



SNAKES, CENTIPEDES, SNAKEPEDES, AND CENTISERPENTS: CONFLATION OF LIMINAL SPECIES IN MAYA ICONOGRAPHY AND ETHNOZOOLOGY.

*(Workshop Closing Paper Presented at the XXIVth Linda Schele Forum on
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Abstract

Since the identification of centipedes in the Maya hieroglyphic corpus and iconography in 1994 by Nikolai Grube and Werner Nahm (Grube & Nahm 1994: 702), epigraphers and iconographers alike have debated whether the serpentine creatures in Maya iconography depict imaginative snakes or centipedes. In this paper we argue that most serpentine creatures with unrealistically depicted heads are neither snakes nor centipedes, but a conflation of both, and even have characteristics of other animals, such as sharks and crocodiles. Thus these creatures should more aptly be designated as zoomorphs, monsters, centiserpents, or dragons. In the present article the topic will be examined using iconographic, epigraphic, zoological, and ethozoological data.

Acknowledgements

We would like to express our thanks to Justin Kerr for directing the Workshop on Maya ceramics at the XXIVth Maya Meeting in Austin. We would also like to thank Justin for making available hundreds of roll-out photographs of Maya ceramics and for offering us his insights on Maya iconography. Furthermore, we would like to thank Nancy Elder, the head librarian of the Biological Sciences Library at the University of Texas at Austin for providing us numerous articles relating to our topic and for directing us to relevant sources during our research on centipedes. This paper is intended to be a concise study of snakes, centipedes, and conflated liminal species in Maya art. Consequently, we cannot go too deeply into the history of related epigraphic analyses. We would therefore like to apologize for any omitted acknowledgements, and would welcome feedback in this regard.

Introduction

In their 1994 article Grube and Nahm call attention to a certain creature depicted on K1256 (see Figure 1) and to other related representations of the same entity on the monuments. They state that “it forms the corners of ancestor cartouches and the Skeletal Maw on the base of Pakal’s sarcophagus in Palenque” (Grube & Nahm 1994: 702). In 1999 Erik Boot (Boot 1999: 2) recognized that the creature on Lintel 25 at Yaxchilan is similar to the centipede depicted on K1256 (see Figure 1 and Figure 2) Boot also identified the two small hooks connected to the body of the creature as possible representations of centipede legs.

The hieroglyphic caption on K1256 was read as *sak bak nah chapat (u way bakel)*¹ by Grube and Nahm (1994: 702) and the first part was glossed as “white bone house centipede”. Other examples of the word centipede are discussed by Boot (1999), who provides a set of different spellings of the word: **cha-pa-ta** (in K1256); **cha-pa-tu** (in a ceramic vessel discussed by Marc Zender in an unpublished manuscript); **cha-CHAPAT-ti** (ceramic vessel from Copan, Test Trench 4-42); **CHAPAT-tu** (Copan, Altar of Stela 13); and **CHAPAT** (numerous examples). These varied ways to spell the word for centipede and the outcome of the different arrangements (i.e. transliteration) are shown in Table I).



Figure 1: Detail from K1256 showing Deer snake and Centipede wayob (photo by Justin Kerr).

¹ With current (2000) modifications the caption can be read as **SAK-B'AK-ka na-ja cha-pa-ta u-WAY B'AK-le** (*Sak B'ak Naj Chapa[h]t uway B'ak[e]*).

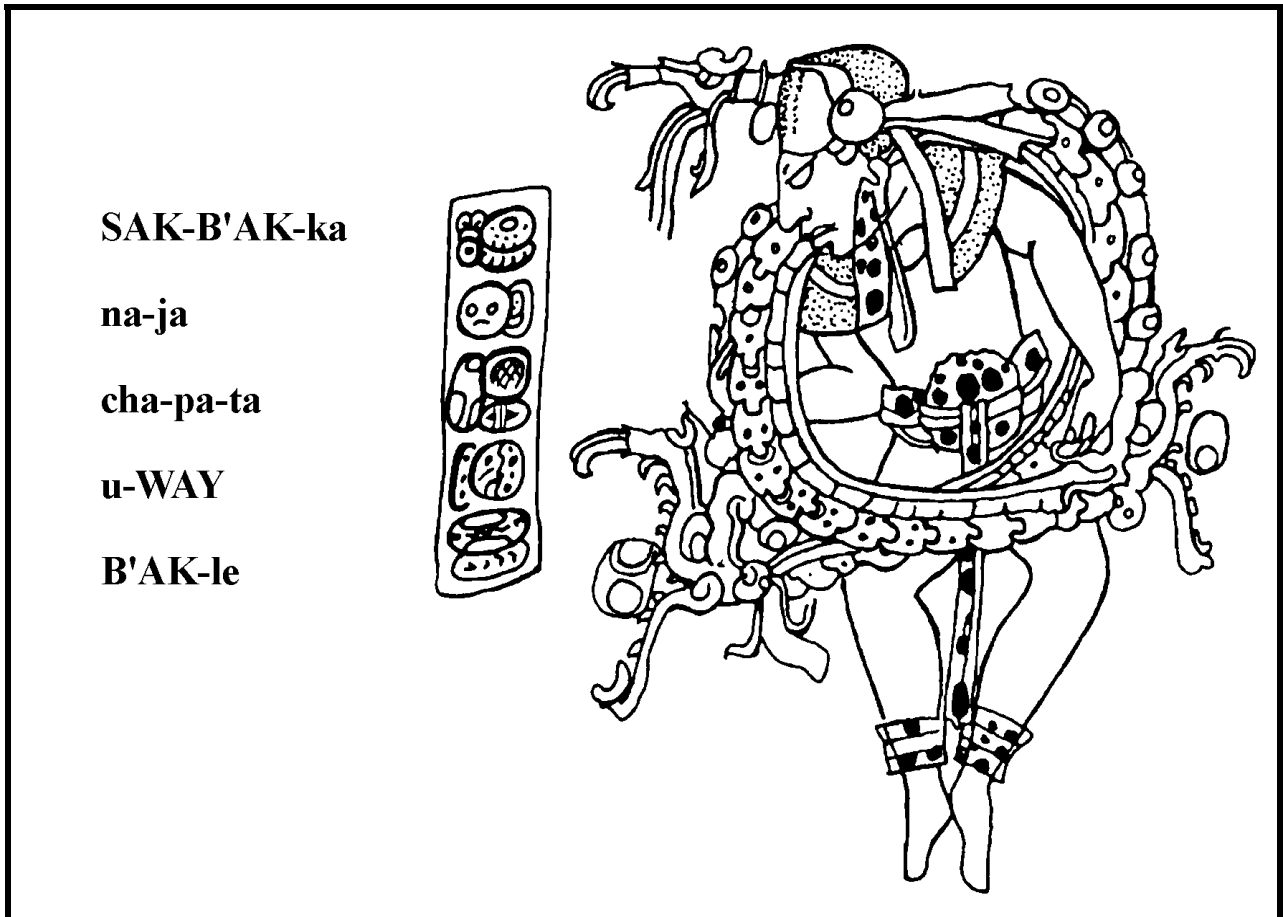


Figure 2: K1256 "Sak B'ak Naj Chapa[h]t" (Drawing by Linda Schele [after Grube and Nahm 1994: Fig. 30 with slight modifications])

In our opinion most of the creatures in Maya iconography with heads identified as centipede heads by Grube, Nahm, and Boot are more accurately confections of different animals. Combining an imaginative centipede-like head with a snake or serpentine body is a common feature in Maya iconography. In the example noted by Erik Boot (1999: 2) from Yaxchilan Lintel 25 (see Figure 3) we believe that the small "hooks" connected to the body of the creature are not centipede legs, as suggested by Boot, but are in fact protruding vestigial hind limbs² (rear legs) of genus *Boidae* snakes. These snakes are commonly known as such as *Boa constrictor* (the only species in the *Boidae* family found in the Americas), and are found throughout the Maya lowlands (see Figure 27).

² The vestigial hind limbs are longer and more prominent in males than in females. In addition, the male uses his larger limbs to stimulate the female during mating.

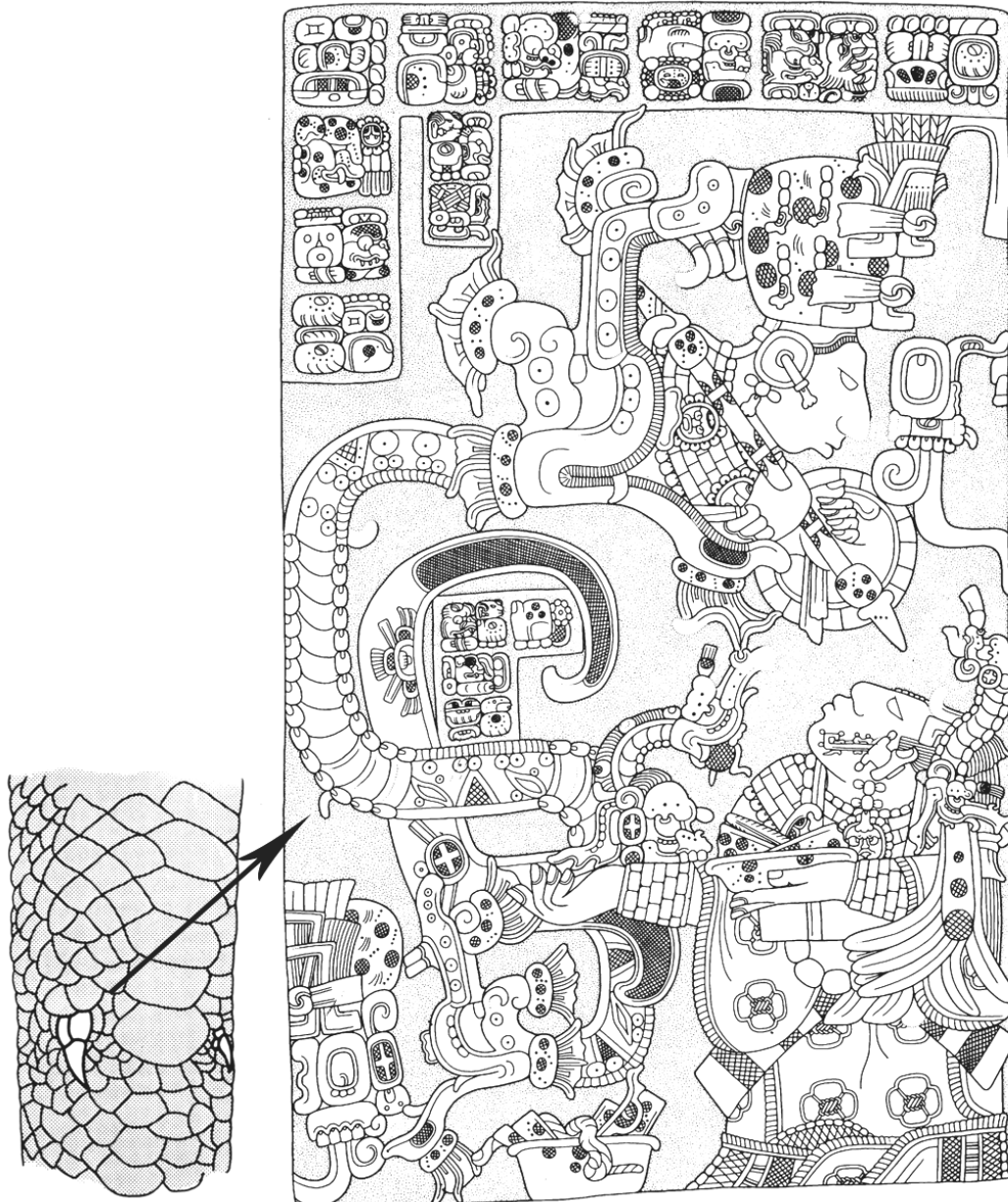


Figure 3: Yaxchilan Lintel 25 (drawing by Ian Graham) with a depiction of protruding vestigial hind limbs of genus *Boidea* snakes (adapted after Frank 1979: 44)

The middle part of the snake body depicted on Lintel 25 is segmented, which might lead one to the incorrect impression that this was a depiction of a centipede somites or body segments. However, we suggest that this part of the creature depicts the ventral part of the snake. Below and above the middle part one can see designs that have indications of either *Boa constrictor* or *Bothrops asper* (see Figure 28) body patterns.

The head of the creature in question is depicted in a number of different ways in Maya iconography. Most commonly the creature is skeletal, has large eyes, a prominent forehead, beard-like component on the mandible (lower jaw), and a set of teeth or fangs inside the mouth or maw. Skeletal heads also have a set of two claws (teeth/ fangs/ incisors/ maxillae/ maxillapeds) at the far end of the upper jaw or maxilla.

One of the most distinctive features of the skeletal creatures is the two fangs or teeth at the end of the upper jaw. These are clearly present on K1256, on Yaxchilan Lintel 39 (see Figure 4), and on numerous other monuments, ceramic vessels, and miscellaneous portable items such as on the carved bone from Tikal Burial 116 (see Figure 5), on the House A medallions (see Figure 7) at Palenque, on Stelae D and H and on Structure 9N-82 (see Figure 8) at Copan, on the bicephalic headdress creature on Yaxchilan Lintel 25 (see Figure 3), and on K1180, K1392, K1523 (see Figure 6), K1609, K2700, and K8150.

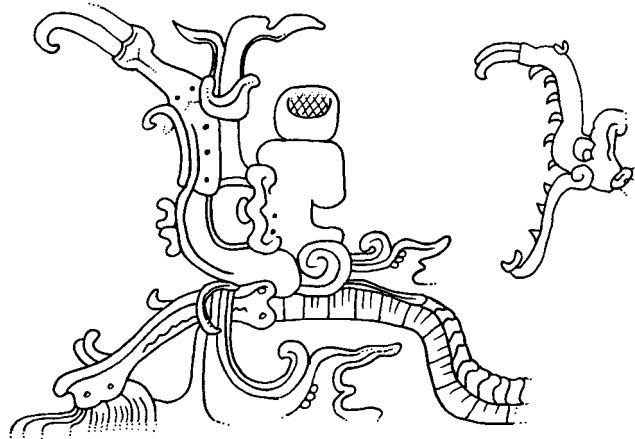


Figure 4: Comparison of zoomorph heads from Yaxchilan Lintel 39 and K1256 (drawings by Harri Kettunen)

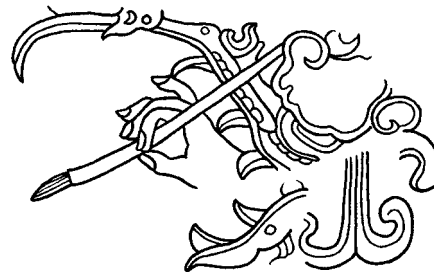


Figure 5: Artist's hand incised on a bone stylus, from burial 116, Tikal (drawing by Harri Kettunen).

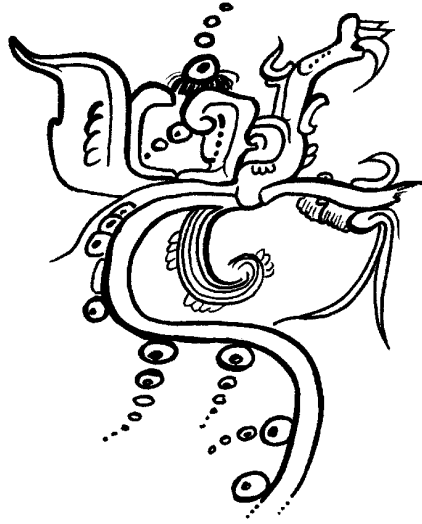


Figure 6: Detail from K1523 (drawing by Harri Kettunen).

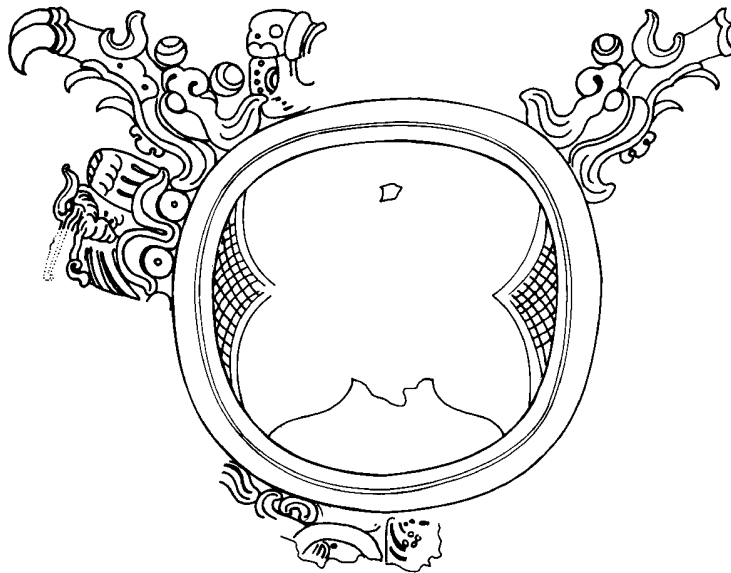


Figure 7: House A, medallion 6, Palenque (after Greene Robertson 1985: Fig. 119a)

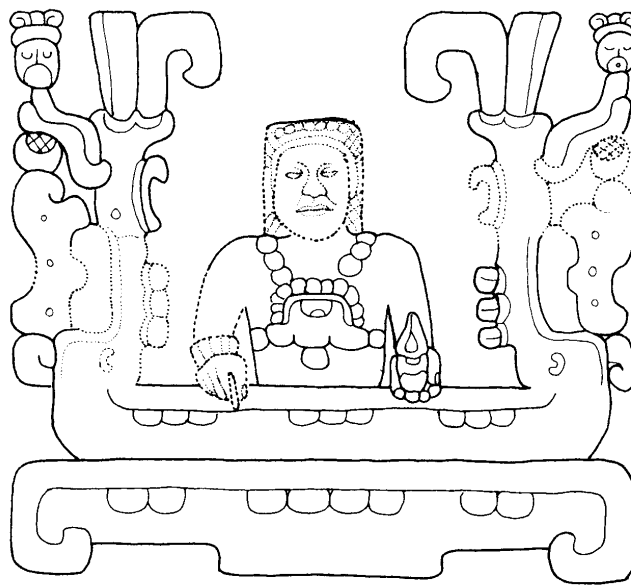


Figure 8: Detail (reconstructed) from Structure 9N-82, Copan (after Schele & Miller 1986: Fig. III.8 [drawing by Barbara Fash])

Also, the fangs or teeth are present in the logogram for centipede: **CHAPAT** (see Table I). In the case of the principal dragon-like creature on Yaxchilan Lintel 25, K2572 (see Figure 9), and hundreds of other occurrences of dragon-like creatures, the inner fangs are present but the prominent skeletal premaxilla teeth or fangs are absent.

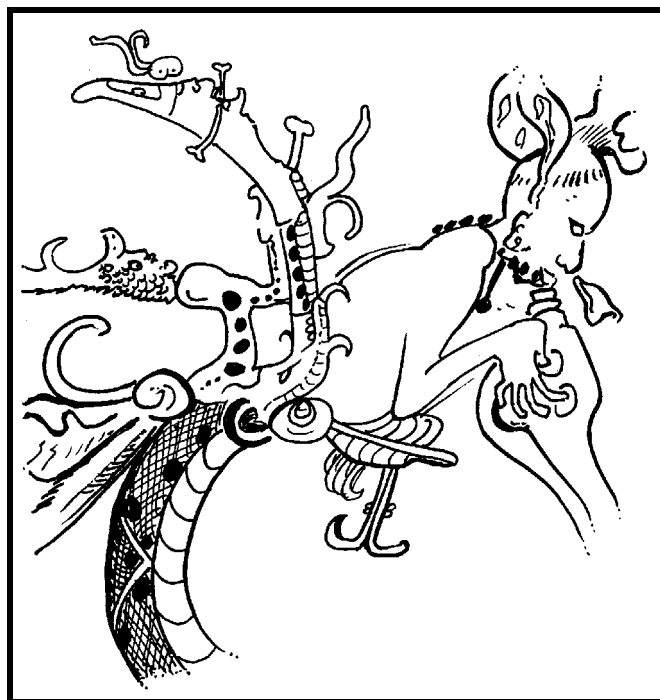
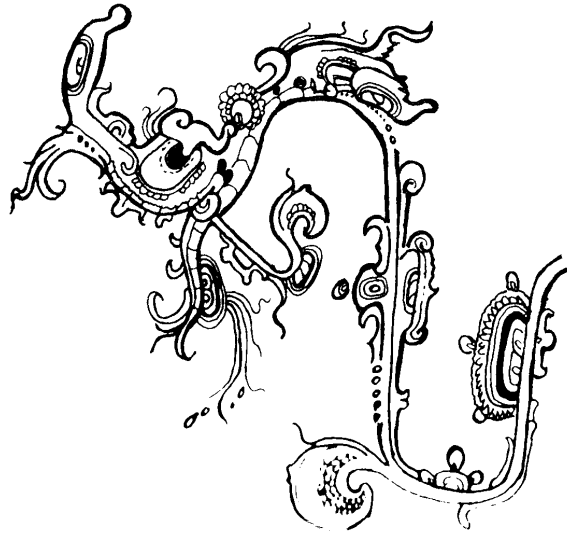
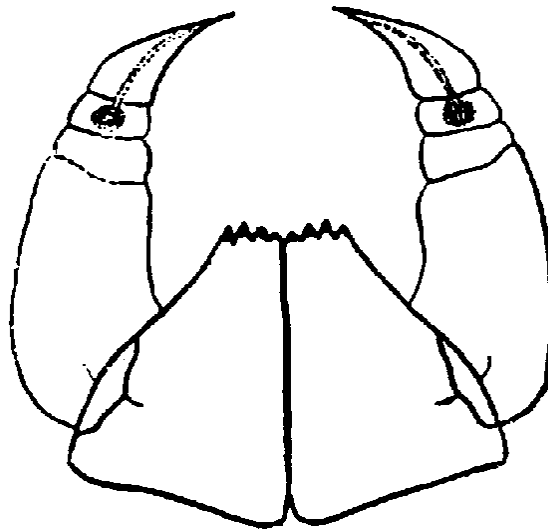


Figure 9: Detail from K2572 (drawing by Harri Kettunen).

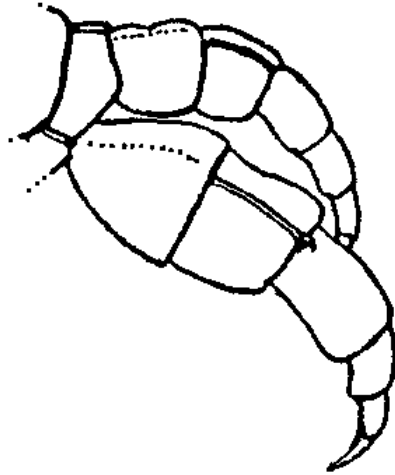


**Figure 10: Detail from K1609 showing a
(adapted after Schele and Miller 1986: Pl. 122b,
drawing by Linda Schele)**

Furthermore, the creature depicted on Yaxchilan Lintel 25 has three fangs instead of two, disagreeing with the fact that centipedes have a set of two primary maxillae (see Figure 11).

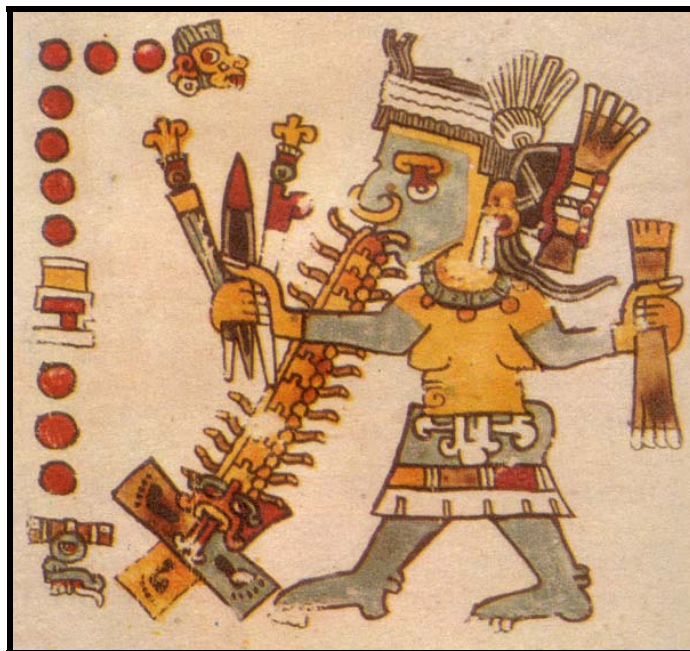


**Figure 11: Generic skeletal view of a centipede maxillae and the
position of poison glands and their ducts (after Cloudsley-
Thompson 1968: Fig. 13)**



**Figure 12: Last pair of legs of *Asanada sokotrana attemsi*
(after Bücherl 1974: 106 [NB: spp. not found in the neotropics])**

While in the Maya iconography explicit depictions of centipedes are scarce or nonexistent, in the art of other Mesoamerican cultures centipedes are frequently portrayed in a more realistic manner. On page 47 in Codex Borgia (see Figure 13) a centipede is shown emerging from or attached to the mouth of a deity. In a Classic period Totonac polychrome ceramic vessel from Veracruz (see Figure 14) a relatively realistically rendered centipede is shown undulating around the vase³.



**Figure 13: Detail from Codex Borgia, p. 47 showing a centipede
emerging from or attached to the mouth of Cihuateteo
(after Códice Borgia 1963)**

³ We would like to thank Philippe Bézy for pointing out this example during the course of the workshop.



Figure 14: Classic period Totonac polychrome ceramic vessel from Veracruz depicting a centipede (Museo Nacional de Antropología, México, D.F.)

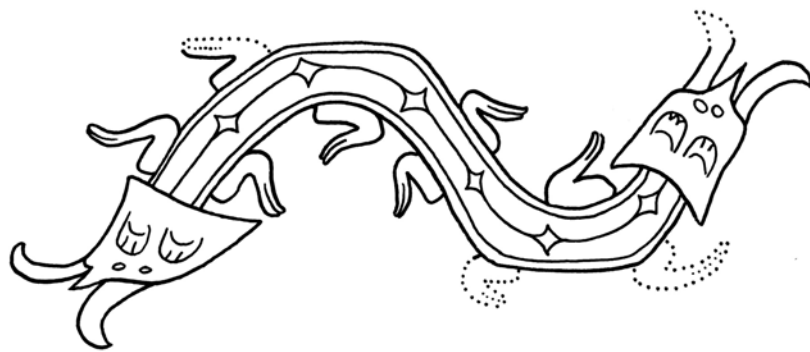


Figure 15: Early Preclassic Olmecoid centipede figure from K1608 (drawing by Harri Kettunen after Justin Kerr's photo)

While the chilopodan attributes in the iconography of imaginative creatures in Maya art are plentiful, the abundance of different species of snakes in the Mesoamerica area has had an even bigger impact on the artistic traditions of the Maya and other Mesoamerican cultures. However, as with centipedes, most snake-like or serpentine creatures in Maya art seem to be conflated with the attributes of other animals to form imaginative creatures. However, when rendered in a more realistic manner, one can be more or less certain that the intended creature is a snake and not an imaginative beast.

In Maya art it is possible to identify, with certain restrictions, different snake species. This can be done both with the realistically rendered snakes and with snake bodies with imaginative heads. The rattlesnake (*Crotalinae spp.*) with its diagnostic rattle attached to the last caudal vertebrae is a common theme in Maya art – especially in the northern part of the Maya area – and easy to recognize without having to study body patterns or other features of the snake. By looking at the body patterns it is, however, possible to identify at least groups of different snakes. A common body pattern of snakes in Maya art is that of a V-shaped pattern diagnostic of (at least) *Bothrops asper* (see Figure 28), *Crotalus durissus* (tropical rattlesnake) and *Boa constrictor*, and it is present in numerous depictions of snakes or snake bodies in Maya art (see, for example, Lintel 14, Yaxchilan [Figure 18]). This pattern is probably also the graphic origin for the logograph MAN (see Figure 16).

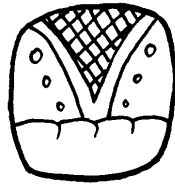


Figure 16: Logograph MAN.

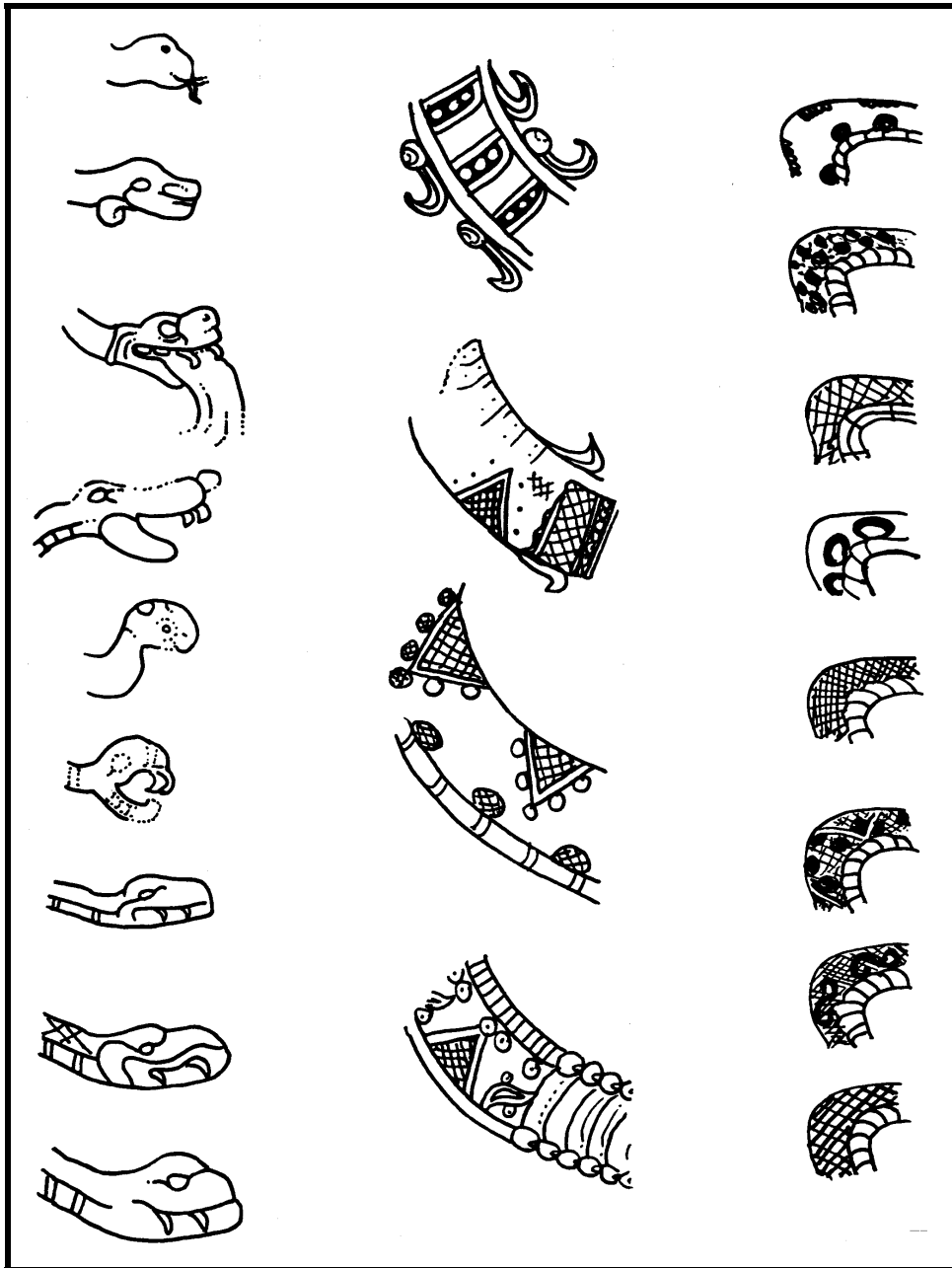


Figure 17: Examples of snake heads and snake bodies in Maya iconography (left: snake heads on monumental art; center: snake bodies on monumental art; right: snake bodies on ceramic scenes)

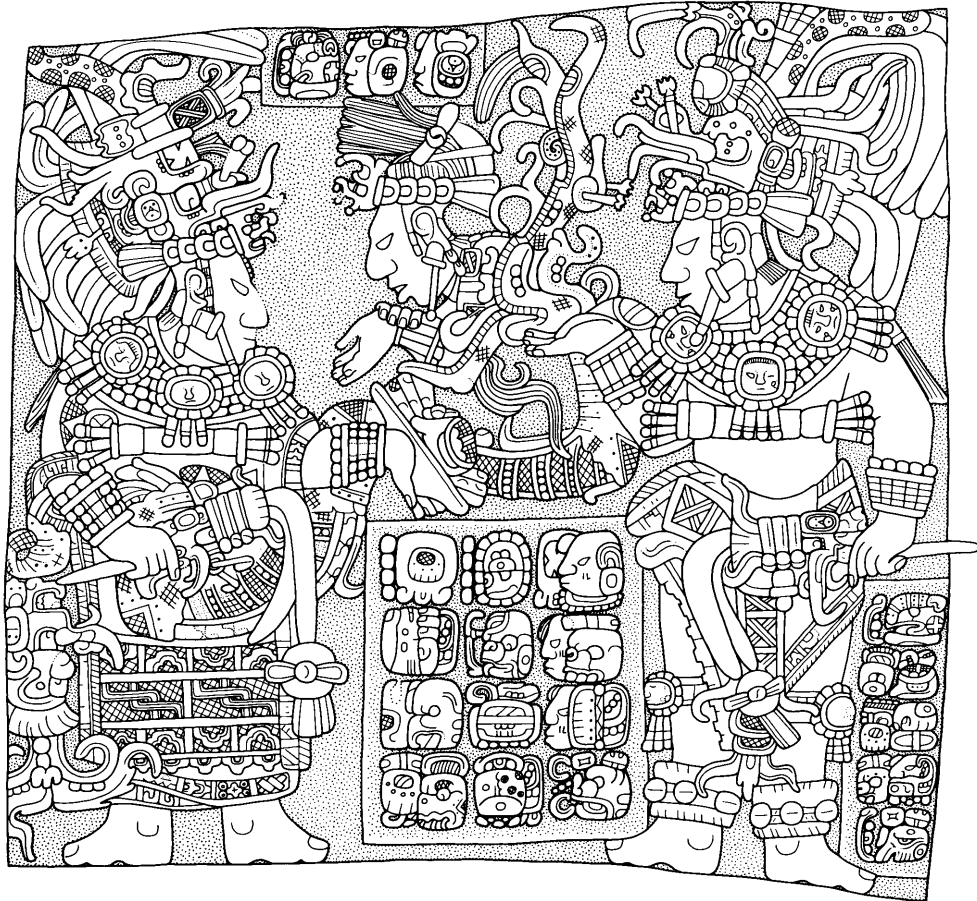


Figure 18: Lintel 14, Yaxchilan (drawing by Ian Graham).

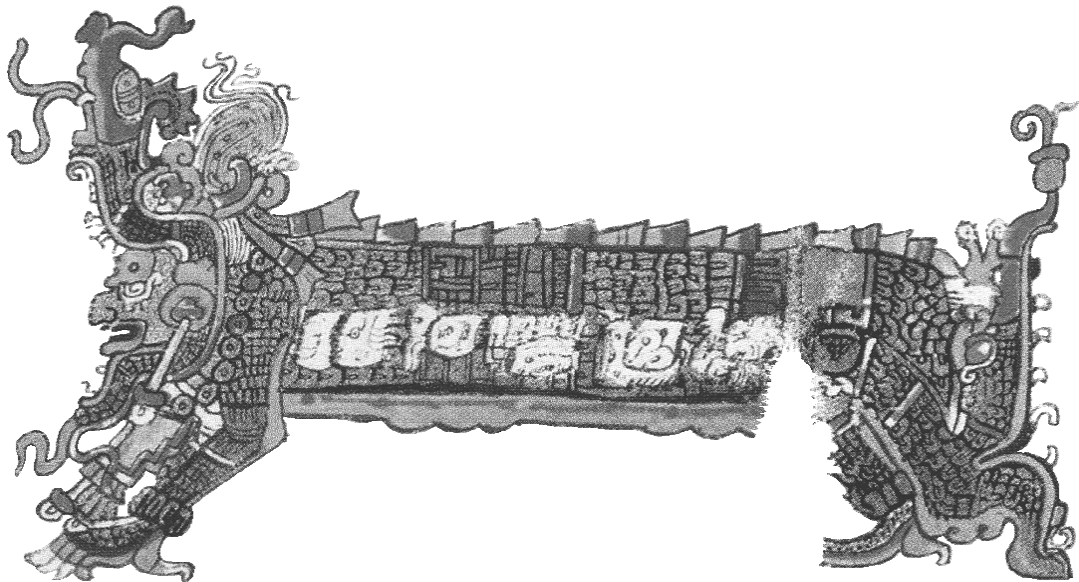


Figure 19: Detail from Dresden Codex p. 4-5 (adapted from Kumatzim Wuj Jun 1998: 4-5).



Figure 20: Stela 25, Izapa, showing a foliated caiman (drawing by Linda Schele, Linda Schele Archive, file #6904)

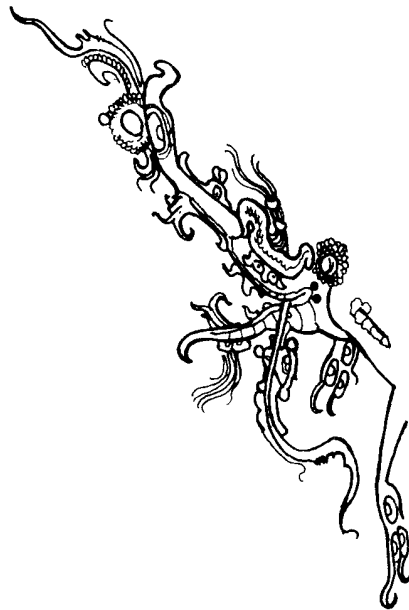


Figure 21: Detail from K1609 showing a crocodilian monster (adapted after Schele and Miller 1986: Pl. 122b, drawing by Linda Schele)

All in all, most Mesoamerican artistic traditions seem to have a common feature of conflating different species to render imaginary dragon-like creatures that have attributes of centipedes, snakes, crocodiles, and other animals. This practice is essentially a worldwide phenomenon and examples from Chinese, Indian, Near Eastern, and Mediaeval European Art are abundant.

Centipedes

There are some 3000 known species of centipedes around the world. All centipedes belong to the phylum *Arthropoda*, subphylum *Mandibulata*, superclass *Myriapoda*, and class *Chilopoda*, and, furthermore, there are at least four orders of the Chilopoda class, namely *Scutigleromorpha*, *Lithobiomorpha*, *Scolopendromorpha*, and *Geophilomorpha*. Centipedes have 15 to 181 somites, each with a pair of legs. In comparison **millipedes** [phylum *Arthropoda*, subphylum *Mandibulata*, class *Diplopoda*] have 20 to over 100 **double** somites, each with two pairs of legs. All of the over 8000 species of millipedes are herbivorous. (Storer & Usinger 1965: 270-271, 281-284, 593-599)⁴.

On centipedes, Hickman (1967: 442) writes: “[Centipedes] are ground dwellers, living in soil, rotten logs, and under stones. They are usually restricted to habitats with high environmental moisture. Unlike *Diplopoda* [millipedes] they are exclusively carnivorous and are very active, agile animals”. Easterla (1975: 411) mentions an incident in Texas of a *Scolopendra heros* centipede feasting on a considerably longer *Rhinocheilus lecontei* snake that it had killed. Hickman (1967: 442) also notes that a bite of *Scolopendra* can be lethal, especially if the wounded is a small child.

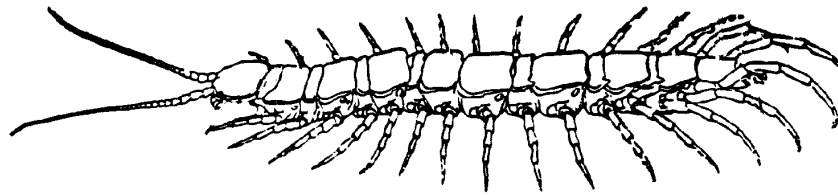


Figure 22: *Lithobius forficatus* (adapted from Kaestner 1968: 357)

The body of a centipede is composed of a chain of flattened segments (up to 177). All the segments (save the one behind the head and last two body segments) have a single pair of legs (appendages). The first appendages form relatively large, poisonous fangs that are used to capture prey. Distinguished from millipedes (class *Diplopoda*) centipedes are predatory, feeding mostly on soil invertebrates. All centipedes are terrestrial and they require moist microhabitats, they lay eggs, and when they hatch, the young resemble miniature adults. (Myers 2000).

In Bücherl's (1974) study on the *Scolopendromorpha* order of the *Chilopoda* (centipede) class in the neotropics one can find at least nine examples of *Scolopendromorpha* centipedes that are found at least in some parts of the Maya area, namely: *Scolopendra gigantea gigantea*, *Scolopendra sumichrasti*, *Scolopendra viridis viridis*, *Otostigmus samacus*, *Rhysida nuda immarginata*, *Cryptops micrus*, *Cryptops pugnans*, *Dinocryptops Crabill*, and *Scolopocryptops melanostomus*. The variation in morphology, size, and color between the species is great but they all share common features.

⁴ See also: http://home.uleth.ca/emf/Shimazaki_Photosgallery/index.htm

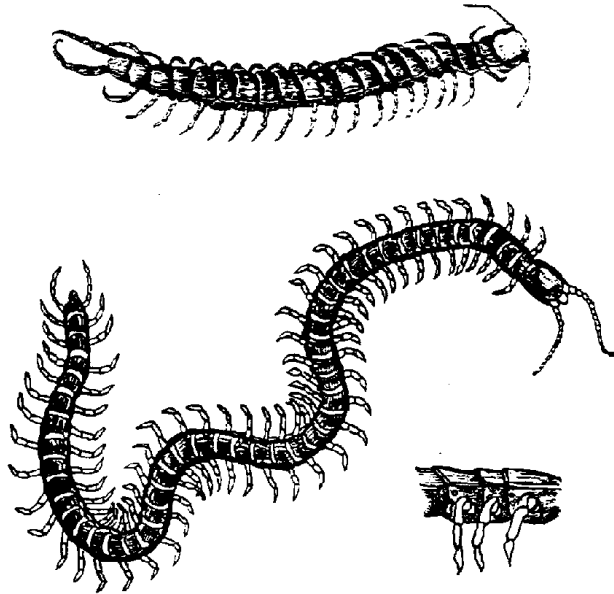


Figure 23: *Scolopendra* (above), *Geophilomorpha* (middle), and *Lithobius* (below; side view) from Hickman 1967: 444.

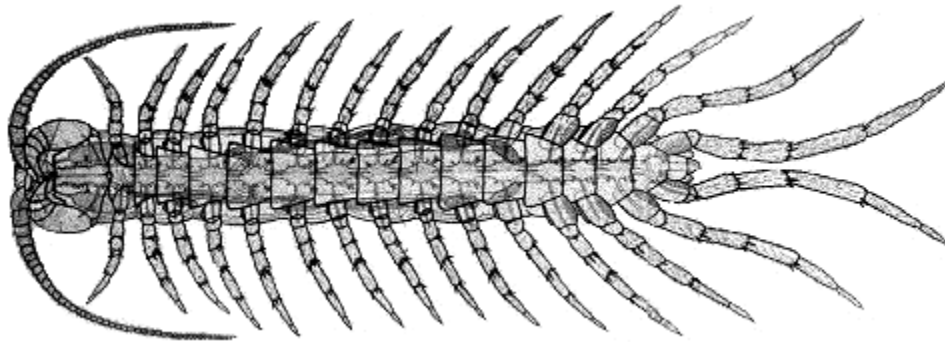


Figure 24: Ventral view of an unspecified centipede (adapted from Leuckart's late 19th century Wandtafel [wall chart] on Arthropoda: Chilopoda).

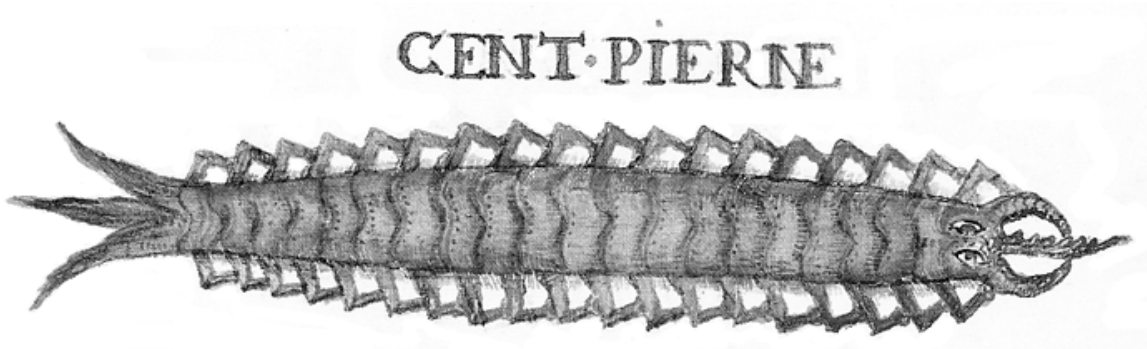


Figure 25: 16th century European artistic impression of a centipede (adapted from Histoire Naturelle des Indes 1996).

Snakes

Snakes belong to the phylum *Chordata* (Group [β] *Craniata*), subphylum *Gnathostomata*, superclass *Tetrapoda*, class *Reptilia*, order *Squamata*, and suborder *Serpentes* (*Ophidia*). There are a number of families in the order, including *Boidae* (e.g. pythons & boas) and *Crotalinae* (e.g. pit vipers & rattlesnakes), and the families have different genera (sg. genus), e.g. the *Crotalinae* family has genera such as *Bothrops* and *Crotalus*.

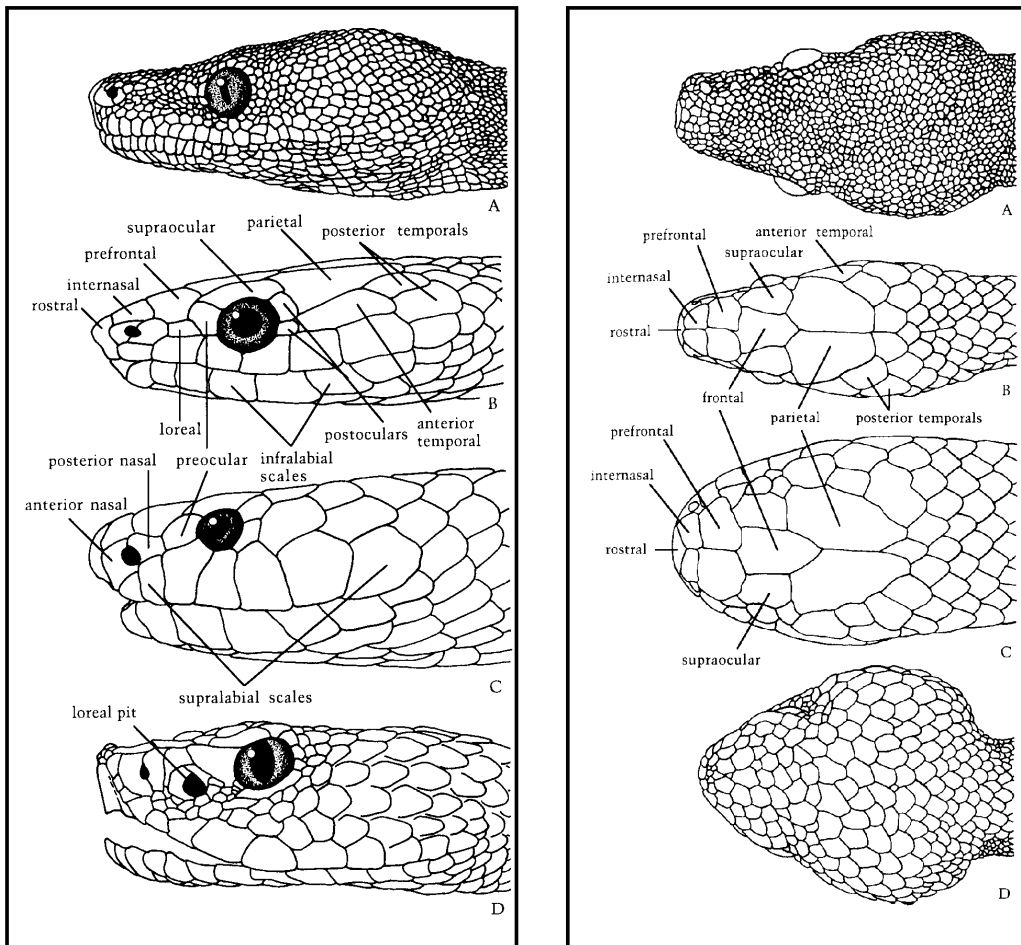


Figure 26: Lateral (left) and dorsal (right) views of the heads of snakes showing configuration and terminology of head scales. Left: *Boa constrictor* (*Boa constrictor*), B: Yucatán White-lipped Snake (*Symphimus mayae*), C: Variable Coral Snake (*Micrurus diastema*), and D: Jumping Pitviper (*Atropoides nummifer*). (After Lee 2000: Figs. 16 and 17)

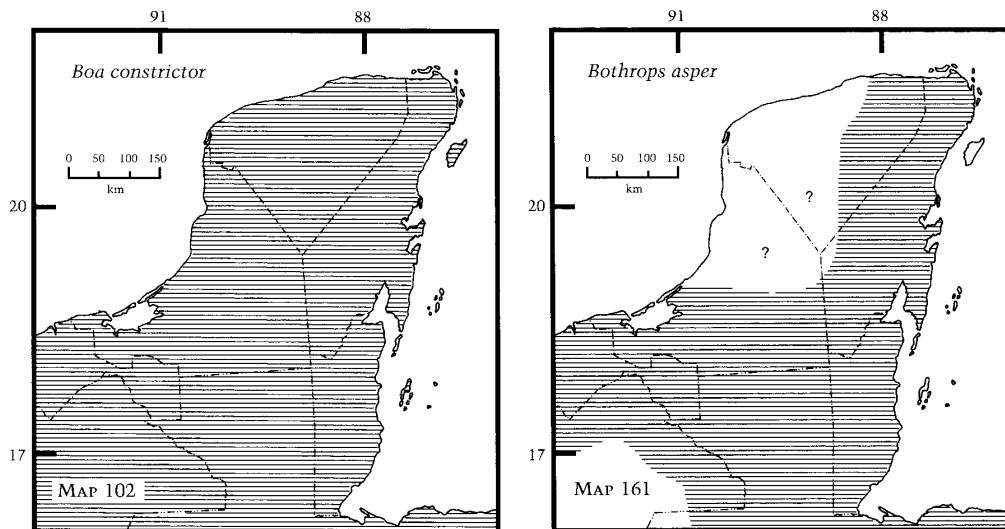


Figure 27: Map of the distribution of *Boa constrictor* and *Bothrops asper* (after Lee 2000: 260 and 368).

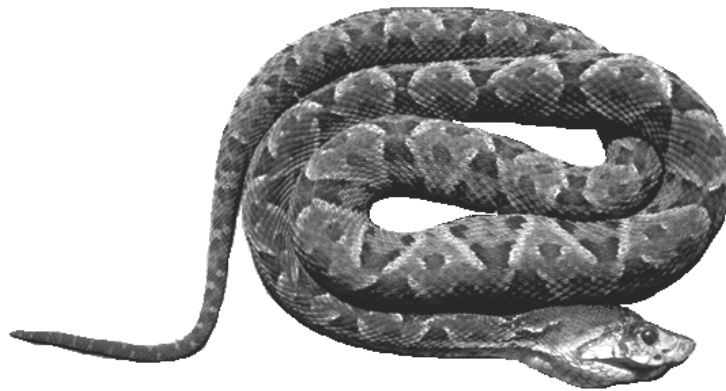


Figure 28: An executed *Bothrops asper* at Pook's Hill, Cayo district, Belize (photo by Harri Kettunen).

Crocodiles

Crocodiles⁵ belong to the phylum *Chordata* (Group [β] *Craniata*), subphylum *Gnathostomata*, superclass *Tetrapoda*, and class *Reptilia*, just as snakes do. The infraclass of crocodiles is that of *Archosauria*, the order is *Crocodylia*, and the families are *Alligatoridae*, *Crocodylidae*, and *Gavialidae*. There are 23 species around world. Three are found in the Maya areas, namely *Crocodylus acutus* (see Figure 29), *Crocodylus morletii* (see Figure 31), and *Caiman crocodilus* (see Figure 33). The American crocodile or the *Crocodylus acutus* is less than two meters to four meters in length and has a narrow snout. It lives in the Grijalva and Usumacinta rivers and their tributaries, and also in the coast and islands of Quintana Roo and Belize. *Crocodylus morletii* is two to three and a half meters long and is common all around in the lowlands. *Caiman crocodilus* two to three meters long and it can be found in the southern parts of the Maya area. (Britton 2000; Lee 2000: 132-4).

⁵ The etymology of the name *Crocodylus* is derived from the Greek word *krokodeilos* ("pebble worm") which refers to the appearance of a crocodile (Britton 2000).

Crocodylus acutus

Common Names (After Britton 2000): American crocodile, Cocodrilo americano, Crocodile d'Amérique, Caimán de Aguja, Central American alligator, Cocodrilo de Rio, Crocodile à museau pointu, Lagarto Amarillo, Lagarto Real, Llamam Caimán, South American alligator, and American saltwater crocodile.

Distribution (After Britton 2000): Southern United States, Central and South America: Belize, Cayman Islands (Extinct), Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Hispaniola, Honduras, Jamaica, Margarita (poss.), Martinique (poss.), Mexico, Nicaragua, Panama, Peru, Trinidad (poss.), United States (extreme south Florida), and Venezuela.

Appearance (After Britton 2000): "One of the larger crocodilian species. Males typically reach 5 metres, with reports of 6 and even 7 metre animals (unconfirmed). Dorsal armour is irregular and much reduced in comparison with other species. There is a distinctive swelling in front of each eye, visible in all except the hatchlings. Juveniles are lighter coloured (light tan) than more mature animals, with banding on the body and tail. Adults take on an olive brown colour. Iris is silvery."

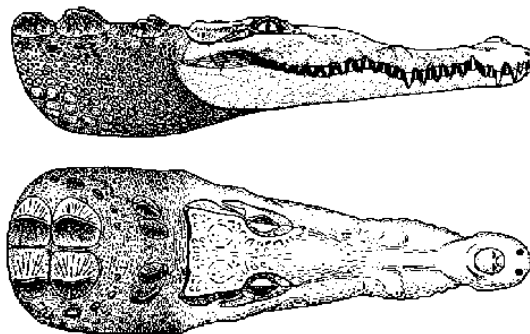


Figure 29: *Crocodylus acutus* [*americanus*] (After Britton 2000).



Figure 30: Distribution of *Crocodylus acutus* (After Britton 2000).

Crocodylus morletii

Common Names (After Britton 2000): Morelet's crocodile, Cocodrilo de Morelet, Crocodile de Morelet, Central American crocodile, Mexican crocodile, Soft belly, Belize crocodile/alligator, Cocodrilo de Pantano, Lagarto de El Petén, Lagarto negro, Lagarto Pantanero, and Lagarto Panza.

Distribution (After Britton 2000): Belize, Guatemala, and Mexico.

Appearance (After Britton 2000): "Relatively small species, usually reaching 3 m in length. Snout is quite broad for a crocodile. Similar colouration to *C. acutus*, but general tone is darker - a greyish brown with darker bands and spots on body and tail. Iris is silvery brown. Heavy scalation on the neck. Juvenile colouration is a brighter yellow with black banding."

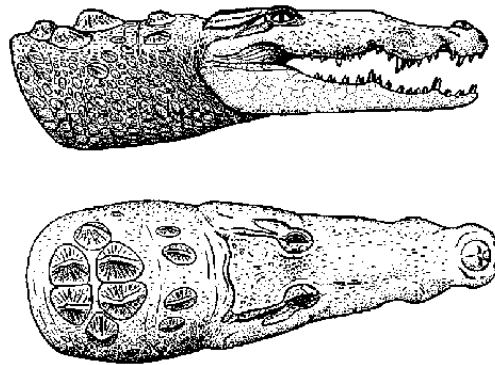


Figure 31: *Crocodylus morletii* (After Britton 2000).



Figure 32: Distribution of *Crocodylus morletii* (after Britton 2000).

Caiman crocodilus

Common Names (After Britton 2000): Common caiman, Spectacled caiman, Tinga, Baba, Babilla, Babiche, Cachirré, Caiman Blanco, Caiman de Brasil, Cascarudo, Jacaretinga, Lagarto, Lagarto Blanco, and Yacaré Blanco.

Distribution (After Britton 2000): Brazil, Colombia, Costa Rica, Ecuador, El Salvador, Guyana, French Guiana, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru, Suriname, Tobago, Trinidad, and Venezuela.

Appearance (After Britton 2000): "A relatively small to medium sized crocodylian (males generally reach 2.0 m to 2.5 m, with the largest specimens reported to approach 3 m - but these are undoubtedly rare). Females are smaller, reaching a mean maximum size of 1.4 m, and rare individuals may approach 2 m. Its common name derives from a bony ridge which is present between the front of the eyes (infra-orbital bridge), appearing to join the eyes like a pair of spectacles. A triangular ridge is present on the heavily-ossified upper eyelids, vaguely reminiscent of those on the dinosaur *Allosaurus*. Juveniles are yellow in colour with black spots and bands on the body and tail. As they mature, they lose this yellow colour and the markings become less distinct. Adults are dull olive-green. This species (probably along with several others, including *A. mississippiensis*) has shown a limited ability to change colour (metachrosis) due to changes in the distribution of black pigment in melanophore cells. The different subspecies vary in colour, size and skull shape."

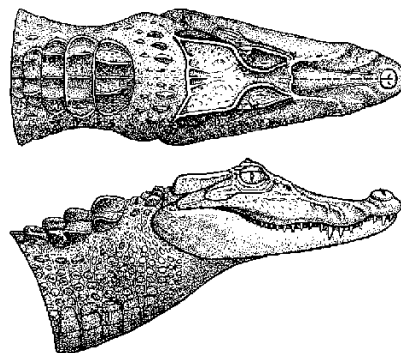


Figure 33: *Caiman crocodilus* [Common caiman, Spectacled caiman, Tinga, Baba, Babilla, Babiche, Cachirré, Caiman Blanco, Caiman de Brasil, Cascarudo, Jacaretinga, Lagarto, Lagarto Blanco, Yacaré Blanco] (After Britton 2000).



Figure 34: Distribution of *Caiman crocodilus* (after Britton 2000).

Sharks

Sharks belong to the phylum *Chordata*, subphylum *Vertebrata*, and class *Chondrichthyes*. There are 8 orders in the class, and every order has a number of families, genera, and species.

The following species of sharks are found in the Caribbean or in the Gulf of Mexico: Bigeye thresher (*Alopias superciliosus*), Thresher shark (*Alopias vulpinus*), Hoary catshark (*Apristurus canutus*), Iceland catshark (*Apristurus laurussoni*), Smallfin catshark (*Apristurus parvipinnis*), Blacknose shark (*Carcharhinus acronotus*), Bignose shark (*Carcharhinus altimus*), Copper shark (*Carcharhinus brachyurus*), Spinner shark (*Carcharhinus brevipinna*), Silky shark (*Carcharhinus falciformis*), Galapagos shark (*Carcharhinus galapagensis*), Finetooth shark (*Carcharhinus isodon*), Bull shark (*Carcharhinus leucas*), Blacktip shark (*Carcharhinus limbatus*), Oceanic whitetip shark (*Carcharhinus longimanus*), Dusky shark (*Carcharhinus obscurus*), Caribbean reef shark (*Carcharhinus perezii*), Sandbar shark (*Carcharhinus plumbeus*), Smalltail shark (*Carcharhinus porosus*), Night shark (*Carcharhinus signatus*), Sandtiger shark (*Carcharias taurus*), White Shark (*Carcharodon carcharias*), Black dogfish (*Centroscyllium fabricii*), Roughskin dogfish (*Centroscymnus owstoni*), Kitefin shark (*Dalatias licha*), Cuban ribbontail catshark (*Eridacnis barbouri*), Pygmy shark (*Euprotomicrus bispinatus*), Tiger shark (*Galeocerdo cuvier*), Nurse shark (*Ginglymostoma cirratum*), Sharpnose sevengill shark (*Heptranchias perlo*), Bluntnose sixgill shark (*Hexanchus griseus*), Bigeyed Sixgill shark (*Hexanchus vitulus*), Cookiecutter shark (*Isistius brasiliensis*), Largetooth cookiecutter shark (*Isistius plutodus*), Shortfin Mako (*Isurus oxyrinchus*), Longfin mako (*Isurus paucus*), Lemon shark (*Negaprion brevirostris*), Campeche catshark (*Parmaturus campechiensis*), Blue shark (*Prionace glauca*), American sawshark (*Pristiophorus schroederi*), Whale shark (*Rhiniodon typus*), Caribbean sharpnose shark (*Rhizoprionodon porosus*), Atlantic sharpnose shark (*Rhizoprionodon terraenovae*), Narrowtail catshark (*Schroederichthys maculatus*), Chain catshark (*Scyliorhinus retifer*), Smallmouth velvet dogfish (*Scymnodon obscurus*), Scalloped hammerhead (*Sphyrna lewini*), Scoophead (*Sphyrna media*), Great hammerhead (*Sphyrna mokarran*), Bonnethead (*Sphyrna tiburo*), Smooth hammerhead (*Sphyrna zygaena*), Piked dogfish (*Squalus acanthias*), and Sand devil (*Squatina dumeril*).

The following species of sharks are found in the Pacific Ocean off the coast of Mexico and Central America: Prickly shark (*Echinorhinus cookei*), Grey smooth-hound (*Mustelus californicus*), Sicklefin smooth-hound (*Mustelus lunulatus*), Brown catshark (*Apristurus brunneus*), Longnose catshark (*Apristurus kampa*), Salmon shark (*Lamna ditropis*), Mexican hornshark (*Heterodontus mexicanus*), Copper shark (*Carcharhinus brachyurus*), Smooth hammerhead (*Sphyrna zygaena*), Scoophead (*Sphyrna media*), Scalloped bonnethead (*Sphyrna corona*), Silvertip shark (*Carcharhinus albimarginatus*), Pelagic thresher (*Alopias pelagicus*), Pygmy shark (*Euprotomicrus bispinatus*), Thresher shark (*Alopias vulpinus*), Bigeye thresher (*Alopias superciliosus*), Crocodile shark (*Pseudocarcharias kamoharai*), Smalltooth sand tiger (*Odontaspis ferox*), Whitenose shark (*Nasolamia velox*), Kitefin shark (*Dalatias licha*), Lollipop catshark (*Cephalurus cephalus*), Swellshark (*Cephaloscyllium ventriosum*), Tope shark (*Galeorhinus galeus*), Frilled shark

(*Chlamydoselachus anguineus*), Brown Smoothhound (*Mustelus henle*), Pacific Sleeper shark (*Somniosus pacificus*), Piked dogfish (*Squalus acanthias*), Pacific angel shark (*Squatina californica*), Leopard shark (*Triakis semifasciata*), Bonnethead (*Sphyrna tiburo*), Great hammerhead (*Sphyrna mokarran*), Scalloped hammerhead (*Sphyrna lewini*), Whale shark (*Rhiodon typus*), Blue shark (*Prionace glauca*), Lemon shark (*Negaprion brevirostris*), Shortfin Mako (*Isurus oxyrinchus*), Bluntnose sixgill shark (*Hexanchus griseus*), Horn shark (*Heterodontus francisci*), Nurse shark (*Ginglymostoma cirratum*), Tiger shark (*Galeocerdo cuvier*), Basking shark (*Cetorhinus maximus*), White Shark (*Carcharodon carcharias*), Smalltail shark (*Carcharhinus porosus*), Dusky shark (*Carcharhinus obscurus*), Oceanic whitetip shark (*Carcharhinus longimanus*), Blacktip shark (*Carcharhinus limbatus*), Bull shark (*Carcharhinus leucas*), Galapagos shark (*Carcharhinus galapagensis*), Silky shark (*Carcharhinus falciformis*), and Bignose shark (*Carcharhinus altimus*).

Caribbean reef shark

Common names (After Scharfer n.d.): Caribbean reef shark, cabeza dura (Spanish), Caribische rifhaai (Dutch), reef shark, requin de récif (French), shark, tiburón (Spanish), and tiburón coralino (Spanish).

Distribution (After Scharfer n.d.): "The Caribbean reef shark is found throughout tropical waters, particularly in the Caribbean Sea. This shark's range includes Florida, Bermuda, the northern Gulf of Mexico, Yucatan, Cuba, Jamaica, Bahamas, Mexico, Puerto Rico, Colombia, Venezuela, and Brazil. It is one of the most abundant sharks around the Bahamas and the Antilles. Although Caribbean reef sharks are found near reefs in southern Florida, surveys using long-line gear off the east coast of Florida reveal that Caribbean reef sharks are extremely rare north of the Florida Keys."

Appearance (After Scharfer n.d.): "The Caribbean reef shark has an interdorsal ridge from the rear of the first dorsal fin to the front of the second dorsal fin. The second dorsal fin has a very short free rear tip. The snout of *C. perezii* is moderately short and broadly rounded. It has poorly developed, low anterior nasal flaps and relatively large circular eyes. Caribbean reef sharks also have moderately long gill slits with the third gill slit lying above the origin of the pectoral fin."

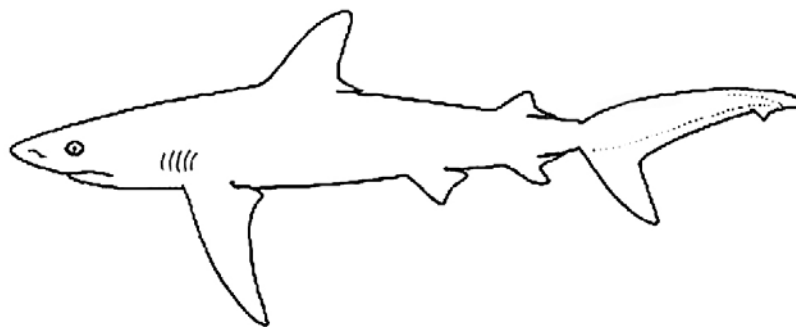


Figure 35: Caribbean reef shark (*Carcharhinus perezii*).
After Scharfer n.d. (NOAA Tech Report NMFS Circular 445)

Ethnozoological Considerations: The Case of Tzeltal Folk Zoology

The following is based mostly on Eugene Hunn's (1977) work on Tzeltal folk zoology, and it is not to be taken as a pan-Maya approach on zoology. However, it is worth noticing the fact that Western scientific taxonomy has little to do with Tzeltal taxonomy – a fact that applies to all Mesoamerican cultures (and to all non-Western cultures for that matter). Westerners might see similarities between various animals and, for example, between different iconographic details that simply are not there in the native taxonomies. As a result, familiarity with Maya way of classifying animals is crucial in Maya studies involving research on zoological issues – whether we are dealing with iconography, epigraphy, or any other branch of Maya studies.

Centipedes

On centipedes, Hunn (1977: 309-310) writes: "Centipedes (class CHILOPODA) are included in the extended range of this taxon [diplopoda / millipedes] by a few informants and may be known as *ti'wal mokoch*⁶ 'biting millipedes' [...]" In Hunn's work centipedes are classed [descriptively] as *xulub' chan* ["horned bug" or "horn-snake"] by his Tzeltal informants. According to Hunn (1977: 310) "many informants are unfamiliar with this taxon, naming it descriptively as *tzahal chan* 'red bug' or *pehch hol chan* 'flat-headed bug'. Others include it within the extended range of the preceding taxon as *kps* [sic.] *mokoch* or *ti'wal mokoch* 'biting millipede'."

Snakes

The list and description of different snakes in Hunn's work is extensive and only a few species will be discussed here. The Tzeltal word for (generic) snake is *chan*, which also forms the last part of the names of many snakes, such as *'ajaw chan* (*Crotalus durissus* & *Pituophis lineaticollis*), *tz'in te' chan* (*Bothrops godmani*), *'ik'os chan* (*Bothrops nummifer*), *kantéla chan* (*Micrurus spp.*), *me' tz'isim* (*Lampropeltis triangulum*), *ha'al chan* (*Thamnophis spp.*), *tz'ib'al chan* (*Caniophanes schmidtii*), *mokoch chan*, *p'ahsum chan* (*Tropidodipsas fischeri*), *xch'ox chan* (*Oxybelis aeneus*), *yax 'itah chan* (*Oxybelis fulgidus* & *Leptophis spp.*), *p'ehel nuhkul chan* (*Leptodeira septentrionalis*), *chihil chan* (*Spilotes pullatus*), and *lukum chan* (*Leptotyphlops phenops*).

Interestingly, the word for Boa constrictor is *masakwáto* (variants: *masakwáto chan*, *masa'wáto*, and *masa'wáte*) – a Nahuatl loan word originally meaning "deer-snake", which translates to Tzeltal as *chihil chan* – being another snake, *Spilotes pullatus* or Mexican rat snake. Same word or a cognate (*chijil chan* or *chij chan*) is also found in a number of Maya ceramic texts describing a *way* creature with a snake body, zoomorphic head, deer antlers, and a deer ear (see Figure 1). Worth of noticing is also the descriptive term for centipede, *xulub' chan*, in Tzeltal (see above).

The Tzeltal word for gopher snake (*Pituophis lineaticollis*) and for tropical rattlesnake (*Crotalus durissus*) is the same (*'ajaw chan*), but according to Hunn (1977: 239) "the fear

⁶ Orthography revised here and below.

associated with this animal suggests that the rattlesnake, though rarely encountered, is the focal referent of this category". The word *'ajaw chan* and its cognates seem to refer primarily to rattlesnakes in other lowland Maya languages: for example, *ahaw kan* in Yukatek (Barrera Vásquez 1980: 4; sources 1, 2, 3, 5, 7, 8, and 13 [see page 32 for the key to sources]) and *aja chon* in Tzotzil (Hurley and Ruíz Sánchez 1978: 14). Furthermore, Kaufman and Norman (1984: 115) trace the word to proto-Ch'olan *'ajaw chan* and to Proto-Mayan *'ajaw kaan*.

In Maya iconography rattlesnakes are rather easy to recognize by the rattle of the snake (as noted above) – especially in monumental architecture. However, in Maya ceramics either rattlesnakes or the rattles of the rattlesnakes are relatively rare: in the Kerr corpus there are only three clear examples of rattlesnake rattles: in K2706, K5226, and K5635. On the other hand, out of the nine examples of "Deer Snakes" or "Deer Dragons" in the Kerr corpus, namely in K998, K1256, K1384, K1653, K2572, and K7794, six have a "Flaming Ajaw" head at the end of the tail (in the three others, in K1646, K2595, and K3150, they either have another type of head or none at all). The "Flaming Ajaw" motif could conceivably be a reference to *ajaw chan* making the "Deer Dragon" a dragonish-deer-boa-rattlesnake. At this point this idea can be only a suggestion.

Along with factual snakes, Hunn (1977: 246) also lists a few "hypothetical snakes" or "apochryphal species" found in the Tzeltal folklore. One of them is, interestingly enough, glossed identically with the name for centipede *xulub' chan* or "horned snake". According to Hunn (ibid.) "this huge snake has horns like a bull, eyes like the headlights of a truck, and in times past made the underground passages for the rivers by smashing through the rock". Another imaginary snake is *chitam chan*, or "pig snake". According to Hunn (ibid.) "it may be apochryphal or refer to the fer-de-lance (*Bothrops asper*). The snake "is said to be large and deadly and to grunt like a pig: if you see one count to thirteen before running or suffer a fatal bite" (ibid.).

To elucidate the difference between western zoological taxonomy and Tzeltal animal taxonomy the word *chan* provides a useful example: as has already been demonstrated the word *chan* can be applied to other living creatures besides snakes. Along with centipedes, the (classificatory) term *chan* can be found in a myriad of species, including *tzotzil holol chan* ("hair-of-the-head critter" or Horse-hair worm [ASCHELMINTHES: NEMATOMORPHA: Gordioidea], *xkoen chan* [CRUSTACEA: Isopoda: Porcellionidae / Armadillididae], *xk'ohowil chan* [INSECTA: Odonata: Anisoptera: spp. (larvae)], hawhaw chan [INSECTA: Hemiptera: Corixidae / Notonectidae], tzihil chan [INSECTA: Hemiptera: Reduviidae: *Pothea* sp. / *Pselliopus* sp. / *Repipta* sp. / *Zelus* sp. // Piesmatidae // Lygaeidae // Pyrrhocoridae // Coreidae // Pentatomidae], *b'utb'ut 'it chan* [INSECTA: Neuroptera: Myrmeleontidae (larva)], *chan* [INSECTA: Coleoptera: Carabidae: Harpalini / Oryptini / Pterostichini], *hawhaw chan* [INSECTA: Coleoptera: Dytiscidae], *mayil chan* [INSECTA: Coleoptera: Gyrinidae / Hydrophilidae], *chan* [INSECTA: Coleoptera: Lycidae / Melyridae / Cleridae], *xp'ahk'in te' chan* [INSECTA: Coleoptera: Elateridae], *chan* [INSECTA: Coleoptera: Erotylidae / Endomychidae / Coccinellidae], *tuluk' chan* [INSECTA: Coleoptera: Meloidae: *Meloe laevis* / *Meloe nebulosus*], *tu tziis chan* [INSECTA: Coleoptera: Tenebrionidae: Tenebrioninae: *Eleodes* sp.], *wayway chan* [INSECTA: Coleoptera: Zopheridae: *Zopherus jourdani*], *hse' te' chan* [INSECTA: Coleoptera: Cerambycidae:

Aseminae / Clytinae], *chan* [INSECTA: Coleoptera: Chrysomelidae: sp.] *chanul chenek'* [INSECTA: Coleoptera: Chrysomelidae: Alticinae: (bean parasite)], *chan* [INSECTA: Coleoptera: Chrysomelidae: Alticinae: (other spp.)], *chan* [INSECTA: Coleoptera: Chrysomelidae: Cryptocephalinae / Eumolpinae / Galerucinae], *hmil mut chan* [INSECTA: Coleoptera: Curculionidae], *b'osb'os chan* [INSECTA: Diptera: Culicidae: (pupae)], *k'alel chan* [CHORDATA: REPTILIA: Squamata: Teiidae: *Ameiva undulata* / *Cnemidophorus* sp.], *k'alel chan* [CHORDATA: REPTILIA: Squamata: Anguidae: *Barisia morletii*], *'ohkotz chan* [CHORDATA: REPTILIA: Squamata: Anguidae: *Gerrhonotus liocephalus*], and *chanb'alam* [MAMMALIA: Primates: Hominidae: *Homo sapiens*].

In Hunn's (1977: 134) words: "Two, perhaps three, polysemous uses of the term *chan* are distinguished. *Chan*₁ is the name applied to the 'snake' complex. *Chan*₂, sometimes distinguished as *ch'uhch'ul chan* 'small (pl.) bug', refers to a residual category of beetles. In addition, practically any animal may be referred to in certain contexts as *chan*, e.g. *chanul ha*₁ names a complex that includes several orders of aquatic insects, while *chanul ha*₂ is occasionally used to refer to certain types of waterbirds. *K'alel chan* is a species of lizard and is not considered to be a snake (i.e., *chan*₁). *Tzotzil holol chan* refers to a worm of the phylum ASCHELMINTHES. *Chanul 'ako'*, *chanul 'aha chab'*, etc., are variant forms of names for a type of wasp and the honey bee respectively. Thus the morpheme *chan* is distributed among names for a wide variety of animals. Furthermore, the form *xchanul* [pp + chan + rs] can be glossed as 'its body' in reference to a variety of animals."

Dictionary Entries

Centipedes

Source:	Period:	Entry:	Gloss:
Proto-Maya (Kaufman, personal communication)	c.2000BC	*komes ~ *kames	centipede
Ch'olti' (Moran 1695)	17th C	chapaht	sientopies (gusano largo i delgado) = centipede (long and thin worm)
Ch'orti' (Wisdom 1949)	20th C	chapaht	"insect said to resemble the centipede"
Ch'orti' (Wisdom 1949)	20th C	awauh wi	awauh ^{ui} fern (generic); 'centipede'
Ch'orti' (Wisdom 1949)	20th C	butan e awauh ^{ui}	'centipede sting'
Ch'orti' (Wisdom 1949)	20th C	ch'ich' awauh ^{ui}	'[awauhui : centipede] 'doradilla (small ????)'
Ch'orti' (Wisdom 1949)	20th C	pech'ay [? pech-chai]	'pechay (a small edible crustacean, said to resemble a centipede)'
Ch'orti' (Wisdom 1949)	20th C	awauh wi hopob	'crawfish'
Ch'orti' (Pérez Martínez, García, Martínez Alvarez, and López y López 1996)	20th C	kamis	escolopendra, rosquilla, ciempiés
Tzeltal (Slocum, Gerdel, and Cruz Aguilar 1999).	20th C	chapat	ciempiés (<i>artrópodo</i>)
Tzeltal (Hunn 1977)	20th C	ti'wal mokoch	'biting millipede' [centipede, descriptive]
Tzeltal (Hunn 1977)	20th C	xulub chan	'horned bug', centipede(s) [descriptive]
Tzeltal (Hunn 1977)	20th C	tzahal chan	'red bug' [centipede, descriptive]
Tzeltal (Hunn 1977)	20th C	pehch hol chan	'flat-headed bug' [centipede, descriptive]
Yukatek (BV:3)	17th C	tsimés	chimés [ciento pies]
Yukatek (BV:3)	17th C	ix chi'il	sabandija ponzoñosa menor (posiblemente semejante al chimés o escolopendra)
Yukatek (BV:5)	17th C	chimés	ciento pies
Yukatek (BV:7)	18th C	(ah) chapat	ciento pies [ciempiés]
Yukatek (BV:7)	18th C	h-chapat	ciento pies
Yukatek (BV:7)	18th C	chapat	ciento pies, insecto; sabandija que entra en el oído y mata
Yukatek (BV:8)	19th C	(ah) chapat	ciento pies [ciempiés]
Yukatek (BV:8)	19th C	chapat	cientopiés; insecto
Yukatek (BV:8)	19th C	chapatil	cientopiés; insecto
Yukatek (BV:10)	20th C	chapat	nombre genérico de las escolopendras
Yukatek (BV:7)	18th C	(ah) uuk chapat	serpiente fabulosa de siete cabezas
Yukatek (BV:8)	19th C	(ah) uuk chapat	serpiente fabulosa de siete cabezas

Source:	Period:	Entry:	Gloss:
Yukatek (BV:11)	20th C	(ah) uuk chapat	serpiente fabulosa de siete cabezas
Yukatek (BV:13abv)	20th C	(ah) uuk chapat	"siete-ciempiés-escolopendra" [nombre de una deidad] cabezas
Yukatek (BV:13)	20th C	chimés	artrópodo, miriápodo, <i>gyymnostreptus</i> sp.; <i>orthoporus</i> sp.
Itza' (Hofling and Fernando Tesucún 1997)	20th C	chemes	ciempiés / centipede
Itza' (Hofling and Fernando Tesucún 1997)	20th C	ixchemes	ciempiés / centipede; venenoso / poisonous
Mopan (Ulrich and Ulrich 1976)	20th C	chupaat	ciempiés
Q'eqchi' (Sedat S. 1993)	20th C	cojoj (kojoj)	ciempiés
Q'eqchi' (Sedat S. 1993)	20th C	patal; aj patal	ciempiés
Tz'utujil (Pérez Mendoza, and Hernández Mendoza 1996)	20th C	sootaay	ciempiés

Snakes

Source:	Period:	Entry:	Gloss:
Proto-Maya (Kaufman and Norman 1984)	c.2000BC	*kaan	snake
Proto-Tzeltal-Tzotzil (Kaufman 1972)	c.500AD	*čʌn (chan)	culebra
Proto-Ch'olan (Kaufman and Norman 1984)	c.500AD	*chan	culebra / snake
Cholti (Moran 1695)	17th C	chan	culebra = viper, snake
Cholti (Moran 1695)	17th C	chancha	animales nosibos que destruyen la milpa = noxious animals that destroy the milpa
Ch'orti' (Wisdom 1949)	20th C	chan	"snake, long worm (generic), intestine, gut, zigzag line, winding rut, winding, muscle cramp, colic (<u>colico</u>)"
Ch'orti' (Wisdom 1949)	20th C	lukum	'any long large worm, any small snake'
Ch'ol (Kaufman and Norman 1984)	20th C	chan	culebra / snake
Chontal (Keller and Luciano G. 1997)	20th C	chan	culebra, víbora

Source:	Period:	Entry:	Gloss:
Tzotzil (Hurley and Ruíz Sánchez 1978)	20th C	chon	animal, culebra
Tzeltal (Slocum, Gerdel, and Cruz Aguilar 1999).	20th C	chan, schanul	1. insecto 2. culebra
Tzeltal (Hunn 1977)	20th C	chan	snake
Yukatek (BV:1)	16th C	kan	culebra, nombre genérico
Yukatek (BV:2)	16th C	kan	culebra en general
Yukatek (BV:3)	17th C	kan	culebra cualquiera
Yukatek (BV:4)	17th C	kan	culebra
Yukatek (BV:5)	17th C	kan	culebra en general
Yukatek (BV:6)	17th C	kan	culebra
Yukatek (BV:7)	18th C	kan	culebra
Yukatek (BV:7)	18th C	kan	sierpe
Yukatek (BV:8)	19th C	kan	culebra
Yukatek (BV:8)	19th C	kan	víbora
Yukatek (BV:9)	20th C	kan	culebra, nombre genérico
Yukatek (BV:11)	20th C	kan	víbora
Yukatek (BV:11)	20th C	kan	ofidio; pitón
Yukatek (BV:12)	20th C	kan	culebra
Yukatek (BV:13abv)	20th C	kan	serpiente
Yukatek (BV:13cob)	20th C	kan	culebra
Yukatek (BV:13fpv)	20th C	kan	víbora
Yukatek (BV:13nem)	20th C	kan	serpiente
Yukatek (BV:7)	18th C	kanil	culebra
Yukatek (BV:7)	18th C	kanil	sierpe
Yukatek (BV:8)	19th C	kanil	culebra
Yukatek (BV:8)	19th C	kanil	víbora
Yukatek (BV:7)	18th C	kan hel	serpiente
Yukatek (BV:12)	20th C	kön	culebra
Lakandon (Bruce 1979)	20th C	kan	snake; [...] All snakes foretell (seeing) rope
Itza' (Hofling and Fernando Tesucún 1997)	20th C	kan	culebra, serpiente / snake, serpent
Mopan (Ulrich and Ulrich 1976)	20th C	can (kan)	culebra
Kaqchikel (Guzman 1984 [1704])	17th C	cumatz (kumatz)	todo genero de culebra
Kaqchikel (Munson, Ruyán Canú, and Coyote Tum 1991)	20th C	cumetz (kumetz)	culebra; víbora

Source:	Period:	Entry:	Gloss:
Tz'utujil (Pérez Mendoza, and Hernández Mendoza 1996)	20th C	kumatz	culebra, serpiente; dolor muy fuerte en alguna parte del cuerpo
Q'eqchi' (Sedat S. 1993)	20th C	c'anti' (k'anti')	culebra
Q'anjob'al (Diego Antonio, Pascual, Nicolás Pedro, Fernando Gonzáles, Juan Matías, and Fernández Pablo 1996)	20th C	lab'aj	culebra
Mam (Maldonado Andrés, Ordóñez, and Ortiz Domingo 1986)	20th C	lab'aj	culebra, serpiente
Akatek (Andrés, Dakin, Juan, López, and Peñalosa 1996)	20th C	laab'a	culebra [NB: aalaab'a = brujo]

Note also the following entries:

Source:	Period:	Entry:	Gloss:
Ch'orti' (Wisdom 1949)	20th C	ch'í'ih	'growth, large, great, supreme, giant'
Ch'orti' (Wisdom 1949)	20th C	ch'í'ih chan	[chan: snake] chicchan (deity of rain and spirit of water; also called ah ch'í'hchan and ch'í'hchan noh ha')
Ch'orti' (Wisdom 1949)	20th C	ch'í'ih chan ik'ar	ch'í'ij.chanikar [ikar : wind] 'storm, hurricane (said to be caused by the passing of a chicchan)'

Crocodiles

Source:	Period:	Entry:	Gloss:
Proto-Mayan (Kaufman and Norman 1984)	c.2000BC	*'ahiin	lagarto / alligator
Proto-Tzeltal-Tzotzil (Kaufman 1972)	c.500AD	*'ahyin	lagarto
Proto-Ch'olan (Kaufman and Norman 1984)	c.500AD	*ahin	lagarto / alligator
Ch'orti' (Wisdom 1949)	20th C	aihn [sic.]	aihn [? ah.hin] 'alligator, large lizard; giant lizard spirit (<u>lagarto</u>) said to inhabit and protect deep spots in streams and to attack lone bathers at night with its long bone-pointed tail'

Source:	Period:	Entry:	Gloss:
Ch'ol (Aulie and Aulie 1978)	20th C	ajin	1. cocodrilo de pantano 2. cocodrilo de río 3. jicotea
Chontal (Keller and Luciano G. 1997)	20th C	äjín	1. lagarto, caimán 2. cocodrilo
Tzotzil (Hurley and Ruíz Sánchez 1978)	20th C	ain	lagarto, cocodrilo
Tzeltal (Slocum, Gerdel, and Cruz Aguilar 1999).	20th C	ahyin	<i>lagarto</i> (reptil)
Tzeltal (Hunn 1977)	20th C	x'ain	Caiman crocodilus
Tzeltal (Hunn 1977)	20th C	x'ain	<i>Crocodylus acutus</i>
Tzeltal (Hunn 1977)	20th C	x'ain	<i>Crocodylus morletii</i>
Yukatek (BV:1)	16th C	ayin	caimán o lagarto, especie de cocodrilo
Yukatek (BV:2)	16th C	ayin	cocodrilo, animal
Yukatek (BV:3)	17th C	ain	cocodrilo, por caimán
Yukatek (BV:3)	17th C	itsam	lagartos como iguanas de tierra y agua*
Yukatek (BV:3)	17th C	k'an pach	lagarto o iguana
Yukatek (BV:3)	17th C	(ah) pach	lagarto coronado con cresta y macho
Yukatek (BV:7)	18th C	ain	lagarto, cocodrilo
Yukatek (BV:7)	18th C	balamchan	otras [lagartijas] ponzoñasas
Yukatek (BV:7)	18th C	balamchan	especie de lagarto
Yukatek (BV:7)	18th C	(ix) baw	lagarto del mar [NB: 1, 5, 6, 7, 11: cangrejo]
Yukatek (BV:7)	18th C	chi'wa'an	cocodrilo
Yukatek (BV:8)	19th C	ain	lagarto, cocodrilo
Yukatek (BV:8)	19th C	ainil	lagarto, cocodrilo
Yukatek (BV:8)	19th C	balamchan	especie de lagarto
Yukatek (BV:9)	20th C	ain	cocodrilo, lagarto
Yukatek (BV:10)	20th C	ain	<i>Crocodylus acutus</i> Cuvier; cocodrilo
Yukatek (BV:10)	20th C	ayin	<i>Crocodylus acutus</i> Cuvier; cocodrilo
Yukatek (BV:10)	20th C	balamchan	nombre de una serpiente no identificada
Yukatek (BV:11)	20th C	ayin	cocodrilo, caimán, lagarto
Yukatek (BV:11)	20th C	chi'wa'an	cocodrilo
Yukatek (BV:11)	20th C	itsam	lagartos como iguanas de tierra y agua*
Yukatek (BV:12)	20th C	ayin	caimán, lagarto
Yukatek (BV:13)	20th C	ayin	lagarto, cocodrilo
Yukatek (BV:13)	20th C	balamchan	nombre de una serpiente no identificada

Source:	Period:	Entry:	Gloss:
Yukatek (BV:13abv)	20th C	itsam	nombre esencial de Itzamná (itsamna) : *es muy posible que itsam, en la definición de la fuente 3, sea la deidad misma Itzamná , representada como un monstruo anfibio, una especie de cocodrilo, y no el nombre de animales reales a manera de iguanas de tierra y agua [...]
Yukatek (BV:13lrf)	20th C	yobain	caimán
Lakandon (Bruce 1979)	20th C	ayim	alligator; <i>Tämähchi'!</i> <i>U k'in chäk-wil-il yete(l) sis-il.</i> A bad omen! It foretells fever and chills (i.e. malaria).
Itza' (Hofling and Fernando Tesucún 1997)	20th C	ayim	lagarto, cocodrilo / alligator, crocodile
Mopan (Ulrich and Ulrich 1976)	20th C	ayin	lagarto, caimán, cocodrilo
Chontal (Keller and Luciano G. 1997)	20th C	äjín	1. lagarto, caimán 2. cocodrilo
Q'eqchi' (Sedat S. 1993)	20th C	ahin	lagarto
Ixil (Cedillo Chel and Ramírez 1999)	20th C	ayin	Lagarto. La gente no conoce este animal. Algunos dicen que el "ayin" es una ballena, un tiburón u otro animal del mar.
Kaqchikel (Guzman 1984 [1704])	17th C	aiym	el lagarto
Kaqchikel (Munson, Ruyán Canú, and Coyote Tum 1991)	20th C	ayin	Iguana, lagarto
Tz'utujil (Pérez Mendoza, and Hernández Mendoza 1996)	20th C	aayiín	lagarto

Sharks

Source:	Period:	Entry:	Gloss:
Yukatek (BV:10)	20th C	k'anxok	[toponímico]; tiburón, pez; población que pertenencia a la provincia Kukul [...]
Yukatek (BV:7)	18th C	(h)k'anxok	una especie de tiburón
Yukatek (BV:7)	18th C	(ah) k'an xok	especie de tiburón
Yukatek (BV:8)	19th C	(h)k'anxok	una especie de tiburón
Yukatek (BV:8)	19th C	(ah) k'an xok	especie de tiburón
Yukatek (BV:10)	20th C	(ah) pat	[...] tiburón pequeño

Source:	Period:	Entry:	Gloss:
Yukatek (BV:10)	20th C	xok	patronímico maya [cuenta, lectura, contar, leer, raíz, cintura, cadera, obediencia, tiburón]
Yukatek (BV:11)	20th C	(ah) k'an xok	tiburón, pez
Itza' (Hofling and Fernando Tesucún 1997)	20th C	b'alumil k'ab'-naab'	tigre del mar, tiburón / (lit. jaguar of the sea) [shark]

Key to sources and abbreviations:

BV: Barrera Vásquez 1980:

- | | |
|-------------------------------------------------------|---------------------------------------------------------------|
| 1. Motul I, maya-español | 16th century |
| 2. Motul II, español-maya | 16th century |
| 3. Diccionario de Viena, español-maya | 17th century |
| 4. Diccionario de San Francisco I, maya-español | 17th century (*1850) |
| 5. Diccionario de San Francisco II, español-maya | 17th century (*1850) |
| 6. Diccionario de Ticul, español-maya | 1690 |
| 7. Fray Pedro Beltrán de Santa Rosa | 1746 |
| 8. Juan Pío Pérez, Diccionario y correlaciones | 1866-1898 |
| 9. Mauricio Swadesh y otros, Diccionario de elementos | 1970 |
| 10. Ralph L. Roys, varias obras | 1931-1957 |
| 11. Ermilo Solís Alcalá, Diccionario español-maya | 1949 |
| 12. Otto Schumann G., Dialecto del Petén | 1971 |
| 13. Maya moderno | (1980) |
| 13 abv | Alfredo Barrera Vásquez |
| 13 asp | Arthur Sperry Pearse |
| 13 byv | Robert Blair y Refugio Vermont |
| 13 cob | Dialecto de Cobá |
| 13 ddp | Domingo Dzul Poot |
| 13 fpv | Florencio Palomo Valencia |
| 13 gann | Thomas Gann |
| 13 jet | J. Eric Thompson |
| 13 lrf | Luis Romero Fuentes |
| 13 mrc | Moisés Romero Castillo |
| 13 mse | Munro S. Edmonson |
| 13 nem | Nomenclatura etnobotánica maya: Alfredo Barrera Marín y otros |
| 13 rvs | Refugio Vermont Salas |
| 13 spc | Santiago Pacheco Cruz |
| 13 std | Paul C. Standley |
| 13 vep | Víctor Echeverría Pérez |
| 13 wbs | William Brito Sansores |

Appendix A: Epigraphic Entries

Table I: Different spelling arrangements for the word *centipede* in Maya writing

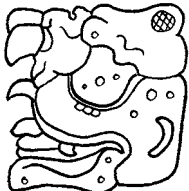



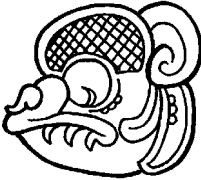
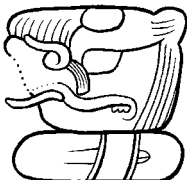

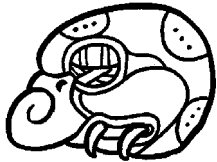
Illustration:				
Source:	PAL Tablet of the Sun: C4 (drawing by Harri Kettunen)	K1256 (drawing by Harri Kettunen)	CPN ceramic vessel (drawing by Harri Kettunen after Boot 1999, Fig. 5)	ceramic vessel (drawing by Marc Zender [after Boot 1999, Fig. 4])
Transcription:	CHAPAT	cha-pa-ta	cha-CHAPAT-ti	SAK-cha-pa-tu
Transliteration:	<i>chapat, chapa[h]t, chapaat, chapaa[h]t</i>	<i>chapat, chapa[h]t</i>	<i>chapaat, chapaa[h]t</i>	<i>sak chapa't, sak chapa[h]t</i>
Translation:	centipede	centipede	centipede	white centipede

Table II: Snake, shark, and crocodile in Maya writing

Illustration:				
Source:	Generic CHAN logogram (drawing by Harri Kettunen)	YAX Lnt 25: S2 (drawing by Harri Kettunen)	TIK St 39: B2 (drawing by Harri Kettunen)	Generic AHIN logogram (drawing by Harri Kettunen)
Transcription:	CHAN	XOK-ki	XOK	AHIN
Transliteration:	<i>chan</i>	<i>xook</i>	<i>xo[o]k</i>	<i>ahiin</i>
Translation:	snake	shark	shark	caiman, alligator

Appendix B: Taxonomy of the Animal genera and species discussed in this paper

Taxonomy:

sg.	pl.
phylum	phyla
class	classes
order	orders
family	families
genus	genera
species	species

Centipede:

Phylum:	Arthropoda
Subphylum:	Mandibulata
Superclass:	Myriapoda
Class:	Chilopoda
Order 1:	Scutigermorpha
Order 2:	Lithobiomorpha
Order 3:	Scolopendromorpha
Order 4:	Geophilomorpha

Millipede:

Phylum:	Arthropoda
Subphylum:	Mandibulata
Class:	Diplopoda

Snake:

Phylum:	Chordata (Group [β] Craniata)
Subphylum:	Gnathostomata
Superclass:	Tetrapoda
Class:	Reptilia
Order:	Squamata
Suborder:	Serpentes (Ophidia)
Family 1:	Boidae (e.g. pythons & boas)
Family 2:	Crotalinae (e.g. pit vipers, rattlesnakes)
Genera:	Bothrops, Crotalus
[...]	

crocodiles:

Phylum: Chordata (Group [β] Craniata)
Subphylum: Gnathostomata
Superclass: Tetrapoda
Class: Reptilia
Infraclass: Archosauria
Order: Crocodylia
Family1: Crocodylidae
 Subfamily Crocodylinae:
 Genus: Crocodylus (e.g. Crocodylus acutus, Crocodylus moreletii)
 Subfamily Tomistominae
 Genus: Tomistoma
Family2: Alligatoridae
 Genus1: Alligator
 Genus2: Caiman (e.g. Caiman crocodilus)
 Genus3: Melanosuchus
 Genus4: Paleosuchus
Family3: Gavialidae
 Genus Gavialis

sharks:

Phylum: Chordata
Subphylum: Vertebrata
Class: Chondrichthyes
Order Squaliformes
 Family Echinorhinidae
 Family Squalidae
 Family Oxynotidae
Order Hexanchiformes
 Family Chlamydoselachidae
 Family Hexanchidae
Order Pristiophoriformes
 Family Pristiophoridae
 Family Pristiophoridae
Order Squatiniformes
 Family Squatinidae
Order Heterodontiformes
 Family Heterodontidae
Order Orectolobiformes
 Family Parascyllidae
 Family Parascyllidae
 Family Brachaeluridae
 Family Orectolobidae
 Family Hemiscyllidae

- Family Stegostomatidae
- Family Ginglymostomatidae
- Family Rhiniodontidae
- Order Lamniformes
 - Family Odontaspidae
 - Family Odontaspidae
 - Family Mitsukurinidae
 - Family Pseudocarchariidae
 - Family Megachasmidae
 - Family Alopiidae
 - Family Cetorhinidae
 - Family Lamnidae
- Order Carcharhiniformes
 - Family Scyliorhinidae
 - Family Scyliorhinidae
 - Family Proscylliidae
 - Family Pseudotriakidae
 - Family Leptochariidae
 - Family Triakidae
 - Family Hemigaleidae
 - Family Carcharhinidae
 - Family Sphyrnidae

In comparison:

Man:

- Phylum: Chordata (Group [β] Craniata)
- Subphylum: Gnathostomata
- Superclass: Tetrapoda
- Class: Mammalia
- Order: Primates
- Superfamily: Hominoidea
- Family: Hominidae
- Genus: Homo
- Species: Sapiens?
- Subspecies: Sapiens?

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