

Bugs for Life 2013: Exploring the practices, perceptions and possibilities of edible insects in Northern Benin

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Why eat bugs?

Yuck, disgusting, interesting and mad are all words I have known people to use when talking about eating insects. It's true, they wriggle and creep, but really they are quite similar to the crustaceans which we consider a culinary delicacy. Indeed recently, entomophagy, the eating of insects, has grabbed the attention of researchers and the media alike for its potential role in ensuring global food security. As populations rise worldwide and with the average person consuming more meat, how will supply meet the growing demand? Can we produce sufficient food while minimizing environmental impacts? Putting insects on the menu certainly offers some tantalizing solutions to a number of current issues. Their efficiency in converting plant material to animal protein is enviable compared to our current domestic animals, and they produce only a fraction of the greenhouse gasses. Not to mention the fact that when developed you could farm insects in tower blocks, minimizing the need for land. Finally, in many nations where issues of food security are most serious, insects offer the potential for diversifying agricultural output through developing production of insects. However, in truth people have been indulging in insects for millennia, and examples of entomophagy today can be found in two thirds of nations worldwide. Perhaps the most striking examples

being found in certain South East Asian countries where a huge range of insects and other invertebrates can be found on the market. Nonetheless, rapid changes in lifestyles and habits in many nations are threatening traditional cases of entomophagy. This concern is what brought about the project Bugs for Life; which, by documenting traditional entomophagy, hoped to both guard regional knowledge of these tasty critters, and provide a basis for using them further in food security programmes for Benin.

The Bugs for Life team comprised individuals from a range of areas; entomology (Rudi and Laura), international development (Mariangela) and public science communication (Craig). Our first motivations to explore the world of edible insects came from a combination of personal interest and inspiring blog videos¹. This passion eventually led to the development of the project in Benin, with a local contact, Séverin Tchibozo, from the environmental NGO, CRBG². Located between Nigeria and Togo in West Africa, Benin (the birthplace of Vodun), is a country rich in cultures, languages, and traditions, and for this reason is particularly interesting for discovering delicious insects. Although entomophagy is not widespread in Benin today, there are a number of ethnic groups in the country that each has their own very different traditions when it comes to eating insects.

¹ http://www.ted.com/talks/marcel_dicke_why_not_eat_insects.html

<http://vimeo.com/35846172>

² Centre de Recherche pour la Gestion de la Biodiversité



Realising that little academic work had explored edible insects in Northern Benin, our project focussed on the Atakora region and the Wama group who traditionally eat insects. Our aim was to complete a comprehensive list of insects eaten in the region, document how they are traditionally collected and cooked, as well as to probe the potential and limitations for developing future projects on edible insects. With our plans formed and funding secured, we headed to Benin in October 2012, hoping to reach our study sites just in time for the harvest!

Our Journey

Our first stop was Cotonou, the economic capital of Benin, where we met our local contact Séverin and without delay headed to our field sites in the North. After arriving at the sisters of Notre Dame Des Apôtres, our accommodation for the trip, we arranged our first expedition to the village of Kosso, a small and close-knit Wama community situated in scrub Savannah under the Atakora Mountains. A simple village of mainly subsistence agriculture, we learned that Kosso was likely to be where the strongest traditions of eating insects

were still likely to be found. Upon first arrival we were formally introduced to the village members, with whom we would be working. After being welcomed according to customs, sharing palm wine with both the village delegate (an elected village representative) and the ancestors of the earth, we could begin to arrange our first collections over the coming weeks. We eagerly anticipated being able to fill our stomachs with some tasty treats soon. The following Saturday, we arrived bright and early to the house of the Kosso delegate, Gnissma Boto, in order to get catching insects before the sun was too hot. Here we were met by not only the children of the house, but seemingly most of the village from the surrounding houses too. We all trooped out to 'la brousse' (the wild grass around their fields) and joined the children creeping through the six foot grass looking for crickets and chafers still cold from the dew. Later, having been lucky enough to have caught enough tasty treats, we joined the children back at their houses to roast or fry up the different insects. The grilled cricket kebab is one I will definitely be trying at my next barbeque! From that day on we worked regularly with the village; collecting the different insects

they eat while trying to understand how and why they do it. As our partnership changed into a friendship over the course of the six weeks we spent with the village, we joined in other activities from harvesting to walking with the women to market. These experiences offered an opportunity to understand how entomophagy could stay a part of the changing culture in Benin. When the time came time to head back home, the village invited us for our last day and we were treated to a surprise farewell from the whole village. The celebration saw us welcomed in by a chain of children of every age, and closed with an emotional and honest 'see you again'.

In addition to working in Kosso, we were fortunate enough to encounter a fantastic opportunity to explore edible insects, this time from the slightly different angle of working in a secondary school in the neighbouring village of Kotiakou. Although a slightly larger settlement (as indicated by the presence of a church and a school), Kotiakou residents still have a relatively simple life, compared to larger settlements in the area, lacking electricity or supermarkets. This made it a good bridge between small village

life and the more urban habits of larger towns, like Tanguieta. After being introduced to the teacher of the small school in Kotiakou, we immediately knew we had met a special individual: Mathieu Doko. He was an inspired advocate for the role of education in building Benin's future. Within what felt like minutes, we had arranged opportunities for the children to collect the insects they ate from wider areas around the village, while also giving classes in English, and discussing issues of nutrition and edible insects. The kids took like wildfire to the idea, and soon we had the classrooms crawling with everything from giant armoured crickets to plastic bottles full of chafers. When it was time to take our leave, we definitely left with a greater appreciation of the potential to use education to elevate the status of entomophagy across Benin. Later that month, we met with a member of the Peace Corps, who have hundreds of teachers spread across Schools in Benin, and after discussing our project they were very interested in the role of edible insects for providing food security and agricultural diversification in the region.

However much fun scrambling around in the grass and chasing after giant insects was, exploring issues of malnutrition in the region also formed a fundamental part of our project. Thinking the hospital Saint Jean de Dieu in Tanguieta would be a good place to start, we met with Dr Aouanou Guy Basile, head of paediatrics. He explained that despite increasing education and development, Northern Benin still suffers severe problems of malnutrition, particularly among children. Indeed, recent studies suggested that ten percent of children suffer from acute malnutrition. Most alarmingly, levels of chronic malnutrition were estimated to be as high as fifty percent among children under five. However, malnutrition is not a simple problem of food quantity, but a complex issue of quality, affordability, and nutritional knowledge. Later that month, we worked with Elizabeth Kassa, a nurse at the Centre for Nutrition, where we were able to discuss the potential for using insects to address nutritional problems. While the potential is definitely present and a variety of insects are locally available, encouraging people to use them, and creating affordable protein rich products



presented the greatest barriers. Nonetheless, we left with a positive feeling about the potential of entomophagy and the forward thinking of people dealing with food insecurity issues in the area.

What insects do they eat and why?

Throughout our period of working with the Wama villages of Kosso and Kotiakou we documented 11 new species of insects, bringing the total number to around 17 species that are eaten, with the most abundantly consumed being Coleoptera (52%) followed by the Orthoptera (29%). Particularly interesting were a species of beetle from the family Hydrophilidae, previously not recorded to be eaten in Western Africa, and the armoured ground cricket which was not only a new recording for species eaten in the region but was also the first record of this species in Western Africa, previously having only been recorded in East Africa. While there are some insects that are eaten across the whole year, despite a

considerable dry season (December-April), the vast majority of insects were collected during the rainy season (May-November). It was particularly remarkable that insects were collected from such a range of habitats, including; wild grass, underground, still water, and even on cattle. Although this is perhaps not so surprising when you consider that insects are the most diverse animal group on earth! One thing that was notably different for the Wama group, compared to others who eat insects in Benin, was that they don't eat any larvae or caterpillars. They even found it surprising that we would ask if they did.

Focusing on collecting and cooking habits, we were surprised to find that it was predominantly children who did everything. Indeed, they consider it more like a game with a potentially tasty snack at the end, rather than a valuable source of nourishment. However, we learned that around forty years ago, during a famine, eating insects did become a necessity. Nowadays, the only insects that were collected on a large scale by adults were

termites during their sexual winged migration. These are then either sold or eaten by all members of the family. These traditions contrast with other studies in West Africa, where insect collection often can play a role in pest management and crop protection as well. In the region we were working, there was little evidence of large-scale pest problems, with the major crop loss being caused by parasitic plants. While completing work with the Wama groups, we also tried to gauge the general opinion of neighbouring groups and local institutions. When discussing insect consumption with people from other ethnic groups in Benin, the opinion that eating insects was a sign of poverty was fairly general, and therefore they were considered inferior to other foods. As a result, when people move to the towns and cities they would often stop eating insects, suggesting that traditions of entomophagy could quickly be lost with the transition to a more meat-rich western diet. When further discussing this with local doctors, the general consensus was that a change in education and attitude towards insects as a food source was fundamental to any expansion of entomophagy in the area. Nonetheless, with neighbouring Burkina Faso and Niger selling insects on the market and termites already

being collected on a larger scale, the potential for expansion definitely exists.

Where to now?

Upon leaving Benin, all the group was left with the feeling of having scratched the surface of something, which given the right support and further work, has a role to play in tackling malnutrition and addressing food security in Benin. From the inventory of potential species already traditionally eaten, through to developing education classes and community nutrition groups about insects, our results have uncovered plenty of avenues for future work in the area. Indeed, while visiting the International Institute of Tropical Agriculture (IITA) and their extensive entomology museum, we were lucky enough to meet some health specialists and agronomists with whom we discussed our work and sowed some seeds in the hope that future work might emerge out. Targeting malnutrition sensitive groups such as children under five and pregnant women, IITA now hope to develop an international platform to develop entomophagy for nutritional purposes.

For certain, a multidisciplinary research programme would be required to address issues of how to expand

entomophagy in Benin. Understanding the biology of different species to develop cultivation techniques, as well as investigating marketing and consumer preference are a few areas where headway is now being made. In addition, other avenues, such as the role insects could play in local economies and agricultural diversification remain to be explored. However, as well as sowing seeds for locally initiated projects to develop, the research served to show us the value in international partnerships and how organisations such as the Royal Entomological Society can play a role in flying the flag for insects in any part of the world. The next stop for us now we are back in the UK, will be supporting edible insects closer to home, and helping to put them back in the minds and menus of as many people we can!

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