

Howler Monkeys of Guatemala

Annotated Bibliography

Especially Howler Monkeys
of Parque Nacional Yaxha, Nakum y Naranjo

Nicholas Hellmuth, Vivian Hurtado,
Marcella Sarti, Linda Bac





Alouatta pigra. Sep. 6, 2018.

Parque Nacional Yaxha, Nakum and Naranjo.

Photo by Nicholas Hellmuth. FLAAR Mesoamerica.

Cover photo by Boris Llamas. FLAAR Mesoamerica.

Jun. 22, 2019.

Introduction to the present annotated bibliography


Our first bibliography on howler monkeys of Guatemala and surrounding countries was in 2014. Linda Bac assisted Nicholas Hellmuth with more references in 2015. Subsequently Marcella Sarti put into the FLAAR format all the entries plus lots of additional titles found by Nicholas.

Several months ago I also consulted the bibliography of Baker 1992 (but added more items she did not have included, plus added lots more from the following several decades). In May 2020 our bibliography researcher Vivian Hurtado added additional titles. So with the combined work of Linda, Vivian, Marcella and Nicholas we now have a bibliography that can assist professors to prepare educational material and for students who wish to do a term paper, thesis, or dissertation on these howler

monkeys of Mexico and Central America.

There are lots of people around the world who like to learn about mammals, so we hope our bibliography work of 2014 through 2021 can help everyone.

We are also dedicated to assisting the national parks of Guatemala. I worked at Parque Nacional Tikal for 12 straight months in 1965 as a student intern for the Tikal archaeological project. In 1969 I formed FLAAR to initiate the Yaxha Project and during the 1970's I worked together with Miguel Orrego and many helpful students for multi-month seasons over several consecutive years to map Yaxha and add to the map of Nakum. Lots of howler monkeys and spider monkeys in those years.



We are also preparing a separate bibliography on what trees should be protected in Peten, Alta Verapaz, and Izabal in order to insure that the howler monkey has enough leaves, flowers, buds, and fruits to eat.

We are also preparing a separate bibliography on *Alouatta palliata*, the Mantled Howler Monkey. This is found in Veracruz, Tabasco and nearby Mexican areas; and in Izabal (Guatemala) to adjacent Honduras and then all the way south to northern Peru.

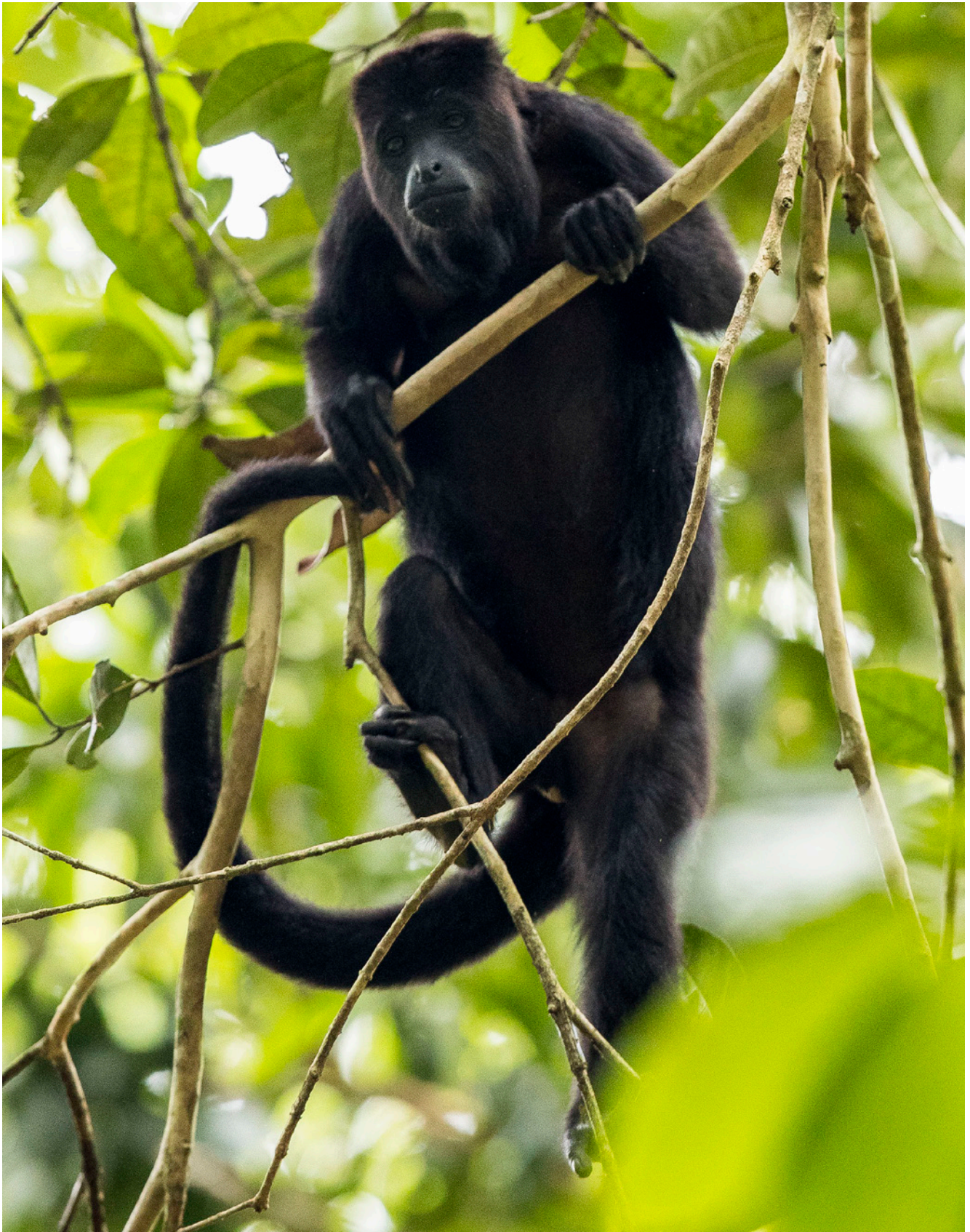
When the then-president of Guatemala visited Yaxha (while FLAAR was mapping the site), he spent several days there. So I had the opportunity to speak with him about having him declare the Yaxha-Sacnab-Nakum-Topoxte areas a national park. I also discussed this with the then head of FYDEP, Coronel Oliverio Casasola y Casasola (Peten was not a departamento in those years; it was governed by FYDEP). A few months later President Arana asked me to travel with him to Tikal to guide him there; so I had more opportunity to speak with him about forming the park (ironically we entered a palace of the Central Acropolis at the same time as did archaeologist J. Eric S. Thompson, formerly of Carnegie Institution of Washington).

During the same year that I was negotiating with the present and with FYDEP, I happened to meet a team from the US National Parks Service; so I encouraged them to add Yaxha, Topoxte, Nakum, Laguna Yaxha and Laguna Nakum to their plans (I had never visited Naranjo nor worked there at all, so I focused on the areas that I knew first-hand).

For one-week every month for 12 months (July 2018-August 2019) our team was back at Yaxha, working together at the invitation of the co-administrators (DAEH and CONAP) of Parque Nacional Yaxha Nakum Naranjo. The team saw and heard lots of howler monkeys in the camp area kindly provided for them to stay during each field trip. I and the digital camera battery-charging team stayed in the nearby hotel Ecolodge el Sombrero in order to have electricity to charge all the computers, all the cameras, and telephones. Howler monkeys almost every day and for sure at 4 or 5 am every morning, literally directly next to your bungalow.

To protect these endangered monkeys (and their treetop friends the spider monkeys), it is essential to protect the trees. It also helps to reforest areas that were cut down for cattle pastures in past decades. Nowadays there are ways to learn how to harvest biodegradable products from a thriving forest (without cutting down the trees).

We are also preparing a bibliography on spider monkeys, and also on trees, especially treetop ecosystems, also called tree canopy ecosystems. The epiphytes: orchids, bromeliads, ferns, lichens and everything else that grow up on the tree trunks and along the branches are all crucial aspects of the forest to learn about and to protect and to provide land and incentive to grow.



Alouatta pigra. Aug. 17, 2018.
Parue Nacional Yaxha, Nakum and Naranjo.
Photo by Erick Flores.

Howler Monkeys in Alta Verapaz

Our bibliography is focused on black howler monkeys in Peten and also the second species of black rust colored mantled howler monkeys in Izabal. But during the hour by hour, day by day, and week by week library research (90% on-line to find and download articles from the recent 50 years), I began to notice that nobody (that I have yet found) has done a comprehensive study of howler monkeys of Alta Verapaz (except in Lachoa lowlands); no one has done a recent, in-person, field-work study of howler monkeys in Guatemala outside of Peten; and although there are more howler monkey species in Izabal than anywhere else in the entire Republic of Guatemala, there are no recent theses, dissertations, or field work focused on howler monkeys of Izabal whatsoever.

All the studies of howler monkeys are in Veracruz, Mexico, Tabasco, Mexico, and Honduras, Costa Rica, Panama, etc. This is typical for almost every plant, every mammal, every bird, every reptile: Mexico and Costa Rica, Panama and South America; and often there are more studies in Belize than

in all of the neighboring departamentos of Peten and Izabal put together (even though Peten and Izabal are multiple times larger than Belize).

A monkey census definitely needs to be accomplished for all of Alta Verapaz, in karst hills and mountains (so, ecosystems more than the lowlands of Lachua where of course there are lots of howler monkeys and also spider monkeys).

I just now telephoned our Pokomchi Mayan plant scouts to ask what monkeys were in their area (Municipio of Santa Cruz Verapaz, southern Alta Verapaz, south of Coban (the much higher part of this area of Guatemala). Norma Estefany Cho Cu said there were monkeys not far from them. She said that howler monkeys would be on the lookout for bananas that grew around people's homes (bananas are not native but all monkeys love to eat them). The Municipio de Santa Cruz Verapaz is at a rather high altitude, 1,406 meters above sea level. Obviously any howlers in Alta Verapaz would be the solid black ones.



Alouatta pigra. Feb. 11, 2018. Rio Polochic.
Photos by Nilcholas Hellmuth.



Whether howlers occupy any areas of adjacent northern Baja Verapaz is definitely worth research. I say this because all the howler monkey maps of almost all peer-reviewed journal articles on howler monkeys have a map of Guatemala that claims *Alouatta palliata* can be found all across central Guatemala. Wikipedia claims howler monkeys are in Chiquimula (nothing surprises me, neither whether Wikipedia is totally copy-and-paste mistaken or whether there are actual howler monkeys swinging through the trees of Chiquimula).

Livingston itself, in Izabal, is about 15 meters above sea level (depending whether you are up in the center of the town or down by the edge of Amatique Bay. And much of Rio Dulce is only a few meters above sea level. So potentially *Alouatta palliata* prefer altitudes that are not too high.

Howler Monkeys of Izabal, Guatemala

You can find howler monkeys in the trees around hotels if they are not in the middle of a city. So around El Estor or anywhere with forest in Izabal, you can expect howler monkeys.

We would like to find a hotel along Rio

Dulce that is within easy hiking distance of the mantled howler monkey, so we can photograph them every day. So far, in eight one-week-per-month field trips throughout the eastern half of the Municipio de Livingston, we have not heard a single howler monkey on five of the field trips (near the coast and along the rivers and El Golfete). We have heard only rarely an isolated howl during at most three field trips. I was especially surprised not to find and hear howler monkeys everywhere up in Cerro San Gil.

Would be helpful to coordinate and cooperate with hotel owners inland from El Golfete where black howler monkeys are known to be close to these hotels. You can spend more time studying the monkeys if your hotel is close to their feeding areas.

When driving along the main highway from Teleman to the nickel processing mine area (near El Estor) we have seen howler monkeys. And much to our surprise Ilena Garcia found a howler monkey in a tree in the nickel processing property facing the highway.

In other words, there are “howler monkeys everywhere” along the edges of Lake Izabal and Rio Polochic. But not any (or at least not many) along the Amatique Bay coast (Tapon Creek and that whole area).

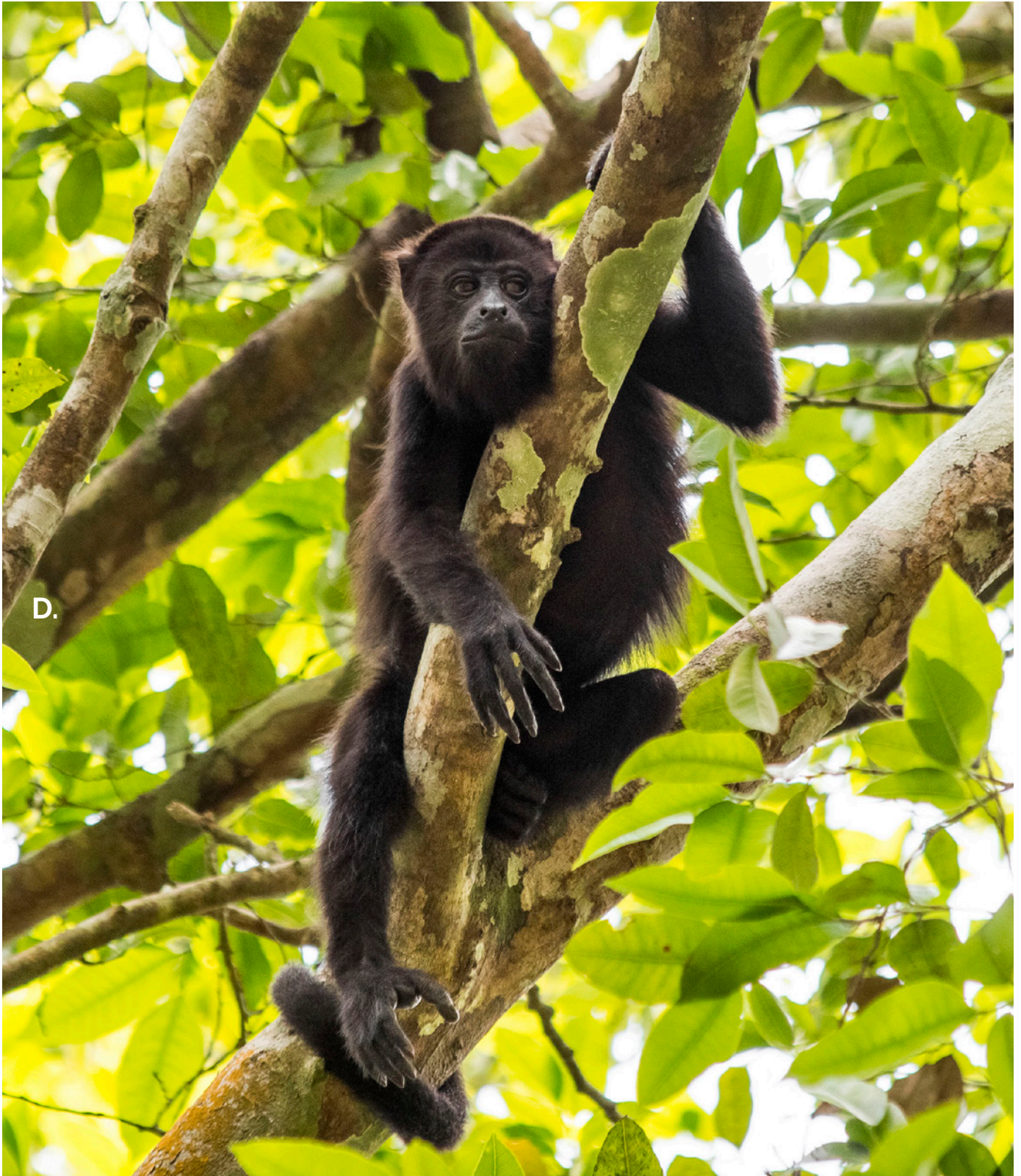


Alouatta pigra, at Yaxha Plaza C. Sept. 5, 2018. Photo by Nicholas Hellmuth.



A.





Alouatta pigra, Parque Nacional Yaxha, Nakum and Naranjo.
Photos A, B by Nicholas Hellmuth, FLAAR Mesoamerica. Sept. 5, 2018.
Photos C,D by David Arrivillaga, FLAAR, Mesoamerica. Jun. 22, 2019.

Annotated Bibliography on Howler Monkeys

On the following pages is the annotated list of suggested reading on howler monkeys by the FLAAR Mesoamerica team.

My style of bibliography is not traditional. For example; for me a bibliography is a helpful list to make it easier for other botanists, zoologists, ecologists and Mayanists, and students, find material that they need. If I put only “References cited” that limits the list. So I do not want to have only references cited and then a separate bibliography on “additional suggested reading.” I prefer to put everything together. My job as a professor in past decades was to assist students (and colleagues in Mesoamerica) to have helpful information available.

I have used my style for over 50 years and my fingers align everything almost automatically. So I apologize that I have no time to change everything to APA style, MLA style, or Chicago/Turabian style.

Another aspect of the “Nicholas style” of bibliography is annotations. Sorry to “get

personal” but unless someone points out a potential issue, no one will repair it. And other reports are so good they deserve a compliment.

I put the date clearly visible, in deliberately isolated space. The norm is to stick the date inside the overall text (the result is the date is not always immediately evident). Sorry, but the date of a report is a crucial aspect. Lundell’s work was essential, but was in the 1930’s. So the 1937 date is needed (he worked into the 1960’s but none of that has (yet) been gathered together into a Lundull 1940’s-1950’s-1960’s digital depository).

Plus in most cases I indicate whether a report or thesis or dissertation or book is available as a free download. Sorry, I am from another past century and don’t yet use doi. But for peer-reviewed journal articles to include doi in the bibliography is helpful.

I put a period at the end of the citation. Yes, a title and publisher info is not a sentence but it should “end” and a period is fully acceptable to me. Otherwise the text seems lost and floating.

I use “and” instead of “&”.

For editors, I put their initials before their name; but only initials because with multiple authors and often some of the same as editors, it becomes ‘too much.’

For initials I don’t clump them (in other words I don’t dump them together): ABC Jones. I list the author minimally as A. B. C. Jones and when I have spare time, for authors, I try to learn what the first name really is. People who work hard and prepare and publish information deserve to have their first name mentioned also. But some authors are very hard to find their first names: for one author it took literally over 20 minutes. Since we have so many trees, plants, birds, insects that we are doing research on, I don’t have 20 minutes for each author’s initials. But if I can find the person’s name quickly, as a courtesy to colleagues I put their first name.

I no longer put the city of the publisher. Nowadays I could not care less whether it’s Kansas City, Kansas or Kansas City,

Missouri, or Timbuktu. What counts is the author and the title (the subject), and the journal name or if a book, the publisher.

I prefer to see what pages of a book a chapter is in, so I put the page numbers ahead of the title. I put editors after the title of the book (when the citation is to a specific chapter that has its own separate authors).

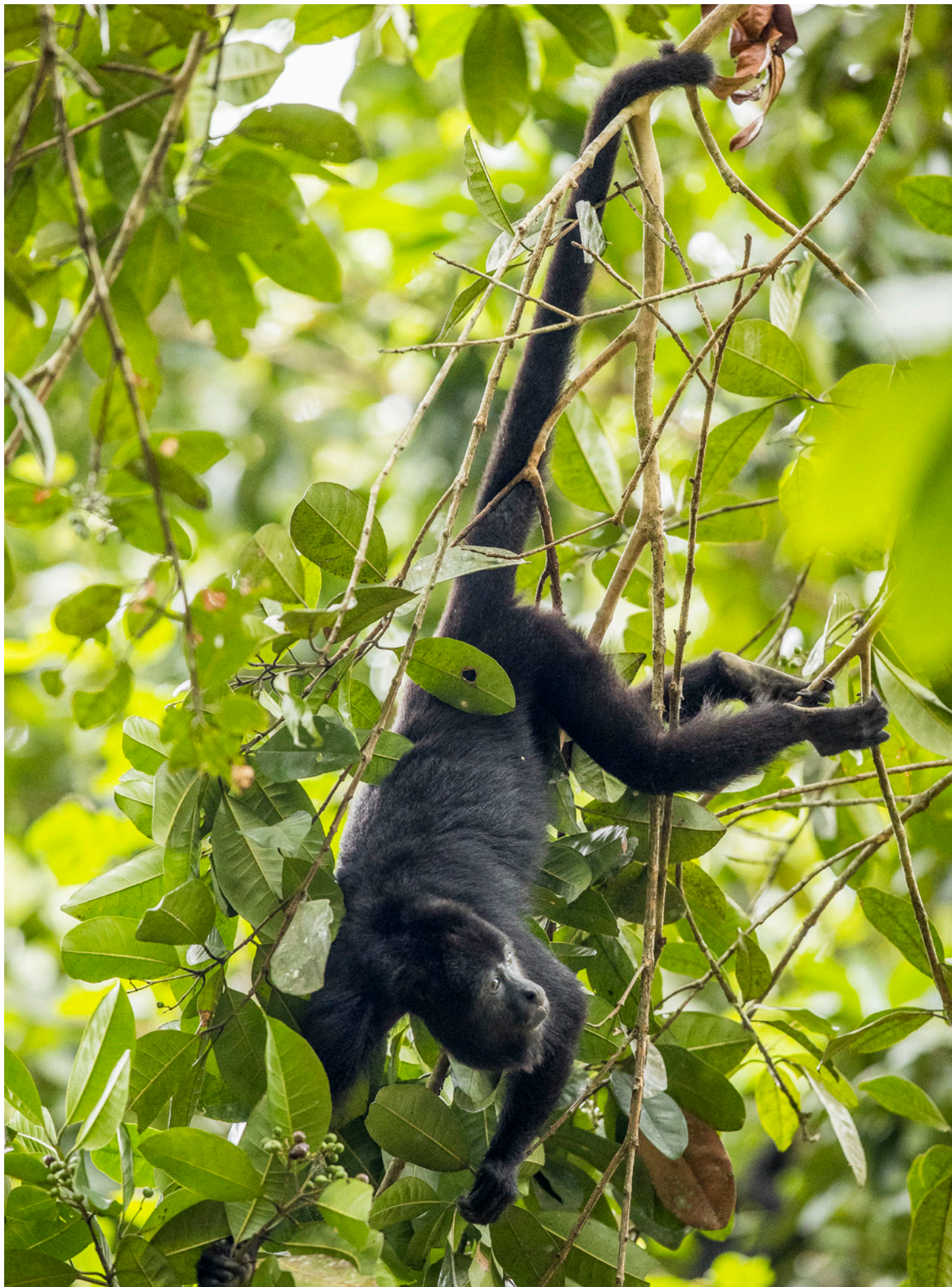
In a peer-reviewed journal, space is expensive, so everything is done to make the academic references cited as compact as possible. In distinction, we at FLAAR (USA) and FLAAR Mesoamerica (in Guatemala), we don’t sell our reports; they are available at no cost. So we see no need to scrunch and squeeze and compress material to a frankly often ridiculous format.

As a professor I was never interested in tenure. I prefer to be who I am and provide educational material based on my library research and field work. But if you are a student today, or a recently graduated PhD candidate, it may help to become ossified early and fall into the academic format of your field. Because without peer-reviewed journal articles and an occasional monograph, tenure may allude you.



Alouatta pigra, Parque Nacional Yaxha, Nakum and Naranjo.
Photo by Erick Flores. FLAAR Mesoamerica.

Our web site on fauna of Guatemala is read by over 30,000 people a year. Our web site on flora is read by almost a quarter of a million people a year (it's a lot easier to find and photograph flowers than find and photograph a lizard). These readers include professors, researchers, students, and interested lay public.



List of suggested reading on *Alouatta pigra* and *Alouatta palliata*, primarily of Mesoamerica and primarily of Mexico and the Maya areas

One goal of the bibliography here is to assist further research on *Alouatta pigra* at Parque Nacional Yaxha Nakum Naranjo and nearby areas of Peten. This bibliography is to be available to CONAP, IDAEH, FUNDAECO, CECON, and all the wildlife preservation entities that help protect the fragile ecosystems and endangered species of Guatemala.

An additional goal to encourage field work to study both *Alouatta pigra* and *Alouatta palliata* in the Izabal area of Guatemala, especially the Municipio de Livingston.

Plus, as I mentioned earlier, the howler monkeys of Alta Verapaz are almost non-present in research reports except for occasional studies in Lachua. I hear howlers roaring every time I overnight outside Chisec (down from the misty-moisty chipe-chipe mountains from Coban, Alta Verapaz). No monkeys at high elevations, but they are delightfully noisy around Chisec. It would be great if the howler monkeys could be studied literally all over Alta Verapaz (so more than just inside Parque Lachua).

Previous page: *Alouatta pigra*. Aug. 17, 2018.
Parque Nacional Yaxha, Nakum and Naranjo.
Photo by Erick Flores.

ALVAREZ del Toro, Miguel

- 1991 Los mamíferos de Chiapas. Gobierno del Estado de Chiapas, Consejo Estatal de Fomento a la Investigación y Difusión de la Cultura, DIF-Chiapas, Instituto Chiapaneco de Cultura, 133 pages.

This opus is missing from the bibliography on howler monkeys that we found on-line. Alvarez del Toro focused on mammals of Chiapas, spiders of Chiapas, butterflies of Chiapas, and reptiles of Chiapas. Would be wonderful to have books of this nature on each kind of creature in Peten (probably over 80% of the creatures at Parque Nacional Yaxha Nakum Naranjo (PNYNN) are elsewhere in Peten; and probably 95% of the creatures at Tikal are also at Yaxha (since the parks are next to each other). But Parque Nacional Yaxha Nakum Naranjo has two large lakes and the seasonal Rio Holmul (which is adjacent to Nakum and then Naranjo). So I estimate there are eco-systems in PNYNN not at Tikal.

El Mirador is far to the northern border of Peten (with Campeche area of Mexico). This eco-system is more dry than central Peten.

ALVARADO, Silvia, ALONSO, Alejandra, ARREDONDO, Ernesto, MOREHART, Christopher, MORTON, Shawn, ROCHAIX, Fernando, RANGEL, Martin, REESE-TAYLOR, Kathryn and Debra WALKER

- 2013 Proyecto Arqueologico Naachtun 2004-2009. Informe No.2 Segunda Temporada de Campo. 150 pages.

This is an important study of biodiverse ecosystems. What is interesting to note is that some of the common local Spanish words (or spelling) are not all identical on the Peten-Campeche border to the common local Spanish words of Central Peten.

I also noticed that no corozo ecosystem is listed for Naachtun (called corozero (or maybe corozera) in Peten). We have found three corozera areas within the park (many more could be found if time and funding were available). The most biodiverse and awesome example of a corozo palm “forest” is physically adjacent to the west side of Naranjo (Parque Nacional Yaxha Nakum Naranjo). The hospitable archaeology team at Naranjo showed us this area.

Also noticed that the bamboo thickets at Naachtun were *Rhipidocladum bartlettii* (p 10, section 4.1.6); the bamboo thickets immediately adjacent to the canal at the west side of Naranjo are a jimbá (jimba bamboo, *Guadua longifolia*). The identical bamboo grows by the millions along one or often both sides of seasonally dry Rio Holmul (which you can easily see as you enter Nakum and you can see if you drive straight north-ish from Naranjo through the Arbol Verde concession area outside the north edge of the park). Here the Rio Holmul has *Guadua longifolia* all along the edge (especially the north edge; quite a challenge to wade through the deep mud of the “river” to get to that other side

to photograph and experience this jimbāl close-up in-person).

ARGUELLO- Sánchez, L. E., ARGUELLO, J. R., GARCÍA-Feria, L. M., GARCÍA-Sepúlveda, C. A., SANTIAGO-Alarcon, D. and A. ESPINOSA de los Monteros

- 2018 MHC class II DRB variability in wild black howler monkeys (*Alouatta pigra*), an endangered New World Primate. *Animal Biodiversity and Conservation* 41.2 (2018).

Free download:

http://abc.museuciencesjournals.cat/files/ABC_41-2_pp_389-404.pdf

ARROYO-Rodríguez, Víctor, ANDRESEN, Ellen, BRAVO, Susana P. and Pablo R. STEVENSON

- 2015 Seed dispersal by Howler Monkeys: Current Knowledge, Conservation Implications, and future Directions. Chapter 5, pp. 111-140, In: *Howler Monkeys, Developments in Primatology: Progress and Prospects* (M. M. Kowalewski et al., editors). Springer.

ATTINASI J. J.

- 1973 Lak T'an: A grammar of the Chol (Mayan) word. Unpublished PhD. Dissertation on file, Department of Anthropology, University of Chicago.

AULIE, H. W. and E. W. AULIE

- 1978 Diccionario Ch'ol-Español, Español-Ch'ol, Instituto Lingüístico de Verano, México.

The word for howler monkey is rather similar in most Mayan languages. In the future it would help if a linguist could show the word for every language where these monkeys are present in that local area.

BAKER, Mary

- 1992 Capuchin Monkeys (*Cebus capucinus*) and the Ancient Maya. *Ancient Mesoamerica* 3, 219-228.

This article is a helpful source of about 20 of the reports on howler monkeys of those years in the present bibliography. The same year 1992 article is in a French journal (<https://journals.openedition.org/primatologie/1683>) dated 2013? Perhaps this is the date it was scanned?

BAKER, Mary

- 2013 Revisiting Capuchin Monkeys (*Cebus capucinus*) and the Ancient Maya. *Revue de primatology*.

Since we see only spider monkeys and howler monkeys swinging through the trees at Tikal, Yaxha, Nakum, Naranjo, Arroyo Petexbatun, Rio San Pedro (Las Guacamayas Biological Research Station), etc. we are not studying capuchin Monkeys. But obviously there was international trade during the Olmec centuries and Maya millennia so finding skeletons of creatures not native is no surprise: for example, some species of *Spondylus* shells may be from far away.

The map (figure 1) showing where each monkey species is found in the Maya areas is totally incorrect. It is worse than any of the others (because it shows *Alouatta palliata* through all of southern Belize, southern 60% of Peten, and worse, in 100% of the southern half of Guatemala. This is the worse, most inaccurate and frankly inexcusable location map that I have ever seen. Would be helpful for a capable student to do a thesis on reliable locations where has been acceptably documented. Plus show on their new map which ecosystems with cacti and thorn covered trees and high mountain elevations of Chiapas and Guatemala HAVE NO MONKEY OF ANY SPECIES WHATSOEVER.

The map of Baker also omits the spider monkey totally, but that is seemingly not a focus of her report.

Free download:

<https://journals.openedition.org/primatologie/1683>

BARRERA-Vasquez, A.

- 1980 Diccionario Maya cordemex. Ediciones Cordemex, Mérida.

BAUMGARTEN, Amrei

- 2006 Distribution and biogeography of Central American howling monkeys (*Alouatta pigra* and *A. palliata*). MS thesis, LSU.

Free download courtesy of LSU:

https://digitalcommons.lsu.edu/gradschool_theses/2417/

BAUMGARTEN, Amrei and G. Bruce WILLIAMSON

- 2007 The distributions of howling monkeys (*Alouatta pigra* and *A. palliata*) in southeastern Mexico and Central America. *Primates*. 2007 Oct; 48(4): 310-315.

BEHIE, Alison M. and Mary S. M. PAVELKA

- 2005 The Short-Term Effects of a Hurricane on the Diet and Activity of Black Howlers (*Alouatta pigra*) in Monkey River, Belize. *Folia Primatol.*, 76: 1-9.

BEHIE, Alison M., STEFFENS, Travis S., WYMAN, Tracy M. and Mary S. M. PAVELKA

- 2015 Hurricanes and coastlines: The role of natural disasters in the speciation of howler monkeys. Chapter 4, pp. 75-91, In: *Taxonomic Tapestries: The Threads of Evolutionary, Behavioural and Conservation Research* (Alison M Behie and Marc F Oxenham, editors). ANU Press, The Australian National University, Canberra, Australia.

Convenient download:

<http://press-files.anu.edu.au/downloads/press/p318011/pdf/4.-Hurricanes-and-coastlines-The-role-of-natural-disasters-in-the-speciation-of-howler-monkeys.pdf>

BEHIE, Alison M. and Mary S. M. PAVELKA

- 2015 Fruit as a Key Factor in Howler Monkey Population Density: Conservation Implications. Chapter 13, pp. 357-382, in *Howler Monkeys, Developments in Primatology: Progress and Prospects*. (M. M. Kowalewski et al. editors). Springer.

BENNET, C. F.


- 1962 The Bayano Cuna Indians, Panama: An ecological study of livelihood and diet. *Ann Assoc Am Geogr* 52, 32-50.

BOLIN, Inge

- 1981 Male Parental Behavior in Black Howler Monkeys (*Alouatta palliata pigra*) in Belize and Guatemala. *Primates* 22(3): 349-360, July 1981.
Male Parental Behavior in www.cs.mcgill.ca/~dtremb8/fulltext3.pdf

BRAAKHUINS, H. E. M.

- 1987 Artificers of the days: Functions of the howler monkey gods among the Mayas. *Bijdragen* 143, 25-53.
Black Howler Monkeys and Guatemala.
Spider monkeys are most often pictured on Late Classic Maya ceramics.
Howler monkeys are surprisingly rare.



I estimate that spider monkeys, deer, and jaguar are the most common animals in Mayan dances and palace scenes because these animals are easily tamed. Photographer Dicky Mata (spelled Dicky and Dickie) had a pet jaguar for years. I know, we are not supposed to; but his jaguar was a total part of his family.

The best jaguar companion video I have seen so far is this:

www.youtube.com/watch?v=-7-rH4IBKLE

Preposterous Pets: The Jaguar That Goes For A Walk In The Park. So if he could have a jaguar as his best friend, so could the rulers and High Priests of Classic Maya cities. Same with monkeys; they wander around (on the ground) on the land around homes of many people in rural areas (Lacandon Maya of Chiapas but also in Guatemala). I often see spider monkeys, no leash, no chain, totally free to wander around, but they are part of the animals that live around the homes.

Same with deer; on our family farm in the Missouri Ozark Mountains, if a mother deer is run over by a car on the highway, and when you drive by you find the baby deer next to the body of what another car hit, it needs to be rescued. They grow up and run around with the cattle and goats and are part of the farm. When they get older they join their relatives back in the forests.

Wild peccary are wild and dangerous but if a baby peccary loses its parents, or is attacked by it's siblings and has to be rescued, it becomes a loving household pet. I don't keep such pets but when visiting AutoSafari Chapin the baby peccary would put it's feet up into the air when I scratched its neck area, to tell me to keep rubbing.

Merle Greene Robertson had a pet peccary, Petunia at her house near Palenque. It would come into your house to seek food and attention, and when finished, or bored, would go outside, down the street, and into the next house. Most elite and High Priests 2000 years ago probably had a variety of such animals as Way (animal spirit companions). These animals would have been trained to perform during ceremonies. So spider monkeys were more responsive in these situations than howler monkeys.

BRIDGEMAN, LeAndra Luecke

- 2012 The Feeding Ecology of Yucatán Black Howler Monkeys (*Alouatta pigra*) in Mangrove Forest, Tabasco, Mexico. PhD dissertation, Washington University. 203 pages.

Easy download

<https://openscholarship.wustl.edu/cgi/viewcontent.cgi?article=1998&context=etd>

BRIDGETT, G. R.

- 2006 The effects of fruit availability and abundance on the diet and ranging behavior of the black howler monkeys (*Alouatta pigra*) of Monkey River, Belize. MA thesis, University of Calgary, Calgary, Alberta.

BROWN, Linda A.

- 2005 Planting the bones: hunting ceremonialism at contemporary and nineteenth-century shrines in the Guatemalan highlands. *Latin American Antiquity* 16, 131-146.

BRUNER, Emiliano and Andrea CUCINA

- 2005 *Alouatta*, *Ateles*, and the ancient Mesoamerican Cultures. *Journal of Anthropological Sciences*. Vol. 83 (2005). Pages 111-117.

CARR, H. Sorayya and Arlene FRADKIN

- 2008 Animal resource use in ecological and economic context at formative period Cuello, Belize. *Quatern Int* 191, 144-153.

CHASE, Arlen F., CHASE, Diane Z. and W. G. TEETER

- 2004 Archaeology, faunal analysis and interpretation: lessons from Maya studies. *Archaeofauna* 13, 11-18.

CHEVALIER-Skolnikoff, S.

- 1989 Spontaneous tool use and sensorimotor intelligence in *Cebus* compared with other monkeys and apes. *Behav Brain Sci* 12, 561-588.

CHISTENSON, Allen J.

- 2007 Popol Vuh: The sacred book of the Maya. University of Oklahoma Press.

There are many different translations and different scholarly editions of the Popol Vuh. For English the translations by Christenson and by Tedlock are considered the best.

COE, Michael D.

- 1978 Supernatural patrons of Maya scribes and artists. pp. 327-349, In: *Social process in Maya prehistory: Essays in honor of Sir Eric Thompson* (Norman Hammond, editor). Academic Press.

COE, Michael D.

- 1989 The Hero Twins: Myth and Image. pp. 161-184 in Vol 1, *The Maya Vase Book: A Corpus of Rollout Photographs of Maya Vases*. Kerr Associates.

COELHO, Anthony M. Jr., COELHO, L., BRAMBLETT Claud A., BRAMBLETT, Sharon S. and Larry B. QUICK

1976. Ecology, population characteristics, and sympatric associations in primates: A socioenergetic analysis of howler and spider monkeys in Tikal, Guatemala. *Yearb. Phys. Anthropol.* 20:96-135.

COELHO, Anthony M. Jr., BRAMBLETT, Claud A, QUICK, Larry B. and Sharon S. BRAMBLETT

- 1976 Resource Availability and Population Density in Primates: A Socio-Bioenergetic Analysis of the Energy Budgets of Guatemalan Howler and Spider Monkeys. *Primates* 17(1): 63-80.

COELHO Jr., Anthony M., BRAMBLETT, Claud A. and Larry B. QUICK

- 1977 Social Organization and Food Resource Availability in Primates: A Socio-Bioenergetic Analysis of Diet and Disease Hypothesis. *American Journal of Physical Anthropology* 46(2):253-264.

CONAP

- 2008 Guatemala y su biodiversidad: Un enfoque histórico, cultural, biológico y económico. Consejo Nacional de Áreas Protegidas, Guatemala. 650 pages.

COOK, Suzanne

- 2016 The Forest of the Lacandon Maya: An Ethnobotanical Guide. Springer, 379 pages.

CORTÉZ-Ortiz, Liliana, BERMINGHAM, Eldredge, Rico, Ciro, RODRÍGUEZ-Luna, Ernesto, SAMPIO, Iracilda and Manuel RUIZ-Garcia

- 2003 Molecular systematics and biogeography of the Neotropical monkey genus, *Alouatta*. *Molecular Phylogenetic Evolution* 26: 64-81.

CORTÉZ-Ortiz, Liliana, DUDA, Thomas F. Jr., CANALES-Espinosa, Domingo, GARCÍA-Orduña, Francisco and Ernesto RODRÍGUEZ-Luna

- 2007 Hybridization in Large-Bodied New World Primates. *Genetics*. 2007 Aug; 176(4): 2421–2425.

The authors are experienced capable zoologists with more knowledge of primates than I can ever achieve. But although I have not spent 50 years or even 5 years learning about primates, I have been literally criss-crossing Guatemala for over half a century and so when I saw their map of their Figure 1 as habitat for howler monkeys I almost had a stroke or heart attack.

Why in the world are *Alouatta palliata* shown for the MOUNTAINS of Central Guatemala, and for the dry ecosystems and for the Boca Costa going into El Salvador. If there are any howler monkeys in even 10% of this mapped area, where are the photographs, the specimens and the documentation? This publication is from top world status institutions.

And, why no *Alouatta palliata* shown for Rio Dulce or Rio Motagua in Izabal area, the one area they are most likely findable?

There are no monkeys along the first 140 kilometers along the main highway going from Guatemala City to Izabal. I have been on this highway since the 1970's (so about half a century). Often I drive parts of this highway every 2 months. We study the cacti and *Ceiba aesculifolia* trees; not sure monkeys can climb any tree anywhere near this highway (until you get out of the bosque seco and into the more humid Izabal areas).

Whew, sorry, I just don't understand who did this map and where in the world the curved area of south-central Guatemala is shown as pure howler monkey territory.

Plus the northern segment: parts are high mountains: sorry, no monkeys anywhere around Senahu for example. Both our Q'eqchi' Mayan contacts said no monkeys of any species there. We work with the Mayan people in these mountains. Not often many monkeys of any species until you get down to the altitude of about 1400m (Santa Cruz Verapaz), and lots of howlers lower, Chisec, Alta Verapaz, at 230 m.

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A specimen in a research center that was collected over half a century ago is no documentation that *Alouatta palliata* can still be found in this location today. And, the precise location of the specimen, and a photo to show that it really is the rust-mantled color, are needed. Without physical proof, a statement is not zoologically acceptable today.

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If anyone reading this bibliography has an electronic copy of the above report or can use their mobile phone to take photos of the pages to send me would be greatly appreciated: to FrontDesk at FLAAR.org (we assume you can turn this into an email address by closing the empty spaces and putting the symbol).

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It is nice to see a Master's thesis longer than 48 pages.

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Free download (but PDF is locked shut; can't utilize any information without wasting time typing every letter and every word by hand).

Nonetheless, has the absolute single best photograph of a howler monkey eating from a guarumo tree. This photograph is priceless. Thousands more such photos are needed for every research project. Statistics and tabulations and lists are also essential, but the lack of good photography in zoological reports is noticeable.

But after this remarkable front cover photo, the dissertation returns to the academic world of universities and there is only about one other photo in the entire 196 pages (and it's typically "academic" style).

Having been a Post Graduate Research Associate (at Yale for many decades) and Guest Visiting Professor at universities in Japan, island of Malta, Florida, and Ohio, I am familiar with the advantages and almost never stated and never pointed out disadvantages of scholarly publications.

Howler monkeys deserve an entire coffee table book with photos as good as on the front cover of this dissertation.

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Bibliography Part II:

Web pages with helpful material

on Black howler Monkey

For web pages on *Alouatta palliata* see Part III at the end of the present part II.

http://academic.regis.edu/ckleier/Belize/Howler_Monkey.pdf

This is a scientific article on Black Howler Monkey of Belize.

https://animaldiversity.org/accounts/Alouatta_palliata/

Three miscellaneous photographs and one scientific rendering (which helps because in a photograph there are usually branches and leaves in the way, and the monkey is so solid black you can't easily see any details (like the sac under its mouth). Correctly comments that sightings in Guatemala are "unconfirmed" but the bibliography is mostly a quarter of a century out of date. Not one single item in the entire bibliography from the current century.

http://animaldiversity.ummz.umich.edu/accounts/Alouatta_pigra/

Nice summary of a dozen articles on the Black Howler Monkey. Sadly has not a single photograph. Has brief bibliography.

<https://animalsake.com/howler-monkey-facts>

Lists all the diverse species and varieties of Howler Monkeys, especially in South America. Also has lots of "Astounding Facts about Howler Monkeys."

www.belizeanjournes.com/howler.html

Photos and text about howler monkeys in the Cockscomb Basin Wildlife Sanctuary. Would help to have photos that can be larger so you can see the details.

www.belizezoo.org/zoo/zoo/mammals/how/how1.html

By Kimberly Lau, *Alouatta pigra* Black Howler Monkey.

www.cayaya-birding.com/mammals-guatemala.htm

Three excellent photographs of howler monkeys, though no location provided (albeit all in Guatemala). Includes one photograph of the rare Mantled Howler Monkey, *Alouatta palliata*.

<http://digital-photography.org/digitalphotographyweeklyreview/?p=1235>

Sofia Monzon was the lead assistant photographer at FLAAR for many years. She is now a mother of two daughters, Jade (about 4 years old) and Maya (over a year now).

www.iucnredlist.org/details/914/0

Here is a web site with monograph style information, all professionally cited.

www.neprimateconservancy.org/howler-monkeys.html

I put this in a sidebar (meaning inside a box) to draw attention to, so far, the best photograph of a howler howling that allows you to see the air sac below its mouth. In days and weeks of studying howler monkeys, I have never seen any photo even close to this detailed.

Unfortunately their map showing distribution, for Guatemala, is totally wrong. And also incorrect for Chiapas. Would be helpful to learn whose map was the source for this unfortunately error. First, this howler is not continuous; second; they are not found in the mountains; third; they are missing Tabasco and potentially Campeche (though I need more documentation for Campeche before I include it.

And Izabal is not included (the adjacent border of northwestern Honduras yes, but not adjacent Izabal of Guatemala.

<http://pin.primate.wisc.edu/aboutp/phys/lifespan.html>

The Life Spans of Nonhuman Primates, suggests that *Alouatta pigra* can live about 20 years.

www.pressreader.com/uk/bbc-wildlife-magazine/20170215/283454961104359

Howling howler monkeys, Tikal, Guatemala, BBC Wildlife Magazine, 2017.

So far this is the best frontal view of a monkey while he has his mouth wide open (and howling). Really good photo; you can see into its mouth. Would be great if we can use our high-res telephoto cameras and get a close-up like this at Yaxha.

www.rainforest-alliance.org/species/howler-monkey

Shows that a blue sky is a much better background for the solid black howler monkeys; normally the sky is cloud-covered in the morning (pure white, so always overexposed or otherwise the monkey is solid black).

https://sites.tufts.edu/gis/files/2018/03/MacGregor_Meghan_MCM591_2017.pdf

Cacao for Corridors: A Suitability Analysis Of Shade-grown Cacao Corridors for Black Howler Monkeys in Izabal, Guatemala. A nicely done info-poster.

Bibliography Part III

Web sites on *Alouatta palliata*

www.cayaya-birding.com/mammals-guatemala.htm

Three excellent photographs of howler monkeys. Includes one photograph of the rare Mantled Howler Monkey, *Alouatta palliata*, though no location provided (albeit all in Guatemala). Evidently the Mantled Howler Monkey is somewhere near the Canyon Rio Dulce or nearby. But we have not seen or heard one at all during 2020 or 2021.

<http://enciclovida.mx/especies/34494-alouatta-palliata>

About five photos; map showing where documented for Mexico and for Honduras. But zero specimens shown for Izabal.

https://es.wikipedia.org/wiki/Alouatta_palliata

This page on Wikipedia is the source of copy-and-paste misinformation that claims the *Alouatta palliata* is found in Chiquimula. This is the best example I have found in recent years of the occasional dubious nature of Wikipedia as source for copy-and-paste misinformation.

www.gbif.org/species/2436649

Would be 100% more helpful if you can switch to a Google maps style to see where each specimen came from. And, if you click on the spot; with this web page, NOTHING happens. So very disappointing. Then went to another page on same site; after scrolling through hundreds and hundreds of Costa Rica sightings, a few from Panama and elsewhere, finally found one for Guatemala. But no information other than Nov. 28, 2019, from Izabal <https://www.inaturalist.org/observations/36180129> To the west of Puerto Barrios (towards border with Honduras).

Another “hour” of trying to figure out how to use this web site and I found *Alouatta palliata* 1 mile south of La Libertad, Peten, Sojio camp Uaxactun, Peten (www.gbif.org/occurrence/476874711).

Verapaz, Chimny (www.gbif.org/occurrence/2432519639). In 1877. Nothing would surprise me but nowadays no documented *Alouatta palliata* anywhere outside of Izabal. I have no earthly idea where “Chimny” is located in “Verapaz.” I assume it is in Alta Verapaz since most (but not all) of Baja Verapaz would not tend to have monkeys.

Bibliography Part IV:

Documentary videos with

helpful material on Black howler Monkey

Amate: The Great Fig Tree (1983)

Amazing how many weeks or months they must have been in blinds near this amate tree in order to photograph howler monkeys, fig wasp pollinator, relative of toucan, collared peccary, tamandua (ant eater), tree porcupine, coati eating iguana eggs, agouti, jaguarundi, paca (nocturnal). They even photograph iguanas underwater grabbing amate fruits, turtles, snails and more,

This video is 37 years old, terrible quality (either bad scan or original was not available at full quality). Unlikely it was done in digital video in 1983. But even with low resolution, the information is irreplaceable. What is needed is to do a comparable video at high resolution (keeping in mind the cost to maintain a team in-situ for an entire year to photograph all seasons).

www.youtube.com/watch?v=Iv3XKJ6P6Mw

Partridge Films Ltd. WNET/Thirteen, Educational Broadcasting Corp.

Acknowledgements

For cooperation, hospitality, and assistance at Parque Nacional Yaxha, we thank
Lic. Jorge Mario Vazquez (CONAP, Santa Elena, Peten)
Arq. Jose Leonel Ziesse (IDAEH, Santa Elena, Peten)
Biolg. Lorena Lobos (CONAP)

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Arqueologa Vilma Fialko
Arquitecto Raul Noriega
Naranjo project person who knows local plants, Horacio Palacios

and all the helpful and knowledgeable guides of IDAEH CONAP who accompanied us each day. It is essential to have either an IDAEH and/or CONAP guardabosque or comparable when doing flora and fauna research.

We appreciate the 16 years of knowledge of birds and plants of “Teco” (Moises Daniel Pérez Díaz).

Ecolodge El Sombrero

I thank Gabriella Moretti, owner of Ecolodge El Sombrero, for providing hotel room and meals while we have been doing field work at Parque Nacional Yaxha, Nakum and Naranjo. We also appreciate the hospitality of her sons Sebastian de la Hoz and Juan Carlo de la Hoz.

Every workday is exhausting because we are carrying and then using very heavy cameras, super-telephoto lenses, sturdy tripods, large gimbals or ball tripod heads. Thus it is crucial for my health to be able to rest and totally recuperate every night in order to be ready for the following day of botanical and zoological adventures in Parque Nacional Yaxha, Nakum and Naranjo.

Equally crucial is having a place to charge the batteries of the computers, or all the cameras, and of the cell phones. Solar power is great, but it lasts only an hour, or less, if you plug in multiple computers and cameras and flash batteries to charge. So a place with enough electricity to charge the entire mass of essential field work equipment is essential and thus very much appreciated.

Contact Info: +502 5460 2934, VentasElSombrero@gmail.com or WhatsApp.

www.elsombreroecolodge.com/en-us

We also appreciate the assistance of park ranger Ricardo Herrera and every park ranger that accompanied us on other field trips.

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