

## 29 **TEACHING SECRETS OF CONSERVATION AND PROSPERITY IN THE MAYA FOREST**

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*The Maya forest is a garden, so say the economic botanists. Indeed, the traditional Maya home gardens are hailed as the most diverse in the world, yet it is practiced in ever fewer numbers. The old Maya farmers, who use the forest as a garden and built utility in their farms based on the Milpa cycle, have few followers and they know this is the case. As a consequence, a group of Maya farmers joined together to make a school garden in their community, Santa Familia. This acre plot is now four years old and with a grant from National Geographic Society, The Maya Forest Alliance and the El Pilar Maya Forest Garden Network developed the Kānan K'aax model school garden. Now, they can educate their children and other visitors in the strategies and practices of forest gardening. The work culminated with a teacher's workshop that begins to integrate school curriculum in the garden and promoting "no child left indoors!"*

### **Introduction**

Conservation of scarce cultural and natural resources is the challenge facing the 21st century. Deforestation is a common threat, and nowhere is this graver than in the tropics (TNC 2012). Protecting these forests is a major concern, yet it has been with an approach that rests on the western conservation model of removing the human element from the equation. Tropical research on ecology and botany of the Maya forest of Mesoamerica demonstrates that it is dominated by useful plants (Ford 2008). This is the result of the domestication of the landscape.

Many of the native Maya forest plants have played a significant role in the global economy—cacao for sweets, vanilla for flavor, logwood for fabric dye, mahogany for wood, chicle for chewing gum, and annatto for food coloring (see Schwartz 1992). The traditional Maya who have managed the forest and its gardens represent a technological legacy of skills, strategies, and practices that have a direct link to the Maya past and may prove to explain the rise of the Maya civilization (Ford and Nigh 2009, Ford et al. 2012).

Traditional Maya practices and strategies serve to manage the water cycle, enhance soil fertility, and provide essential family nutrition. This knowledge has been fostered since the conquest 500 years ago, handed down through generations, and active today (Teran and Rasmussen 1995). Global land use strategies have eclipsed the traditional processes but not their potential (Hernandez X 1995; Gomez Pompa and Kaus 1999). Persistent

traditionalists, the original permaculturalists and heroes of the Maya forest are ready to share their secrets of prosperity and conservation and this is beginning in the village of Santa Familia at the Santa Familia Primary School. The new Maya Forest Garden *Kānan K'aax* (well-tended forest in Mayan) offers an innovative venue of learning about the Maya traditions before it is too late.

Collaboration between Exploring Solutions Past~The Maya Forest Alliance and the El Pilar Forest Garden Network has worked to enhance a school garden space as beginning in 2008. Over the course of the past years this focused project has developed a model school garden, the *Kānan K'aax*, and a school program of study that highlights health, environment, and science based on Belize education curriculum. This program links the traditions of Maya forest gardening with the current education curriculum, bringing outdoor learning to young students in the area of the ancient center of El Pilar.

### **The Santa Familia School Conservation Project**

The forest gardeners understand their practices are vanishing as the traditional practitioners grow old and conventional mechanical and technological agriculture expands. In the time of our project period, three elder Maya farmers and two collaborators, key to the conservation of the Maya forest garden project, are no longer with us to help promote the fundamental local traditions. Since the accumulation of knowledge has been past through practice, the school garden project extends the potential of spreading the knowledge

by engaging the teachers and their classes to leave no child indoors (Coyle 2010; Neill 1997; Rea and Waite 2009).

Clearly, support of the model primary school garden project, Kānan K'aax, comes at a critical time and is of major importance. The forest garden project, endorsed by the Ministry of Education and the local Santa Familia Primary School programs, promises to link contemporary global teaching goals with local traditional environmental awareness. It is a means to honor local traditions and to propagate local forest garden strategies and practices for the youth of the area.

The Maya forest garden project successfully implemented the goals defined in the proposal. We established basic infrastructure to protect the model school site and promoted a teacher introductory workshop. We involved the school principal and all the schoolteachers in the program development and initiation by implementing curriculum activities that connected their current teaching requisites. On-site actions in at the Kānan K'aax model garden were designed to promote involvement in health, nutrition, and environment. Other ancillary learning components touched on math, writing, and science. In sum, this project was able to:

- 1) Engage the traditional forest gardeners in the development of the school site for their teachers and children,
- 2) Create a working map of the site with the new installations of the fencing and gates, roofed galleria, and latrines,
- 3) Establish trails, plot signage, and labels of the 20 dominant plants of the Maya forest,
- 4) Institutionalize the model garden at the school with the workshops, and
- 5) Link local traditions of forest gardening to the Major Maya center of El Pilar.

#### **Objective: No Child Left Indoors**

The model school garden Kānan K'aax is a community-teaching site and a magnificent tool for the primary school. It now serves as a model for other schools in the areas and beyond as a resource on traditional Maya practices. Currently under the stewardship of the Santa Familia Primary School administration, Kānan K'aax is now a fenced, gated, and welcoming

site (Figure 1). This is critical for the primary school students, but also for the youth engaging with the El Pilar Forest Garden Network to apprentice with their elders to build a focus for visitors from around the world. The plan to formalize the Kānan K'aax will set it as *the* Maya forest garden educational site of Belize with a hands-on and accessible forest garden aimed to teach fundamentals of traditional practices for children and other interested groups. The establishment of the model Kānan K'aax provides a basis to teach and understand the importance and inherent value of the conservation traditions of the Maya.

#### *Securing the Site*

Major effort was devoted to construction, making the Kānan K'aax safe and accessible for the school children as well as visitors. The forest gardeners had animals walking into the garden, including horses and chickens, resulting in plant damage. Further, valuable plants, like orchids were removed from their setting, degrading work at the site. Visits to the garden were largely restricted to dry periods and there was a distant walk to a toilet. These were the first order of business.

Fencing was the first to go up. This required the collection of the building materials, including the chain link fencing, the wood posts, and the lumber for the gates. The perimeter was measured and the materials were procured. The posts were collected from the reserves of the forest gardens, lands that make up nearly 60% of these gardeners lands. The arduous process required a group of at five individuals to pull the chain link taught. It was a major enterprise and resulted in a secure area for the garden with locked gates at the east road and west school entrances.

Next was the construction of the latrine. This required knowledge of the landforms, soil deposits of the valley, and the impact of rain. Unlike the latrines in the hard limestone areas such as El Pilar where we had constructed latrines into the solid rock, the latrines at the Kānan K'aax were to be placed in alluvium and would require supports for the long drop. It was determined that 55-gallon drums would serve the purpose and they were set in an excavated trench and stabilized with packed earth form the

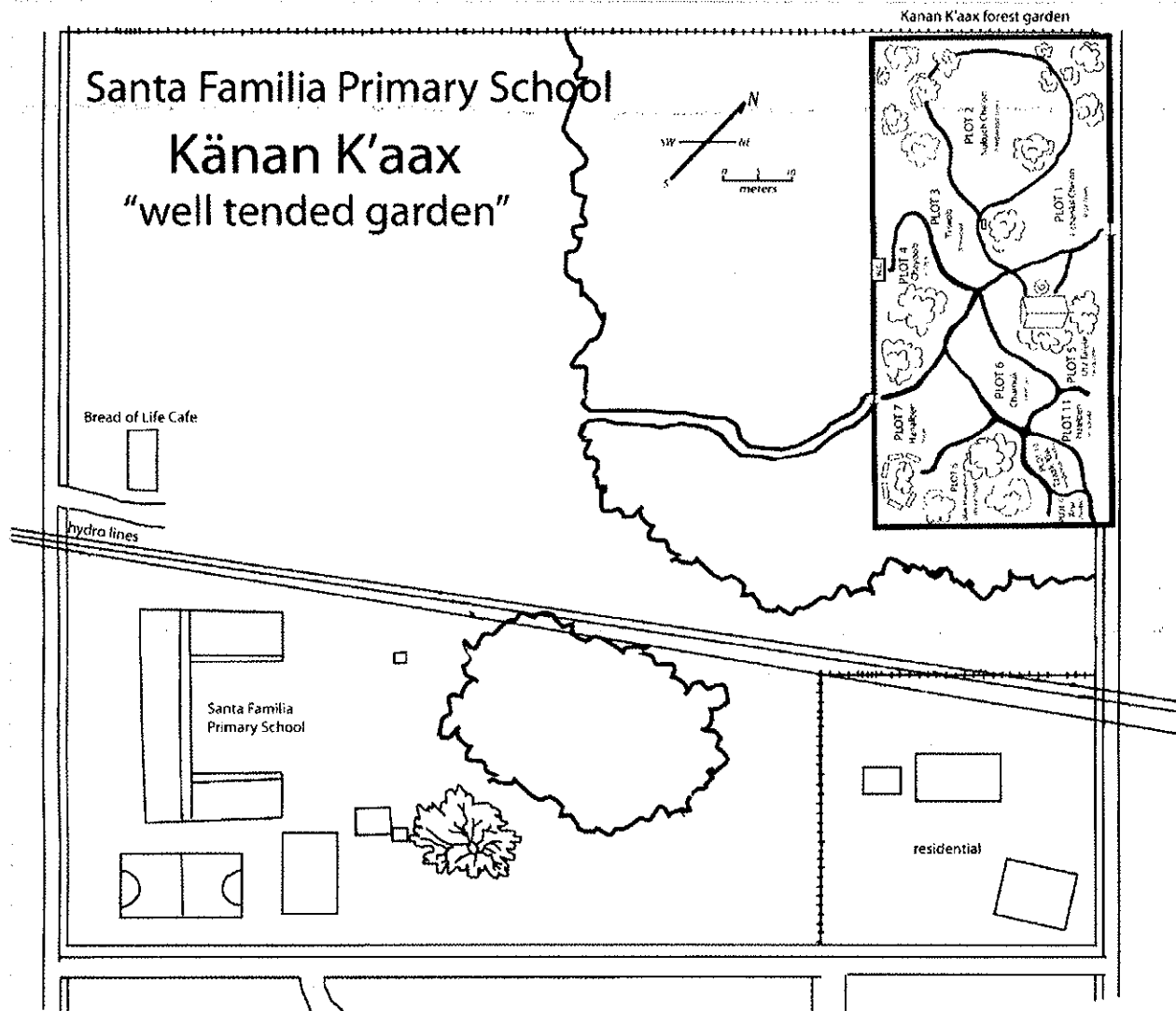


Figure 1. Sketch plan of the Santa Familia Primary School and the location of the Kanan K'aax Model Forest Garden.

excavation. A simple siding, with doors, and corrugated iron roof were selected to finish the construction. A two-stall latrine was completed with padlocked doors. At the same time the latrines were constructed, a water line was drawn in and a faucet was established nearby for washing hands and watering the plants when needed.

Finally there was the construction of the galleria. This was established in two phases: the setting of the poles and corrugated roofing in June of 2011 and then the creation of the perimeter wall with the marl floor November 2011. Getting the galleria sited, the poles and roofing set, and determining the finishing was

the main activity and was completed before the rains. Roofed and dry made it possible to complete the second phase of finishing. It also provided a dry space for the teachers and students in outdoor learning programs. For the second phase, the youth group gathered bamboo for the perimeter wall and brought in white marl for the flooring. The result is a very nice setting for appreciating the garden and learning. This was put to test with our teacher's workshop.

#### *Mapping the Setting*

Mapping the area of the garden required sketches of the entrances, location of the trails, marked with white stones, and the identification

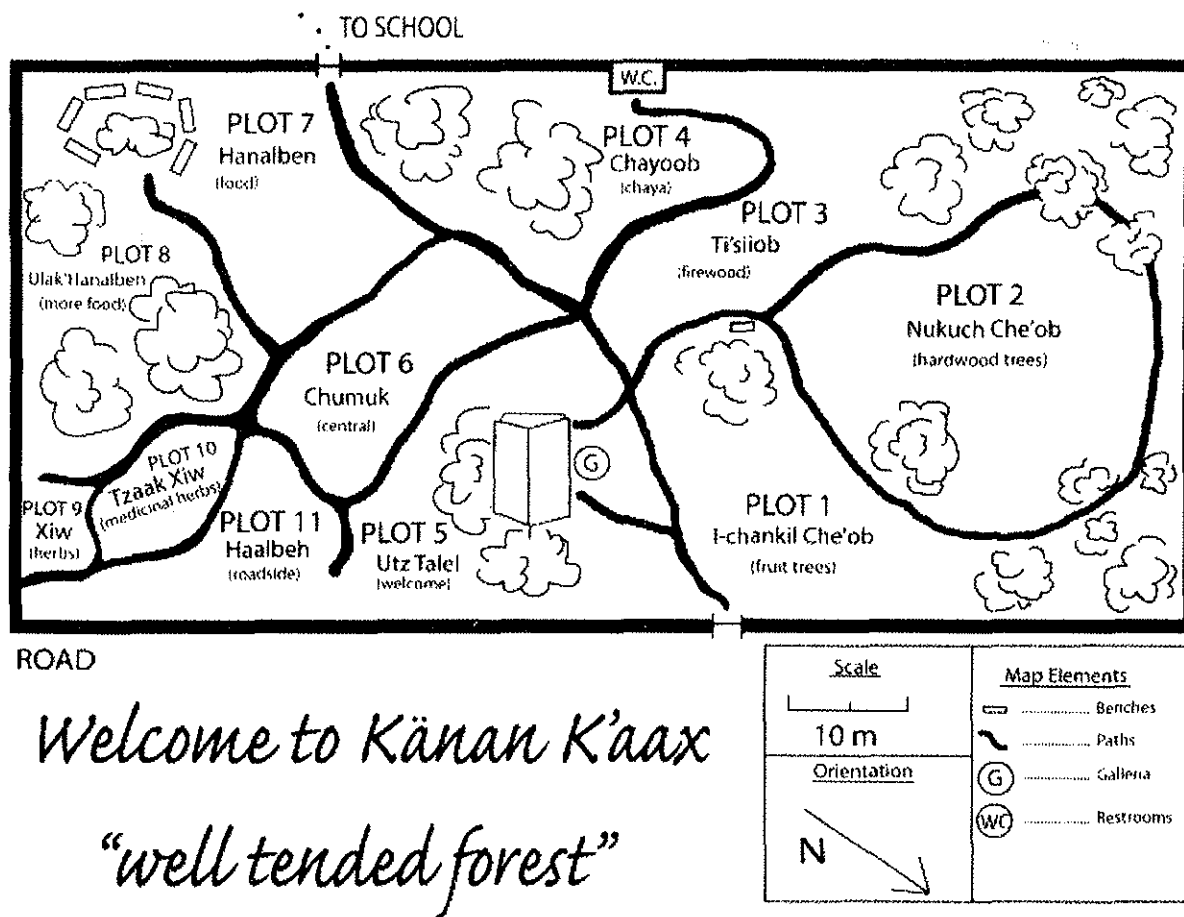


Figure 2. Map of the school garden Kánan K'aax.

of plants and their locations (Figure 2). The site plan, with the trails and the plant plots were all included. While the master forest gardeners know the plants and their locations, we needed to make this accessible to those who would be teaching and learning. Consequently, we had to develop a botanical identification database and based on this list create prominent labels for the plants listed as the dominant in the Maya forest. Working with the master gardeners, we enumerated the plants of the plots within the garden area and developed a list of the locations of the dominant plants and identified where we needed more plants of the Maya forest. We also included 20 native plants illustrated in the children plant book that we wrote and printed in English and Spanish as part of the project.

We developed a sketch map of the site with trails and plot names in Mayan with

translations to build on the Maya roots. This was the foundation of the garden improvements. This map was for the plot lists as a data base and plant labels that would go into the garden. We worked with craftsmen of Cayo and, based on our fieldwork and experience with signage at El Pilar, we developed a way to print, laminate, and mount labels for the plants and plots that could be renovated easily as needed. Galvanized holders were specially made to fit the labels and listings as well as the posted map of the site. The site maps were placed at each entrance, the gate from the school and the gate from the road. These labels, of readable size, provide local names as well as scientific names and cover the range of plant habits and light requirements. All were in place and ready for the teacher's workshop.

### *The Professional Training Workshops*

The culmination of the K'anan K'aax development was the institutionalization of the garden site with the teachers. They all knew of the garden and were using primarily as a refuge on hot days and for reading periods. This is an excellent activity for the garden as it motivates the children and supports our motto of no child left indoors. Now with the galleria, there is greater incentive to use the site as a refuge for assignments that can be managed out of doors. But our real objective for the site is for the teaching of the traditional Maya forest gardening and to inspire children to recognize plants, to seek to learn more about.

We have grand hopes and plans for the K'anan K'aax and with the support of the school principal; we developed the teacher's workshop. Slated for the 10-12<sup>th</sup> of July, the workshop focused on the standard curriculum requirements for the study of health and nutrition, environment, and science. Each day we posted an agenda; Day 1 was focused on concepts, Day 2 was designed to be practice, and Day 3 was the field trip to El Pilar (Appendix 1). Workbooks were provided for all the teachers and master gardeners participating in the workshop.

Our workshop proved revolutionary. We funded the entire program when normally these are self-funded by the teachers. We provided traditional foods for lunches, reviving the old experience with foods from childhood: chaya, ramon, and horchata de maize. Professional teaching workshops normally involve classroom settings with lectures and note taking. Our workshop was designed with workbooks and hands-on activities of reflection and action.

### **The Results**

The Santa Familia Primary School garden initiative has been designed to insure that the traditional Maya practices are not lost. On the school property, the K'anan K'aax garden site is dedicated to student education and village participation to bring alive the excitement and inspiration of the garden and the out-of-doors. For safety and utility, the project investment in facilities makes the site easy for class use. It is fenced with marked trails, proper signage, latrines, and the galleria. It is well known that children excel in the outdoor setting, and now

the village of Santa Familia has a garden available for outdoor learning directly with field activities designed from our workbook and indirectly for outdoor sessions for reading or writing projects. The classroom is appropriate for the basics, but the wider application of learning is vital. The K'anan K'aax school garden offers a versatile and secure site for education.

The K'anan K'aax model garden has designated areas featuring annual and perennial plants. Weaving around the planted areas are trails, clearly marked with white stone, guiding students around the forest garden. Along the trails students will read about the foods, herbs, as well as fruits and flowers. They will also observe the plants that revel in the sun and those that need to be sequestered in the shade. Observation is one of the most important aspects of activities in the K'anan K'aax garden and promises to bring gardens from school into the home.

In the course of the project, we developed a close rapport with the Department of Education and the school Principal Donicio Escobar. Together we created appropriate didactic literature for educational programs designed for schoolteachers. A map of the site with trails and plant communities was created based on the knowledge of the forest gardeners. In addition, we printed a new forest garden plant book in English and Spanish to supplement the school teaching efforts and for sale to support the ongoing forest garden aim of the K'anan K'aax. These materials were developed in the context of the first teacher workshop that we coordinated for professional development credit. Our workbooks were enthusiastically received by the school principal and formed the basis of our professional development workshop with the local schoolteachers. The school has requested that we offer this every year is a testament to its importance.

The workshop, scheduled after the close of classes, was a remarkable and challenging event that brought the teachers into the K'anan K'aax garden setting and worked with student activities designed to meet the curriculum requirements of the Belize school curriculum. The teacher workshop culminated the on-site developments and served as the first step to

bringing the model Kānan K'aax garden into the school programs.

Within the context of the school linkages, we scheduled field trips to El Pilar. The school visits to El Pilar, with the leadership of the forest gardeners, helps to connect the children to their ancestral past. These events were filmed by local television and aired nationwide on the program *Belize Watch* and has helped to showcase the value of community work in conservation.

### Conservation Outcomes

The educational Kānan K'aax project acknowledges the need to bring continuity of knowledge that will promote the survival of the Maya farming heritage and conservation legacy. Specifically the school garden project invests environmental education that links elder traditional knowledge to youth and time-honored practices to the ancient Maya of El Pilar. Through the involvement of the school children, traditional forest garden strategies have the opportunity to live on.

Regional and international involvement through the non-profit Exploring Solutions Past~The Maya Forest Alliance will build recognition of the valuable skills and strategies of the Maya forest gardeners, the original permaculturalists, through the internet and other venues. The outcome provides an opportunity for the youth to learn profitable and sustainable domestic living practices built on the foundation of the Maya forest gardeners and to link the well-known connections of the traditions to the ancient Maya at El Pilar.

Knowing children are open to learning, thirsty for new experience, and excited to engage with the forest garden is a platform for conservation. They are the hope for the future of conservation of the native resources and can keep the Maya forest alive connecting the traditions with the fundamentals of the Belize educational environmental curriculum. Without the traditional knowledge and understanding of the flora and fauna of the Maya forest, the next generation will lose their connection to their landscape, the Maya forest. The model of Kānan K'aax, named by Alcario Cano who is not passed provides the potential to maintain the links and to use the traditions with our modern

knowledge to build a sustainable future. The Kānan K'aax model school garden provides a context for children to learn from their elders and to forge their connection to their Maya ancestors. Further, the garden site offers a space and opportunity to learn about the Maya forest that cannot exist without the community.

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