


# Crocodile Iconography of the Olmec and of the Maya

## References Cited and other Suggested Reading

<h1>FLAAR</h1> 	<p>Nicholas Hellmuth</p> <p>August 2023</p> <p>work-in-progress for July 2023 lecture at Museo Popol Vuh, UFM on iconography of crocodiles</p>	 <h1>FLAAR</h1> <h2>MESOAMÉRICA</h2>
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*Caiman crocodilus*, the spectacled caiman, is a crocodylian (meaning related to crocodiles) but is in the family Alligatoridae. But these are more appropriately called caimans, not alligators.

99% of the webpages that mention *Caiman crocodilus* do not help whatsoever learning in what parts of Guatemala they occur (so you can learn in what parts of Guatemala they do NOT occur). The first distribution map that is even close to accurate is Busack 2001: Fig. 1, page 296. This map clearly shows that for Mexico and Guatemala and Honduras, *Caiman crocodilus* is found ONLY on the Pacific Side. In Costa Rica and south, the *Caiman crocodilus* is on both coasts. That said, new finds can always suggest that old distribution maps need to be updated.

This is a polite suggestion to colleagues to replace the word caiman in studies of iconography. Caiman was available to Izapa and Takalik Abaj, but less likely to Peten, Tabasco, Campeche and Yucatan.

FLAAR and FLAAR Mesoamerica have been studying all three species of crocodylians in the wetlands of Guatemala for over two decades. We are still accomplishing field trips to wetlands in Peten as part of our 5-year project of cooperation and coordination with CONAP for the Reserva de La Biosfera Maya (2021-2025). In addition to crocodiles we are also studying waterbirds, especially wading waterbirds and ducks, grebes that are usually swimming. The present bibliography is for the Museo Popol Vuh lecture on crocodiles; future lectures and reports are being prepared on water lilies, waterbirds, monkeys, etc.

The list of books, articles, etc. that follows is on the iconography of crocodiles in Maya art (including Izapa as proto-Maya), and Olmec (as being source of many images later utilized by the Maya). At the end of that we show samples from Zooarchaeology and then at the end, books on zoology of crocodiles and caimans of Mesoamerica.

**ANDREWS, George F.**

1989 Comalcalco, Tabasco, Mexico: Maya Art and Architecture. Labrinthos, Culver City, CA.

Labyrinthos was the publishing company of Frank Comparato who was the Project Manager of the FLAAR Proyecto Yaxha in the 1970's. Frank was then manager of FLAAR for many years. Labyrinthos was his own inspiration after his years of working with FLAAR.

**ARIAS Ortiz, Teri Erandeni**

2004 El cocodrilo en la cosmovisión Maya: Un proceso de larga duración. B.A. thesis, Ethnohistory Area, Escuela Nacional de Antropología e Historia, Instituto Nacional de Antropología e Historia, Secretaría de Educación Pública.

**BARRERA Vazquez, Alfredo**

1975 La Ceiba-Cocodrilo. *Anales del INAH*, Epoca 7a, pages 187-208. Mexico.

Helpful article but the crocodile tree is unlikely a *Ceiba pentandra* or any other *Ceiba* species. Many crocodile trees at Izapa and elsewhere have gourds and leaves of *Crescentia* species.

**BAUDEZ, Claude-Francois**

1994 Maya Sculpture of Copan: The Iconography. University of Oklahoma Press. 300 pages.

There are more crocodiles and crocodile-composite monsters in the monumental stone sculpture of Copan than any other site. This is curious since Yaxchilan, Piedras Negras, El Peru, and dozens of other Classic Mayan sites are also on major rivers which were full of *Crocodylus moreletii* crocodiles. Plus there are *Crocodylus acutus* in coastal swamps in Belize and elsewhere.

**BENSON, Elizabeth**

1997 Birds and Beasts of Ancient Latin America. University Press of Florida.

**CHASE, Diane Z. and Arlen F. CHASE**

2008 Late Postclassic Ritual at Santa Rita Corozal, Belize: Understanding the Archaeology of a Maya Capital City. Chapter 7 in: *Research Reports in Belizean Archaeology*, Vol. 5, 2008, pp. 79-92. Institute of Archaeology, NICH, Belize.

Their Figure 1 helpfully reproduces Gann's photographs from earlier excavations. The well-preserved, complete, and oft-published crocodile is lower left (SRC Structure 25). Their Figure 3,f shows a full-figure crocodile.

**CHRISTENSON, Allen J.**

1997 The Sacred Tree of the Ancient Maya. *Journal of Book of Mormon Studies*, Vol. 6, Number 1, Article 2. 26 pages.

Written while he was still a student; start of a long career in Maya studies. Crocodile tree on Izapa Stela 5 is pictured but the rest of the article is on the *Crescentia*, calabash tree.

**COE, Michael**

1973 *The Maya Scribe and His World*. The Grolier Club, New York.

**COHODAS, Marvin**

1976 The Iconography of the Panels of the Sun, Cross, and Foliated Cross at Palenque: Part III. In *The Art, Iconography & Dynastic History of Palenque Part III*, edited by Merle Greene Robertson, pp. 155-176. Robert Louis Stevenson School, Pebble Beach, California.

Mentions the Cosmic Monster on his page 109.

**COGGINS, C. C.**

1975 *Painting and Drawing Styles at Tikal: An Historical and Iconographic Reconstruction*. PhD dissertation, Department of Fine Arts, Harvard University.

**COGGINS, C. C.**

1992 *Artifacts from the Cenote of Sacrifice, Chichen Itza*. Harvard University, Peabody Museum of Archaeology and Ethnology, *Memoirs* 10(3).

**FASH, William L.**

1991 *Scribes, Warriors and Kings: The City of Copan and the Ancient Maya*. Thames and Hudson.

**FINAMORE, D. and S. D. HOUSTON**

2010 *Fiery Pool: The Maya and the Mythic Sea*. Yale University Press, New Haven.

**FEINMAN, Gary and Linda NICHOLAS**

2016 Crocodilian Sculpture discovered at Lambityeco, Oaxaca. *Mexicon*, XXXVIII (5): 114-115. Múnich, Verlag Anton Saurwein.

**FREIDEL, David, SCHELE, Linda and Joy PARKER**

1993 *Maya Cosmos: Three Thousand Years on the Shaman's Path*. William Morrow and Company.

Suggests Cosmic Monster is associated with the Milky Way.

**FREIDEL, David and Charles SUHLER**

1999 *The Path of Life: Towards a Functional Analysis of Ancient Maya Architecture*. In *Mesoamerican Architecture as a Cultural Symbol*, edited by Jeff K. Kowalski, pp. 248-273. Oxford University Press

Suggests the Cosmic Monster is associated with the Milky Way.

**GANN, Thomas W. F.**

1918 The Maya Indians of Southern Yucatan and Northern British Honduras. Smithsonian Institution, Bureau of American Anthropology, Bulletin 64. 146 numbered pages in a PDF of 207 pages.

His Fig. 18 is an excellent drawing of the 3-dimensional crocodile ceramic effigy. As typical for individuals who are not deep into zoology or herpetology, he called it an alligator.

**GARCÍA-Des Lauriers, Claudia**

2017 The Regalia of Sacred War: costume and militarism at Teotihuacan. *Americae European Journal of Americanist Archaeology*, Teotihuacan, 2, 2017, pages 83-98.

Excellent article on war costumes and weapons of Teotihuacan. Crocodiles only mentioned; not featured or pictured.

**GARCÍA Nava, David Azael**

2018 El Caos, el Cocodrilo Cósmico y el Tiempo Mítico de la Creación. Primer Simposio Knórosov - Xcaret de Epigrafía Maya "Los textos calendáricos mayas-nuevos enfoques" (19-21 de noviembre de 2012, Xcaret Quintana Roo, México).

Has several helpful illustrations of crocodiles in Maya art not often seen elsewhere.

**GREENE Robertson, Merle**

1974 The Quadripartite Badge – A Badge of Rulership. In *Primera Mesa Redonda de Palenque Part I*, edited by Merle Green Robertson, pp. 77-93. Robert Louis Stevenson School, Pebble Beach.

First focus on the name Quadripartite Badge and one of the early discussions of the Cosmic Monster.

**GRIFFIN, Gillett G.**

1996 The Olmec World: Ritual and Kingship. Princeton University Art Museum / Harry N. Abrams. 344 pages.

**HARRISON, Peter D'Arcy**

2006 Animals as Royal Family Names at Tikal, Guatemala and some considerations at Kalakmul. International Congress of Americanists, Seville, Spain, July 2006.

Correctly points out the errors in scholarly publications calling the Maya reptile a caiman (page 6 is one of many comments).

**HEALY, Paul F. and Elizabeth B. THURSTON**

2014 Crocodiles in Ancient Maya Art. Pages 163-176 in *Archaeological Investigations in the Eastern Maya Lowlands, Papers of the 2013 Belize Archaeology Symposium Research Reports in Belizean Archaeology Volume 11*, Editors: John Morris, Jaime Awe, Melissa Badillo and George Thompson. NICH, Belize.

The Bonampak personage has arms of a crab or comparable fresh-water creature (due to all the water lily flowers).

**HELLMUTH, Nicholas M.**

1988 Early Maya Iconography on an Incised Cylindrical Vessel. In *Maya Iconography*, edited by E. P. Benson and G. G. Griffin, pp. 152-173. Princeton University Press, Princeton.

This incised giant (wide) blackware cylindrical tripod has the most complex and amazing Crocodile Tree of the Early Classic Maya Lowlands. Excellent drawing by Lin Crocker.

**HELLMUTH, Nicholas and Priscila SANDOVAL**

2010 Cocodrilos en el Arte Maya: Zoología e Iconografía. FLAAR Mesoamerica. 9 pages.

**HELLMUTH, Nicholas**

2011 Sacred Animals and Exotic Tropical Plants: Crocodiles, Caimans and Alligators in Mayan art & mythology of Guatemala. *Revue* magazine, pages 18, 94, 96, 98. Antigua Guatemala.

**HELLMUTH, Nicholas**

2020 What is DIFFERENCE between a CROCODILE, ALLIGATOR and a CAIMAN? MayanToons, a division of FLAAR (USA) and FLAAR Mesoamerica (Guatemala).

This is for primary school children, based on over half a century in the Maya Lowlands.

**HELLMUTH, Nicholas**

2021 Jaguars, Birds, Turtles, Crocodiles Wild Animals of the Mayan World at Parque Nacional Yaxha Nakum Naranjo Peten, Guatemala. Drawings by J. Branca. FLAAR Reports. FLAAR (USA) and FLAAR Mesoamerica (Guatemala).

*Crocodylus moreletii* is pictured on page 11.

**HELLMUTH, Nicholas**

2022 Iconography of Marine Creatures in Classic Maya Art: Sharks, Sea Turtles, Stingray (Spines), Conch Shells, etc. Powerpoint presentation as a PDF. FLAAR Mesoamerica. 176 pages.

Crocodiles are part 3. Universities and museums often ask for lectures for their classes of symposiums, so we prepare on the requested topic.

<https://flaar-mesoamerica.org/wp-content/uploads/2022/09/Iconography-Marine-Creatures-in-Classic-Maya-Art-oceanography-URL-Jun-2022-NH-SB-VM.pdf>

**HELLMUTH, Nicholas**

2023a Iconografía y etnozoología de los cocodrilos de Mesoamérica y su relación con la cosmología del inframundo y el cielo. VI Seminario Internacional de Epigrafía Maya en Guatemala, Organizer: Camilo Luin, Museo Popol Vuh, Universidad Francisco Marroquin.

**HELLMUTH, Nicholas**

2023b Iconography and Ethnozoology of the Crocodiles and Caiman of Mesoamerica and their relation with the Cosmology of the Underworld and the Heavens. Updated (August) edition of July 27, 2023 lecture: Iconografía y etnozoología de los cocodrilos de Mesoamérica y su relación con la cosmología del inframundo y el cielo. VI Seminario Internacional de Epigrafía Maya en Guatemala, Organizer: Camilo Luin, Museo Popol Vuh, Universidad Francisco Marroquin.

**INGALLS, Victoria Ann**

2012 The Quadripartite Badge: Narratives of Power and Resurrection in Maya Iconography. MA Thesis. 125 numbered pages in 134 pages in the PDF.

The Quadripartite Badge is a crucial feature of the right end of the Cosmic Monster (though sometimes the crocodile is at the back). So to learn about the Cosmic Monster it helps to learn about the Quadripartite Badge, the shape of deer ears and hooves, and of course crocodiles. To learn about the diversity of aspects of the Quadripartite Badge, this thesis is essential. It shows many examples not in shorter discussions of the Cosmic Monster.

**JOHN, Jennifer Ruth**

2008 Postclassic Maya Ceramic Iconography at Lamanai, Belize, Central America. PhD dissertation, University College London. Volume 1, 493 pages.

**JORALEMON, P. David**

1976 The Olmec Dragon: A Study in Pre-Columbian Iconography. In *Origins of Religious Art and Iconography in Preclassic Mesoamerica*, edited by H. B. Nicholson, pp. 29-71. University of California, *UCLA Latin American Center Publications* Vol. 31, Los Angeles.

**JOYCE, Rosemary A., EDGING, Richard, LORENZ, Karl and Susan D. GILLESPIE**

1991 Olmec Bloodletting: An Iconographic Study. In *Sixth Palenque Round Table*, 1986, edited by M. Greene Robertson and V. M. Fields, pp. 143-150. University of Oklahoma Press.

These authors discuss Olmec crocodiles but show only the Olmec sharks with their shark-tooth shape. I also am curious over how many “stingray spines” in Maya monsters are really inspired by sharks’ teeth more than stingray spines. Or, many “stingray spines” in headdresses and other areas may be a composite of stingray spines and sharks’ teeth.

I know stingray spines since I found two of them in Tikal Burial 196, Tomb of the Jade Jaguar. They are parallel size and shape with no thicker area and no curve anywhere (at least not on the two long ones that I discovered).

**JOYCE, Rosemary A.**

2001 Crocodile, Serpent, and Shark: Powerful Animals in Olmec and Maya Art, Belief, and Ritual. In *Forest and Civilizations*, edited by Y. Yasuda, pp. 71-84. International Research Center for Japanese Studies (Kyoto). Roli Books Put. Ltd, New Delhi.

**KETTUNEN, Harri**

2005 Nasal Motifs in Maya Iconography. Helsinki University Printing House. 309 numbered pages in PDF of 313 pages.

Search for the word dragon; not the word crocodile. Several of the nose shapes I would consider a Zip Monster or relative.

**KETTUNEN, Harri**

2006 Appendices, Appendix A: Supplementary Tables, Charts, and Figures, Supplementary tables, charts, and figures pertaining to Chapter 3.5. Appendix A: Table 117: Dictionary entries of crocodiles in various Maya languages. Pages 311-780 from *Nasal Motifs in Maya Iconography*.

**KMIEC, IV, Theodore B.**

2021 In the Olmec World of La Venta: The Analysis of La Venta Stela 3 and the Archetypes of Later Mesoamerican Gods, Dualistic Heroes, Supernaturals, and Creation Stories. MA thesis. 148 pages.

Mentions crocodiles and their iconography.

**KUBLER, George**

1969 Studies in Classic Maya Iconography. The Connecticut Academy of Arts and Sciences.

The name Cosmic Monster was not yet developed nor was the Quadripartite Badge name a fixed jargon for iconographers in that era. It was not until Merle Greene Robertson suggested the term Quadripartite Badge in 1974.

**LOOPER, Matthew**

2012 The Maya "Cosmic Monster" as a Political and Religious Symbol. Chapter 8, pages 197-215 in the *Ashgate Research Companion to Monsters and the Monstrous*. Taylor & Francis Group.

The Cosmic Monster is a major chapter in the iconography of crocodiles in Classic Maya art. This chapter by Looper is very helpful. The illustrations show three good examples of this Cosmic Monster (which usually, but not always, has a crocodile at the front and a Quadripartite Badge deity headdress at the back).

**LOWE, G. W., LEE, T. A. and E. M. ESPINOSA**

1982 Izapa: An Introduction to the Ruins and Monuments. Brigham Young University, *Papers of the New World Archaeological Foundation*, No. 31.

**MARTIN, Simon**

2006 Cacao in Ancient Maya Religion, First Fruit from the Maize Tree and other Tales from the Underworld. Chapter 8, pages 154-183 in McNeil, C. L., editor, *Chocolate in Mesoamerica: A Cultural History of Cacao*. University Press of Florida

Shows the Crocodile Tree of Izapa Stela 25 facing a crocodile tree on an Olmec jade (Martin 2006: Figure 8.4).

[https://www.mesoweb.com/about/martin/Martin\\_2006\\_Cacao.pdf](https://www.mesoweb.com/about/martin/Martin_2006_Cacao.pdf)

**MARTIN, Simon**

2015 The Old Man of the Maya Universe: A Unitary Dimension to Ancient Maya Religion. Pages pp. 186–227 in: *Maya Archaeology 3*, edited by Charles Golden, Stephen Houston, and Joel Skidmore, Precolumbia Mesoweb Press, San Francisco.

This is one of the best discussions of God N and crocodiles, especially since this article includes LOTS of illustrations and photographs. I add a remarkable Tepeu 1 bowl that shows two (nearly identical) crocodiles, each with a God N-like deity issuing from the mouth.

**MATA Armado, Guillermo**

2005 Monumento Prehispánico frente al Edificio de Rectoría de La Universidad De San Carlos. Chapter 47, pages 511-516 in: *XVIII Simposio de Investigaciones Arqueológicas en Guatemala, 2004* (edited by J. P. Laporte, B. Arroyo and H. Mejía). Museo Nacional de Arqueología y Etnología, Guatemala. Chapter 47, 12 pages.

Shows a human face inside the open jaws of a probable crocodile. Since there is a row of three curved fangs (and then a row of a dozen teeth on each side), I estimate this may be a crocodile/caiman head through a composite with a snake head should also be studied.

[www.asociaciontikal.com/wp-content/uploads/2017/01/47-Mata-Amado.04.pdf](http://www.asociaciontikal.com/wp-content/uploads/2017/01/47-Mata-Amado.04.pdf)

**McDONALD, J. Andrew**

2016 Deciphering the Symbols and Symbolic Meaning of the Maya World Tree. *Ancient Mesoamerica*, 27 (2016), 333–359.

His Fig. 1 shows a frequently published Underwaterworld scene on a Codex Style plate. The round shape of the plate is made oval. An obvious crocodile-like head, albeit with



pit-viper upper fang is #4. This crocodile is clearly a Cosmic Monster due to the Quadripartite Badge head at one end. Most of this report is on water lily iconography.

**MILBRATH, Susan**

1999 *Star Gods of the Maya: Astronomy in Art, Folklore, and Calendars*. University of Texas Press.

Cosmic Monster on pages 277-281.

**MUSE, M. and T. STOCKER**

1974 The Cult of the Cross: Interpretations in Olmec Iconography. *Journal of the Steward Anthropological Society* 5: 67-98.

**NORMAN, V. Garth**

1973 Izapa Sculpture: Part I: Album. *Papers of the New World Archaeological Foundation* No. 30, Brigham Young University Press.

**POHL, Mary D.**

1983 Maya Ritual Faunas: Vertebrate Remains from Burials, Caches, Caves, and Cenotes in the Maya Lowlands. In *Civilization in the Ancient Americas: Essays in Honor of Gordon R. Willey*, edited by R. M. Leventhal and A. L. Kolata, pp. 55-104. Harvard University, Peabody Museum of Archaeology and Ethnology.

**PROSKOURIAKOFF, Tatiana**

1962 The Artifacts of Mayapan. Pages 321-439 in: *Mayapan Yucatan Mexico*, H. E. D. Pollock et al. Carnegie Institution of Washington, Publication. No. 619.

**PUGH, Timothy**

2001 Flood Reptiles, Serpent Temples, and the Quadripartite Universe: The Imago Mundi of Late Postclassic Mayapan. *Ancient Mesoamerica* 12: 247-258.

**PULESTON, D.**

1976 The People of the Cayman/Crocodile: Riparian Agriculture and the Origins of Aquatic Motifs in Ancient Maya Iconography. In *Aspects of Ancient Maya Civilization*, edited by F.A. de Montequin, pp. 1-26. Hamline University, Saint Paul, MN.

**QUIRARTE, Jacinto**

1973 Izapan-Style Art: A Study of its Form and Meaning. *Dumbarton Oaks, Studies in Pre-Columbian Art and Archaeology* No. 10.

**REILLY, Frank K., III**

1987 The Ecological Origin of Olmec Symbols of Rulership. MA thesis, University of Texas at Austin.

**REILLY, F. K., III**

1988 Olmec Conceptions of the Sacred Mountain as Underworld Entrance. Manuscript, Institute of Latin American Studies, University of Texas at Austin.

**REILLY, F. K., III**

1991 Olmec Iconographic Influences on the Symbols of Maya Rulership: An Examination of Possible Sources. In *Sixth Palenque Round Table*, 1986, edited by M. Greene Robertson and V. M. Fields, pp. 151-166. University of Oklahoma Press.

An excellent presentation of the iconography of “Slim”, an oft-published portable Olmec greenstone statue. Shows the Olmec crocodile on his Fig. 14,a. “Slim” was not yet known at the time of Joralemon’s comprehensive review and catalog of Olmec deities in his 1971 “A Study of Olmec Iconography.”

The crocodile on the left thigh of “Slim” is clearly the Olmec origin of “Two-Headed Dragons” which include the Cosmic Monster: this Olmec crocodile has crocodile head raised up as is often typical; and four legs. On the tail is an upward facing head. All aspects are stylized.

**REILLY, F. K., III**

1996 Art, Ritual, and Rulership in the Olmec World. In *The Olmec World: Ritual and Rulership*, edited by M.D. Coe, pp. 27-46. The Art Museum, Princeton University.

Dr Reilly is currently (2023) professor of Anthropology at Texas State University.

**REILLY, Frank Kent, III**

1999 Olmec Style Iconography. FAMSI. 20 pages.

<http://www.famsi.org/reports/94031/94031Reilly01.pdf>

An Olmec crocodile is in Figure 22. An Izapa style crocodile on a ceramic vase is shown in Figure 2.

**RICE, Prudence M.**

2017 Maya Crocodilians: Intersections of Myth and the Natural World at Early Nixtun-Ch'ich', Petén, Guatemala. *Journal of Archaeological Method and Theory*, Vol. 25, No. 3 (September 2018), pp. 705-738.

JSTOR demands excessive \$\$\$ for just a few pages. Best to bypass JSTOR and post the articles as helpful downloads or use Academia.edu or ResearchGate.

**RICE, Prudence M.**

2018 Maya Crocodilians: Intersections of Myth and the Natural World at Early Nixtun-Ch'ich', Petén, Guatemala. *Journal of Archaeological Method and Theory* 25:705–738.

**RICE, Produce M.**

2019 Crocodiles, Sharks, and some Speculations on Central Peten Preclassic History. *Ancient Mesoamerica*, page 1-18, 2019.

Although a report on archaeology by an experienced archaeologist, this report is excellent for iconography, especially the number of illustrations of crocodiles in diverse civilizations of Mesoamerica.

**ROBISCEK, Francis and Donald M. HALES**

1981 The Maya Book of the Dead: The Ceramic Codex. University of Oklahoma Press.

**SALAZAR Lama, Daniel**

2022 El renacer de los Reyes, Imagen, contexto y significado del friso de Balamkú, Campeche, México. *Paris Monographs in American Archaeology* 56. Access Archaeology, Archaeopress. 181 numbered pages (pdf is 185 pages).

This is one of the best and most complete discussions of an Early Classic stucco architectural frieze, in part due to the ample number of illustrations. Since the main zoological theme of the Balamku stucco is bufo toads, crocodiles are only shown in Fig. 5.4 and 5.7.

**SALAZAR Lama, Daniel**

2023 Dramatis Personae del programa escultórico de la Subestructura IIC de Calakmul. *TRACE* 83, CEMCA, ENERO 2023, pages 188-206.

Salazar knows Early Classic stucco façade iconography inside-out (meaning he knows every aspect of these complex multi-dimensional stucco decoration of Maya buildings.

**SÁNCHEZ Herrera, Óscar, LÓPEZ Segurajáuregui, Gabriela, NARANJO Ortiz de la Huerta, Alejandra García and Hesiquio BENÍTEZ Díaz**

2011 Programa de monitoreo del Cocodrilo de Pantano (*Crocodylus moreletii*), MÉXICO • BELICE • GUATEMALA. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (CONABIO) and Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT). Mexico. 269 pages.

Available as download.

**SCHELE, Linda**

1976 Accession Iconography of Chan-Bahlum in the Group of the Cross at Palenque. In *The Art, Iconography & Dynastic History of Palenque Part III*, edited by Merle Greene Robertson, pp. 9-34. Robert Louis Stevenson School, Pebble Beach, California.

Cosmic Monster on page 17.

**SELER, Eduard**

1909 The Animal Pictures of the Mexican and Maya Manuscripts. In Eduard Seler: Collected Works in Mesoamerican Linguistics and Archaeology, Harvard University, Peabody Museum of Archaeology and Ethnology, Memoirs 4 (5), Cambridge, MA.

You can find an easier-to-obtain more recent edition by Labyrinthos.

**SMITH, V. G.**

1984 Izapa Relief Carving: Form, Content, Rules for Design, and Role in Mesoamerican Art History and Archaeology. *Studies in Pre-columbian Art and Archaeology* No. 27. Dumbarton Oaks.

**SPINDEN, Herbert J.**

1913 A Study of Maya Art: Its Subject Matter and Historical Development. *Memoirs of the Peabody Museum of Archaeology and Ethnology*, VI. Harvard University.

Cosmic Monster first pulled out to be studied by Spinden (page 53), though obviously his database in that time was limited.

This 1913 monograph was reprinted in 1970 by Kraus Reprint. Illustrates LOTS of Sky Bands starting pages 19-20. Then on page 53 he has a section on Two-headed Dragon which today is called the Cosmic Monster.

**SPINDEN, Herbert J.**

1913 A Study of Maya Art: Its Subject Matter and Historical Development. Kraus Reprint (with new introduction and bibliography by J. Eric S. Thompson. 755 illustrations in 285 pages.

**STONE, Andrea**

1983 The Zoomorphs of Quirigua. PhD dissertation, Department of Art History, University of Texas at Austin. Austin, TX.

**STONE, Andrea**

1985 Variety and Transformation in the Cosmic Monster Them at Quirigua, Guatemala. In Fifth Palenque Round Table, 1983, edited by V. Fields and M. G. Robertson, pp. 39-48. Palenque Round Table Series 7, Pre-Columbian Art Research Institute, San Francisco.

**STOCKER, Terry, MELTZOFF, Sarah, and Steve AMRSEY**

1980 Crocodilians and Olmecs: Further interpretations in Formative period iconography. *American Antiquity*, 45 (4): 740-758. Cambridge University Press.

**STOCKER, Terry and Verónica ORTEGA Cabrera**

2019 El culto al cocodrilo: cognición y arte del Formativo temprano en Mesoamérica. *Arqueología* 58, Agosto, 2019, pages 95-114.

The illustrations also show crocodiles of the Olmec and most other civilizations of Mesoamerica.

**STRECKER, Matthias**

2003 *Arte Rupestre de Tabasco y Chiapas*. Pages 29-51 in *Arte rupestre de México Oriental y Centro América*, editors Martin Kuenne and Matthias Strecker. Volume 16 of *Indiana*, Berlin, Germany.

**STRECKER, Matthias**

2008 *Arte Rupestre de Tabasco y Chiapas*. Pages 43-66 in *Arte rupestre de México Oriental y Centro América*, editors Martin Kuenne and Matthias Strecker. SIARB, Bolivia.

Original edition by Indiana, Germany; 2<sup>nd</sup> edition by SIARB,

**STUART, David and S. Jeffrey K. WILKERSON**

1995 *Las Figuras de El Planchón de las Figuras, Chiapas*. In *Cuatro Estudios sobre el Planchón de las Figuras* (passim). Colección de textos básicos y manuals, INAH, Mexico.

Stuart and Wilkerson were with Michael Coe, Sophie Coe, Mary Miller and George Stuart on a FLAAR field trip down the Rio la Pasion to the Rio Usumacinta to visit Yaxchilan and Piedras Negras (then all the way down the rapids to Tenosique). We went to the area of Planchón de las Figuras where there is one crocodile running on two legs. Shown as Fig 9 by Strecker.

Several bibliographies give the date of Stuart and Wilkerson as 1985; others give the date as 1995.

**STUART, David**

A Cosmological Throne at Palenque. Mesoweb. 4 pages.

His Figure 1 is a helpful line drawing that shows the crocodile face at left with star symbol on its deer-ear (Stuart calls this creature the Starry Deer Alligator). Right end is a sideways Quadripartite Badge Monster. Normally this faces down but no space for it to turn downwards. No Sky Band symbols on the body of the monster (just basic hieroglyphic text).

Am still hoping to find the date of this report.

**TAKKOU-Neofytou, Richard**

2014 Shows a possible Olmec-related crocodile (note my "possible" since the Figure 6 has potential crocodile eyebrows but this creature has no legs). *Papers from the Institute of Archaeology*, 24(1): 25, pp. 1-12.

**TAUBE, Karl Andreas**

1989 Itzam Cab Ain: Caimans, Cosmology, and Calendrics in Postclassic Yucatán. Chapter 3, pages 109-118 in: *Studies in Ancient Mesoamerican Art and Architecture: Selected Works by Karl Andreas Taube*, pp. 118–149. Precolumbia Mesoweb Press, San Francisco.

Well researched and presented helpful article. I would just suggest calling the creatures crocodiles or at least crocodilians (if you wish to include caimans). Since caimans are mainly near the Pacific coast, and since the Classic Maya are mainly near the Caribbean, they would have seen crocodiles not caimans. The original article was 1989; the reprint is 2018.

Helpful download courtesy of Precolumbia Mesoweb Press,  
<https://www.mesoweb.com/bearc/cmr/RRAMW26-es.pdf>

**TAUBE, Karl A.**

n.d. Introduction: The Origin and Development of Olmec Research. Webpage, Dumbarton Oaks.

Shows a stylized Olmec crocodile as Fig. 0.26d (sic).

<https://www.doaks.org/resources/olmec-art/introduction>

Would help greatly if the download options include a normal PDF format; HTML is a pain.

**THURSTON, Elizabeth Barbara**

2011 Crocodiles and the Ancient Maya: An Examination of the Iconographic and Zooarchaeological Evidence. MA thesis, Trent University, Canada.

Very thorough zooarchaeological research; the best I have seen that lists crocodile remains in Maya caches and burials.

The focus is on Maya images and remains in Maya sites; but there is an introductory chapter on Olmec crocodiles. Her illustrations are helpful for Olmec crocodile iconography since Thurston shows several examples not in other books or articles about iconography of crocodiles of Mesoamerica. Izapa Stela 11 and Izapa Stela 25 are pictured to show the Crocodile Tree. But these trees deserve their own chapter to include all the Classic Maya examples, especially on pottery. Since the thesis was 2011, obviously several examples such as the square ceramic vase that shows a crocodile above an enthroned God L is not included. And the nearly identical one by Coe is not pictured (though surely is in her count). Both these vases show a complete crocodile as roof decoration for a throne room hut.

**TOZZER, Alfred M. and Glover M. ALLEN**

1910 Animal Figures in the Maya Codices. *Papers of the Peabody Museum of American Archaeology and Ethnology*, Harvard University, Vol. IV, No. 3. 746 pages.

**VARGAS Pacheco, Ernesto and Teri ORTIZ Arias**

2004 The Crocodile and the Cosmos: Itzamkanac, the place of the Alligator's House. In Juan Pedro LaPorte, Barbara Arroyo y Héctor E. Mejía (editors), *Symposium of Archaeological Investigations in Guatemala*, 2004. Guatemala, FAMSI.

Introduces crocodile aspects of El Tigre site, Campeche. Shows a ceramic incense burner that is the head of a crocodile. The teeth are helpful to identify other "crocodiles" because the seven or eight teeth are all identical size and straight-down shape; no fangs curved or any other shape.

**VELÁSQUEZ Garcia, Erik**

2002 Una nueva interpretación del Monstruo Cósmico maya. Pages 419-458 in *XXIV Coloquio Internacional de Historia del Arte*, UNAM, Mexico.

Goes in depth on several aspects of the Cosmic Monster; then goes to celestial aspects (so stars and constellations rather than features of the Cosmic Monster). Very helpful for archaeoastronomers.

**VELÁSQUEZ Garcia, Erik**

2006 The Maya Flood Myth and the Decapitation of the Cosmic Caiman. *The PARI Journal*, Volume VI, No. 1, Spring 2006. Pages 1-10.

Helpful discussion of one aspect of the Cosmic Monster. Since caimans are more on the Pacific Ocean coast, and since the three codices are more Yucatec-area or at least elsewhere in the Maya Lowlands (nowhere near the Pacific Ocean), crocodiles are more likely than caimans.

**WANYERKA, Phil**

1996 A Fresh Look at a Maya Masterpiece. *Cleveland Studies in the History of Art* 1:72-97.

Cosmic Monster on page 76.

Web pages:

[www.mayaarchaeologist.co.uk/school-resources/rainforest/crocodile-3/](http://www.mayaarchaeologist.co.uk/school-resources/rainforest/crocodile-3/)

The Crocodile, a page in Educational Resources on the Maya by Dr Diane Davies

Shows four crocodile images in artifacts plus one glyph. Would help to have a bibliography and citations.

[www.maya-ethnozoology.org](http://www.maya-ethnozoology.org) has various pages on crocodiles; check the ABC index of this site.

[www.metmuseum.org/art/collection/search/313335](http://www.metmuseum.org/art/collection/search/313335)

Crocodile whistle and rattle. A 3D ceramic figurine of blue-painted walking crocodile.

[www.newsweek.com/mystery-ancient-maya-city-looks-like-crocodile-1759025](http://www.newsweek.com/mystery-ancient-maya-city-looks-like-crocodile-1759025)

The Mystery of the Ancient Maya City That Looks Like a Crocodile, by Aristos Georgiou, 2022.

### **Zooarchaeology**

There are hundreds of articles, chapters, and lots of theses and dissertations on archaeological discovery of bones in middens, caches, burials and elsewhere. I show just three; their References Cited provide more hundreds of articles than I can count.

#### **EMERY, Kitty F.** (editor)

2004 *Maya Zooarchaeology: New Directions in Method and Theory*. The Cotsen Institute of Archaeology at UCLA, Monograph 51. 310 pages.

Read on-line: <https://escholarship.org/uc/item/75h1s16p>

#### **POHL, M. D.**

1976 *Ethnozoology of the Maya: An Analysis of Fauna from Five Sites in Petén, Guatemala*. Ph.D. dissertation, Harvard University.

Pohl has produced dozens of articles and chapters on Maya ethnozoology.

#### **WRIGHT, Lori E.**

2005 In Search of Yax Nuun Ayiin I: Revisiting the Tikal Project's Burial 10, in *Ancient Mesoamerica* 16. Cambridge University Press, pages 89-100.

Burial 10 at Tikal had a complete crocodile within the tomb, but since two different archaeologists worked here at different times, and since one removed the head, the archaeologist who did the final drawing unfortunately did not include the head. Why this drawing has not been completed by adding the head is sad.

### **Books on Zoological Aspects of Crocodiles and Caiman**

There are “hundreds” of articles and lots of books on crocodiles. But our focus is crocodiles of Mesoamerica, not the Nile Crocodile or others elsewhere in the world. We start with several good zoological monographs. You can find more monographs on line and hundreds of articles. But here is a starter:

#### **ALVAREZ DEL TORO, Miguel**

1974 *Los Crocodylia de Mexico*. Instituto Mexicano de Recursos Naturales Renovables.

Miguel Alvarez del Toro was the leading zoologist of the Chiapas area of Mexico in the recent past century. This 1974 monograph, *Los Crocodylia de Mexico* covers primarily the



Mexican aspect of these reptiles and has an obvious focus on Chiapas. The Zoológico Miguel Álvarez del Toro in Tuxtla Gutierrez, Chiapas, is named for him.

**BUSACK, Stephen**

2001 Geographic variation in *Caiman crocodilus* and *Caiman yacare* (Crocodylia: Alligatoridae): Systematic and legal implications. September 2001, *Herpetologica* 57(3):294-312.

Helpful download from ResearchGate.

**CAMPBELL, Jonathan A.**

1998 Amphibians and Reptiles of Northern Guatemala, the Yucatan, and Belize

**KELLY, Lynne**

2006 Crocodile: Evolution's Greatest Survivor. Allen & Unwin. 288 pages.

Although not focused on Mesoamerica, this book can get you started on crocodiles around the world.

**LEE, J. C.**

2000 A Field Guide to the Amphibians and Reptiles of the Maya World: The Lowlands of Mexico, Northern Guatemala, and Belize. Cornell University Press.