



FLAAR
MESOAMÉRICA

JAGUARUNDI

GRAY TO BLACK; OTHERS ARE RUST BROWN GOLD COLOR



PARQUE AUTO SAFARI CHAPIN

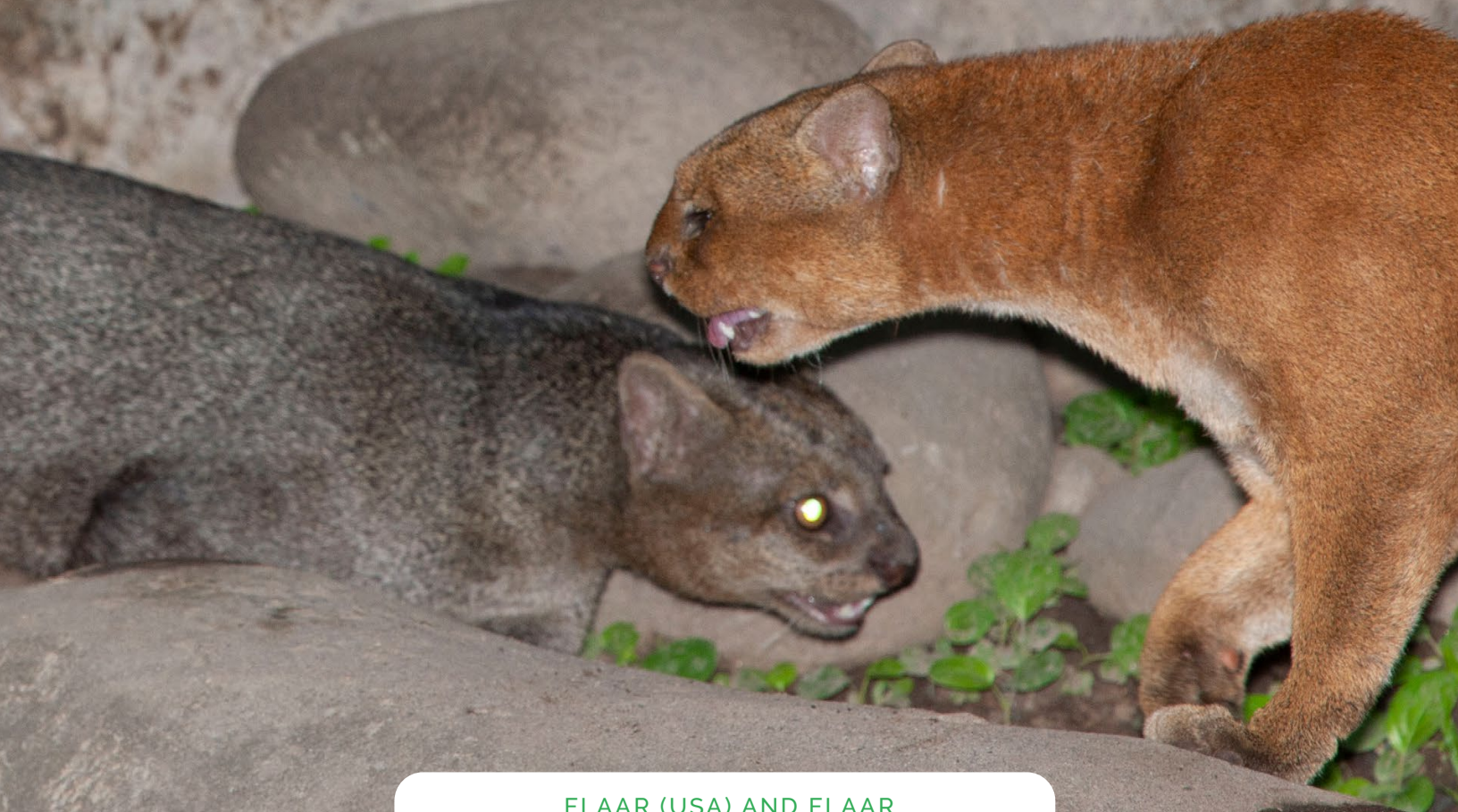
DR. NICHOLAS **HELLMUTH**



FLAAR
MESOAMÉRICA

JAGUARUNDI

*GRAY TO BLACK;
OTHERS ARE RUST BROWN GOLD COLOR*



FLAAR (USA) AND FLAAR
MESOAMERICA (GUATEMALA)
MARCH 2022



CREDITS

The helpful individuals listed below are part of the FLAAR Mesoamerica research and field work team together with report preparation team.

Author

Nicholas Hellmuth

Compilation of basic data from earlier botanists and ecologists

Nicholas Hellmuth

Bibliography Team

Nicholas Hellmuth

Vivian Hurtado (many years up to 2022)

María José Toralla (2022 onward)

Editors

Vivian Díaz

Photographers

Nicholas Hellmuth

Sofía Monzón

Manager Of Design and Layout

Andrea Sánchez Díaz

Translation Into Spanish

María José Rabanales

Layout of this English Edition

Andrea Sánchez Díaz



Herpailurus yagouaroundi

Photography by: Nicholas Hellmuth, FLAAR Mesoamerica, Jan. 2016, xx p.m. ZOO La Aurora, Guatemala.

Camera: Canon EOS 6D. Lens: EF 100mm.

Settings: 1/100 sec; ISO 800.



APPRECIATION FOR FACILITATING FIELD WORK RESEARCH PROJECTS ON FLORA, FAUNA and ECOSYSTEMS

FOR COOPERATION, HOSPITALITY, AND ASSISTANCE AT PARQUE NACIONAL YAXHA, NAKUM AND NARANJO PROJECT (August 2018 through July 2019)

Ing. Jorge Mario Vazquez
(CONAP, Santa Elena, Petén)
Arq. Jose Leonel Ziesse
(IDAEH, Santa Elena, Petén)
Biog. Lorena Lobos (IDAEH)

INITIATION AND COORDINATION OF THE PROJECT OF COOPERATION FOR 2021-2025

Licda. Merle Fernandez, CONAP
Marla Mercedes Bolvito Jerónimo, (Unidad de
Cooperación Nacional e Internacional de la
Secretaría Ejecutiva de CONAP)
Licda. Ana Luisa De León N.,
(Directora de Educación para el Desarrollo
Sostenible, CONAP)
Lic. Apolinario Córdova, CONAP Petén
Ing. Jorge Mario Vazquez
(CONAP, Santa Elena, Peten)

FOR COOPERATION, HOSPITALITY, AND ASSISTANCE AT PARQUE NACIONAL YAXHA, WE THANK

All the helpful and knowledgeable guides of
IDAEH CONAP at PNYNN who accompanied
us each day during field trips one-week-each
month from August 2018 through July 2019.
It is essential to have either an IDAEH and/
or CONAP guardabosque or comparable
individual with your team when doing flora and
fauna research in a national park.

ASSISTANCE FOR KNOWLEDGE OF PLANTS AND ANIMALS OF PNYNN

Teco, Moises Daniel Perez Díaz, park ranger,
PNYNN

TENTS AND COOKING EQUIPMENT AT NAKUM CAMP, PNYNN

Manola Margot Lima Díaz owner of Restaurante El
Portal de Yaxha, La Maquina

HOSPITALITY AND ACCESS TO FLORA AND FAUNA AT AUTOSAFARI CHAPIN

François Berger, Parque Auto Safari Chapín
Walter Polanco, Gerente de Parque Auto Safari
Chapín

HOSPITALITY AND ACCESS TO FLORA AND FAUNA AT PARQUE ZOOLOGICO LA AURORA

Dr. Kurt Duchez, médico veterinario

We appreciate a donation during November 2021 to help cover the costs of FLAAR research projects specifically to assist and support the current FLAAR project of flora and fauna in the Reserva de la Biosfera Maya (RBM). This donation is also assisting the FLAAR (USA) and FLAAR Mesoamerica (Guatemala) research project in the Municipio de Livingston area of the departamento of Izabal, Guatemala.

This donation is from a family in Chicago in honor of the decades of botanical field work of botanist Dr John D. Dwyer, who worked in many areas of Mesoamerica, including in the Yaxha area in the 1970's while the site was being mapped by FLAAR.

This donation is also in recognition of the urgency and need for conservation of both wildlife and rare plants in the bio-diverse ecosystems of the Reserva de la Biosfera Maya (RBM) of Guatemala. Parque Nacional Yaxha, Nakum and Naranjo (PNYNN) is one part of the over 5 million acres of the RBM.



Herpailurus yagouaroundi

Photography by: Nicholas Hellmuth, FLAAR Mesoamerica, Jul. 2012, xx p.m. AutoSafari Chapin, Escuintla.
Camera: Canon EOS 6D. Lens: EF 100mm. Settings: 1/85 sec; ISO 1600.

Contents

- Introduction to Jaguarundi,
a wild feline native to the Americas _____ 7
- There are two felines in Mesoamerica with no spots _____ 7
- The Genus name for the Jaguarundi has changed _____ 8
- Jaguarundi is almost never pictured in Classic Maya art _____ 8
- General Introduction to the Jaguarundi _____ 9
- What is an onza? _____ 10
- The different colors _____ 11
- Mayan terms for Jaguarundi _____ 11
- Jaguarundi has a long tail _____ 12
- Comment on the position of the ears in a feline _____ 12
- Jaguarundi has a longer neck than other felines _____ 12
- Do Jaguarundis swim? _____ 14
- Can a Jaguarundi jump as far as a Puma? _____ 14
- Summary and Concluding Remarks _____ 15
- Bibliography _____ 17



INTRODUCTION TO JAGUARUNDI, A WILD FELINE NATIVE TO THE AMERICAS

Our long-range project is to study all Neotropical flora and fauna associated with Mayan culture of the past and present. Since there are several hundred species of fauna involved, we are studying them by groups or themes. Felines are one major theme since the jaguar was of obvious significant interest to both the Maya, Teotihuacan, Cacaxla and Aztec cultures.

Of the five felines of Mesoamérica (cougar, margay, ocelot, jaguar, and jaguarundi) the jaguarundi is least often pictured in Mesoamerican art or featured in Mesoamerican myths. But this “stretched cat-sized” feline deserves discussion to introduce all the felines to students and people who come to Guatemala to study the Neotropical fauna. On March 23, 2022, I gave a lecture via Google Meet to La Asociación de Guías de Turismo Ah Cacao de Tikal, organized by Lic. José Luis Morales. Several people commented that they did not realize that jaguarundi came in different colors. So after noting that people appreciate having documentation available, I decided to put all my notes into this FLAAR Report.

THERE ARE TWO FELINES IN MESOAMERICA WITH NO SPOTS

- Jaguarundi, *Herpailurus yagouarundi*, otter cat
- Puma, mountain lion, leon, *Puma concolor*

The large puma is a match for the majestic jaguar. The jaguarundi has a medium size head between a margay and ocelot (but a jaguarundi has a proportional longer body and longer tail).

Baby pumas have spots but when they grow older the spots normally disappear. Only about one in a million adult pumas would still have spots.



Herpailurus yagouarundi

Photography by: Nicholas Hellmuth, FLAAR Mesoamerica, Jan. 2016, xx p.m. ZOO La Aurora, Guatemala.



Herpailurus yagouaroundi, one of the five felines in Guatemala.

Photography by: Sofia Monzón, FLAAR Mesoamerica, Jul. 2016, xx p.m. AutoSafari Chapin, Escuintla.
Camera: Canon EOS 6D. Lens: EF 100mm. Settings: 1/85 sec; ISO 1600.

THE GENUS NAME FOR THE JAGUARUNDI HAS CHANGED

The original name of this feline was *Puma yagouaroundi*; the current accepted name is *Herpailurus yagouaroundi*.

JAGUARUNDI IS ALMOST NEVER PICTURED IN CLASSIC MAYA ART

Jaguars are commonly pictured in Early Classic, Late Classic, and Post Classic Maya art. Jaguars are common in the murals of Teotihuacan (Early Classic time period of the Maya far to the south).

Pumas are extremely rarely pictured in Classic Maya ceramics.

You can find an occasional example, but not very many. Plus we do have one FLAAR digital rollout of a carved/mold impressed vase showing a puma. We used digital rollout cameras in the late 1990's and into about 2005 to accomplish precise rollouts without the distortion of film-based rollout cameras (because our digital rollout cameras are operated by a Mac computer so everything can be measured; you don't have to use guesstimates from old tabulations).

Ocelots and margays are only occasionally pictured but are present. It's the jaguarundi that would be helpful for a student to find an example in the art of the Maya, Teotihuacan, Zapotec or in Aztec, Mixtec or other codices (or in Sahagun's Florentine Codex or comparable).

GENERAL INTRODUCTION TO THE JAGUARUNDI

The head of a jaguarundi is very small compared with its stretched body proportions. His head is almost the size of a domestic cat head, but the jaguarundi body is much longer, starting with a long but thick and powerful neck.

Body fur color ranges considerably from golden color to dark gray to almost black. According to Fiona (2009) the body color could be dark gray, gray, chocolate brown, or sometimes even entirely reddish. However gray individuals are the most frequently reported. They don't have a significant spot pattern on most, but if you look at all the images on Google, you begin to notice definite spot patterns, especially on The Animal Files web site. Indeed that web-site indicates they are spotted as kittens. But in March 2022 none of these aspects were on their jaguarundi page any more.

This species presents a wide geographic distribution from south Texas (United States), from east to west in the lowlands in México, and southward through the valleys in Perú, southern Brazil, and Paraguay and to the province of Buenos Aires and Río Black (southern Argentina).

It has not been reported at more than 3200 meters over sea level, but Julia (et al 2000) indicates that its range is up to 2000 m. (Clavijo and Ramirez 2009). Its habitat is very similar to the ocelot (*Leopardus pardalis*), but the jaguarundi is more tolerant to open areas like meadows and pastures (Clavijo and Ramirez 2009).

Jaguarundi are very adaptable; they don't need a virgin rain forest to survive (though we all prefer that the full forest be available to them). Jaguarundi have been documented in cloud forests of Baja Verapaz, over 1500 meters (Marmol et al. 2019) and at sea level at Bahía la Graciosa, en el Refugio de Vida Silvestre Punta de Manabique, Izabal, Guatemala (Escobar et al. 2020).

This species is very appreciated because of the preciousness of the skin, which is the main reason why it has been caught. Also it has been losing its natural habitat because of the human pressure. What has caused the isolation of some population, in some cases, even the extinction because of the bottle neck (Clavijo and Ramirez 2009).



In southern Texas, the Lower Río Grande Valley has been converted in the last 60 years in agricultural and urban development, leaving only 5% of the original vegetation in this area, which has caused the banishment of this feline in United States, despite the high tolerance to habitat modification. However in some countries is not that persecuted. In Argentina is only persecuted because it hunts chickens. In countries like Belize, El Salvador, Bolivia, Colombia, Costa Rica, Panama, México, Guatemala, Uruguay and United States, among others the hunting is illegal (Clavijo and Ramirez 2009).

Studies about food habits detected mainly a presence of herbivores and /or seed predators. It also has been detected that they feed on small or medium sized mammals, birds, snakes, lizards, fishes, invertebrates and even eat plants. According to where they live, they have a food preference adapted to that situation. Cabrera and Yepes (1940) report that for the Central America population there is a preference for primates. Ximenes in 1982 detected that the marmoset (*Callithrix jacchus* Linnaeus 1758) is ingested by the northeast Brazil population (Tófoli et al 2009). Although it appears to have a long list of food items, these vary among the distribution and the ecosystem structure (Tófoli et al 2009).

Since information of jaguarondi (*P. yagouaroundi*) is limited, we recommend biologists and archeologists to study this beautiful creature as a theme for your thesis or dissertation.



Herpailurus yagouaroundi

Photography by: Sofia Monzón, FLAAR Mesoamerica, Jul. 2016, xx p.m. AutoSafari Chapin, Escuintla.

Camera: Canon EOS 1Ds Mark III. Lens: EF 100-400mm. Settings: 1/160 sec; ISO 640.

WHAT IS AN ONZA?

When I am out in the rain forests, especially in México, every time I would ask about a jaguarundi, someone mentions the mysterious onza. Without getting into the biology of this question, my guess is that there was, or is, a variant of the cougar or jaguarundi. Not a unique species, but a variant. An example: the black jaguar is not a different species. There is a good bibliography about the onza in Wikipedia. But my experience with the onza is in Mexico, when I ask local people (since my experience is primarily from the field, not just from books or articles). I estimate that the onza is either the brownish jaguarundi or the dark gray jaguarundi. I will ask the next time I am with a local Mayan person in a remote rain forest area.

Both colors are the same species; it is only local people in rural areas who consider each color is a different animal, one being the onza.

I asked PNYNN park ranger Teco (Moises Daniel Perez Diaz) which color was the onza and his helpful reply was: "color colorado, como el color de puma pequeño". So then asked, is the "jaguarundi" gris oscuro, casi negro" and Teco said, "Asi es." It would help to hear from local people in Tabasco, Chiapas, Campeche, and Quintana Roo what is their conception of an onza compared with a jaguarundi (to zoologists the same animal, but to local people, two different animals).



Onza and Jaguarundi, Both colors are the same species.

Herpailurus yagouaroundi, one of the five felines in Guatemala.

Photography by: Sofia Monzón, FLAAR Mesoamerica, Jul. 2016, xx p.m. AutoSafari Chapin, Escuintla.

Camera: Canon EOS 6D. Lens: EF 100mm. Settings: 1/85 sec; ISO 1600.

THE DIFFERENT COLORS

I like this description of the colors:

“La oscura, que va desde gris hasta negro y la clara, en la que se observan diferentes tonos de café.”

(Botero et al. 2018: 1)

Dark gray is one term but I would also accept simply calling the black ones black and the gray ones gray. Deep reddish brown is one zoological term (Konecny 1989: 246).

In one part of México zoologists estimated that the gray colors were twice as common as the reddish color (Maffei et al. 2007: 264).

MAYAN TERMS FOR JAGUARUNDI

- Ekmuch in Yucateco Maya
- ek-barum, Maya Lacandón (frankly I would expect that in Chortí and ek-balum in Chol, Cholti, or Yucatec).
- Kakicoohish in Q'ekchi.'

Words in most Mayan languages are spelled several different ways. Even the name of the language is spelled differently about every 15 years! One group of scholars has one spelling system; another clique has another spelling agenda. So it helps to have experience with linguistics to understand how many ways one word can be written.

An additional issue is that a word such as Kakicoohish is repeated in so many dozens of web sites there is no realistic way to give a citation to where this started.



This jaguarundi kind of looks like a small puma. But it has been removed from genus *Puma* and put into new genus ***Herpailurus***.

Herpailurus yagouaroundi

Photography by: Nicholas Hellmuth, FLAAR Mesoamerica, Jul. 2016, xx p.m. AutoSafari Chapin Escuintla, Guatemala. Camera: Canon EOS 6D. Lens: EF 100mm. Settings: 1/50 sec; ISO 640.

JAGUARUNDI HAS A LONG TAIL

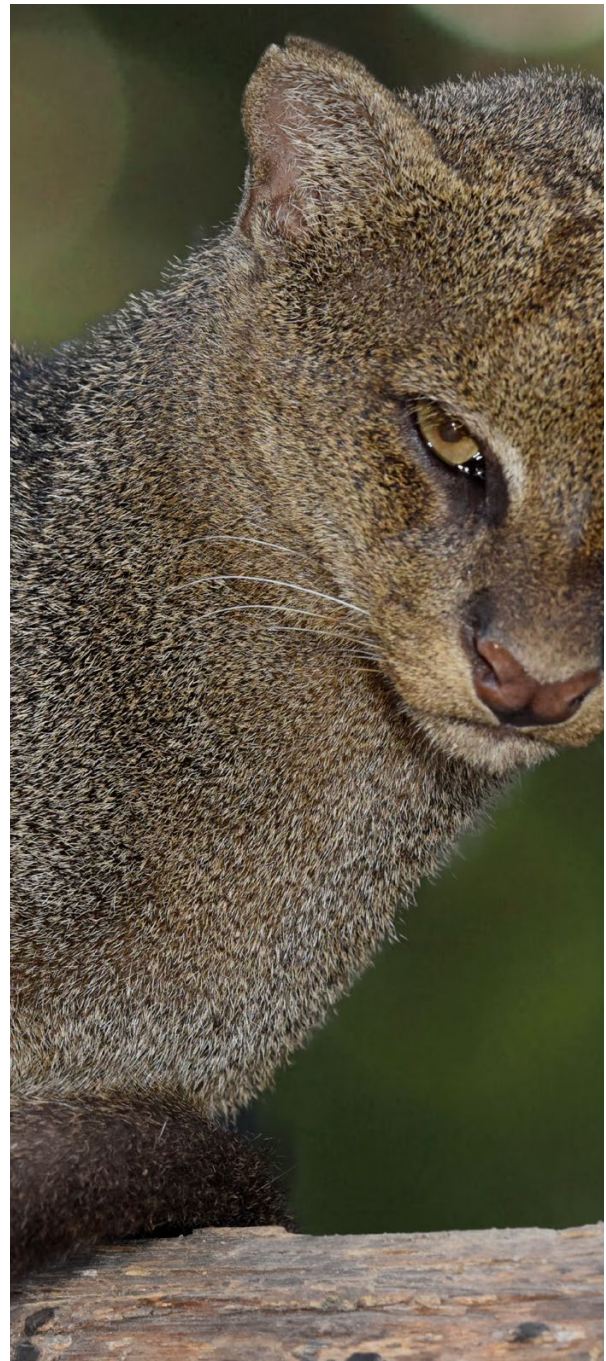
Many animals with long tails use them to grab branches as they climb through trees. As with most cats, they are capable of climbing trees, but the jaguarundi supposedly rarely needs to climb a tree. Yet one excellent discussion of jaguarundi in Belize and Péten documents jaguarundis hiking through the tree tops (McCarthy 1992: 305).

COMMENT ON THE POSITION OF THE EARS IN A FELINE

As with many animals, the position of the ears varies depending on the mood of the animal.

Felines, and other animals, place their ears in specific positions as a way of expressing (displaying) their feelings: fear, attack mode, etc.

The small head and round eyeballs of the jaguarundi are notable. If this animal were not so long and tail also so long, it would be considered a house cat that has been stretched (though yes, it's also a tad larger (so more than just noticeably longer).



Herpailurus yagouaroundi

Photography by: Nicholas Hellmuth, FLAAR Mesoamerica, Jul. 2016, xx p.m. ZOO La Aurora, Guatemala.

Camera: Nikon D810. Lens: EF 60mm.

Settings: 1/250 sec; ISO 2000.



Herpailurus yagouaroundi

Photography by: Sofia Monzón, FLAAR Mesoamerica, Jan. 2016, xx p.m. ZOO La Aurora, Guatemala.
Camera: Canon EOS 6D. Lens: EF 100mm. Settings: 1/100 sec; ISO 800.

When I study an animal I stand near it for some time so the animal notices that I am not making any fast movements (to attack it). After the animal notices I will not attack it, I gradually move closer. I then let the animal smell me.



Herpailurus yagouaroundi

Photography by: Sofia Monzón, FLAAR Mesoamerica, Jan. 2016, xx p.m. ZOO La Aurora, Guatemala.
Camera: Canon EOS 6D. Lens: EF 100mm. Settings: 1/160 sec; ISO 800.



Neck extended as the jaguarundi is looking down below.

Herpailurus yagouaroundi

Photography by: Nicholas Hellmuth, FLAAR Mesoamerica, Jul. 2016, xx p.m. AutoSafari Chapin Escuintla, Guatemala.

DO JAGUARUNDIS SWIM?

The giant jaguar is the feline that is best known for swimming. But since the common name for jaguarundi is "otter cat" surely it must swim as well. In fact many zoologists estimate that it prefers to live near water.

CAN A JAGUARUNDI JUMP AS FAR AS A PUMA?

The ability of a puma to jump varies from awesome to amazing. Obviously the smaller jaguarundi can't compete, but, relative to its size, is the jaguarundi a jumper (to catch prey)? I ask this because in this photo you can see all the leg area available to catapult the jaguarundi to enable it to capture something to eat.



This jaguarundi has noticed something it wants to run to and inspect. It helps to do this kind of photography in an open area.

Herpailurus yagouaroundi

Photography by: Nicholas Hellmuth, FLAAR Mesoamerica, Jan. 2016, xx p.m. ZOO La Aurora, Guatemala.

SUMMARY AND CONCLUDING REMARKS

I classified the jaguarundi as having no spots. I estimate 99% of zoologists classify the jaguarundi as having no spots. But the photograph above (in the discussion of how far can a jaguarundi jump) you see spots on the three legs that are visible.

Also notice the ears are moved flat against the head. The back part of the body and the tail are light gray. The front part of the body is darker gray. The head has tints of rust brown color.



Herpailurus yagouaroundi

Photography by: Nicholas Hellmuth, FLAAR Mesoamerica, Jul. 2016, xx p.m. AutoSafari Chapin Escuintla, Guatemala.
Camera: Canon EOS 6D. Lens: EF 100mm. Settings: 1/50 sec; ISO 640.

BIBLIOGRAPHY

Several entries are from the Texas Parks and Wildlife Department Wildlife Diversity Branch. Understandably they do not cite monographs on the felines of Guatemala. Nine entries are from Arkive, but it is ironic that their bibliography lacks all the major publications on felines of Guatemala, México, Honduras, and El Salvador and have only one article on Belize. Our focus is on Mesoamérica, the areas occupied by or influenced via trade routes of the Olmec, Teotihuacan, Maya, Toltec, and especially the Aztec. Botanists describe Mesoamérica differently; we use the archaeological area for Mesoamérica (central and western Mexico down to western Costa Rica). Our focus within Mesoamérica are the Maya Lowlands and Maya Highlands.

I prefer the term Mayan rather than Maya; archaeologists use the word Maya; they use the term Mayan only for languages. Snag there is that Yucatec Maya, Petén Itzá Maya, and Lacandon Maya are “Mayan” languages but called Maya. But most other languages are called Mayan. So I prefer Mayan for most aspects (except Yucatec, Peten Itza and Lacandon).

Our initial bibliography on jaguarundi was prepared in 2018 by Marcella Sarti, FLAAR Mesoamerica. This has been updated March 2022 with additions by María José Toralla, FLAAR Mesoamerica. There is abundant information in the downloadable PDFs.

ACEITUNO, Francisco

- 2012 Cortejo y Apareamiento del *Puma yagouaroundi* en el Zoológico Rosy Walther, Honduras. *Ceiba*, Vol. 53, No. 2. Pages 73-76. DOI: 10.5377/ceiba.v53i2.2369

Available online.

<https://www.lamjol.info/index.php/CEIBA/article/view/2369>

ARIAS, Andrés., DELGADO, Carlos., ORTEGA, Juan., BOTERO, Sebastián and Juan SÁNCHEZ

- 2013 Presencia de *Puma yagouaroundi* (Carnivora: Felidae) en el valle de Aburrá Antioquia, Colombia. *BRENESIA*, Vol. 79. Pages 83-84.

BORON, Valeria., XOFIS, Panteleimon., LINK, Andres., PAYAN, Esteban and Joseph TZANOPOULOS

2020 Conserving predators across agricultural landscapes in Colombia: habitat use and space partitioning by jaguars, pumas, ocelots and jaguarundis. *Oryx*, Vol. 54, No. 4. Pages 554-563. doi:10.1017/S0030605318000327 Honduras. *Ceiba*, Vol. 53, No. 2. Pages 73-76. DOI: 10.5377/ceiba.v53i2.2369

Available online.

<https://www.cambridge.org/core/journals/oryx/article/conserving-predators-across-agricultural-landscapes-in-colombia-habitat-use-and-space-partitioning-by-jaguars-pumas-ocelots-and-jaguarundis/C5F24FCE33C86541AA-9D16213EC2479B>

BOTELLO, Francisco., VILLASEÑOR, Emma., GUEVARA, Lázaro., MÉNDEZ, Ángel., CORTÉS, Adolfo., IGLESIAS, Jesús., IZÚCAR, Mario., LUNA, Moises., MARTÍNEZ, Apolinar and Juan SALAZAR

2013 Registros notables del zorrillo manchado (*Spilogale angustifrons*) y del jaguarundi (*Puma yagouarundi*) en la Reserva de la Biosfera de Tehuacán-Cuicatlán, Oaxaca, México. *Revista Mexicana de Biodiversidad*, Vol. 84, No. 2. Pages 713-717.

Available online.

<https://www.cambridge.org/core/journals/oryx/article/conserving-predators-across-agricultural-landscapes-in-colombia-habitat-use-and-space-partitioning-by-jaguars-pumas-ocelots-and-jaguarundis/C5F24FCE33C86541AA-9D16213EC2479B>

BOTERO-Cañola, Sebastián., SÁNCHEZ-L, Juan and Andrés ARIAS-Alzate

2016 *Puma yagouarundi*. 4 pages.

Good basic helpful information.

Available online.

https://www.researchgate.net/profile/Andres-Arias-Alzate/publication/292144967_Puma_yagouarundi/links/56aa419a08aef6e05df45803/Puma-yagouarundi.pdf

BURT, W. H. and R. P. GROSSENHEIDER

1964 A field guide to the mammals. Houghton Mifflin Company, Boston, Mass. 284 pages.

Sold online:

<https://academic.oup.com/jmammal/article-abstract/60/3/664/936930>

CABRERA, A. and J. YEPPE

1940 Mamíferos Sudamericanos (Vida, Costumbres y Descripción). Buenos Aires: Historia natural, Compañía Argentina de Editores. 78 pages.

Available online:

<http://naturalis.fcnym.unlp.edu.ar/repositorio/documentos/sipcyt/bfa004148.pdf>

CARMONY, Neil B.

1995 Onza! The Hunt for a legendary Cat. High Lonesome Books. 208 pages.

Sold online:

<https://www.amazon.com/Onza-Hunt-Legendary-Neil-Carmony/dp/0944383289>

CASIA, Rita., ROSA, Aline., GATTI, Andressa and Sérgio MENDES

2011 Diet of margay, *Leopardus wiedii*, and jaguarundi, *Puma yagouaroundi*, (Carnivora: Felidae) in Atlantic Rainforest, Brazil. ZOOLOGIA, Vol. 28, No.1. Pages 127-132. doi: 10.1590/S1984-46702011000100018

Available online:

<https://www.scielo.br/j/zool/a/8LQZVxdKK3WgWyT4QvgbRGv/?format=pdf&lang=en>

CASO, A., DE OLIVEIRA, T. and S. CARVAJAL

2015 *Herpailurus yagouaroundi*. The IUCN Red List of Threatened Species.

Sold online:

<https://www.amazon.com/Onza-Hunt-Legendary-Neil-Carmony/dp/0944383289>

CASTAÑO-Uribe, Carlos., GONZÁLEZ-Maya, José., ZÁRRATE-Charry, Diego. ANGE-Jaramillo, Cristal and Ivan VELA-Vargas

2013 Plan de Conservación de Felinos del Caribe colombiano: Los felinos y su papel en la planificación regional integral basada en especies clave.
16 pages.

CARRERA-Treviño, Rogelio., ASTUDILLO-Sánchez, Claudia., GARZA-Torres, Héctor, MARTÍNEZ-García, Luis and Leroy SORIA-Díaz

Interacciones temporales y espaciales de mesocarnívoros simpátricos en una Reserva de la Biosfera: ¿coexistencia o competencia? Revista de Biología Tropical, Vol. 66, No. 3. Pages 996-1008.

Available online:

<https://www.scielo.sa.cr/pdf/rbt/v66n3/0034-7744-rbt-66-03-996.pdf>

CLAVIJO, Alejandro and Gines RAMIREZ

2009 Taxonomía, distribución y estado de conservación de los felinos suramericanos: Revisión Monográfica. Boletín Científico Centro de Museos, Vol. 13, No. 2. Pages 43-60.

Available online:

http://193.122.196.39:8080/xmlui/bitstream/handle/10521/418/Coronado_Quibrera_WP_MC_Ganaderia_2011.pdf?sequence=1&isAllowed=y

CORONADO, Wendy

2011 Distribución geográfica y ecológica del jaguarundi (*Puma yagouaroundi*) en el estado de San Luis Potosí, México. Maestria thesis.

Available online:

http://193.122.196.39:8080/xmlui/bitstream/handle/10521/418/Coronado_Quibrera_WP_MC_Ganaderia_2011.pdf?sequence=1&isAllowed=y

CORONADO, Wendy., OLMOS, Genaro., BENDER, Louis, ROSAS, Octavio., PALACIO, Jorge., TARANGO, Luis and José HERRERA

2019 Adaptabilidad del amenazado jaguarundi (*Herpailurus yagouaroundi* Schreber, 1777) a ambientes antropizados en San Luis Potosí, México. Acta Zoológica Mexicana, Vol. 35. Pages 1-15.

Available online:

<http://www.scielo.org.mx/pdf/azm/v35/2448-8445-azm-35-e3502210.pdf>

DAVIS, W. B.

2000 Cats of Texas. Texas Parks and Wildlife Department. 4 pages

Available online:

https://tpwd.texas.gov/publications/pwdpubs/media/pwd_lf_w7000_0150.pdf

DE OLIVEIRA, T. G.

1998 *Herpailurus yagouaroundi*. Mammalian Species, No. 578. Pages 1-6. doi: 10.2307/3504500

Available online:

<https://academic.oup.com/mspecies/article/doi/10.2307/3504500/2600750?login=true>

EMMONS, L. H.

1997 Neotropical Rainforest Mammals: A Field Guide. Second Edition. University of Chicago Press, Chicago.

Available online:

<https://press.uchicago.edu/ucp/books/book/chicago/N/bo3628148.html>

ESCOBAR, Barbara., QUIÑONEZ, Juan and Sergio HERNÁNDEZ

2019 Primer registro de nado de *Herpailurus yagouaroundi* en Guatemala / First swim record of *Herpailurus yagouaroundi* in Guatemala. THERYA NOTES, Vol. 1, No. 1. Pages 29-33. DOI: 10.12933/therya_notes-20-8

Documents that they do swim if necessary, in in Bahía la Graciosa, in the Punta de Manabique Wildlife Refuge, Izabal, Guatemala.

Available online:

<http://mastozoologiamexicana.com/ojs/index.php/theryanotes/article/view/39/16>

HARWELL, Gary

1990 Listed cats of Texas and Arizona recovery plan, with emphasis on the Ocelot. U.S. Fish and Wildlife Service. 131 pages.

Available online:

[https://books.google.es/books?id=ManwAAAAMAAJ&dq=U.S.+Fish+and+Wildlife+Service+1990+Listed+cats+of+Texas+and+Arizona+recovery+plan+\(with+emphasis+on+the+ocelot\).+Endangered+Species+Office,+Albuquerque,+N.M.&lr=&hl=es&source=gbs_navlinks_s](https://books.google.es/books?id=ManwAAAAMAAJ&dq=U.S.+Fish+and+Wildlife+Service+1990+Listed+cats+of+Texas+and+Arizona+recovery+plan+(with+emphasis+on+the+ocelot).+Endangered+Species+Office,+Albuquerque,+N.M.&lr=&hl=es&source=gbs_navlinks_s)

JULIÁ, J.P. MOLLE, H. and RICHARD, E.

1998 Curso taller teórico práctico de capacitación de docentes auxiliares de la Reserva Experimental Horco Molle. Rehm: 98 p. (en) RICHARD, E. (ed.) Introducción a la biología, uso y estatus de los felinos de Argentina. Serie apuntes No. 2 Versión 1.0. Universidad Nacional de Tucumán, Facultad de Ciencias Naturales e Instituto Miguel Nillo.

KONECNY, Michael

1989 Movement patterns and food habits of four sympatric carnivore species in Belize, Central America. *Advances in Neotropical Mammalogy*. Pages 243-264.

Very helpful coverage of all four carnivores including the jaguarundi.

Available online:

<http://library.bfreebz.org/Mammals/Michael%20Konecny.%20Movement%20Patterns%20and%20Food%20Habits%20of%20Four%20Sympatric%20Carnivore%20Species%20in%20Belize,%20Central%20America,%201989.pdf>

McCARTHY, T. J.

2019 Notes concerning the jaguarundi cat (*Herpailurus yagouaroundi*) in the Caribbean lowlands of Belize and Guatemala. *Mammalia*, t. 56, no. 2, 302-306.

Very helpful information on what the jaguarundi eat in Belize and adjacent Guatemala. Provides personal documentation that jaguarundi is perfectly capable of travelling through the treetops (even from one tree to another adjacent tree).

Easy download.

MacDONALD, David

2006 *The Encyclopedia of Mammals*. Oxford University Press. 936 pages.

Available online:

https://books.google.com.gt/books/about/The_Encyclopedia_of_Mammals.html?id=XFgVnwEACAAJ&redir_esc=y

MAFFEI, Leonardo., NOSS, Andrew and Christine FIORELLO

2007 The jaguarundi (*Puma yagouaroundi*) in the Kaa-iyá del Gran Chaco National Park, Santa Cruz, Bolivia. *Mastozoología Neotropical*, Vol. 14, No. 2. Pages: 263-266.

Available online:

<http://www.scielo.org.ar/pdf/mznt/v14n2/v14n2a11.pdf>

MARSHALL, Robert E.

1962 The Onza. The Story of the Search for the Mysterious Cat of the Mexican Highlands. Exposition.

Available online:

<https://www.amazon.com/Onza-Search-Mysterious-Mexican-Highlands/dp/B0071IP5BS>

MÁRMOL, Alejandro., PALOMO, Gabriela., PINTO, Juan and Isabella ROSITO

2019 Registro notable de dos mesocarnívoros en el Bosque Nuboso de Baja Verapaz, Guatemala. Revista Mexicana de Mastozoología, Vol. 9, No. 1. Pages 56-61

Available online:

<http://revmexmastozoologia.unam.mx/ojs/index.php/rmm/article/view/271>

MCCARTHY, T.

2019 Notes concerning the jaguarundi cat (*Herpailurus yagouaroundi*) in the Caribbean lowlands of Belize and Guatemala. Mammalia, vol. 56, No. 2. Pages 302-306. <https://doi.org/10.1515/mamm-1992-0220>

Available online:

<https://www.degruyter.com/document/doi/10.1515/mamm-1992-0220/html>

MONTER-Pozos, Alvaro and HERNÁNDEZ, Julio

2020 Dos registros de atropellamiento de *Leopardus wiedii* y *Herpailurus yagouaroundi* (Carnivora: felidae) en Yucatán, México. Mammalogy Notes, Vol. 6, No. 2. Pages 1-7. doi: <https://doi.org/10.47603/mano.v6n2.176>

Available online:

<https://mammalogynotes.org/ojs/index.php/mn/article/view/176/273>

MONROY-VILCHIS, Octavio, SANCHEZ, Oscar and Vicente URIOS.

2011 Consumption of an adult *Puma yagouaroundi* (Felidae) by the snake Boa constrictor (Boidae) in Central Mexico. *Revista Mexicana de Biodiversidad*, Vol. 82, No. 82. Pages 319-321

Available online:

<http://www.scielo.org.mx/pdf/rmbiodiv/v82n1/v82n1a32.pdf>

NOWAK, Ronald and Ernest PILLSBURY

1999 Walker's Mammals of the World. Volume 1. The Johns Hopkins University Press. 1936 pages.

Available online:

https://books.google.es/books?id=T37sFCI43E8C&dq=Walker%E2%80%99s+Mammals+of+the+World.+The+Johns+Hopkins+University+Press,+Baltimore+&lr=&hl=es&source=gbs_navlinks_s

NOWELL, K. and P. JACKSON

1996 Wild Cats: Status Survey and Conservation Action Plan. IUCN/SSC Cat Specialist Group, IUCN, Gland, Switzerland and Cambridge, UK.

Available online:

<http://carnivoractionplans1.free.fr/wildcats.pdf>

PACHECO, J. J. and J. F. GONZÁLEZ

2013 Noteworthy record of subsistence hunting and meat consumption of jaguarundi (*Puma yagouaroundi*) in Colombia. *Revista Mexicana De Mastozoología*, Vol. 3, No. 1, 15-18. <https://doi.org/10.22201/ie.20074484e.2013.3.1.174>

Available online:

<http://www.revmexmastozoologia.unam.mx/ojs/index.php/rmm/article/view/174>

ROMA, Vanessa., BARUFATTI, Alexéia., CAMPAGNARI, Francine., MILAZZOTTO, Marcela., HARUMI, Cristina., GARCÍA, José and Edislane, BARREIROS

2006 Genetic variability of *Herpailurus yagouaroundi*, *Puma concolor* and *Panthera onca* (Mammalia, Felidae) studied using *Felis catus* microsatellites. Genetics and Molecular Biology. Vol. 29, No. 2. Pages 290-293.

Available online:

<https://www.scielo.br/j/gmb/a/fKGJGwTHYLg9P43VvbxLXWy/?format=pdf&lang=en>

SAUNDERS, Nicholas

1999 Icons of Power Feline Symbolism in the Americas. Routledge.

Available online:

<https://www.routledge.com/Icons-of-Power-Feline-Symbolism-in-the-Americas/Saunders/p/book/9780415513586>

SEGURA, Valentina., PREVOSTI, Francisco and Guillermo CASSINI

2013 Cranial ontogeny in the Puma lineage, *Puma concolor*, *Herpailurus yagouaroundi*, and *Acinonyx jubatus* (Carnivora: Felidae): a three dimensional geometric morphometric approach. Zoological journal. Vol. 169, No. 1. Pages 235-250.

Available online:

<https://onlinelibrary.wiley.com/doi/abs/10.1111/zoj.12047t>

SCIABARRASI, Antonio., ANZÓATEGUI, Agustín., RODRÍGUEZ, Rocío., PERGAZERE, Mauro., ORTEGA, Andrés., SCAGLIONE, María and Raúl CERUTTI

2016 Actividad y temperatura cutánea del *Puma yagouaroundi* (Jaguarundi). Universidad Nacional del Litoral. Pages 1-2.

Available online:

www.vetcomunicaciones.com.ar/uploadsarchivos/17._medicina_de_la_conservacion_dic_16.pdf

SCHMIDLY, David J. and Robert BRADLEY

1994 The mammals of Texas. Texas Parks and Wildlife Press. Austin, Texas.
720 pages.

Available online:

<https://books.google.es/books?id=OdsDDOAAQBAJ&dq=The+mammals+of+Texas.+Texas+Parks+a>

SUNQUIST, M. and F. SUNQUIST

2002 Wild Cats of the World. University of Chicago Press.

Available online:

<https://press.uchicago.edu/ucp/books/book/chicago/W/bo3643502.html>

TEWES, M. E. and D. J. SCHMIDLY

1987 "The neotropical felids: jaguar, ocelot, margay, and jaguarundi" in M. Novak, J. Baker, M.E. Obbard and B. Malloch (eds.) Wild Furbearer Management and Conservation in North America. Ministry of Natural Resources, Ontario. 703-705.

TÓFOLI, C. F., ROHE, F. and E. Z. Setz

2009 Jaguarundi (*Puma yagouaroundi*) (Geoffroy, 1803) (Carnivora, Felidae) food habits in a mosaic of Atlantic Rainforest and eucalypt plantations of southeastern Brazil. Braz. J. Biol, Vol. 69, No. 3. Pages 871-877.

Available online:

<https://www.scielo.br/j/bjb/a/nD53QtTbH85DdNtNB76QBtj/?format=pdf&lang=en>

XIMENES, A.

1982 Notas sobre felidos neotropicales, VIII Observaciones sobre el contenido estomacal y el comportamiento alimentar de diversas especies de felinos. Revista Nordestina de Biología, Vol. 5, No. 1. Pages 89-91

Available online:

<https://periodicos3.ufpb.br/index.php/revnebio/article/view/15905>

SUGGESTED WEB PAGES ON **HERPAILURUS YAGOAROUNDI**

https://animaldiversity.org/accounts/Puma_yagouarundi/

Information and photos.

www.arkive.org/jaguarundi/puma-yagouarundi/

Information and photos.

www.ardea.com

Commercial stock photo site but does have over a dozen good photos (used by arkive web site). No text.

www.cathouse-fcc.org/births2006.html

Over 20 photographs of two baby jaguarundis from age 7 weeks up to about a year old.

www.enciclovida.mx/especies/8018768

Photos.

<http://eol.org/pages/1053885/details>

Information and distribution

www.iucnredlist.org/details/9948/0

Information.

<https://www.iucnredlist.org/species/9948/50653167>

Information and status.

www.nsr.ttu.edu/tmot1/feliyago.htm

Information.

[https://www.theanimalfiles.com/mammals/carnivores/jaguarundi.html#:~:text=Jaguarundi%3A%20The%20Animal%20Files&text=Jaguarundis%20are%20small%20cats%20that,\(10%20%2D%20%20lbs\).](https://www.theanimalfiles.com/mammals/carnivores/jaguarundi.html#:~:text=Jaguarundi%3A%20The%20Animal%20Files&text=Jaguarundis%20are%20small%20cats%20that,(10%20%2D%20%20lbs).)

Two good photos; one at the bottom is golden rust brown. The one at the top is gray.

www.tpwd.state.tx.us/publications/pwdpubs/media/pwd_bk_w7000_0013_jaguarundi.pdf

Two pages of description (but only of jaguarundi in Texas), bibliography of five items, one photo of one jaguarundi.

This report can be cited in your preferred style. Here is the basic information:

HELLMUTH, Nicholas

2022 Jaguarundi, Gray to Black; others are Rust Brown Gold Color, a seldom discussed Feline of Guatemala with few spots on its pelage. FLAAR (USA) and FLAAR Mesoamerica (Guatemala).

ACKNOWLEDGEMENTS:

We appreciate the hospitality and permission to enter the living area of the animals so we can study and photograph them at AutoSafari Chapin during our many visits here.

We appreciate the hospitality and permission to enter the living area of the animals so we can study and photograph them at Parque Zoológico La Aurora during our many visits here.

We also appreciate access at Zoológico Miguel Álvarez del Toro (ZOOMAT) in the 1970's and 1980's when I did much of my studies of flora and fauna in southern Mexico.

BASE CAMP ASSISTANCE IN PARQUE NACIONAL TIKAL

While doing field work in the Tikal national park about a decade ago we appreciate the house provided to us by the park administration. We also thank the Solis family, owners of the Jaguar Inn, for providing a place to stay when park facilities had other occupants. We also thank the Solis family for food in their Jaguar Inn restaurant.

BASE CAMP ASSISTANCE IN PNYNN

We thank Biologist Lorena Lobos and both co-administrators of PNYNN (Arq. Jose Leonel Ziesse (IDAEH) and Lic. Jorge Mario Vazquez (CONAP) for providing a place to stay for the photographers, biologists, and assistants of the FLAAR Mesoamerica team of flora and fauna during the 1-week-a-month field trips August 2018 through July 2019.

In turn FLAAR purchased and donated a cooking stove when the original one no longer functioned, plus we have photographed and documented many tree and insect species that we found around this camp.



ECOLOGE 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.

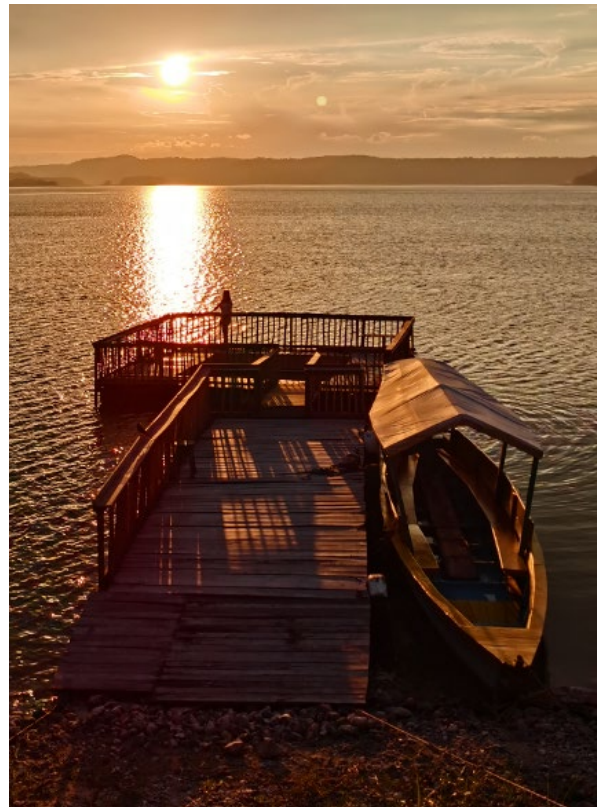
Equally crucial is having a place to charge the batteries of the computers, plus all the cameras, and recharge cell phones. Solar power is great, but it lasts only an hour, or less, if you plug in multiple computers and cameras and flash batteries to charge.

Contact information:

- ✉ ventaselsombrero@gmail.com
- 🌐 www.elsombreroecolodge.com/en-us
- 📞 (+502) 5460-2934

So a place with enough electricity to charge the entire mass of essential field work equipment is essential and thus very much appreciated.

In order to post photographs on botanical and zoological websites, you can't do this if there is either no Internet or weak Internet. Thus it is very helpful that when we are provided rooms and meals, that Internet is also provided by the Ecolodge El Sombrero.



PERMISSIONS

Any school, college, university, botanical garden, zoological garden, botanical or zoological association (or club) may post this report on their web sites, (at no cost) as long as they link back to one of our web sites: either www.maya-ethnobotany.org or www.maya-ethnozooology.org or www.maya-archaeology.org or www.digital-photography.org or www.FLAAR-Mesoamerica.org.

FLAAR (in USA) and FLAAR Mesoamerica (in Guatemala) are both non-profit research and educational institutes, so there is no fee. And you do not need to write and ask permission; but we do appreciate when you include a link back to one of our sites.

Any school, college, university, botanical garden, etc. can post this PDF on their school or university or institute web site for their students to download at no cost. And you do not need to write and ask permission; but we do appreciate when you include a link back to one of our web sites.

Any web site in or related to the Municipio of Livingston, is also welcome to post this PDF on their web site (no fee). This permission includes travel agencies, hotels, guide services, etc. And you do not need to write and ask permission; but we do appreciate when you include a link back to one of our web sites.

CECON, CONAP, FUNDAECO, INGUAT, ARCAS, IDAEH, Municipio de Livingston, etc. are welcome to publish our reports, at no cost.

All national parks, nature reserves, and comparable are welcome to have and use our reports at no cost.

USAC, UVG, URL, and other Guatemalan universities and high schools, and schools, are welcome to post our reports, at no cost.

IF YOU WISH OUR FLORA AND/OR FAUNA MATERIAL AS A POWERPOINT PRESENTATION

Dr Nicholas (Hellmuth) is flown all around the world to lecture. He has spoken in Holland, Belgium, Germany, Austria, Greece, Italy, Serbia, Croatia, Bosnia, Russia, UK, Dubai, Abu Dhabi, Thailand, Korea, China, Japan, Canada, USA, Mexico, Panama, Guatemala, etc. He can lecture in Spanish, German, or English (or simultaneously translated to your language).

He has lectured at Harvard, Yale, Princeton, UCLA, Berkeley and dozens of other universities, colleges, museums, alumni clubs, etc.

He also writes cartoon books on plants and animals of Guatemala so gives presentations to primary school, high schools, etc. www.MayanToons.org shows our educational material for children.

In today's COVID era, we present via ZOOM, Google Meet or comparable platforms. This way there are no costs for airfare, airport shuttle, hotel, or meals. But it is appreciated when a donation can be provided before the lecture presentation to assist our decades of research.

IF YOUR CLUB, ASSOCIATION, INSTITUTE, BOTANICAL GARDEN, ZOO, PARK, UNIVERSITY, ETC WISHES HIGH-RESOLUTION PHOTOS FOR AN EXHIBIT IN YOUR FACILITY ANYWHERE IN THE WORLD

The Missouri Botanical Garden (MOBOT) has had two exhibits of the FLAAR Mesoamerica photos on Neotropical flowering plants of Guatemala. Photos by the FLAAR team have also been exhibited at Photokina in Germany and in Austria, Guatemala, and elsewhere. For use of these photos in a book or exhibit, naturally we need to discuss how to share the costs. We have material for entire exhibits on:

- Orchids of Guatemala (including aquatic orchids),
- Dye colorants from Mushrooms and Lichens of Guatemala,
- Bromeliads of Guatemala,
- Trees of Guatemala,
- Treetop Ecosystems of Guatemala (includes arboreal flowering cacti, bromeliads, and orchids),
- Cacao Cocoa Chocolate and their Maya and Aztec Flavorings.

We naturally appreciate a contribution to help cover the costs our office expenses for all the cataloging, processing, and organization of the photos and the field trip data.

TO PUBLISH PHOTOGRAPHS

Hellmuth's photographs have been published by National Geographic, by Hasselblad Magazine, and used as front covers on books on Mayan topics around the world. His photos of cacao (cocoa) are in books on chocolate of the Maya and Aztec both by Dr Michael Coe (all three of editions) and another book on chocolate by Japanese specialist in Mayan languages and culture, Dr Yasugi. We naturally appreciate a contribution to help cover the costs our office expenses for all the cataloging, processing, and organization of the photos and the field trip data.

FOR YOUR SOCIAL MEDIA

You can post any of the FLAAR Mesoamerica PDFs about the Municipio of Livingston on your Social Media sites; you can send any of these PDFs to your friends and colleagues and family: no cost, no permission needed.

We hope to attract the attention of professors, botanical garden clubs, orchid and bromeliad societies, students, tourists, experts, explorers, photographers and nature lovers who want to get closer, to marvel at the species of flowering plants, mushrooms and lichen that FLAAR Mesoamerica finds during each field trip each month.

OTHER PUBLICATIONS OF
MAMMALS OF GUATEMALA

If you wish more FLAAR reports on flora of Guatemala, visit our website:
www.maya-ethnozoology.org

OTHER PUBLICATIONS OF
BIÓSFERA MAYA

If you wish more FLAAR reports on flora of Guatemala, visit our website:
www.maya-ethnzoology.org



FLAAR
MESOAMÉRICA