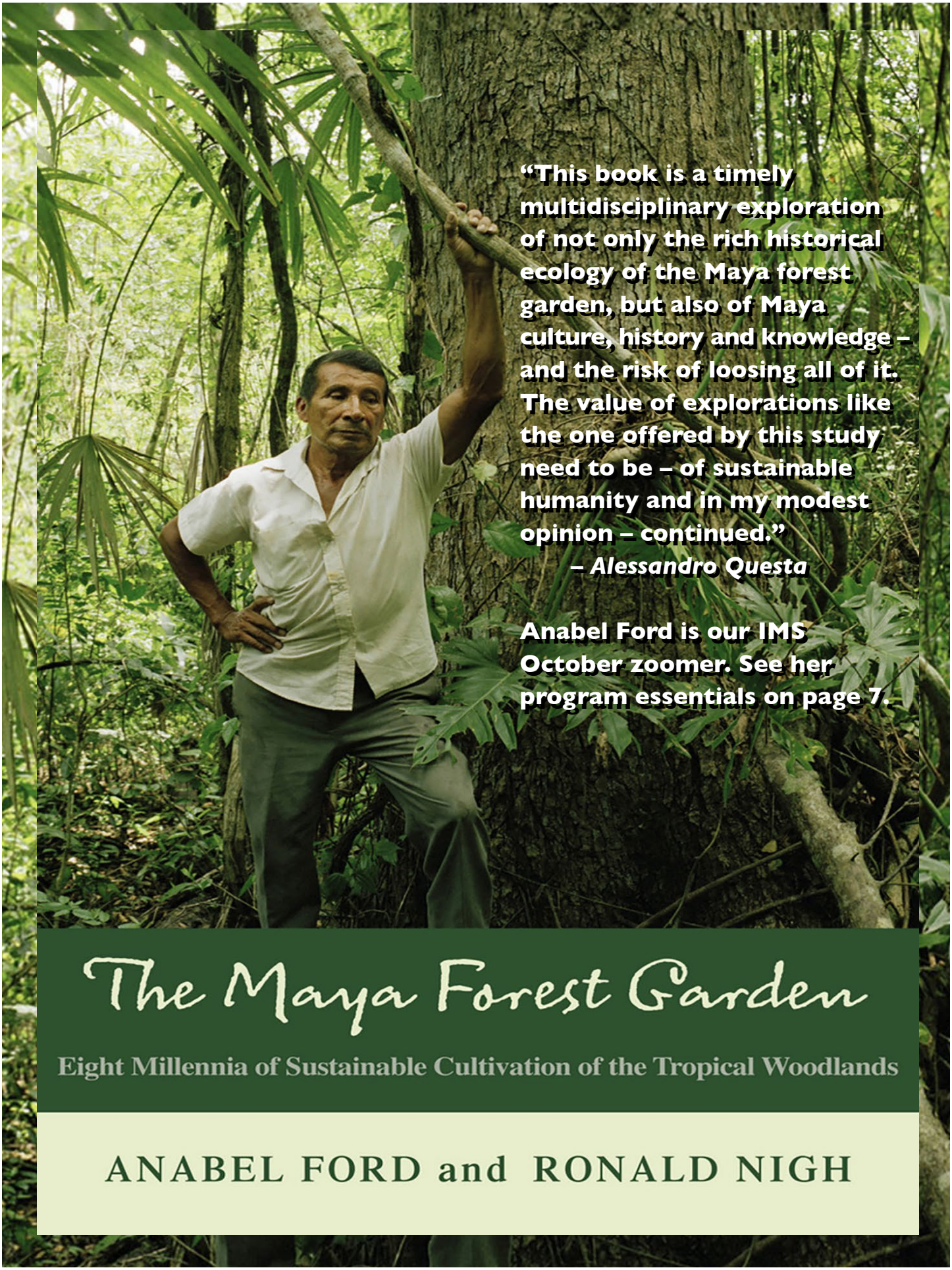
"This book is a timely multidisciplinary exploration of not only the rich historical ecology of the Maya forest garden, but also of Maya culture, history and knowledge – and the risk of loosing all of it. The value of explorations like the one offered by this study need to be – of sustainable humanity and in my modest opinion – continued."
– Alessandro Questa
Anabel Ford is our IMS October zoomer. See her program essentials on page 7.
The Maya Forest Garden
Eight Millennia of Sustainable Cultivation of the Tropical Woodlands
ANABEL FORD and RONALD NIGH

IMS Explorer

Institute of Maya Studies

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October 20, 2021 • Modern K'iche' Maya Long Count: 0.0.8.17.5 • 5 Chichan 3 Sac • G3

Inside this issue:

Lost and Found: An Architectural Survey in the Maya Puuc Area by Stephan Merk

What I have delimited as the Dzekilna grid is an area of about 75 square kilometers in the Maya Puuc heartland (***Fig. 1***). This grid area has been investigated during the last four years, mostly with the extremely valuable help of three local Maya guides (and long-time friends) from the villages of Santa Elena (Yucatan) and San Antonio Yaxche (Campeche). The goal of this surface survey in this uninhabited forest area was to mainly document still-standing ancient architecture. The Dzekilna project followed on the heels of my two earlier projects in the Chunhuaymil and the Itzimte areas, both documented in the books *The Long Silence* (Merk 2011) and *The Long Silence (2)* (Merk 2016). The survey work is not completely finished yet; what is presented here is a first and rough overview of the outcome of the Dzekilna project until now.

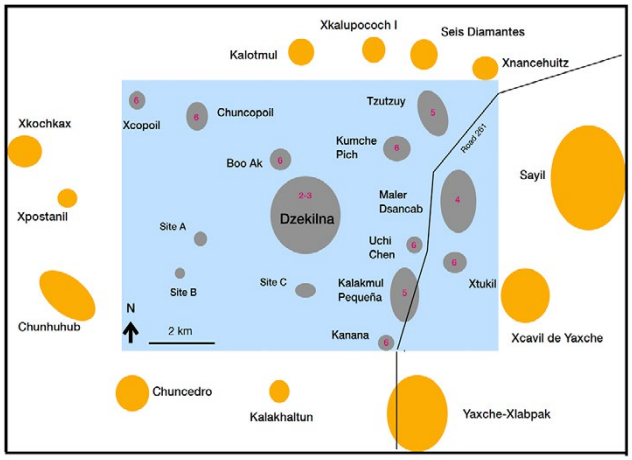

Fig. 1*: Map showing the numerous archaeological sites located in and around the Dzekilna grid area.*

The northeast corner of the Dzekilna grid is the modern *arco* (arch) on Road 261 that marks the border between the Mexican States of Yucatan in the north, and Campeche in the south. From that point, the selected area for my project reaches about seven km south and almost 11 km towards the west.

So far, within the given grid, we found 11 typical archaeological ruin sites plus three very tiny settlements whose nature is not precisely defined yet. The latter are extremely small remnants of ancient occupation,

Fig. 2*: All buildings in Dzekilna are buried under heavy vegetation. The picture shows a part of the façade of the second building in the South Group.*

defined by Nicholas Dunning as Rank 7 sites, with scattered platforms, a few low mounds and only in one case, the addition a *chultun* (an underground water cistern that allows a permanent occupation). Those places are named here only with numbers (Site 1, etc.).

IMS Streaming:
Oct. 20, 8 pm ET

The Cultivated Landscape of the Maya Forest: Exploring Solutions Past
with
Dr. Anabel Ford

Of the remaining 11 sites, Dzekilna clearly stands out as being the major settlement in terms of extension, number and size of buildings, and richness of decoration. According to the ranking

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Jim Reed, Editor

Conserving the American Tropics: Exploring the Cropspace of the Ancient Maya

by Anabel Ford, Sherman Horn III, Thomas Crimmel, Justin Tran

Long-term strategies for land management are essential in the contemporary tropics, which have endured extreme changes from deforestation and are projected to host the highest levels of future population growth. Tropical forests have regularly been dismissed as fragile landscapes, and received wisdom suggests these environments are inadequate and unable to sustain large populations without substantial alteration. Yet this is the very strategy that has put the tropics at risk today. By contrast, long-surviving Indigenous food-production and land-use practices, involving sophisticated understandings of forest ecology, remind us that tropical forests are indeed hospitable environments. The Maya are one people among many who deserve recognition for creating sustainable land-use practices, and those practices should inform successful development programs in the tropics as we confront present and future challenges. The real threat to the Maya Forest is the loss of traditional Maya farming practices, for once the carriers of this knowledge are lost, it may never again be regained.

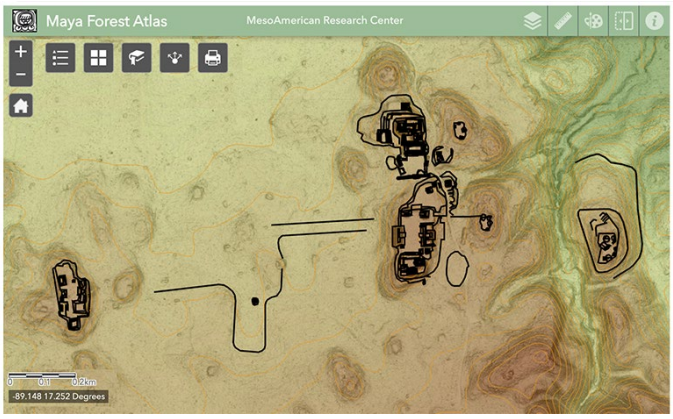

Fig. 1: *El Pilar. Maya Forest Atlas Web App.* Credit: MesoAmerican Research Center; Claudia Knudson.

The environmental legacy of the ancient Maya is a controversial topic. Since at least the 19th Century, when widely published travelogues began revealing the wondrous monuments of Maya cities to Euro-American audiences, Western popular imagination has been captivated by Maya civilization, and especially tales of its demise. Collapse narratives frequently invoke primitive cultivation techniques, fragile tropical forests, and environmentally destructive lifeways as driving the downfall of Maya kingdoms, but these explanations more often hinge on ecological imperialist prejudices than empirical observations. Our research, conducted in partnership with traditional Maya farmers – the master forest gardeners – suggests these stories miss the mark. Indigenous agricultural practices and ecological knowledge developed over millennia in the Maya Forest of southeastern Mesoamerica *(see* ***Fig. 1****)*, actually increased resilience to climate change while providing all household necessities for ancient populations. A shift in mindsets and willingness to challenge received wisdom are requisite to begin exploring sustainable living solutions from the Maya past that can address our future challenges.

Theoretical frameworks for understanding the "Maya Collapse" – which have incorporated data from advanced scientific techniques in recent years – envision Maya societies becoming increasingly vulnerable to climate change, as their environment was degraded and deforested by growing populations and unsustainable agricultural practices. The robust archaeological record and long-enduring Indigenous understandings of forest ecology and food production, however, suggest different interpretations that warrant exploration. The Maya Forest is among the most diverse in the world, and its dominant trees are economically valuable in both local and global markets *(see* ***Fig. 2****)*. These contemporary forest features reflect long-term land-use choices that we must decipher to make sustainable living a reality in the area today.

Fig. 2: *Maya Forest Gardens and the Milpa Cycle. Maya Forest Garden Web App.* Credit: MesoAmerican Research Center, Bianca Graves.

The topic of tropical forest conservation may seem esoteric to those from temperate latitudes, and the connection to archaeology may not be apparent at first. Tropical forests have long been viewed as marginal environments for human occupation – their soils uncultivable, their land unworkable for food production without the technology of industrial agriculture – yet they are now at the forefront of a population explosion, with massive growth and development forecast for the coming decades. The Maya Forest, a biodiversity hotspot second only to the Amazon, now faces grave risks from the expansion of

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Conserving the American Tropics: Exploring the Cropspace of the Ancient Maya

by Anabel Ford, Sherman Horn III, Thomas Crimmel, Justin Tran *continued from page 2*

industrial plantation agriculture. The top-down imposition of Euro-American agricultural systems, based on pasture and plow, has created the very conditions of deforestation and environmental degradation invoked to explain the Maya collapse. How, then, can archaeology inform debates about sustainable development and human population expansion in the tropical forest?

We consider the contemporary Maya Forest as the product of human-environment interactions over millennia – not as a wild or pristine jungle, but as a cropscape shaped by human hands and an integral component of successful land-use technologies. By documenting how the ancient Maya settled their landscape, and assessing these settlement patterns in light of traditional food-production and forest-management techniques, our team of archaeologists, ethnologists, geographers, botanists, wildlife biologists, geologists, volcanologists, advocates, and citizen scientists are beginning to reveal how this remarkable civilization was able to thrive in the tropical forest for generations. Recognizing the potential of Maya land-use strategies to create a vibrant, diverse, and economically bountiful cropscape can yield insight into critical concerns facing communities throughout the world today, such as the need to conserve water, reduce erosion, build soil fertility, lower temperatures, maintain biodiversity, and provide people a high quality of life. To understand how the ancient Maya and their descendants developed subsistence technologies that shaped the forest – and how these might be employed for contemporary conservation and sustainable development – we must examine the Maya Forest environment and the history of humans on the landscape.

The Mesoamerican Tropics and the Creation of the Maya Forest Cropscape

The Maya Forest is situated in the southern lowlands of Mesoamerica, spreading across 54,000 km2 of the modern-day countries Belize, Guatemala, and Mexico in the Yucatan Peninsula. Large rivers flank this area to the east and west but do not traverse its extent; lakes are concentrated near its geographic center but are otherwise uncommon. A combination of permeable limestone bedrock, which absorbs surface water, and a karstic topography of ridges and low-lying troughs creates a complicated landscape mosaic, comprising well-drained uplands and perennial wetlands with transitional areas between. Well-drained soils of the rocky ridges and hills, supporting the greatest diversity of broadleaf forest vegetation and particularly prized by ancient and modern people, cover about 30% of this region, while poorly drained wetland soils overlay around 40% of the land *(see **Fig. 3**)*. Variation in the physical environment, along with the restricted nature of available surface water, produces a range of habitats for plants and animals and provides a foundation for the biodiversity seen in the area today.

Maya settlements emerged in the tropical forests of the Yucatan Peninsula more than 3,000 years ago and, over the ensuing centuries, developed into one of the world's great pre-industrial civilizations. The expansion of Maya populations – along with increasing organizational complexity in their

Dominant Plants of the Maya Forest: Their Pollinator, and Uses

Common Name	Pollinator Syndrome	Primary Uses
Bay Leaf	insects	Food, Production
Breadnut	wind	Food, Fodder
Cabbage Bark	insects	Construction
Chicle	bats	Food, Latex
Cohune	insects	Food, Construction
Drunken Baymen	bees	Medicine
Fiddlewood	bats	Construction
Give-and-Take	beetles	Production
Guaya	bees	Food
Gumbolimbo	bees	Medicine
Hogplum	insects	Food
John Crow Redwood	moths	Construction
Mahogany	insects	Construction
Mamee Ciriola	insects	Food
Mayflower	bees	Construction
Monkey Apple	moths	Food
Mylady	insects	Construction
Wild Mamey	moths	Food
Wormwood	bees	Poison
Zapotillo	insects	Food, Latex

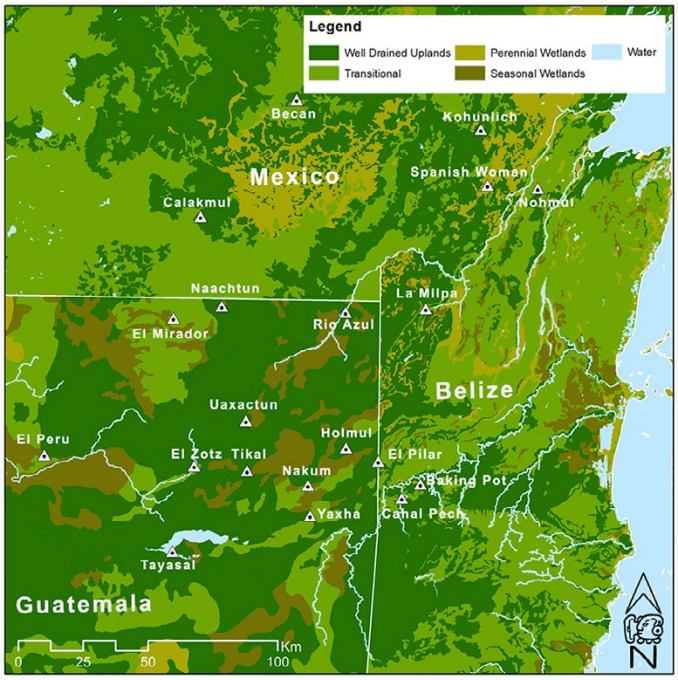

Fig. 3: *Landforms of the Maya Lowlands with major sites indicated (including Tikal and El Pilar).* Credit: MesoAmerican Research Center.

communities – was underwritten by adaptations to the tropical forest environment that sustained growth and development for millennia. Indeed, part of the enduring public fascination with Maya civilization seems to derive from the circumstances of its development. How could a literate society, with notable achievements in mathematics, astronomy, architecture, and fine arts

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Lost and Found: An Architectural Survey in the Maya Puuc Area by Stephan Merk

continued from page 1

Fig. 3: *One of the stone figures from an entrance in Dzekilna is now being displayed in the Gran Museo del Mundo Maya in Mérida, Yucatán.*

systems of George F. Andrews (1995) and Dunning (1992) it should be considered as a small Rank 2 or a large Rank 3 site. Next in size is the Rank 4 site of Maler Dsancab, followed by the Rank 5 settlements of Kalakmul Pequeña and Tzutzuy. The other seven archaeological sites (Kumche Pich, Xtukil, Boo Ak, Chuncopoil, Xcopoil, Kanana, and Uchi Chen), although of slightly different sizes, meet the criteria for Rank 6 places.

The early explorers John Lloyd Stephens (1843) and Teobert Maler (1895) were the first to report about Dzekilna, followed in recent times by Nicholas P. Dunning (1992) and George F. Andrews (1995), but none of those visitors did extensive investigations at the site. The main structure in Dsancab was seen in 1887 and later described by Maler (1997: 56), while Dunning (1992) explored Kalakmul Pequeña for his doctoral thesis. I published notes about Tzutzuy and Kumche Pich (Graf and Merk 2009: 124-125), and Xtukil (Merk 2010: 104-105). The sites of Boo Ak, Chuncopoil, Xcopoil, Kanana, and Uchi Chen are reported here for the first time. As I have previously described Dzekilna for the *IMS Explorer* in 2019 (Vol. 47, Issue 3), I will therefore only give a short summary here.

The settlement area of Dzekilna covers three square kilometers. Three major groups aligned along a strict north to south axis dominate this heavily overgrown city. The Main Group is defined by a huge pyramid in the center and two adjacent quadrangles to the north and south, surrounded by smaller architectural units. Isolated outside the Southern Quadrangle lies a large stone slab flat on the ground. Its shape suggests a stela, but the visible sides do not show any image or glyphs. Within the Northern Quadrangle we found a small but complete stone phallus and a worked stone which could represent a human torso.

Around 200 meters distant from the pyramid rise the buildings of the North Group located on top of a high man-made platform. Two large structures dominate this group: in the north a two-story range-type building with a flying stairway and in the west,

Fig. 4: *The better preserved of two stone heads found in Dzekilna.*

a three- story building with rooms on all four rectangular sides. Three *chultunes*, as well as *metates* (grinding stones) and *pilas* (stone containers) speak for a rather residential use of the buildings.

The South Group was also erected on a huge platform. It consists of three buildings. Its main structure sits on the eastern edge of the platform and has a minimum of 17 rooms split up into three parallel running lines. A fourth line of chambers, today completely destroyed, was built on a lower level on the east side, into the platform's slope. Many decorative façade elements lie in the rubble, mostly on the east side, proof that this large building once was heavily adorned. The second structure *(**Fig. 2**, see page 1)* stands in the south and probably had six, now mostly fallen, rooms in a row, plus an additional chamber that sticks out in the center towards the north. The third building in the west, is today no more than a pile of stones; I estimate it could have been made up of three rooms in a row. A lack of *chultunes* could indicate a non-residential function of this group.

At some place west of the pyramid, Teobert Maler found a collapsed building with two stone figures which once divided an entrance. These human-sized figures were brought out of the site and are now housed in museums in Campeche and Yucatan *(**Fig. 3**)*. Because Maler's description of the fallen building is not precise, we were not able to clearly identify its location within the amount of stone mounds in that area.

From the site's many other smaller groups only five will be mentioned here briefly. In the southwestern part is an otherwise unimportant stone mound representing a former building. Of special interest are two well-preserved stone heads *(**Fig. 4**)* that most likely once adorned the two corners on the structure's front side; probably the corners of a platform that closely surrounded the structure.

To the northwest of the North Group are two structures on a hill; one is destroyed but formerly designed with two stories, while the other, on a lower level of the hill, is one of the few well-preserved buildings in Dzekilna. The latter has four rooms in a row and a rounded corner at its northeastern end – an unusual architectural feature in the Puuc. A small group southeast of the just described structure also shows uncommon architecture for this part of the Maya world: a three-room building *(**Fig. 5**, see page 6)* with the central chamber on a minimum two meter higher level than the two adjacent rooms, the former standing on a massive core.

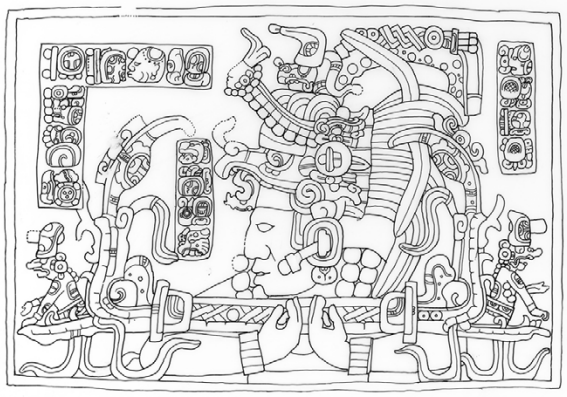
continued on page 6

Unbundling the Past: Events in Ancient and Contemporary Maya History for October by Zach Lindsey

30 October 1942 CE: On 12.16.8.15.0 7 Ajaw 13 Yax G3, Linda Schele was born. I don't normally celebrate non-Maya folks in this column, but I'm sure many of us would agree Linda Schele is a worthwhile exception. (Also, is it any surprise she was born on Ajaw, the day sign of boisterous leaders?) The daughter of an artist, Schele was a talented draftsperson who drew the layouts for submarines before switching to the Maya.

Gregarious and generous, yet known for chucking chalk at students, Schele nurtured a whole generation of Mayanists, made the Maya accessible to generalists, and made important discoveries of her own. Her love of naming undeciphered glyphs things like "Square-Nose Beastie" has helped to cement her sense of levity in the foundations of our discipline. Though she died all too early, Schele's artwork serves as an important legacy – researchers continue to use her images thanks to their detail and precision and the author's strong knowledge of Maya culture. You can investigate them yourself at: *LACMA Schele Drawings*

31 October 1952: On 12.16.18.17.14 8 Ix 17 Yax G3, the K'iche' poet Humberto A'ab'al was born. Perhaps the most famous contemporary K'iche' poet, Ak'ab'al toured Japan and Europe with his distinctly biting style of poetry. Using traditional indigenous subject matter and styles, Ak'ab'al was not afraid to tap western modalities either, and in fact he was often his own translator. (His early works were in Spanish, and he often had trouble finding publishers to publish his K'iche'-only material.) He died in 2019, but not before writing seven books of poetry. It's hard to pick just one of his poems to showcase, but perhaps *Piedras (Stones)* captures his style best:



Drawing of Bonampak Lintel from Structure 6 Depicting Bust of Ruler Holding Serpent Bar (SD-6007). The Linda Schele Drawing Collection is now housed online by the Los Angeles County Museum of Art (LACMA) Ancient Americas site (at the link in the text).

Piedras

Altars of the ancestors,
– Eternal listeners,
harsh in their silence,
harsher in their responses.

Then there is the line from *Para quienes (For Those)* which expresses his frustration with the lack of respect paid to K'iche' speakers:

For Those

Who don't speak our languages:
We are invisible.

For centuries, that was true. But as English speakers who none-the-less celebrate the Maya, I hope you and I can help make that quote a lie. I for one will do my best to make sure the Maya are no longer invisible, and I know many of the readers of this newsletter are doing the same.

Lost and Found: An Architectural Survey in the Maya Puuc Area

by Stephan Merk *continued from page 4*

Fig. 5: *Typical Classic Puuc style room in the northern part of the city.*

Finally, I want to mention a group to the east of the site's center. It consists of a courtyard of an unusual partially-rounded shape, surrounded by five destroyed ancient structures. The only building partly standing has a similar layout as the one described above, with a double room to the left and right and a central chamber on a higher level. The rubble contains many decorated stones and in one corner of the courtyard, is a huge, but plain monolithic stone.

In total, we were able to document 195 structures in Dzekilna, including standing and fallen buildings (117), foundation braces (18) and platforms (60). It seems that the site has no ballcourt, at least we could not discover one of those emblematic structures. Almost all of the stylistically dateable architecture belongs to the Late Puuc styles (roughly 770-950 AD). As for the water supply for the city, we detected three depressions which could once have functioned as *aguadas* (pond-like water reservoirs), and a minimum of 45 *chultunes*. In the vast majority of cases, Dzekilna's structures were erected on platforms of various sizes on flattened areas, with only a few on hills. The site's bad state of conservation is probably due to immense stone robbing for building the Hacienda San Antonio Yaxché six kilometers south of Dzekilna. This is probably also the reason why so few stone monuments, like sculptures and stelae, remain at the ancient city. *See References on page 8.*

Conserving the American Tropics: Exploring the Cropspace of the Ancient Maya

by Anabel Ford, Sherman Horn III, Thomas Crimmel, Justin Tran *continued from page 3*

possibly have arisen in the 'inhospitable' Mesoamerican jungles? This view reveals a fundamental, cultural bias in Euro-American understandings of both the tropical forest and its occupants, and it obscures another great technological achievement: the creation of the Maya Forest cropscape.

Introducing the Milpa Cycle: From Field to Forest and Back Again

A popular perception holds that slash-and-burn fields – components of the Milpa Cycle in Mesoamerica and the Maya area – are responsible for destroying forests. By focusing on domesticated crops and the fields they are grown in, ecological imperialists only see shifting agriculture and discount the majority of the landscape as 'abandoned.' In fact, traditional Maya land use has a deep history, but these practices have been deliberately dissociated from the living Maya by adherence to imperialistic views. These views deny the obvious connection between the contemporary Maya and their ancestors.

Contrary to this perspective of an abandoned landscape, studies show that the forest today was shaped by practices developed by the Maya millennia ago. The ancient Maya maintained their environment while using it to provide food, shelter, medicine, and other necessities of daily life. The Milpa Cycle – a complex and sustainable sequence that alternates between cultivated fields and forest gardens – builds a useful cropscape that can sustain human life and maintain the biodiversity of the forest. Contemporary Maya forest gardeners draw on the knowledge of their predecessors to preserve the forest as a garden.

The Maya Forest reflects countless generations of managed crop cultivation and directed succession of perennial forests. As a result of this careful curation of the forest as a cropscape, the Maya Forest biodiversity is filled with plants valued for the economic uses

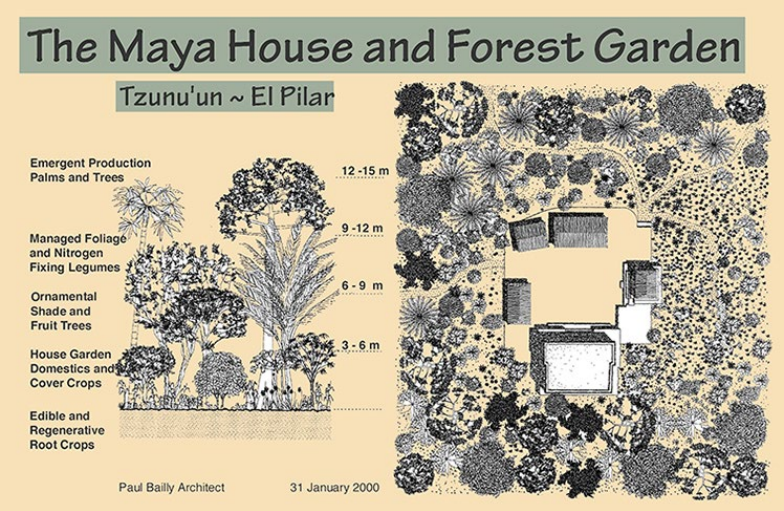


Fig. 4: *Profile and Plan Schematic of a Maya House and Forest Garden Infield.* Credit: MesoAmerican Research Center.

and the habitats they provide. This wealth untold is both a cultural and economic treasure, representing millennia of short- and long-term choices of planting annual crops and perennial trees to sustain the needs of Indigenous Maya communities.

The Maya milpa-forest garden cycle provides a stimulus for exploring solutions to global issues of food sovereignty and climate change, which are critical challenges in the world today (see ***Fig. 4***). The Maya Forest cropscape diversity of trees for shade to moderate temperature as well as conserve water. With land cover, the cycle reduces erosion while producing organic matter to build soil fertility. Food produced by annuals and perennials met the subsistence needs of millions at the height of Maya civilization and could do so again. It is valuable to consider master forest gardeners as citizen scientists whose traditional ecological knowledge promotes sustainability through biodiversity, and whose traditional practices demonstrate an alternative strategy in maintaining a productive environment.

Anabel Ford is our October IMS zoom presenter on October 20 at 8 pm ET. *See her program info on page 7.*

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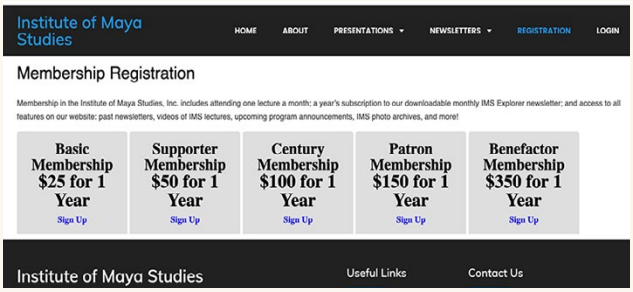

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https://us02web.zoom.us/j/87025126168

The Cultivated Landscape of the Maya Forest: Exploring Solutions Past

with Dr. Anabel Ford

The cultivable landscape of the ancient Maya flourished in the shallow friable soils of the limestone uplands, avoiding soils that the conventional Western agricultural systems deem arable not recognizing the cultivable lands that do not use plows. Maya development depended on hand cultivation, using labor, knowledge, and skill to increase the productive yields. It was not more fields, but more skill and labor in fields that produced greater yields. For the civilization to thrive, the Maya cultivated their landscape not only for crops, but for all the necessities of daily life, including materials for construction and utensils, fibers and spices, resources for food production, and habitat for hunted animals. The Maya cultivated nature embedding it in the cultural landscape as a cycle of varied forest habitats and productive fields that sustained everyday life. This tradition was unfamiliar to the Western eye and was literally overlooked.

Mesoamerica and the Maya relied on human power to move and to transport goods – a Tumpline economy. Credit: *mexicolore.co.uk.*

Archaeology Under the Canopy. Plaza Jobo, El Pilar Archaeological Reserve for Maya Flora and Fauna. El Pilar straddles the Belize-Guatemala border.

This presentation will show the links of contemporary Master Maya forest gardeners to the ancient Maya settlement patterns and promoted a new way of seeing ancient monuments under the canopy.

Anabel Ford, a Maya archaeologist, decoded the ancient Maya landscape by combining archaeological survey with traditional knowledge. Admiring the local knowledge of the Maya forest, when she encountered El Pilar, a major Maya city linking Belize and Guatemala, she envisioned a place of monument discovery in the context of the traditional knowledge of the people living in the region today. She recognized the Maya forest garden as a relic of traditional land use; accounting for ancient Maya settlement patterns. She brings her extensive field experience and broad inquisitive mind to demystify the Maya.

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Lost and Found: An Architectural Survey in the Maya Puuc Area

by Stephan Merk *continued from page 6*

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Editor's note: Stephan has planned a three-part series for the *IMS Explorer*. These References cover all three parts.

Additional Resources to Explore from Anabel Ford

Visit El Pilar on your staycation!
"El Pilar Archaeological Reserve for Maya Flora and Fauna"
A video with Jane Goodall (thanks to the Eva network)
https://www.youtube.com/embed/KQPNXmIGOxM?rel=0

UCSB Video:
"El Pilar: Preserving the Maya Legacy"
https://vimeo.com/163885061

Milpa Cycle Video:
"Sustainable Farming: The Maya Milpa Cycle"
http://www.odysseyearth.com/videos/sustainable-farming-the-maya-milpa-cycle/

Maya Forest Atlas Portal: Maps online:
You can explore the Maya Forest Atlas from the MesoAmerican Research Center: http://marc-ucsb.opendata.arcgis.com/

UCSB Map Stories: Maya Forest Garden
A beautiful, well-designed website; A learning experience
http://ucsb.maps.arcgis.com/apps/Cascade/index.html?appid=f788d8db0bf6492bb9196e6454e7d8e4

Archaeology Under the Canopy:
https://ucsb.maps.arcgis.com/apps/Cascade/index.html?appid=fe1c9fdfd126471983703f1ada3ebc8e

Video: *Sustainable Farming: The Milpa Cycle video at this hyperlink:* An Odyssey Film: Credit: Odyssey Film.

Trails of El Pilar:
A Tour, Plants, Animals, and More!
http://elpilar.marc.ucsb.edu/trail/

Find news about El Pilar on Facebook:
https://www.facebook.com/espmaya

Chaya Dinner with the Maya:
Features of our recent exhibit at the Mexican Embassy Cultural Institute in Belize (A Belize TV interview):
https://youtu.be/Y1NaG7WwpNM