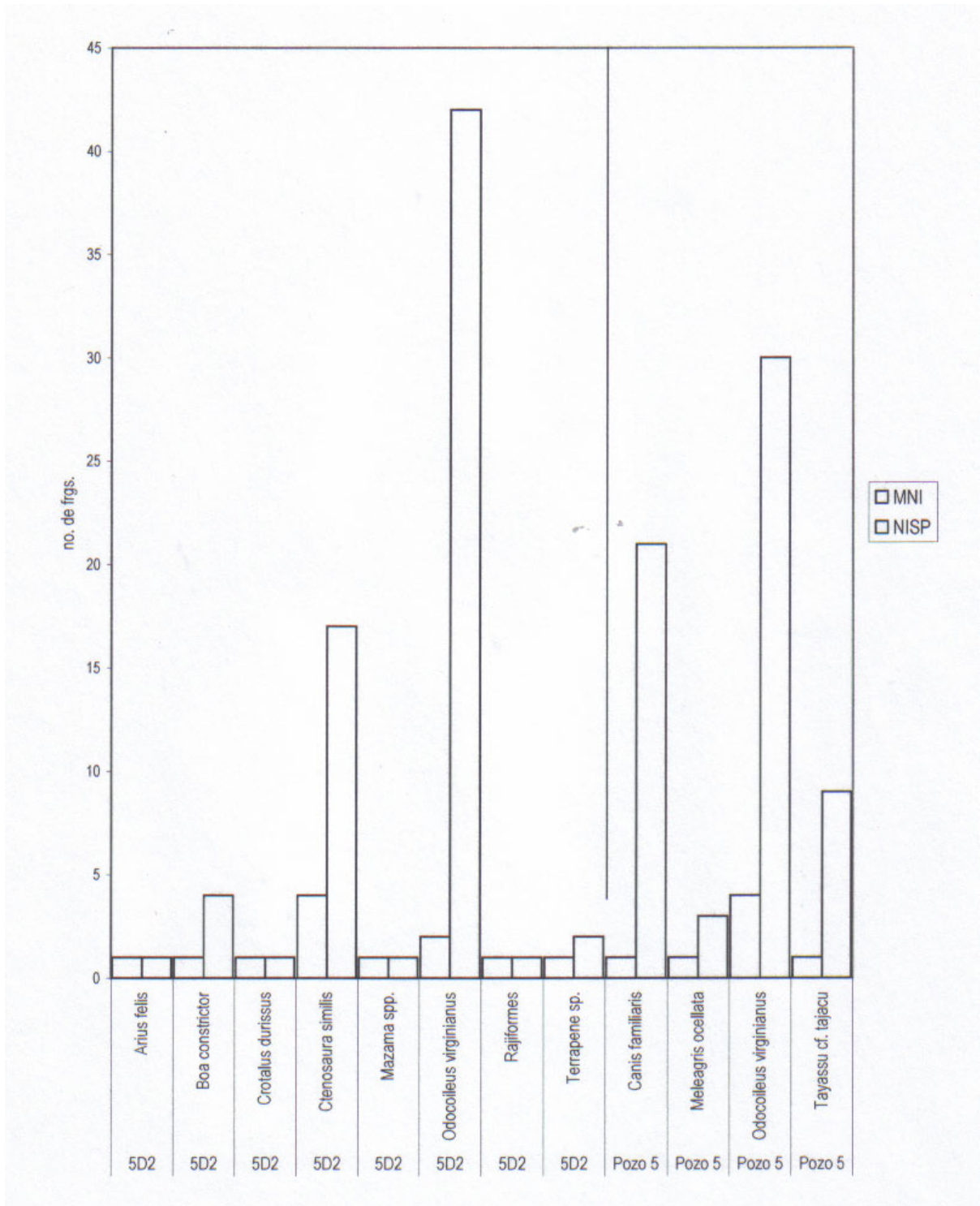


Figure 7. Siho's taxa – Late Classic.

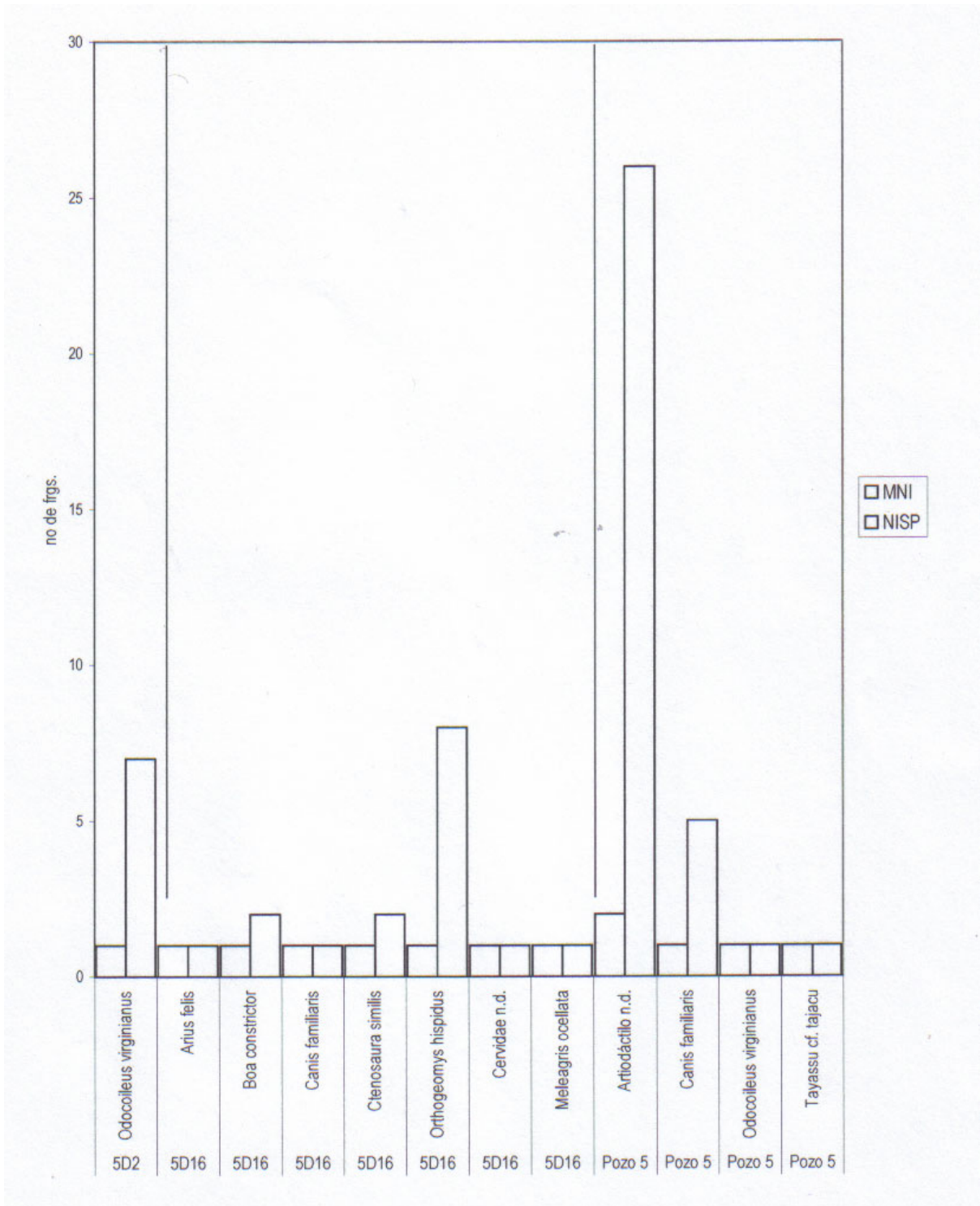


Figure 8. Taxa Siho – Terminal Classic.