Maya

Ethnozoology

Complete Inventory:

Mammals, Birds,Insects, Reptiles, Seashells, Fish & Amphibians that appear in Classic Maya Art: Murals, Pottery, Effigies

Guatemala, Mexico, Belize, Honduras

FLAAR Reports

January 2013

Nicholas M. Hellmuth

Introduction

The purpose of our studies of neotropical fauna of Mesoamerica is to provide information to

Biologists, and especially zoologists

Ethnozoologists and ethnographers

Iconographers and epigraphers

Archaeologists and zooarchaeologists

Staff of natural history museums

Staff of national parks and nature preserves

Organizations dedicated to preserving eco-systems and flora and fauna

Students who notice that some textbooks don't have all the information needed on the utilitarian and revered fauna of Mesoamerica.

The interested public who visit Guatemala, Mexico, Belize, Honduras, and El Salvador.

One of our multiple goals

In addition to working hard at showing how to improve photography of flora and fauna, our goal is to remind the world that it is worth visiting places such as the Parque Nacional Tikal for much more than just the beautiful temples and palaces and stelae.

Through the cooperation of the managerment of the Parque Nacional Tikal, with the hospitality of park biologist Licda. Mirtha Cano, we have a long-range project to record the flora and fauna of Tikal in high-resolution photographs to encourage people from North America, Mexico and the rest of Latin America, Europe, Asia, especially the growing tourism from China, plus traditional groups from Taiwan, Japan, and Korea, plus Australia and the rest of the world to visit the Tikal National Park to learn about the remarkable plants and animals.

Here we show a few of the animals which we saw wandering around the area where we were housed courtesy of the park administration.

Coverage: this is a list of much more than only edible animals

This report contained in this PDF is not a list of all mammals, all reptiles, all birds of Mexico and Central America. Our project at FLAAR is dedicated to those creatures, whether insects or felines who are

- revered by the ancient or present-day Maya
- pictured in Classic Maya art: Preclassic, Early, Late, and Terminal Classic
    - murals
    - codices
    - ceramics: painted, incised, effigy
    - stone sculpture
    - stucco and other sculpture of architecture
- pictured in art of Teotihuacan-influenced cultures (especially Tiquisate area)
    - incense burners; usually lids of hourglass based incensarios.
    - Figurines
    - Cylindrical tripods
    - Associated ceramic vessels
- Associated with deities, culture heroes or mentioned in myths such as Popol Vuh.
- or were utilitarian: eaten, or used for hide or any other use.

To keep the list of manageable list, I do not attempt to catalog animals in Post Classic times (other than in the Maya codices). The list does not cover Zapotec, Mixtec, Toltec, or Aztec but the final catalog will indeed include samples from these cultures plus from Xochicalco, Classic Veracruz (El Tajin), Cacaxtla murals, etc.

Status of our long-range Ethnozoological studies in Mesoamerica

My interest in tropical plants and animals began at age 19 when I spent 12 months at Tikal. I was a student of architecture at Harvard and was hired by the University of Pennsylvania Tikal Project as an assistant. When you spend an entire 365 days out in the El Peten rain forest, you either develop an interest in the plants and animals, or you freak out and run home after the first few weeks.

I stayed the whole year, and then in 1970 returned to the Guatemalan rain forests for another five seasons at Yaxha, the large Classic period ruins on the shores of Lake Yaxha, an hour or so from Tikal. I initiated this mapping project and was the individual who coordinated preserving the entire north shore from ranchers and milperos so that by the last day of our project the area had been declared Parque Nacional Yaxha Sacnab. In subsequent years many capable Guatemalans were able to enlarge and extend this park to include Nakum and Naranjo. I feel proud for having rescued the central core area of this now popular national park.

From perhaps 1978 through 1985, I worked on my PhD dissertation at the Karl-Franzens Universitaet, Graz (also known as the University of Graz), in Austria. This dissertation included the water lily and many of the creatures associated with scenes of the Surface of the Underwaterworld. This was published as a coffee table book in 1987, by ADEVA. We still have a few copies left, which we keep as presents for potential future benefactors.

We have seven copies of this book remaining and present a signed book to a benefactor or corporation who donates funding so we can obtain newer digital photography technology and software or research funding for ethnozoological field research.

Then about 2007 I began to do more biological research. This was the year that Guatemalan biologist Mirtha Cano worked for FLAAR. We did a field trip to study water lilies in the Rio San Pedro area, downstream from Naranjo, Peten. Over the next three years I spent time in the tributaries of the Rio de la Pasion and even more time in the mangrove swamps of Monterrico, on the Pacific coast of Guatemala.

I learned more about the water lily eco-system in these years than in my previous thirty years in Mesoamerica.

During these years, 2007-2010, I set as my goal to produce a total encyclopedia of all the flora and fauna of the Maya area, especially to create an archive of top quality digital photographs. Although there are thousands of photographs of all these species, most are snapshots in bad lighting, wobbly with no tripod, out of focus, or the typical kind of snapshot that scientists bring home because they are very good biologists but they do not take the time or effort to create professional quality photographs.

So the goal of FLAAR is to rescue the flora and fauna by doing the absolute best photography possible. And here even we have a lot to learn. We improve our photography every year. Many improvements are simply taking the time to be patient and not be in a hurry. Other improvements are because we have more experience. Obviously as we acquire superior equipment our photographs also improve.

For example, during 2010 one corporation, Parrot Digigraphic (near Boston) provided a complete Canon EOS-1Ds Mark III outfit: the 21 megapixel camera, 180mm macro-telephoto lens, 14mm ultra wide angle (but non-distorting, so not a fish-eye lens), and a 100-400mm zoom lens. We already had a MP-E 65mm macro lens for extreme close-ups (1x to a remarkable 10x).

New equipment helps our photography to become better and now (in 2013) we have remarkable macro photographs of centipedes and millipedes of Guatemala.

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As soon as it is possible to acquire an 800mm telephone lens we can do a better job of photographing elusive birds. Water birds are among the most common creatures pictured in Mayan art, but they fly away when you get too close. This is why we need, minimally, a 500mm lens. 600mm would be better; an 800mm prime lens would be even better. A lens of this category (800mm) is about $12,000, so only if a generous benefactor wishes to contribute to our digital photography project, that's the only way we could obtain a lens of this quality.

We are now also seeking donations to acquire the ultimate camera for ethnozoology, ethnobotany, and archaeological photography. Three of us from FLAAR went to Photokina photography equipment expo in Cologne, Germany to study which was the best equipment for working out in the field as well as in a studio. Photokina is the Mecca of photo equipment trade shows, and is held every two years. I have attended Photokina in 1998, 2000, 2002, 2004, 2006, 2008, 2010, and then recently in 2012. So we have good knowledge of what equipment is available and which precise camera and lenses we still need.

What would also help our project is a 4-shot medium format Hasselblad HD4-50MS, a 50 megapixel camera, with macro and mid-range tele lenses. Our current medium format digital is a Phase One P25+, 21 megapixels but is 1-shot technology (Bayer Pattern). A 4-shot technology is significantly higher quality (Multi Shot = MS in the product designation).

For creatures on the move a 4-shot technology is best replaced by a 1-shot technology. Phase One just launched an 80 megapixel system, but also has a 60 megapixel digital camera available. We do not need the full 80 megapixels. We can capture views of plants and animals with the 60 megapixel version that would bring pride to the benefactor, individual or corporation.

For photography of the ecology, of panoramas of the environment, we are also seeking funding to obtain two Rodenstock wide-angle lenses, to use on our Cambo WIDE RS 6x9 format camera that we already have. The first Rodenstock lens that we need is $8,000. Yes, you-get-what-you-pay-for and this is the ultimate lens for photographing eco-systems.

The last item we seek is a good professional quality underwater housing for either our Canon or Nikon DSLR cameras. These run in the $3K to $4K range.

So the photographs you see here in this initial outline are taken primarily with our older digital cameras. As soon as we have the new equipment, our photographs will be even better. But we hope you like what we have done so far.

Preliminary List of Creatures to Study, Photograph, and Publish

Below is the initial list of animals, insects, shellfish, etc that we are interested in studying, photographing at high resolution with professional lighting quality, and then publishing.

We have a comparable list of all plants, but since the list of plants is so long, we are doing two separate PDFs: one on fauna (the one you have here) and one on flora (a separate publication).

Chapter Outline for Past, Present, and Future Research of FLAAR Reports on Ethnozoology of

Guatemala, Belize, Mexico, and Honduras

related to Iconography and Epigraphy Maya and Teotihuacan



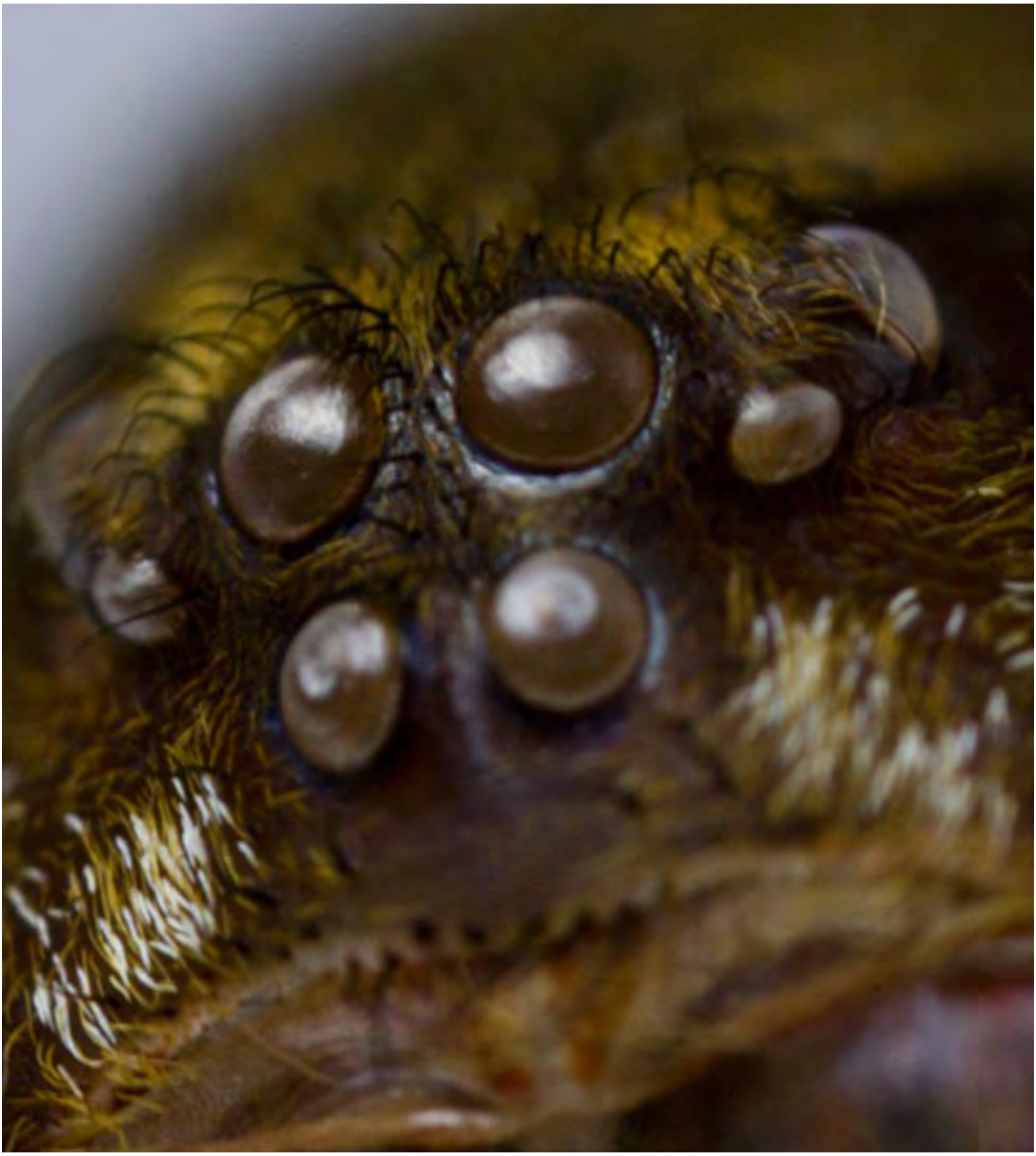

Insects

Insects

- Ants, leaf-cutting but carrying flowers, in Popol Vuh story
- Ants, army ants
- Ants, with large nests (in Popol Vuh the jealous brothers put the Hero Twins on top of nests of stinging ants).
- Ants which live in Subin bush (*Acacia cornigera* is the bush; (Anderson and Medina 2005:190),
- Cochineal insects as source of red coloring material, *Dactylopius coccus*.
- Niij, also called cochinea, source of liquid for surface treatment of gourds *Llaveia axin*
- Cochineal insects, wild, not cultivated; live on opuntia cactus in Guatemala.
- Beetles, (*Coleoptera*) the click beetle especially (see also lightning bugs), that are pictured clearly in Maya art on Tepeu 1 bowls from central Petén.
- Bees, stingless Meliponini, common throughout Guatemala, Mexico, Belize, etc.
- Bees, with stinger Hymenoptera, used in warfare, described in Popol Vuh.
- Butterflies, Lepidoptera (not as common as in Teotihuacan art)
- Grasshopper Orthoptera
- Lightning bugs. Coleoptera, many sizes, many species; large ones pictured on Maya bowls and described in Popol Vuh.
- Wasps, Hymenoptera, used in warfare, described in Popol Vuh.

Arachnids

- **Arachnids**
- Scorpions, potentially several species *Centruroides* spp., astrological symbols.
- Spiders, Araneae
    - (spiders of interest to the Maya, as "shell" for God N)
    - (unusual, photogenic, or otherwise worthy of interest today)



Centipedes

Myriapods

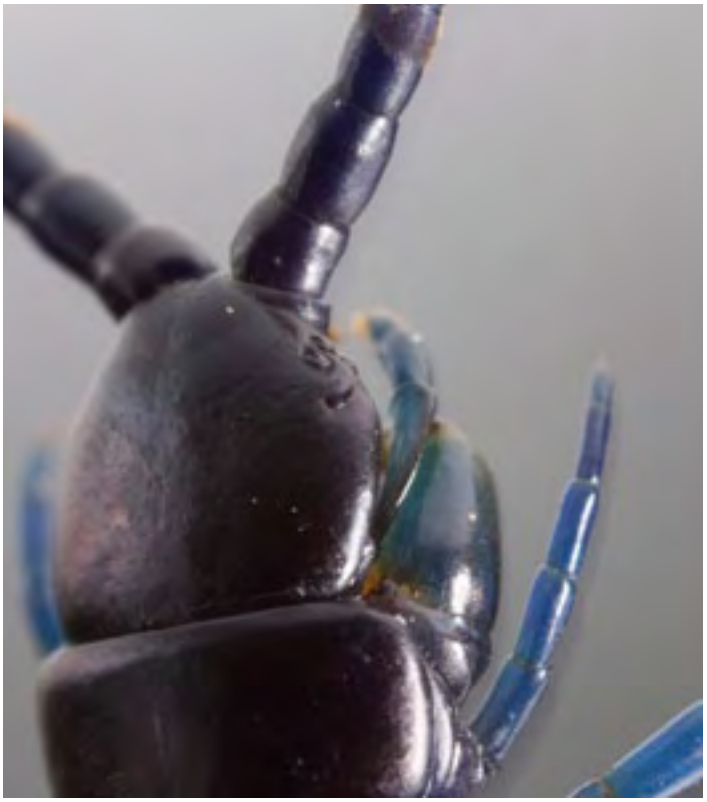
Centipedes

There is still considerable confusion among iconographers about pinchers, fangs, and dentition in Maya dragons and composite monsters. Although Taube, Kettunen, Davis and others have convincingly documented that centipedes are known from ceramic and codex art of non-Maya Mexico, the examples from the Maya area are less frequent and less convincing. I feel that most dentition in Maya monsters was a mixture of diverse creatures.

Nonetheless, we have centipedes high on our list of creatures to find and do macro photography of. Snag is that they are not available in zoos, and although everyone says, "oh, yes, I have seen large centipedes under rotting wood…" not many people have yet been able to show us actual specimens. However during 2013 we hope to find several of the needed species.

- Centipedes, in pre-Columbian art (Kettunen and Davis 2004:14)
- Cryptops micrus,
- Cryptops pugnans,
- Dinocryptops Crabill,
- Otostigmus samacus,
- Rhysida nuda immarginata,
- Scolopendra gigantea,
- Scolopendra sumichrasti,
- Scolopendra viridis,
- Scolopocryptops melanostomus

Taube shows *Lithobius forficatus* (Taube 2003: Fig. 6,a) but this is UK and Europe; not a major presence (if at all) in Mesoamerica.



Millipedes

We have found and photographed a millipede in the Izabal area. We estimate that many other species will be in our next update. Although millipedes are not featured by any of the articles on centipedes, they both occupy some of the same environmental niches.

So far we have not found any monograph on "Millipedes of Mexico & Central America" which can help us identify these creatures. Also we have not found any useful book on "Centipedes of Mexico and Central America." At least none which has color photographs of all the pertinent species. I have not yet had time to check the two giant monographs we have on insects to see if centipedes and millipedes are included.

Plus, millipedes have exoskeletons which have segmented plates. This is the feature which iconographers find on composite snake monsters. So we are adding millipedes to the list in order to check to what degree millipedes may be models for some aspects of the repetitive segments on composite snake monsters.

On a recent field trip to Peten we did not find as many centipedes or millipedes as we would have hoped for. Thus we believe the really large creatures are in Zacapa, Izabal, and some needed species are in Highland areas. I would have expected creatures used as models in Maya art to be common in Peten.

Snakes

snakes, venomous

- rattlesnake, *Crotalus durissus*
- fer-de-lance, *Bothrops asper*
- coral snake, *Micrurus spp.*
- Many other venomous snakes

snakes, not venomous

- Mazacuata, *Boa constrictor*

iguanas,

- spiny-tailed iguana, black iguana, *Ctenosaura similis,*
- green iguana, *Iguana iguana,*

lizards Squamata

Creatures associated with water:

rivers, lakes, oceans

Reptiles

crocodiles and alligators,

- *Crocodylus moreletii*, Morelet's Crocodile
- *Crocodylus acutus*, American crocodile
- *Caiman cocodrilus*

Creatures associated with water:
rivers, lakes, oceans

Crustaceans

crabs

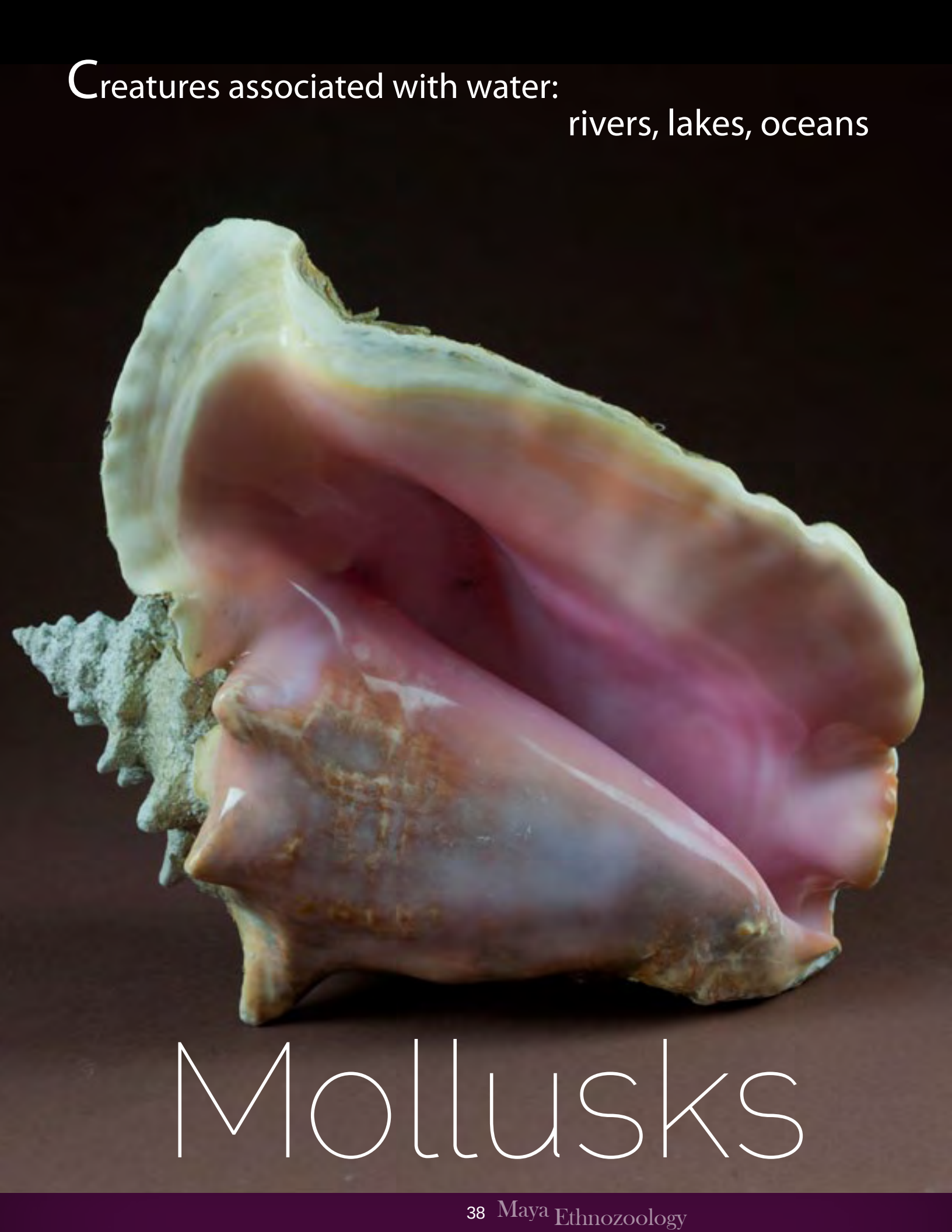
- marine crabs, many species
- river and lake crabs, many species

shrimp (incised shell in form of shrimp, Ek Balam). Penaeidae

River shrimp, pigua, *Macrobrachium carcinus* (Houston)

Lobster *Homarus americanus*

Creatures associated with water:
rivers, lakes, oceans



Mollusks

marine

- conch, several species, musical and to hold ink or pigment
- bi-valve, many species
- *Spondylus*, imported from far south
- shells as origin of dye
- shells as jewelry

shellfish, rivers and lakes

- bi-valve (Arroyo Petexbatun, Peten, and elsewhere)
- apple snail, *Pomacea flagellata* fed on by snail kites.
- Jute, *Pachychilus spp*.

Fish

fish, salt water

- sharks (shark teeth in deity faces, Tzakol cache vessels) *Carcharodon carcharias*
- stingray spine, *Dasyatis centroura*
- marine fish

fish, fresh water

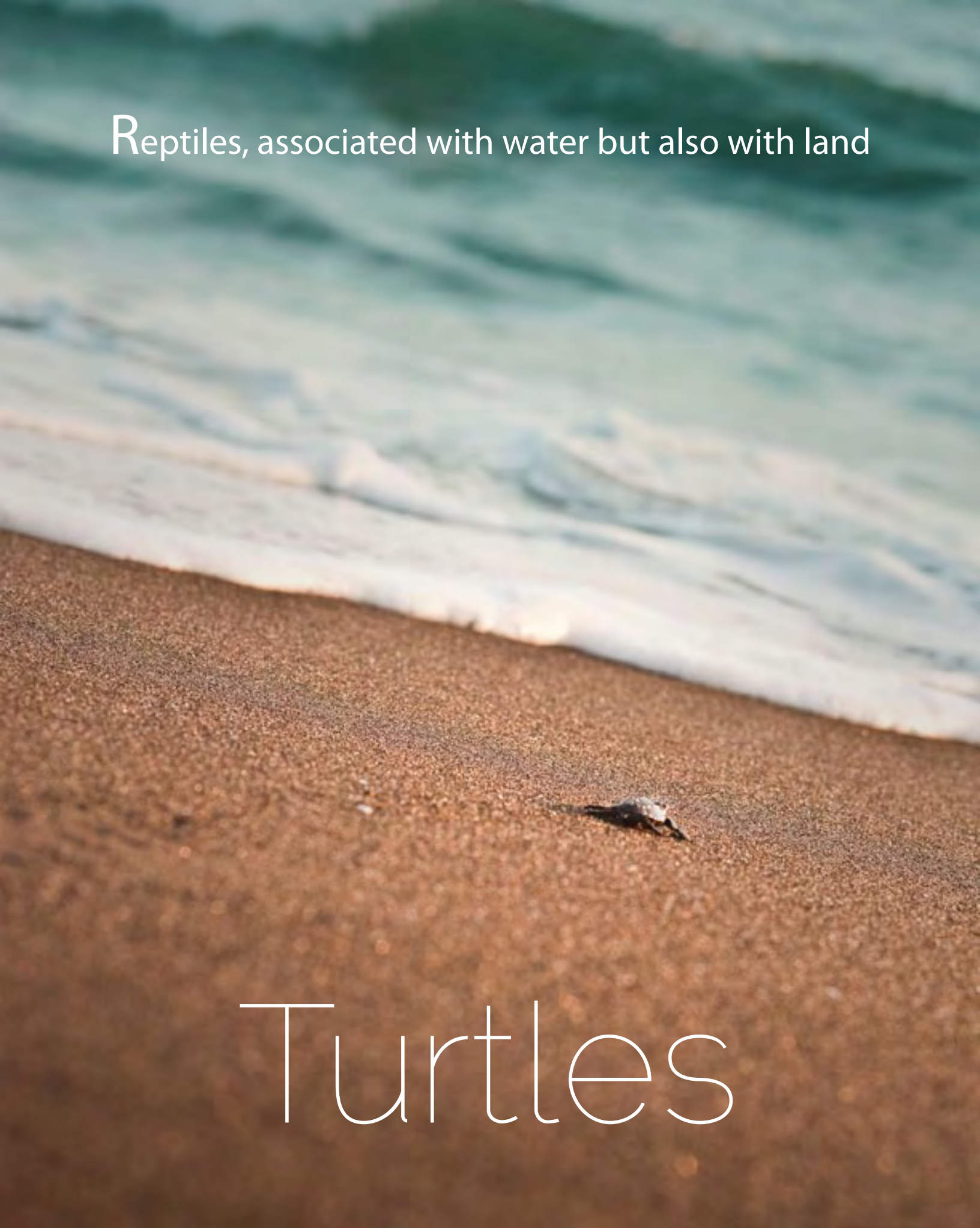
- catfish *Rhamdia guatemalensis*
- several other fresh water fish, in waterlily scenes

Amphibians & Amphibious

frogs, toads

- *Bufo marinus*, marine toad, frequent in Guatemalan art
- *Bufo valliceps*, very similar to *Bufo marinus* but not as large
- *uo* frog, *Rhinophrynus dorsalis,* actually a toad

Reptiles, associated with water but also with land



Turtles

turtles,

- turtles as food
- turtle carapaces as musical instruments
- turtle as birth location of Maize God with Hero Twins attending
- sea turtles
    - green sea turtle *Chelonia mydas,* Pacific coast
    - Hawksbill *Eretmochelys imbricata*
    - Leatherback *Dermochelys coriacea*
    - Loggerhead *Caretta caretta*
    - Olive ridley *Lepidochelys olivacea*
- water turtles (rivers, lakes, swamps)
    - Central American River Turtle tortuga blanca*, Dermatemys mawii*
    - Furrowed Wood Turtle, Rhinoclemmys areolata
    - Mexican Snapping Turtle, *Chelydra serpentina*
    - Narrow-bridged Musk Turtle, *Claudius angustatus*
    - Northern (Mexican) Giant Musk Turtle, *Staurotypus triporcatus,* three parallel ridges along back
    - Red-eared terrapin, Mesoamerican Slider, Jicotea, *Trachemys scripta*
    - Scorpion Mud Turtle*, Kinosternon scorpioides*
    - Tabasco Mud Turtle*, Kinosternon acutum*
    - White-lipped Mud Turtle*, Kinosternon leucostomum*
    - Creaser's Mud Turtle*, Kinosternon creaseri*
    - *Yucatan box turtle, Terrapene carolina*

Water-related mammals

Otters *Lontra longicaudis*

Beavers are not present in pre-Columbian Mesoamerica

other water mammals

Tapirus bairdii

other mammals

rabbits *(Order Lagomorfa)*

- *Sylvilagus brasiliensis***,** forest rabbit or conejo de monte
- *Sylvilagus floridanus*, eastern cottontail

Two (or, depending on whose article you read, three) species of rabbit can be found in the Maya area of Mesoamerica. Scores of other rabbit species are known from Mexico. Of the two principal species, one species is the male companion of the young female Moon Goddess.

rodents

Most zoologists have removed rabbits from "rodents".

Surely there are many species of squirrels, rats, and mice in the Mayan areas. We list the best known species.

squirrels, *Sciurus yucatanensis,* in several animal scenes on polychrome Peten vases. Would need to check Peten species for which would be appropriate.

rats, *Rattus rattus, Rattus norvegicus.* A rat is a character in the Popol Vuh story.

mice, *Mus musculus*

opossum, *Philander opossum*

Common Opposum, *Didelphis marsupialis*

Mouse Opposums, *Marmosa* species

coatimundi, *Nasua narica,*

paca, *Agouti paca*

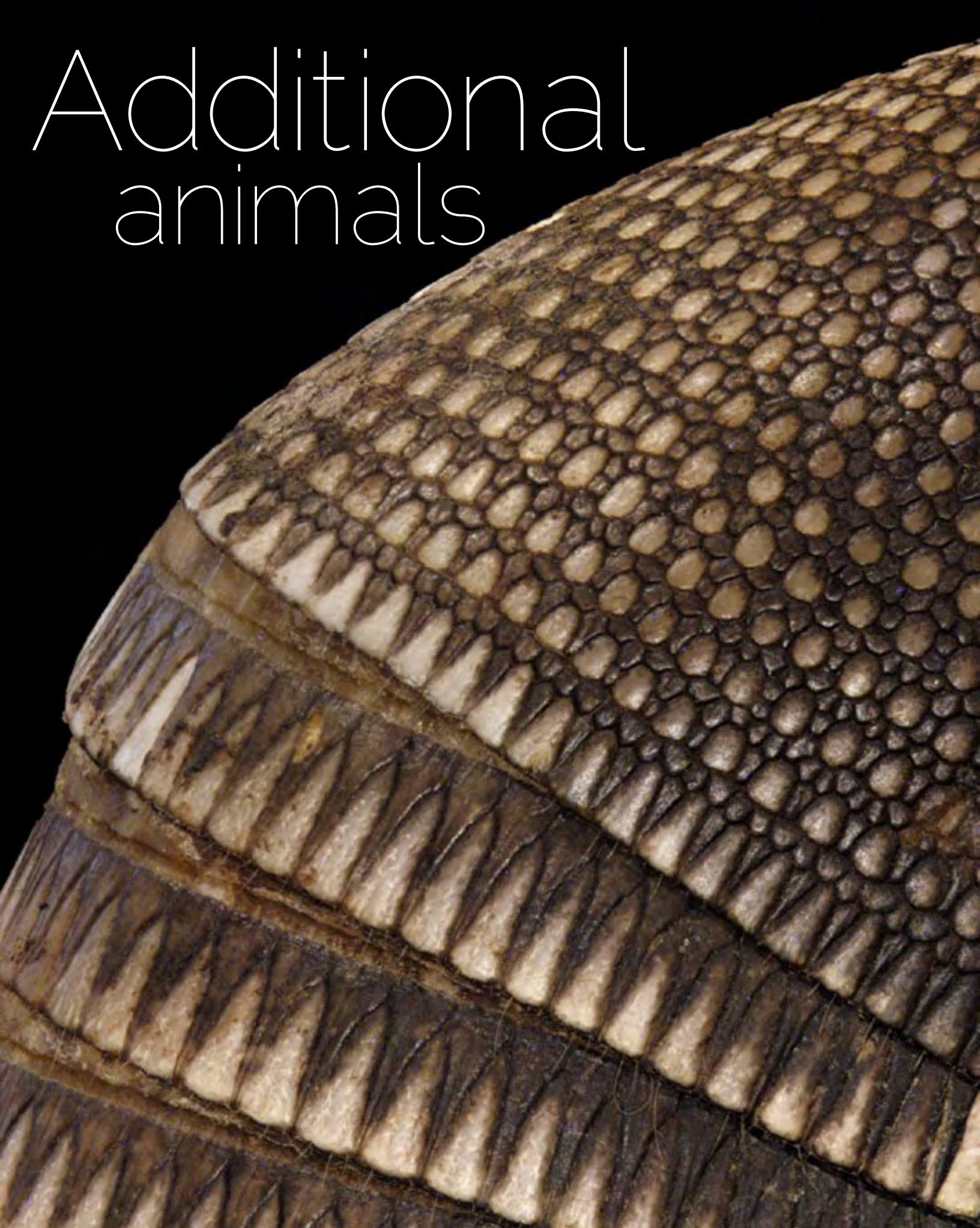
agouti, *Dasyprocta punctata*

pocket gopher, *Orthogeomys species.*

Mexican porcupine, Puerco espin, Kilixpach-och, *Coendou mexicanus*, found in many areas of Guatemala.

This photography shows one of the friendly animals in the FLAAR ethnobotany gardens surrounding our office. We also have happy bees, several wasp nests, many contented spiders (especially inside), and a diversity of other neotropical fauna both inside and outside.

Additional animals



skunk *Mephitis macroura,*

sloth *Bradypus tridactylus,*

Ant eaters (rarely pictured, if ever), *Tamandua tetradactyla,* dwarf anteater *Cyclopes didactylus,*

Armadillo, *Dasypus novemcinctus, Cabassous spp.*

Dog

- *Canis lupus familiaris*
- Hairless dog, reported for pre-Columbian Guatemala, so more than just the "Mexican hairless dog."

I estimate two species of dog (hairless and with hair) or at least more than one variety.

Foxes, *Urocyon cinereoargenteus.* Foxes are common at Tikal.

wolf (range does not extend to Maya areas) *Canis lupus*

coyote, *Canis latrans*

felines,

- Jaguars, *Panthera onca*
- Jaguarundi, *Puma yaguarondi*
- ocelot, *Leopardus pardalis*
- Margay, tigrillo, *Leopardus wiedii*
- pumas, *Puma concolor,*

peccaries: in diet, art, astronomy (iconography and epigraphy)

- collared peccary *Tayassu tajacu,* javelina
- white-lipped peccary, *Tayassu albirostris, Tayassu pecari*

deer

- brocket deer, *Mazama americana, Mazama pandora*
- white-tailed deer, *Odocoileus virginianus,* this is the species shown in Maya art.

monkeys

- spider monkey, *Ateles geoffroyi*, this is the species shown in Maya art.
- howler monkey, *Alouatta pigra*, *Alouatta palliata nigra,*

mico de noche, kinkajou *Potos flavus,*

bats

- vampire bats
    - common vampire, *Desmodus rotundus*
    - Hairy-legged vampire, *Diphylla ecaudata*
    - false vampire *Vampyrum spectrum*
    - white-winged vampire, *Diaemus youngi* is listed by Wikipedia for Mexico southward, but is not in the list of bats for Guatemala by Jose Cajas.
- leaf-nosed bats Phyllostomidae and many others
- other bats (see Appendix A)

photographs taken in FLAAR Studio.

Birds

birds

- raptors, There are 33 hawks, eagles, and kites in the Wikipedia list. You do not need a PhD in zoology nor even be an ornithologist to realize that the Principal Bird Deity (especially of the Early Classic Peten style) is a snake eating raptor. It may be called "7 Macaw" in Quiche Mayan language, but it has macaw features mainly at Copan; elsewhere (in Peten), the bird is simply a monstrous and definitely pompous raptor.
    - eagles, Accipitridae
    - hawks, Accipitridae
    - kites, Accipitridae
    - falcons, Falconidae

I show the list here from Wikipedia, but put it in alphabetical order by species (it is in order by bird type: Hawk, or kite, or eagle, in Wikipedia).

kites

Chondrohierax uncinatus, Hook-billed Kite

Elanoides forficatus, swallow-tailed Kite

Elanus leucurus, White-tailed Kite

Harpagus bidentatus, Double-toothed Kite

Ictinia mississippiensi, Mississippi Kite

Ictinia plumbea, Plumbeous Kite

Leptodon cayanensis, Gray-headed Kite

Snail Kite, *Rostrhamus sociabilis*. I would expect this along tributaries of the Rio de la Pasion such as Arroyo Pucte.

Hawks

Busarellus nigricolli

- osprey *Pandion haliaetus*

owls

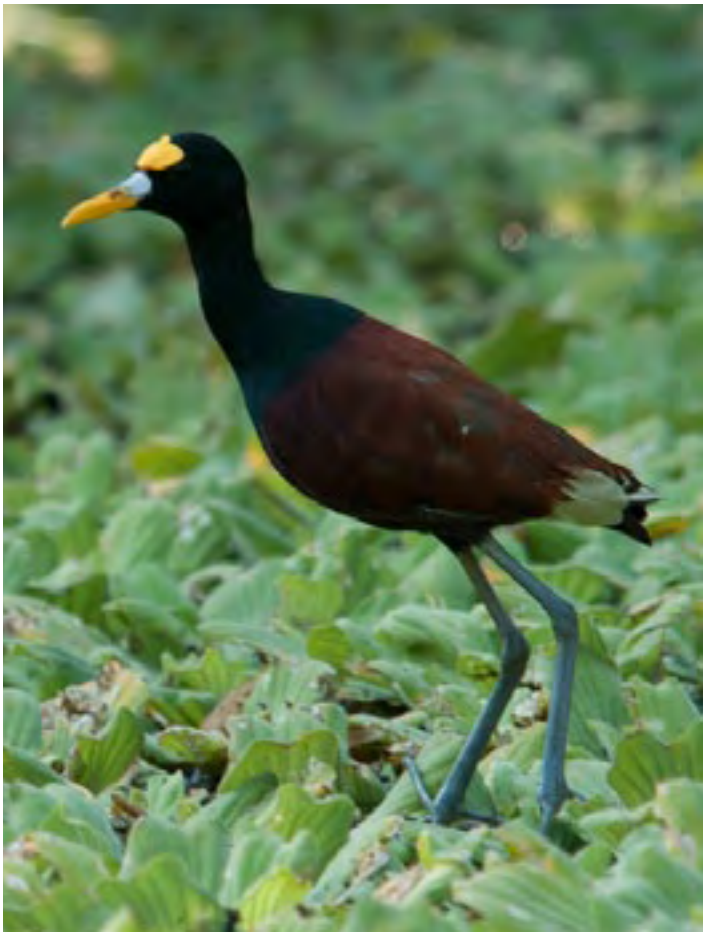
- A web site on birding of Chichen Itza lists four owls.
- Alvarez del Toro on birds of Chiapas shows 18 owls.
- Wikipedia lists 21 owls for Guaemala
- My tabulation (in a separate report) listed 29 owls for Mesoamerica, and added seven more from the Wikipedia list.

- diverse other large birds of the forests
    - chachalaca,
    - crested guan, *Penelope purpurascens,*
    - Horned Guan, Pavo de Cacho, *Oreophasis derbianos*
    - great curassow, *Crax rubra*
    - turkey, ocellated turkey, *Agriocharis ocellata,*
- vultures
    - Turkey vulture *Cathartes aura*
    - Black vulture *Coragyps atratus*
    - Lesser yellow-headed vulture *Cathartes burrovianus*
    - King Vulture, *Sarcorhamphus papa,*
- doves, *Columbidae*
- sparrows and comparable, *Passeridae*
- Montezuma Oropendula, *Psarocolius Montezuma*, murals of San Bartolo
- Woodpeckers, *Picidae*
- hummingbirds, *Trochilidae,* many species
- pigeon, *Columbidae*
- parrots, *Psittacidae*, pictured especially on Early Classic Peten style ceramics. It is not yet known which species are featured, so we list below a wide range.
    - Yellow-lored Amazon, Amazona xantholora, Yucatan peninsula, northern Belize
    - Mealy Parrot (Amazona farinosa) northern Guatemala, Belize.
    - Yellow-headed parrot, Belize
    - Red-lored, *Amazona autumna!is*, Tikal, Belize
    - White-crowned, *Pionus senhis*, Tikal, Belize
    - White-fronted, *Amazona albifrons*, Mexico, Peten (Tikal), Belize, Honduras
    - Brown-hooded, *Pionopsitta haematotis*, Tikal, Belize

water birds

Water birds commonly appear in scenes of the Surface of the Underwaterworld. It will be a dissertation-length project to identify which of the water birds of the Maya areas are indicated. To be safe we start off by listing most of the most obvious water-related birds, both of the ocean shores and also of inland rivers and lakes.

- Cormorant,
    - Neotropic cormorant, *Phalacrocorax olivaceus*
    - Double-crested Cormorant, *Phalacrocorax auritus*
- ducks *Anatidae,* appear in Early Classic Maya ceramics. Will be a long-range project to figure out which species, so we list hear all the "ducks" for Guatemala listed by Wikopedia.
    - American Wigeon *Anas americana*
    - Black-bellied Whistling-Duck, *Dendrocygna autumnalis*, pijiji
    - Blue-winged Teal *Anas discors*
    - Canvasback *Aythya valisineria*
    - Cinnamon Teal *Anas cyanoptera*
    - Green-winged Teal *Anas crecca*
    - Fulvous Whistling-Duck *Dendrocygna bicolor*
    - Lesser Scaup *Aythya affinis*
    - Mallard, *Anas platyrhynchos*
    - Masked Duck *Nomonyx dominicus*
    - Northern Shoveler *Anas clypeata*
    - Northern Pintail *Anas acuta*
    - Redhead *Aythya americana*
    - Ring-necked Duck *Aythya collaris*
    - Ruddy Duck *Oxyura jamaicens*
    - Muscovy duck, *Cairina moschata,* one of the few Maya domesticated animals
- egrets, *Ardeidae* family
    - Great Egret, *Ardea alba*
    - Snowy Egret, *Egretta thula*
    - Reddish Egret, *Egretta rufescens*



- herons *Ardeidae* family
    - Bare-throated Tiger Heron, *Tigrisoma mexicanum*
    - Great Blue Heron, *Ardea Herodias*
    - Tricolored Heron, *Egretta tricolor*
- ibis, Threskiornithidae family
    - American White Ibis, *Eudocimus albus*
    - Roseate Spoonbill, *Platalea ajaja*
- pelicans *Pelecanus spp.*
    - American White Pelican, *Pelecanus erythrorhynchos*
    - Brown Pelican, *Pelecanus occidentalis*
- Storks
    - Jabiru, *Jabiru mycteria*
    - Wood stork, *Mycteria americana*
- other birds related to water,

birds mentioned in Popol Vuh

Owls are the birds most often mentioned, but also snake eating hawk and other birds. All these birds we include elsewhere in our list since these birds are well known elsewhere in Maya myths or art. Below I include a bird which is not known for art scenes but which is an actor in the story of the Popol Vuh.

- whippoorwill, guardians of the gardens of One Death and Seven Death

mythical birds

- 7 Macaw (Principal Bird Deity). Except at Copan this is more a snake heating raptor than a Macaw related creature.
- Moan (Muan) Bird; some consider this an owl.
- Four messanger owls of Xibalba.

If you know of any species of animals that we missed, especially if their image is shown in Classic Maya art: murals, figurines, vases, bowls, etc, please let us know at ReaderService@FLAAR.org

I tend to prefer web sites specifically on a topic, which is a polite way to say that I tend to avoid Wikipedia (since there is no way to know where the information is really coming from). But for birds of Guatemala the page of Wikipedia is a really good place to start, http://en.wikipedia.org/wiki/List_of_birds_of_Guatemala

Concluding Comments

FLAAR is becoming known for its long-range research on plants and animals of the Classic Maya. We also have an interest in the seashells and flowers favored by Teotihuacan incensarios, since these incensarios are frequently found in the greater Tiquisate area of lowland Escuintla, Guatemala. But normally we focus on the Classic Maya, especially of Guatemala.

The material in this report is the chapter outline for the next five to ten years of my life. We can find, photography, and publish all the sought after fauna in three years if a considerate corporation, foundation, or individuals assist us with funding. Ten or more years if we try to continue to work with no outside funding.

FLAAR is a research institute that combines studies of Mayan iconography, art history, architectural history, ball courts and rubber ballgame studies, geology (jade, etc), ethnozoology and ethnobotany with research on advanced digital imaging (sophisticated digital photography and printing the resultant images for museum exhibits, displays, etc.).

There are so many capable epigraphers, iconographers, archaeologists, ethnographers, ethnohistorians, botanists, zoologists, and geologists. But few of them concentrate on learning which camera equipment and which photography lighting techniques will give them the best records of their field work. And it is almost unknown that these capable scholars have time to learn the latest technology of wide-format inkjet printers and the newest ink chemistry to produce exhibits that show the results of their work and improve museum displays.

So FLAAR works hard to learn advanced digital imaging technology and chemistry, and then to deliver this knowledge to the world of Latin American anthropology. We recognize that the concept of anthropology should encompass all the disciplines from archaeology through studies of what geological resources the indigenous peoples used a thousand years ago.

Our success so far

We have a long way to go. But considering that we are an institute with very little funding, we have done pretty well. We hope that the list of utilitarian and sacred fauna of this PDF will be a useful adjunct for students, and for professors who are teaching this subject.

Plus if you are visiting the Maya area, especially a nature preserve or national park, this FLAAR Report should provide a list of what to look for.

And this is only the beginning. There are another hundred species of plants and animals that we intend to add to our web sites. It is a bit slow, because we are still looking for grants, corporations, and individuals (benefactors) to assist us. So far we have reached our success out of sheer interest in the subject: the remarkable flowers, trees, resins, birds, reptiles, and other creatures which were pictured in Mayan art from the Preclassic through the Post Classic.

Then additional chapters should include:

Sacred creatures

sacred creatures related to astronomy or astrology

creatures that appear in hieroglyphs

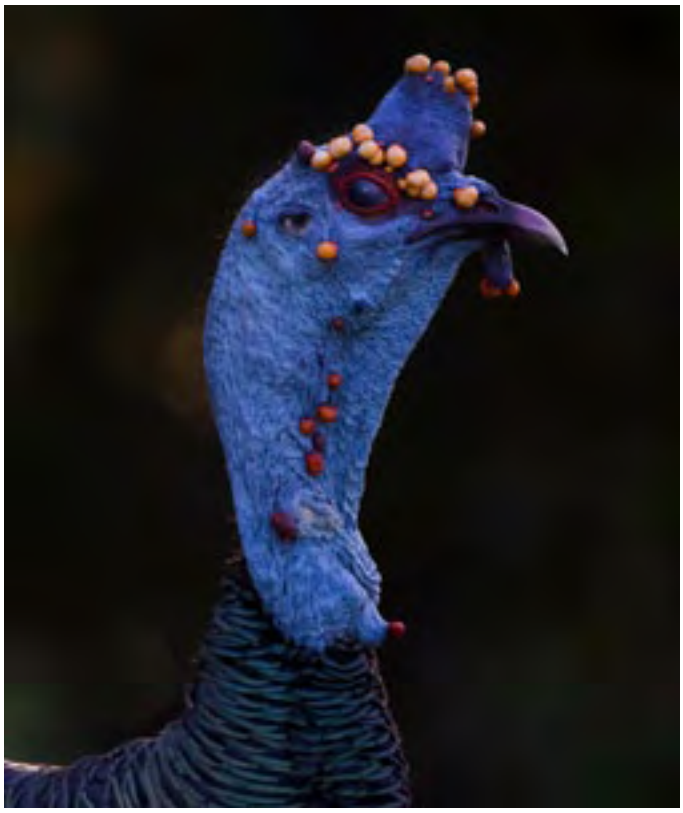
Edible creatures

creatures for utilitarian materials: hides, bones

Domesticated creatures

List of animals which are common in the Maya areas but which are not yet found pictured in Classic Maya art.

etc (common sense topics)



The bibliography to this report is so long that we will issue it as a separate PDF. Since our staff is occupied in multiple projects, to do the graphic design may take another month.

Same with the Appendix; we have a complete list of 94 bats of Guatemala, kindly provided by Jose Cajas. This will be together with the bibliography.